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OTH-B RADAR

Environmental Impact Analysis Process

Final Environmental Impact Statement
Part IIA
Proposed Central Radar System
Over-the-Horizon Backscatter Radar Program
May 1987

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DEPARTMENT OF THE AIR FORCE
AIR FORCE SYSTEMS COMMAND
ELECTRONIC SYSTEMS DIVISION

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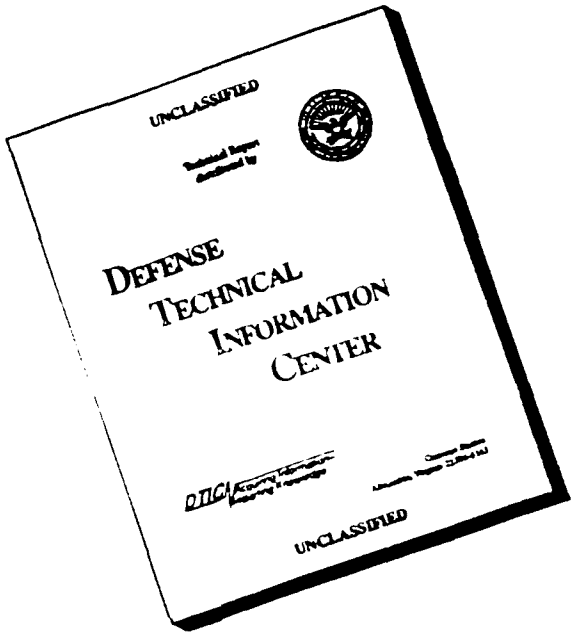

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COVER SHEET

(a) Responsible Agency: U.S. Air Force

(b) Proposed Action: Construction and operation of the Central Radar System, an Over-the-Horizon Backscatter (OTH-B) radar system that would be located in the north central region of the U.S.

(c) Responsible Individual: Lt. V. G. Brown
ESD/SYO
Hanscom AFB, MA 01731
(617) 271-5360

(d) Designation: Final Environmental Impact Statement (FEIS)

(e) Abstract: This document describes the probable environmental impacts of constructing and operating a new surveillance and tracking radar that operates in the High-Frequency band of the electromagnetic spectrum. The radar system would consist of four very large transmit antenna arrays located in either northeastern South Dakota or west-central Minnesota, four larger receive antenna arrays located in either eastern North Dakota or northwestern Minnesota, and an operations center proposed for Grand Forks Air Force Base, North Dakota. Four areas were considered for the transmit arrays, five areas for the receive arrays, and one site for the operations center. Potential significant physical and biological impacts can be avoided or minimized by careful selection of the transmit and receive sites. The key environmental concerns are erosion in areas where substantial grading would be required, interruption of water courses and drainage patterns, disturbance of migratory bird habitat, and the potential for birds colliding with the antennas. Moderate economic stimulation of local economies would result from construction activities, but the benefits of continuing operations would be small. Electromagnetic interference with telecommunication systems is unlikely. No reliable evidence exists that chronic exposure of humans to the radiofrequency radiation levels outside the exclusion fence surrounding the transmit site is likely to be harmful.

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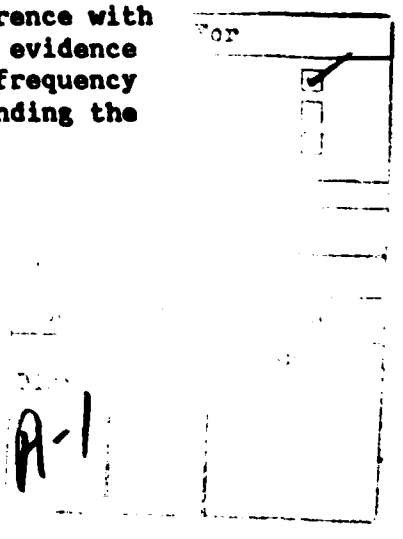

SUMMARY

FINAL ENVIRONMENTAL IMPACT STATEMENT
Construction and Operation of the Central OTH-B Radar System

Description of the Action

The Over-the-Horizon Backscatter (OTH-B) radar is a surveillance and tracking radar system that the U.S. Air Force plans to construct and operate at four locations in the United States. The functions of these radar systems are to detect, track, and give early warning of aircraft and cruise missiles approaching North America. Early warning of hostile aircraft approaching North America is critical to the defense of the United States.

The four planned OTH-B systems would establish a surveillance zone around the east, west, and south perimeters of North America. The Central Radar System (CRS) is needed to complete the perimeter coverage of the southern approaches to North America. It is also needed to cover the near-shore ocean areas not covered by the East Coast and West Coast OTH-B systems.

The functional components of the CRS would be geographically separated from one another: Different sites would be required for the transmit and receive antennas; the operations center, which would process radar data, would be separate from both of those sites. Four areas in eastern North Dakota (known as the Dahlen, Goose River, Galesburg, and Blanchard study areas) and one in northwestern Minnesota (Thief River Falls study area) were studied for the receive site. Three areas in west-central Minnesota (Wheaton N, Wheaton SE, and Wheaton SW) and one in northeastern South Dakota (Amherst) were studied for the transmit site. Grand Forks Air Force Base, North Dakota, is the proposed location of the operations center.

The OTH-B transmitters and receivers use very large fixed antennas. The transmit site and the receive site would each require a minimum of about 2,400 acres of level land. The operations center would be housed in a conventional building of about 48,000 ft^2. Approximately 50 maintenance and security personnel would be required at the transmit site and at the receive site; about 390 operating personnel would be located at the operations center.

Public Concerns

In conformance with the requirements of the Council on Environmental Quality, the Air Force convened a series of 10 scoping meetings in com-

munities near the areas studied and in the North and South Dakota and Minnesota state capitols. Many questions about the characteristics and features of the radar system and its construction were asked. At the request of citizens seeking more information, Air Force personnel have subsequently conducted telephone conversations and held additional meetings. During these various exchanges, concerns were expressed about:

- o The impacts of construction and operation, particularly on property tax revenue, on the infrastructure (especially roads), and on birds and their migration
- o The land requirements for sites, and the process and basis for acquiring land
- o The biological effects of radiofrequency radiation (RFR)
- o The use of land already in federal control
- o Electromagnetic interference, primarily with radio and television
- o The loss of agricultural land
- o Superior alternative surveillance systems
- o Restrictions on aircraft operations
- o Increased aircraft or ground vehicle traffic
- o Site selection and environmental analyis processes
- o Job opportunities and required training
- o OTH-B as a military target.

The Draft EIS was filed with the U.S. Environmental Protection Agency on August 15, 1986. Public hearings on the Draft EIS were held in Grand Forks, North Dakota, Wheaton, Minnesota, and Langford, South Dakota, in September 1986 and in Hillsboro, North Dakota, Britton, South Dakota, and Thief River Falls, Minnesota, in November 1986. In addition to oral remarks, the public and agencies submitted written comments and questions both at the hearings and later by mail.

The comments and questions focused primarily on possible adverse fiscal impacts, direct or indirect, on townships and school districts; on harmful biological effects on humans; and on the loss of prime agricultural land. Much interest was shown in the process of acquiring the necessary land and the possibility of lease as well as purchase. Concern was expressed about restrictions on farming and aviation activities, particiularly aerial spraying, about interference with communications, and about disruption of established drainage patterns. There was also frequent questioning of the need for the OTH-B system

and concerns in some communities about the Environmental Impact Analysis Process itself and the prospect of disruption of long-established family farms and the farming way of life.

Environmental Effects

Biophysical Effects

The areas studied for the transmit and receive sites are largely farmland. Generally, the areas have poorly drained soils, and they are characterized by numerous temporary and permanent streams and potholes. Wetlands frequently surround the streams and potholes, and provide shelter and breeding grounds for wildlife, primarily birds. Because the study areas are located in the Central and Mississippi Flyways--the major bird migration routes in North America--and because food in surrounding grain fields is abundant, the incidence of birds is high and thus of importance.

The Dahlen and Goose River study areas have considerable topographic relief that would require significant grading (more than two million yd^3 per sector) and would be subsequently susceptible to erosion, with potential impact on rivers. The Galesburg area has intermediate grading requirements; however, the remaining study areas (Blanchard, Thief River Falls, and all of the transmit areas) are flat enough that grading requirements are minor, as are erosion concerns, with proper construction precautions.

Surface water is extensive at the Dahlen, Goose River, Galesburg, and Wheaton SW study areas, but is present to a lesser extent at Blanchard, Thief River Falls (the western portion), Wheaton N, Wheaton SE, and Amherst. The presence of surface water is likely to require the rerouting of permanent and seasonal drainage features and the filling of potholes and ponds. These actions would disrupt the associated wetlands habitat.

In addition to wetlands, occasional rows of trees in the areas provide wildlife shelter. With the exception of the eastern half of the Thief River Falls study area, few wooded areas exist. Deer and perhaps moose and elk may use the wooded areas. Although federally listed threatened or endangered species are known to occur in the study areas, the ranges of some such species do extend into the study areas. Before siting and construction, the selected sites would be surveyed for the occurrence of such species or their habitat, and appropriate mitigation measures would be taken if required.

Birds may be significantly impacted because of the loss or disruption of habitat and breeding grounds and the possibility of collisions with the antennas. The proximity to wetlands, preserves, the Central and Mississippi Flyways, and grain fields increases the likelihood of collisions. The potential for wildlife impacts is greatest in the Dahlen, Goose River, Galesburg, and Wheaton SW study areas. The eastern

portion of the Thief River Falls area contains important wildlife areas, and the western portion contains or borders important wildlife areas; thus, the potential for wildlife impacts exists if the CRS is built near these latter areas. Wildlife impacts at Amherst would depend on the specific location of the site within the study area. The remaining areas, Blanchard, Wheaton N, and Wheaton SE, could satisfy the CRS requirements with minimal wildlife impacts.

The greatest risk to birds is from collision with the backscreen as they fly low between shelter, breeding, and feeding areas. Siting an antenna astride such flight paths should be avoided. Similarly, the risk of collision is greater where water and grain fields are nearby. Higher flying migratory birds would not be affected, except when they use the area for feeding or breeding. The collision risk could be mitigated by increasing the visibility of the structure. Other measures involve means (e.g., sound) to enable the birds to sense the antenna arrays.Although bird collisions are a potential impact, frequent collisions have not been reported at existing structures in the region that are about as tall as the antenna arrays (e.g., observation towers and silos). Problems with collisions have been reported for much taller towers in the region, however.

The operations center is to be built on existing military grounds at Grand Forks Air Force Base. Therefore, no significant biophysical impacts are likely.

Socioeconomic Effects

Significant adverse socioeconomic effects are not anticipated at any of the nine areas studied as possible antenna array locations or at the proposed operations center location.

Population increases from operations, even in the most sparsely settled study areas, would be less than 1%. During operation, 390 people would be required for the operations center, with 50 each for the transmit and receive sites. CRS operations would reduce local unemployment by about 1 to 3 percentage points, when both indirect effects and the effect of nonlocal hiring are considered. Construction employment would average about 100 workers each at the operations center, transmit, and receive sites over the 3 to 5 years of construction.

The most significant socioeconomic impact would be the removal of land from agricultural use for the transmit and receive sites. However, the net loss of farm income of less than $100 per acre would be more than offset by the total wages paid to the operational personnel at the sites. The tax loss resulting from removal of land and buildings from the tax base would be less than 1% for a county, but would be more significant to individual townships or to those tax districts that include large portions of the selected area. Some landowners would

welcome the sale of their property; others would regard sale of the family farm as a personal loss. From an agricultural resource point of view, the CRS would affect less land than has been removed from production annually in recent years from every county in the study areas except Traverse in Minnesota, where more land has been put into production.

Roads are an important part of the local infrastructure, typically crisscrossing an area in one-mile grids. The transmit and receive sites would require that traffic be rerouted. On the other hand, the roads remaining near the CRS would be improved and maintained.

Because of the generally flat, primarily agricultural land, the natural visual resources in the region are homogeneous. Man-made features such as transmission towers and farm buildings already stand out on the local landscape. The CRS antenna arrays should not further obscure or detract from existing scenery.

Although the regions considered for the CRS have been important to humans since prehistoric times, relatively few archeological sites are known in the study areas--probably because of the lack of systematic investigation. The existence of important former trails and of the shorelines of ancient lakes suggest the likelihood of finding more archeological sites in the region. Of the study areas, Wheaton SW appears to have the highest potential to contain the most archeological sites, and Wheaton N the least. Cultural impacts would be mitigated after the specific sites were selected for the CRS, the significance of identified sites was evaluated, and a mitigation plan was prepared.

Radiofrequency Radiation

Detailed calculations were made to estimate the magnitude and distribution of radiofrequency radiation (RFR) from the CRS, and the resulting values were used to estimate the possible effects of RFR. The validity of the computational methods was confirmed by measurements made at the Experimental Radar System (ERS) in Maine. The fence around the transmit antenna arrays would be located so that the average power density at ground level outside the fence would be well below the levels designated by the American National Standards Institute (ANSI) 1982 standard for both occupational and general public exposure.

Human Health

Because radiation safety is of paramount importance, an in-depth, critical review of the available literature on the biological effects of RFR was carried out. That review does not include any system-specific information; rather, it addresses the present state of scientific knowledge on the biological effects of RFR in the range from 0 to 300 GHz. The conclusions regarding possible RFR bioeffects of OTH-B were derived from the most pertinent and scientifically significant results.

Epidemiologic studies performed in the United States and other countries have not provided adequate scientific evidence that low levels of RFR constitute a hazard to the general population.

Most U.S. experiments with animals that yielded recognizable and repeatable effects of exposure to RFR were performed at whole-body average specific-absorption-rates (SARs) of more than about 4 W/kg (the basis for the ANSI standard). Such effects are thermal, in the sense that the RFR energy is absorbed by the organism as widely distributed heat that increases the whole-body temperature, or as internally localized heat that is biologically significant even with functioning natural heat-exchange and thermoregulatory mechanisms operating.

The existence of threshold values of average power density has been experimentally demonstrated for some effects and postulated for others. Exposure to RFR at average power densities exceeding the threshold for a specific effect for durations of a few minutes to a few hours (depending on the value) may or may not cause irreversible tissue alterations. The heat produced by indefinitely long or chronic exposures at power densities well below the threshold does not accumulate because its rate of production is readily compensated for by heat-exchange processes or thermoregulation.

Most investigations involving chronic exposures of mammals indicated either that no effects occurred or that reversible, noncumulative behavioral or physiological effects took place for SARs exceeding 4 W/kg. In the few cases in which irreversible adverse effects of exposure were found, such effects were absent for SARs below 4 W/kg. In a relatively small number of investigations, biological effects of RFR were reported at SARs of less than about 4 W/kg.

In sum, the review of the relevant literature indicates that no reliable scientific evidence exists to suggest that chronic exposure to RFR from the OTH-B radar outside the exclusion fence would be deleterious to the health of even the most susceptible members of the population such as the unborn, infirm, or aged.

Electromagnetic Interference and Hazard Effects

The CRS would operate from 5 to 28 MHz, which is within what is commonly called the high-frequency (HF) band. Users of HF band communicate between points as far away from each other as the opposite sides of the earth. The band as a whole is shared by other OTH-B radars, air-to-ground and ship-to-shore communications, standard time and frequency broadcasts, the Amateur Radio Service, Citizens' Band radio, and others. The specific portions of the HF band within which the CRS would transmit are also occupied by the Fixed Service (set aside for point-to-point communication between non-mobile stations) and the Broadcast Service (international radio broadcasting stations such as the Voice of America).

The radar can operate on a large number of frequencies. Its frequency use cannot be predicted exactly, however, because it will depend not only on changing ionospheric conditions, but on the frequencies independently used by other occupants of the HF band--frequencies that the radar would attempt to avoid. If the radar were operated on a frequency already occupied, it could interfere with reception at distant receivers.

Operation of the ERS for approximately 1 year, however, resulted in no valid reports of interference from either Fixed-Service stations or from listeners on the international broadcast bands.

The radar's modulation has been carefully designed so as not to interfere with reception in the adjacent bands. Occupants of these adjacent bands include the Amateur Radio Service, the Maritime Mobile and Aeronautical Mobile Services, standard time and frequency services, and, when the radar is in the Fixed Service bands, the Broadcast Service. The radar would be operated sufficiently far from the band edges so as not to produce adjacent-channel interference.

The radar would also radiate low-power harmonics of its fundamental frequencies that could interfere with systems using those frequencies. The harmonics would typically not propagate by sky wave to distant regions; thus, any interference effects would be strictly local. Harmonic interference would result from transmission only on particular frequencies. Among the systems considered for potential interference from the radar's harmonics were television, land-mobile radio, air-to-ground radio, and very high frequency (VHF) omnirange (VOR) air navigation beacons.

Information regarding television reception near the transmit study areas or regarding placement of the OTH-B radar within any study area is as yet insufficient to attempt to predict where or when television interference might be produced. Measurements in Maine near the ERS showed that at distances of 6 miles or more from the radar, the radar's harmonics that could potentially interfere with television were generally so weak that they were not detectable above the background radio noise.

Measurements and experience at the ERS suggested that harmonic interference with low-band VHF land mobile radio was unlikely at distances greater than about 3 or 4 miles, and a similar prediction applies for the CRS.

Although the VHF air-mobile communication frequencies may be susceptible to harmonic interference, no complaints were voiced during the more than a year that the ERS was operated.

Seven VOR and VORTAC ground stations are within about 100 miles of the transmit study areas; aircraft using them would sometimes pass through the tramsmit beam, and their VOR receivers are potentially susceptible to harmonic interference. Measurements at the ERS indicate that the interference may become severe when the aircraft are within about 30 miles of the front of the transmit array. However, those harmonic interference problems result from operation of the radar only on certain frequencies, which can be determined. The Air Force would cooperate with the Federal Aviation Administration (FAA) to determine whether interference exists and to resolve any interference problems.

At least seven small airports within approximately 100 miles of the transmit study areas are served by nondirectional radio beacons. Aircraft use directional antennas to receive the beacon signals and to determine the direction to the beacon. No experimental information is available to judge whether the OTH-B signal would interfere with aircraft reception of a beacon signal.

Operation of the OTH-B radar is not expected to interfere with reception of broadcast radio beyond about 1 to 2 miles from the transmit site.

The Air Force has developed an "Operational Plan for RF Interference Avoidance" for the OTH-B radars. This plan contains detailed operational procedures to be followed when changing frequencies to avoid producing interference to other users of the radio spectrum. It also contains procedures for cooperative remedial action that the radar operators are to follow when receiving a complaint that the radar has produced interference or is currently doing so.

The OTH-B radar would not be a threat to fuel-handling operations, nor would it constitute a threat to cardiac pacemaker owners outside the exclusion fence.

Some electroexplosive devices (EEDs), such as electrical blasting caps, could be detonated by electromagnetic energy. Safe separation distances depend on the electrical conductivity of the ground. Estimates indicate that the storage or transport of EEDs would be safe outside the exclusion fence if they were enclosed in metal containers. Otherwise, the safe distance would be about 2.3 miles in front of the transmitter and about 1,300 feet behind it (depending on ground conductivity). The use or handling of blasting caps in preparation for blasting operations would be safe if it were done at least 4 miles from the front of the transmit array, depending on ground conductivity.

Alternatives Considered

No Action or Postponement of Action

Under this alternative, the CRS would not be constructed and operated on any combination of the study areas, or it would be postponed to allow resolution of specific problems or issues related to these activities. Because the mission requirement would not be satisfied, the Air Force would continue to study the need for and methods to achieve the mission.

Other Surveillance Systems

Under this alternative, airborne or satellite surveillance systems would be used in place of the CRS. However, airborne systems are prohibitively expensive, and satellite systems require additional development.

Other Locations

No alternative locations to those identified as study areas have been considered. Operational requirements defined an optimal siting region. Additional operational criteria identified the EIS study areas and excluded the remaining portions of the siting region.

Conclusion

Significant long-term biophysical impacts from CRS construction and operation are possible, but their occurrence depends on the sites selected. Carefully planned and executed mitigation measures would reduce the likelihood and severity of potential problems. Selection of less environmentally favorable sites would result in some significant short-term impacts and require stronger mitigation measures. No significant adverse socioeconomic impacts would occur.

The Air Force, after carrying out its Environmental Impact Analysis Process, has identified the Amherst study area as the preferred location for the CRS transmit site and the Thief River Falls study area as the preferred location for the receive site.

After publication of the Final EIS, the Air Force will make its decision whether to proceed with the CRS as well as the study areas in which to locate it following the 30 days required by the Council on Environmental Quality Regulations. At the end of that period, it will prepare a Record of Decision (ROD) to document its decision.

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(Bound Separately)

Draft Environmental Impact Statement
(August 1986)

Part II*

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1 INTRODUCTION

The Final Environmental Impact Statement (EIS) for the Central Radar System (CRS) has two parts: Part I is the Draft EIS that was filed with the U.S. Environmental Protection Agency (EPA) and made available to the public on August 15, 1986. Part II includes the transcripts of the public hearings, comments and questions submitted to the Air Force, and the Air Force's responses to those submittals. In addition, the Summary from the Draft EIS has been revised and included in Part II; it incorporates the corrections and changes arising from the public review of the Draft EIS. Most importantly, the preferred study areas for locating the transmit and receive sites are identified in Section 2. Part II has been published in two volumes, designated Parts IIA and IIB.

In completing the Final EIS, the Air Force has addressed the public and agency comments. Each comment for which a response has been prepared, whether the comment is contained in a hearing transcript or in a separate submission, has been assigned a number. Comments or information that arrived after the closing date for public comment have been considered in preparing the Final EIS.

On publication of the Final EIS, the Air Force will make its decision whether to proceed with the CRS after waiting the 30 days required by the Council on Environmental Quality regulations. At the end of that period, it will prepare a Record of Decison (ROD) to document its decisions about whether, where, and how it will proceed with the proposed action.

The ROD will describe the mitigation strategy the Air Force would employ if it proceeds with the CRS. In general, the strategy would be to avoid or minimize potential impacts by careful design and placement of the CRS facilities. When possible, specific measures would be identified as well. However, many of the mitigation measures would not emerge until further coordination with state and federal agencies has taken place and additional environmental studies have been conducted. The mitigation measures selected for application would be compiled in a mitigation plan.

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2 PREFERRED STUDY AREAS

As a result of carrying out its Environmental Impact Analysis Process (EIAP), the Air Force has identified the Amherst study area as the preferred location for the CRS transmit site and the Thief River Falls study area as the preferred location for the receive site. This conclusion is based on a combination of operational, engineering, and environmental considerations.

The Draft EIS described the process used to identify the nine study areas that were considered. The Draft EIS also described the potential environmental impacts associated with constructing and operating the CRS transmit site in each of four study areas, and the receive site in each of five study areas.

The four study areas designated as potential transmit site locations were: Wheaton North, Wheaton Southeast, Wheaton Southwest, and Amherst. (Subsequent to publication of the Draft EIS, the northern boundary of the Amherst study area was modified slightly to include land owned by individuals who had indicated an interest in making the land available to the Air Force. Upon investigation, the land was found to have environmental characteristics similar to those of the land within the original study area.) The Draft EIS concluded that the Amherst and Wheaton North study areas were the environmentally preferred areas for the transmit antennas. Siting in either area would create relatively few biological and physical impacts, most of which could be minimized by selecting a site removed from the infrequent wet areas and wildlife habitats. Biophysical impacts would likely be significantly greater in the Wheaton Southwest study area than at any other transmit study area. The severity of impacts in the Wheaton Southeast study area would fall between those in the Wheaton Southwest and Wheaton North/Amherst study areas.

Of the two environmentally preferred areas, the Air Force has identified the Amherst study area as the preferred transmit site area. Its much larger size will give the Air Force considerable flexibility in selecting the transmit antenna locations. Also, the existence of landowners in the Amherst area who have expressed willingness to sell or lease their land would allow the CRS program to proceed in a timely manner without lengthy delays in the land acquisition process.

The five study areas designated as potential receive site locations were: Dahlen, Goose River, Galesburg, Blanchard, and Thief River Falls. The Draft EIS found that constructing the CRS receive site in the Dahlen, Goose River, or Galesburg study area would likely lead to

significantly greater biological and physical impacts than if it were constructed in the Blanchard or Thief River Falls study area. The impacts would be caused by grading requirements and surface erosion, by disruption of surface water bodies, and by the loss of vegetation and wildlife habitats. Fewer impacts would be experienced in the latter two study areas because they are flatter and have fewer surface water bodies.

The small size of the Blanchard study area and the nearby presence of a very tall radio tower significantly limit flexibility in selecting specific antenna locations in that area. Some uncertainty exists that all four antenna sectors could even be located within the study area; any large separation between antenna sectors would be undesirable for operational reasons. In contrast, the Thief River Falls study area is large and offers considerable flexibility in site selection. In addition, because landowners have expressed willingness to sell or lease their land, the Air Force could proceed with the CRS in a timely manner without lengthy delays in the land acquisition process.

If, in the Record of Decision, the Air Force announces its decision to proceed with the CRS, it will continue its environmental studies as it works to identify specific sites within the selected study areas. The environmental studies would also be used to assist in determining the mitigation measures that should be implemented for the selected antenna locations. Local, state, and federal agencies would be consulted during these studies and the development of the mitigation plan.

3 PUBLIC HEARINGS

Initial public hearings on the Draft EIS for the Central Radar System were held in September 1986, at Grand Forks, North Dakota; Wheaton, Minnesota; and Langford, South Dakota. Additional public hearings were held in November 1986 at Hillsboro, North Dakota; Britton, South Dakota; and Thief River Falls, Minnesota. The proceedings of those hearings were recorded and transcribed by a professional court reporter. Transcripts of the hearings follow, beginning on the next page.

Briefing charts used at each of the first three hearings are reproduced only following the Grand Forks transcript. Charts used in each of the second three hearings are reproduced only following the Hillsboro transcript. Materials submitted at the hearings are also reproduced following the transcripts.

The Air Force and its contractors responded to questions posed at the hearings. In a few cases where clarification or further information was judged necessary, additional written responses were developed; they are included in Section 5. The comments for which responses have been prepared are numbered in the margin of the transcripts or submitted materials.

3.1 Grand Forks, North Dakota

3.1.1 Transcript

The hearing at Grand Forks, North Dakota, commenced at 7 p.m., September 9, 1986.

Lt. Col. Clarke: Good evening, ladies and gentlemen. It's 7:00 o'clock and time to start this meeting. It's my pleasure to welcome you here tonight to this public hearing on the Draft Environmental Impact Statement that's been filed by the Air Force and is currently being evaluated on the Over-The-Horizon Backscatter Radar System. My name is Lt. Col. Leonard S. Clark. I'm an active duty Air Force trial judge currently serving in the First Circuit located at Bolling Air Force Base, Washington, D.C. I have been asked to serve as the presiding officer at this hearing to see that all parties having an interest in this matter receive a fair opportunity to be heard. The time which we have available is from now until 10:00 P.M.

Let me welcome Colonel Robert W. Parker, the Commander of the 321st Strategic Missile Wing. Colonel Parker.

The purpose of your opportunity to be heard is twofold: First, it is to provide you with a chance to receive factual information about the proposed Air Force action, and to ask any questions you might have about it. Thus, in a sense, this hearing affords the Air Force the opportunity to clarify points which may have been misunderstood. It is informational. Second, and most importantly, your opportunity to speak at this public hearing also permits the Air Force to receive representative samples of public opinion as to the anticipated environmental impact on the proposed Air Force action. Your comments may be either oral or written, and will constitute an integral part of these proceedings.

I am not here as an expert on this proposal or the Draft Environmental Impact Statement which has been filed on it. Although I have familiarized myself with the Draft statement, my principal responsibility is to ensure that this hearing is conducted in an orderly fashion and is adequately recorded. I have not participated in the development of this proposal and have not rendered any legal advice or assistance with respect to it. Likewise, I will not be making any recommendations or decisions with regard to whether this Air Force proposal is to proceed, be modified, or be abandoned.

With me here on the platform this evening are Air Force officials who are extremely knowledgeable about the details of the proposal. I'd like, at this time, to introduce Colonel Jim Lee, the Director of the Over-The-Horizon Backscatter Radar Program, assigned to the Electronic Systems Division, Hanscom Air Force Base, Massachusetts, and Dr. Sid Everett of SRI International. Gentlemen, please stand. (Individuals stood and were recognized).

Also with us to assist Colonel Lee are several Air Force personnel and consultants to the Air Force who will be introduced later by Colonel Lee. In a few moments, Colonel Lee will brief you about the Draft Environmental Impact Statement, the "how's and why's" of the Central Radar System, and the anticipated environmental impact. Following his presentation, you will have the opportunity to ask him questions, either about his remarks or about the Draft EIS. The purpose of this questioning is, of course, to clarify what he has said, or that which is contained in the Draft statement.

You will have ample opportunity, after the questions, to make comments either in written form or orally here in this public hearing concerning the adequacy of this Draft EIS. Those of you who have already signed up to speak may wish to reserve your questions for the conclusion of your comments.

A verbatim transcript of this hearing will be prepared by Ms. Grace Kegler, a qualified court reporter, and will be used--along with the written statements which any of you may care to submit--in preparing the Final Environmental Impact Statement. This will be used by senior decision makers of the Air Force in evaluating the Air Force proposal. The hearing is also being recorded by audio equipment to ensure that the record of public comment received this evening is accurate and complete. When any speaker is recognized, you should state your name and speak clearly and distinctly so that Ms. Kegler can hear you and record all of your comments.

I will now explain the agenda for this evening's hearing and outline the ground rules which we will follow. After Colonel Lee's remarks, we will take a ten minute recess, and we will collect the written questionnaires which were given to you. If you'll notice on the questionnaires, about the third or fourth sentence down, it says "Check here if you wish to ask any questions." Ladies and gentlemen, if you wish to ask questions, check there, put your name at the bottom and at the proper time I will recognize you. If any of you do not particularly want to ask questions publicly, you may write down at the bottom your questions with your name, and I will ask the question for you--and then ask whether or not I correctly stated it, if the answer is sufficient, or do you need more information. The other two are self-explanatory.

Those who wish to make a statement, either personally or for a group or an organization, I will recognize you at a later time. After the recess, I'll open the hearing for clarifying questions addressed to Colonel Lee. After approximately 15 or 20 minutes of questions and answers--as I say, either orally presented by you, or written which I will ask for you--we will move on to a presentation portion of the hearing, where those of you who have requested to speak will be given a chance to do so using the microphone at the front. If time permits, after having heard from all those who have asked to speak, we will attempt to close the evening with another question and answer session.

Those who wish to make an oral statement this evening are asked to fill out the speaker sign-up block that is checked. The forms that you have--I ask for your environmental area of concern, and your mailing address so that you may also receive a copy of the Final EIS if you desire. If the block is checked for the Final EIS and you do not wish to speak, but merely receive a copy of the EIS, say so on the appropriate block. You may also use ths form to reflect your written comments instead of also making a verbal statement here tonight. You should realize that neither oral nor written statements have a higher priority than the other. Each is afforded equal weight and will be fairly considered by those preparing the Final EIS. If you have failed to fill out a card, please raise your hand. One of the ladies or gentlemen will be happy to hand you one at this time.

After the break, I'll ask you to pass them to the center--those of you who have questions you want to ask--and we'll collect them and I'll arrange them in an order of the environmental areas which each group wants to discuss. If you wish to speak, I'll ask for strict adherence to our time restrictions for this hearing--which are five minutes for elected or other public officials, as well as those representing a group or agency--three minutes for those who are speaking for themselves.

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Lt. Brown, up front, will assist me in collecting some things and letting me take care of the time. Each speaker will be notified by me when they have 30 seconds remaining, and if necessary, when the time is up. I plan to strictly enforce these time restrictions, solely in order to ensure that as many of you who desire to speak will be given that opportunity.

I will attempt to group the speakers with similar environmental concerns together, so that the speakers on a particular issue are heard together. And the general order of speakers will be elected or public officials, representatives of groups, and private individuals.

Those who wish to submit written statements may do so tonight. Or they may mail their comments to--you might want to write this down, although I believe it's at the bottom of your form--Headquarters Electronic Systems Division/SCO, OTH-B--that's Over-The-Horizon Backscatter Programs Officer, Hanscom Air Force Base, Massachusetts. The zip is 01731, attention Lt. Brown. And these should be mailed within 45 days--for the public comment period which ends 6 October 1986.

Finally, as hearing officer, I want to briefly remind you of the twofold purpose of this hearing. First, to provide the public with an additional means of presenting information and your comments to the decision-makers on the environmental impacts to your community that may result from this proposed radar system.

Secondly, to provide you with an opportunity to receive factual information about the proposed action and to ask questions of knowledgeable persons about this project. However, this is not a trial. Nor is it a courtroom for cross-examination of the speakers or the agency representatives. It is not a debate. It is not to obtain a vote. Therefore, I ask that you refrain from applauding or reflecting displeasure with the comments of any speaker, as such actions tend to detract from the purpose of this hearing and can only cause interference with everyone's ability to freely speak and express their views at this public meeting.

I will now present Colonel James Lee, the team chief, who will give you the briefing. Thank you, ladies and gentlemen.

Colonel Lee: Thank you, Colonel Clark. It's a pleasure to be back in this area again to continue another major step in this environmental impact analysis process. Before going on with the formal part of the presentation this evening, which will be shared with me and Dr. Everett, I'd like to introduce those other members of the Air Force team. First of all, Dr. Gordon Guttrich. Dr. Guttrich, would you please stand? (Dr. Guttrich rose). Dr. Guttrich is with the Mitre Corporation. He's been a principal engineer associated with the Over-The-Horizon Radar Program technology, the Experimental Radar Program, and the current East Coast Radar System for approximately the last ten years. In addition to having his Ph.D. in Physics, he also has done a lot of work in the environmental sciences area. Thank you.

Another area that has been of significant interest is the process the Air Force would use in acquiring the land. And we really have two different techniques that we are looking at. The acquisition of the land by purchase, and also a consideration of leasing. When it comes to those dealings with the government, they will be handled by the Army Corps of Engineers. They are the executive agency responsible for all land acquisition matters. When it comes to questions or further follow-up in this area, these items will be handled by the Omaha District of the Corps of Engineers. They will be the land acquisition agency for the Air Force in this particular program.

The Omaha District is located near Omaha, Nebraska and the Chief of the Real Estate Division is Mr. Gary Blair. Mr. Blair, would you please stand? (Mr. Blair stood). Thank you. Mr. Blair will have the overall responsibility for the acquisition of the land involved in the Central Radar System. The actual negotiations will be handled out of the Riverdale, North Dakota, Real Estate Field Office. That office is under the supervision of Mrs. Jackie Bratz. She is here tonight also. If you would please stand? (Mrs. Bratz rose).

I wanted you to have a specific recognition and identification of those key people that will later play a role in how this process continues--with the actual acquisition by purchase or by leasing of the land that is required for the transmit and receive sites of the Central Radar System.

I remarked at the beginning that this was another significant step in the environmental impact analysis process. This process that we are following is one established by public law. It is intended to ensure that a full recognition and analysis of all the likely impacts to this major action are properly considered. The proposed action that we're dealing with here tonight is the construction and the deployment of the Central Radar System. We began this process with a series of scoping meetings that were held several months ago--some ten different meetings in this area.

We took the information that we obtained from those scoping meetings and other contact that we had with individuals and with agencies, and used that to prepare the Draft Environmental Impact Statement. Many of you have received copies directly. We have also placed copies of that Environmental Impact Statement in libraries, in town halls. We hope that we have provided sufficient copies so that each of you has had an opportunity to review it. If there are other people who still would like that opportunity before the public comment period closes, we would ask that you note that for us also.

The steps that will take place following this point in time--are to take the information that we receive, your input tonight, and use that to prepare the Final Environment Impact Statement. That document will be published and distributed the end of November. Following the mandatory minimum 30-day waiting period, the Air Force Record of Decision will then be filed at the end of December. So we will continue through this process, identifying impacts, making sure that we have done the proper analysis--then there will not be any final decision on the specific study area to be selected for the transmit site or for the receiving site until the end of December.

With that introduction, then, let me move on--and using some 35 mm slides, illustrate several points--and most important, to show you some pictures of the current hardware, the sectors, the specific kind of configuration that you might see when the Central Radar System is constructed here Could we have the lights, then, and we'll proceed?

I identified this environmental impact analysis process to show where we are in this process, and the particular milestone events at the end of November and the end of December. This will complete that selection process.

The proposed action is construction of the Central Radar System--four surveillance sectors that will look out towards the west, the east, southwest and southeast areas. The Central Radar System is one of four Over-The-Horizon Backscatter Radar Systems.

The East Coast System has already been approved and fully funded and is completing construction now at our East Coast site. The West Coast Radar System has also been approved. The environmental impact analysis process was conducted and completed, and construction has

started at the Operations Center at Mountain Home Air Force Base. And we should, very shortly, be awarding the construction contract for the transmit and receive sites for the first of those three sectors.

The Central Radar System and the Alaskan System are the last steps to try to complete this surveillance coverage around the entire North American continent. Taken in combination with the North Warning System and Seek Igloo, a series of short-range, microwave radar systems, we will then have a complete surveillance protection around the continental United States.

There are several reasons why this is important to us. Most significant, it will allow us to detect aircraft that would be approaching the North American continent at distances up to 1,800 nautical miles. Even at the high speeds that many of our aircraft travel today, that translates roughly into several hours additional warning time--in case a large scale aircraft attack were launched against the North American continent.

Currently, we have a series of coastal radars which--we're limited to a couple hundred miles in detection range. So with the current system that we now have, it is literally possible for an aircraft to pass within a couple hundred miles of the coast without being detected or tracked by any other system.

The OTH system, by giving several hours of time, additional time, provides then that added time for our decision-makers, for the National Command Authorities--to negotiate, to consider options, to provide warning to the public and in that final step, if it becomes necessary then, to have our forces ready to respond as required. Because it provides this added warning time, then, it is very much a stabilizing, defensive system--one that is very important to the Department of Defense and, we feel, to the country as well.

One of the reasons it's so important right now is because of the increase in activity that we have seen from the Soviet Union in long-range aircraft. They are continuing to make significant upgrades and increases in their capability.

Shown here (referring to the 35 mm slides) is an artist's concept of the Soviet Blackjack aircraft. This aircraft is currently in flight tests, and it could be operational before the end of the decade.

This is an existing Soviet aircraft, the Soviet Bear H. It is the latest, most improved version of the Bear aircraft that the Soviet Union has had for many years. Shown in a trail position, following that Bear aircraft, is an Alaskan Air Command F-15. Many of these kinds of intercepts take place outside the continental United States. Many of them around the Alaskan area, as was shown here--but similar types of tracking, of training maneuvers where the Soviet aircraft will approach

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DUPLICATE OF GRAND FORKS 6 PAGE 3-4

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towards the United States--similar incidents like this take place on a somewhat regular basis. And we have aircraft even from our own National Guard base here in North Dakota that take place in alerts and special exercises, and have similarly tracked and visually identified these Bear aircraft as they have approached North America from the east coast, west coast, as well as up in the Arctic area.

The OTH System, then, will provide us the capability--not to wait until such aircraft are within a couple hundred miles of the coast--but to be able to detect and track while they are hours away from the coastline. The East Coast System is now under final construction, and test activity is now starting in this first northeastern sector. That northeastern sector was tested with an Experimental Radar System, with a program beginning in 1975, and a full period of operation from 1980 to '81. During that year of operation, we verified that this type of a system could work--that it could detect aircraft out to that 1,800 nautical mile distance--and that it could provide the correlation of those tracks with known aircraft tracks, and therefore identify potential enemy or unfriendly aircraft.

The current East Coast System will provide us a full 180 degree surveillance using three transmit antennas and three receive antennas. The transmit site, outside Moscow, Maine, is located shown here. The receive site, outside of Columbia Falls, Maine, is also indicated. The Operations Center, which is the third part of the system, is located in Bangor, Maine.

Each transmit antenna, paired with a receive antenna, provides a surveillance area one-third of that total 180 degree coverage--about a 60 degree sector. By sending the beam up towards the ionosphere, reflecting it back towards the ocean's surface--we are able to pick up any aircraft all the way down to the surface. A faint return signal is sent back by the same path--reflected from the ionosphere, where it is picked up by the receive antenna. The information from the receive antenna, then, is sent to the Operations Center for final data processing.

This is one of the three transmit antennas for the East Coast System. The antenna structure itself is approximately 4,000 feet long. The maximum height, shown in this section at the end, is 135 feet. The shortest array of the six arrays is 35 feet tall. There is a back screen, which is a wire mesh that is attached to the framework supporting antenna, running the entire length of the transmit antenna. In addition, there is a ground screen that extends out in front of the antenna approximately 750 feet, again running the entire length of the transmit antenna.

That previous picture was taken during the construction phase. This is a more recent picture that was taken this last fall. We see, again, that 4,000 foot antenna. The ground screen is in front of the antenna. But you will notice now that the vegetation has started to fill back in. While we do grade and clear the area to ensure that it is

level and to lay down the ground screen, we then seed and help that vegetation grow back in to provide a natural ground cover for the transmit antenna. The same would be true of the receive antenna.

The final point I'd like to make here is to call your attention to this fence--an exclusion fence that runs around the entire transmit sector. There is a concern over potential radiofrequency emissions, RFR or radiofrequency radiation. Outside of that fence--exclusion fence--any energy levels would be well below the established safety standards for that type of radio energy frequencies and power levels. This is one of three transmit sectors for the East Coast System. There will be four of these required for the Central Radar System.

This is the antenna and the back screen for the receive site antenna. Again you can see the back screen, the wire mesh, that is supported by this framework and runs the entire length of the receive antenna. That back screen is 65 feet tall. The antenna elements themselves are 19 feet tall. In the case of the East Coast System which is pictured here, the receive antenna is approximately 5,000 feet long. Because we want to have an added detection capability, however, against the cruise missiles, both the air launched cruise missiles as well as the sea launched cruise missiles that may be launched close to the coastline, we've increased the length of that receive antenna for the West Coast to 8,000 feet. And the projected length, then, for the Central System as well as the Alaskan would also be 8,000 feet for the receive antenna.

This is a picture of the Operations Center that is located at Bangor Airport, Bangor, Maine. A similar-type one story building would be constructed at Grand Forks Air Force Base, which is the proposed site for the Operations Center. The two radar dishes that you see here are the dishes that receive the signal information from the receive sites. A similar type of construction would be used here. And these dishes that provide that signal information then, need to be within approximately 50 miles from the receive site. This will be identified a little bit later in my presentation and is one of the siting criteria that was used in establishing the possible receiving site areas.

Within the Operations Center, in addition to the large amount of computational equipment, we have at the East Coast System some 30 display units as shown here. We have one of the typical radar system displays brought up on this TV tube type, or cathode-ray tube. A picture--we see here, symbolically, the East Coast of the United States, and Greenland, and the 60 degree coverage provided by that first sector.

As aircraft are detected, the computer will automatically establish their position, will establish a track, will maintain that for the radar system operator. It will take that track information and correlate it with track information from known pilot position reports or flight plans that had been filed at the FAA or similar international organization.

Aircraft that are not correlated then, are continued and tracked. That information can then be provided to the Region Operations Control Centers as well as to NORAD and Cheyenne Mountain. It's this system, then, that will provide us, for the East Coast, the capability and the surveillance area that is shown here.

In the next portion, I would like to describe the siting location for the Central Radar System and the specific set of criteria that establish the area that we have been looking at. First of all, you will note that there is an area that is not covered within both the East Coast and the West Coast Systems. There is a certain minimum range, due to this reflection of the HF radio energy, within which we are not able to detect. To fill that gap and to provide some overlap, we want to ensure that both the east looking and west looking sectors of the Central Radar System provide that kind of overlap. In addition, for added detection capability and to ensure that we are taking advantage of the system, we want to overlap this southeastern site of the North Warning System. And finally, we want to provide that contiguous coverage from a single location rather than split locations located at several points--largely because of the cost that would be associated with trying to construct two such systems rather than operating from a single location. That set of criteria, with the 500 mile and 1,800 mile range, then, defines an area within the northcentral United States for location of the antennas and the Operations Center.

This is that area that's shown here, with the center focus of that located in the southeastern part of North Dakota. We've also circled Grand Forks where we're here for this public hearing tonight.

Looking a little bit further, then, at some of those site selection criteria within that area then, we examine these items. First of all, as identified from the photograph, a large amount of land is required for both the transmit and the receive antennas. Approximately 2,400 acres for the transmit site, and approximately 2,400 acres for the receive site. The area needs to be relatively level. We want to ensure that there are no obstructions that would be in the field of view interfering either with the transmitter or with the receiver. For that reason, we're looking for flat terrain--or terrain that, at least, will slope downward rather than rising up above this one degree point.

To ensure that there is no interference, we want to locate the antennas at least five miles from any high voltage transmission lines. And to ensure, again, that there's no interference with us as well as to reduce the chances of our interfering with other systems, we establish the distance locations or criteria here--more than five miles from any population center more than a thousand, behind the antennas and 10 miles from those centers in front of the antennas. And finally, we want to have the antennas more than ten miles away from any airway.

In addition to those specific criteria, in trying to determine and pair up potential transmit and receive sites, we have these additional criteria. We want to have the receive site within about 125 nautical miles of the optimum receive site location which is identified in the southeastern part of North Dakota. The receive site, to be able to properly send the signal information to the Operations Center, needs to be within about 50 nautical miles of the Operations Center.

Because of the large number of personnel and equipment associated with the Operations Center, we need to locate that at an existing Air Force installation. If you recall back to the photograph, the only such installation within that area is Grand Forks Air Force Base. And that, then, established the tentative location of possible receive sites within that same area. Then finally, the transmit site should be no more than 150 nautical miles--no less than 50 nautical miles from the Operations Center or the receive sites. That set of criteria, then--we have documented in the Draft Environmental Impact Statement--identified these study areas.

Grand Forks Air Force Base is the proposed site for the Operations Center. We have Thief River Falls, the Dahlen area of North Dakota, Goose River area in North Dakota, Galesburg and Blanchard. All of these five are proposed candidate study areas for location of the receive antennas. In the final decision to be made at the end of December, one of these study areas will be selected. And within that one study area, then, specific siting of all four receive antennas would be made.

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Similarly, the set of criteria that we identified before are identified for study areas for the transmit antenna. And there are three of those--identified as Wheaton North, Wheaton Southeast and Wheaton Southwest, are in Minnesota--and an area that we termed the Amherst area is in South Dakota. Again, the decision to be made at the end of the year will be to select one of those candidate study areas, and then the four transmit antennas will be located within that study area.

Among the candidate study areas that we have been looking at and analyzing in our environmental impact analysis process, the Draft EIS identifies that Thief River Falls and Blanchard are the environmentally preferred receive sites. Wheaton North and Amherst are the environmentally preferred transmit sites. But I'll identify, as we go through the description of some of the specific environmental factors that are to be considered--I'll summarize some of the additional factors that will also go into the final decision that will be made.

This is one possible layout for the four possible transmit antennas--each of these areas being approximately 5,000 feet square. We have our 4,000 foot antenna with the ground screen in front of it and the building that is used to house the support personnel and the transmitters themselves. The four sites--facing directly to the east and to the west, southwest and southeast is required. However, there is

some flexibility in how we locate the specific transmit site. This is another alternative configuration that would place all four transmitters within an area approximately two miles by two and one-third miles.

In the case of the receive site--and again, all of the locations around Grand Forks, are candidate receive sites--we again have an area that's about 600 acres. However, in this case, it's about 10,000 feet long by about 2,600 feet deep, with an 8,000 foot receive antenna, the ground screen in front of it and the support building. It's one of several different configuration ways of laying out those receive site antennas.

With that description of the Central Radar System--the study areas that we are looking at, some pictures of the actual hardware that we have on the East Coast System that would be representative of what you would expect to see from the Central Radar System--let me now turn this over to Dr. Everett who will describe the environmental factors and considerations.

Dr. Everett: Colonel Lee has described the principal features of the Central Radar System and has shown you the prime areas in three states which have been identified as candidate locations for the transmit and receive sites.

Now, as I guess he's made clear, the National Environmental Policy Act requires that an EIS be prepared whenever the federal government undertakes a major action that could affect the quality of these environments. I led the team that prepared the EIS that has been circulated here. What we did was organize our work along the lines of 13 factors or topics to describe the environment in which this construction and operation of the Central Radar System is to take place.

These are the categories and topics we've defined, just exactly as they were listed in the EIS. I am going to talk about most, but not all, of these topics tonight in a brief fashion. I'm going to concentrate on the ones that we found may have some significant impacts associated with the Central EIS.

The first topic is land and minerals. In the EIS, you will know that--or from reading the EIS, you will know that we covered these five subtopics. We don't expect that there will be significant impact associated with the geology of soils and minerals, or the seismology of any of these areas. However, there is some variation of the topography of these areas that is, one area to another. And the potential for impacts in this general area of land and minerals is most related to the topography, because it influences the amount of grading or movement of earth that may be required. To be a little more specific, we know that the flatness of the study area varies as described right there (referring to slides). Given the requirement for flat land, it's clear that extensive grading is to be avoided if at all possible, because it

can promote erosion, drainage problems--drainage is often a problem in these areas when land and much earth is moved. It can become an expensive proposition.

Let me point out that this estimate of 100 to 200 acres of flat land is speaking largely to the area occupied by the ground screens in any sector. That is why it's different from the [600] 400 acres that you have heard. Beyond the ground screen, that you have heard requires a flat piece of land or land graded to flat specifications, the land can be somewhat more variable in its relief.

The erosion potential varies according to this topographic situation. And therefore we would say that there is a bit more potential for erosion at Dahlen, Goose River, and to a lesser extent at Galesburg, than at any of the other study areas that were considered. Wherever these sites were constructed, however, there would be efforts made to limit the amount of erosion that might occur by good design in such matters as the road or any culverting that might be done to channel drainage. By applying various measures to mitigate the potential impact, doing such things as silt fences, prompt revegetation of the land, water spraying because of the possibility of erosion or dust being driven by the wind.

In the case of water resources, our investigation showed that there were a few major rivers and streams in the area. Most of them have erratic flow, and if you say transient, it's better to spell it with an "e" than an "a" [referring to typographical error in slide]. And they're subject to seasonal flooding. At the same time, although there are a few major rivers and streams, there are, as you know, numerous smaller streams, drainage ditches, ponds and wetlands. Now, the combination of the high ground water table, generally, and the extreme flatness of the land again, generally, means that there are often serious drainage problems.

To avoid potential impacts on the water resources of the area, the principal strategy is to avoid laying out these sites so that they would affect major water bodies or drainage features. Within a specific site or area, the silt screen would be constructed and the smaller streams and drainage ditches might well have to be rerouted. Also, the many numerous potholes and ponds that exist, especially seasonally, would require that fill be used to level them out and prevent excessive amounts of ponding in the area.

Water would be required by the employees of the sites. However, most--and I should say some water would be used in the cooling of the transmitters. However, in the proposed sites, very little make up would be required and furthermore, the water would be of the ionized variety presenting no pollution problems whatsoever. So the amount of water that would be required by the employees is expected to be about the same

amount of water that is currently used by the residents of the area· no major change there. As I just alluded to, we wouldn't expect any water quality effects from the cooling water. And the remainder of the water used for domestic purposes would be treated according to the applicable regulations. Therefore, we don't expect any water quality effects there.

In the case of vegetation, as you probably all know--those of you who live here--essentially all the native vegetation is prairie grasses, and have been replaced by cultivated lands. There are some shelter belts and wooded areas. Most of the shelter belts have been planted, and agricultural crops are now the dominant plant.

Now, wetlands turn out to be the most interesting and important aspect of the vegetative environment. There are streams, ponds, ditches, and potholes which are quite common in the area. And in general, the wetlands are numerous in these areas--and I must include also part of Thief River Falls. The key feature, besides retaining water during flooding periods, is that they can be important habitats for birds.

Now based on the fact that most of the native vegetation has been changed into cultivated fields and a few shelter belts--a relatively small amount of shelter belts--the effects on the vegetation can be simply to involve more of the wetlands and also the shelter belts and wooded areas. One mitigation measure that can be attempted is to plant trees if it should happen at a site that some of the wooded areas and shelter belts are removed. By that, of course, I mean create other shelter belts which would provide ample habitat. And under consideration is the reseeding of natural grasses or allowing the natural vegetation to return to portions within the site itself.

So in sum, the impact on vegetation would be related almost solely to the wetlands. And in the case of wildlife, there are the most common larger mammals in the area. There are numerous small mammals. The large mammals will tend to be kept out by this exclusion fence which will be constructed and will be approximately eight feet tall--made of wood or an equivalent nonconducting material--and the concept of the design now is to have two-inch wooden slats separated by six-inch gaps. This will keep out the larger animals, but, of course, enable any of the smaller animals to get through that.

In the case of the larger animals, they may be deprived of some habitat that they normally use. However, we don't expect it will affect their numbers in any significant fashion. In the case of the small animals, they will have access to this site, and it shouldn't have any effect at all on their habitat. And to the question of whether they would be affected in the transmit site area by the radiofrequency radiation that's emitted, the answer is no. They're small and unlikely to be placed in the field in such a fashion that they would absorb a lot of energy. The hazard is greater for larger things such as people.

There are relatively few species and fishery resources in the area. And protection of that is again connected with avoiding key features such as drainage and wetlands. Birds are the other component of the wildlife, and they are important. In particular, waterfowl are of special interest because of the central flyway and the migration route in North America. The wetlands in the areas are also attractions. From the habitat point of view, once again, the objective would be to minimize the effects by avoiding the wetlands whenever possible.

Another aspect of the subject of birds has to do with the possibility of collision with this structure--which has been pointed out is as tall as 165 feet and as long as 8,000 feet, though not both at the same time. The possibility of collision hinges on a number of factors. One of them is whether birds in question are migrants flying at high altitudes, or migrants that are making a stop in the area, in which case they are transitioning from high flights to the ground and may be passing through the elevations of the antennas. Also, it depends upon the proximity to the attractions on the earth, whether the wetlands are the feeding grounds.

And finally, but not exclusively--this is not an all-inclusive list--but also including how well can they see the structure? And add one to this list--how well, if they see it, can they maneuver to avoid it. There is considerable information, most of it of the anecdotal variety rather than complete scientific studies about collisions. We have learned that the potential can surely be reduced by attempting to avoid feeding and breeding areas wherever possible, and this can be arranged to the point of view of the birds. In case of poor weather or at night, the question of illuminating this structure is possible. And the last item has to do with essentially being aware of what is happening in the course of construction and operation--and the implementation of any of these ideas to reduce the collision potential. In other words, it says if you are monitoring what is going on, to see what is happening and the effect of any of the measures that you take.

I'd like to move on to some topics that I term the socioeconomic environment. In the EIS, you will see these six topics covered. Another one that I don't classify as socioeconomic is air quality. That's also in the EIS. There are no significant impacts that we identified to air quality or any of these issues except, perhaps, in the case of the economy. So I'm going to jump to discussions of four items of the economy--namely, the specific aspects of the economy.

First, unemployment. We're estimating an average 100, perhaps 125 jobs at each site. That's the transmit and receive sites over a period of five years and perhaps as many as 250. We do not have a good idea of the nature or source of the workforce, because the hiring for these positions will be done by the so-called system contractor. There will clearly be at least some local temporary hiring to acquire certain skills that are available in the community.

The direct effects, therefore, are not likely to be extremely significant. However, the indirect effects on employment would be apparent, though not very large. Now in the case of operations situations, there will be about 390 employed at the Operations Center and about 50 at each of the transmit and receive sites. These generally represent quite a small percent of existing labor force in these areas. Three hundred and ninety would be in the Grand Forks area. The 50 would be in the areas of smaller communities. However, generally the proportions are on the order of a few percent of the labor force in any of those areas. That means that if you're wondering what it does to unemployment, or what impact it has on the growth of the workforce, we're talking on the order of one to two percent.

Another aspect of the economy is the amount of money that's pumped in by the wages--in addition to the wages, in the form of purchase of other materials and services. We estimate on the order of 20 million dollars would be spent for construction of each of these sites.

Moving from the first to the second line (referring to slides), one has to consider that, in general, a fraction of the total contract price goes into subcontracts. And only a portion of that is captured by the local community. In general, the community would capture about half of what goes into subcontracting. We'd expect that somewhere around three or four million dollars would end up being spent locally. That's speaking for the transmit and receive site areas. And in the case of the Operations Center, 10 million dollars construction expenditures in the Grand Forks area. Just as in the case of employment or jobs, the relationship of these numbers in the existing quantities, in this case, income, shows a very small proportion, on the order of several percent. It's not a big surge compared to what's here already.

Clearly, the employment income would add to the local economies. The point to be made here, however, is that although wages--well, back to the two points. First, is that the wages and income stream resulting from this project would exceed, we expect, the loss, farm income loss, lost income from the farms that would be superseded by these transmit and receive sites. But this income would be earned by different people and spent for different goods and services--different types of goods and services.

Now if we looked at taxes, we first have to recognize that, in general, land can be either purchased or leased. And that, as Colonel Lee indicated, this is not settled at the moment. Obviously, or rather, land and buildings connected with the land that is purchased would be removed from the tax rolls. When we look at what this means in terms of effect--given the amount of land that's likely to be required, given the typical net for income and production for the tax rolls, that measured against the accounting base--that a very small percentage of the tax base would be lost. However, it's entirely possible for specific townships in special tax districts, that if the transmit site is largely

contained within it, that the percentage of tax loss would be considerably greater. Now we can't say with certainty about that simply because we don't know where we're going and all the particulars that might exist.

Finally, on agriculture and agricultural land--the amount that would be removed--as we understand it, the amount that would be removed is actually less than the amount that's going out of production annually right now in all the counties involved, except the case of Traverse County in which land has been added to production in the last few years. So it gives you a sense of 300 or 400 acres, approximately in context with the farm economy when you think just about the land part.

This system is projected to have a life on the order of 20 years. And you may have been able to tell from the picture and our discussion of it, now that most of the land, although it might be graded, is not actually occupied with anything solid once the equipment goes into operation. What that means is that most of the land in the transmit and receive sites could be returned to agriculture after decommissioning of the system.

Now, switching gears to a little different aspect of the environment, I'd like to talk about these aspects of the electromagnetic environment--the interference and the hazards associated with radiofrequency from the Central System, and given that radiation, what the effects might be on humans.

First of all, I'd like to point out that the Central System is like a radio station. It operates in a so-called high frequency band which includes international radio stations like the Voice of America. That band is also occupied by amateur radio and citizens' band radios. A particular characteristic of radio waves of this frequency range is that they tend to be reflected beyond the horizon, which is what makes this such a valuable radar tool of course. What it means is that there can be both local interference and longer distance interference. The interference is possible both in the meaning with the HF band itself, and out-of-band because of the so-called harmonic frequency effect that would possibly affect things such as TVs or navigational beacons or other forms of communication.

What was found during the operation of the Experimental Radar System in Maine, is that there is very little, if any, interference with any of these systems. And, in fact, I think we decided there were no documented cases of interference. Mitigation measures include those listed here. And to give you an opportunity--to say that the system will operate, first, to search for clear channels, where it normally operates, that are not already operated where the radar will transmit. Another way to--let me explain that just a little bit. It listens to see whether somebody is operating on a particular frequency, and it does not come up on that frequency.

I should also point out that those amateur bands, citzens' bands, international bands are all specified and authorized for those operations, and the radar would not operate on them at all. The subharmonic frequency refers to the way you avoid interference--for this type of equipment that operates at a higher frequency--is simply not to operate on so-called subharmonics or multiples of the frequency.

Finally, the Air Force has prepared a guidance manual - what to do to avoid interference and what to do if somebody believes they are being interfered with. This is a set of procedures that will tend to minimize the chance of interference and indicate what is to be done if it does.

When I speak of hazards, I'm speaking of the possibility that the radio energy may inadvertently do something to another system that has nothing to do with communications, navigation, radars. And these are the three prime cases to be concerned about. The design of the pacemakers is such and the strength of the energy beam admitted by the radar is such that there is no hazard to cardiac pacemakers beyond the exclusion fence. There is not a hazard to fuel handling.

Finally, we get to electroexplosive devices or EED's. Generally speaking, if you are carrying them--transporting them in a metal container--there's no problem whatsoever beyond the exclusion fence. If you're in the business of using them, removing them from a metallic container, working with the leads--in case of anything that looks like that, there is a chance of accidental detonation. This is the kind of phenomenom that occurs even with citizen band radios, in that there are signs that tell you not to use your radios. It's the same idea, but it's safe about four miles for this.

Finally, human health. As I've indicated, the energy radiated by the Central Radar System is like a radio. It's like radio energy. The exclusion fence would be placed so that the energy level outside the fence would be below the applicable standards, of which there are several. As part of our EIS preparation, we made an extensive survey of the literature of biological effects on humans. And our finding was that there's no reliable evidence that indicates that exposure to these levels of energy--of radio energy of this frequency and power--is harmful to any part of the population.

This completes the brief summary of the EIS, and I'll turn this back to Colonel Lee.

Colonel Lee: Thank you, Dr. Everett. We've described for you the environmental impact analysis process, the specific factors associated with selecting the areas that we're looking at now for the Central Radar System, and some of the kinds of physical systems that you would expect to see here when that Central Radar System went into construction in the operations phase.

We're at the public hearings. As I mentioned, the Final Environmental Impact Statement which follows will be distributed at the end of November. The Record of Decision will be made in the final part of December.

During this next period of time, the comments that we're receiving from you tonight, as well as those that you will send in to us before the closing date of October 6th, will be used to prepare that Final Environmental Impact Statement--and used to provide that summary of information then which the decision-makers will use in selecting one of these study areas for the receive site and one of the study areas for the transmit site.

The environmental impact process is a significant part of that decision point. However, there are other factors as well that will be used by the decision-maker, and that decision will be made in the Office of the Secretary of the Air Force. Some of those additional factors include the ease of construction, the cost of construction, the cost of land acquisition or leasing, and the availability of land. And in that regard, to assist us in providing additional information, it would be valuable to us if you, as individual landowners, could identify for us either your significant opposition or interest in negotiating with the government for specific land that you would own within those areas. And so, if you could separately indicate that for us in writing, either now or at a later time, and send it to that same address--then that information can be used as well, then, in the final decision.

We'd like to thank you very much for your patience in sitting through this portion describing the process and the system. The Central Radar System plays a huge role in completing complete coverage surveillance and detection capability around the United States. It's very significant--very important to the Department of Defense and, we feel, to the nation as well. Thank you very much.

Lt. Col. Clarke: Ladies and gentlemen, with your kind consideration, we'll take a few minutes' recess. And get something to drink if you'd like to. Those of you who want to ask questions or have me ask your questions or make a public statement, please bring your forms up so that I may have them, or pass them to the center and Lieutenant Brown will pick them up.

(The hearing recessed at 8:03 p.m. and reconvened at 8:14 p.m., September 9, 1986).

Lt. Col. Clarke: We will now turn to the question and answer period of the public hearing. The time of approximately 15 or 20 minutes is set aside to ask questions about the comments and briefings that you just received in the Draft statement. As I said--again, it is not to take public comments or statements--which will come later. Later, we'll

have a public statement or comment period. Just a Q and A on the briefing that you might have. Just limit your questions to the briefing on the Draft EIS.

Please understand if I have to interrupt you to ask a question--if a comment precedes your statement, which I'm sure they will. I have questions from individuals. I will try to go through this list first. And if I call your name and I haven't accomplished what you wanted done, please holler back at me and I'll try to reaccomplish it. If you want to come and ask questions, I'll ask you to come to the microphone so we can hear you. Please introduce yourself with your name and address, if you'd like to, so the court reporter can get it down.

This is from Clark Carpenter and the question concerns airspace for local pilots and airplanes. You can stand right there. Speak up and just relax.

Mr. Carpenter: I was just wondering what this is going to have to do with pilots and flying. Will I be able to fly over it? I'm a pilot and I want to know if I can fly over this, or if I got to go around it so many miles, or what it's going to do with local flying.

Colonel Lee: In the case of the receive site, there should be no impact at all to the private pilot. You will be able to fly over the antennas as close to them as you would like. The amount of interference that you would cause us would be minimal, in the sense of the potential destruction of that very weak return signal that's coming to us from that area some 1,800 miles away. So no impact at all in the case of the receive site.

In the case of the transmit site, we will establish a restricted area similar to what we are doing in the East Coast Radar System and will also do for the West Coast Radar. And those restrictions will ask or require that pilots of small aircraft maintain at least 5,000 feet altitude over that area. And there will be a certain minimum distance in front of the antenna as well as to either side which you will be asked to avoid. That distance will be well within a five-mile radius.

Lt. Col. Clarke: Does that answer your question?

Mr. Carpenter: Yes, thank you.

Lt. Col. Clarke: If I mispronounce anyone's name, please excuse me. I'm from South Carolina and if you can't understand me, I apologize. This is from Herbert Welte. I hope that's correct. Mr. Welte, do you want me to ask these, or would you like to?

Mr. Welte: I would, please.

Lt. Col. Clarke: Go ahead, sir.

Mr. Welte: Why is the backscatter to be situated here?

Colonel Lee: The specific areas which we defined were the natural result of the set of individual criteria that I identified. Specifically, we need this kind of a system to provide a surveillance area around the southern part of the United States. We also want to link up and cover those overlap areas within the East Coast and the West Coast System. It's just the result of laying out the geometry. Any of you could do that with a compass, with a ruler--given the distances and the current locations that we have. We have a very limited area where we can locate the transmit and receive antennas and still be able to provide that coverage.

Within that area then, we have those additional criteria that I identified for us, for the specific study areas that we had documented in the Draft EIS. So those are the available areas. The alternative that you would normally like to see covered in such an action--that is, locate the system entirely someplace else--is not acceptable. It will not provide the required detection capability for the OTH system.

Lt. Col. Clarke: Mr. Welte, you ask what weight the public comment has in relation to this property? Has the decision already been made to have the backscatter radar system here?

Colonel Lee: As I mentioned in my remarks, the decision clearly has been made to have an OTH-B Radar System. That has been translated into a specific decision to have the East Coast Radar System, which has been translated into funding approval by Congress for all three sectors. And that system is beginning its test phase now.

The decision has also been made to have a West Coast Radar System. Before us is this proposed action for the Central Radar System, and no decision has been made--other than the Air Force planning. And our objective, to be able to complete that coverage, the coverage that we think is very essential--essential to our national security interests and really, to the well-being of the nation.

This environmental impact analysis process, however, is intended to identify how best to proceed as well as whether to proceed. And so to that extent, the comments and reactions that we receive from the public are taken into account in that final decision.

We remain confident that within the study areas that we have defined, we will be able to identify those significant environmental impacts, identify the significant mitigation measures that will be required, and be able to identify willing landowners to negotiate with the government. And in that sense, we believe the system will be able to go on as proposed. But, again, public comments are definitely a key part of this process.

Lt. Col. Clarke: I believe Mr. Welte's other comments are in a comment form and not a question. Basically, I'll put them on the record. Must North Dakota give up 2,400 acres of land as we already have missiles at the Air Base? And, basically, it says that government installations at Nekoma and, I guess, Concrete, North Dakota, are not being used. Does that basically answer your question, sir?

Mr. Welte: I was wondering why the retired ABM site could not be used at Nekoma and Concrete?

Colonel Lee: Those sites, as I understand them, fall outside the set of criteria that we have described here tonight. That is, we need to have a 2,400 acre area available, and it needs to be within 50 miles of Grand Forks Air Force Base. That's the specific restrictive set of criteria for the receive site.

Mr. Welte: Thank you.

Lt. Col. Clarke: The next one from Ralph Berg. Mr. Berg, do you want to ask your question here?

Mr. Berg: Go ahead.

Lt. Col. Clarke: Has the exact boundaries of the receiving site of the Thief River Falls site been determined? And if so, what are the boundaries of the said site?

Colonel Lee: This other area that we showed in the map is just that. It's a study area. In doing environmental analysis, as you realize from the comments that Dr. Everett made as he addressed many of those items, they apply equally well to that immediate area as well as to the certain portion of the area beyond those lines that have been drawn--in the maps that I showed here tonight, as well as the maps that are in the Environmental Impact Statement.

So we do have a defined study area. The specific sections involved are identified and documented in the Draft EIS. To the extent that we are able then, within this process, we will be concentrating our attention within those boundary areas. And if I could, to correct something that was taken down as a part of the original comments related to this same area or item, the map that we showed that identifies Blanchard, incorrectly showed the town of Blanchard where it does not exist. The map that is in the Draft EIS is correct and does show the community there. But I did want to note that for the record as well. [Note: the briefing slide was actually correct and the DEIS map was incorrect. See the Errata.]

Lt. Col. Clarke: Does that satisfy you, sir? (Mr. Berg indicated it did).

Lt. Col. Clarke: This is from Mr. John Engel. Can I go ahead and state your question?

Mr. Engel: Yes, go ahead.

Lt. Col. Clarke: Thank you very much. Mr. Engel is from the Amateur Radio Club. How will the Over-The-Horizon Radar System, known as the backscatter radar system, differ from the over-the-horizon system used in the Soviet Union which causes interference on amateur frequencies from 7.0 MHz to 14.2 MHz? And what are the approximate frequencies that the Over-The-Horizon would use?

Colonel Lee: The Soviet over-the-horizon system is affectionately known as the woodpecker by many of those that operate on the ham radio band. It's described that way because it really puts out a chatter. It's a pulse-type signal, interrupted at a very high level, and it's a very noisy signal. The Soviets, apparently, were not concerned about possible interference effects with ham radio operators, either in their country or for that matter, anywhere in the world.

As we have set up, and this has been the case from the very beginning, we have set up the criteria for our Air Force Over-The-Horizon Radar Program--we're concerned about those kinds of effects. In place of the pulse system, we have a continuous wave system. We have a set of filtering that results in a very clean signal. And the most significant thing, our system keeps track of, and locks out, those established bands that are used by the ham radio operators, for example. And across the rest of the spectrum area, we use a special monitor and continually listen and establish that we have clear channels.

We're interested in being a good neighbor, to be sure. But there's also another very important reason. Because we have very sensitive receive antennas to be able to extract that signal information from a signal that's been returned by way of the ionosphere some 1,800 miles away, we don't want anyone to interfere with us. We don't want another signal in that same frequency area where we have been transmitting and receiving back the signal. So for that reason, we establish and transmit only on clear channels. Those that are already established and recognized for other users are locked out by the computer system.

Lt. Col. Clarke: Satisfactory, sir?

(Mr. Engel indicated so by nodding his head.)

Lt. Col. Clarke: This is Mr. John Rodgers' question. Has the location of existing main power lines, with the capacity, capability of supplying the Over-The-Horizon Backscatter energy requirements, been considered to minimize power line construction? What is considered high voltage?

Colonel Lee: Dr. Guttrich, can you help me there on the high voltage size--and concur for me, is that 115 KV high voltage lines that we're talking about?

Dr. Guttrich: Yes, normally 115 KV or above.

Colonel Lee: We will be looking at the specific power sources that are available to us. And yes, in terms of looking at the total cost of construction, any cost to establish additional power lines needs to be considered and included in that analysis as well. From the preliminary review that we have done, it appears that the existing power grid system that's available within most of these areas will be adequate. So we will be able to tap into that with very minimum added lines required, if any at all.

So we would attempt to use that existing system. We would like, for purposes of reliability, to have perhaps more than one original source available through additional nodes in that power grid system. So that system should be adequate to support our needs without any need for significant added construction.

Lt. Col. Clarke: Satisfactory, Mr. Rodgers?

Mr. Rodgers: One follow-up. What is the actual estimated power requirement of the facility?

Colonel Lee: In terms of the power required for all four transmit antennas, and that's where the significant power demand would be, we are estimating approximately 16 megawatts of power required. In the case of the receive site, that power requirement is more like 2 megawatts at maximum.

Lt. Col. Clarke: All right, sir?

(Affirmative response from Mr. Rodgers.)

Lt. Col. Clarke: This is from Jean Bernard, and it's not in the form of a question. I don't know how to take care of it, Mrs. Bernard. I think we've taken care of the radio, TV and electromagnetic interference. Is that satisfactory? Sir, I'm sorry. Wrong Jean. You wanted to address ducks and geese flying into the screen?

Mr. Bernard: Being we're in the central flyway, we have a lot of ducks and geese during the fall in their migration. And a lot of times they're flying at low elevations, and we're worried about these antennas that are 30 feet high and so long.

Colonel Lee: Dr. Everett?

Dr. Everett: Can you be more specific?

Lt. Col. Clarke: I think his concern is that he's got ducks and geese flying all around the area and you've got a screen sitting up there so many feet long. He'd like to know if we have any studies about ducks and geese flying into obstructions? Does that do it, sir?

Mr. Bernard: Yes.

Dr. Everett: We've looked extensively into available information, and contacted some people about the possibility of bird, ducks, waterfowl striking the screens. And it is a distinct possibility. But it's impossible to say that it won't happen or that it will happen. We just know that under certain circumstances it can happen.

And as I've indicated, there are certain things that we've considered doing. And one that's not listed there, which I think should have been listed there, that we will be coordinating with the Fish and Wildlife Service at the federal level and with the state agencies--to consider the problem in the broadest possible way from their experience and points of view, and discuss what, if anything, needs to be done to take steps initially--or what might be done to take steps subsequent to construction of the facilities, to follow what happens and to take actions to try and mitigate the possible impact. But they can run into them if they don't see them, if they're ungainly--and some waterfowl are busy doing other things--driven down by the weather and things like that.

Lt. Col. Clarke: Is that all right, sir?

(Affirmative response).

Lt. Col. Clarke: The next is Carl Altenberud.

Mr. Altenberud: Carl Altenberud.

Lt. Col. Clarke: Carl didn't have a question listed. Do you have one?

Mr. Altenberud: Yes. You've identified this as the current state-of-the-art technology. Could you project how long this technology is going to be around? And then just briefly explain if you have a disbanding procedure when the technology's outdated?

Lt. Col. Clarke: He did have a question. It happens to be on the back. I'm sorry.

Colonel Lee: In the Draft EIS and in the presentation tonight, we talked about a 20-year life cycle, a 20-year period of operation. But that really is in terms of the minimum period that we would expect the system, as we place it into operation, to last. The basic physics that we're dealing with--HF radio waves that are reflected by the

ionosphere--is not going to be affected or changed by technology at all. In the case of the transmitter, we feel already that the equipment that we have provides a very clean signal with the processing that we have, and at minimal energy level from output to input.

It's possible that as technology improves, we may have newer, better ways to provide the energy level to feed the transmit elements. So it's possible--to upgrade, and perhaps 15, 20, 25 years from now--to think in terms of a different set of power transmitters feeding the existing transmitters.

Similarly, on the receive side, you might think of different hardware--solid state signal processors or beam transformers--that collect the energy and translate it into energy that came from a specific area that you were looking at. It may be that technology will give us new and improved pieces of equipment, and those we will be able to substitute on an as available basis. So that kind of capability--some folks refer to it as preplanned product improvement. That is, we have a capability to grow the system as technology provides additional opportunities for us. That certainly is a part of the basic program strategy. So again, while we talk to a minimum 20 years, if the system and the requirement for it is still there--if we still have the need to provide that kind of surveillance, then we will be able to maintain this type of a system well into the next century.

Lt. Col. Clarke: Those were all the questions that were presented. Before I go into the comment period, are there any other questions that you'd like to entertain? (Individual indicated he had a question.) And I'd like you to identify yourself now.

Mr. Ulland: I am Harts[illegible]and, a Traill County Commissioner. and our area, I guess, is o[illegible]e [illegible] the hot spots, more or less, in the Blanchard area. And we have several farmers here this evening that own some of this land. And I was wonder[illegible]ng--they would like to know--I imagine, you probab[illegible] won't be ab[illegible]co answer this now, but the price of the land--what they [illegible]eel they're go[illegible]ng to get for it, and the buildings that will most likely be moved--some of them--and the tax base you know, the County is going to lose, and the township probably will lose more. I'd like to address these questions to you.

Colonel Lee: Sure. Let me try to answer that and provide some clarification as well. When the government negotiates with an individual landowner, the final price that is established is the price that is agreeable between the buyer and the seller. It is based upon a fair market value. The Army Corps of Engineers uses the certified professional appraiser in working that process, and it is actually handled as a negotiation, with an offer made to that landowner. So it is done at the time when the system is approved and Congress has appropriated funds for the purchase or the lease of that land. Then the Army Corps of Engineers will work, and through the office that I identified, will contact the individual landowners and deal with them on an individual basis.

I mentioned that the Draft EIS includes the option of leasing in addition to acquisition--straight out purchase. Purchase is the preferred choice, but because there has been a lot of concern expressed about wanting to keep the land in the family name, or concerns about the loss of tax base--this is why leasing has also been identified as an option. In that case, there would still be tax revenue coming to the township or to that specific tax district.

However, if the government purchases the land, then that tax revenue is lost to the area. Let me ask from my Corps of Engineers if there is anything else that should be added to that, in answer?

Mr. Blair: No, I don't believe so. We just establish the price by appraisal and then it's up to negotiations after that.

Colonel Lee: Thank you.

Lt. Col. Clarke: Any other questions before I go into comments? (Spectator indicated he had a question).

Mr. Tate: I wonder--if you don't settle with the farmer, you come up and condemn his land, and take it anyway?

Colonel Lee: Congress has provided for us in Public Law that last choice, and it really is a last choice--condemnation of the land--taking it by legal action. One of the objectives in preparing the many study areas that we have, and in trying to deal with the public and getting comments and reactions back, is to ensure that we are not placed into that kind of a situation. Our objective is to select a study area where we can site the antennas with miminal environmental impact--or where there are impacts, mitigations can reduce those to a minimum--and where we are able to acquire land through purchase or leasing. And that is the priorty concern.

What you mentioned as the condemnation is the right of eminent domain, which is always available to the government as a last resort. But it strictly is a last resort. It's something we do not wish to do.

If I could, while I'm here--there was a part to a previous question that I really didn't answer, about decommissioning the system--and related to the usage of land topic again. If the system is decommissioned and the government owned the land, then the land is disposed of in accordance with the procedures that have been established, and that's handled through the General Services Administration for land that the government has purchased. If the land has been leased and there are specific items identified in the lease on how the land is to be dealt with when the Air Force is finished with its use, then those terms of the lease, then, would be met by the government when the site is decommissioned.

Lt. Col. Clarke: Ladies and gentlemen, as I said, I'll try to keep to the times. I have some people who would like to make a statement. I'll recognize first Mr. Jacobson, who represents the city counsel. Mr. Jacobson, you indicated you had a comment to make, sir?

Mr. Jacobson: I was just concerned about the water, which in that area, is very corrosive for anything.

Lt. Col. Clarke: When he says that area, Mr. Jacobson says the water in that area (Goose River) is very corrosive. Is that all you wanted to say, sir?

Mr. Jacobson: Yes.

Lt. Col. Clarke: Fine. Thank you. The next for a group, the North Dakota Building Constructions Trade Council, Mr. Funston.

Mr. Funston: I am David Funston. I represent the 7,000 men and women in the construction unions in North Dakota, under the umbrella of the AFL-CIO, plus the construction teamsters. We are here to give our full support to the Blanchard site. And we can assure you that we have the people from all crafts with experience to build it. We are proud to say that we have had a major role in all the major construction projects built by the government in North Dakota, going back to the Garrison Dam.

We would welcome the opportunity to take part in this one. We also have here in North Dakota, some of the finest trade and technical schools in the country that could provide reliable candidates for your permanent workforce at these installations. We've always had a good working relationship with the federal government, between the North Dakota Building and Construction Trades Council, and we'll continue to do our part in the future.

We'd like to thank you for this opportunity to give this testimony and would answer any questions that you have now or later.

Lt. Col. Clarke: The next person who asked for a public statement is Marlin Honk, is that correct?

Ms. Honea: Marvine Honea, H-o-n-e-a.

Lt. Col. Clarke: Do you want me to put it on the record for you?

Ms. Honea: If you don't, it will only get thrown away.

Lt. Col. Clark: No, maam. You asked for a comment. I'll be happy to make the comment for you or you may come up and read it. Want me to make it?

Spectator: No, that's all right. Just let it go.

Lt. Col. Clarke: We'll attach your comments to the record. Virginia Miller? Virginia's address is 316 Hamline in Grand Forks, North Dakota.

Ms. Miller: First of all, I have a question about the reliability of the computers involved in the system. What happens if the computers make an error in identification, either that something is coming or the wrong--you know--that it's not an enemy bomber?

Colonel Lee: The key point in the OTH system as a surveillance system is not the detection and tracking of a single aircraft. We can do that--we can do that with high confidence. But yes, you always have that opportunity for a single error, or perhaps not positively identifying that track against the pilot position report--because, for example, the pilot of that commercial airliner may have not accurately reflected his current position. So that possibility is always there.

But the key objective of this kind of a system is to detect a large number of aircraft that are all approaching towards the United States, none of which we have been able to correlate--and the attack appears to be advancing and progressing. In that case, that information is provided to the Region Operations Control Center. And they have the ability, then, to pass and send out alert aircraft to try to make positive identification, still a long distance away from the coastline.

As that attack would continue, then, that information would also be provided to our National Command Authorities. And that is a part of this total scenario--of providing significant warning, and being able to actually watch a large attack as it appeared to begin and to progress towards the United States.

It is not a system where any decisions are made on the basis of a single track with a single aircraft, positively identified or not. Does that answer the question there?

Ms. Miller: Yes. Thank you. My comment--I appreciate your efforts to minimize the socioeconomic and environmental impact. However, I am concerned that all the billions of dollars in our tax money and socioeconomic and environmental disruption of peoples lives is being--that the money is being spent, and the disruption will occur for a radar system that I think is not needed and that is vulnerable.

In my understanding, the Soviet bombers are limited in number compared to our own. And they also have a much shorter range. And they would be unable to fly the whole distance. They would have to be moved first before they could reach the United States. It is also my understanding that the CIA and the National Security Agency--their intelligence work provides the information already about these bombers.

And that they are aware of any changes, any movement in these enemy bombers. So I'm questioning why we need--now, this isn't just a question, this is a comment--I don't think that the system is needed. Because if this information is already being provided on a lot of them already, and we know when these bombers are moving, and when they will be taking off, and where they would be headed.

Also, it's my understanding that the system is more easily jammed because it has a narrow bandwidth. It is also subject to sabotage even though security will be part of the system. It can be sabotaged. We would not know if this happened--for sure--who was behind that necessarily. I recommend that you read the book The Button, by Daniel Ford, particularly the part that deals directly with the OTH-B, and I can give you the pages on that. I have the book with me. And I also urge the Air Force and the government to stop the OTH-B immediately. I believe that there has been a long history of problems and questions about this whole system. I ask you to reevaluate. Thank you.

Lt. Col. Clarke: Thank you. Helen Vinje? You checked that you'd like to make a comment?

Mrs. Vinje: I'm Helen Vinje from Clifford, North Dakota. I think that the loss of revenue is of great importance to our small schools in the area. I understand that any land purchased will cease to produce any revenue for our schools and most acreage in our area is the best producing land. My impression of world conditions leads me to object to taking extended acreage out of production. Thank you.

Lt. Col. Clarke: Donovan D-y-r-d-a-l. Dyrdal. Mr. Dyrdal, how about Don? Mr. Dyrdal has a comment. He's from Route 1, Box 2164, Thief River Falls.

Mr. Dyrdal: Thank you. My name is Don Dyrdal and I would like to offer the following comments opposing the proposed radar project sited near Thief River Falls, Minnesota.

The location of the radar receiving facility within the Thief River Falls area would require either the loss of productive agricultural land, or the loss of wetlands and wooded areas, or a combination of the two. The loss of a potential 2,400 acres of productive farm land would be felt primarily by the township in which it is located. I would assume that the tax burden, no longer chargeable to these acres, would be shifted to the other landowners in the area. At a time when local farmers are having a difficult time financially, this increased cost is potentially devastating.

The loss would be felt in a more indirect way in local businesses, in a potential $240,000 less dollars in spendable income for farmers. And that's simply a formula of taking 40 bushels of wheat per acre at

$2.50 an acre, and we're told that the farmer's dollar is returned seven times on main street. And I think the type of input that the farmer spends his spendable income on is very important here. The loss to the area when wetlands are drained and graded is much more difficult to calculate. It is very hard to tell how changes in the drainage system will affect the surrounding farm land. The loss of many of the wooded areas can mean increased erosion and wind damage of crops.

It is not difficult to imagine the impact on the wildlife and birds if this amount of natural habitat were lost. This part of Minnesota supports a large number of deer, moose and many species of smaller animals that provide a wide variety of recreation for sportsmen. This project would interrupt feeding patterns and natural track and flight patterns. It would also destroy many of the wooded areas that these animals use for shelter.

In the Enviornmental Impact Statement, page 2-9, the statement was made that if the land was purchased it would be made available for other federal uses. When the radar project is decommissioned in 20 years, the question arises as to what other federal use might be made of this land. Is it possible it may be a nuclear waste disposal site? This, too, is a federal project and the local area has heard a great deal of information regarding this possibility.

It's a possibility that a few of the employees at the proposed radar site might choose to live in Thief River Falls instead of Crookston or Grand Forks. Would the risk of, number one, increase the tax burden to local farmers? Two, damage the crop land and natural resources? Number three, the likelihood that in 20 years the radar site could be replaced by a nuclear waste depository?

It is for these reasons that I oppose the selection of the Thief River Falls site for this radar project. Thank you.

Lt. Col. Clarke: Thank you, sir. The last public comment is from Lloyd Putney, is that right? He tells me it's right. Mr. Putney?

Mr. Putney: Thank you. Good evening, Colonel Lee. As many people know, I've been traveling around the country, kind of chasing Colonel Lee and listening to all the questions asked. I'd like to take this opportunity, first, to commend Colonel Lee and his staff for the fine job they've done at these public forums, and the way they've handled themselves, and their staff has handled themselves.

I feel that you've done a very good job in public relations in handling these questions and dealing with them. And I guess with that, I'd like to get on with my statement.

I guess my statement is that I work in the state of North Dakota. We have a lot of unemployment in the state of North Dakota. As I say, I have followed this around and I am concerned about the environment in the state of North Dakota. I'm very concerned about the environment. And after going to all these public forums and hearing all the public statements, I feel that this system would interface quite nicely with the defense systems we have in place in the state of North Dakota already and the economic situation we have in North Dakota.

We have a lot of skilled, unemployed workers, and we welcome the jobs. And I feel that this system would have a minimum effect if you did place it in North Dakota. We welcome the opportunity to have this here and also have the jobs and the opportunity to work on the job. Thank you very much.

Lt. Col. Clarke: Can I keep that, sir? (Referring to Mr. Putney's statement). Those are all that I was presented with. I'll take questions in just a minute. Is there anybody who wants to make a public statement rather than a question?

Spectator: I'm Al Hermodson from Crookston. I'd like to make a brief statement and then ask you a couple questions. I, too, believe this is just another expensive way to continue the militarization of our society, and that is a social impact that we have to consider. We're asked to accept first strike nuclear weapons, MX's, Tridents, Pershings, the billons of dollars in Star Wars space weapons, and coming up in this area Ground Wave Emergency Network, and this is at a time when our government is carrying on no meaningful negotiations and, in fact, I believe, are exaggerating the enemy capability as, for example, the picture of the Bear class airplane. It's a propeller driven airplane and it can't, essentially, make it to the United States. They have virtually no refueling capability.

A couple of questions. First, about jamming this system. I understand it can be jammed with relatively crude technology. Is that true and how do you overcome that? And the second question is regarding the ABM treaty. You might say this is not an antiballistic radar, but it falls under the technical consideration. And I believe there are a couple of points in the ABM treaty. One of them is that radars must be at the border, which this would technically comply with, and the other is that it faces outward. This does not face outward, this faces south. It does not face north partly because there are electronic--there are problems with the northern lights and the fact that this would confuse this radar if this would face north.

President Reagan has attacked the Soviet radar repeatedly. Now, this was supposedly an ABM radar that the Soviets had. But even the CIA, in a 1984 report, said this is not or for ICBM's, but it's an early warning system for sub launched missiles and probably cruise and air attacks. But even though it's not an ABM system, as we agree now, it's

still technically in violation of the ABM Treaty because of its location and its orientation. How is it that this system is not also in technical violation of the ABM Treaty on the same grounds? Thank you.

Colonel Lee: I'd like to answer a couple of the specific questions if I could, briefly. First, the point of jamming. Any radar system is susceptible to jamming. It's a question of having the right kind of jamming equipment, the right power level, located at the right position. In the case of a system where we are literally covering over a million and one-half square miles from that single system--a scanning system that has that beam continually moving--it's extremely unlikely that even--although simple technology, perhaps, can do it in a spot location--it's extremely likely [unlikely] that any kind of a system could effectively jam the entire Central Radar System or even, for that matter, jam a particular sector.

If an attempt were made to jam it very close up to the location, we would be able to use other techniques identified when those jamming circumstances were taking place. So we believe we do have a response to that type of concern.

The second point, and you're really asking for some very specific, technical nuances--really, an interpretation of the ABM Treaty. I'm certainly not equipped to answer those. That's something that we would have to document for the record as a part of the Final Environmental Impact Statement. I assure you, however, that the decision was made and the confirmation made that this system, as a surveillance system for aircraft systems, does not violate that treaty. But getting down and trying to debate the specifics of that, no, I'm not able to.

But the United States and the Air Force clearly intends to live by that treaty, and the determination as to--this OTH system really does not fall under the specifics of that treaty. Beyond that, as I said, we'll comment in the final record, the Final EIS. Thank you.

Lt. Col. Clarke: Colonel Lee said likely. I think he meant unlikely.

Colonel Lee: I meant unlikely. Thank you. [See first paragraph of previous answer.]

Lt. Col. Clarke: A comment from the back?

Spectator: I'm Gloria Porter. My husband, Paul, and I live in Bohnsack Township in Traill County, and that's in the Blanchard area. Colonel Lee, I'd like to once again correct you. I'm sorry, but in your book, the location of Blanchard is not the location here. It's wrong in the book; it was wrong on the screen. The location of the City of Blanchard in this book is at the intersection of I-29 and North Dakota Highway 200. The City of Blanchard is located immediately to the left where Highway 18, State Highway 18, jogs out of that little black dot in your Blanchard site area.

Now, in relation to that, I'd like to comment on the way that you listed your sites in the book. I don't think that you listed them to the benefit of all the public. And a news release certainly didn't make people aware. I'm going now from the Blanchard area site- I would like for the record to note that the Blanchard area site includes townships in Greenfield, Bloomfield and Bohnsack Townships, or sections I should say. Sections in Greenfield, Bloomfield, and Bohnsack Townships in Traill County. And I believe in the next statement you issue, you should not only list the legal description, you should also name the township. And in relation to the township, my husband is on the township board, and I would also like to comment on the statement made earlier about the taxation. You mentioned that there'd be a one percent for the county, which doesn't seem like a whole lot. But if you take this--and on page 4-33 of your statement, I will read, "For a particular township or school district, however, the losses would be more significant. The exact impact would be determined by the percentage of taxable land that is removed by the site. If an entire site were to be contained within a given township, the tax loss--assuming average land values--would be as much as 18.5 percent of this township's tax base. Depending on the ownership and use of this land, the tax consequences discussed above may be of less impact than indicated."

However, I believe we had a little bit of discussion on this impact for the townships. It will be a major impact on our township. The impact on the township would be hard to realize in terms of the road construction and all that. I would also like to ask, with this in mind, should it be located in one township, would the Air Force or the government, in some way, give the township special funds to address this economic impact on the township? Thank you.

Colonel Lee: I'd first like to thank you for calling attention--and really, a more comprehensive emphasis needs to be placed on that area of taxation. We certainly did not mean to leave the impression, from the way we summed those estimates and described them on an area basis or a county basis, that there would not be specific cases where there may be significant impact on the county. You made that point quite well. Thank you. And, as you said, it is documented in the Draft EIS.

To the extent that with the news releases and as we described it tonight, we did not give proper recognition to those townships--again, I would hope that as a result of the meeting tonight, and the Draft EIS's that are available in the community, we would be able to ensure that landowners, people affected in those areas, including the Blanchard study area, would be able to know specifically the kind of boundary areas that the Air Force is considering for the study areas. We need that feedback, that impact, from those communities.

Now, as far as the very specific question--the government as a policy does not provide mitigation to the loss of that tax revenue. If the land is purchased, the government will not make tax payments, in place of individual landowners, that go in to that school district or go into that township. That is one of the reasons that we have specifically identified and received approval from the Office of the Secretary of the Air Force--and for that reason it's included in this Draft Environmental Impact Statement--and that approval is to consider leasing as an option. Because on that basis, then, the land is not removed from the tax base. Taxes would continue to be paid. So that would be our way of mitigating against it rather than the government making tax payments to itself.

Lt. Col. Clarke: Is there a follow-up?

Mrs. Porter: I have one further question in that regard. According to the article in the interview you gave to the Fargo Forum, it said in there that if you bought the land or you leased the land, the entire amount of the money would be about the same. So, therefore, the landowner is going to end up paying those taxes. I don't see that there's going to be an advantage in leasing the land.

Colonel Lee: If the government were to lease the land, the value that's--the equivalent rental value would be established in the same way that we would establish a purchase price. That is, an equitable, fair market value for that price. In that case, that money is going into the hands of that landowner, just as there are many landowners already who re leasing their land for an equivalent fair market value and are continuing to pay taxes against that amount. But their individual decision has been that--that still is a profitable venture, or for some other reason, something that they are wishing or interested in continuing to do so.

The final decision, under what set of circumstances the government would be willing to lease rather than purchase, has to take many things into account--including what would be the equivalent total cost over an expected lifetime of the system. But to the extent that there can be some, if you will excuse the word, mitigation in the way that process is handled, the key objective is to try to reach a solution with the landowners. Leasing is an option that has been approved for us to consider in addition to the purchase. And that will be done and considered on a case by case basis.

So for the landowner, if he feels it's more to his best interests to try to lease that, then there would be tax money continuing to flow into the district.

Lt. Col. Clarke: I have no further names that I can decipher. Yes, maam?

Spectator: May I make a comment?

Lt. Col. Clarke: Yes, maam.

Spectator: My name is Marvine Honea. I object to the charge that Russia will send over bombers to bomb this country. Russia is peace-loving. I'm a Russian.

(Spectator indicated he had a question).

Spectator: I'm David Eblen. I'm from the Bohnsack Township area. And my question is--it's my understanding that your land requirements are about 2,400 acres. The surrounding area, you know, can people live right next to these sites, you know? Are there any restrictions? Also, is there any easements required of land in the immediate proximity of these sites? In other words, you know, are you going to require other land in that area for future expansion, you know? Are there things needed in this development? Can you answer that?

Colonel Lee: The schematics that I showed you of the receive site areas--and I guess that's what you're talking about here up in this area- identify a sector of land approximately 10,000 feet by 2,600 feet, about 600 acres. That would be the total amount of acreage required, an acreage that would be fenced off for each of the four receive antennas. There would be no restrictions at all to the use of the land or what kind of crops or other activities that the landowners outside of that area would put that land to. No real restrictions at all.

Further, there are no plans or requirements for growth beyond that. We have sized the system. We have the system designed that really provides us with a detection sensitivity that we feel that's required. And that should be adequate to protect us over any known set of threats that we can plan on and envision at the time. That also is tied in with this minimum 20-year period that we're looking at.

So what you saw was the land requirements. The only case where we might be interested in negotiating something in addition to that, four times 600 or 2400 acres, would be if we were in a situation with the antennas configured such that there was a portion of land that really wasn't economical to a landowner to try to farm a particular section, a corner of one of the sections. In that case, then, the government would consider, also purchasing or leasing that additional acreage as well. That would be the only thing that would carry us beyond that 2,400 acres.

Lt. Col. Clarke: How about the easement requirements?

Colonel Lee: No additional easement requirements. We would provide roads around the individual site areas. We recognize, from looking at the maps and flying over the area and driving through, that there are roads around the sections, sometimes dividing sections into quarter sections. We would certainly end up, in the case of the receive antenna, closing some of those down. And we would still, and if necessary, establish a new access road that would be available to the general public outside of that receive site. And the land that would be required we would purchase that total acreage to allow us to be able to do that as well.

The cost of the construction of those roads would be borne by the Air Force as a part of the construction project.

Lt. Col. Clarke: Thank you.

Mr Ulland: I have one more question. Will there be more hearings later on? I want to make a comment that I wish that we would have had a little more time in our county to study this. I mean, we just got this book about a week and a half ago. And when this goes further on, are these landowners going to be given a chance to have another hearing? The ones that are going to be involved or what?

Colonel Lee: Thank you. That provides a good way to kind of summarize what happens next. We are holding three formal public hearings. And I'm here tomorrow night at Wheaton, Minnesota Thursday at Langford, South Dakota. Those will be the only three public hearings as a part of this environmental impact analysis process. But the significant point you allow me to make is that the comments that are still to come in to us in written form are equally as significant as anything that has taken place here tonight.

We recognize that you haven't had a lot of opportunity, and because we realize many of you have been calling and we have been sending out additional copies of this Draft EIS, as recently as the end of last week we know there are people who have not had a chance to study it. You have from now until the 6th of October to provide those comments back to us. All those written comments carry the same impact as anything that has taken place here.

They will be carried in the Final Environmental Impact Statement. To the extent that they raise questions or concerns that we have not addressed in the draft, we will respond to that as well in the Final Environmental Impact Statement.

So I would urge you if you have not had time to review that document totally, or your friends or neighbors have not please, you can help us in spreading that word. If you need some additional copies, please contact us at the same reference point, Lieutenant Brown, Electronic Systems Division, Hanscom Air Force Base, and we'll still get additional copies out. But the most important thing is please provide us with your written comments.

Lt Col. Clarke: We're starting to double up again and I'm going to keep it open as long as I can. Let's have somebody who hasn't had an opportunity to speak, or is it a question?

Spectator: Question, I guess. I'm Bill Mohr from Hunter, North Dakota. I live in Greenfield Township and I was wondering does this site can water stay on this site, or does it have to be drained off? Because we have problems in the spring where we have, we figure, a foot of water on all the sections.

Colonel Lee: That area of ponding of water, certainly in the springtime, we have seen ourselves as we've flown over and looked at the area that we've had the team doing environmental analysis. We're aware of that, and if that site was selected and we plan to locate the antennas first of all, we would try to avoid those specific areas to the maximum extent possible.

To the extent that you've got a large amount of land within that area that has that occurrence every year, then that site is not environmentally as attractive as a site that does not have that kind of problem. We will, where possible, fill in that ponding, establish a level area where we do not have that problem but I also have to hasten to add, that needs to be done recognizing the potential for drainage and flooding in adjacent lands.

So the only way that we would step in and select an area and do that is if we also felt that some mitigation measures would enable us to control and take the proper measures so that we did provide for that kind of flooding in adjacent areas Does that clarity that?

Mr. Mohr: Thank you.

Lt. Col. Clarke: I'll go there, there, and to the back (indicating the spectators who rose to be recognized).

Spectator: I'm Don Dyrdal and I'd like to ask Colonel Lee I get the impression that the Air Force is going to work with the landowners to the utmost to give them the most consideration possible. I guess the

question in my mind is--why was this particular date set for the hearing if this is the last input for our area other than written? And we have in our township a local form of government, which most of our leaders in the community--and here we have a primary election meeting where people, for the most part, are not able to have an opportunity to attend on this date.

Colonel Lee: The selection of the dates for the public hearings were established based on a number of things, and they needed to take place within a given period of time. One of those additional things is a set of Alaskan public hearings that we also had to fit within the next week and a half.

We also wanted to make sure that we gave at least a minimum period of time for people to have the document in their hands before we had the public hearing. And we still wanted to ensure that there was adequate time after the hearing to do just exactly what we've identified here tonight. We discovered, apparently, that there are a lot of landowners that still--in spite what of we have felt have been our best efforts--had not really gotten the specific information. We wanted to ensure that following this hearing there was opportunity for them to get the document, to review it, and to be able to make that written input to us.

The final point that I'd make--and I certainly did not mean nor did the Air Force mean for this selection tonight in Grand Forks to be any kind of an insult to anybody.

I think the comments that had been made before, recognize that we really had attempted to work with all the communities. The public hearing has provided a key opportunity to give information out, and to provide an opportunity for you to ask questions. We also provided significant information in the communities--as to Thief River in particular, in two scoping meetings and with answering a lot of questions directly, that have come during the last several months of the scoping process.

But the most significant point, again, is that the written comments--that still come to us over the next period of several weeks until the 6th of October--are just as significant, just as valuable, as anything that would have taken place here at the public hearing. So it's unfortunate that--there would have been additional people that were unable to make it because they apparently needed to be voting rather than coming on over here to this meeting tonight. That is unfortunate. But the process, really, is still carrying on, and we are getting that input, and we're providing the opportunity to still receive that input before the 6 October date.

Spectator: I have a health concern.

Lt. Col. Clarke: Your name again?

Spectator: Virginia Miller. I have a concern about the health. Is the phrase "no reliable scientific evidence exists" - does that really mean you don't know, as it has in the past sometimes been used? And that the people living in the area of the transmitting sites will, in fact, find out as the years go by, or is there no connection being made?

Dr. Everett: The reason for the modifiers of "no reliable scientific evidence" is that there are many claims made in the literature of the scientific--pretending to be scientific literature, and in popular literature, of effects. In our review, we were scrupulous about examining these reports to see that they were scientifically based. By that I mean, in a general sense, that they were well-founded experiments or surveys of effects against exposure and so forth, before we concluded that they could be relied upon to reach the conclusion of the type that was reached.

Now we acknowledge and can see that--in the EIS we acknowledge that--we cannot demonstrate that there will be no effects ever from this system. However, all the evidence to date that we can rely upon, indicates that there would be no effects in the long run or the short run outside these exclusion fences, in the exposure to the kinds of energy levels that are involved.

I think that if you examine particular parts of the document where we have systematically worked through the methods or the ways by which we think this kind of energy could influence the human body--that you would see that we've considered, on the basis of all that is known, the possibilities--and weighed the meaning of the documented evidence in order to reach that conclusion. Scientists will never guarantee a thing, at least on a negative proposition. They specifically have not demonstrated it. But I think within the realm of scientific expertise and our ability to know the environment, that this is a rather reliable conclusion.

I would add to that, that the field of regulating these emissions, or in indicating the strength of signals that are hazardous, has been fairly accurate lately--from the Environmental Protection [Agency] Administration, and a number of other advisory scientific bodies that looking at the literature and discussing whether the standards which now exist for limiting exposure are adequate.

The answer is actually that some of them are being even more conservative. They are quite interested. There have been some proposals more restrictive than the standards, that is, to lower--to put it at lower values of exposure. It turns out in this particular instance--for this radar system, considering its power and the amount of land that is being acquired--that it has no effect. That is to say, we don't have to take more land in order to meet the standards. We're still below the standards of the exclusion. We're lower than the standards that exist, and we're below the standards that have been suggested.

So you don't think that the standards are always being lowered, you should know that in several parts of the spectrum of interest, it's been suggested that the standards have been slightly relaxed based on more recent knowledge.

Lt. Col. Clarke: The lady in the back.

Spectator: Gloria Porter from Grandin. I am in the Bohnsack Township area. I'd like to comment on Mr. Mohr's statement about the water in the area. I have a set of pictures that I'd like to share with you following this presentation. And I also have another question about how are you going to protect the workers that are going to work inside this exclusion fence? Is there going to be special provisions made in your building structure for these workers in the building? And are any civilian people going to be employed there, or will it all be military? And what is the one percent height of your--I don't know what you call that. About--it says is there one percent--about--no, one degree above the horizon--is that the right term? Okay. Well, how many feet up is that? I don't know. And if you should decide to build another building, say, a silo, a metal structure, a grain bin, grain driers or that within--can you build that nearby if your farm is located nearby?

Dr. Everett: On this matter of exposure to the employees in the building, the nature of this system--the way it's been designed is to throw as much energy out the forward facing part of the antenna. In fact, such a large proportion of energy that is roughly a factor of 100 to 1. What that means is that the energy coming back is quite small. It does prevent exposure. The Air Force will, through one of its organizations, survey both in front of and behind and to the side of this system when it's constructed and operating--to verify what the field strengths are, and if there's any adjustment that's required, and safety considerations for either the general public or for people who work on the site--that these decisions will be made.

Colonel Lee: Let me clarify that the site is fenced off to ensure that outside of that exclusion area then, the RFR levels are below those standards. But we also provide that fencing to have some basic security for the entire site. And so the distance to the rear, we fence off, including that building as well, for security purposes. But the building is located sufficiently far from the back side of the transmit antenna so that we do not have any danger involved to the workers there.

Now, to the question about what kinds of things we can still do when the system is there--that one degree translates to about 100 feet every mile. It's a little bit less than that. And so in the case of the transmit antenna, where the fence is a mile from the antenna itself--you could have a new silo appear as high as 100 feet with no impact at all. And it continues to grow on a linear basis--two miles, 200 feet, etc. all the way out.

In the case of the receive site, similar to the one degree factor, our primary concern there would be potential interference of some--things such as another transmitter or a source of noise. We would not have significant degradation in performance at all if you were to build a silo that even might be within the lower portion of that one degree horizon.

Lt. Col. Clarke: I have two more questions. The gentleman in the green sweater?

Spectator: I'm Court Hanson, Blanchard, North Dakota, Bloomfield Township. I'm on the township board there. And I was wondering why we haven't been sent a copy of that EIS book, and where we can get one? Because the first I heard about it happened to be the Traill County Commission meeting that Mr. Ulland was speaking of. And the second part of my question --

Lt. Col. Clarke: You can get the book tonight.

Mr. Hanson: My question is not addressed to you, but it's addressed to Mr. Funston over here who represents North Dakota labor. And my question is--why does he specifically say that they support the Blanchard site? There were, what, four sites in North Dakota? Maybe he could answer that one.

Lt. Col. Clarke: He could answer that one. As I indicated, a statement is not subject to question and answer from you to another member. That's not the way it works. It's a public comment from you to us for our report. If you'd like to know why another member of audience does something, you can ask him after the meeting. I told you where you can get the EIS, and there's still one left. And why they didn't get one before, I can't answer that.

Colonel Lee: I'm sorry, I don't have a satisfactory answer for that either. We thought we were blanketing the area with contacts that we established in the different communities--sending the different copies to the libraries, to city councils, where we had addresses. We were hopeful that through the process of the scoping meetings, the media coverage that we had, newspaper articles, even this last weekend--again, that enough would become aware of it so that where we did not have documents out, we would have people that would raise the question, attend these meetings or otherwise get in touch with us. We can only apologize for not having the documents there. And if you'd like to take more than just that single copy back with you tonight, I'm sure that there are additional people in Blanchard that could have that available. Please, we need to see that that takes place.

Lt. Col. Clarke: Another comment?

Spectator: I'd just like to say that I'm awful thankful to live in a country where you can address the military in a public forum, open debate, open comments. And I'd also like to take this opportunity to

welcome the lady from Russia to the United States of America and also make the statement that I don't want war with anyone any more than anyone else in this room. Thank you very much. Welcome to America.

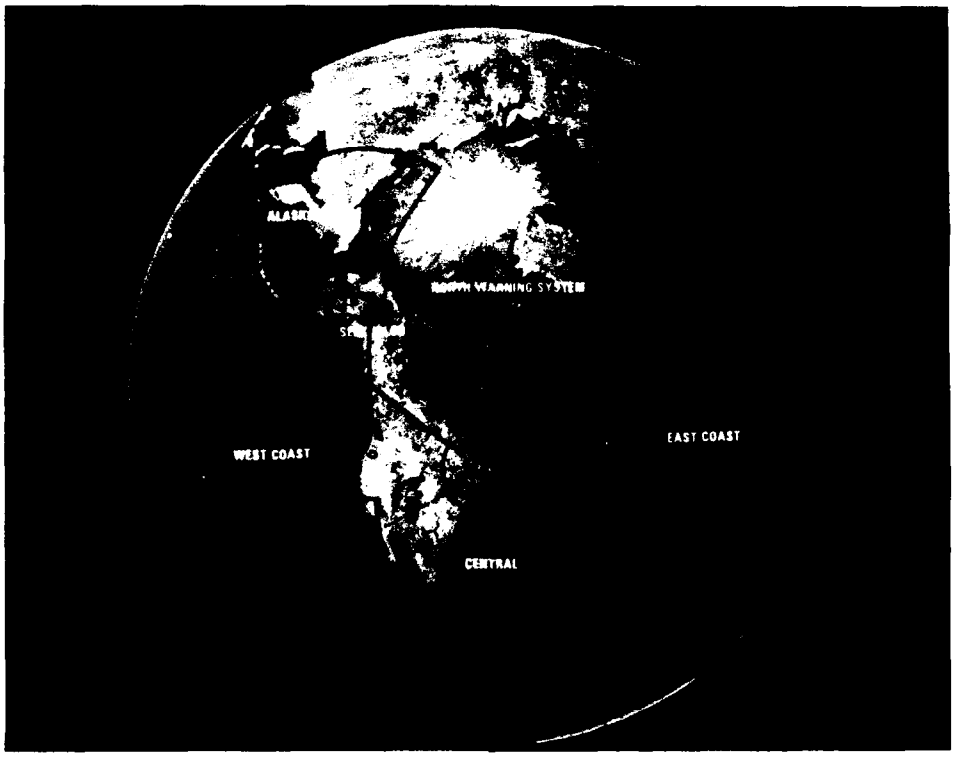
Lt. Col. Clarke: I have no more hands. Are there any more questions? If not, I'll make a closing remark.

Ladies and gentlemen, officials of the Air Force appreciate your efforts in coming out tonight to contribute your views to this public hearing. Speaking on behalf of the Air Force and the briefing team, we thank you for your courteous attention and adherence to the rules of this session.

I believe it is not too presumptious to say that each of us that have been here throughout this evening have learned a lot, both about us and we about you. And we are grateful that we are allowed to, as we hope you are, particpate in this free and democratic society. Living in Washington and having to fight the commuter traffic every morning, I certainly appreciate being here where the land is nice and flat and there are not cars that run over you every day. So I've enjoyed the beautiful sky and country, and not getting run over by cars. With that, if there's nothing else, I'll adjourn this meeting. Thank you very much.

(The public hearing was adjourned at 9:43 p.m., September 9, 1986).

3.1.2 Briefing Slides



SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS

Environmental Impact Analysis Process

WHAT: PROCESS FOR ANALYZING IMPACTS OF A PROPOSED ACTION

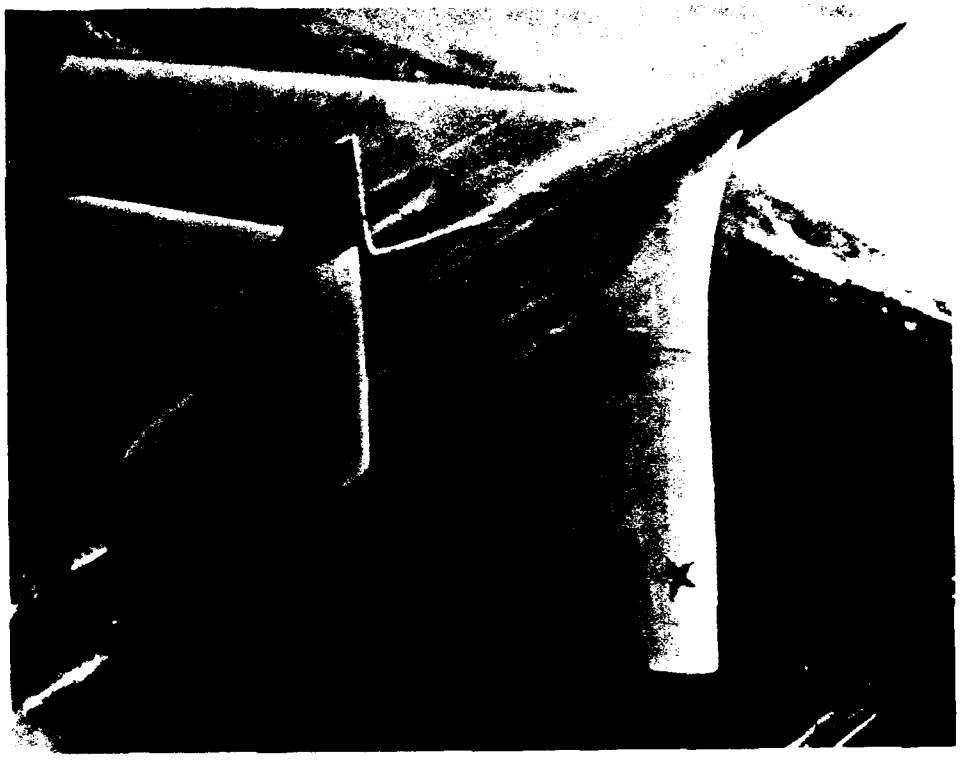
WHY: HELP DECIDE WHETHER AND HOW TO PROCEED

STEPS: SCOPING MEETINGS

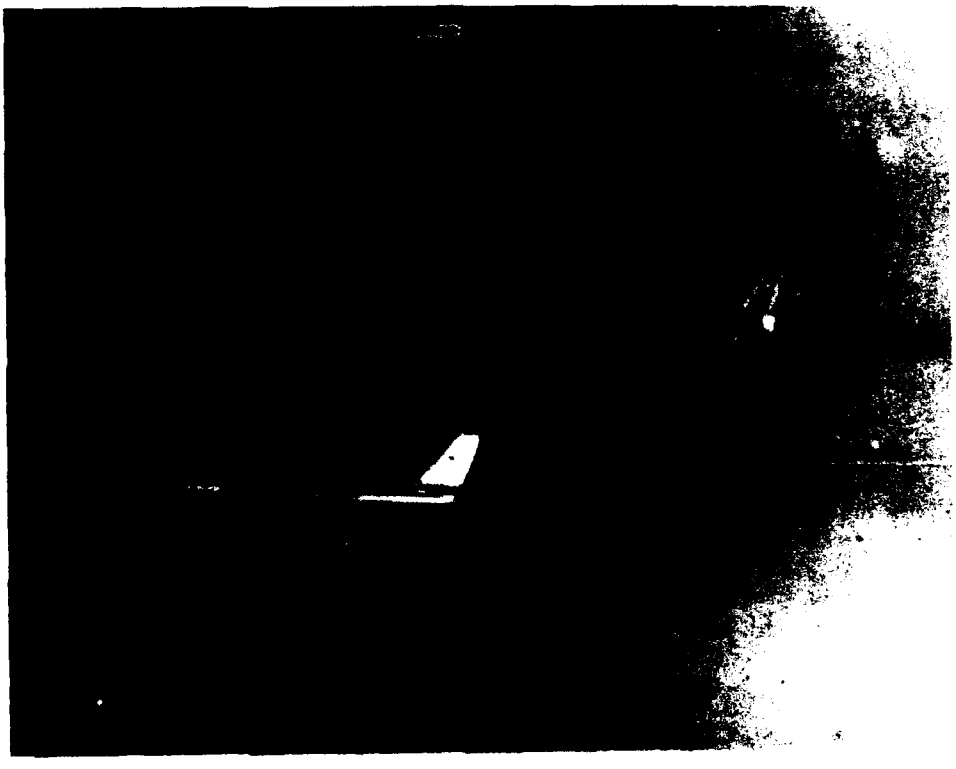
DRAFT ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARINGS

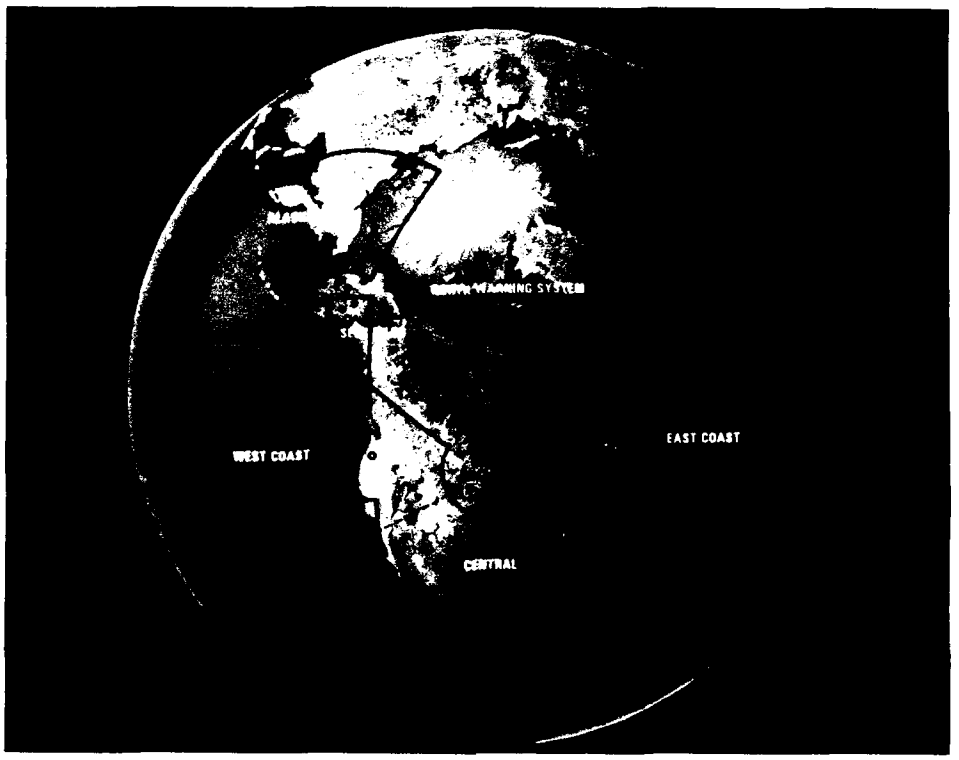
FINAL ENVIRONMENTAL IMPACT STATEMENT



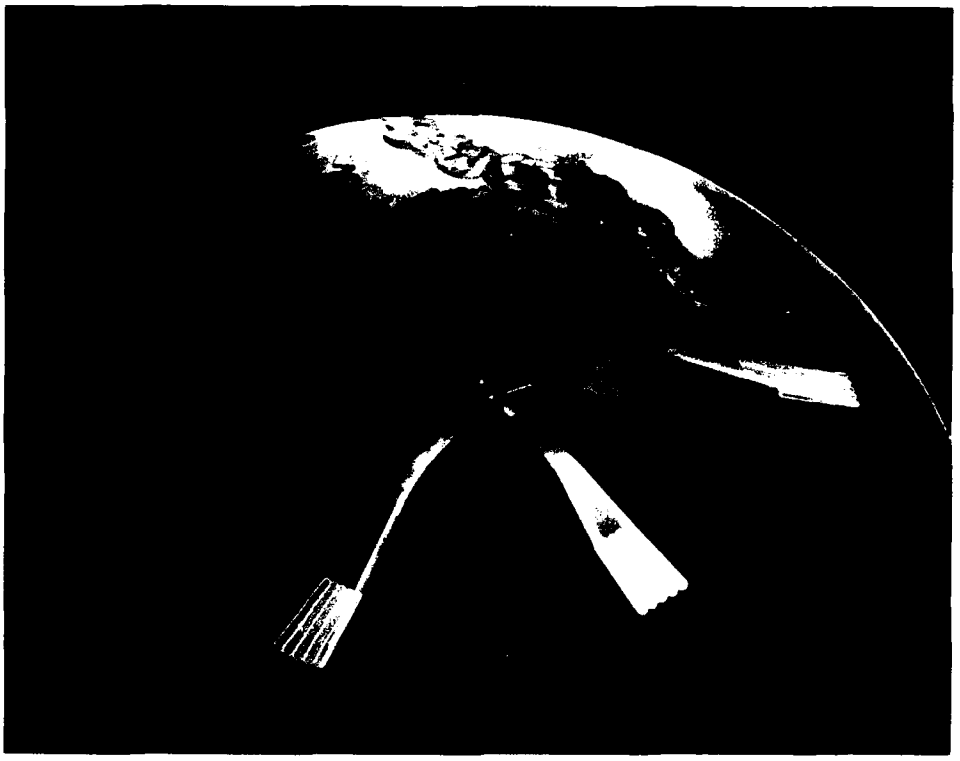
SOVIET BLACKJACK MANNED STRATEGIC BOMBER



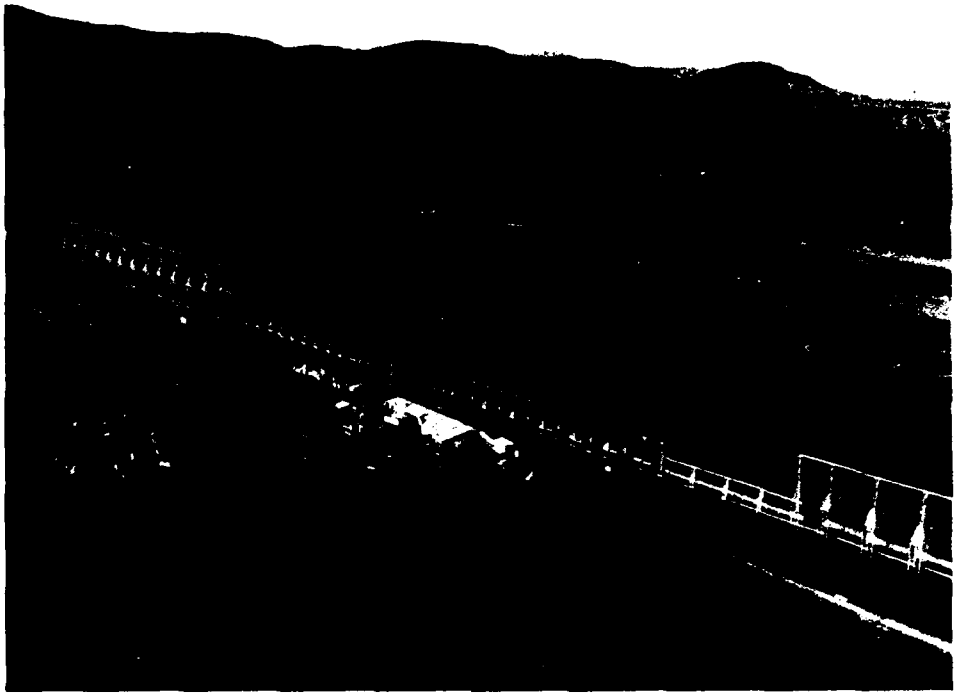
SOVIET BEAR H BOMBER AND AAC F-15 AIRCRAFT



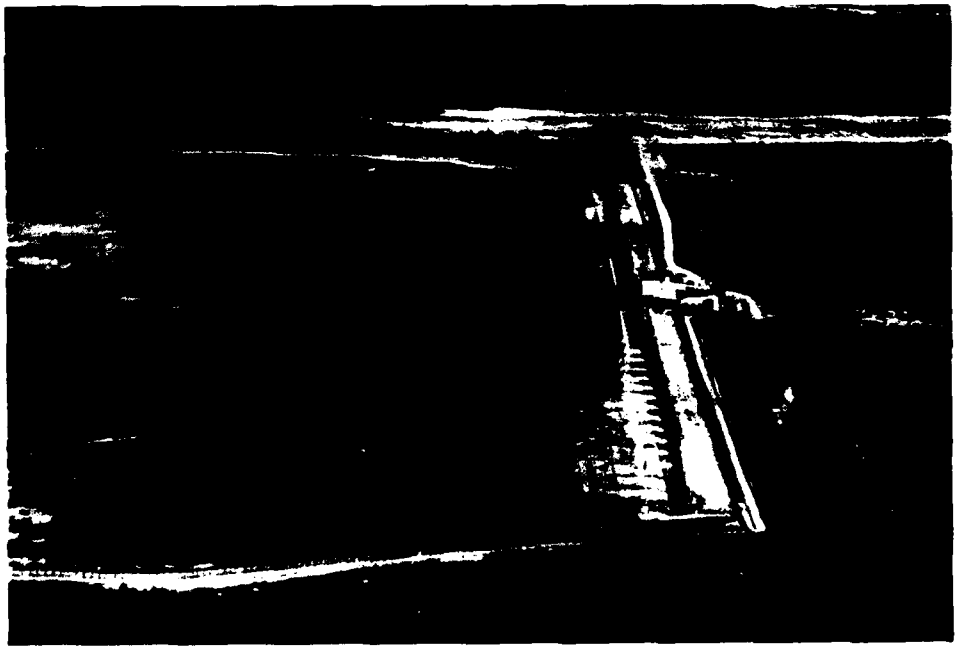
SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS



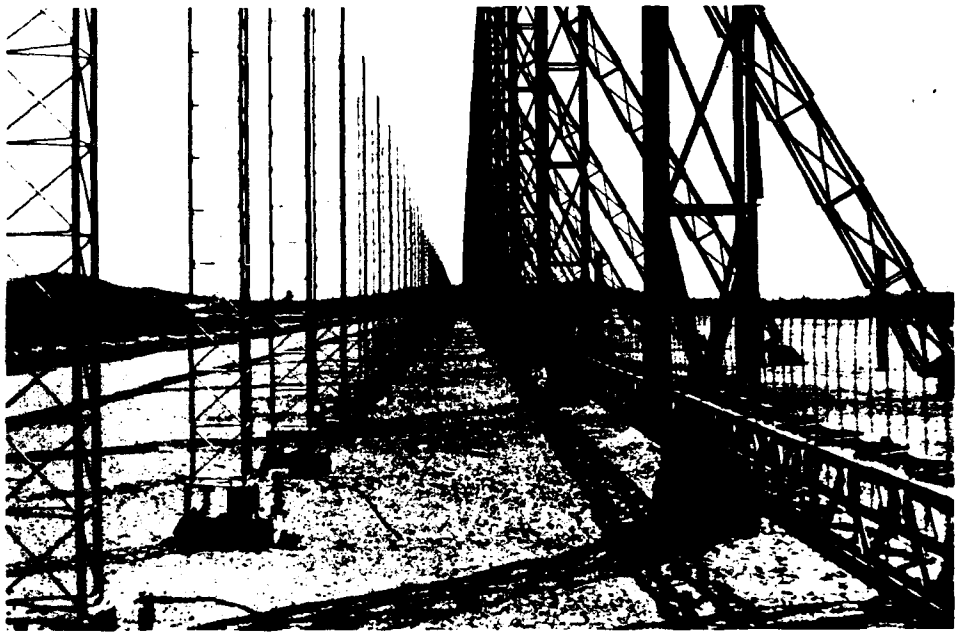
OTH-B EAST COAST RADAR SYSTEM CONCEPT



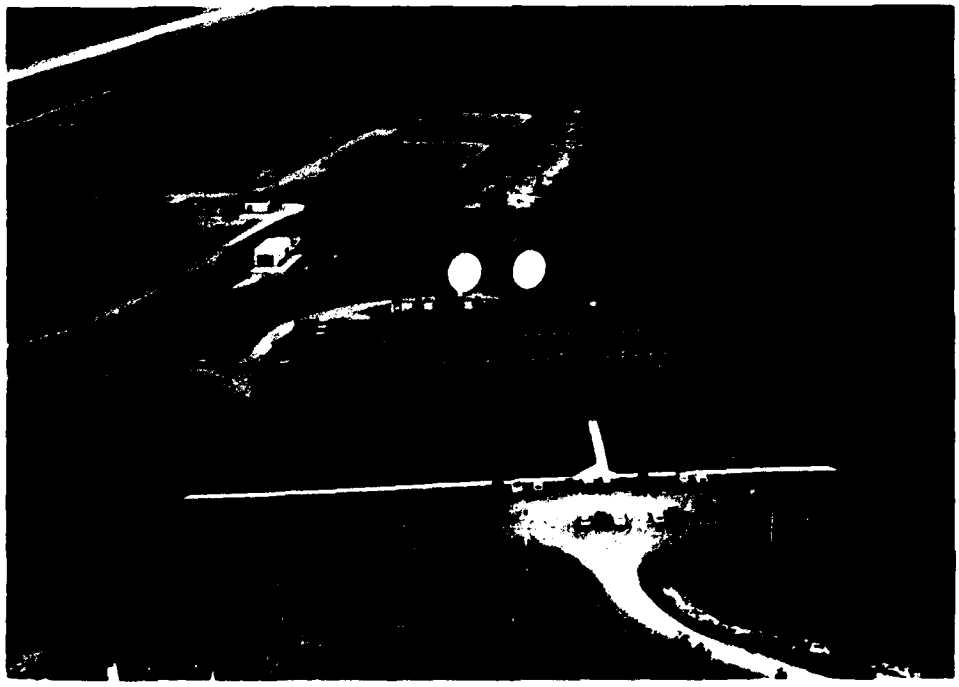
SECTOR ONE AT TRANSMIT SITE — EAST COAST RADAR SYSTEM



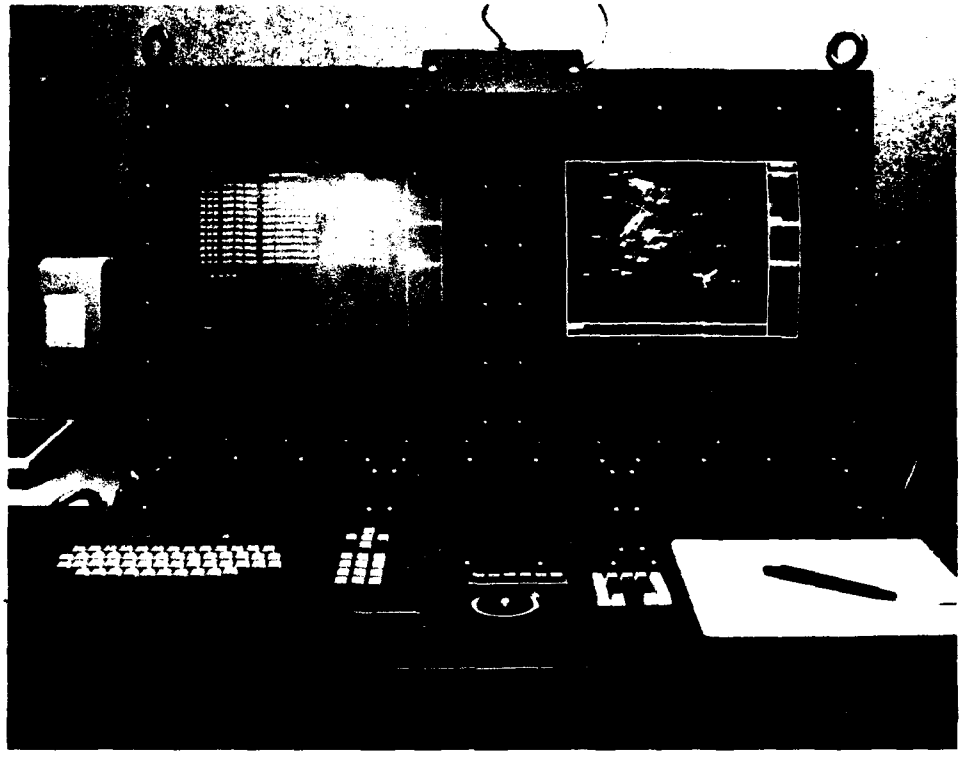
SECTOR ONE AT TRANSMIT SITE — EAST COAST RADAR SYSTEM



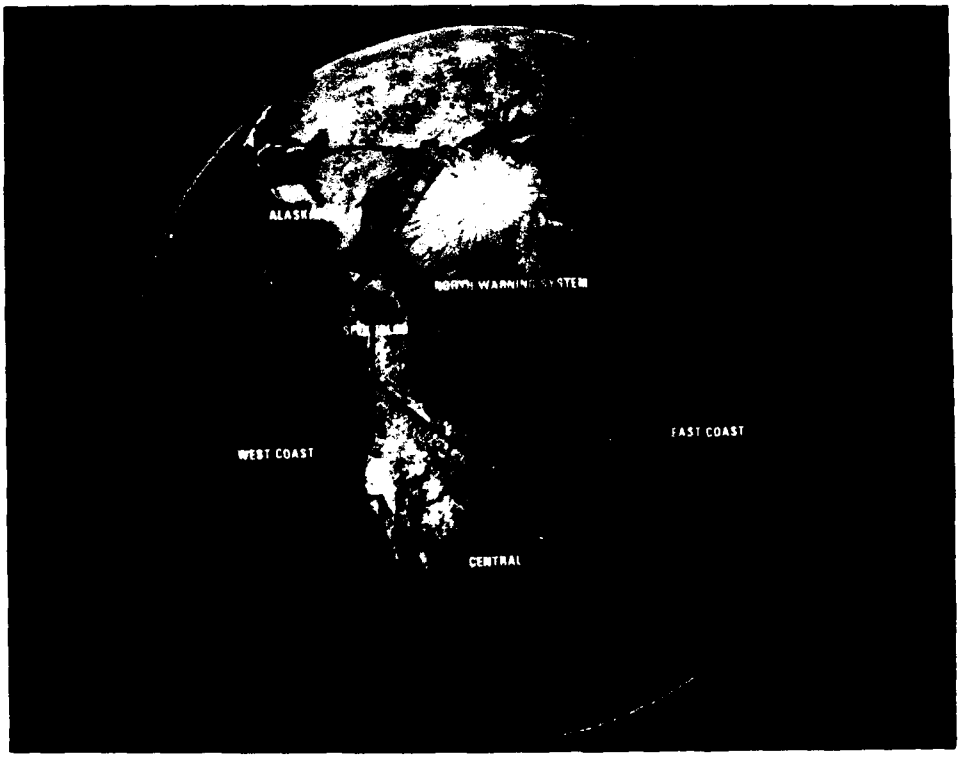
RECEIVE SITE ANTENNA AND BACKSCREEN — EAST COAST RADAR SYSTEM



OPERATIONS CENTER — EAST COAST RADAR SYSTEM

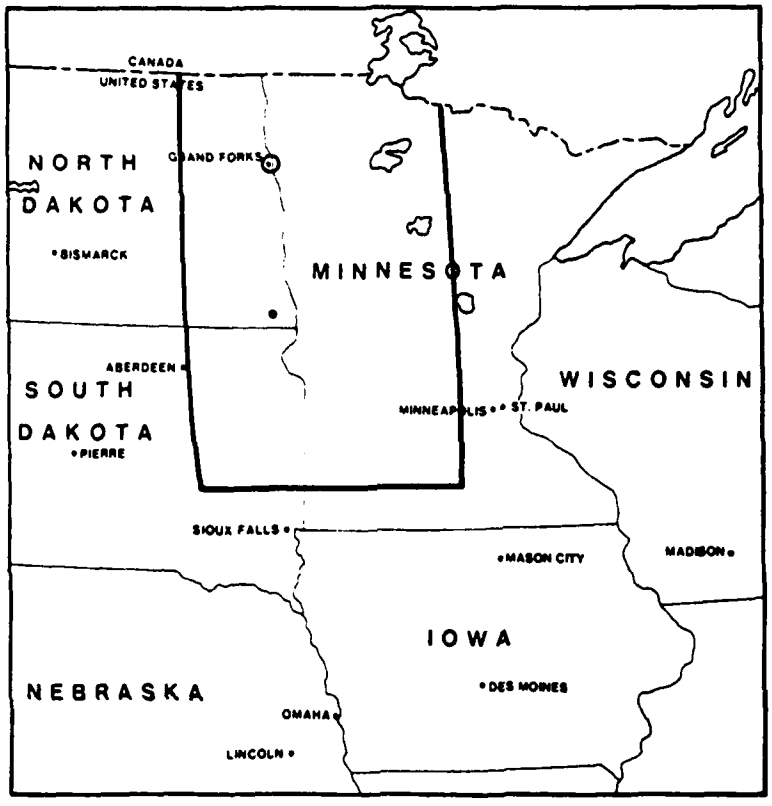


MULTIPURPOSE DISPLAY CONSOLE — OPERATIONS CENTER



SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS

SITE SEARCH AREA FOR THE CENTRAL RADAR SYSTEM



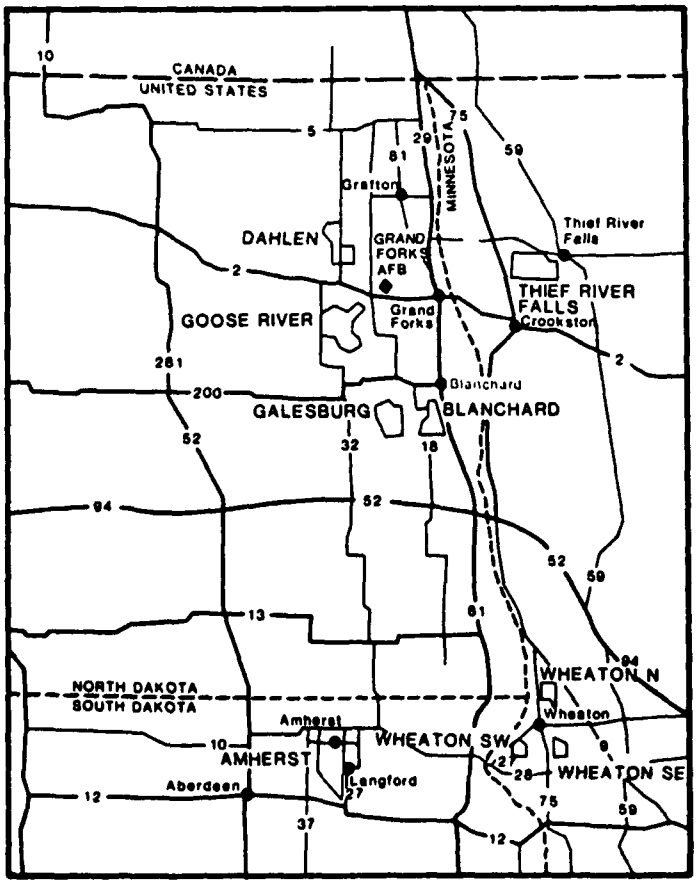
SITE SELECTION CRITERIA

- Sufficient land to accommodate four antenna arrays
- No obstructions rising more than 1 degree above the horizon
- Flat terrain, or terrain that slopes downward from the arrays
- More than 5 miles from high-voltage transmission lines
- More than 5 miles from population centers behind the antennas; more than 10 miles from centers in front of the antennas
- More than 10 miles from airways

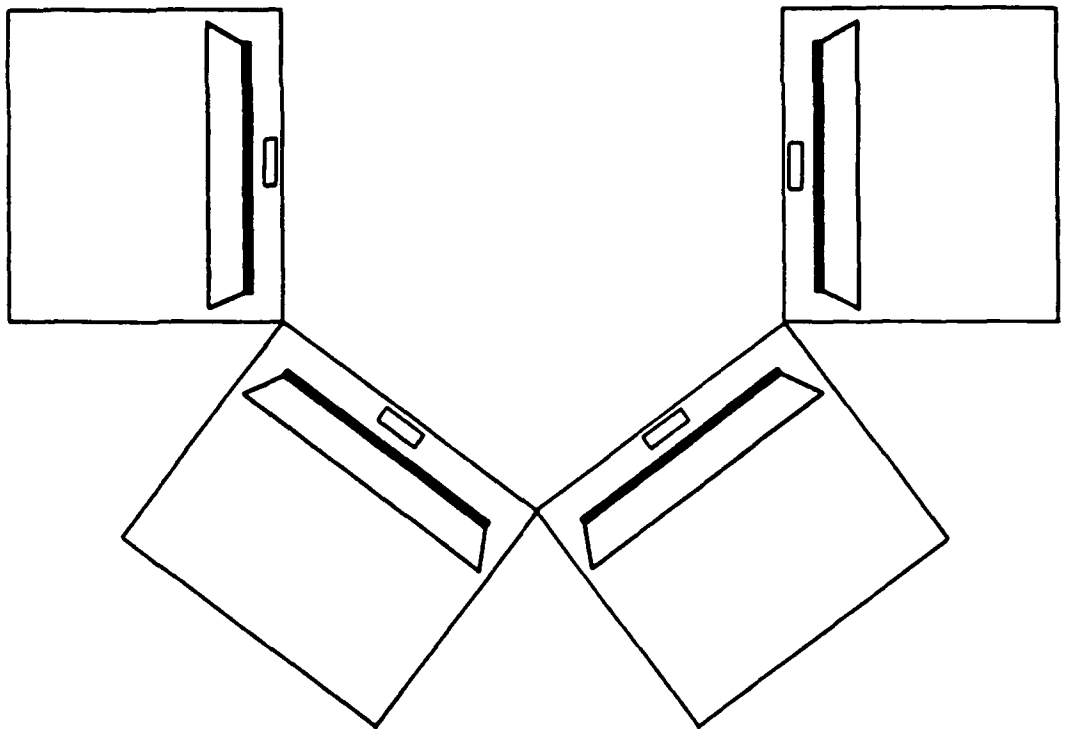
SITE PAIRING CRITERIA

- The receive site should be within about 125 nm of the optimum receive site location
- The receive site should be within about 50 nm of the operations center
- The operations center should be at an existing Air Force installation
- The transmit site should be no more than about 150 nm from the receive site and from the operations center

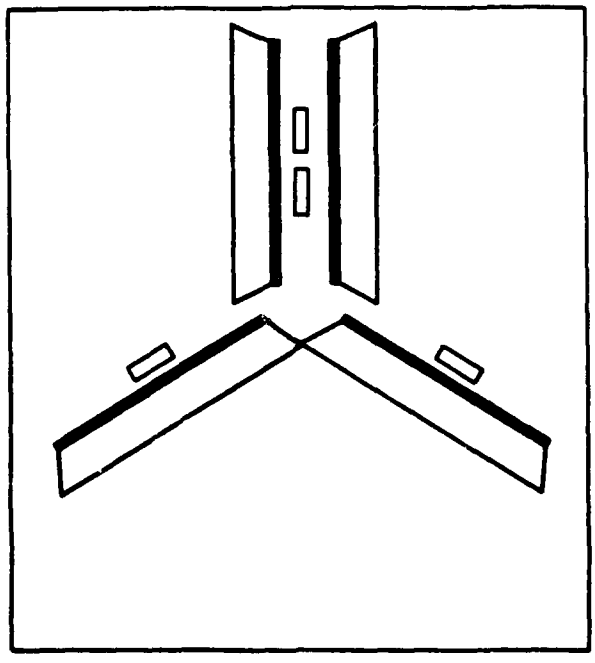
CENTRAL RADAR SYSTEM STUDY AREAS



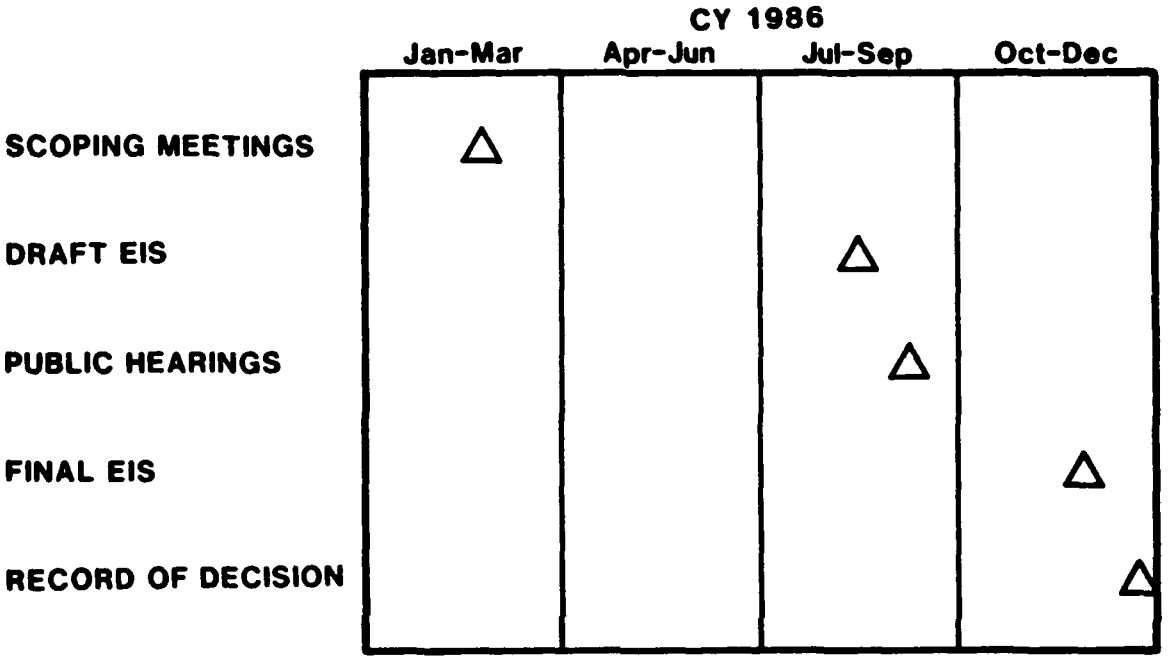
CRS Transmit Site Schematic



CRS Transmit Site Alternate Schematic



Environmental Impact Analysis Process (CRS)



AFFECTED ENVIRONMENT

- Land and Minerals
- Water Resources
- Vegetation
- Wildlife
- Air Quality
- Population
- Economy
- Housing
- Community Services and Facilities
- Aesthetics
- Cultural Resources
- Electromagnetic Environment (Interference)
- Human Health (Radiofrequency Effects)

LAND AND MINERALS

- Geology
- Topography
- Soils
- Minerals
- Seismology

TOPOGRAPHY

- Flatness of study area varies:
  - Moderate slopes at Dahlen, Goose River, and Galesburg
  - Flat at Blanchard, Thief River Falls, Wheaton areas, and Amherst
- Each antenna groundscreen requires 100-200 acres of flat land
- Extensive grading is undesirable because of:
  - Erosion
  - Drainage
  - Cost
- Erosion would be controlled by design and mitigation techniques

WATER RESOURCES - SETTING

- Few major rivers and streams
  - Transiant flow
  - Seasonal flooding
- Numerous streams, drainage ditches, ponds, and wetlands
  - Extensive seasonal standing water
- High groundwater table
- Serious drainage problems

WATER RESOURCES - IMPACTS

- Major water bodies would be avoided, if possible
- Existing drainage features would be used, where possible
- Small streams and drainages might be rerouted
- Potholes and ponds would be filled
- Water use requirements would be similar to current use
- Water quality would not be affected

VEGETATION - SETTING

- Wetlands
- Grassland
  - Nearly all the native vegetation replaced by cultivation
- Shelter belts
  - Typically along section lines
  - Provide animal habitat
- Wooded areas
  - Primarily in eastern portion of Thief River Falls area
  - Provide animal habitat
- Agricultural crops
  - Dominant vegetation in all study areas
  - Major economic factor

VEGETATION - WETLANDS

- Abundant throughout study areas
  - Near rivers, streams, ponds, and ditches
  - Prairie potholes common
  - Numerous in Dahlen, Goose River, Galesburg, and Wheaton SW
- Many seasonal
- Many drained for agricultural use
- Important as bird breeding areas
  - Waterfowl production areas maintained by state and federal agencies

VEGETATION - IMPACTS

- Avoid wetlands
- Avoid shelter belts and wooded areas
- Plant trees and natural grasses

WILDLIFE

- Birds

- Mammals
  - Deer, perhaps some elk and moose
  - Numerous small mammals
  - Large mammals kept out by exclusion fence
  - Avoid or replace habitat, when possible
  - No radiofrequency radiation danger

- Fish, reptiles, and amphibians
  - Few species and fisheries
  - Avoid streams and wetlands, when possible

BIRDS

- The central flyway is a major migration route in North America
- Birds feed in grain fields and wetlands
  - Areas also provide resting and breeding grounds
- Habitat impacts would be minimized by avoiding wetlands, when possible

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COLLISIONS

- Birds may collide with the antenna structure and backscreen
  - Migration versus local flight altitudes
  - Proximity to wetlands and feeding grounds
  - Visibility
- Collision potential could be reduced by:
  - Avoiding feeding and breeding areas when possible
  - Increasing visibility of antenna arrays
  - Properly illuminating arrays
  - Keeping records

SOCIOECONOMIC ENVIRONMENT

- Population
- Economy
- Housing
- Community services and facilities
- Aesthetics
- Cultural resources

ECONOMY

- Employment
- Income
- Tax base
- Agriculture

ECONOMY - EMPLOYMENT

- Construction employment
  - 250 peak, 100 average at each site over 3-5 years
  - Hiring by system contractor
  - Local, temporary hiring for certain skills
- Operations employment
  - 390 at operations center
  - 50 each at transmit and receive sites
- Small reduction in unemployment

ECONOMY - INCOME

- $15-20 million would be spent for construction for each transmit and receive site
- $2.5-4 million would be spent locally (~1-3% increase)
- $10 million of construction expenditures would be for the operations center (~1% increase)
- Employment income would add to local economies
- Wages would exceed lost farm income, but would be earned by different people and spent for different goods and services

ECONOMY - TAXES

- Land would be purchased and leased
- Land and buildings on purchased land would be removed from the tax rolls
- If all land were purchased, the tax loss would be less than 1% for a county
- The tax loss could be more significant for townships or special tax districts

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ECONOMY - AGRICULTURE

- Agricultural land would be removed from production
- The amount removed would be less than that removed annually in each county (except Traverse)
- Most land could be returned to agriculture after CRS decommissioning

ELECTROMAGNETIC INTERFERENCE

- HF band includes:
  - Amateur radio
  - Citizens' Band radio
  - International radio stations (e.g., VOA)
- Local and distant interference is possible
  - In-band
  - Harmonics (e.g., TV, VHF communication, VOR beacons)
- Operation of the Experimental Radar System caused no interference
- Mitigation measures include:
  - Seeking clear channels
  - Avoiding subharmonic frequencies
  - Employing the RF Interference Avoidance Plan

ELECTROMAGNETIC ENVIRONMENT

- Interference and hazards
- Human health effects

ELECTROMAGNETIC HAZARDS

- Cardiac pacemakers
  - No hazard beyond exclusion fence
- Fuel handling
  - No hazard anywhere
- Electroexplosive devices
  - Safe beyond exclusion fence if in metal containers
  - Safe beyond about 4 miles for handling

RADIOFREQUENCY RADIATION - HUMAN HEALTH

- RFR from the OTH-B system is similar to radio waves
- The exclusion fence would be placed so that exposure levels would be below the applicable standards
- The biological effects literature has been extensively surveyed
- No reliable scientific evidence exists to indicate that exposure to OTH-B RFR levels outside the exclusion fence is harmful

3.1.3 Submitted Materials

Materials were received from:

David A. Funston, President and Executive Director, North Dakota State Building and Construction Trades Council, Bismarck, ND

NORTH DAKOTA STATE BUILDING AND CONSTRUCTION TRADES COUNCIL

217 S. MANDAN ST.
BISMARCK, NORTH DAKOTA 58501
(701) 258-7340

TESTIMONY FROM DAVID A. FUNSTON

PRESIDENT & EXECUTIVE DIRECTOR

ND BUILDING & CONSTRUCTION TRADES COUNCIL

FOR RADAR RECEIVER SITE

BLANCHARD, NORTH DAKOTA

SEPTEMBER 9, 1986

I AM DAVID A. FUNSTON, AND I REPRESENT THE SEVEN THOUSAND (7,000) MEN AND WOMEN IN THE CONSTRUCTION UNIONS, IN NORTH DAKOTA, UNDER THE UMBRELLA OF THE AFL-CIO, PLUS THE CONSTRUCTION TEAMSTERS.

WE ARE HERE TO GIVE THE BLANCHARD SITE OUR FULL SUPPORT, AND WE CAN ASSURE YOU THAT WE HAVE PEOPLE FROM ALL CRAFTS WITH THE EXPERIENCE TO BUILD IT.

WE ARE PROUD TO SAY, THAT WE HAVE HAD A MAJOR ROLL IN ALL OF THE MAJOR PROJECTS THAT HAVE BEEN BUILT BY THE GOVERNMENT, IN NORTH DAKOTA, GOING BACK TO THE GARRISON DAM, AND WE WOULD WELCOME THE OPPORTUNITY TO BE A PART OF THIS ONE.

WE ALSO HAVE, HERE IN NORTH DAKOTA, SOME OF THE FINEST TRADE AND TECHNICAL SCHOOLS, IN THIS COUNTRY, THAT COULD PROVIDE GOOD, RELIABLE CANDIDATES FOR YOUR PERMANENT WORK FORCE, AT THESE INSTALLATIONS.

WE HAVE ALWAYS HAD A GOOD WORKING RELATIONSHIP BETWEEN THE FEDERAL GOVERNMENT AND THE NORTH DAKOTA BUILDING AND CONSTRUCTION TRADES COUNCIL, AND WILL CONTINUE TO DO OUR PART IN THE FUTURE.

WE WOULD LIKE TO THANK YOU FOR THIS OPPORTUNITY TO GIVE THIS TESTIMONY, AND WOULD ANSWER ANY QUESTIONS THAT YOU HAVE NOW, OR AT ANY TIME IN THE FUTURE.

President
Executive Director
DAVE FUNSTON
Bismarck, ND

Vice Presidents
WILLIAM COUCHIGIAN
Grand Forks, ND
RAY REINKE
Fargo, ND

Secretary-Treasurer
DICK BERGSTAD
Minot, ND

Trustees
JOHN BINA
Grand Forks, ND
EUGENE THOMPSON
Bismarck, ND
MIKE DRISCOLL
Bismarck, ND

3.2 Wheaton, Minnesota

3.2.1 Transcript

The hearing at Wheaton, Minnesota, commenced at 7 p.m., September 10, 1986.

Lt. Col. Clarke: Good evening, ladies and gentlemen. It is my pleasure to welcome you here tonight to this second public hearing on the Draft Environmental Impact Statement that has been filed by the Air Force and is currently being evaluated on the Over-The-Horizon Backscatter Radar System.

My name is Lt. Col. Leonard Clark. I am an active Air Force trial judge currently serving in the First Circuit located at Bolling Air Force Base, Washington, DC. I have been asked to serve as the presiding officer at this hearing to see that all parties having an interest in this matter receive a fair opportunity to be heard. The time which we have been allowed is from 7:00 until 10:00 this evening.

The purpose of your opportunity to be heard is twofold. First, it is to provide you with a chance to receive factual information about the proposed Air Force action and to ask any questions you might have about it. Thus, in this sense, this hearing affords the Air Force the opportunity to clarify points which may have been misunderstood in its informational filing. Second, and most importantly, your opportunity to speak at this public hearing also permits the Air Force to receive representative samples of public opinion as to the anticipated environmental impact on the proposed Air Force action.

Your comments may either be oral or written and will constitute an integral part of these proceedings. I am not here as an expert on this proposal or the Draft Environmental Impact Statement which has been filed on it. Although I have familiarized myself with the draft statement, my principal responsibility is to ensure that this hearing is conducted in an orderly fashion and is adequately recorded.

I have not participated in the development of this proposal and have not rendered any legal advice or assistance with respect to it. Likewise, I will not be making any recommendation or decision with regards to whether the Air Force proposal is to proceed, be modified or be abandoned.

With me here on this platform are Air Force officials who are extremely knowledgeable about the details of this proposal. At this time, I'd like to introduce Colonel Jim Lee, the Director of the Over-The-Horizon Backscatter Radar Program assigned to the Electronic Systems Division at Hanscom Air Force Base, Massachusetts and Dr. Sid Everett of SRI International. Gentlemen, if you would? Colonel Lee and Dr. Everett.

(The audience applauded as Colonel Lee and Dr. Everett rose to be recognized.)

Lt. Col. Clarke: Also with us this evening to assist Colonel Lee are several Air Force personnel and consultants to the Air Force that Colonel Lee will introduce at a later time.

In a few moments, Colonel Lee will brief you about the Draft Environmental Impact Statement, the "how's and why's" of the Central Radar System, and the anticipated environmental impact. Following his presentation, you will have the opportunity to ask him questions either about his remarks or about the Draft EIS itself.

The purpose of these questions is, of course, to clarify what he has said or that which is contained in the Draft EIS. You will have ample opportunity after the questions to make comments in either written form or orally in this public hearing concerning the accuracy of the Draft EIS.

Those of you who have already signed up to speak, and I'll get to that in a moment, may wish to reserve your questions for the conclusion of your comments. A verbatim transcript of this hearing will be prepared by Mrs. Kegler, a qualified court reporter, and will be used along with written statements which any of you may care to submit, in preparing the Final Environmental Impact Statement. This will be used by senior decision-makers of the Air Force in evaluating the Air Force proposal. The hearing is also being recorded by audio equipment to ensure that the record of public comment received this evening is accurate and complete. And I am here to ensure that also.

When any speaker is recognized, please state your name and speak clearly and distinctly and I'll ask you to come to the microphone that's located on the aisle to your left. That way, Mrs. Kegler can hear and record all of your comments.

Ladies and gentlemen, we have a couple of hundred forms. The way I'd like to do this--I know that there are quite a few of you who wish to speak. On the form, I'd like you to please print your name and your address at the top and indicate what area you have concerns with or wish to comment on.

Now, you may just check "I have a question," and that will be sufficient. I will put those in order and I will recognize the questions as time permits. Those of you who wish to submit a written statement may do so using the bottom and the back of the form. Those of you who wish to make an oral or public comment, you may check the block. I would like to know the area of your comment, whether you represent a political organization or a labor union or something like that, and then I will put those in some order so we're talking about, generally, the same concerns and you will be recognized.

I'll now explain the agenda for this evening's hearing. Pardon me, would all of you who wish to either ask questions--this may be ludicrous--or make public statements, raise your hand and two representatives will come by and pass them out now. And I'm probably going to have you keep them up for awhile. So if you'll just be patient, I'll continue to speak as you have your hands up.

I will now explain the agenda for this evening and outline the ground rules which will be followed. After Colonel Lee's remarks, we'll take a ten-minute recess in order for my court reporter to take a small break. We will then, during that break, either collect or ask you to bring down front these sheets that are being handed out to you. Those of you who wish to write written statements, they'll be filed with the report. Those who want Draft EIS's, they will be taken care of so we get them to you. Those of you who have questions or those of you who want to make statements, we will then cover that.

After approximately 15 minutes of questions and answers, and I understand that's a brief period, but I have to get into public comments before I go back to a question and answer session. But after Colonel Lee's briefing and the break, we'll have about 15 minutes of questions and answers from those people who submit Q and A's to me. We will then move to the presentation portion of this hearing where those of you who requested to speak will be given a chance to do so using, as I said, the microphone to the left.

If time permits, after having heard from all of those who who wish to speak, we'll attempt to close the evening with another question and answer session. Those who wish to make an oral statement this evening are asked to fill out the forms that are being handed out.

If you do not wish to speak, but merely wish to receive a copy of the EIS, there's a block for that on the bottom. Please just say so. Again, as I said, if you wish to make written comments and not public, please write those out and they will be considered. You may also use the card. Let me digress one minute. Realize, please, that neither oral nor written statements have any higher priority than the other. Each is afforded equal weight and will be fairly considered by the preparing officials on the Final EIS.

If you wish to speak, I will ask for strict adherence to the time restrictions for this hearing. Five minutes for elected public officials as well as those representing a group, agency or organization. Three minutes for those who are speaking for themselves. Only the first speaker representing a particular group will be allowed the five minutes. So, therefore, if you wish to have a speaker for your group, identify him as such when you fill out the form.

All others representing that group will be allowed three minutes. We can't switch time; we can't save time and give it to somebody else. Lieutenant Gale Brown, down in front, will assist me in keeping time. I will indicate to you 30 seconds prior to the time running out and I will strictly adhere to the times that I have set up. The times, as I say, cannot be transferred.

I will attempt to group the speakers with similar areas of environmental concerns together so that each speaker and each question will be in the same area so we can finish that area. Those who wish to submit written statements tonight may do so, as I say, either on the form or mail their comments to the address on the bottom and I'll also give it to you for those who did not get one of the handout questionnaires. The address is Headquarters Electronic Systems Division/SCO, Over-The-Horizon Backscatter Systems Program Office, Hanscom Air Force Base, Massachusetts 01731, Attention: Lieutenant Brown. These must be submitted within 45 days, after the public comment period, and that public comment period ends on October 6, 1986.

Finally, as hearing officer, I want to briefly remind you of the twofold purpose of this hearing. First, to provide the public with additional means of presenting information and your comments to the decision-makers on the environmental impact to your community that may result from this proposed radar system. Second, it provides you with an opportunity to receive factual information about the proposed action and to ask questions of knowledgeable persons about the project.

However, this is not a trial, ladies and gentlemen, nor is it a courtroom for cross-examination of the speakers or the agency representatives. It is not a debate. It is not to obtain a vote. I ask that you refrain fron applauding or reflecting displeasure with the comments of any speaker as such actions tend to detract from the purpose of this hearing and can interfere with everyone's ability to freely be heard and express their views.

I now present Colonel Lee, the Air Force representative of the Backscatter Radar System.

Colonel Lee: Thank you, Colonel Clarke. Ladies and gentlemen, it's a pleasure for me to be back here in Wheaton, Minnesota, to take part in these formal public hearings. If I could make a very brief administrative announcement. There is a red Chrysler with license plates MLN-336, Minnesota plates. Your lights are on.

In the presentation tonight, we would first like to briefly review the environmental analysis process that we have been going through. Second, I would like to give a very brief description of the system characteristics, the basic purpose and scope of the Over-The-Horizon Backscatter Radar Program and in particular, the proposed Central Radar System.

Dr. Everett, who was introduced, will then follow and present a summary of the environmental concerns that have been identified and documented in the Draft Environmental Impact Statement. I will then conclude with some final remarks and that will end the formal presentation part of this public hearing.

Before beginning my presentation, however, I would like to introduce a few of the additional government people who are here to assist us in the process tonight. First of all, Dr. Gordon Guttrich. Dr. Guttrich is a systems engineer, a part of the Mitre Corporation who has had the general systems engineering responsibility on the Over-The-Horizon Radar Program since 1970. Dr. Guttrich has been associated with the program for approximately ten years, including the first Experimental Radar System--the East Coast [Radar] System and has been active as an engineer in the west coast and remaining OTH systems as well. Dr. Guttrich, would you please stand? (Dr. Guttrich stood.)

Then a couple of additional experts that we have brought with us tonight. When it comes to the matter of land acquisition, that responsibility falls with the Omaha District Corps of Engineers. They will be the land acquisition agent for the Air Force. That district is located at Omaha, Nebraska, and the Chief of the Real Estate Division is Mr. Gary Blair. Mr. Blair, would you please stand? (Mr. Blair stood.) Mr. Blair would have the overall responsibility for the acquisition of land either by purchase or by leasing. The actual negotiations, however, that would take place with individual landowners, will be handled out of the Riverdale, North Dakota, Real Estate Field Office. That office is under the supervision of Mrs. Jackie Bratz. Would you please stand? (Mrs. Bratz rose.)

When the decision and if the decision is made to proceed with the Central Radar System and when Congress funds the money for the acquisition of the land or for the leasing of the land, then this office of the Corps of Engineers, the people that I have identified to you tonight, will be those people that you would be directly dealing with. Also, they will be an additional source of information or for the questions you have at any time over the next several months or actually, over the next year or more before any process for the acquisition purchase or leasing of land would take place.

The proposed action that we're dealing with tonight is the construction and deployment of the Central Radar System. As a part of the environmental impact analysis process, you, the public, have been assisting us in identifying and determining those environmental impacts that would result from this major action. And therefore, under the National Environmental Policy Act, we are required to go through this formal process--we in the Air Force identify the environmental impact analysis process. It consists of several steps with the basic objective to help us determine how best to proceed with the construction and deployment of the Central Radar System.

To describe that process, I'll show you those key milestones. Could we have the lights, please, and we'll start with the slides.

We have already conducted this series of scoping meetings to identify the fundamental concerns of the Draft Environmental Impact Statement that has been published. We hope that all of you either have a copy or will have access to a copy through town offices, libraries or other people who have been on direct distribution for the copies. The series of public hearings, and this is the second of three, is another major milestone in that process. It was identified by Colonel Clarke that a verbatim transcript of tonight's hearing will form a part of that Final EIS, as will any additional comments, answers, investigations that we do as a result of additional information that is identified here tonight. The Final EIS will be published the latter part of November. The record of decision, which will be made by the Office of the Secretary of the Air Force, will not take place until the end of December.

As I identified it, the proposed action is the construction and deployment of the Central Radar System. We show here the complete OTH-B system consisting of four separate radar systems. (Colonel Lee referred to the 35 mm slides on the screen.) The East Coast [Radar] System has already been fully approved and funded. It is nearing completion of construction, and the first sector in the northeast is now under test. That same area to the northeast is where we constructed the Experimental Radar System beginning in 1975. From 1980 to 1981, we operated that system and gathered data confirming the ability of the system to perform its intended role. That role is the detection and surveillance of aircraft that would approach the North American continent out to the extremes of those boundaries that are shown. That extreme is some 1,800 nautical miles away from the coast.

The West Coast Radar System has also been approved and Congress has authorized the funds for the first of the three sectors. Construction of the Operations Center started in the middle of June. The contract award for the construction of the transmit and receive sites will take place very shortly.

The Central Radar System, then, is the proposed action that together with the proposed Alaskan [Radar] System and Seek Igloo in the north, and the North [Warning] Radar System, will provide the protection around the continental United States. The reason for the importance of this is visualized here in this artist's concept of a Soviet Union's Blackjack long-range strategic aircraft. But more than an artist's concept, this aircraft is currently in the flight test stage and the Soviet Union could have it in operation by the end of the decade.

In addition, we have a large number of Soviet Bear aircraft. They're turboprop aircraft but they still have the range capability. And in this current version here, the Bear H, they have the needed range and the ability to carry air launch cruise missiles. On a regular basis, these aircraft approach the continental United States. In this

case here, you see an Alaskan Air Command F-15 that has tracked and approached close to the Soviet aircraft. Similar occurrences take place off the northeastern part of the United States and we have had Air National Guard aircraft from Fargo, North Dakota, on alert status, that have made similar intercepts with these Soviet aircraft.

The Soviets are continuing their program to increase their long-range strategic aircraft. As such, those aircraft, with the systems we have today, can approach the United States as close as 200 miles before they can be picked up or detected by our existing microwave radar systems. The OTH system will allow us to begin detection and tracking of those aircraft out to distances some 1,800 nautical miles away. This added distance means added time--time for negotiations, time to provide notice to our public, time, if necessary, to increase the alert status of our own forces. But principally--time for our national authorities, the command authorities, to best determine the conditions and situations that will allow us to maintain peace. That is the ultimate objective of the system as well.

The East Coast [Radar] System, as I mentioned, is nearing completion and is currently under test. I would briefly like to show you some pictures of that hardware, because a similar or same kind of radar equipment transmit and receive antennas, would be located here for the proposed Central Radar System. This is the surveillance zone provided by the three transmit and three receive antennas for the East Coast Radar System--an entire 180 degree surveillance area extending out to 1,800 miles away.

The transmit antenna is shown here. The antenna is approximately 4,000 feet long. The tallest part of the structure, off to your left, is 135 feet tall. The shortest span is some 35 feet tall. This is another view of that same transmit sector for the East Coast Radar System. Again, you see the length of the antenna. I also point out that the area now has been reseeded and vegetation is growing back in in front of the antenna.

I also call your attention to the fence that is constructed entirely around the transmit zone. The exclusion fence is to supply security as well as to ensure that outside the fence there is no danger associated with the radiofrequency energy of the transmit antennas. And that topic will be addressed more by Dr. Everett in a few minutes.

This is the receive antenna. The backscreen is the portion to the right. It is some 65 feet tall running the entire length of the antenna. The receive antenna elements themselves are in the left portion. They are 19 feet tall, and the entire antenna for the Central Radar System will be approximately 8,000 feet long.

This is the Operations Center at Bangor Air National Guard Base, Bangor, Maine. A similar Operations Center is proposed to be located at Grand Forks Air Force Base for the Central Radar System. The signals from the receive antenna are picked up by the white dishes that are

shown in this photo. And that signal information, then, is sent into the building where the computational capacity is there to take that data and to translate to specific aircraft tracks which are then displayed to the radar system operators.

On the right-hand side, there, is that map of the northeastern part of the United States, a 60 degree sector, which is covered by the one transmit and the one receive antenna. As an aircraft is detected and tracked, it is carried forward on that display. And there are appropriate markings that identify for the radar system operator. And when that track has been correlated with a known commercial airliner or other known aircraft, then that information is also identified to the operator.

The system keeps track of the known pilot position reports and flight plans so that we're able to do this correlation on an automatic basis. What we are concerned about, and the primary emphasis, is to detect that large number of Soviet aircraft that could be massing an attack against the North American continent.

Going back to the visual schematic, then, of the entire system, I would like to talk briefly, in the next section, about why it is that we have picked a particular area in the northcentral part of the United States for the Central Radar System. You will notice that both the East Coast and the West Coast [Radar] Systems have an area right off the coast where we do not provide coverage. There is a certain minimum angle that the HF, high frequency radio beams can be sent up towards the ionosphere and reflect back down to provide us a detection capability. To provide an overlap with both the East Coast and the West Coast [Radar] Systems to fill in that gap as well as to provide linkage with the North Warning System, that small circle that's furthest down on your right, and also to provide a complete continuous coverage then, from a single site, the geometry ended up leading us to a specific area in this part of the country. Within that area, then, we need to locate both the transmit and the receive antennas.

That area is shown here. The dot in the southeastern tip of North Dakota is that ideal location where the geometries all match to provide an equal overlap coverage for both the east and the west coast and to provide the other linkages that I mentioned.

There are a number of additional criteria, then, to try and identify the study areas and designate them as transmit or receive site study areas. These criteria are summarized here. First, sufficient land, and by that we need approximately 2,400 acrea for the four receive antennas and 2,400 acres for the transmit antennas. The land needs to be relatively flat with no obstructions of no more than one degree above the horizon. We need to be more than five miles from any high voltage transmission lines and we want to be more than five miles from any population center behind the antenna and more than ten miles away in front of the antenna to ensure that we do not have interference from

sources on the system and also, similarly, to ensure that there is minimum interference, or any EMI, electromagnetic interference, that may result from the transmit antenna. This is a topic, also, that Dr. Everett will discuss in a few minutes.

Finally, we want to establish the location of the antennas at least ten miles away from any airways. With these criteria, then, a large number of candidate study areas were defined. The particular pairing of those study areas occurred using this set of criteria. First, we need to have that receive site no more than 125 miles from that optimum location that I identified for you. Beyond that point, we lose that overlap. We lose the accuracy that we're after in providing that complete coverage.

Because we use those tropo dishes to send the return energy from the receive antennas to the Operations Center, the distance from the Operations Center to the receive antennas needs to be no more than 50 nautical miles. There are a large number of people, approximately 400, associated with the Operations Center. For that reason, we need to locate the Operations Center at an existing military installation. The only military installation within the area I showed you is Grand Forks Air Force Base, and that is the reason that that is the proposed site for the Operations Center. As result of that, then, we identified a number of study areas clustered around Grand Forks for the receive site.

Finally, then, the transmit site needs to be between 50 and no more than 150 miles from the receive site and the Operations Center. That set of criteria resulted in identification of the particular study areas here. Grand Forks Air Force Base is noted and the five candidate study areas for the receive sites: Thief River Falls, Dahlen, Goose River, Galesburg, and Blanchard. And to the south we have identified four separate candidate study areas for the transmit antennas: Wheaton North, Wheaton Southwest, Wheaton Southeast, and the Amherst area.

The final decision to be made at the end of December will select one of these receive study areas for location and specific siting of the receive antennas and one of the four locations for the transmit study area. Again, specific siting of those transmit antennas would take place after that time.

This is the concept of one of these siting alternatives, a schematic of how those four antennas would be laid out for the Central Radar System. Each one of those transmit sectors is approximately 5,000 by 5,000 feet, about 600 acres. The heavy black line is the transmitter itself. The area in front of it is the ground screen that extends out about 750 feet. It's laid out over the land which has been cleared and graded in that area. And then, as I mentioned, natural vegetation can grow back in.

There is a fair amount of flexibility, however, in how these individual four sectors are located. An alternative configuration, one that would place all of the four sectors within a single area, is shown here. That area would be approximately two miles by two and one-third miles.

This is the schematic of the receive antenna sectors. Each of the four sectors is approximately 10,000 feet long by 2,600 feet. Again, about 600 acres each. As I emphasized, the conclusion of the environmental impact process would be, then, the selection of one of those areas, the top areas for the receive site, and one of the four south [areas] for the transmit site. At this point I'd like to then turn this over to Dr. Everett to discuss the environmental concerns.

Dr. Everett: Please leave the lights down. In the preparing of the Draft Environmental Impact Statement, we were in the business of describing the environment of these study areas and of the impacts which we thought might occur if construction and operation of this OTH radar system was undertaken.

To do the job, we divided the environment arbitrarily into these categories. These correspond to the major subdivisions of the EIS, Sections 3 and 4, in describing what's there and what the impacts might be. Tonight I will not talk about all of these topics. I will talk about a few of them and within some of them, only one topic or so.

To begin with, I'll talk about topography which would be largely in the category of land and minerals. Most aspects of the environment of land and minerals have no influence on the impact as they compare from study area to study area. But topography does vary from study area to study area. And I'll focus on this just briefly to say that because topography or because erosion is connected to the relief of the land, topography is of interest here both for the amount of earth that might have to be moved to prepare the site and the amount of erosion which might be created in the process.

You can see the summation, how the topography varies among the study areas. Given that erosion is a prospect within construction, it is an objective to minimize the amount of earth you move because the erosion would be promoted. There could be several drainage problems and there are drainage problems in these areas that we have examined. The cost could become quite large depending on how much earth has to be moved wherever the system is constructed.

There would be efforts made to reduce the amount of erosion that would occur by good design practices. For example, in the design of the perimeter roads or any drainage ditches which have to be employed, we would also use measures such as silt fencing, water spraying to keep down dust, prompt revegetation to limit the amount of water or wind erosion.

Moving on to the water resources area, I jump to the impact aspects rather than describing what's out there. These are rather sizable sites. The major way to avoid impacting surface water bodies is to avoid them if at all possible, as well as any drainage features, ditches, culverts that are out there. It is true, however, that for at least the ground screen portion of the sites, that any small streams or drainages that exist there would probably have to be filled in order to properly support the ground screen and minimize the amount of water ponding on it. And potholes and ponds that happen to be there would be filled.

The next to the last there (indicating the slides) refers to the amount of water required in the operation of the system. There will be approximately 50 personnel employed at the transmit site, which is the site which might be constructed in the Wheaton area. There, domestic water requirements are very similar to the amount of water that is currently used by the residents of the area. So there is expected to be no significant increase in the amount of water use. The water that is used would be properly treated before disposal according to the applicable laws and regulations of every state. So we do not expect there will be any impact on the water quality of the area.

The key vegetative feature of these study areas is the wetlands. The natural vegetation of these areas has almost entirely been turned into agricultural crops. But in the vicinity of rivers and streams and in low lying areas are wetlands--some temporary, many permanent. They and the shelter belts or wooded areas that do exist provide the animal--including bird--habitat for the wildlife in the area. They are important bird breeding areas. In order to minimize the effects upon the vegetation, primarily for habitat protection, it's the Air Force's intention to avoid wetlands whenever possible, and, of course, the other more valuable natural vegetative features. It is also under consideration to consider the creation or substitution, or perhaps replacement is a better word, of features that are removed in the course of construction where it might involve planting trees, or reseeding the areas included in front of the antenna with natural vegetation.

There is a variety of wildlife--large animals, small animals--in the area. The key feature about the system that influences the large mammals is the exclusion fence which is designed to keep them out so that they would not get into the groundscreen area and possibly damage it or get tangled in it themselves or do harm to themselves. Small mammals would be able to get within the exclusion fence, and we foresee, on the basis of evidence that we've examined, no effects on them from the radiation--the radiofrequency radiation that is emitted by the transmit site. Of course, in the receive site, that is not an issue.

In the case of birds, we're dealing with a situation in which we're here- or right among, I should say- the various parts of the central flyway. In addition to the wetlands, the grain fields are attractions

for these migrating birds as well as local birds. And, once again, the goal is to minimize the effects on the birds by minimizing the effect on the wetlands.

There is, however, a particular aspect of both the transmit and receive sites which figures in the risk to the birds, and that's the possibility of collisions with the antenna structure. Whether birds collide with any structure of this size or similar size depends on a number of factors--things about the birds themselves--whether they are migrants flying at high altitudes or migrants that happen to be setting down or taking off near the antenna for resting or feeding purposes--how close the antennas happen to be to wetlands or other areas that are attractions to birds--and finally, how well the birds can see this structure.

There is considerable interest about the true risk presented here. However, we don't expect this to be a major impact on the bird populations. We expect that the collision potential can be reduced by measures such as staying away from wetlands and other traffic areas, increasing the visibility of these arrays and the implications, or keeping records. A better way of saying that is simply paying attention to whether collisions appear to be a problem, and how well the measures we are taking to minimize the problem are working.

Moving on to some features dealing with the economy--first--employment. The construction employment will average approximately 100 over the period of time the construction takes place. Perhaps as much as 250 during the second year. The hiring will be done primarily by the system contractor. That's the company that will put in the major hardware portions of the radar. It's hard to say now what the mix of hiring would be as far as local or nonlocal, but certainly, there would be some local hiring. In the case of employment after operations have begun, we're anticipating that 50 people would be employed at the site, and there are prospects for local residents to be hired into some of those positions. However, given that the numbers that are going to be employed are fairly small relative to the existing labor force in all of the areas of interest, the effects, whether it has to do with unemployment or general economic improvements, are actually quite small. Generally, the numbers that we have estimated are on the order of several percent. In Traverse County, for example, I believe we're estimating on the order of two to three percent. The number of 50 employees represents two to three percent of the existing labor force.

And in income, I'm referring to both the wages received by the employees and money spent for other services or materials. Now, a substantial amount of money is spent for other materials and services as well as wages. We expect that out of the total contract, a relatively small portion would be seen directly by the communities in the vicinity of the transmit and receive sites- as you can see, on the order of three or four million dollars for the transmit site. That represents about one to three percent of the total income of this general area.

An important point to make is the last bullet, which is--that although there would be a loss in that farm income, the employee wages would exceed that income. In other words, there's a net benefit to the region. However, those wages would be earned by different people, typically, and spent for different services.

Finally, on the tax question--in the acquisition of land for the transmit and receive sites, both leasing and purchasing were considered. In the case of the land that is purchased, it would be removed from the tax rolls. Considering the county as a unit, the amount of land involved really represents on the order of one percent of the land, so that the effect on the county tax revenue is rather small. However, for particular townships or special tax districts, the impact could be significant--perhaps as high as 18 or 19 percent of the revenue. However, that presumes that all of the land that's been mentioned--that is to say, 2,400 acres is purchased, and all of that land falls totally within the particular tax district under consideration.

I'd like now to talk a little bit about the electromagnetic radiation from the transmit antenna. First of all, I'd like to point out that this operation, the so-called high frequency band of the electromagnetic spectrum--other occupants of that particular band include amateur radio, citizens' band radio and international radio stations like the Voice of America. Interference from the transmitter is possible, both local and some distance away. The very principle that allows the radar to be useful in seeing over the horizon is the same principle that allows the signals from the transmitter beyond the horizon, and possibly can interfere with something.

There is the possibility it would interfere, both within the band or near the frequency that it's operating, and perhaps at other frequencies--that has to do with the harmonics. There is a frequency that is a multiple--that is, two or three times the frequency on which the radar's operating, and it's possible to interfere. There are some systems such as TV, navigational beacons or other forms of communication that do have that kind of relationship. It's possible to interfere with the radar. However, there has been experience with the so-called Experimental Radar System, which is the predecessor of the East Coast Radar System. During this testing, no reports of interference were made that were valid, that is to say, that the radar was operating at that time. There are also some well-established ways in which to minimize the interference. They include the three dashes at the bottom there. First, the radar, when it operates, excludes the operation of bands already authorized for other users of that general spectrum. In other words, the radar does not operate on the amateur bands or citizens' band radio frequencies or the VOA frequencies--frequencies already established for other systems.

In the case of problems that may come from harmonics, the radar will avoid those lines of frequencies that could cause that interference. The radar is programmed to lock out and not transmit on certain frequencies that could possibly interfere.

Finally, the Air Force has prepared and planned for dealing with reports of interference as well as to avoid interference in the first place. Interference, although possible, has not been experienced and therefore is considered unlikely, and in any case, avoidable.

There is a certain class of hazards which go with the emission of this energy. These three are the major ones. No hazard is expected to cardiac pacemakers as long as they're outside the exclusion area. No hazard to fuel handling which would be normally done in the vicinity. And finally, there are no hazards to the use of what are called electroexplosive devices--blasting caps is another term sometimes used for the class of them--if they are being transported in metal containers which are made for the purpose of transportation, so they are protected. There is no problem outside of the exclusion fence.

There is the possibility of accidental ignition of these devices if they are being handled and they're unshielded, as in the preparation for use. In that case, the Air Force would make an effort to inform all the authorities and people in the area of things of which it considers are unsafe to use the equipment, and that's approximately three to four miles in front of the antenna.

And finally, I'd like to talk a little bit about the effects on human health. As I've indicated, the emissions from the transmit antennas are very much like radio waves. Their power is quite similar. The exclusion fence is going to be established so that the energy, at the exclusion fence, will be well below that recommended by the applicable standards as safe. We have extensively examined the nature and, in fact, have separately been under contract to a different part of the Air Force, to examine radiofrequency radiation on radar devices and other similar devices. So we've looked quite extensively at the literature. And the conclusion reported in the EIS is that there isn't any evidence to indicate that this is going to be a hazard presented by the operation of this radar outside the exclusion fence.

I'll turn it back now to Colonel Lee to conclude.

Colonel Lee: This is the summary schedule for the conclusion of the environmental impact analysis process. The key milestones that we have been through are identified. And the next two coming up are, as I summarized at the very beginning in the presentation, are the publication of the Final EIS and the Record of Decision.

The period from now through the 6th of October is for the comment period relating to publishing the Draft Environmental Impact Statement. It was emphasized by Colonel Clarke in his beginning remarks, that the written input you give us carries the same weight and is just as

important as any statements that would be made here at this public hearing. But going even beyond that, any written statements that you would still continue to prepare and send in to us will be included in that Final Environmental Impact Statement. And they will carry the same weight and will be considered and analyzed in the same manner as the proceedings that we have here tonight.

Last night we had our first public hearing at Grand Forks. That public hearing was to allow written and oral comment for all of the receive study areas shown. The meeting here tonight is to consider that same type of public comment on the three specific transmit sites identified around the Wheaton, Minnesota, area. Tomorrow night we will have the final public hearing at Langford to address the receive study area in that part of the country.

The information is then documented in the Final Environmental Statement and, together with some additional factors, will be used by the Office of the Secretary of the Air Force in making that final decision. Some of these additional factors which are not directly related to the environmental concerns but which still are important are the ease of construction among the different study areas, the cost of construction, the cost of land, whether land purchased or land leased, and in the case of land which is leased, I want to add a postscript to one of the items that Dr. Everett was talking about. There would, in that case, be no tax loss to the districts--to those taxing areas--because the land would remain owned by the landowner and he would continue to pay taxes from that--from the lease payments that would be made to him by the government.

In addition to these factors on the cost of the land purchased or leased is also the matter of their availability of the land and the ease of acquiring or leasing that land. I know that many of you are here tonight to make comments in regard to that point. I would also invite others, between now and the closeout period, or anytime, really, for the next several months, if there is specific information you have indicating either your opposition or willingness to negotiate with the government for land that you have available, that information then could also be used in this final decision process.

This concludes our presentation on the environmental impact analysis process, a description of the system and a summary of the major environmental concerns that have been identified.

The Central Radar System is an important part of this complete OTH system. As I mentioned, we are already committed and have approved and are getting ready to deploy the first of the four systems. We're starting construction on the second of the four systems. The proposed Central and Alaskan, then, are necessary to complete that network of key systems to provide that important long-range detection and tracking. Thank you very much.

Lt. Col. Clarke: Ladies and gentlemen, those of you who wish to present questions, will you hand them on this side. Please, the questions, and those who wish to have public comment pass them down on this side please. As I indicated, we're going to take five minutes and come back in at three or four after. We'll start the question and answer session in about 20 minutes, then public comment. Thank you.

(The hearing was recessed at 8 p.m. and reconvened at 8:08 p.m., September 10, 1986.)

Lt. Col. Clarke: I'm taking questions. I know I've only got about six questions and I've got about 60 requests for comments so we'll go through the questions. Douglas Byrd.

Mr. Berg: My name is Douglas Berg. I represent the Minnesota Pollution Control Agency. We are one of the people who received your mailing of the draft of the Environmental Impact Statement. We'll be making a written comment--brief comments on the adequacy of the document. At this time, I'd also like to ask questions.

One of the things that happened was, we were listed on the direct distribution list but the Minnesota Department of Health was not and they are the appropriate agency in the State of Minnesota for looking out for public health as related to the portion of the document that deals with health effects. I have had copies sent to them so they will be making a comment on their own. Their comments will be included with ours.

What I'd like to know, is there a particular reason why they were excluded?

Colonel Lee: No, there was certainly no reason why they or anyone else was excluded. It was an oversight and an omission on our part. We're sorry for that. Thank you very much for making sure that they did have a copy available to them. Thank you.

I might also add that we do have some additional copies here tonight--only a limited number. And if you do want to pick one up, we will need to get your name and address so we can have it for the record, and be able, then, to followup also with the final copy. But, yes, we'll make sure you get an extra copy. Thank you.

Mr. Berg: Okay. I have an additional question. You mentioned harmonics. Harmonics are multiples of the frequency. If you're broadcasting your radiofrequency for your radar, I was wondering if you had looked into the effects of harmonics possibly reaching a range where they would have an area of greater potential for human absorption and whether the strength of the radiation at that harmonic level has been considered and whether there would be any human health effects?

Colonel Lee: I'd like to have Dr. Guttrich answer that. Dr. Guttrich?

Dr. Guttrich: The harmonics are typically to be reduced by one hundred million times. There's essentially no radiation on the harmonic frequency level that would represent a health risk. There are potential interference effects. It's very sensitive equipment as was noticed, but it's way below and wouldn't be a problem from the health point of view.

Mr. Berg: I'm sure I won't be the only one to ask this. Will the fact that there is a radar installation in the community make the radar installation a target for a nuclear strike? Would you be addressing the effects of such an attack?

Colonel Lee: You're correct, that question has been asked repeatedly at every meeting and from different media people who have contacted us as well. The answer that we have given is always the same. The basic purpose of this type of system is to provide long-range detection and warning of an attack--warning several hours before we have any other indication of impending attack against the United States.

For the Soviet Union to consider striking and destroying this early warning system would, in itself, provide that kind of warning and therefore, call for that increased alert status that really otherwise would not have taken place. It's difficult to imagine any scenario where there would be an advantage to a first strike basis to take out this early warning system. That, in itself, would provide the early warning.

Mr. Berg: Thank you. That's all my questions.

Lt. Col. Clarke: Christine Borsheim, B-o-r-s-h-e-i-m. I hope I didn't butcher your name too much.

(No response from anyone in the audience.)

Lt. Col. Clarke: We'll take the next one. Mr. Mark F-r-i-d-z.

Mrs. Borsheim: Am I supposed to pronounce my name or spell it?

Lt. Col. Clarke: Pronounce it.

Mrs. Borsheim: Borsheim--Christine Borsheim. I have two questions actually. The first one is when would the funding decision for this essential operation be made and who was responsible for introducing that legislation or the decision that's got to be made?

My second question is--reading the impact statement that was sent here, many of the health hazard concerns were answered by "no significant evidence is now available." If the Wheaton site was

selected, would there be a possibility of a health study being conducted prior to construction throughout the area and throughout the years of operation in order that future generations might be able to seek some type of compensation if there are health hazards actually in effect?

Colonel Lee: Let me first answer the question concerning the funding. The Air Force plans, at this point, to request funding in the FY 88 defense budget. That would be a part of the present budget that would be submitted to Congress the first part of this next year, sometime after January 1987. So that period, all the way through October, would be that time when Congress would normally consider, debate and finally, both authorize and appropriate the funds for the program.

So the earliest that legislation would take place would be for the FY 88 defense bill. That would finally be approved by Congress late next year. Currently, we have a request in the FY 87 budget for the funding to complete the West Coast Radar Systems. There are certainly a couple of options that are under consideration by the various houses, both the Senate and the House in Congress. There is a possible scenario that would have us receive approval for funding of only one sector in FY 87. If that were the case, the budget request for the Central Radar System would be delayed until FY 89 and, for this entire process I just described, would take place one year later.

Your second question or comment also really concerns what type of long-term impact might we have as a result of this system. As I described before, the Experimental Radar System was tested in 1981, but there was a lot of development work that preceded that as well. We've had experience with this type of system and it really goes back to the early '80s with a lot of calculations as well as measurements. The conclusions that are in the Draft Environmental Impact Statement, we feel, are the correct ones. There is no evidence to suggest long-term concerns. In the sense of taking on a major study at this time to try to determine what would next take place, we'll take your comment down and we'll consider that, but I can't make any further comment or commitment on that right now.

In the experimental site, was the area populated? Were there people living near the site itself was the question. There were no homes or farms, as we have in this situation, there. So it could be different in terms of that transferring to this area. The same information we have now may not apply to this area in that regard. The same information in either case would be--what is that minimal acceptable power density level? Those calculations and measurements were made back then. There is no evidence to suggest a difference in opinion--whether there were people living around that area then or not. As I said earlier, we'll take this down for the record and provide some additional information on the Final Environmental Impact Statement.

Lt. Col. Clarke: I have a question from a Mark Fridgen.

Mr. Fridgen: I know you talked about these studies and really, it doesn't even pertain to us because there's no system set up as big as the one you're going to put in Wheaton here. I don't see how anything can be even close to pertaining to us because everything is like it says, "no reliable evidence exists that chronic exposure of humans to this radiofrequency radiation levels outside the exclusion fence surrounding . . .

Lt. Col. Clarke: Mark, question and answer--if you have a question . . .

Mr. Fridgen: My actual question is--was this anywhere near the size that we're--that's projected to be put up here and like in the back it says about four miles from the exclusion fence you better not be using blasting caps? What if a farmer and his family lives--there has to be something going in and coming out from that farmsite right here and they should not be using . . .

Lt. Col. Clarke: I'm waiting for your question, sir.

Colonel Lee: I understand what your question is.

Mr. Fridgen: The question is how can you say it's safe when all this electricity--it says right here--is going into the ground? That using explosives, you shouldn't use them within four miles and there might be kids playing on the ground, a farm might be within a mile of the fence?

Colonel Lee: Let me try to answer, as I've heard two separate questions. First of all . . .

Mr. Fridgen: The question--the site that you tested wasn't as big as this site . . .

Colonel Lee: I believe I understand the question. Let me try to answer. If that's not satisfactory, then you can ask a related follow on question. The Experimental Radar System was identical in the kind of power and the kind of frequency range as what we are proposing for the Central Radar System. It was also the same system that is now being constructed in the East Coast [Radar] System. You may not have seen any systems like this in the sense of having a transmit antenna that's some 4,000 feet long. But that really isn't a single antenna. It's six individual antennas, each of those antennas covering a certain portion of the frequency range. We do that over a set of 12 individual transmit elements to provide a particular focusing of the radio energy. But in terms of the total energy output, we are approximately power level as some of the very large Voice of America radio stations.

So to that extent, there is lots of information. And really, in most cases, a lack of information suggesting the impacts of having those

kinds of high power radio transmissions. We have a similar type system although it is somewhat in the reduced power level. So, first, the system is very similar to what was tested in the Experimental Radar System, and there are other kinds of transmission systems that put out similar types of power on the same kind of frequency range.

Mr. Fridgen: Just one question--there were no human guinea pigs set out there to absorb that frequency, then, huh?

Dr. Everett: As the Colonel said, there are a number of other systems that are similar in various respects in the amount of power and the frequency in which they operate. There is evidence, or as he says, lack of evidence surrounding those installations of effects. It is also true that there is a great deal of laboratory work being done as well in which attempts are being made to study and look at these effects. I think the document we've written sums or makes a summary of the literature in various areas, and I think the evidence is clear that there isn't evidence or effects, and that there is enough information out there to make this kind of conclusion.

I believe that with the measurements that have been made on similar systems, the fact that there are these other large systems and the laboratory experiments--not with humans but sometimes augmented by actual information--that we have the necessary scientific evidence to make the conclusion.

On the point about the electroexplosive devices, this is actually quite a low amount of energy that we're talking about. The kind that's there is a very specialized one--people who would be at risk using these devices. It does not present a risk for ordinary humans who would be four miles from the antenna range. The amount of energy required to have that kind of impact is quite large and can be received only well within the exclusion fence. We're talking about two different types of systems--the electrical system, if you will, and the human organism which reacts quite differently in this case.

Colonel Lee: The final point I'm making on the question is also that the effects that we would warn people, again, are identical to the posted signs that you often see when you're driving into an area where there's heavy road construction, particularly through a rock or granite area--turn off your two-way radios. It's the same type of information. If there's a signal transmitted, there's a possibility of producing a very small current that could potentially in some cases cause detonation. The same warnings would apply to those types of radio transmitters and what we're concerned about. And from a very conservative calcuation, then, we would post and make sure that people within a four mile area of the transmit antenna were advised of the potential of that.

Lt. Col. Clarke: James Conroy?

(Mr. Conroy had a sign on his chest which said, "No Radar." He was applauded as he stood.)

Mr. Conroy: Colonel Lee, the statement you just made about if we had a nuclear war attack, would this be a target for this area. And your answer was--well, this is an early detection radar and the missile would be detected so you have hours of time to destroy the missile. Well, if your radar only reaches 1,800 miles, these nuclear head missiles must crawl on the ground or swim across water . . .

Lt. Col. Clarke: What is your question. I said I would interrupt people.

Mr. Conroy: How can this radar do us any good up here?

Colonel Lee: I'm sorry that you misinterpreted or misunderstood the comments I made in my presentation. The type of detection we're talking about is not against missiles--not against the intercontinental ballistic missile which is the reference you're speaking to where we have warning times of 15 minutes to thirty minutes. We have an existing detection warning system capability against existing missiles. We do not have that kind of capability against aircraft. The specific slides that I showed you were of aircraft systems. That is the objective of this type of system, and against those aircraft threats--and that threat does exist today--we can provide hours of warning--warning that does not exist today.

So my statement really remains as I presented it. This kind of capability is needed. The OTH system would provide it.

Mr. Conroy: Thank you.

Lt. Col. Clarke: Thank you, sir. Loren R. I-r- . . . can you help me?

Spectator: Loren Irvine.

Lt. Col. Clarke: You indicated that you already mailed a letter and had a question, is that right, sir?

Mr. Irvine: That's correct.

Lt. Col. Clarke: Thank you.

Mr. Irvine: We have a hog farm just west of your north of Wheaton site and I guess in reading and following up on somebody else's comments, it makes reference to blasting caps and four miles. I'm wondering if somebody could clarify that point. And also, I guess, the second one--someplace in the statement, I gather the reference that it

would point to the south, but in your diagram up there, it would actually show that if we were to the east or west of your transmitting site we would be not only to the side of your transmissions, we would actually be behind one and in front of one and is that correct? And if that is correct, then do we have to be concerned not only with your transmitting going forward but, I believe, you referred to them as the back loops or the side loops coming off that--or would it be a low level coming off in the opposite direction? I think that covers my questions.

Colonel Lee: Let me take the second question while Dr. Everett is finding some specific reference points to some of the charts that we've got in the document.

We require four 60 degree sectors to provide this complete surveillance area. So the answer is that it fills in that gap of the East and West [Coast Radar] Systems. Therefore, the antenna points to the east and the other one for the west coast gap, it points to the west. We have another antenna that points southeast and the fourth one to the southwest.

The primary effects that we are dealing with are those directly in front of the transmit antenna. The back lobe is at a much lower energy level. That power density falls off significantly more rapidly than out in front of the antenna. That's one of the reasons that we have this backscreen behind the transmit antenna. Similarly, the energy that's sent out to the side--the side lobe, again, because of the way our beam is transmitted, the way that the signal is constructed, the way the transmit antenna design works, those side lobes are also at a much reduced power level. So for the exclusion fence, the comment still remains that outside the fence, any of the radiofrequency radiation and the power density levels that would be experienced would be well below what has been established as standards at this point in time.

The comment you were talking relating, again, to electroexplosive devices--that is a phenomenon, then, that occurs for all kinds of transmitting equipment. It's not related to microwaves. It's related to the ability to induce a current in a long wire. Let me turn this over to Dr. Everett.

Dr. Everett: In the complete document, in Appendices A and B, you'll find that we've calculated what's called the field strengths created by this radar. In Appendix C we talk about interference and hazards. In Appendix C-40, there's a section describing electroexplosive devices and possible effects on them. Specifically, on page C-44, there's a figure which shows what these densities--these power densities or the energy levels, as a function of distance from the antenna would be, and that figure is labeled as to the distance or relative to the power density which could pose a risk for EED under various conditions.

What I'd like to do is simply stop at this point and if you'd like to discuss this further, we can talk after the meeting and talk about the reading of the figure and how to interpret it.

Mr. Irvine: Could I ask one point here? You're talking about it creates an electrical field. Would that have an effect on a metal bin? I.e., a grain structure or a metal hog building or anything of metal would pick up that current to that building and for how long a period?

(Dr. Everett indicated no.)

Lt. Col. Clarke: He said no. I have two more questions and they're written questions. I've gone into what I've said was 20 minutes. It's 8:30 and I have many comments. So at this time, I'm going into the comment section. If we have time at the end for these two questions, then we'll answer them.

Mr. Douglas Frisch and following Mr. Frisch, Mr. Daryl Leininger.

Mr. Frisch: My name is Douglas Frisch. I'm opposed to the construction of the radar transmit site in Traverse County. I'm opposed to it because I'm concerned about the loss of good agricultural land and the possible health hazards and the loss of tax revenue.

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You would be putting prime agricultural land out of production by doing this and you'd be destroying the livelihood of approximately six or seven families and their hired help and their families. We want to keep our homes and keep on farming our land. Granted, these times might be hard, but just like everyone else we're trying to make a living doing what we know how and enjoy it.

Not only would it affect the families because of the loss of land and homes, it would affect many families because it would also reduce the value of the land surrounding that place. This radar site can cause rerouting of roads and waterways. By rerouting roads and waterways, possibly flooding could occur and turn good farmland into poor farmland.

This radar site would also affect real estate and tax structure. There would be an additional tax placed on county residents to redeem what was lost when this land goes off the tax list. The possible health risks are not worth the few jobs that might be created by this system.

At this time, could I please present the petition?

Lt. Col. Clarke: Please bring it up.

Mr. Frisch: Well, I'm representing the residents of the city of Dumont. I'd like to submit to you, the United States Air Force, our petition containing 88 signatures opposing the installation of the radar transmitter site in our area. I'm also submitting a resolution which was drafted at a special town meeting held on May 9, 1986. This

resolution also opposes the radar site in this area. We, the citizens of Dumont, want this petition and resolution to be included in the Final Environmental Impact Statement. Thank you.

Lt. Col. Clarke: Thank you, sir. If you'll bring it up, I'll take it. Mr. Leininger and following Mr. Leininger would be Mr. Duane Dahlberg.

Mr. Leininger: My name is Daryl Leininger. I represent the citizens of Wall Township, Traverse County, who are strongly opposed to the radar transmission in our area. At this time, I would like to submit to the Air Force a petition containing 92 signatures opposing the installation of the radar system in our area and want to ensure that this petition is included in the Final Environmental Impact Statement. At this time, I'd like to present this petition.

Lt. Col. Clarke: Thank you, Mr. Leininger. Please bring it up. Mr. Dahlberg and then after Mr. Dahlberg, Mr.--I think it's Craig Gaffney--G-a-f-f-n-e-y.

Mr. Dahlberg: My name is Duane Dahlberg and I will be speaking with respect to the health effects. I won't have time, I know, but there are misstatements that are made in conjunction with induced currents from this system. The earth is a--I must mention this--the earth is a very good conductor and there will be induced currents from this system in the earth.

I am here tonight, not to refute the calculations that are in this report, but rather to refute the model that was used in determining the effects. And I would like to cite two case studies to begin my point of view. As we all know, back many years ago, perhaps as early as the early 1950s--but we know from the 1960s, microwaves were beamed into the American Embassy in Moscow. It is well-known also that there were significant health effects caused by that. The information that has been provided indicates that the levels of microwaves that were striking the Embassy were below .018 milliwatts per square centimeter. That is below the number that I've heard in conjunction with this system. 4

Now, I realize there's a difference between microwaves and radio waves and I'll get to that in a bit. We have effects that were noted here and this is known and everyone has heard about it. Ambassador Walter Cecil was diagnosed as having a rare blood disease similar to leukemia and suffered headaches and bleeding from the eyes. His two previous irradiated predecessors died of cancer. There are many other things that were done. The official report the United States put out was put out by a scientist who was only allowed specific information about that particular case and he concluded--he had to conclude that there were no effects. But he hedged. He said, "but I didn't have all the information."

Another case, one which I personally have worked with, deals with electricity that is in the earth. It deals with the concept of shock effect. The farmers--the dairy farmers throughout the country and I speak specifically about Minnesota, have been told that the cattle are affected by being shocked and every effort has been made to eliminate any possibility that cows can be shocked in the barn--the effects are still there.

The conclusion from my work is that we're dealing with effects caused by far lower levels of electromagnetic energy than anyone has dealt with before. The shock effect is not what it is. The same is true in the case of microwaves and other electromagnetic fields--that it is the heating that causes the problem. It is the direct interaction with the cells that causes the problem, and that changes the ground rules for looking at the interaction and the health effects. The research literature has changed a lot in the last year from the standard that was established in this country--ten milliwatts per centimeter that was established. There were particular views associated with the effects. At that time, the effects were considered to be is that most people said there were no effects. Some said there were. That's all changed today.

Now we have most people saying yeah, there may be an effect. We have also a group that are saying there is a great potential--a significant potential because of the research for effects at very low levels. Even a level that the Russians have suggested--at one thousandth of a milliwatt per square centimeter for both radio and microwaves is not sufficient. Now, this is a sobering thought that maybe we are--maybe as new information is coming out that we are seeing problems that were never expected before simply because we're seeing the wrong model and that is the most appropriate as it affects the living cells.

There are a number of people in our country who are researching this and I'd like to cite three: There's a person by the name of Robert Becker, medical researcher from New York. And Andrew Morino, a medical researcher from Louisiana State University, and a radiologist from Stockholm, Sweden. These people have done a lot of the pioneering work in this area and they have drawn far different conclusions than you have heard here tonight or seen in the Environmental Impact Statement.

Lt. Col. Clarke: Thank you, sir.

Mr. Dahlberg: I'm not through.

Lt. Col. Clarke: I'm sorry. I said I was going to keep to five minutes.

Mr. Dahlberg: I have been involved in these hearings on your side of the fence. It is not appropriate for you, in all respect, as a judge to limit debate and limit discussion especially since there was no

notification in advance that there would be a limit. I'm here and I've prepared this material. I've spent a lot of time just to make this presentation.

(Applause from the audience and many who asked to let Mr. Dahlberg speak.)

Lt. Col. Clarke: Ladies and gentlemen, I attempted to be as pleasant as possible when I came in. I'm not for one side or the other nor will I express any viewpoint on that. I am the only person at this public hearing who has the authority to close it and if I continue to hear applause and no one is following my time restrictions, I will take a ten minute recess until we compose ourselves and then if my time limits are not followed, I will close the hearing. I do not want to do that because in addition to the professor, there are many other people who want to comment also. I will be happy to accept the remainder of your statement if you want to bring it up here and if we have time and if I can, I'll recognize you again.

Mr. Dahlberg: I'd like to continue my statement. As I said, there has been no indication of a time limit and it is not appropriate under the public review process for you, as a judge, to limit that debate especially since you have not notified anyone in advance. I have sat on your side many times and been involved on that side of the podium in the State of Minnesota.

Lt. Col. Clarke: Do I understand that you do not intend to follow my request?

Mr. Dahlberg: Pardon?

Lt. Col. Clarke: Do I understand that you do not intend to follow my request?

Mr. Dahlberg: I am asking to continue until I have finished.

Lt. Col. Clarke: You've had five minutes and that's the time I announced, sir.

Spectator: I'd like to give Dr. Dahlberg my three minutes.

Spectator: I'll give mine too.

Lt. Col. Clarke: Sir, they may not be transferred from one to another.

(Many in the audience were in an uproar over this issue, and many comments were made that this reporter could not understand.)

Spectator: For the record, Colonel Clarke, how come your so-called experts get all the time they want to here and our experts can't get it? We might as well call it off then.

Lt. Col. Clarke: We're wasting an awful lot of time here. If time remains at the end of the other statements, I will recognize you.

Spectator: I'd like to hear him now.

Spectator: Let him talk.

Lt. Col. Clarke: You have 45 days to submit it in written format. I will ask you one more time to relinquish the floor for the next person that I call. If not, I'll take a five minute recess and we'll reconvene in five minutes.

Mr. Dahlberg: All right then. The only thing I can assume, then, is that you're not interested in what the public has to say.

(Audience applause.)

Lt. Col. Clarke: Mr. Rodriguez? R-a-g-u-s-e. I apologize for messing that up.

Mr. Raguse: We only grow sugar beets in this area.

Lt. Col. Clarke: I mispronounced your name. I apologize.

Mr. Raguse: My name is Steve Raguse. I'm a farmer and resident of Traverse County. I serve as county commissioner representing the fifth district which includes the townships of Clifton, Dollymount, Monson, Redpath, Taylor, Tinta and the Villages of Tinta and Charlesville.

First of all, I am opposed to placing the radar site in Traverse County. The economic benefits received by a few people are far outweighed by the continued stress, increased tax burdens and townships and county governmental headaches that would be created by this radar site. Costly unforeseen situations, the local participation costs would have to be paid directly by our landowners and taxpayers in Traverse County.

Secondly, I urge all landowners in the proposed site areas to make their land holding unavailable to the government.

(Audience applause.)

Please consider the consequences that your neighbors will have to live with if this radar site is placed in our area. And thirdly, and God forbid, if this hearing is only one more step in your final red tape, if all that's said tonight is politely acknowledged that really doesn't have any effect on your decision of placing the site in Traverse County, then I sincerely ask that you work with local, rural and I emphasize rural officials to select a site that does not displace rural families, that does not affect our rural roads, that does not affect our agricultural drainage situations and most importantly, does not affect our physical and mental health. Thank you.

(Audience applause.)

Lt. Col. Clarke: Thank you, Mr. Raguse. Mr. Berg. Following Mr. Berg is Theodora D. E-c-o-n-o-n-o-v.

Mr. Berg: I'm Daniel R. Berg and I represent the Minnesota Pollution Control Agency. I'd like to draw your attention to the back of the Draft Environmental Impact Statement where there are addresses of other agencies that have--that represent you and have expertise that you might want to avail yourself of in that--for example, the Pollution Control Agency--you might want to ask questions or make comments to us in areas where we have regulatory authority such as areas affecting service, water quality, air quality and issues of solid and hazardous waste. And, you know, there's other agencies in the back of that book that are going to be commenting on and if you have other information or questions, you might want to incorporate into what they'd be commenting on. You might want to do that.

Lt. Col. Clarke: Thank you, sir. Theodora . . .

Mrs. Econonov: My name is Debbie Econonov. I'm here as a mother, a mother-to-be and an attorney and I'd like to address three concerns--health hazards, land use and the assessment in the DEIS.

The Draft EIS is deficient in addressing safety concerns of exposure of the general population and the radiation to be emitted. On page 4-55 of the EIS, it is stated that, "The location of the exclusion fence would ensure that the highest average power density at ground level immediately outside the exclusion area in any direction would not exceed the 1982 ANSI radiation protection standard for the general population for the OTH-B frequency range."

And elsewhere in the EIS is stated that this standard varies with the frequencies of five to 28 MHz, which I understand is the frequency of the radar system, from 36 to 1.15 milliwatts per centimeter square of power density. These standards were covered and submitted in the Immunological Effects and documented as noted. For example, in the DEIS on page 4-84, it states, "RFR has quite definite effects' on the immune system of mammals at 10 milliwatts per square centimeter and higher. A few effects have been detected at following exposure to power densities as low as about 0.5 milliwatts per square centimeter. Some studies suggest suppression of immune system function, some suggest stimulation, and others, both effects."

The DEIS makes the statement that the average power density outside the exclusion fence will not exceed .02 milliwatts per square centimeter or .1 milliwatts per square centimeter average incident power density yet does not state what the maximum amount of radiation the general public would be exposed to or for what period of time. However, the DEIS consistently states, "There is no evidence that the biological

effects of RFR are or would be harmful to humans" and admits that there are gaps in the study of the immunological effects of this type of radiation.

Finally, of most serious concern are the conclusions in the DEIS, for example, page 4-78, that "studies showing demonstrable teratogenic effects," i.e., birth defects, "following exposure to RFR have involved power density levels that are capable of producing a significant heat load in the animals." Yet the issue of what is a significant heat load is not fully addressed nor has the DEIS thoroughly researched this. Given the extremely sensitive nature of the biological processes, especially fetal development, the temperature changes should be thoroughly tested before and not after the siting process is completed.

What assurance do those living here near the installation have if the radar installation does prove, in the future, to be harmful to humans and livestock? Will they be adequately compensated for their losses? There is no law like the Price-Anderson Act for radiofrequency radiation. The Price-Anderson Act compensates for nuclear catastrophe. In this case, the residents would end up with private losses against the military and given the experience of those exposed to toxic substances such as Agent Orange, such litigation would be complex, extensive and protracted and of very little use to the victims.

Also, if the existing standards for the general populations of RFR are subsequently reduced and they have beer reduced since 1974, would the power output of the transmitter be reduced accordingly? Nowhere in this DEIS does it discuss the mitigation measures to be taken if the population is exposed to higher power densities of .02 milliwatts per square centimeter if, for some reason, the Air Force needs to operate at a higher frequency and power output than normal.

I'd like to address the land use concern. A number of citizens are concerned that any purchased land would be put to federal use after the decommissioning process. This raises the possibility of use as a nuclear repository as this area is near to certain DOE sites for nuclear dumps. Would the Air Force agree to any land acquisition and purchase to restrict and prohibit the government's future use of a nuclear waste repository or disposal site?

Finally, this section of the DEIS is based on questionable assumptions. Specifically, there is a possibility of "human adaptation to the biological effects of this radiation and the acceptability of the contradiction of minimum effects and, as yet, unknown, acceptable levels especially on the unborn." Thank you.

Lt. Col. Clarke: Thank you. I saw an attorney by your name, counsel. If you'd like to give that statement to the court reporter on the chance that she might not have gotten every word.

Mrs. Econonov: I'm going to have my secretary type it. It's not in an acceptable form.

Lt. Col. Clarke: Please mail it in for us. Thank you. Craig Gaffney? And after Craig is Jerry Berger. Irvin Renke (phonetically) your lights are on in your car and your doors are locked. Go ahead, sir. You might want to go out and turn off your lights.

Mr. Gaffney: Craig Gaffney. I represent all of the radio users in the area here. I'm the Motorola representative. Just a little information that I received from my engineers. Some frequencies that are possibly affected by this system is low band which would be affected most, VHF, very high frequency, and also UHF which is ultra high frequency. These stations in low bands that do not have radiofrequency shields will be affected along with high band and UHF. If you do have a repeater system, it will be affected if you do not have the radiofrequency shield also.

The part that will be affected is the audio circuitry control inside the base station. So if there is anybody out there that does have a low band/high band or UHF, it will be affected if you do not have a radiofrequency shield. Radios that will not be affected are the community repeaters, your multiple communications and radiofrequency shield base stations and or repeaters. Thank you.

Lt. Col. Clarke: Thank you, sir. Jerry and after Jerry is Clayton Toso.

Mr. Berger: My name is Jerry Berger, clerk of Redpath County. I represent the citizens of Redpath township, Traverse County, Minnesota, who are strongly opposed to the Over-The-Horizon Backscatter Radar transmitter in our area. At this time, I'd like to submit to you, the U.S. Air Force, our petition containing 51 signatures opposing the installation of the Over-The-Horizon Backscatter Radar transmitter in our area and we would like to ensure that this petition is included in the Final Environmental Impact Statement and I have a short comment here.

The U.S. Air Force states, on pages 4-52 and 53 of the Environ mental Impact Statement that if electroexplosive devices such as blasting caps were to be transported or handled in the area, a safe distance of four miles would be required for safety. But the makers of the blasting caps recommend a 17-mile distance for safe handling. This all depends on the electrical conductivity of the ground, which you state in the analysis process is unknown.

If this electrical conductivity can affect blasting caps from four to 17 miles away from the transmitter, what else can it affect? What effect does it have on humans, ground crops, root crops, animals, or is that another unknown factor? There are many more things in this book that are unknown. It was stated in last Sunday's Fargo Forum, and there

is no actual proof, that there can never be long-term harm or damage. These kinds of absolutes you just do not provide. I don't think the people in Traverse County should settle for less than absolute proof.

Lt. Col. Clarke: Thank you, sir. Mr. Toso and after that is Dean Frisch.

Mr. Toso: I'm Clayton Toso from Graceville, Minnesota. I represent the citizens of Traverse County and Parnell Township where we strongly oppose the radar transmitter in our area. At this time, I'd like to submit to you, the Air Force, our petition containing 56 signatures opposing the installation of the radar transmitter in our area and we want to ensure that this petition is included in the final draft impact statement and I would leave the petition with you.

Lt. Col. Clarke: Thank you, sir. Mr. Frisch and after Mr. Frisch a Mr. John E. Daniels.

Mr. Frisch: Dean Frisch. As a Traverse County citizen, I'm concerned about the health hazards of the radar station. With environmental studies so concerned about wildlife in these areas, I'm wondering if they considered the people who have to live near the sites. From the information that I received, I think the radar site would be better off and the people it involves, if it was in a less populated area. The land area around north of South Dakota and also Nebraska could provide excellent open country that will not bother animals and, most importantly, the people.

More studies should have been done before construction of the east and west radar stations before they considered this area as the final site. The Air Force is forcing this project on us. Traverse County is an area with good farmland and an abundance of wildlife. I would hate to see a project like this tear the County apart and the people with no sound guarantees concerning the people, the wildlife or water drainage.

I'm definitely opposed to the radar site located in this area. Thank you.

Lt. Col. Clarke: Thank you, sir. Mr. Daniels and after Mr. Daniels is Mr. Richard Keller.

Mr. Daniels: I'm John E. Daniels from Tinta. I'll be quick so the professor can say some more things. I've got a couple of comments. On page 4-59 in your study, it says this type of study--the thing that concerns me is the United States studied only harmful effects and does not extend this to the most susceptible people. And the system is set up, in actuality, to be harmful to those people who are more susceptible to the radar. What concerns me is will I be one of them or would my children or possibly you be one of those that would be susceptible?

The other thing that concerns me, on page 4-66--it says here that there was rarely a study that was confirmed by another study that was identical to it. Rather, it's expanded. Scientific studies seem to be a study in the nature of probability. It is probable that in a small dose it is not harmful and it's probable that in a large dose it's not harmful also. That lacks, for me, the proof that it's improbable so it could be probable that it would be harmful.

(Audience laughter.)

I have a personal objection. On page 3-55, Aesthetics, you said, "The lack of natural topographic features of interest, the lack of visual diversity, and the dominance of human modifications in the study area landscapes result in a moderate to low rating for scenic quality for the study areas." I find that personally objectionable from the fact that I agree with my father who was visiting while I was up in the Air Force in Elmendorf in Alaska and came up there and I said, "Did you enjoy the mountains?" and my father said, "I think they're rather boring. After all, what can you do with them." God, I wish they were flat so I could farm them."

(Audience applause.)

Lt. Col. Clarke: Thank you, sir. Mr. Daniels? Am I one behind? Mr. Keller, and after Mr. Keller is Denise Smith.

Mr. Keller: I'm Richard Keller and I live in east Taylor Township, section 12 and farm sections 11 and 12. I'm the third generation on that farm. I hope to keep it in the family in the future. I'm located in the Wheaton North site. I am very much opposed to the Over-The-Horizon transmitter in my area or any other area in Traverse County for several reasons.

First, we are located in the southern end of the Red River Valley of the North which is considered to be some of the best farmland in the country. The ten-year average on my farm for soybeans is 36 bushels per acre and for wheat, 45 bushels per acre. I believe the value of the land should be considered before altering it in any way.

Second, if the transmitter is located in the area, valuable land would be adversely affected because of the unknown effects of radiation on human life and the environment.

Third, the possibility exists that with the rapid advancement of technology in the field, the Over-The-Horizon could be obsolete before operational, and the raping of the land would be for naught. Thank you.

Lt. Col. Clarke: Mr. Smith and after Mr. Smith would be F-r-i-d-g-e-n

Mrs. Smith: I'm Denise Smith, a farmer's wife and mother of three boys and proud of it. My husband and I moved from Moorhead to the Wheaton area about seven years ago leaving behind our teaching careers to take on farming. One of the reasons for making that choice was the quality of life. We thought it would be an ideal place to raise a family. We have had no regrets even with the changes made occupationally or environmentally until now.

It's hard for me to imagine the real tragedy of those people who would be forced off their land and losing income and most importantly, their way of life. It's been said that 2,400 to 4,000 acres that's being taken out of production is hardly worth mentioning in light of the acreage available today. Does this person stop to think about the number of families being displaced by the loss of this land, the value that the land holds to each of those families and where these displaced farmers would find productive acres?

We were laughed at by some when we first moved here to farm because of our inexperience. We proved our ability to take on the challenges in withstanding the stresses and hardships placed on today's farmers. Who would have dreamed that a government claiming to be for the people and residents of the town would lead to the business of trying to take our farms that we have worked so hard for away from us. Pitting one industry against an existing one in no way solves the problems of job shortages or depressed economy.

Speaking of the 50, what is the guaranty that those jobs will be filled by local people? As I see it, it's the whole of new jobs versus the lack of quality people now. On top of this, I strongly feel that the health of my family will be threatened by being in line with the non-ionizing electromagnetic radiation released by these OTH radar transmitters. According to the Air Force, as it is written in the EIS, there is no reliable scientific evidence in existence to suggest that chronic exposure to the RFR would be harmful to the health of anyone beyond the fenced area.

In no way am I assured by that statement of what the future will bring healthwise for my sons. I base these fears on what is written about "Zapping of America" by Paul Brodeur which speaks out against the so-called harmless safety levels of RFR that we have in this country. My sons Tyler, Jeffery and Michael were born healthy and biologically without defect and I'm here tonight to oppose this system being built which could alter that. I speak out for all of the residents and landowners of Redpath Township, which would be part of the Wheaton north study area, in opposition of it being built in Traverse County.

Please do not take away from the quality of our life by allowing this radar transmitter to be built here. Thank you.

Lt. Col. Clarke: Thank you. Mark Fridgen and then Marjorie Frisch.

Mr. Fridgen: I'm Mark Fridgen from Walls Township and I just want to say again that I believe your studies that you use as your criteria there's no way they can have anything to do with us because you're stating maybe two, three years, five years this thing's going to be here for 20 years. I don't see how you can even say what the hell's going to happen in 20 years and I don't believe it's safe and I think from the agricultural land this is some of the most prime agricultural land. Who's to say 10 years from now we won't need every bushel we can raise. We think we're so wise in the United States, but we don't even worry about it. But for centuries, every nation in the world has always stored up grain for the lean years or what they called famine back then and now we don't even worry about it.

I think in the future we will probably regret this kind of thing. That's all I have to say.

Lt. Col. Clarke: Thank you, sir. After Marjorie Frisch, Lorine Raddatz, R-a-d-d-a-t-z.

Mrs. Frisch: My name is Marjorie Frisch. I'm speaking as a very concerned community person, not for myself, but for all those who are opposed to the OTH-B radar site in Traverse County. My home was in Walls Township for 34 years where my son now lives and two sons farm land. For the past 12 years, my husband and I have lived in Dollymount Township where he has farmed for 46 years. I was told that we had no need to worry about Dollymount and Walls Townships. They will not be chosen. Whether or not this is true, my concern is not only for these two sites, but for all of Traverse County.

From the Wheaton Gazette, February 27 issue, I quote: "If the Air Force were to run into marked opposition to such a project here or anywhere, the chances of moving on to a new location would be high. They simply don't need problems which come from a public controversy."

I talked to Colonel Lee and in our conversation, he also stated if there is opposition we'd look into Dakota. There's a large ranch there and I'm sure they wouldn't mind selling us a portion of that land. We don't want any problems between the townspeople and the farmers.

I have spoken with people both in the town and in the country and businessmen as well. Some are for this site and some are against it. This is a democratic society and it is evident by the number here all here will not be able to speak. In order to get a consensus, let us now take a poll. All people here in favor of the site, please stand and voice yes. (No one stood.) All people not in favor of it, stand and voice no. (A majority of the audience stood and said no.)

Lt. Col. Clarke: Thank you, ma'am.

Mrs. Frisch: Please let this be for the record. Please state that the vast majority of people in this hearing in Wheaton, Minnesota, September 10, 1986, are against construction of the OTH-B radar site in Traverse County. Thank you.

(Audience applause.)

Lt. Col. Clarke: Lorine Raddatz?

(Spectator was too emotional for this reporter to understand what she said. Time was taken for her to compose herself.)

Ms. Raddatz: I cannot understand why the government allows the Air Force to install the OTH-B system on highly productive land. I have proof of above average yield of oats from the Quaker Oats program. I've been a member of the Herman Future Farmers of America for four years and out of those four years, I have grown for three years for Quaker Oats. My advisor, along with the field rep from Quaker Oats checked out how the oats were heading. My advisor then came out after it was swathed and measured two acres that would be checked. At harvest, he stood in the field and watched us combine and rode along with me to the elevator to have the oats weighed. The yield we have here from 1983, 1984 and 1985--in 1985, my Moore yielded 101.5 bushels per acre. In 1984, the Moore yielded 117.7 bushels and my sister, who is also in Quaker Oats, had a yield of 122.6 on her Centennial. In 1985, my Centennial yielded 162.1 bushels per acre and my sister's Pierce oats yielded 133.1 per acre.

Land that yields this way does not fit the description of the land that you have in the Environmental Impact Statement book. For this reason, I do not think the OTH-B should be installed in this prime, productive farm land.

(Audience applause.)

Lt. Col. Clarke: Thank you very much. Warren Raddatz?

Mr. Raddatz: I am Warren Raddatz, son of Virgil and Sharon Raddatz. We live on a dairy farm in Traverse County, Dollymount Township, Section 14-126-45 which is in or near the Wheaton SE study area. I'm 12 years old and I own six head of registered Holsteins which consists of three generations in the same family. Dad has mentioned that if a dairyman has a chance to see five generations of genetic improvement in a lifetime, he is lucky.

I feel fortunate because I already have three generations and, hopefully, a lifetime to see five or six generations of improvement. In order to accomplish this, I'll have to be able to continue in the dairy business and I wonder if it will be financially possible if our dairy has to relocate. Therefore, I do not want the OTH-B to be installed in this area.

Lt. Col. Clarke: Thank you, Warren.

(Audience applause.)

Lt. Col. Clarke: The next person is Dan Downey Smith and then Sharon Lueker. Mr. Smith?

Mr. Smith: My name is Dan Smith. I live and farm in Traverse County. I have some feelings I would like to relate tonight--some very strong feelings. The Air Force has convinced some people here that they won't force farmers off their land. I'm not one of these people. I have the impression that the Air Force representative, Colonel Lee, could sell an Arab sand.

Calling this type of transaction a land sale or fair negotiation is absurd. I have always felt that when I sell something, I decide the time to sell, the name of the buyer and the exact dollar amount. With eminent domain hanging over one's head, in reality, none of this exists. To believe otherwise, is extremely naive. But this is not my only reason for being here tonight, although it's reason enough if one wants to dwell on reality.

My main concern is the possible, detrimental health effects the electromagnetic radiation could have on my family. Colonel Lee made the statement people get upset when they hear the word radiation which, from my point of view, is an awfully good thing to be concerned about. I read the East and West Coast Environmental Impact Statements and they built these systems in remote and unpopulated areas away from other systems. My question is why were they built away from other systems? In the scoping meeting in June, Colonel Lee said this information is outdated. What gets my curiosity going is when will the information they're giving us tonight be flip-flopped and outdated?

Until that day comes, and it will come, when more of the true nature of this type of radiation is understood, I do not want my sons and wife to be used as guinea pigs by the Air Force for their radiation factor. You say how can I believe this? Very simply. What does Dwayne Dahlberg, Chairman of the Minnesota Pollution Control Board, have to gain from relating this information on nonionizing electromagnetic radiation? He gains nothing--absolutely nothing.

In contrast, the Air Force is made up of individuals who like advancements, are determined to be successes and not failures. It comes down to the simple fact that I believe the system would have hazardous effects on myself, my wife and my three sons. I would never support anything that could bring harm to anyone and people who do are badly misguided and lack the true facts or are short on conscience.

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In conclusion, it's safe to say that I will find it hard to support an individual in the community who gives their blessing to a system has the potential of harming one's family, taking away one's home and way of making a living simply because of greed. Thank you.

Lt. Col. Clarke: Thank you.

(Audience applause.)

Lt. Col. Clarke: Ms. Lueker?

Mrs. Lueker: My name is Sharon Leuker. I have a home in Whitesock, South Dakota. I was a third generation in Minnesota. I have two living sons who are fourth generation who want to come back. I want to live my declining years here, I hope.

I have, I question the need for the installment at all. I don't want to take this installment and take it from where I feel that I couldn't have it and put it where it's not going to hurt me.

I morally could not do that. I question the need. Do you need it? You prove to me that you need it now. If you need it now, you're too late. You're going to start in 1988 and by 1990 you're going to be operational? You're going to be obsolete. Right now, what about the anti-radar detection airplane? Boom--into Russian airspace--boom, right out.

Hey, those Russians aren't any dumber than we are. Okay. My sons watch too much television.

(Some of this individual's comments were unintelligible to this reporter.)

I put my blood, sweat and tears--I picked every rock in 240 acres.

I don't think you exactly understand what terror is to these people. I can go to San Diego and they can say, well, she's a rabble rouser. She riles everybody up and she left. That's what I am intending to do, because when you get atrophy, you don't want to do anything--I can't fight the government.

I watched "Protocol" with Goldie Hawn and she said, "Who is the government?" Who is it? It's we, the people and when you forget it, then you're lost. You make the laws. You're the ones who elect your government officials. You pay his salary and his and his and his and his (pointing to the stage area.) It's your tax dollar that's paying his salary and don't you forget it and don't you forget that at all. (30 second notification given.)

The decommissioning--somebody hit on that. When it's decommissioned, the impact report says they can dispose of it as they please or as they want to. Remember, do you want a toxic waste dump in your back yard? Every hospital, every X-ray lab, every university--they have to all turn over their waste products to the federal government. Do you know why? Because the federal government knows how to dispose of it. We sure don't want it in our backyard, do we?

Lt. Col. Clarke: Your time is up. Thank you very much.
(Audience applause.)

Mrs. Lueker: I didn't read until three days ago the Constitution. "We, the people"--I sure missed a lot . . . (Audience laughter.)

Lt. Col. Clarke: We have Terry L. Tritz and then after that, Virgil Raddatz. I'm not going to try to figure out what member of the family that is.

Mr. Tritz: My name is Terry Tritz. I live near the southeast sector. One of my greatest concerns is the proposed radar station on prime farmland. The argument can be used that there's a surplus of grain. This brings to mind that the surplus could dwindle with a severe drought such as the southeast had this summer or the drought in the midwest cornbelt in '83. So all that vast surplus could disappear. This whole scenario could change before this project is complete, let alone putting this land out of production for the next 20 years.

In the southeast site alone, wheat yielded an average of 48 bushels. Corn yielded an average of 118. Soybean yields averaged 40 bushels. These figures differ substantially from those used in the study. The South Dakota had wheat yields which averaged 12 percent less, corn yields of 40 percent less, soybeans 29 percent less and you could probably find much less productive land to put the site on than this.

Is it wise to take land in an area as diversified as ours when skyscrapers are taking over farmland by thousands of acres each years, when starvation and malnutrition are increasing every year in the U.S.?

Another of my concerns is the decreased productivity of the land surrounding the sites. There is a statement in the impact study where this might be expected where waterways are deferred or changed in some other way. What would it be like to have our planting and herbicides applications hampered each year? It makes no specific mention of how far civilian planes must stay away from the site. I see tonight that they do not want airports within ten miles and does that mean that aerial applicators have to stay ten miles away? Who's going to make up the difference in yields when herbicides can't be applied and our yields are cut in half?

Do we send a postcard to Washington when we want an aerial applicator to apply herbicide dust? I'm sure they won't shut down for the farmer to spray his crops. The problem can only be compounded by the unknown effects on local dairy herds, on poultry as well as wildlife populations which inhabit our creeks and waterways and most of all, the harm that might be done to our families and community around the sites.

Lt. Col. Clarke: Thank you, sir. Next is Virgil Raddatz and then John A. Scharf.

Mr. Raddatz: I'm Virgil Raddatz. My family and I live on a dairy farm in Traverse County, Dollymount Township, Section 14 near the Wheaton southeast study area. I spent 19 years genetically improving our herd of registered Holsteins. In the state of Minnesota, we are in top one-half of one percent with our level of milk production. Our production is one of the key points in our marketing program. Having the OTH in this area concerns me. For one reason--will I be able to maintain this production because of the stray voltage caused by the electric demands? And will it have any effect on production and reproduction? I find it hard to understand how the environmental impact study you just referred to--those in the study, without referring to those close to the area in their economical study of the community especially when those surrounding the proposed area would probably be affected more than those in the study area.

Therefore, would I be able to financially relocate at this time and see half a lifetime of genetic improvement hampered because of the OTH? For that reason, I cannot see it in this area.

Lt. Col. Clarke: Thank you. Mr. Scharf and after that is Evelyn S-c-h-w-e-b-a-c-h.

Mr. Scharf: My name is John Scharf. I'm a wildlife manager for the Minnesota Department of Natural Resources. Early this spring, our department was asked to provide input on the potential wildlife impact because of this project. As a field man, of course, they came out to us and asked us for input.

I, like my colleagues in the U.S. Fish and Wildlife Service--we try to treat this thing fair and objectively. Besides the structure being rather an aesthetic monstrosity, there's no way we can comment on that because we're concerned only with the wildlife effects.

Our chief concern was the collision hazard as applies to birds. It took a rural farmer to point out to me, just a little while ago--John--what about the radiofrequency radiation? Obviously, we had missed a very important factor in regards to wildlife.

Since that time, in the two days I've had, I've been doing some reading and some contacts. I will admit that what I read borders on sensationalism, but I also find myself admitting that it is a real, valid concern. It's a little of both.

It reminds me of the time when I was a young man in graduate school when a few people were concerned about DDT. I remember at the time that I researched the literature and looked about the DDT and the experiments that were done at that time said dosing the various wildlife species at the rates that are applied--there's no problem. Lo and behold, two years later we find out we had an environmental disaster on our hands.

I read your EIS and there's one thing that becomes very obvious to me. It does not adequately assess the problem of wildlife inside the exclusion fence. Repeatedly, you state there's no problems for all the various factors in regards to radiation outside the exclusion fence. There is just one mention about inside the exclusion fence that relates to small animals like mice that would probably not be able to absorb enough.

So I feel that the problem of radiation has not been adequately assessed in regards to the wildlife within the fence. We all know that birds fly and animals burrow. We've got a lot of wildlife within that enclosure. The area will certainly attract a lot of ground nesting birds--ducks, pheasants, Hungarian partridge and all the song birds. What will happen to those birds when they sit under that radiation for a long period of time? I don't know, but I want to know.

A large rodent population will develop in those grasslands when they're seeded down. This, in turn, will attract many of our various raptors and at this time of the year, this area is undergoing a huge hawk migration.

Lt. Col. Clarke: You have 30 seconds.

Mr. Scharf: I thought I had five minutes, sir, as a representative of an agency.

Lt. Col. Clarke: I didn't know that you represent the agency, but go right ahead.

Mr. Scharf: Okay.

Lt. Col. Clarke: You represent the Department of Fish and Wildlife.

Mr. Scharf: This large rodent population will attract the resident raptors and they will hover over this thing and be perching on that aerial. I wonder what it will do to them. In closing, let me just get a little bit philosophical. A number of years ago, this nation was divided over the Vietnamese war. At the time, I was like many--

undecided and I didn't know what to make of it all. But near the midpoint or a little after the midpoint of that war, the city of Hue was destroyed by our own forces and the military announced that they had to destroy the city in order to save it.

At this time, I'm wondering if some of that mentality still exists. Are we willing--in order to defend this country--to destroy it bit by bit? My recommendation to my state office and to my colleagues in the Fish and Wildlife Service is that radiofrequency radiation, as it affects wildlife within the fence, must be reevaluated. There is much to learn and we need the input from qualified people.

Until such time that such an evaluation has been concluded by qualified persons, my recommendation to my department will be that any permit required for this structure should not be granted. Thank you.

Lt. Col. Clarke: Thank you, sir.

(Audience applause.)

Lt. Col. Clarke: Ms. Schwebach and after her is Ms. Tritz.

Mrs. Schwebach: I'm Evelyn Schwebach and I live in Leonardsville Township. We are opposed to the radar site being built here. We bought our farm here some 30 years and have worked long and hard to make it the place it is today. We have raised our family here with the hope of having the place remain in the family for years to come. Our two sons are farming with us at present. The rest of our family live nearby and we enjoy their company often.

The proposed radar site would eliminate our farm and our business. It would also be the end of farming for the boys. It would break up our whole families as those of us who would have to move off the farm would have to go elsewhere to earn a living. And not being educated in another line of work, we will, no doubt, have a hard time finding a job that will sustain our families.

We don't want to give up our farm, our business, our family, our friends. We want to stay right here to continue to go to church here and God willing, to see our grandchildren grow up around us. Thank you.

Lt. Col. Clarke: After Joanne is Ms. Tritz.

Spectator: Joanne who?

Lt. Col. Clarke: Did I mess somebody up? Please tell me if I did. Joanne is the next one I drew and then Shirley.

Mrs. Tritz: Opposition to the Over-The-Horizon Backscatter radar site. I'm Joanne Tritz near the southeast site. Having lived in Leonardsville Township for 27 years, raised seven children, I feel

I'm very active in our farming operation. I go for repairs, supplies and do the bookkeeping and by the way, I don't address myself as just a farm wife.

As most of you women present here tonight know, we have many job titles. No, I'm not complaining because this is what I chose to do, marry a farmer and have a family and raise them in a healthy environment. Yes, our farm and our land are what I call healthy. There is fresh air, wide open spaces, many trees and shelter belts which we worked hard to start so we could have much scenic beauty and provide a perfect habitat for the pheasant, partridge, and the family of deer that live most of the summer north of our house. We can't forget all the other little animals and birds that make their home there.

Bringing in the OTH-B radar site with their fence opposite from our picture window upsets me, mainly because we are kept in the dark as far as facts are concerned. The health hazards to the family is bad enough, but what about our three precious, innocent grandchildren? With our four sons actively in farming, I see the disappointment on their faces and the disgust in their voices.

My goal as a mother was to raise the boys to become good citizens, farmers, possible leaders and for two so far, good fathers. And for what, the loss of their farmland against their will, good clean living and contentment on the farm, dangers, health hazards to themself and family--I could go on and on, but I only hope to have a wish of many mothers and housewives living in and around the proposed OTH-B radar site to have it relocated to an area where there won't be so much human life affected. Thank you.

Lt. Col. Clarke: Thank you, ma'am. Shirley and then John Tritz also.

Mrs. Tritz: My name is Shirley Tritz. I live in Croke Township with my husband and family. We are farmers. My Dad and Mom live in Leonardsville Township along with my two brothers, one of my sisters and many friends all of whom rely on farming for their homes and livelihood. Another sister and her husband farm in the proposed southwest site.

Dad and Mom had six children and the boys always wanted to farm and now do with Dad and the girls wanted to marry farmers, which we all did. We feel good working the land and raising our families there. We also worked with Dad and Mom to maintain and improve the family farm, which we always knew someday would be Dad and Mom's legacy to us and our children.

The proposed radar site would put an end to that lifetime dream of three generations. The grandchildren, though young, have already voiced a preference for the land. When asked in Kindergarten what they wanted to be when they grew up, the boys replied, "farmers."

There would be nothing left for Dad and Mom who know no other business and they aren't young enough to start over. My brothers and their families would also lose their homes and their businesses. Many others could be affected in the same way.

Within one mile of Leonardsville Township, where Dad's farm is located, the site would displace ten families to say nothing of the hired help and their families. Just think of what we could be losing.

We, the rural people, maintain a fierce pride in our land. It is our home, our business and our life. With this site placed anywhere here, it would destroy our past, our present and our future. Thank you.

Lt. Col. Clarke: After John is Edward Baxter.

Mr. Tritz: My name is John Tritz. I live in Section 36 of Croke Township which is on the western edge of the Wheaton southeast site. I oppose the location of the radar transmitter not only in the southeast site which is in my immediate area which is my immediate personal concern, but also any of the sites in Traverse County or even in South Dakota or anywhere else for that matter.

I am opposed on the basis of the practicality of this system. Have we not, in recent years, been sold on the need for huge appropriations for the development of the so-called [undistinguishable].

The technology that exists today avoids radar detection and will advance to the point where it makes this system obsolete. I'm also opposed on the basis of health concerns. In review of the literature as it concerns human health, this review does not include any specific information. I ask you, how can you make a valid environmental statement without any specific information. And again, quoting from the summary, "Epidemiology studies performed in the United States and other countries have not provided adequate scientific evidence that environmental levels of RFR constitute a hazard to the general public."

This leads me to wonder, is there some evidence that does suggest a health hazard for chronic exposure to RFR and is not reported here because it may have a negative effect on the advancement of this project? Again, we have no concrete evidence, only generalization. Because of these unanswered questions, I oppose the completion of this project which would use myself, my family and acres as guinea pigs to provide the answers to these questions. Because of these concerns, I go on the record as completely, unequivocally opposed to further advancement or completion of this system.

Lt. Col. Clarke: Thank you, Mr. Tritz. Mr. Baxter and after, Mr. Dean Holtz. Mr. Baxter?

Mr. Baxter: I'm Edward Baxter. I live in Leonardsville Township. My building site is not directly in any of the proposed sites. My building site is one mile south of the southeast proposed site. My family and I would make an appeal that the proposed radar station not be put in Traverse County.

We have several reasons why. One is the health hazards. What radiation will do to my family and three little girls and we're expecting another one in November. And, you know, there isn't any definite proof of what the radar hazards could be or will be.

Another reason is we have citizens' band radios worth $5,000 and $6,000 and according to that EIS, this radar site will render them practically useless. I feel that the idea of a radar station is basically outdated or obsolete and a gross misuse of tax dollars. 7

I believe the protection of natural resources is as valuable as cropland. It's despicable. We talk about surpluses in agriculture. There is no such thing as surplus. All you have is the land distribution. If people think that it's wrong to have a little extra on hand, they should talk to the people overseas that don't have anything to eat at all. They'd know what it's like to be hungry.

I guess my main point is we believe the destruction of cropland and wildlife habitat is sinful and should concern people all over this country. That's all I have to say. Thank you.

Lt. Col. Clarke: Thank you, Mr. Baxter. Next is Mr. Holtz.

Mr. Holtz: My name is Dean Holtz, Tenney, Minnesota. I represent the citizens of Taylor Township. We're strongly opposed to the OTH-B radar transmitter in our area. I'd just like to submit to you a petition containing 80 signatures opposing the installation of the OTH-B radar transmitter in our area. We want to be sure that this petition is included in the Final Environmental Impact Statement.

Lt. Col. Clarke: It will be. Please bring it down. Next is Norma Holtz.

Mrs. Holtz: My name is Norma Holtz. I'm a resident of Traverse County. We strongly oppose the OTH radar base. There would be many families who would suffer loss of income, productive farmland and the towns would lose because of people leaving. Even those not directly involved may become impaired in health because of added pressure the base will add.

The land is the past, present and future for many and we would lose some good productive farmland. We would also lose a lot of friends and neighbors. The biggest fear is the statement in the impact statement on page 4-87 on how there are no studies on the long-term effects. There are not enough definite answers. We can't determine the good or the bad. There are way too many possible maybes or uncertainties in the impact statement what really is a health risk. We may never know, but how about our children or our grandchildren?

In the impact statement, you limited the studies to animals and it showed harm. What would it do to humans? Do you think we're dumb enough to think that we are immune from it? What about livestock? We raise beef. Who would want to buy our beef with the possibility of radiation? Do you care only about the wildlife?

It seems so in the impact study. Why do you need defense for our country without the concern for its citizens? You've been here before and said things opposite from what the impact study stated. Then you qualify the statement and you give another answer. Who is telling us the truth and what have you hidden?

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When we call places we get nothing but runaround and even anger at us. No one will answer anything and the impact statement doesn't tell us anything. If you take all the uncertainties out of this book, there would be very few pages left. How can you expect us to make a decision on something so important that we know very little about? You have made statements that are not true according to the impact statement. And the economic gain, according to the book, is less than one percent and it does not include our loss and what we would end up with.

The impact statement says there will be tax dollars lost. How do you go deceiving a lot of people. You speak of jobs yet you fail to tell them that they have to be civil service qualified, tested, and that there is minimum wage paid even in civil service. And a person would have to qualify for a top secret clearance. And the bottom line is, is it not true that because of Gramm-Rudman, civil service jobs are froze? You lead them to believe that they will get top dollar for their lands and homes and in the impact statement, it clearly states that it will be determined by the fair market value. Right now, it's $375 to $500 per acre. And we all know it will be lower yet next year.

Then there are many grades of land involved and some will get a lot less than others. Yet you fail to be explicit on your intentions. People who are in the Air Force say there's much more involved and dangerous than you are leading us to believe. What are the effects of a malfunction? Nowhere in that book is it talked about. The impact statement says beyond five to six miles there would be no TV or radio interference. People who work with this say ten miles or more. Possibly even satellite dishes not working or there could be television interference. Who really knows?

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They say in the impact statement it can affect airport beacons 100 miles away. Besides all of the above, this is basically already obsolete because of planes being made that can evade radar. Now, really, do you suppose that Russia has the same? Will you be like some of the other government bases that are obsolete and you put various other things on our land? You spend millions to put these facilities up but do very little testing on human lives.

7

Will we be left like the people from Project Bikini where the government took over a group of islands southwest of Hawaii and moved all the people off to do tests? That was 40 years ago. Some people have developed health complications or died and were 250 miles away. After 40 years, the land is contaminated and they still can't go home. The government had led them to believe that it was God's will.

(Lt. Col. Clarke gave the 30-second notification.)

The story was published in the June issue of the National Geographic.

Lt. Col. Clarke: Thank you very much.

(Audience applause.)

Lt. Col. Clarke: After Father Wey is Gerald Frisch.

Father Wey: Father Wey from Dumont, St. Peter's Parish and St. Patrick's Parish for ten years and 23 years in Traverse County. I don't know of anyone else who would be willing to admit that. I'm not an expert. I'm too close to home. Experts only come from a distance. I don't know anything about radar. I don't know anything about harmonics. I can't even turn on the microwave oven. But I think I do know something about human values.

And our small community, since this past November, has experienced ten deaths. Our population has been decimated and we can't change that. Oh, God, I wish I could because everyone of them is missed. And I don't want anything to happen that's going to take anyone away from our community.

One thing I've learned over the years is that I'm proud to be a part of Traverse County, otherwise I wouldn't be out here for all these years. I've had choices of many places, but I've noticed the community of people, whether it's in Dumont or Wheaton, in Traverse County, that people were proud of their families, proud of their community as evidenced last year by the Dumont Centennial and next year by the Wheaton Centennial. They have all this pride--a pride in the land and God forbid that we should do anything to destroy that pride by taking away from people that which they have worked for, that which they have sacrificed for, for something that is unknown and that is just not understandable to many of them. I can understand that. I deal with it every day.

I can understand sickness for I see it every day. But I cannot, for the life of me, understand if I live to be 100 years old--I'll never understand the greed and the selfishness that comes from people's minds and out of their hearts. Thank you.

(Audience applause.)

Lt. Col. Clarke: After Mr. Frisch, George Duckwitz, Jr.

Mr. Frisch: I've lived most of my life and on a farm in the Dumont area. We like it so well, we remodeled our home and decided to stay there. Unfortunately, it is one of the sites to be destroyed for a radar transmission site, possibly. But even worse, it's the feeling of being a non-person. All us farmers in the radar site are non-persons. We don't even exist. The Air Force will tell us they don't feel there's any danger of radiation or from tests they feel there is no danger at all. Even their impact statement doesn't go that far. They stated that all tests are inconclusive which means that there is some danger and some not.

Before any new drug is used, the FDA sees to it that it is thoroughly tested and proved safe. So then how can the Air Force get away by saying we don't think there will be any harm? Are we just to be guinea pigs for this to see if it really is dangerous? We're told by the Air Force that they need our land. If we don't want to sell it, they can take it by eminent domain. They can take our homes, but not touch a slough because there's ducks there.

They can take our land, but not a field where geese feed. They can take our roads and everything else, but are not able to put up screens because birds might fly into them. Don't you think that as Americans we have the right to be treated as human beings or at least treated as well as birds and animals?

In the past few days, we have been hearing about abandoned radar and missile sites used as dump sites for toxic and hazardous wastes. Is that to happen here? These sites will be obsolete in 20 years. Then what? In the impact statement, it is stated that when these bases are decommissioned, the land will be available for other federal uses. Like dump sites? But don't depend on local and state laws. The Air Force will have the most powerful argument of all time. It's needed for ..ational defense. Thank you.

Lt. Col. Clarke: Thank you, sir. After Mr. Duckwitz, Vere Vollmess.

Mr. Duckwitz: My name is George Duckwitz, Jr. I'm a consultant type of geologist. The suitability of the transmit site in the Wheaton southeast section relative to the hydrological characteristics of the site, the maintenance of surface water alterations and the hydrological problems prevalent in this proposed site--I have not examined all the

hydrological data for the remaining two sites in Traverse County--the Wheaton North and the Wheaton Southwest--therefore I can't make a professional comment regarding the hydrology of those two sites.

However, some of the information for the Wheaton Southeast site may be applicable to the other two county sites. The Wheaton Southeast site does get to be a flooding problem, particularly in the spring when there is snow melt. This flooding has caused extensive damage to the county and township roads and grid systems and to some personal property of local residents. It is also evident that the volume of water that flows through this site has increased in the past 15 years at the county and township roads by removal of the lower capacity bridges and replacing them with larger water capacity bridges.

Yet these new bridges appear to be inadequate in some years to handle the volume of water that is evident by the high water marks in culverts and above them and the photographs that have been made by local residents. Yet there might be alterations prior to the Minnesota protective water laws which consist of scraping under meanders. This has been met with no success especially if the old filled in meanders [undistinguishable]. During high water, the creek does follow the old meanders scouring to build channels. Drainage of temporary ponds in the site area consist of shallow field ditches ranging in depths from one to two feet. These are not adequate either to meet the needs of the local residents or the proposed sites.

However, extensive drainage systems upstream will also increase the capacity to the proposed site and place an increased burden on the creeks, roads and bridges in regards to the volume of water that rapidly inundates the area. There has been renewed interest to improve the efficiency of the drainage systems upstream of the proposed site which could place an additional demand on the creek as far as the volume of water flowing into the creeks. This interest has been temporarily curtailed due to the economics of the ditch and the overall poor economy in agriculture in this area.

The overall suitability of this proposed site is severely questioned as it pertains to the hydrological factors present in the area. Any changes or diversions of the natural watercourse as proposed in the Environmental Impact Statement, Section 4.3.2.7, will place an increased burden on the roads, bridges and personal property downstream caused by the change of the storage capacity of the creeks--channels, increasing the volume of water in the other channels that water is diverted into and the acceleration of the water velocity through any of the diversion culverts.

Also, any diversion of water from one creek to another, especially during the high waters, could conceiveably cause the flood water to crest over the banks of these drainage channels and flood the generally flat lands which are below the channels.

Minor alterations of the meandering has had little or no success of the diversion of the water. Therefore, a larger scale channel alteration probably will meet with the same degree of success. Improvements and alterations of drainage systems upstream of the site could change the performance and efficiency of any alteration or diversion associated with the construction of the transmit site if one should be located here, due to the degree that flooding of the sites will increase. Therefore, it is advisable, based on the hydrology in the southeast site, it be dropped from all further considerations as a candidate for the Over-The-Horizon Backscatter Radar Program.

And, Colonel Clarke, if I may, I'd like to submit more detailed comments about this to you?

Lt. Col. Clarke: I wish you would. Please bring it up. Mr. . . .

Mr. Vollmess: Sir, my name is pronounced Vere Vollmess.

Lt. Col. Clarke: After you will be Joanne Marihart.

Mr. Vollmess: I rise to speak in opposition of this Over-The-Horizon radar system. One of the areas I'm looking at is land use. I guess when I started farming and became involved in farming, those other farmers around me--I think if you look at a farmer, you begin to realize that we are all tenants and sojourners here on this earth today.

We have an inherent responsibility to use wise conservation measures on our property for the benefit of yet unborn generations in this country. When I look at this type of use of very productive agricultural land, I simply cannot understand it. I think it behooves everyone, whether you be a businessman, a teacher, an editor, or whatever your profession, all of us depend upon the soil. Even the Russians do. If we look at Russia today, they're having a problem passing 180--195 million metric ton in their annual production. Where would this country be if we had three or four years of back to back crop failure such as the Russians have experienced? Our blessing has become a burden. You simply do not realize it.

Another point I'd like to make is where would we be today in this country if the Indians had utilized the land to the extent that our society has? We continue to take productive land and destroy it instead of living in harmony with nature.

I'd like to promise you that after the President proposes his budget for FY 88 or FY 87 or FY 89 or if it's 93, I will do everything that I can to fight this project in the Congress and the Senate of the United States. Thank you.

Lt. Col. Clarke: Thank you, sir.

(Audience applause.)

Mr. Vollmess: Sir, I'd like to present a petition signed by the residents of Monson Township. There's 104 signatures on it and we have 119 registered voters within our township. I ask that this be part of the record.

Lt. Col. Clarke: Thank you. Next is Joanne and then Rick Mathias. Ladies and gentlemen, it's 10 minutes to 10. It's going to be obvious that we're not going to be able to finish everything so please be brief.

Ms. Marihart: My name is Joanne Marihart. I live in Taylor Township and I'm here tonight to voice my opposition to the radar site being located in Traverse County. One of my main reasons for this opposition is the loss of prime farmland and the destruction of our way of life.

Most of the people concerned have spent the greater part of their lives in this area working this land and building what they now have. Even if we could relocate, it would never be the same. There is no way that they could compensated for the time, patience and care that they have put into their farms and the feeling they would have watching it being destroyed and replaced by this radar site.

Some would possibly incur a loss on the sale of their land and land values have dropped in the last few years and those who are fortunate to show a gain might not be so much farther ahead in the end.

The capital gain has taken a tremendous drop and the entire gain could cancel our very income. And what of the people that remain? Some would lose the greater part of their several acres, whether owned or rented as in my case and it's lost. Some of this land will be hard to replace either for distance, cost reasons or just not being able to find good land. Others will be forced to live next to this site for probably the next 20 years and deal with the problems that it leaves--extra miles and hours spent on rerouting roads, the possible flooding because of rerouted waterways and the burden of higher property taxes to make up the loss of tax revenue on the land used for the radar site, not to mention the feeling they will live with wondering if 15 years down the road it is proven to be a hazard to their health.

Lt. Col. Clarke: Thank you, ma'am. Mr. Mathias.

Mr. Mathias: My name is Rick Mathias. I live five miles east of Dumont, Minnesota. I'm a farmer and operate an aerial crop spraying business. Reading the Environmental Impact Statement, it was informative in some areas but incomplete in others. The greatest disappointment I had in the EIS was that it did not mention the loss of farm families or project how many it could affect, as I feel this is the most important issue at stake.

On the subject of land, it states a minimum of 2,400 acres is needed, but it does not even estimate what the maximum amount of acreage would be. It does state that a significant negative impact could occur from the loss of productive farmland. On land acquisition, it states the landowners will receive fair market value. Will the value of the surrounding farmland be affected?

On decommissioning, the EIS states that when the Central Radar System is decommissioned or ceases to be operational, the land, if it had been purchased, would be made available for other federal use. I repeat--other federal use. This means that it will not be returned to agriculture.

And on radiation, it states that it will keep within American national standards which are 1,000 times greater than Russia's permissible level. I repeat--1,000 times greater.

On tax revenue losses, it states a potential negative impact would occur at this level and may have a significant impact on the township level.

On air traffic, it states the area will be posted for general aviation, but it does not mention the limitation on the crop spraying.

On wildlife, it states that some wetlands will be drained and I question what impact that will have on the wildlife. And around the exclusion fence, it states that interference effects will be strictly local, and what will be the effect on ground to air radios, VHF, navigation beacons, TV and other systems?

On drainage, the disruption of surface water, it states that streams and ditches may be rerouted or culverted. It says if culverted, flooding problems could exist downstream and it does not mention the impact to the surrounding farms if water is rerouted around the transmit area.

And a last and very important point is that the Over-The-Horizon Backscatter Radar System requirements are subject to change at any time. This system is new and the Air Force is apparently still learning about it. The Air Force makes the rules and it can change them at any time. Therefore, I question the credibility of the Environmental Impact Statement. Thank you.

Lt. Col. Clarke: Thank you, Mr. Mathias.

(Audience applause.)

Lt. Col. Clarke: Gloria Raguse?

Mrs. Raguse: My name is Gloria Raguse and we are landowners and farmers in the Wheaton north area, section 14, and we are very much opposed to the radar transmitting station in our area. We are also

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sugar beet farmers who feel that the radar transmitting station will be a great hindrance to the industry and the loss of valuable sugar beet acreage.

We have four children and our farm is part of their future and our family way of life. Our farm has been in the Reguse family for over 60 years and we would like to continue for more generations to come. Our two older children are now teen-age boys who, since childhood, have been interested in farming. I have a picture one of the boys drew in kindergarten ten years ago, labeled "When I grow up, I want to be"--on that picture he drew a tractor and a semi-truck. That same boy has the same dreams today. How can you dare take away a child's dream and our way of life? And I have a question. Can I ask that? Why does the EIS specify that the transmitter must be five miles away? What about the power line running through the site? Page 2-11 . . .

Lt. Col. Clarke: That will be answered in the report that comes out. Ladies and gentlemen, unfortunately it's ten o'clock. There are numerous people that we didn't get to and I'm not going to apologize because I did the best I could.

Spectator: You did nothing.

Lt. Col. Clarke: Dr. Dahlberg, I would appreciate it if you would submit your comments to us here tonight so we can take them back or mail them to us. Ladies and gentlemen, all of you who wish to make comments, I assure you that the written comments you submit--and if you want more forms, they're in the front--will be given the same weight as what you've heard here tonight and I encourage you to do this. You have until the 6th of October to send those in and they will be addressed.

Spectator: Why is it being cut off at ten o'clock?

Lt. Col. Clarke: That was the time that was set for the public hearing. We are limited to three hours--this is three hours, and we will do three hours tomorrow night. Again, I can't impress upon you enough to submit your written comments. I thank you for your time. I hope you have felt you've gotten something across to us. I'm sure that you have. I trust that you have.

Based upon that, ladies and gentlemen, thank you again. This public hearing is adjourned.

(The hearing was adjourned at 10:03 p.m., September 10, 1986.)

3.2.2 Submitted Materials

Materials were received from:

James Conroy
Duane A. Dahlberg
Gene Berger, Chairman, Redpath Township, Norcross, MN
Lorine Raddatz
Warren Raddatz
Virgil Raddatz
Shirley Tritz
Dean Holtz, Tenney, MN
George Duckwitz, Jr., Holloway, MN
Joann Conroy
Bruce Conroy, Dumont, MN
Alice M. Fridgen, Dumont, MN
Marilyn Mathias, Wheaton, MN
Frederick G. and Luella E. Joos, Washington, IL
Sharyl (Peterson) Fischer, Brooklyn Park, MN
Wanda Berger
James and Shirley Krenz, Wheaton, MN
Douglas E. Frisch, Mayor, Dumont, MN

Petitions from the following townships were submitted: Parnell, Taylor, Redpath, Tara, Croke, Campbell, Leonardsville, Walls, Tintah, Clifton, and Monson.

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G3, G6, G8

Statement of Opposition to the Proposed Radar Site at Wheaton, Mn.

My name is James Conroy. I live in Walls Township 1 mile east of the proposed S.W. study site. My wife, Sandy, and I have five children ages 17, 14, 9, 4, and 1½.

In the S.W. area there are farms with proven yields of 45 bu. wheat, 80 bu. corn, and 36 bu. beans (soybeans).

The Farm Land Protection Policy states that these prime farm lands should not be used for any purpose other then agriculture when other none productive land is available. This is found under Chapter 73 section 4201-4202-4203-4204.

During the land soil testing done here in Traverse County these past couple years the sections in the S.W. study area were found to be top prime farm land with the soils consisting of hamerly, aazdani, lindaas, foredale, and parnell.

I'm sure there is land that is less productive than this.

Drainage would also be a big problem if the sight were placed here.

The soil study proves that this area is of top grade prime farm land.

Wildlife:

This area is also heavily populated with wildlife. There are many white tail deer in this area which depend on the cover which is available at this time.

The water fowl in this area is extremely heavy in the spring and fall as the birds pass through. There are also many sloughs and pot holes for wildlife to nest in during the summer months. Thousands of ducks and some geese use these wet lands. I believe the environmental impact study states these facts.

This radar would cause an extreme hazard for water fowl.

James Conroy

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(465 p 2 of 3)

People: S.W. Study Site

When reading through the environmental impact study I find there is very little said about the affects of the OTH-B radar on humans.

From listening to the Air Force meetings and reading local paper editorals they say nothing about harmful health affects. What is Uncle Sam trying so hard to hide? The Air Force funded a $5 million general health study at the Univ. of Washington School of Medicine. Rats exposed to electromagnetic radiation developed a disproportionate number of malignant tumors. The Air Force downplayed the study and would and will not fund new studies. Dr. Guy, who led the study, disagrees with the Air Force's conclusion, saying that it's "provocative".

I guess it will take much public pressure, as Dr. Guy said, to force our government into more studies.

I'm a Vietnam Vet. and the government tried to say agent orange was harmless. I guess we all know better now. Only thing is it's much too late. Lets not let something like this happen again. Stop the lies now!

Why does the government want to use humans as a study group and not more rats? Are we a cheap form of race that when these radars go into operation for a couple years and babies are born deformed, children start showing signs of cancer and so on, that the government will say, Oh! I guess the rats were right! How many bad things must happen before the government starts to care what happens out here? Face it, that radar, on washington and you know darn well complete studies would be made first.

I would sure hate to be a person with a family living infront of those radar screens spraying radiation on my family knowing darn well we would all have a high cancer risk. So you see, more families would be affected then what is stated in the study. Many would have to move to protect their family.

This would destroy many families way of life.

James Conroy

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Township: S.W. Study Site

If the site were put in Walls Township it would put a financial burden on the rest of Walls Township land owners. 2400 acres would add $1.00 per acre taxes and 4,000 acres would add about $1.75 per acre increase for land owners.. Over a twenty year period this would mean at least $454,000 increase on the 2400 acres site and over $757,000 increase on 4,000 acre site. This would be way too much of a tax burden to expect of remaining land owners.

James Conroy

COMMENTS ON THE DEIS FOR THE PROPOSED CENTRAL OVER-THE-HORIZON BACKSCATTER (OTH-B) RADAR SYSTEM

BY DUANE A DAHLBERG PhD

RECEIVED
20 Oct 86

The following comments will begin with two case studies, continue with an arguement for the inadequacies of the thermal and shock models as well as a discussion of health impacts, and conclude with specific arguements related to the DEIS.

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The first case study deals with direct effect from microwaves. An experiment was conducted in the American Embassy in Moscow over a period of many years beginning perhaps as early as the 1950s. The experiment consisted of the bombardment of the American Embassy with a composite of microwaves of several frequencies until the late 1970s. Although intensities of the beams are uncertain, levels were officially quoted to have been less than .018 mw/cm^2. An unfortunate circumstance was the fact that the central intensity of the beam was directed at the ambassador's office. The Moscow signal was first documented in 1962. In 1965 the CIA sought consultation and wanted a secret evaluation which was called Project Pandora. Jack Anderson broke the story in 1972. The first U S Government response occurred in 1976. In spite of the difficulty in obtaining information investigations did uncover the entire microwave syndrome among the embassy workers of that period. Very important implicating informaton is the report that Ambassador Walter Stoessel had developed a rare blood disease similar to leukemia and was suffering headaches and bleeding from the eyes. In addition two of his irradiated predecessors Charles Bohlen and Llewellyn Thompson had already died of cancer.

Reasons for our government allowing this experiment to continue

over period of so many years without some official public statement condemning the use of the American Embassy as a laboratory for determining adverse microwave effects on human beings, have never been officially discussed. The position in our country has been that unless the power of the microwaves actually causes a temperature increase and/or kill cells, no adverse effects can occur. Since our standards for general population had never been exceeded in this experiment, a benevolent conlusion might be that the officials in our country who were aware, honestly felt that no physiological harm would come to those working in the embassy. The anecdotal information from this experiment certainly proves those conclusions incorrect and points to the need for our country to reconsider its approach to microwave effects.

A second case study describes conditions especially characteristic of dairy barns and involves primarily direct currents, DC field, and ELF fields. Traditionally electrical shock has been known to affect livestock and at levels below those that apparently affect humans. As a consequence special care has been taken to avoid faults or shorts that might cause electric currents to access livestock and especially the dairy cow. The additional stress is considered detrimental to the dairy animal. The traditional effects which farmers have associated with a prolonged electrical fault have been reluctance to enter parlor or stall. Unusual and adverse behavior while in the barn, uneven and incomplet milk-out, uneven milk let-down, health problems including mmastitus, high somatic cell count, breeding problems and reduced milk production. The general condition reponsible for these effects attributable to electricity has been called "stray voltage".

The condition described by these terms implies the existence of an electrical potential between two contact points on the animal which

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cause excessive current to flow through the animal's body.

Most often the association has been with a short duration alternating current best described as a shock. Demonstrations and research indicate clearly that shocking livestock with alternating currents in the range of one or more milliamps can cause behavioral responses. The emperical evidence gathered in field investigations of affected dairy herds correlated ma[illegible] the health and production effects with the behavioral reponses. Logically one could postulate that at certain levels of electrical shock the health and production of dairy cattle could be adversly affected.

By the 1950's, the stray voltag problem was becoming quite evident, especially as electrical mechanization increased on the dairy farms. From that time, and ever increasing to the present the effects mentioned previously have been correlated to electricity accessing cows. Farmers, dairy equipment suppliers, power suppliers, agricultural extension specialists, veterinarians, feed suppliers, and electricians can all attest to the problem and have correlated and related it to electricity.

Farmers and their consultants became more sophisticated in their discovery of and solutions to the fault condition but in many cases the farmers could not eleiminate the behavioral reponses and health and production problems in their dairy herds. As the professional people searched for other sources of electrical energy, their investigations revealed that electricity could reach the barn through the neutral-grounding system. Methods were developed to virtually eliminate AC potentials from accessing the cows while in the barn. Under nearly all conditions imaginable in a dairy operation these methods assured the

10b

dairy farmer that cows could not receive a significant AC shock. In principle. therefore, the problem should be solved and the case closed. No reports assessing the effectiveness of these corrective methodologies negating the effects have been forthgoing. Changes in the health and production of the herd usually occurred but the change was not always an improvement. Unfortunately, when the recommended corrective procedures did not elliminate the effects, the cause was no longer considered electrical but something else. Most often that something else was the manner in which the dairyman managed his herd.

Very little research was carried out throughout the history of the stray voltage problem to prove cause and effect relationships. The work which was undertaken considered mainly the behavioral aspects of the prob em. The results showed correlation of behavioral response and AC pote ntials down to about 1vAC. The only research performed to assess phys ological impacts from shock currents proved negative.

In spite of the fact tht the research could not correlate the health and production problems with shock currents the farmers were told to eliminate the shockcurrents that might access the cows. For many farmers, even after they virtually eliminated all shock currents, however, the same behavioral, production and health problems persisted. The problem varies from significant improvement to increasing severity. The farmers then analyzed every possible cause suggested to them. They had experts analyze and evaluate their entire management methodology and they made all recommended changes. Even after all these efforts, the problems still persisted. In addition, the only changes which caused any modification in behavior, production and health of the cows were electrical.

Through an extensive research effort of working with the farmers on

10b

their farms, my conclusions are:

In the space occupied by people and other living systems there exists today a significant diversity of electromagnetic fields(EMF) which are produced because of human activity. Research results which connect relatively small EMFs and electrical currents to a number of human and animal physiological effects are appearing more frequently in the published literature. In many cases the effects are believed to be caused synergistically from more than one EMF. As these research discoveries are being made, a large quantity of experimental work and anecdotal information is being reported which links uncontrolled EMFs and change in electromagnetic parameters with a set of physiological problems in animals and humans. The fact that the animals and humans are surrounded by numerous EMFs which appear to work synergistically, the term electromagnetic synergistics (EMS) is used to identify this reality. Electromagnetic synergistics syndrome (EMSS) is the set of effects associated with EMS.

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The set of effects which have been brought to my attention and would fall the heading of EMSS are:

1. Among dairy cows the effects include restlessness when in their stalls or parlor, unwillingness to enter barn, parlor, or stall. refusal to eat or drink, unable to clean up the feed off the concrete floor, lapping in the water cup, pressing their noses against stalls especially while being milked, dancing in stalls or parlor, distended eyes, urination problems, kicking at farmer when being washed, kicking off milkers, uneven milkout and letdown (some quarters will release milk while others will not), long milking time, poor production, sudden onset of mastitis which is often unaffected by antibiotics, high veterinarian

bills implying high incidence of various illnesses, leukemia, peaking in production in the first weeks of the lactation cycle, abortions, breeding problems, leg sores that will not heal, difficulty walking and getting up.

2. The collection of information on other animals is not as complete. For all domestic animals there are recorded problems. In hogs such problems as small litters, mastitis, inability to gain weight, fighting and breeding problems are reported. For race horses the reported effects include stereotypic stress-related behaviors such as stall-walking and weaving, inability to gain weight, dull coats, dull eyes, loose manure and sinus problems.

3. The human physiological and behavioral problems which have been reported are strange sensations in the body, tired and aching legs, general fatigue after working a couple of hours in barn or shop, aching and swollen knees, dizziness, headaches, temporary loss of vision, disorientation, loss of depth perception, numbness in hands and feet, feet suddenly becoming hot any time of year, swollen abdomen, pain in lower abdomen area, nausea, open sores unable to heal, back problems, irritability, inability to concentrate. Other effects which have been difficult to assess in a short time and may be a part of the syndrome include cardiovascular problems and cancer(esp. leukemia).

The presentation of this group of problems in no way implies EMS as the only possible cause.

These two case studies are important for two reasons. First they point out the potential for direct effects from microwave energies induced in the human body as well as the potetial for effects from EMF produced from EM energies induced in or introduced into the earth. Both of these possibilities exist for the OTH-B transmitter. Second the

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types of effects are very similar in the two cases and suggest living system interaction mechanisms other than heating or shock as being extremely critical.

In the early 1950's Herman Schwan was asked to assess the effects from microwaves. His basic assumption was that thermal effects were the only possible concern. It was determined that appreciable heating occurred only at levels of 100 mw/cm^2 or above. As a margin of safety 10 mw/cm^2 was selected as the standard. The history of research and actions incouraging our country to set standards more stringent is long, controversial and extremely political.

10e

At the present time there is a leaning toward 1 mw/cm^2 but is not enforced for everyone. USSR and Eastern Europe began their research into EMF effects in the early 1930's. They have a long history of extensive investigations into the impact of all types of EM energy. Their fundamental postulate was that any electromagnetic fields which were not naturally present in the world had the potential of causing effects. Consequently they were not limited to considering thermal effects alone. As a result of the USSR studies, the off-the-job safety limit of .001mw/cm^2 in the micro and radio wave bands was adopted. Since heating is apparently not a problem above 100 mw/cm^2, USSR and Eastern European researchers realized other mechanisms for adverse effects of micro and radiowaves in living systems. The choice of standard is certainly in part the result of asumptions as to how EMF interacts with living tissue. In addition there is another clearly defined difference in the research methodology. In the US our ultramechanistic attitude forces us to depend upon statistics to give us the answer whereas researchers in the USSR concentrated on the animal

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or the living system. Each approach has its assumptions, values and problems. For each type of research there are reasons for selecting one or the other of these approaches.

Statistical averaging provides useful information if the effects on a specific organism are essentially the same none other than a small finite number of effects occur, and a definite mechanism has been established. In the case of electromagnetics the individual differences in organisms appear to determine the specifc effect on the system, nc mecnanism has yet been established for the noted effects, and one or more of many different effects can occur. Consequently the specific effect of EMF on a particular organism is very difficult to predict. An example from microwave research is chosen: Results on blood chemistry change have shown that in a single experiment involving a number of animals of the same species, the red cell count increased for some and decreased for others. Using statistics and averaging the increase and decreases, one could conclude that no significant change took place and consequently the microwaves had no significant impact. If, however, multiple trials had been conducted on single animals or groups of animals that responded in a similar way, an entirely different conclusion is probable. Microwaves do affect the blood chemistry.

Two additional factors impact the reproducibility of experimental results. First, there are synergistic effects from combinations of forms of EM energies. Second the natural and anthropogenic EM energies present in the laboratories which could contribute to the effects have not always been eliminated or even identified. In fact the magnitudes of the anthopogenic EMFs are in some cases millions of times higher than natural backgrounds. As a consequence providing a proper laboratory condition with only natural background EMF's present is nearly

impossible. Then one must ask a very important question concerning the significance or even the possibility of having a control group for comparison.

At the present time there is no scientific concensus relative to EMF effects. The newer research in all EMF regions, however, is pointing toward effects at much lower levels then even considered in the early research in this country. The more recent research is also revealing a broadening of the models relating cause and effect so as to include nontraditional mechanisms. Small direct currents, ELF fields at volts/meter, low power radiofrequency and microwaves, and combinations of these have been correlated with physiological effects on living systems. Radiofrequency fields modulated at ELF's, for example, have demonstrated significant effects because the radiofrequency fields appear to be the best carrier for most effectively exposing cells to the ELF fields. Although there is no clearly defined lower level for effects from any EMF, the levels at which effects are observed continues to go down. One of the most disconserting aspects of reserch in EMF effects is the problem of reproducability which I eluded to previously. This carries through in the utilization of EMFs in health assist activities. Analyzing raw data with statistically methods does not always prvide the convincing proof that one would like in order to introduce the technology as being benificial. Bone union is one area. Anesthesis, pain relief are others.

There are a number of researchers around the country who are leading the way to a new and more accurate model for assessing EMF effects. I will only name three all of whom are controversial as are all who pave the way to discovery: They are Dr. Robert Becker medical

researcher from New York, Dr. Andrew Marino a medical researcher from Lousiana State University, Dr. Bjorn Nordenstrom, Professor of diagnostic radiology, Stockholm, Sweden. At the present time there are two books in publication which in my opion will go down in history as classics in biomedicine. One is The Body Electric by Dr. Robert Becker, published in 1985 and the other is Biological Closed Electric Circuits: Clinical, Experimental, and Theoretical Evidence for an Additional Circulatory System by Dr. Bjorn Nordenstrom published in 1983.

Dr. Nordenstrom's book draws together his and others research which substanciates his theories that all living systems contain numerous functioning electrical circuits. Electric fields produced within the zbody provide the force and energy which maintains these currents for whatever purpose is required. These circuits, he maintains, exist in all bodily functions and the DC currents which flow determine the well being of the body.

"Simple electrotechnical analogues imply that a local decrease or increase of transported current may give rise to undesired as well as useful effects. A local change in density of current anywhere in a biologically closed circuit might lead to anaesthesia, or produce pain or other undesired effects far way from the site of the driving force for the closed circuit transports. Clinical considerations which can not simply be understood by the known and accepted mechanism of referred pain might be explained in this way. For example, degenerative alterations in the cervical spine may not only give rise to pain in the distribution of an affected nerve but also to symptoms of local peripheral injury associated with pain, e.g., tenderness to local palpation or active contraction of a muscle or muscles."

Dr. Nordenstrom discusses the possible role of biological closed

electric circuits (BCEC) in biogenesis, including carcinogenesis. "In the author's opinion, endogenous activation of BCEC systems, leading to unidirectional flow of current over long time periods, may lead to modification of cells and tissues. The mechanism involved in cell and tissue modifications demonstrated in Chapters XIV and XVI should function with endogenously generated currents as well as with currents from an external source of power. Strong currents will destroy cells and tissue. Weak currents, on the other hand, will more gently create new internal and external environments for cells. The currents will also directly interfere with cellular metabolism and modify structural elements of cells. The currents will also directly interfere with cellular metabolism and modify structural elements of cells. Damage to structures, e.g. the DNA molecule, is evidently one possible effect of such modifications. Cells subjected to the conditions described can be expected to show variable abilities to survive and to adapt themselves to the new living conditions. Thereby a variety of possibilities should occur for the evolution of normal and pathological populations of cells. A continuous selection of viable, reproducible cells, capable of adapting to environmental factors, which are slowly changing over long time periods, might lead to the developement of normal biological tissues. A endogenous activation of BCEC systems in this way should evidently represent an important biogenetic function. The underlying mechanism can, however, also be anticipated to produce a variety of less viable and adaptable cells. Some of these cells may survive, leading to the developement of benign or malignant tumours. In this view the developement of neoplastic tissue may depend on the same biologic mechanism as the developement of normal tissue.

A large variety of chemical, physical and biological factors can induce cancer. The capability is not surprising. Many chemicals should have the capability to activate BCEC systems with different magnitudes of energies, either primarily by their own electro-(physico-)chemical potentials or secondarily over a chronic injury polarization. It is therefore possible to understand that BCEC systems under certain circumstances may function as a common mechanism in carcinogenesis."

The specific physiological effects from ELF fields are critically summarized by Andrew A. Marino researcher, at the Louisiana State University Medical Center, in his contribution to the Assessments and Viewpoints on the Biological and Human Health Effects of Extremely low Frequency Electromagnetic fields (a compilation of comissioned papers for ELF literature review project) under the direction of the American Institute of Biological Sciences. The summary of the nearly 200 research reports which Dr. Marino reviewed is:

"1. EMFs can alter the metabolism of all body systems, including the nervous, endocrine, cardiovascular, hematological, immune response, and reproductive.

2. The effects on each tissue or system are largely independent of EMF frequency.

3. An organisms response to an EMF is determined in part by its physiological history and genetic prodisposition; individual animals, even in an apparently homogeneous population, may exhibit changes in opposite directions in a dependent biological parameter.

4. EMF-induced biological effects are best characterized as adaptive or compensatory; they present the organism wih environmental factor to which it must accommodate."

Even though this study did not completely exclude effects from

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higher frequencies there is another body of research concentrating on radio and microwaves. Both western and eastern nations have contributed to this research but let me highlight informaiton provided at a conference in Warsaw in 1971 by Zinaida V. Gordon and Maria N. Sadchikova of the USSR Institute of Labor Hygiene and Occpational Diseases. They identified a comprehensive set of symptoms which they called microwave sickness. Its first signs are low blood pressure and slow pulse. The later and most common effects are chronic excitation of the sympathetic nervous system(stress syndrome) and high blood pressure. This phase also often includes headaches, dizziness, eye pain, sleeplessness, irritability, anxiety, stomach pain, nervous tension, inability to concentrate, hair loss, plus and increased incidence of appendicitis, cataracts, reproductive problems, and cancer. The chronic symptoms are eventually succeeded by crises of adrenal exhaustion and ischemic heart disease (blockage of coronary arteries and heart attack).

10o

For the OTH-B transmitter the emitted energy is in the radiofrequency EM energy spectrum. The wave is a linear sawtooth frequency modulated contiuous wave. The common microwave radar system is a pulsed modulated system which therefore does not emit a contiuous wave. The saw tooth modulation is is the ELF range. The beam has a width of approximately 8 degrees and rotates through a 60 degree angle The mazimum power density is approximately seven times the average and the emitted beam impinges on a point 14% of the time.

If my observations are accurate Figure B-7 indicates that the maximum groud level power density for sector A is .5mw/cm^2 at 4000 feet from the antenna. For other sectors and other bands the level is lower. The lowest level at the ground 4000 feet away appears to be approximately

the ground at larger distances from the antenna.

The analysis of biological and health effects are based on the heating (power, energy) model. The assumption is made that when comparing the microwave effects with the radiofrequency effects the relative energy of the quantum model determines the potential for effcts. In other words since the radiowave frequencies are much lower than the microwave frequencies, radiowaves of the same power will have lower quantum energy and therefore produce a lesser effect on living systems.

When one utilizes Dr. Nordenstrom's BCEC model it is only appropriate to consider the induced currents in the living system. Since the electrical induced currents in the living system varies over orders of magnitude, the magnitudes of the induced currents will likewise vary. Induced currents will be present in the living system as long as it is in the beam which would be approximately 8 1/2 minutes/hour every hour of every day for as long as the radar system is operating. The closed electrical circuits will have the greatest conductivity and therefore the greatest currents will be induced in these circuits. In addition studies of living tissue has varified the existence of semiconducting maerials and in such an arrangement as to create organic diodes. The implication of these characteristics is the potential for the induced radiofrequency currents to be rectified to direct currents. Assuming such a model for interaction of EM energies with living systems, no correlation is possible between health effects and size of the living system for particular power density. Effects on humans and wildlife, for example, are equally as likely. Without specific information concerning the conductivity of the various materials in the living system calculations of the induced currents

would be impossible. To determine the rectification potential is likewise difficult. The recognition that these interactions occur when EM energies impact on living system, however, requires the action of other models and interaction mechanisms. Also an ever increasing body of scientists are finding effects from EM fields and currents at much lower levels than the thermal model would predict. In addition, if Dr. Nordenstrom's model is correct, out greatest concern should be the chronic health problems caused by long term contiuous or intermittent, low level EM energies. When one considers other mechanisms, the power levels outside the proposed OTH-B fence would be above those that research has shown to cause chronic effects. For some operation of the proposed OTH-B radar system, the emissions are above the USSR standards for the general public at large distances outside the fence.

Because of its size the earth must be considered a good conductor. As a consequence signigicant radiofrequency currents can be induced into the earth and will be present as long as radar systems are functioning. My research strongly points to the electromagnetic energies in the earth as being capable of significantly impacting both humans and animals. At this time I cannot predict an exact correlation of specific type or magnitude of electromagnetic energy to level of health effect. One of the major reasons is the inability to sort out and/or control each of the EM energies present at all times. As a consequence I cannot predict the magnitude of the effect from the induced EM energy from the proposed OTH-B system. This model, however, would support the conclusion that the more anthropogenically produced EM energy in the earth the greater the potential for health effects.

As we account for the natural and the ever increasing anthropogenic EM energies in the space in which we live, we must deal with the

possibility of synergistic effects. This is espcially necessary in light of the research which exists today which points to very definite synergistic effects caused by combinations of EM energies. Without the existence of this OTH-B transmitter, living systems are aready exposed tc numerous forms and magnitudes of EM energies. Therefore considering the potential effects from this souce completely independently from all other sources is not appropriate.

Various weather parameters such as atmospheric conductivity and electric fields can affect the transmission and scattering of the radiation and consequently the radiation power levels at specific points.

None of these factors have been discussed in the DEIS. In fact it is criminal to propose a project that qualifies under the environmental review process as having potential for significant effects and then to consider health effects using the model which is least likely to indicate the potential for effects.

EM energies can cause adverse effects in the central nervous system, cardiovascular system, and immune system. The levels which induce these effects is debated; the exact mechanism is uncertain; and the specific effect on an individual species does vary. If one includes the spectrum of reliable scientific work, the only conclusion is that the OTH-B system has the potential for causing and contributing to the cause of adverse biological and health effects in both humans and other living systems.

The real impact from the radar transmitter such as the OTH-B can only be assessed through an open acknowledgement of a number of interaction mechanisms which have potential for causing biological and

health effects. It is mandatory that the Air Force and its consultants explain their rationale for not seriously utilizing mechanisms of interaction other than thermal in determining potential biological and health effects. It is also mandatory that the Air Force and its consultants determine the potential for biological and health effects from synergistic interactions between the OTH-B emissions and other anthropogenic EM energies to which living systems are exposed.

10p

Gene Berger
RR1, Box 35
Norcross, MN 56274

G3, G6, G8

I want to thank you for the opportunity to express my opposition to the OTHB Radar system proposed for three locations in Traverse County. My first statement is that as chairman of Redpath Township:

(Redpath Township Resolution)

The remainder of my comments are based on my own personal feelings and observations.

My family and I are directly affected by this proposal as 10% of the land we farm is located within the Wheaton North study area and our farmstead is 1.5 miles south of the southern tip of the Wheaton North Area.

One of the topics within the OTHB Siting Criteria deals with population centers. The criteria states that the optimal condition for centers of over 1000 people be 10-15 miles or more away in the direction of the radiation. I must conclude that there will be some problem with the quality of life for these 1000 or more citizens. I am concerned about the quality of life for our population center of five people. If this will ffect 1000 or more at 10 to 15 miles then it will

surely affect the five of us at a mile and a half. And it will affect as well the numerous other farm families that would border the site.

When our friends and relatives learned that we would be returning to the farm, after I had been employed by a large utility company for 7 years, one of them remarked that one of the biggest differences in being employed and being self employed is that when you work for yourself you pay for your own mistakes. And believe me it is true. I feel that the Air Force made a big mistake by locating the Centeral Radar System in this area. With a little more planning and a little more technology they certainly can locate in an area that has far less value and will affect fewer people. The difference is that the people within and adjacent to the radar site will be the ones who have to pay for the Air Force's mistake.

I believe there would be little to no additional economic benefit to Wheaton in placing the radar system in this area. Surely any new people employed at the Wheaton North site would give serious thought to locating in the Wahpeton-Breckenridge area. And anyone in the Wheaton Southeast or Southwest would give serious thought to locating near Morris.

As I look around this room I see a lot of my friends and neighbors and a lot of familiar faces. Most of the people here are from the area surrounding Wheaton. It takes a very special event to gather this many for one cause. One of the ways it is done is for a school team to advance to regional or state competition. Another is, as we have just completed, a county fair or a community social event. Another reason for the people of an area to gather is for the funeral of a prominent citizen or the tragic loss of an area family. Keep in mind that this gathering tonight could very well be the "last rites" for several area farmsteads and farm families.

Thank you.

At a special township meeting of the Township of Redpath held on April 21, 1986, the following resolution was adopted:

Whereas, a radar station in Redpath Township would result in the potential loss of farm families and prime agricultural land, and;

Whereas, environmentally we find concern with possible health hazards, along with the loss of the aesthetic beauty that the land has, and;

Whereas, we question the economic advantage, for Redpath Township, the surrounding trade area, or Traverse County, and we feel the short term use of the actual acreage for this military installation would be greatly outweighed by the long term agricultural benefit;

Now, therefore, by it resolved: That we strongly oppose an Air Force Radar Station within the township of Redpath, and we prohibit the destruction of agricultural land for any reason other than roads, ditches, residential or agricultural development.

Redpath Township
Traverse County
Minnesota

MINNESOTA

PARTICIPANTS

PARTICIPANT	SCHOOL	DISTRICT	PROJ NUMBER	VARIETY	PROTEIN (%)	YIELD (BPA)
KEVIN MALO	GLENWOOD HIGH SCHOOL	6	2060901	MOORE	0.0	119.3
DANIEL MUNSTERMAN	GLENWOOD HIGH SCHOOL	6	2060902	NOBLE	0.0	43.0
MIKE STOEN	GLENWOOD HIGH SCHOOL	6	2060903	MOORE	0.0	116.9
RODNEY STOEN	GLENWOOD HIGH SCHOOL	6	2060904	MOORE	0.0	112.9
BRIAN WILDMAN	GLENWOOD HIGH SCHOOL	6	2060905	MOORE	0.0	90.8
BRUCE GUSTAFSON	GRANITE FALLS SCHOOL	9	2091001	NOBLE	0.0	75.4
DENISE GUSTAFSON	GRANITE FALLS SCHOOL	9	2091002	NOBLE	0.0	71.1
ALAN SKJEFTE	GRANITE FALLS SCHOOL	9	2091004	BENSON	0.0	76.1
GALEN SKJEFTE	GRANITE FALLS SCHOOL	9	2091005	BENSON	0.0	77.3
LEE ALM	HAWLEY HIGH SCHOOL	5	2050701		INCOMPLETE	
TIM ANDERSON	HAWLEY HIGH SCHOOL	5	2050702		INCOMPLETE	
MARK EKRE	HAWLEY HIGH SCHOOL	5	2050703	LYON	0.0	55.7
DAN NOREEN	HAWLEY HIGH SCHOOL	5	2050704		INCOMPLETE	
BILL PETERS	HAWLEY HIGH SCHOOL	5	2050705		INCOMPLETE	
MARK SCHENCK	HAWLEY HIGH SCHOOL	5	2050706		INCOMPLETE	
DAVID SCHOFF	HAWLEY HIGH SCHOOL	5	2050707		INCOMPLETE	
SCOTT TANGEN	HAWLEY HIGH SCHOOL	5	2050708		INCOMPLETE	
DOUG DORN	HENDRICKS HIGH SCHOOL	9	2091101	LYON	PLANTED ACRES	
DALE HOFF	HENDRICKS HIGH SCHOOL	9	2091102		INCOMPLETE	
CHRISTOPHER NELSON	HENDRICKS HIGH SCHOOL	9	2091103	MOORE	0.0	89.3
DAVID NUESE	HENDRICKS HIGH SCHOOL	9	2091104	MOORE	0.0	71.8
CHAD OLSEN	HENDRICKS HIGH SCHOOL	9	2091105	OGLE	0.0	59.3
MARVIN OVALL	HENDRICKS HIGH SCHOOL	9	2091106	OGLE	0.0	80.1
ERIC TROOIEN	HENDRICKS HIGH SCHOOL	9	2091107	BENSON	NOT HARVESTED	
SCOTT AMUNDSON	HERMAN COMMUNITY SCHOOL	6	2061101	LYON	0.0	97.8
KURT ENGQIST	HERMAN COMMUNITY SCHOOL	6	2061102	MOORE	0.0	98.9
BRAD GIESE	HERMAN COMMUNITY SCHOOL	6	2061103	MOORE	0.0	106.3
DARIN ITZEN	HERMAN COMMUNITY SCHOOL	6	2061104	NOBLE	0.0	34.0
WENDY ITZEN	HERMAN COMMUNITY SCHOOL	6	2061105	MOORE	0.0	98.0
JOHN MILLER	HERMAN COMMUNITY SCHOOL	6	2061106	MOORE	0.0	105.3
JULIE OACHS	HERMAN COMMUNITY SCHOOL	6	2061107	LYON	0.0	105.0
LORINE RADDATZ	HERMAN COMMUNITY SCHOOL		2061108	MOORE	0.0	107.9
CHAD SIMPSON	HERMAN COMMUNITY SCHOOL	6	2061109	MOORE	0.0	101.7
LINDA THOLUND	HERMAN COMMUNITY SCHOOL	6	2061110	MOORE	0.0	86.9
VILEM VAVRA	HERMAN COMMUNITY SCHOOL	6	2061111	BENSON	0.0	108.8
TODD WERK	HERMAN COMMUNITY SCHOOL	6	2061112	LYON	0.0	91.6
BOB KLOOS	HOFFMAN KENSINGTON H S	6	2061201	MOORE	0.0	101.8
DARYL QUICK	HOFFMAN KENSINGTON H S	6	2061202	MOORE	0.0	60.2
MIKE SABOLIK	HOFFMAN KENSINGTON H S	6	2061203	MOORE	0.0	92.4
JON UPHOFF	HOFFMAN KENSINGTON H S	6	2061204	MOORE	0.0	119.8
DAVID WROLSON	HOFFMAN KENSINGTON H S	6	2061205	OGLE	0.0	132.2
MIKE HAGEN	HOFFMAN KENSINGTON H S	6	2061206	NOBLE	0.0	84.4
TIM BENGTSON	MARSHALL HIGH SCHOOL	11	2110801		INCOMPLETE	
JOE VERSEAVEL	MARSHALL HIGH SCHOOL	11	2110802		INCOMPLETE	
TOM BITKER	MILROY PUBLIC SCHOOL	10	2101101		INCOMPLETE	
GEORGE LANOUE	MILROY PUBLIC SCHOOL	10	2101102		INCOMPLETE	
DAN LEACH	MILROY PUBLIC SCHOOL	10	2101103	MOORE	0.0	84.5
CLAYTON ROSA	MILROY PUBLIC SCHOOL	10	2101104	MOORE	0.0	79.3

G3

I am Lorine Raddatz, daughter of Virgil and Sharon Raddatz. We live on a dairy farm in Dollymount Township, Traverse County, Section 14-126-45, which is in or near the Wheaton S.E. study area. I can not understand why our government allows the airforce to install the OTH-B system on highly productive land! I have proofs of above average yields on oats, through the Quaker Oats Program. I have been a member of the Herman Future Farmers of America Chapter for four years and out of those four years, I have grown oats through Quaker Oats for three years. My advisor along with a field representative from Quaker Oats, checked the oats at heading. My advisor then came out after it was swathed and measured two acres that would be checked. At harvest he stood in the field and watched as we combined and then rode along with me to the elevator to have the oats weighed. The yields I have here are from 1983, 1984, and 1985. In 1983, Moore yielded 101.5 bu/A. In 1984, Moore yielded 117.7and my sister, who is also in the Quaker Oats Program, had a yield of 122.6 on her Centennial. In 1985, my Centennial yielded 162.1 and my sisters Pierce yielded 133.1. Land that yields this way does not fit the description of the land that you have in the environmental impact statement book. For this reason I do not think the OTH-B should be installed in this prime productive farmland.

Lorine Raddatz

MINNESOTA

PARTICIPANTS

PARTICIPANT	SCHOOL	DISTRICT	PROJ. NUMBER	VARIETY	PROTEIN (%)	YIELD (BPA)
SCOTT P...MELA	GLENCOE HIGH SCHOOL	10	2100606	OGLE	0.0	109.0
TIM ...NUTH	GLENCOE HIGH SCHOOL	10	2100607	OGLE	0.0	105.8
BRIAN ...HALMAN	GLENCOE HIGH SCHOOL	10	2100608	STEELE	0.0	130.4
B... GRAVLEY	GLENWOOD HIGH SCHOOL	6	2060801	MOORE	0.0	97.6
K...T GRAVLEY	GLENWOOD HIGH SCHOOL	6	2060802		INCOMPLETE	
PAUL KOUBSKY	GLENWOOD HIGH SCHOOL	6	2060803	CENTENNIAL	0.0	129.0
KEVIN MALO	GLENWOOD HIGH SCHOOL	6	2060804	PRESTON	0.0	92.2
LYNN PETERSON	GLENWOOD HIGH SCHOOL	6	2060805	ARROWHEAD345	0.0	80.0
MIKE STOEN	GLENWOOD HIGH SCHOOL	6	2060806	OGLE	0.0	96.4
ROONEY STOEN	GLENWOOD HIGH SCHOOL	6	2060807	MOORE	0.0	98.7
BRAD VOLD	GLENWOOD HIGH SCHOOL	6	2060808	OGLE	0.0	82.7
BRIAN WOOLERY	GLENWOOD HIGH SCHOOL	6	2060809	MOORE	0.0	42.7
JOHN WOOLERY	GLENWOOD HIGH SCHOOL	6	2060810	MOORE	0.0	44.7
TIM DALE	GRANITE FALLS	9	2091001	LYON	0.0	111.1
DENISE GUSTAFSON	GRANITE FALLS	9	2091002	PRESTON	0.0	116.0
CHRIS SCHULER	GRANITE FALLS	9	2091003	MOORE	0.0	124.4
LEE ALM	HAWLEY FFA	5	2050701	LYON	0.0	69.5
AARON BERG	HAWLEY FFA	5	2050702	MOORE	0.0	131.2
MIKE BURNSIDE	HAWLEY FFA	5	2050703		INCOMPLETE	
PAULINE EKRE	HAWLEY FFA	5	2050704		INCOMPLETE	
SHAWN LANGSETH	HAWLEY FFA	5	2050705		INCOMPLETE	
DARIN TANGEN	HAWLEY FFA	5	2050706	MOORE	0.0	105.5
TODD YOUNG	HAWLEY FFA	5	2050707		INCOMPLETE	
DOUG HOMAN	HECTOR COMMUNITY	10	2100701		INCOMPLETE	
BROCK PERIS	HECTOR COMMUNITY	10	2100702	OGLE	0.0	92.5
CRAIG RADLOFF	HECTOR COMMUNITY	10	2100703	OGLE	0.0	101.3
DUANE WINKELMANN	HECTOR COMMUNITY	10	2100704	OGLE	0.0	97.2
JARED WINKELMANN	HECTOR COMMUNITY	10	2100705	OGLE	0.0	98.2
CHRISTOPHER NELSON	HENDRICKS HIGH SCHOOL	9	2091101	LYON	0.0	90.4
NATHAN NELSON	HENDRICKS HIGH SCHOOL	9	2091102	LYON	0.0	104.0
SCOTT AMUNDSON	HERMAN COMMUNITY SCHOOL	6	2061001	MOORE	0.0	114.8
TOM BACKMAN	HERMAN COMMUNITY SCHOOL	6	2061002	PIERCE	0.0	127.4
CLAYTON DERBY	HERMAN COMMUNITY SCHOOL	6	2061003	STEELE	0.0	130.8
DARIN ITZEN	HERMAN COMMUNITY SCHOOL	6	2061004	PIERCE	0.0	123.1
JEFF KJERNESS	HERMAN COMMUNITY SCHOOL	6	2061005	MOORE	0.0	87.0
JANICE MILLER	HERMAN COMMUNITY SCHOOL	6	2061006	PIERCE	0.0	122.1
JON OLSON	HERMAN COMMUNITY SCHOOL	6	2061007	PIERCE	0.0	109.8
AILEEN RADDATZ	HERMAN COMMUNITY SCHOOL	6	2061008	PIERCE	0.0	133.1
LORINE RADDATZ	HERMAN COMMUNITY SCHOOL	6	2061009	CENTENNIAL	0.0	102.3
MIKE RICHARDS	HERMAN COMMUNITY SCHOOL	6	2061010	PIERCE	0.0	149.1
MISSY SIMPSON	HERMAN COMMUNITY SCHOOL	6	2061011	PIERCE	0.0	116.6
GREG SPERR	HERMAN COMMUNITY SCHOOL	6	2061012	PIERCE	0.0	119.9
JODY VAVRA	HERMAN COMMUNITY SCHOOL	6	2061013	MOORE	0.0	88.2
TROY WERK	HERMAN COMMUNITY SCHOOL	6	2061014	PIERCE	0.0	133.5
MARK BENNETT	HOFFMAN-KENSINGTON H S	6	2061101	PIERCE	0.0	97.5
MATT MATTSON	HOFFMAN-KENSINGTON H S	6	2061102	MOORE	0.0	84.4
STEVE PEDERSON	HOFFMAN-KENSINGTON H S	6	2061103	MOORE	0.0	94.9
DALE RAU	HOFFMAN-KENSINGTON H S	6	2061104	PIERCE	0.0	99.0

MINNESOTA

PARTICIPANTS

PARTICIPANT	SCHOOL	DISTRICT	PROJ. NUMBER	VARIETY	PROTEIN (%)	YIELD (BPA)
MIKE STOEN	GLENWOOD HIGH SCHOOL	6	2060806	MOORE	0.0	106.3
ROD STOEN	GLENWOOD HIGH SCHOOL	6	2060807	OGLE	0.0	94.4
BRAD VOLD	GLENWOOD HIGH SCHOOL	6	2060808	LYON	0.0	85.1
BRIAN WOOLERY	GLENWOOD HIGH SCHOOL	6	2060809	MOORE	0.0	87.9
TIM DALE	GRANITE FALLS HIGH SCHOOL	9	2091001	MOORE	0.0	100.3
BRUCE GUSTAFSON	GRANITE FALLS HIGH SCHOOL	9	2091002	NOBLE	0.0	80.6
DENISE GUSTAFSON	GRANITE FALLS HIGH SCHOOL	9	2091003	NOBLE	0.0	77.3
...LEN SKJEFTE	GRANITE FALLS HIGH SCHOOL	9	2091004	BENSON	0.0	128.7
LEE ALM	HAWLEY H S	5	2050701	LYON	0.0	95.1
MARK EKRE	HAWLEY H S	5	2050702	MOORE	0.0	77.3
LANGSETH SHAWN	HAWLEY H S	5	2050703		INCOMPLETE	
JASON THEUSCH	HAWLEY H S	5	2050704		INCOMPLETE	
CRAIG RADLOFF	HECTOR COMMUNITY	10	2100701	STOUT	0.0	110.6
DUANE WINKELMANN	HECTOR COMMUNITY	10	2100702	NOBLE	0.0	101.0
JARED WINKELMANN	HECTOR COMMUNITY	10	2100703	NOBLE	0.0	118.9
DOUG HOMAN	HECTOR COMMUNITY	10	2100704	OGLE	0.0	129.7
BOBBY CHRISTIANSON	HENDRICKS PUBLIC SCHOOL	9	2091101	BENSON	0.0	80.0
DOUG DORN	HENDRICKS PUBLIC SCHOOL	9	2091102		INCOMPLETE	
NATHAN NELSON	HENDRICKS PUBLIC SCHOOL	9	2091103		INCOMPLETE	
DAVE NUESE	HENDRICKS PUBLIC SCHOOL	9	2091104	LYON	0.0	98.5
ERIC TROOIEN	HENDRICKS PUBLIC SCHOOL	9	2091105	MOORE	0.0	108.3
SCOTT AMUNDSON	HERMAN COMM SCHOOL	6	2061001	MOORE	0.0	106.7
KURT ENGQUIST	HERMAN COMM SCHOOL	6	2061002	MOORE	0.0	84.4
BRAD GIESE	HERMAN COMM SCHOOL	6	2061003	MOORE	0.0	110.5
DARIN ITZEN	HERMAN COMM SCHOOL	6	2061004	MOORE	0.0	90.8
JEFF KJORNESS	HERMAN COMM SCHOOL	6	2061005	MOORE	0.0	109.4
JOHN MILLER	HERMAN COMM SCHOOL	6	2061006	MOORE	0.0	90.3
JULIE PACHL	HERMAN COMM SCHOOL	6	2061007		INCOMPLETE	
AILEEN [illegible]	HERMAN COMM SCHOOL	6	2061008	[illegible]	0.0	102.0
LORINE [illegible]	HERMAN COMM SCHOOL	6	2061009	[illegible]	0.0	111.3
JODY VAVRA	HERMAN COMM SCHOOL	6	2061010	BENSON	0.0	108.2
VILLER VAVRA	HERMAN COMM SCHOOL	6	2061011	BENSON	0.0	97.2
TODD WERK	HERMAN COMM SCHOOL	6	2061012	MOORE	0.0	99.8
KENT HEDSTROM	HOFFMAN KENSINGTON	6	2061101	MOORE	0.0	84.7
BOB KLOOS	HOFFMAN KENSINGTON	6	2061102	MOORE	0.0	108.8
JOEY MILES	HOFFMAN KENSINGTON	6	2061103	MOORE	0.0	80.3
STEVE PEDERSON	HOFFMAN KENSINGTON	6	2061104	MOORE	0.0	101.4
MIKE SABOLIK	HOFFMAN KENSINGTON	6	2061105	MOORE	0.0	101.1
MIKE TELKAMP	HOFFMAN KENSINGTON	6	2061106	MOORE	0.0	88.0
DAVID WOOLSON	HOFFMAN KENSINGTON	6	2061107	OGLE	0.0	109.3
CHUCK HEIL	HUTCHINSON PUBLIC SCHOOLS	10	2100601	NOBLE	0.0	119.2
SCOTT LANG	HUTCHINSON PUBLIC SCHOOLS	10	2100602	ARROWHEAD338	0.0	99.2
TOM PLATH	HUTCHINSON PUBLIC SCHOOLS	10	2100603	NOBLE	0.0	82.8
RICHARD PRIEVE	HUTCHINSON PUBLIC SCHOOLS	10	2100604		INCOMPLETE	
RODNEY RAUCH	HUTCHINSON PUBLIC SCHOOLS	10	2100605		INCOMPLETE	
DUANE AMUNDSON	IVANHOE PUBLIC	9	2091201	LYON	0.0	82.6
TROY BARKER	IVANHOE PUBLIC	9	2091202	MOORE	0.0	93.0
BYRON JOHNSON	IVANHOE PUBLIC	9	2091203		INCOMPLETE	
JOE KVETENSKY	IVANHOE PUBLIC	9	2091204	MOORE	0.0	92.5

Warren Raddatz G6

I am Warren Raddatz, son of Virgil and Sharon Raddatz. We live on a dairy farm in Traverse County, Dollymount Township, Section 14-126-45 which is in or near Wheaton SE study area. I am 12 years old. I own 6 head of registered Holsteins which consists of three generations in the same family. Dad has mentioned that if a dairyman has a chance to see five generations of genetic improvement in a lifetime, he is lucky. I feel fortunate because I already have three generations and hopefully a lifetime to see 5 or 6 generations of improvement. In order to accomplish this I'll have to be able to continue in the dairy business, which I am wondering if it will be financially possible if our dairy has to relocate. Therefore I do not want the OTH-B to be installed in this area.

G8

I am Virgil Raddatz. My family and I live on a dairy farm in Traverse County, Dollymount Township, Section 14-126-45, which is in or near Wheaton S.E. study area. I have spent 19 years genetically improving production on our herd of registered Holsteins. In the State of Minnesota, we are in the top ½ of one percent with our level of milk production. Our production is one of the key points to our marketing program. Having the OTH-B in this area concerns me. Will I be able to maintain this production because of stray voltage caused by the increased electrical demands of the OTH-B and will radiofreguency radiation have any effect on production and reproduction? I find it hard to understand how the environmental impact study can just refer to those in the study without referring to those close to the area in your economical study of the community, especially when those surrooding the proposed area would be affected more than those in the study area. Therefore, whether I would be able to financially relocate, at this time, or see half a lifetime of genetic improvement hampered because of problems from the OTH-B, I do not want to see it installed in the S.E. area.

Virgil Raddatz

Statement given at public hearing in Wheatland PA Sept 10, 1986

My name is Shirley Fritz. I live in Croke Twp. with my husband and family. We are farmers. My Dad and Mom live in Leonardsville Twp. along with my two brothers, one of my sisters, and many friends, all of whom rely on farming for their homes and livelihoods. Another sister and her husband farm land in the proposed SW site.

Dad and Mom had six children. The boys always wanted to farm, and now do with Dad, and the girls wanted to marry farmers, which we all did. We feel good working the land and raising our families there.

We all worked with Dad and Mom to maintain and improve the family farm for we always knew that someday it would be Dad and Mom's legacy to us and to our children. The proposed radar site would put and end to that lifetime dream of three generations. The grandchildren, though young, have already voiced a preference for the land. When asked in kindergarten what they wanted to be when they grew up, the boys replied, "Farmers".

There would be nothing left for Dad and Mom, who know no other business and are not young enough to start over. My brothers and their families would also loose their homes and their businesses.

Many others would be affected in the same way. Within one mile of Leonardville Twp., where Dads' farm is located, the site would displace ten (10) families, to say nothing of the hired help and their families. Just think of what we would be loosing.

We, the rural people, maintain a fierce pride in our land. It is our home, our business, our life. What this site, placed anywhere - would do, is destroy our past, our present and our future.

G2, G3, G4, G6, G8, G9

From the family of Dean Hoover / Silent Testimony

How would you like to wake up on the morning to silence? No birds, no crickets! Nothing. We lived over 50 miles from where a recording bomb was tested & there were no birds, we didn't remember any animals except tumbleweeds & spiders. It was to have been 30 years after the test! (All we may have is the hungry ol' locusts)

We landowners and residents of Traverse county see as a farming community strongly opposed the SDI-B Radar base. There will be many families disrupted. Loss of income, productive farm land & even town businesses because of people leaving. Even those not directly involved may leave because of fear of health or the added pressure the base will add. & the land is the past, present & future for many! We would lose home, good productive farm land and we'd have to live with/on the land from it all. We would also lose alot of good friends and neighbors!

The biggest fear is the statement in the impact statement on page 4-87 of how there are no studies on the long term effects! There are not enough definate answers,

11

3-89

(2)

we can't determine the good or the bad! There are way to many "possibles" Maybes & uncertainty's! What makes the health risk? We may never know but how about the children or grand children. In the ~~studies~~ impact statement they did some limited studies on animals and it showed harm, what will it do to humans! Do you think we are dumb enough to think we are immune to it!

Our 14 year old son is very worried about it! He plans to farm someday! He wonders how this can be put in without further studies. How he questions it all!

What about livestock? We raise beef, who will ever buy our beef with the possibility of radiation? Would we dare to eat it ourselves? What will it do to our production? So you care only about wildlife? Seems so in the impact study! Why do we need defense for our country with out concern for the citizens. You have been here before and said things opposite from the impact study. When we call senators & get "pat answers answers! Who is telling us the truth & what is yet hidden. When we call places

3-90

(3)

We get nothing but the run around or even anger at us! No one will answer anything and the ~~book~~ impact statement doesn't tell us anything. If you take all the uncertainties out of the book there would be very few pages left. How can you expect us to make a decision on something we know very little about!!!

You have made some big statements that are not true according to the impact statement. Economic gain according to the book is less than 1% and does that include our loss. Would it really be a minus? Yet the impact statement says there will be ~~tax~~ tax dollars lost! How can you go on deceiving alot of people? You speak of jobs - yet you fail to tell them that they have to be civil service qualified & tested and that there is minimum wages paid even in civil service - and yet a person would have to qualify for top secret clearance - and bottom line is it not true the because of Hiram Fong Act civil service jobs are frozen? You lead some to believe they

-CVCP →

(4)

will get big dollars for their land & homes & in the impact statement it clearly states that it will be determined by fair market value - right now it is 375 to 500 & we all know it will lower next year - And then there are many grades of ~~bad~~ land involved & some will get alot less than others.

Again you fail to be explicit of your intentions!

(5)

I understand that your job is to be a salesman for the OTH-B radar site but how do you really sleep at night? This is not a car you are selling to one person! There are many lives related to this!

People who are in the airforce say it is much more involved than you are leading us to believe! What are the effects of a malfunction? No where is that talked about. The impact statement says beyond 5 to 6 miles there should be no TV or Radio interference. People who work with it daily 10 or more & possibly even a satellite dish won't work! There could be telephone interference Who really knows!!

Brenda

E-91

(6)

Besides all of the above this base is basically already obsolete because there are planes made by you - the Air force like Carey Battilis to evade the radar. Now really don't you suppose that Russia has the same? Being Russia have a OTH B Radar base already. The Finnish people who live near the Russian Boarder who have had major heart problems - linked to the Finnish base - young & old.

Well we be like some of the other Host bases who are obsolete and you put various other things on the land. You spend millions to put these facilities up but do very little testing on the side effects!

Well we be left like the people from Project Bikini? When the govt took over a group of islands southwest of Hawaii and moved all the people off to do test. What was 40 years ago, some people have died developed terrible complications or died - they were 300 miles away! After 40 years their land is

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Contaminated and they still can't go home! They don't have to believe it was Gods will! This story was published in the June issue of National Geographic.

Those of you who think it is not going to effect you please think again, our whole area economy will be hurt, homes, family, farms, people and land lost! (And who knows about your health!

There must be less populated areas that can be used, with less loss of families, homes and productive farm land. We feel this will not benefit Hancock County but will leave a large scar for a considerable amount of time. Maybe forever!

You are taking away alot of dreams and hopes along with giving others false dreams and hopes.

Jean, Norma & Robert Holtz
Box 159
Dumont, MN
56582

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT for the PROPOSED CENTRAL RADAR SYSTEM, OVER-THE-HORIZON BACKSCATTER RADAR PROGRAM

G5

AUGUST 1986

Prepared by

George Ducknits, Jr.

Hydrogeologist

of

George H. Ducknits, Inc.

RR 1, Box 38

Holloway, MN 56249

September 1986

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT PROPOSED CNETRAL RADAR SYSTEM OVER-THE-HORIZON BACKSCATTER RADAR PROGRAM, AUGUST 1986

INTRODUCTION

The necessity of maintaining the defense of this Country is recognized and the need of the Over-The-Horizon (O-T-H) Backscatter Program. However, the suitability of the transmit site, Wheaton SE (T. 125 N., R. 45 W., Sections 1-4, 9-11; T. 126 N., R. 45 W., Sections 16, 21-23, 25-28, 33-36) is questioned relative to the hydrological characteristics of this site, the maintenance of surface water alterations and the hydrologic problems prevalent in this proposed site, to the overall performance of the Transmit site.

AN OVERALL REVIEW OF THE HYDROGEOLOGY

WATERSHED:

The watershed area of Twelvemile Creek is approximately 129 square miles (Minnesota Department of Transportation, 1977) at the location upstream from the bridge located on Twelvemile Creek (Sec. 28 and 21, T. 126N., R.45W. Bridge No. L6671) NW of site. The watershed area of the Twelvemile Creek includes the watersheds of the East Fork of Twelvemile Creek (approximately 21 square miles) and the West Fork of Twelvemile Creek (25.8 square miles)(Minnesota Department of Transportation, 1988). The Wheaton SE site area is located in the lower end of the Twelvemile Creek Watershed, approximately five miles upstream from it's confluence with the West branch of the Mustinka River.

Upstream, on the Twelvemile Creek, is an extensive array of county ditches (Stevens County Ditch No. 1, 7 and 8), which drains approximately 61.9 square miles of land (Stevens County Auditor's Office, County Ditch No 1 file). The outlet of County Ditch No. 1 (of which County Ditch No. 7 and 8 drain into) is four miles east of the Wheaton SE site and it empty's into Twelvemile Creek.

To the south of Stevens County Ditch No. 1, in Stevens County, Minnesota, is Stevens County Ditch No. 15. This ditch system drains approximately 16 Square miles of land. The outlet of this ditch enters the East Fork of Twelvemile Creek, approximately one mile southeast of the proposed site (Stevens County Auditor's Office, County Ditch No. 15 file).

To the West of Stevens County Ditch No. 15, in Big Stone County Minnesota, is Big Stone County Ditch No. 11. The drainage area of the ditch is unknown at this time. The outlet of this ditch enters the West Fork of Twelvemile Creek, approximately six miles south of the proposed site.

These county ditches have undergone several repairs since their construction in the late 1910's and early 1920's. These repairs have consisted mainly of removing sediment and trees, which restricted and hinder the performance of the ditch.

More recently, in the 1980's there have been attempts to repair sections of Stevens County Ditch No. 1. This has been met with opposition from residents along Twelvemile Creek, including those in the Wheaton SE site area. The primary argument against any more repairs is the volume of water which inundates the area. The extent of the flooding along Twelvemile Creek is to the degree that portions of County and Township roads are flooded, making them almost impassable at times, and the washing out of bridges, and the potential damage of personal property.

CHANNEL HYDRAULICS

The Twelvemile Creek has an approximate stream gradient of five (5) feet per mile (U.S. Geological Survey topographic map Chokio NW) in the Wheaton SE site. The stream gradient is approximately ten (10) feet per mile for the East Fork of Twelvemile Creek and the West Fork of Twelvemile Creek (U.S. Geological Survey topographic map, Chokio NW, Johnson).

The Creeks consist of a channel approximately 20-30 feet in width and three to four (3-4) feet in depth.

These creeks flow in an old "paleochannel" of a larger size than the present day creeks. These "paleochannels" are estimated to be

approximately 650 to 800 feet in width and range in depth from 9 to 15 feet in depth. The profile of these channels generally have a gentle concave shape with no steep sides, except in one isolated location on Twelvemile Creek in Section 28 T.126 N. R.45W. Here a meander of the present creek butt against the western bank of the paleochannel.

Upon examination of photographs taken by residents in the site area, show the flood waters from spring snow melt in the paleochannel approaching within one foot of cresting the banks of the paleochannel without flooding the generally flat land lying outside of the paleochannel.

Water velocities in these creeks range from zero (0) to velocities in excess of seven (7) feet per second (fps) as it flows through the RCP-A bridges (Minnesota Department of Transportation discharges 1977, 1978, 1980[a], Traverse County Engineer's Office, 1980).

There are 15 bridges in the Wheaton SE site of which 13 have been replaced within the last ten (10) years. These 13 bridges consist of Round Concrete Pipe with Aprons (RCP-A). These bridges generally contain two (2), sometimes three (3) RCP-A, ranging in diameters from five (5) to eitht (8) feet (Figure [illegible]), depending on the location on the stream and the stream's hydraulics. Two (2) of the bridges not replaced are those with wing walls and a span crossing the stream. The remaining bridge not replaced consists of two (2) RCP, 30 inches in diameter.

The road grades, by the bridges have been designed to permit the excessive water that the culverts cannot handle, to flow over the road. Sometimes the excessive volume and velocity of the water has been so extensive that it has caused the bridges to wash out (Figure [illegible]) or damage to the road grade.

WHEATON SE PROPOSED TRANSMITTER SITE

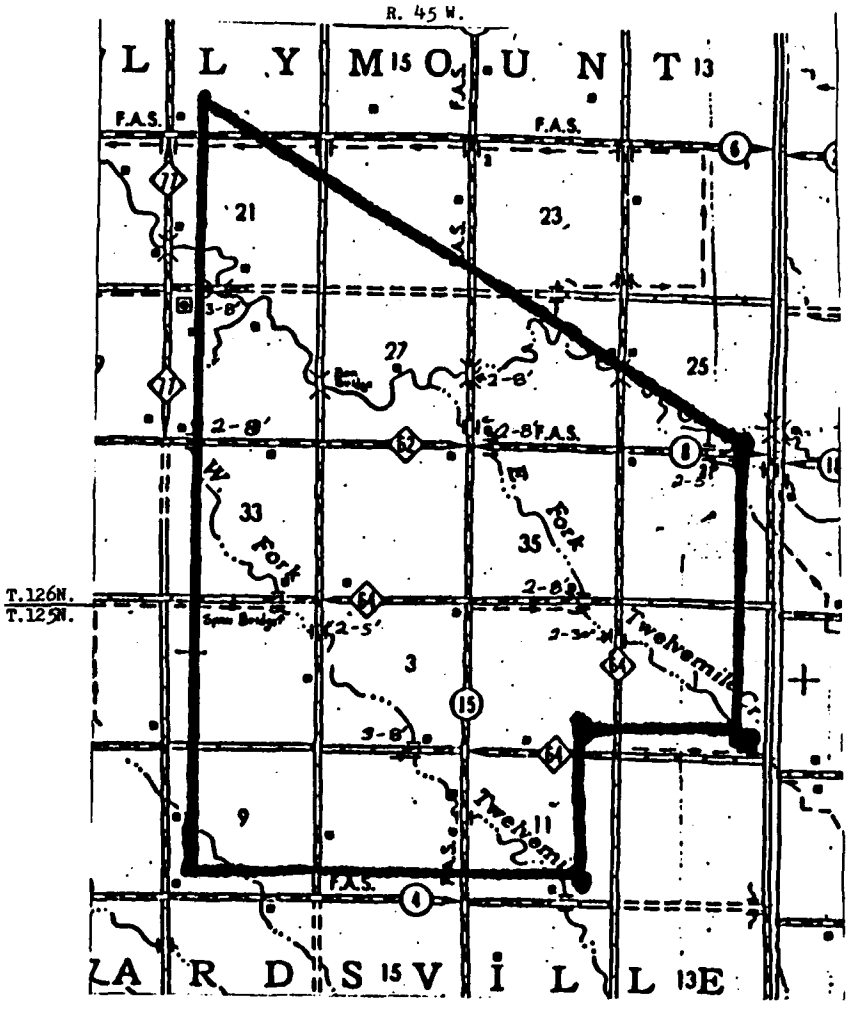

Figure 1. Location of bridges in the proposed site (the number by each bridge indicates the number of RCP and the diameter).

WHEATON SE PROPOSED TRANSMITTER SITE

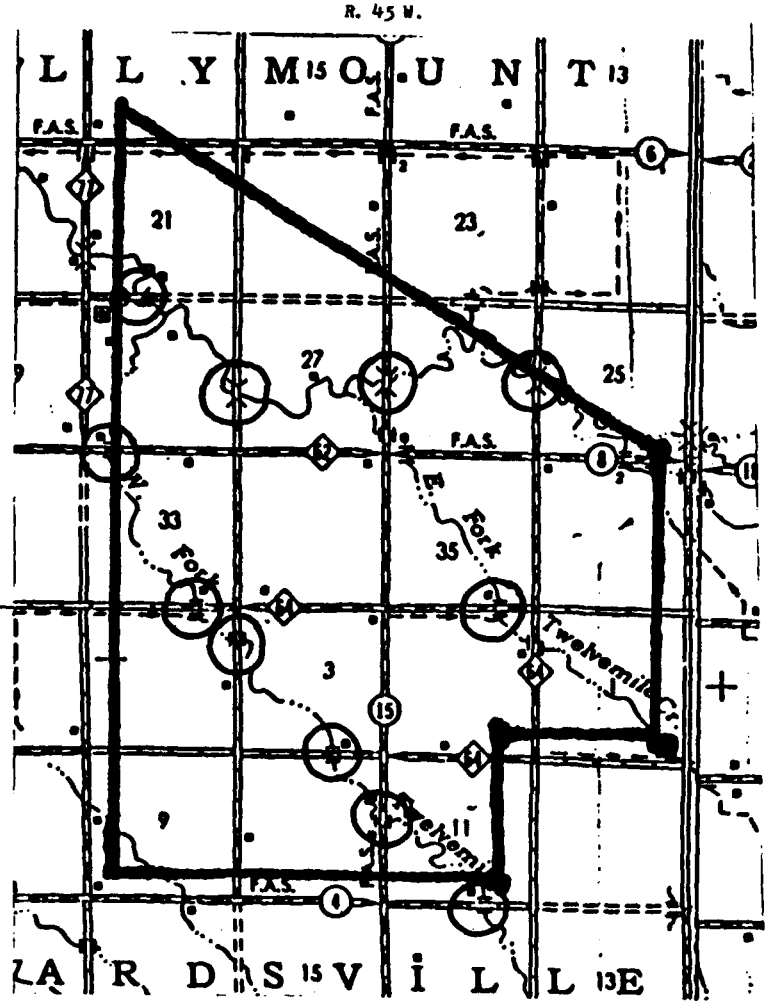

Figure 2. Bridges that have washed out.

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STREAM CHANNEL ALTERATIONS

There have been attempts to divert the flow of water within the Wheaton SE area, prior to the implementation of the state protected waters law. These attempts were the straightening of meanders on the creek, not the paleochannels, which the creeks now inhabit. Attempts were made on Twelvemile Creek and one attempt on the East Fork of Twelvemile Creek (Figure 3).

All of the channel alterations consisted of straightening creek meanders, and filling the old meander with fill from the excavation. Additional fill material was obtained nearby to raise the elevation of the old channel to ensure that the water would follow the new channel.

During low water, the alteration works satisfactorily. However, during a high water event, such as spring snow melt or a heavy rainfall event where the runoff (volume of water) is larger than the channel capacity, the excess water WILL follow the filled in meander, removing some of the fill material in the old meander during each flood thereby forcing itself (the creek) to obtain it's channel equilibrium prior to the alteration (Berg, 1986).

The Wheaton SE site has a history of minor channel diversion projects, all of which work somewhat satisfactorily. However, once a diversion has been made, the creek will make every effort to flow in the course of it's old meander prior to the alteration. There has been no maintenance of these alterations since the implementation of the State Protected Water Course Law.

WHEATON SE PROPOSED TRANSMITTER SITE

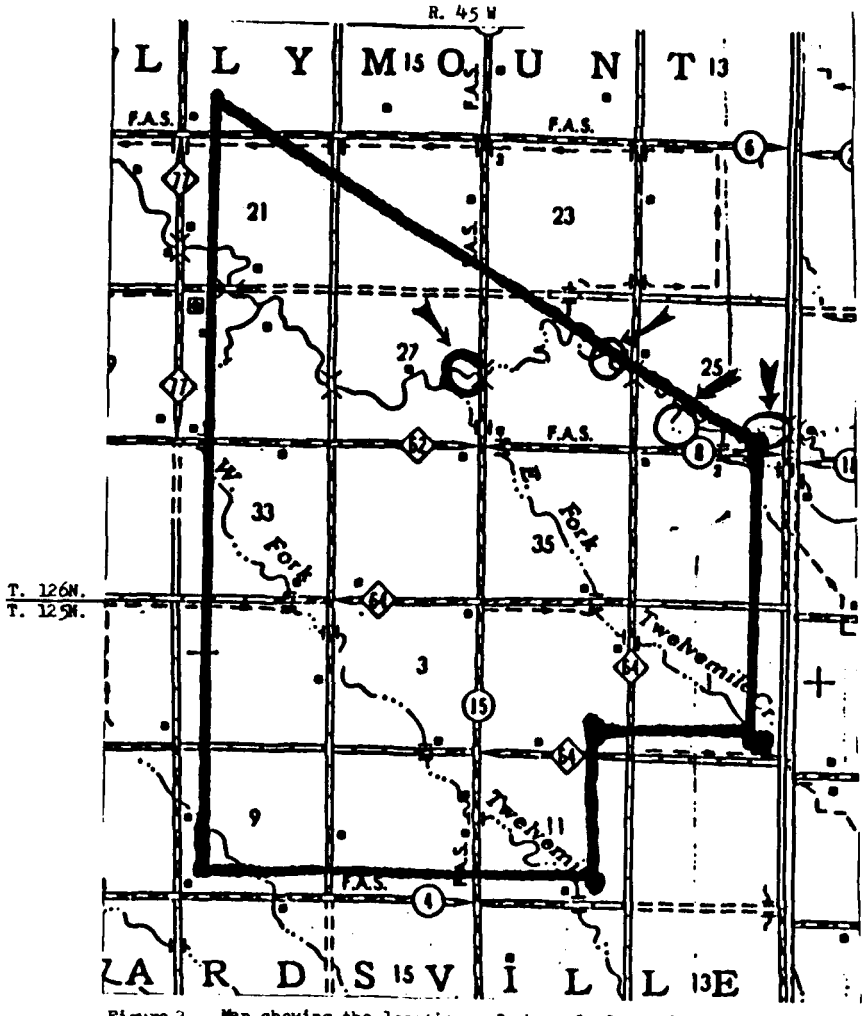

Figure 3. Map showing the locations of channel alterations prior to the implementation of the State Protected Water Courses.

VEGETATION AND ITS EFFECTS ON CHANNEL PERFORMANCE

The vegetation that primarily occupies the Twelvemile Creek, East and West Forks of Twelvemile Creek are cattails, rushes, willows and box elders, etc. These plants have the tendency to jam next to or in the round, concrete pipe bridges in the Traverse County and Township roads. This in turn causes the water to be restricted in flow, backing the water upstream, until the flood water crests the road grade and begins its flow over the road surface.

This vegetation has the tendency to slow the flow (velocity) of water.

SUMMARY

The Wheaton SE site has a history of flooding problems. In particular the spring during the snow melt. This flooding has caused extensive damage to the County and Township road and bridge system and to some personal property of local residents. Also it is evident that the volume of water that flows through this site has increased over the past 15 years by the removal of the lower capacity bridges and the replacement of large capacity bridges. Yet these new bridges appear to be inadequate in some years by the evidence of the high water marks above the culverts and abutments and photographs taken by local residents.

There have been minor creek alterations prior to the Minnesota State Protected Water Course Law, which consisted of the straightening of a meander. This has been met with little success especially if the old filled in meander is used for non-grass agriculture crops. During the high water, the creek follows the old meander scouring the filled channel.

Drainage of the temporary ponds in the site area consists of shallow field ditches ranging in depth from one to two (1-2) feet. These are adequate to meet the drainage needs of the local residents in the proposed site. However, the extensive drainage systems upstream of all three creeks that pass through the proposed site have placed an increased burden on the creeks and the road bridges with regard to the volume of water that this area has experienced. There has been a renewed interest to improve the efficiency of the drainage system upstream of the proposed site which could place an additional demand on the creeks as far as the volume of water flowing through the creeks. This interest has been curtailed due to the economics of the ditch and the overall poor economy of agriculture in this area.

CONCLUSION

The overall suitability of this proposed site is severly questioned as it pertains to the hydrological factors present in this area. Any changes or diversion of the natural water course as proposed in the EIS, Section 4.3.2.7 will place an increased burden on the roads, bridges and personal property downstream, caused by the reduction of the storage capacity of the creeks' channel and the acceleration of water through any diversion culverts.

Any diversion of water from one creek to another, especially during high water ie (spring snow melt) could conceivably cause the flood water to crest over the banks of the paleochannel and flood the generally flat land whose elevation is above the banks of the paleochannel.

Minor channel alterations (straightening of meanders) have had little or no success in the diversion of water. Therefore, larger scale channel alterations probably will meet with the same degree of success.

Proposed improvement and alteration of drainage systems upstream of the site could change the performance and efficiency of any alteration or diversion of a stream associated with the construction of a transmitter site if one should be located here, to the degree that the potential for flooding of the site would increase.

Therefore it is advisable, based on the hydrology, that the Wheaton SE site be dropped from all further consideration as a candidate for the Over-the-Horizon Backscatter Radar System.

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Minnesota Department of Transportation, 1978, Construction Plan for Bridge Replacement, Bridge No. L6665, p.5.

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Stevens County Auditor's Office, Stevens County Ditch File No. 7, Morris, MN.

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Traverse County Engineers Office, 1980, Replacement of Dollymount and Leonardsville Bridge, Bridge No. L-6674, Wheaton, MN.

U.S. Geological Survey, 1973, Chokio NW Quadrangle, Minnesota-Stevens Co., 7.5 Minute Series (topographic).

U.S. Geological Survey, 1974, Johnson Quadrangle, Minnesota, 7.5 Minute Series (topographic).

3-98

G2, G8

Statement of Opposition to the Proposed Radar Site at Wheaton, Mn.

I, Joann Conroy, am very much opposed to this Over the Horizon Back-scatter radar system. As a mother of three small children I see it as a threat not only to their health but also to their future and the future of Traverse County.

The proposed SW site would be as close as one half mile from our farmstead. There is NO way we could take the chance of living so close to such a potential danger as this with their welfare in mind. I know you claim there is no evidence at this time to support a potential health risk but those words have been heard many times in the past and it is now coming to the publics attention in various communities where they too have heard these words and where such things as safe nuclear testing and storage waste sites have indeed caused various health risks. We are not naive to the tactics the government has used to play out their experiments at the publics expense. We are not willing to be guinea pigs out here. Even if the site that is proposed near our farm was not chosen but one of the others in Traverse County instead I'm afraid it would still mean a move for many of us because of the exposure we'd still be in contact with to these non-ionizing radiation rays given off.

We are the 3rd and 4th generation of the Conroy family on the farmstead with hopes that our sons could someday also enjoy raising their families there. Farming is more than an occupation for most of us. It is a way of life. One that we'd like to pass on and see preserved. A good share of our farming operation is involved in the site also and so it creates many potential losses for us.

To add to this argument is not only the personal aspect but what is the future of such a system when the government is already testing planes able to go undetected by these radar systems. With the obvious fact of

confidential material escaping into the enemies' hand how long until they too have it and thus would nullify the usefulness of such an expensive system. I have relatives and friends who live near the abandoned ABM-Anti Bilistic Missile site at Nekoma, N. D. To drive by there and see the waste of tax payers money you'd know why the local residents call this ABM site America's Biggest Mistake. Do we have to also see many of our neighbors and friends move away only to have history repeat itself.

I'm loosing faith in our government. Are we really a nation for the people? How we can critize the USSR for their lack of communication with their citizens but is our country fo different? Why hasn't the government continued their research on these non-ionizing radiation systems? The environment is of major importance well how about the potential risks to our future generations. Let's nave a through examination of all possible risks involved and realistic life span for our national defense before we spend the tax payers money and take the chance of destroying so many lives.

3-99

Bruce Conroy
Dumont, Mn.
Farmer

G6

Statement of Opposition to the Proposed Radar Site at Wheaton, Mn.

I live in Walls Township which is part of the Wheaton S.W. Study Site. The study site is only ½ mile from our home and includes most of our farm land. My wife and I have three healthy children ages 4, 2, and 5½ months. we are very fortunate our children like all the children in this community live in a healthy environment and I'm here tonite to help fight to keep it that way.

In the Sept. 7th 1986 Fargo Forum Col. Lee stated, "Some Wheaton business people are aware of potential economic benefits from having a transmitt site located there. But whether or not that is in any way balanced off against the potential loss of income from farmland, and more important the moving and disruption of family life--thats the tough question the community of Wheaton is dealing with."

Tough question? I think it's an easy question and the answer is NO, it doesn't balance off.

There are 37 families living in the S.W. Study Site and 52 families living within two miles of the S.W. Site. There are many households with 4 or more family members, these of course being younger families the future of this community. The placement of the Over the Horizon Radar base in the Wheaton S.W. Site would cause the distruction of many family farms and force many families to move. That is not right!

Despite what we hear and read there is no quaranttee that Wheaton will benefit from this project. There is a saying "Only two things are for sure death and taxes."

A bare quarter of farmland in Walls Township assesed value of $26,604 with 156.8 acres of cropland contributes each year in taxes to:

LOST TAXES

	TAX	$/ACRE	2400acres	4000acres
County	$ 602.58	$3.84	$ 9,216	$15,360
Township	$ 74.76	$ .48	$ 1,152	$ 1,920
School Dist.	$ 806.48	$5.14	$12,336	$20,560
Totals	$1483.82	$9.46	$22,704	$37,840
20 years			$454,080	$756,800

All of us in this community will have to make up this loss in taxes. We who are farming feel tax of $9.46 an acre is plenty. That is almost 4 bushels of wheat at todays prices.

Every acre of cropland in Walls Township is an economical benefit to this community. Each spring farmers spend cash for fuel, chemicals, seed and fertilizer. These expenses can vary from around $40.00 an acre to $70.00 or more depending on the land, crop to be raised and the farmer himself.

CASH EXPENSES

Cash Expense	Wheat	Soybeans	Corn
Fuel	$ 8.00/acre	$10.00/acre	$10.00/acre
Chemicals	$ 3.00/acre	$24.00/acre	$14.00/acre
Seed	$ 8.00/acre	$10.00/acre	$18.00/acre
Fertilizer	$24.00/acre	$18.00 /acre	$28.00/acre
Totals	$43.00/acre	$62.00/acre	$70.00/acre
2400acres	$103,200	$148,800	$168,000
4000acres	$172,000	$248,000	$280,000

Now these figures don't include repairs, interest, wages, cash rent, insurance, utilities and machinery payments. All which varies from farmer to farmer but still contribute to this community.

We must also concider the loss in crop revenue and what this loss in farm land means to our local elevator.

Lost Crop Revenue per year

	Wheat	Total Bu.	$2.40 Bu.	Elev. Loss
2400acres	45bu/ac	108,000	$259,200	$21,600
4000acres	45bu/ac	180,000	$432,000	$36,000
	Corn	**Total Bu.**	**$1.35 Bu.**	**Elev. Loss**
2400acres	80bu/ac	192,000	$259,200	$38,400
4000acres	80bu/ac	320,000	$432,000	$64,000
	Soybeans	**Total Bu.**	**$4.58 Bu.**	**Elev. Loss**
2400acres	36 bu/ac	86,400	$395.712	$25,920
4000acres	36 bu/ac	144,000	$659,520	$28,800

Using proven yields from the ASCS for Walls Township and todays cash prices we get an idea as to how much we could lose to this radar site. Just in cash expenses and the lost in crop revenue this community stands to lose between 384,000 a year to 776,000 a year. This is just too productive a land to see taken out of production.

Public Hearing
Wheaton, Mn. -

G2, G4, G8

Sept. 10, 1986

Alice M. Pridgen
Box 146
Dumont, Mn. 56236
612-563-4076

I am here to express my opposition to the Over-The-Horizon Backscatter Transmitter.

The OHB was first presented to this community as a possible economic boom for the town of Wheaton. (The Air Force has good salesmen just like any other big business!) I attended both previous informational meetings and was skeptical from the very beginning about the "benefits"of this project to this community.

There are no guarantees. There are possibilities and realities:

Possibility - there may be jobs available during construction. (it will depend on who gets the contracts)

Reality - there will be loss of jobs for farmers and farm workers wherever this is built.

Possibility - there is a strong possibility that the OHB will be obsolete and abandoned in a short time.

Reality - there will be irrepairable destruction of 2000 to 4000 acres of good farm land.

Possibility - some of the construction workers may choose to live in Wheaton

Reality- many construction laborers bring their own trailer homes and park near the site.

Possibility - once it is built, some of the employees may want to live in Wheaton

Reality - there will be microwave radiation from this screen. Who wants to live near something like that?

Possibility - some of the military personnel may shop in Wheaton

Reality - many military people make monthly trips to a PX and buy most of their goods there.

We people of rural Traverse County pride ourselves in being intelligent, informed stewards of the soil. We work and care for the land with the intent of future generations using it. We plan further down the road than 2 or 3 years for land use. I wish the defense department would do the same. It is very disturbing to see people want to permanently disfigure the land for a temporary project such as the OHB which is not even a real necessity. The defense department gives no promises as to what happens to the land or equipment when they decide it is no longer needed.

With planes already being used that can not be detected by radar, this screen will be obsolete before it is built! People who favor installation for this area should take a trip to Nekoma, N. D. and see the abandoned military site there and then imagine those 2000 to 4000 acres of beautiful farm land being turned into something similar. Or suppose the defense department decided to use the abandoned site near here as a nuclear waste dump? If they own the land they can do as they wish with it.

I have received information from the defense appropriations committee that the defense department has millions of unspent, appropriated dollars. It is very upsetting to see money wasted on a temporary site with so little regard for land and peoples lives.

There is no such thing as adequate compensation for permanent displacement of farm families that don't want to go. There is no adequate compensation for the distruction of good farm land. It can not be put back to what it was.

In America we are privileged to supposedly have a say in our lives and properties. Some countries don't have this. To decide first and then try to make us believe we have something to say is not the American way.

Let's hope the concerns and objections voiced here tonite are truly heard and respected.

STATEMENT OPPOSING OTH-B RADAR TRANSMITTER

My name is Marilyn Mathias. I live 5 miles east of Dumont in Dollymount Township, Traverse Co., Minnesota, along with my husband and two young children. We own and operate a farm, along with an aerial crop spraying business. We are located very near the proposed S.E. site

At this time, on behalf of the citizens and land owners of Dollymount Township, I am submitting for the record, our Petition consisting of 101 signatures opposing the installation of the OTH-B radar transmitter in our area. I am also submitting, for the record, petitions from Lake Valley Township, Arthur Township, Windsor Township, and Folsom Township -- all strongly opposing the OTH-B radar transmitter proposed for our area.

I am submitting also, for the record, a petition from the citizens of Traverse County consisting of 212 signatures, a petition from citizens outside Traverse Co. consisting of 70 signatures -- all opposing the OTH-B transmitter in our area.

Collectively, we have over 1000 signatures, including each & every township in Traverse County from citizens opposing the OTH-B transmitter in our area. LET THE NUMBERS SPEAK FOR THEMSELVES!!

These people have worked hard caring for the land. Alot of farms have been in these families for several generations. There's a deep pride that runs in this county -- pride in our families, our homes, our farmland. We feel that our farmland is some of the most productive in the country and should continue to be used in that way. ~~Farming is our past, our present, and hopefully our future!!~~

Marilyn Mathias
Route 1, Box 104
Wheaton, MN. 56296

COPY

3-102

PETITION

We, the undersigned, residents and/or landowners in Dollymount Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 11, 1986

Name:	Address:
Rick Mathias	RR 1 Wheaton, Mn
Marilyn Mathias	Route 1 Wheaton, Mn. 56296
Gerald Frisch	Dumont Mn
Marjorie Frisch	RR Dumont Mn
Leroy Behrens	R.R 1 Wheaton Minn
Pearl Behrens	RR 1 Wheaton, Mn.
Leon Peddaty	RR1, Wheaton, MN.
Dane Peddaty	RR1, Wheaton MN
Virgil T. Roddy	RR1 Wheaton Mn
Gary M. Roddy	RR1 Wheaton, MN
Virgil Haulmpp	RR1 Wheaton, Mn.
Wayne Haulmpp	" " "
Jim Pirke	Wheaton
Glenn Miller	Wheaton
Steve Rinke	Wheaton
Nancy Pirke	RR1 Wheaton, Mn
Opal Fridgen	RR1 Wheaton, MN
Edgar Fridgen	RR1 Wheaton, Mn.
Hazel Findley	RR1 Wheaton Minn
Pat Rudquist	Rt. Dumont, Mn

Name:	Address:
Kenneth R. Baldry	1308 4th Ave N Wheaton, Mn
Earl Behrens	Dumont, Minn.
Dora Behrens	Dumont, Mn.
Floyd Behrens	Dumont Minn
Jerry Behrens	Dumont, Mn
Bob Cringer	Dumont, Mn
Margaret Cringer	Dumont Mn
David Tate	Dumont Mn.
Dwight Tate	Graceville Mn
Rodney Lichtsinn	Dumont, MN
Kevin Lichtsinn	Dumont, Mn.
Erma J Ewers	Dumont Mn
Jean Ewers	Dumont Minn.
Ed Murken	Dumont Mn
Kathy Murken	Dumont Mn
Vicky Hollmes	Dumont, MN
Orville Holmes	Dumont, MN
Orval Rinke	Wheaton Minn
Harold Lee Rinke	Wheaton, Mn
Ben Rinke	Wheaton Mn
Betty Rinke	Wheaton MN
Jane Ladouce	Dumont Mn
Robert Berg	Chokio Minn
Audrey Berg	Chokio, Minn
Karen Berg	Burke MN

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Name:	Address:
Brian J Berg	RR1 Chokio Minn.
Barbara Hongo	Dumont Minn
Eileen Hongo	Dumont Mn.
Barbara M Lesick	RR Wheaton, MN
Dean J Fried	RR Wheaton, Mn
Gilbert Rinke	Wheaton Minn
Earl N Steffen	Wheaton Mn
Kuela M Fridgen	Wheaton Mn
Patricia Tracy	Wheaton Mn.
Douglas Berg	Chokio, Mn.
Bruce W Rinke	Wheaton Mn
Jack C Rinke	Wheaton Mn
Lester Rinke	Wheaton Mn
Craig Lichtsinn	Dumont, MN
Donald Tait	Dumont Minn
Donna Tait	Dumont Minn
Mary Zabell	Wheaton, Mn.
Veronica Scheffler	Dumont, Mn
Virginia Tait	Dumont Minn
Jon L Mathias	Wheaton Mn
Scott Jacobs	Dumont MN.
Yvonne C. Rinke	Wheaton, Minn.
Bernice L Braun	Wheaton MN
Alice A Braun	Wheaton, MN
Laura Jennings	Tintown, Minn
Beverly Lichtsinn	Wheaton.

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3-103

Name:	Address:
Donald Mathias	Wheaton Minn
Lola Mathias	Wheaton Minn
Esther Binke	18 Brookst Warren, Minn
Willam Binke	18 Brookst Marshall Minn
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	Dicevill Minn
[illegible]	Wheaton Minn
Dan Graham	Herman
Marie Lukkonen	Wheaton
Mrs Hazel Findley	Wheaton
Anthony Ringger	Dumont Minn.
Doris Ringger	Dumont Minn.
[illegible]	Dumont Minn
[illegible]	Dumont Minn
[illegible]	Dumont Minn
[illegible]	Dumont Minn
Carl Berg	Chokio Minn
Philip J. Brink	Dumont, Minn
Tena Brink	Dumont, Minn.
Aaron Frisch	Dumont
Cynthia Frisch	Dumont
Glenn Reinke	Wheaton
Steve Fridgen	Wheaton
Vernon Falding	Dumont Minn
Noelle Falding	Dumont, Minn

DOLLYMOUNT TWP

Name:	Address:
Lucille Frisch	Box 156 Dumont, Minn.
Paul Frisch	Box 156 Dumont Minn.
Charlie Berg	Box 29 Chokio Minn.
Dan J Findley	Rt 2 Herman Minn.
Joann Trost	Dumont, Minn
Mike Trost	Dumont, Minn
Donna Cuckes	Wheaton, Minn

April 18, 1986

RESOLUTION

At a special township meeting of the Township of Dollymount held on April 18, 1986, the following Resolution was presented and adopted:

WHEREAS, a radar transmitter station in Dollymount Township consisting of approximately 4000 acres would result in a loss of several farm families and 20% of our township's agricultural land; and,

WHEREAS, environmentally, we are very concerned about being a military target, living near excessive radar radiation, the blockage of our roads, restriction of drainage, communications interference, and the restriction of air rights, and,

WHEREAS, economically, we are concerned that our land could be condemned, forcing farmers to sell out during a depressed period, which sale would result in a loss of tax revenue; and we question if the economic advantages for our local businesses and job opportunities would be justified, considering the burden to our township and that the construction crews would have their own employees, with housing being built at the proposed site, which site could become obsolete in the near future.

NOW, THEREFORE, BE IT RESOLVED: That we strongly oppose an Air Force Radar Transmitter Station within the Township of Dollymount, and we prohibit the destruction of agricultural land for any reason other than roads, ditches, residential or agricultural development.

DOLLYMOUNT TOWNSHIP

17c

3-105

PETITION

We, the undersigned, residents and/or landowners in Lake Valley Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Lawrence Dawger	Wheaton
Margaret Dawger	Wheaton
B. E. Dornburg	Wheaton
Ellen Fiskum	Wheaton Rt. 1
David Fiskum	"
Beverly Fiskum	Wheaton, Mn.
Randy Mccarney	" "
Bonnie Dunphy	" "
Jesse A. Braun	Wheaton, MN
Evelyn Leininger	" "
Evelyn Leininger	" "
Lola Watkins	Wheaton, Minn.
Donald Watkins	" "
Elmer Leininger	" "
Ella Fiskum	" "
Ira J. Mathias	" "

PETITION

We, the undersigned, residents and/or landowners in Fair Valley Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Arlene Mix	East Route No. 1 Wheaton
Todd K Mix	205 - 2nd St. N Wheaton
Sonia Sellden	Box 1 Star Rt C
Bob Olson	Rt 1 Box 5 Wheaton
Lisa Johnson	Box 1 Star Route Wheaton
Mindy Erickson	Wheaton, Minn

PETITION

We, the undersigned, residents and/or landowners in Arthur Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Tom T. Davidson	Beardsley
Lawrence V. Anderson	"
Ella V. Anderson	"
Bob Peters	"
Joanne Peters	"
Patrick O'Neill	"
Kenneth Fritz	Dumont
Dean F. Fritz	Dumont
Lorraine Fritz	Dumont
Gail M. Mentink	Elbow St
Gerald P. Mentink	Dumont
Mary A. Fritz	Dumont, Minn
Todd M. Fritz	Dumont, Minn
Randal Fritz	Dumont

PETITION

We, the undersigned, residents and/or landowners in Windsor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Otto Fibranz	Wheaton
Edna Fibranz	Wheaton
Elsie Fibranz	Wheaton
Dale A. Marchant	Dumont
Joann R. Marchant	Dumont

PETITION

We, the undersigned, residents and/or landowners in Folsom Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Bev Nagel	Browns Valley, MN
Tim Nagel	Browns Valley, MN

PETITION

We, the undersigned, residents and/or landowners in [redacted] Minnesota, strongly oppose the OTH-B (Over-the Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Melvin Ringgen	Milltown Mn.
Inga Ringgen	" "
Norma Bailey	Tenney, MN 56580
Margaret Schneider	Tenney Mn 56596
Ray W Ellers	
Ruby Wink	Wheaton, Mn
Lucille Frisch	Dumont, Mn.
Evelyn Schwebach	RR Dumont Mn
Beth Knuth	RR Wheaton, MN
Rick Frisch	Dumont Minn.
Donna Frisch	" "
[redacted] Schultz	Granville Mn
Violet E Schmitz	
Gail Thiel	Dumont, MN
Francis Schmitz	Beardsley, MN 56211
Douglas Berg	Wheaton, Mn 56296
Kathy Jans	Wheaton Mn 56296
Gloria Fritz	Dumont, Mn. 56236
[redacted] Johnson	P.O. Box 815
Harry Straber	Williston ND 56201

-1-

Name:	Address:
Doris F. Tate	Johnson, Mn.
Marilyn Gillespie	Johnson, MN.
Agnes Berger	Wheaton, Mn
Clara Hellmers	Dumont,
Gordy Greenfield	Johnson
Jim Schroeder	
Margaret Hengger	Dumont
Drusilla Priddy	Graceville, Minn
Diana Zimmerman	Herman, Mn
Beth Gillespie	Johnson MN
Dan J Ellers	Wheaton Mn.
Mrs Erwin Bystad	Johnson Minn. 56250
Glen McDaniel	Graceville Mn 56240
Dina Mosely	Graceville Mn 56240
Dan Ringgen	[illegible]
Sharon Martens	Graceville, MN 56240
Paul M. Martens	Graceville Minn 56246
Wanda Berger	Norcross, Mn.
Susan Ragsdale	Wheaton, MN
Gail Ragsdale	Wheaton Mn.
Gary Berger	Norcross, Minn
Kyle Ragsdale	Tenney Mn.
Gloria Ragsdale	Tenney, Mn.
Philip J. Brink	Dumont, Mn.
[redacted] Johnson	Dumont, Mn

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TRAVERSE Co.

Paul Berger	Wheaton Minn
Geraldine Welhaven	Tintah, Minn.
Joe Welhaven	TINTAH, MN.
Burt Johnson	Wheaton
Lisa Johnson	Wheaton
Dan Tritz	Dumont
Clayton A Johnson	Wheaton
Carol Johnson	"
Willis Johnson	Wheaton Minn
Jo Madson	Wheaton
Floyd Marshall	Wheaton
Paul Frisch	Dumont Minn.
Shasa Paddock	Wheaton, Minn
Virgil Paddock	Wheaton, Minn.
Hazamin Lichtsinn	Dumont MN
Dawn Lichtsinn	Dumont, Minn.
Pat Kallhoff	Dumont, Minn.
Leonard Kallhoff	Dumont Minn
Jim Lupkes	Wheaton
Lucille Lupkes	Wheaton
Doug Hellman	Norman, Minn.
Fern G.E. Adkison	Wheaton Minn.
Darryl Hagen	Wheaton Minn
Mrs Walter Ragsdale	Wheaton, Minn.
Mrs Daryl Ragsdale	
Mrs Ralph Larson	Dumont, Minn
Dale H Marshall	Dumont, Minn.

TRAVERSE Co.

Names	Addresses
Russell Wathen	Wheaton Minn
Dennis Hyde	Wheaton Minn
David Marchant	Dumont MN
Earl Steffens	Wheaton, Minn
Steve Rinke	
Kathy Steffens	" "
Gene Rinke	" "
Doris Seidler	" "
Bev Nagy	Browns Valley MN
Lu Nagy	Browns Valley Minn
Mrs Gerald Frisch	Dumont Minn
Gerald Frisch	
Ronald Hervey	Wheaton Minn
LaMae Hervey	" "
Carol Hall	Wheaton Minn
Marjorie Hansen	Dumont Minn
Ralph Fox	Dumont, Minn
Mrs Fox	Dumont Minn
Doris Finnegan	Dumont
Bob Ward	Graceville, Minn.
Evelin Ward	Graceville
Edward Hansen	
Howard Hansen	Graceville
Sophie Berger	Wheaton Minn

"TRAVERSE CO."

NAME		ADDRESS
Cindy Blaine		Wheaton, MN
Ralph W. Bakken		Wheaton, Minn
E Orel Simpson		Tenney
Jeanette Pechowski		Browns Valley, Minn
Mr. Rose Thompson		Tenney, Minn.
Alice A Braaten		Wheaton, MN
Wayne Harmey		Graceville Mn.
Eugene Boucher		
Randy Tuchy		Dumont Minn
[illegible]		Dumont, Mn
Shirley Fritz		Dumont Minn
John Pint		Dumont Mn.
Karl Kittleson		Dumont Mn.
Lyman Johnson		Wheaton Minn
Mrs Lyman Torgerson		"
Myra Kraus		"
Clara Vellmer		Dumont "
Foxie H. Smith		
Arlene Smith		Wheaton, Minn
Marvin Niesche	landowner	Fergus Falls Minn
Dorothy Niesche	"	Fergus Falls, Minn
Evelyn Leininger		Wheaton, Minn
Ronda Leininger		Dumont, MN
Mrs. Elaine Vellmer	landowner	Dumont Minn
Lavern Vellmer	" "	" "
Lola Mathias	" "	Wheaton, Minn
Audrey Berg	" "	Wheaton, Minn
Robert Berg	landowner	Wheaton, Minn

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TRAVERSE CO.

Name:	Address:
Dale L Chmela	Wheaton, Minn
B. Ea Bemberg	Gilbertson. Minn.
Marilyn M. Thiel	Wheaton, Minn.
Laurence V. Anderson	Beardsley, Mn.
Ellen V. Anderson	
Eldon Fiete	Wheaton Minn.
Diane Vellmer	Dumont, Mn
Bruce Lawrence	Wheaton
Jon Kruger	Browns Valley
Loretta Kruger	
[illegible]	
Jon Ruhoff	Race ac
Vernon Balding	
Noella Balding	
Patrick O'Neill	Beardsley Mn.
Doyle Davis	Tintah Mn.
Valorie Hawes	Tintah, Mn.
Carole Daniels	Tintah Minn
Reginald R. Hawes	Tintah minn.
Henriette Kuhlmann	
Lyndon Krachte	Wheaton Mn
Beverly Kirton	Wheaton.
[illegible]	Wheaton MN
[illegible]	Gilbertson
[illegible]	Wheaton Minn
Donald E Erickson	Norcross, Minn
Brenda Erickson	Wheaton Minn.
Donald Eichten	Norcross Minn

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TRAVERSE COUNTY

Name:	Address:
Evelyn Maibaht	Dumont
Lois Hasbargen	Wheaton, Minn
Martha Beyer	Wheaton, Minn.
Chester Hasbargen	Wheaton, Minn
Viola Ehlers	Wheaton "
Vernon Ehlers	" "
Steve Rueke	" "
Kenneth Kristofferson	Norcross "
Walter Beyer	Tenney "
Bob Mohn	Wheaton, Minn.
Cora Beyer	Tenney, Minn.
Mary Petersen	Wheaton, Minn.
Dick Watkins	Wheaton, Minn
Diane Hoeder	Lowrecon, MN
Ann Vanderwal	Dumont, Minn
Joe Vanderwal	Dumont
Bernardine Doll	Dumont
[illegible]	[illegible]
Vicki Behrens	Dumont
Lawrence Sawyer	Wheaton
Margaret Hoeger	Wheaton
Alice Fridgen	Dumont
Manny Fridgen	Dumont
Lyle Mae Krumpos	Tenney, Minn
Deanna Galtz	Tenney, Minn.
Dennis [illegible] Smith	[illegible]
Dan D Smith	" " " "
Karla Fridgen	Wheaton, Minn
Steve Fridgen	Wheaton, Minn.

TRAVERSE CO.

Name:	Address:
Rosemary Janke	Tenney, Minn.
Jani Eschen	Dumont
Gilbert Deal	Herman, Minn.
Katherine Ewers	Wheaton, Minn.
Lora Gray	Graceville, Minn.
Jay Gray	Graceville, Minn.
Gayle Thiesfeld	Wheaton, Minn.
Joann Lytz	Dumont, Minn.
Mike Lytz	" "
Alma Daubapp	Wheaton, Minn.
Agnes Ragan	Tenney, Minn.
Mavis Frisk	Dumont, Minn.
David Sawyer	Wheaton
Mary Jo Stueve	Dumont Minn 56236
Don J Stueve	Dumont Minn 56236
Steve Edwards	Dumont, MN 56236
Janet Davidson	Beardsley
Curtis Davidson	"
Jerome Hasbargen	Wheaton MN
Lynn Schindler	TINTAH, Minn.
Marge Crandall	" "
Joe Driesbach	Wheaton, Minn
Jean Putman	Tintah, Minn
Harry Braswell	Tintah, Minn
Jane Maibaht	Dumont, Minn
Marie Carney	Wheaton Minn

TRAVERSE CO.

Name:	Address:
Brenda Conroy	Dumont, MN. 56236
Mrs William Leyton	Dumont, Mn 56236
Scott Jacobs	Dumont Minn 56236
Thomas Sedem	Wheaton Minn
Tom R Conroy	Wheaton Mn.

PETITION

We, the undersigned, residents and/or landowners in Traverse County, Minnesota, strongly oppose the OTH-B (Over-the-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept 9 86

Name:	Address:
Dale E Douglas	Fairmont, Mn. 56031
Cindy Wilke	Wahpeton, N.D. 58075

OPPOSITION OUTSIDE TRAVERSE COUNTY:

WE OPPOSE THE INSTALLATION OF THE OTH-B RADAR TRANSMITTER IN TRAVERSE COUNTY, MINNESOTA:

Dated: Sept. 5, 1986

Name:	Address:
Lavis Hawley	Rt 2 Box 164 Hawley, Mn 56549
Jan Ellingson	New Effington, S.D. 57255
Hilding Johnson	Elbow Lake, 56531
Sharon Ehlers Lueker	White Rock S. Dak. 57277
Lee Erwin Lueker	" " " 57277
Nelly Wulff	Johnson, Mn. 56250
Mark Hood	Elbow Lake, mn 56531
Deb Hunseth	Elbow Lake, Mn. 56531
Vicki Wilson	Morris, Mn 56267
Mike Wilson	Morris, Mn. 56267
Jan Baldry	Mpls, MN 55414
Jim Brown	Mpls, MN 55414
Teresa & Sandy Herman	Beardsley MN 56211
Lonnie & Donna Ingison	Graceville, MN 56240
Oliver Simonson	Kulbet, S.D. 57260
Maurice Simonson	Kulbet, S.D. 57260
Lois Rotlien	2576 Fish Av. - Roseville, Mn. 55113
[redacted] Kathy Shannon by T.R.	" "
Susan & Matthew Field by T.R.	Fridley, Mn
Shirley & Wm Lee Olson by T.R.	Fridley, Mn
Lonnella Schmidt	Beardsley, Mn
Gary Goffing	Mpls, MN
Tammy Goffing	Mpls, MN
Jason Lemme	Browns Valley Mn.
Mr. Wilfred Meers	R.R. #1 - Brooks, MN 56224
Wilfred Meers	R.R. #1 Chokio Minn
Mark Pistorius	Brown Valley Mn.

-1-

Opposition Outside Traverse Co.

Name:	Address:
Virgil Lindahl	Beardsley, Mn. 56211
Irene Myhre	Beardsley Mn 56211
Mr. Donna Peterson	Herman, Mn. 56248
Howard Wellman	
Matilda Miller	Wayzata, S.D. 57260
Lucil Miller	Kimball, SD 57355
Maria Streeter	MPLS MN 55419
Charles Streeter	MPLS MN 55419
Mary Fritz	New Effington S.D.
Diane Drewitz	Graceville, Mn 56240
Evelyn Schmidt	Correll, MN 56227
Larry Schmidt	Browns Valley
Phyllis Schmidt	Browns Valley, Mn
Rick Martins	Beardsley, Mn
Shawn Dobberstein	Herman, Mn.
Mary Sullivan	Graceville, Minn
Darlene Ward	Graceville, "
Bernadine Hemmert	Graceville - Mn
Eileen Hemmert	Pinant, Minn
Dean Fischer	Morris, Mn
Jeffrey Mitchell	Wheaton, Mn
Donna Dutton	Ortonville, MN
Nicholas A Dutton	
William Kirkey	Graceville, Mn
Margaret Kirkey	" "

-2-

Say "No" to proposition "Outside" Traverse Co.

Name:	Address:
Darrell Roehl	RR1 Box 55 Ortonville Minn
Judy Mral	Herman Minn.
Rita Bertram	Louisville, Wis
John A. Kinzel	Veblen S.D. Box 246
Mary Engelson	Ortonville
Lyle Hedrick	Ortonville
Lola Michaelson	Morris
DeWayne Michaelson	Morris
Martha Fynder	Lyonsville
Gene Fynder	Lyonsville
Lolon Schulz	R.R. 2 Wahpeton N.D.
Eric Beem	Lyonsville
Mary L. Ness	Graceville
William B Stewart	Yuma Twin Arizona
Clara M. Hoeye	Baker Minn
John Hoeye	Chokio Minn
Ervin Hoeye	Ortonville
Michael Hoeye	Wheaton

3-114

-3-

Attached - Envelope

JOOS REALTY CO.

REALTOR®

PH. 444-3158

115 S. MAIN
WASHINGTON, IL 61571

Sept. 4. 1986
Washington, Ill. 61571

To the Supervisor of Traverse county of the Taylor Township. Minnesota.

Or to whom this may concern.

We the undersigned, owners of the NW Quarter of section 27-129-46. A.C. One hundred sixty acres in Taylor Township. We strongly appose the installation of a OTHB radar transmitting Tower put on our land, or adjacent area. This refers to the correct description of tower proposed to be installed.

Sincerely.

Frederick E. Joos sr

Theresa E. Joos

September 8, 1986

G3, G8

Attention: Colonel Lee

RE: Backscatter Radar Installation
in Taylor Township

Although I am not able to attend the public hearing on September 10, 1986, I would like to voice my opposition to the Backscatter Radar Installation.

I am a land owner in Taylor Township (Section 11), which is included in the layout of the OTH-B plans, and am greatly concerned for my family and their well being. This land has been our families roots for almost 30 years, and what a shame to uproot production! They have adjacent land that they will be farming within feet of your proposed boundries, and what are the hazards of living next to a radar site?

What are the known radiation hazards on people, land, animals, wildlife, trees and plants? Are there any test results that are complete, accurate, and available to the public?

Hasn't the Red River Valley Region always been known for its productive farm land? It is my understanding that quite a portion of farm land would be consumed for the OTH-B, leaving farmers with less land for production.

You are ruining productive land, not only from the stand point of the farmers, but all the way to the final consumer.

An OTH-B location solution seems quite simple! Why not have it located where the land is not used in such a productive matter as in the Red River Valley. Surely there is a plot of open, non-productive land available in South Dakota, where it is less populated with people, livestock and wildlife.

I hope that all aspects and loop holes of this crucial situation will be carefully planned and thought out, before any definite plans are made. Let's think of the lives and economy it will affect in Taylor Township—careful consideration is needed!!!

Respectfully Submitted,

Sharyl (Peterson) Fischer
8925 Cherokee Drive
Brooklyn Park, MN 55428

G2, G8

My name is Wanda Berger. I live in Redpath Township. This is a very hard thing for me to do, to stand up here before you and make a statement, but I feel that I must do it be cause I strongly oppose it. Some of the people I've talked to are afraid to do this because of reprecussions. Some that work in town are afraid they will lose their jobs. But we live in a country that is supposed to have a free democracy and also freedom of speech. Like Mr. Kremer said in his article we all have a right to express our opinion, whether it be pro or con.

I think the Over-The-Horizon Backscatter Radar Program would by an outlandish waste of taxpayers money, because it is already outdated. We already have 50 stealth fighters that can elude radar. We have under development the Stealth cruise missles and a new Stealth missle designed to knock out radar.

I also question the health issue, the Air Force cannot give us absolute proof that there can never to any long-term harm or damage from this radiation. They don't have a very good record in this department look what happened in Viet Nam with agent Orange, which they said was safe. 20 years later we get the real message. Our own brave soldiers are paying the price for that, and I don't want my children to have to pay the price for this mistake. Why don't they want to put it within 10 miles of a populate d area? Will by family to safe living as close 2 miles away from it? I question this!!!!

Why doesn't the Air Force know more about non-ionizing radiation or it Hazards? Because government agencies and the industries that control funding of the biological research are the same ones that are promoting or using the technology so there's a conflict of interest. The military funds 70% of work in the area of radiation. If studies were to confirm dangers

from low-level exposure, tough new standard could cost millions of dollars in preventive measures and law suits.

Between 1978 and 1985 the Air Force funded a $ 5 Million dollar general health study at the University of Washington School of Medicine. Rats who were exposed to electromagnetic radiation as part of the study developed a disproportionate number of malignant tumors. But the Air Force downplayed the study because in their view the results were not strong enough to warrant further work.

When will the results be strong enough for further study? After our children have had malgiant tumors?

You have stated in the Environmental Impact Analysis Process that all this is experimental. Please do not experiment with us!

G4, G5, G8 Sept. 10, 1986

We own approximately 320 acres in the Wheaton North Site currently proposed by the U.S. Air Force for the construction of the Central Radar Systems Over-the-Horizon Backscatter Radar facility.

We wish to go on record as being 'not opposed' to the construction of this facility providing that the following conditions and requirements be met to the satisfaction of the concerned:

1. That the physical safety of the inhabitants of the area, both human and non human be of primary concern in the construction of this facility

2. That the drainage of the surrounding area be not altered so as to be threatening to the inhabitants of the community.

3. That if, at sometime in the future, the facility becomes obsolete, the land be returned to its original status.

4. That adequate compensation, as agreed to by the U.S. Govt and the landowners be met, in the acquisition of the land required to construct the Radar facility.

James Krenz
Shirley Krenz
RR 2
Wheaton, MN 56296

Representing the Citizens for the City of Dumont, I would like to submit to you (The United States Air Force) our Petition containing 88 signatures, opposing the installation of the OTH-B radar transmitter in our area. I am a.so submitting a Resolution which was drafted at a special town meeting held on May 9, 1986. This Resolution also opposes the radar transmitter for this area. We, the citizens of Dumont want this Petition and Resolution to be included in the final Environmental Impact Statement.

Thankyou.

Douglas E. Frisch

Douglas E. Frisch
Mayor, City of Dumont

RESOLUTION

At a Special Town Meeting of the City of Dumont held on May 9, 1986, at 8 p.m. the following resolution was presented and adopted:

Whereas a Radar Transmitter Station near the City of Dumont would result in the loss of several farm families which would be an economical hardship for the City of Dumont. We, the people of Dumont, do support a national defense system, but we also question the short term use of the Radar Transmitter Site versus the long term effect of the loss of prime agriculture land and farm families. We strongly urge the Air Force to choose an alternative location for the Radar Transmitter Site.

Whereas environmentally we are very concerned about living near excessive radar radiation which possibly could contaminate the surrounding soil and water, blockage of surrounding roads, restriction of drainage and possibly communications interference; and being a military target.

Now therefore be it resolved: That we strongly oppose an Air Force Radar Transmitter Station near the City of Dumont or anywhere within the County of Traverse. Also we prohibit the destruction of agriculture land for any reason other than roads, ditches, residential or agriculture development.

CITY OF DUMONT

THE WHEATON GAZETTE
Thursday, May 15, 1986

PETITION

We, the undersigned, residents and/or landowners in the City of Dumont , Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 14, 1986

Name:	Address:
Allen F Wold	Dumont MN
Bette K. Wold	Dumont, MN
[illegible]	" "
[illegible]	Dumont "
[illegible]	" "
[illegible]	"
[illegible]	"
[illegible]	Dumont Minn
Roger F Frisch	Dumont Minn
[illegible]	Dumont Minn
Ronald Krauth	Dumont Minn
[illegible]	Dumont Minn
[illegible]	Dumont Minn
Eleanore Ahrens	Dumont Minn
[illegible] Co-op Employee	" "
Ernest Kahn Co-op Employee	Comstock Minn
[illegible]	Wheaton Minn
Steve Grimes	Dumont MN
[illegible]	"
Theresa Grimes	"
Allyn Grimes	Dumont Minn
William L Grimes	Dumont Minn

(Other Side)

3-118

Gail Thiel Dumont
Kathryn Driewer "
Clara Vollmers "
~~Harold Vollmers~~
Pat Peyton Dumont
LeAnn Peyton "
Maxine K Campbell "
Marilyn Rau Dumont
Lance Rath " "
Becky Sinacek Dumont
Paul Frisch - Dumont
Karen Billet - Dumont
Madeline Frisch - Dumont
Joe Fischer - Dumont
Elwina Fischer - Dumont.

Co-op bus

Name:	Address:
Felix Frisch	Dumont
Evelyn Wiesner	Dumont
Esther Mathias J. Ney	Dumont
Lucille Frisch	"
Clem Frisch	"
Rita Eccles	"
Merle Eccles	"
Bernardine Doll	"
Mrs Sylvia Frisch	"
Mrs Betty Grimes	"
Mrs Louis Frisch	"
Lee M Donath	"
Mrs Harold Wilhite	"
Harold Wilhite	"
Henry Frisch	"
Nancy Frisch	"
Jacklyn Schmitz	"
Larry Billert	"
Dick Frisch	"
Donna Frisch	"
Steve M Sullivan	"
Rose Sullivan	"
Mary Jo Wiesner	"
Tommy Frisch	"
Bernard Doll	"

Name:	Address:
Clarence Schaffer	Dumont
Helen Schaffer	Dumont
Kevin Grimes	Dumont
Joe Bieber	Dumont, Minn
Julie Bieber	Dumont
Dan Jacobs	Dumont Minn
Theodore Craddock	Dumont Minn
Esther Craddock	Dumont Minn
Adelle Bridgen	Dumont Minn
Art Bridgen	Dumont Minn
Mary Ann Fudge	Dumont, Minn.
Barbara Halverson	" "
Julia Wist	Dumont Minn
Robert Beichert	" "
Helen Frisch	" "
Dawn Dosch	" "
Daniel Dosch	Dumont Minn
Bob Dosch	" "
Charles Wiesner	" "
Ronald Frisch	" "
Ronald J. Montague	" "
Janice Montague	" "
Delores Hauschild	" "
Darlene Beichert	" "

[redacted]	[redacted]
Donna Reichert	Dumont Minn
Jerome E. Wieser	Dumont Minn.
Vernon Dale	Dumont Minn
Alef Wilson	Dumont Minn
Walter D. Thuesbed	Dumont, Minn. 56236

G2, G4, G5, G6, G8, G9

(1) I am opposed to the Air Force constructing the proposed OTH-B system in Traverse County.

There are still many unresolved issues regarding the adverse effects of radiation transmitted from a radar site in our county. The Air Force is taking precautions against possible radiation exposure to individuals within the exclusion area of the site by providing appropriate protective and control measures. If the Air Force feels there is possible radiation exposure from the proposed radar site, how can we ignore the fact that it is indeed a serious risk to human health and give approval to construction of a radar site in our county!

I am a landowner in the Wheaton SE site. We rent our farm to our son and wife and four small children. We are deeply concerned for their safety in the event that the CRS would be located in this site or any other site in Traverse County. We are concerned for the health of all residents of Traverse County as well.

We are concerned for the safety of the cattle and hogs we feed for market each year. The Wheaton SE site has the largest concentration of livestock raised in the county.

The land we own and operate in Dollymount township has been in our family for four generations. We feel that the fertile land at the Wheaton SE site should not be destroyed for the purpose of building a Radar Site because of its high value as farmland. As stated in the Environmental Impact Study, construction of the Central Radar System would require a large area of cleared and graded land, a minimum of 2400 acres. Landowners in proposed will be asked to sell land at fair market value, which in many cases is much lower at the present time than it was at the time of purchase. There is also the option to lease the land to the government. In the event the radar site becomes obsolete and is abandoned in a few years, the government is saying the landowner can have his land back. After all the sloping and grading and removal of fertile top soil to prepare the area for the site, the land

(2) will no longer be suitable for agricultural purposes, resulting in an irreversible economic loss to the landowner. The soil in Traverse County is one of our best resources for the economic strength of our towns and cities. The soil on our land in Dollymount township is especially suited for corn and soybeans and our yields are above the county average. In addition to corn and soybeans, we grow wheat, oats and malting barley. In the Impact Study soils in our county are described as sandy and clayey silt with varying amounts of sand and gravel. There is no mention of the high fertilit of the soil for growing corn, soybeans, barley, oats, wheat, alfalfa and sugar beets.

I have been a resident in the Wheaton SE area for 50 years and am certainly familiar with the wild life population there. I have seen the deer population increase in the last ten years. The study of the Wheaton SE area states that the area has few trees and would not be especially attractive to mammals except racoons and muskrat No mention is made of the deer population there. According to the Minnesota DNR there is a heavy population of Canada geese in this area, also. This concentration of wildlife would loose its natural habitat if the proposed radar site were located in this area.

I feel that the proposed re-routing and restricting of water flow in the natural waterways in the Wheaton SE site would seriously increase flooding in areas beyond our own county. All this restructuring, grading and sloping would completely destroy the natural beauty of our rural area.

There seems to be a difference of opinion as to whether the OTH-Backscatter Radar would have adverse effects on television, land mobile radios, air to ground radio and VOR air navigation systems. The Impact Statement states on page 4-49 that these are the very systems that might suffer interference from the radar's harmonics. The lower level TV signals

(3) located in the study areas (Wheaton included) would be the ones most likely to experience interference.

In many agricultural operations, including our own, the land mobile radios have become a necessary tool. Radio interference from the radar beam would make our radio systems operate ineffectively, because our radio repeater is located within the area of the Wheaton SE site that would be affected by radar interference.

Radar interfence in air to ground radio could result in serious inconveniences and possible accidents for aircraft flying through the radar beam.

I feel the jobs that the Radar Site would provide will be for the highly technically trained only and therefore people from this area would not necessarily be employed at this site. The technically trained people would spend their incomes for non farm services creating loss of business in our community. Many of our local businesses are designed for services and supplies for the farming industry, the major industry of Traverse County. We feel that land values will go down because land located near a Radar site would be less desirable to buyers because of all the hazards involved.

The proposed CRS could very well be obsolete before it is completed in view of the fact that the U.S. already has about 50 radar eluding "Stealth" jet fighters fully operational in training in the Nevada desert. This information appeared in the Aug. 22 issue of the Mpls. Star and Tribune but the Air Force still refuses to acknowledge the existence of the "Stealth" fighter.

I feel that a CRS would be a prime target foran enemy aerial attack. We would no longer enjoy the feeling ofsafety that we have enjoyed, living in this rural area.

For all these reasons I am opposed to the construction of the CRS in Traverse County.

Statement by Eldren Lichtsinn
Box 805
Wheaton, Mn. 56296

PETITION

We, the undersigned, residents and/or landowners in Parnell Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 12, 1986

Name:	Address:
* Kenneth Ahrens	Graceville Minn
Cathy A Ahrens	Graceville Minn
Paul Zach	Graceville Minn
Eleanor Zach	Graceville Minn
Linda Murphy	Graceville Minn
Kim Murphy	Graceville, Minn
Marvin D. Weis	Graceville Minn
Maryann Weis	Graceville, Minn.
Don Casey	Graceville Minn.
Cliff P. Noelle	Graceville Minn.
Jolene Noelle	Graceville Minn
Thomas Kruger	Graceville, Minn
Kim Murphy	Graceville, Minn
Marian Murphy	Graceville, Minn
Robert Lundgren	Graceville, Minn
Linda Lundgren	Graceville, Minn

14
30
~~44~~
~~47~~ Total 56

3-122

PETITION

We, the undersigned, residents and/or landowners in Parnell Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 2, 1986

Name:	Address:
Darlene Anderson	Graceville
Wayne Anderson	Graceville
Wayne Hamann	"
David Monkart	Dumont, MN
Gwen Hoff	Wheaton, MN
[illegible]	Graceville
* ~~Vivian Hamann~~	Graceville
Bert Walden	Graceville
Sue Wilkins	Graceville
* ~~Everett Hamann~~	"
David H Monkart	Dumont
Joann P. Monkart	Dumont
Joanne Lutz	
[illegible]	
Lauren V. Anderson	Beardsley

THE WHEATON GAZETTE
Thursday, May 8, 1986 May 1, 1986

RESOLUTION

At a special township meeting of the Township of Parnell held on May 1, 1986 the following Resolution was presented and adopted:

Whereas, a radar transmitter station in Parnell Township consisting of approximately 4000 acres would result in a loss of several farm families and 20% of our township's agricultural land and,

Whereas, environmentally, we are very concerned about being a military target, living near excessive radar radiation, the blockage of our roads, restriction of drainage, communications interference, and the restriction of air rights.

Now, Therefore, Be It Resolved: That we strongly oppose an Air Force Radar Transmitter Station within the Township of Parnell and we prohibit the destruction of agriculture land for any reason other than roads, ditches, residential or agricultural development.

PARNELL TOWNSHIP

19c

3-123

We Steongly oppose a radar transmitting Site in Traverse County.

1
2 Kenneth Allen
3
4
5
6
7
8 David Marshart
9
10
11 Ronald L Volk
12 Mrs. Gerald Wards
13
14
15
16 Gerald Wards
17 Joyce Krueger
18
19
20 Rae Hammer
21 Howard Hammer
22 Edna Hammer
23
24 Merle W. Weick
25
26
27
28
29
30

September 8, 1986

TO: TRAVERSE COUNTY TOWNSHIPS OPPOSING THE OTH-B RADAR TRANSMITTER INSTALLATION:

As you well know, the public hearing is coming up on Wednesday night, September 10th at 7 p.m., concerning the OTH-B radar transmitter proposed for Traverse County.

If you have the original Petition for your township/area, please make a photocopy of it, and bring the original & photocopy to the hearing on Wednesday night. What we'd like to do is: have you (or a volunteer chosen from your area) present the Petition to the Air Force with the following information:

My name is Dean Helt, Tenney Minnesota.
(address)

I represent the citizens of Taylor Township, Traverse County, Minnesota, who are strongly opposed to the OTH-B radar transmitter in our area. At this time, I would like submit to you (the U.S. Air Force) our Petition containing 80 signatures, opposing the installation of the OTH-B radar transmitter in our area; and we want to be assured that this Petition is included in the final Environmental Impact Statement.

It is very important that this Petition is turned in to the Air Force on Wednesday night at this hearing. So if you can't make it to the hearing, please have someone else bring it in and make the statement.

Also, please call me today when receiving this letter to give me the number of signatures on the Petition. Thank you so very much. If you have any questions, please call me at 563-8875.

Sincerely,

Marilyn Mathias

Marilyn Mathias
Route 1, Wheaton
563-8875

3-124

80

PETITION

We, the undersigned, residents and/or landowners in Taylor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Charles Helt	Tenney Minn
Lloyd Dr Kellen	RR1 Box 150 Tenney Minn 56582
Jeanette Kellen	RR1 Box 150 Tenney Minn 56582
Maxwen Kellen	RR1 Box 150 Tenney Minn 56582
Ewa Kellen	RR1 Box 150 Tenney Minn 56582
Barb Ragsus	RR1 Box 142 Tenney Mn 56582
Richard Kellen	RR1 Box 149 Tenney Mn 56582
Lynn Kellen	RR1 Box 149 Tenney Mn 56582
Kelly Ragsus	RR1 Box 142 Tenney Mn 56582
Donna Ragsus	RR1 Box 142 Tenney Mn 56582
Duane Ragsus	RR1 Box 142 Tenney Mn 56582
Lorin Comfort	RR1 Box 155 Tenney Mn 56582
James Linhart	RR1 Box 5 Campbell Mn 56522
Kenneth Wojciechs	RR1 Box 11 Wahpeton 56565
Georgia Wojciechs	RR1 Box 9 Wahpeton Minn 56565
Delores Ragsdale	820 E Summit Fergus Falls Mn 56537

PETITION

We, the undersigned, residents and/or landowners in Taylor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. ____, 1986

Name:	Address:
Basil Ragsdale	Tintah, Mn. Rt 1 Box 24 56582
Dora Ragsdale	Tintah, Mn. Rt 1 Box 24 56582
Norman Swanson	Tenney, Minn. Rt 1 Box 135
Allen Ragsdale	Tenney Minn 56582
Donald Beyer	Tenney, Minn. Rt 1 Box 118 56582
Walter Beyer	Tenney, Minn. RR1 Box 119 56582
Cora Beyer	Tenney, Minn. RR1 Box 119 56582
Karen Beyer	Tenney, Minn. RR1 Box 118 56582
Ed. Winter	Wheaton, Minn.
Alice M. Winter	Rt 2 Box 98 Wheaton, Minn.
Gloria Ragsdale	Tenney Mn 56582
Lyle Ragsdale	Tenney Minn 56582
Carlene Beyer	Rt 1 Box 130 Tenney, Minn. 56582
Jon Dahlby	Rt 1 Box 155 Tenney, Minn. 56582
Rebecca Ragsdale	Rt 1 Box 155 Tenney, Minn 56582
Robert Schmeck	Rt Box 129 Tenney Minn
Joyce Schmeck	Rt Box 129 Tenney Minn
Deanna Zentgraf	320 - 12th St N Breckenridge, Mn 56520
Timothy Zentgraf	320 12th St N Breckenridge, Mn
Dean Zimmerman	RR2 Box 124 Hankinson, N.D.
Vaughn Mandal	RR1 Box 135 Hankinson ND

3-125

PETITION

We, the undersigned, residents and/or landowners in Taylor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 3, 1986

Name:	Address:
Donna Wolf	Rt 1 Tenney, Mn 56582
Marlene Swenson	RR Wheaton Mn 56296
Susan Ragsdale	RR 2 Wheaton MN
Gregory Hamp	RR Tenney Mn.
Linda Hasbargen	Rt. 2 Box 97 Wheaton, Mn.
Scott Hasbargen	Rt 2 Box 97 Wheaton, Mn.
Chester Hasbargen	Rt. 2 Box 98 Wheaton, Mn.
Lois Hasbargen	Rt. 2 Box 98 Wheaton, Mn.
Bradley Hasbargen	Rt. 2 Box 98 Wheaton, Mn.
Dean Holt	RR Tenney Mn Box 139
Bryan Swenson	RR 2 Box 90 Wheaton, MN
Veronica Holt	RR Tenney Mn. 56582
Emma Holt	RR Tenney Mn 56582
Margaret Schneider	Wheaton Minnesota
Dean Krump	RR 1 Box 41 Wheaton, Mn
Gale Krump	RR2 Box 41 Wheaton MN
[illegible]	[illegible]
Robert Stoller	RR1 Hankinson N.D. 58030
[illegible]	Comphell Mn. 56522
Jo Ann Dowe	Comphell Mn 56522

PETITION

We, the undersigned, residents and/or landowners in Taylor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. ____, 1986

Name:	Address:
Adolph Marellia	Wheaton Minn RR2 Box 83
Dianne Wineke	Wheaton, MN RR2 Box 83
Louis Bruce	Wheaton, Minn RR2 Box 81
Louis Ann Bruce	Wheaton, Minn RR2 Box 81A
Dean Bang	Wheaton Minn RR2 Box 81A
Lenk Bruneking	Wheaton Minn, RR2 Box 81
Harold Bruneking	Wheaton Minn RR2 Box 81
Ann Ellen	Wheaton Minn RR2 Box 74
Paul Otto	Wheaton Minn RR2 Box 79
Carol Ekstrom	Wheaton Minn RR2 Box 79
Curtis Brandel	Wheaton, Minn RR2 Box 39

PETITION

We, the undersigned, residents and/or landowners in Taylor Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. ____, 1986

Name:	Address:
Rosemary Janke	Tenney, Minn.
Myron Janke	Tenney Minn.
Willard Wahl	Tenney Minn
Helen Wahl	Tenney Minn
Marvin Reguse	Tenney Minn
Wayne Reguse	Tenney Minn
Loretta Sheldon	Wheaton Minn
Fred Sheldon	Wheaton Minn
Edwin Oltmans	Wheaton Minn
Evelyn Oltmans	Wheaton Minn
Lyle Grundy Meyer	Tenney Minn
Roger Beadle	Wheaton Minn
Floyd Beadle	Wheaton Minn

3-126

Original

PETITION

We, the undersigned, residents and/or landowners in [redacted] Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Jerome Haeberger	Wheaton MN
E Carl Simpson	Tenney
H. Paul Simpson	Tenney Rt. 56 56 42
Darryl Wagner	Wheaton, Minn.
Mrs Darryl Wagner	Wheaton, Minn.

My. name is Jerry Berger, Norcross, Minnesota, Clerk of Redpath Township. I represent the citizens of Redpath Township, Traverse County, Minnesota, who are strongly opposed to the Over-the-Horizon Backscatter Radar transmitter in our area. At this time, I would like to submit to you (the U.S. Air Force) our Petition containing 51 signatures, opposing the installation of the Over-the-Horizon Backscatter radar transmitter in our area: and we want to be assured that this Petition is included in the final Environmental Impact Statement.

3-127

5

PETITION

We, the undersigned, residents and/or landowners in Redpath Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June __, 1986

Name:	Address:
Dennis Lee & Janet Smith	Norcross, MN
David Smith	RR1 Box 32A Norcross
Roy A. Berger	Wheaton, Minn.
Louis Berger	Norcross, Minn.
Wm C. Berg	Norcross, Minn.
Ivy Lee Berg	Norcross Minn
Duane Erickson	Norcross, MN
Donald Erickson	Norcross, Minn.
Earl Bordsen	Norcross Minn
Isaac Bordsen	Norcross, Minn.
Sigurd Morrow	Norcross, Minn.
LeRoy Reckner	Norcross, Minn
Shirley Reckner	" "
Jim Reckner	Norcross
Lyman Berger	Norcross, Minn
Wanda Berger	Norcross, Minn.
Jerry Berger	Norcross, Minn.
Helen E. Johnson	Norcross, Minn
Raymond E. Johnson	Norcross, Minn
Gary L. Johnson	Norcross, Minn
Bonita Krenz	Norcross, Minn
Chris Bordsen	Wheaton, Minn.

Name:	Address:
Eugene J Bordsen	Wheaton, Minn.
Dennis Krenz	Norcross, Minn.
Mary C Krenz	Norcross Minn
Ludvic C Berger	Norcross Minn
Paul Berger	Norcross Minn
Lee Clarken	Norcross Minn
Isaac Bordsen	Norcross Minn.
Myrtle Killen	Norcross, Minn
John O. Morrow	Norcross Minn
Mary Morrow	Norcross, Minn
Anita Bordsen	Norcross, Minn.
Walter Lybben	Norcross Minn.
Leone Sudsen	Norcross Minn
Rhonda L. Berger	
Maggie J Conway	Wheaton, Minn
Cynthia Morrow	Norcross, Minn
Carol Boyd	RR1 Box 35 Norcross, MN
Dorothy Coulpt Johnson	Wheaton, Minn
Alvina Krenz Christianson	Wheaton Minn.
Agnes Berger	Wheaton Minn.
Sylvia Berger	Norcross, Minn.
Larry Krenz	Norcross Minn
Shirley Abbott	Norcross, Minn.
Bill Abbott	Norcross, Minn.
David Kelly	Norcross, Minn.
Myra Kelly	Duluth, Minn
Lloyd Johnson	Norcross
Violet E Johnson	Norcross, Minn.

PETITION

We, the undersigned, residents and/or landowners in Redpath Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Kenneth Christofferson	Norcross Mn
Donald Engebretson	RR1 Box 42 Norcross Minn
Eugene Buchert	707 1st Ave North
Jerry Berger	Norcross Minn
Paul Berger	Norcross Mn
Evelyn Johnson	Lundeen Redpath
Elmer Ehlert	Elmer Minn
Lillian Ehlert	

3-129

Jerry Berger, R. 1, Box 34, Norcross, Mn. 56274

The Air Force states that on page 4-52 and 53 of the Environmental Impact Statement that if electroexplosive devices such as electric blasting caps were to be transported or handled in the area, a safe distance of 4 miles would be required for safety. But the makers of the Blasting caps recommends a 17 mile distance for safe handling. This all depends on the electrical conductivity of the ground. Which you state in the analysis process is as yet unknown. If this ground conductivity can effect blasting caps from 4 to 17 miles away from the transmitter wha' else can it effect. What effect has it on Humans, Grain Crops, Root Crops and Animals or is that another unknown factor, as may more things in this book are unknown.

Col. Lee stated in last sunday's Fargo Fourm that there is no absolute proof that there can never be a long term harm or damage. These kinds of absolutes you just can't provide.

I don't think the people of Traverse County should settle for less than the absolute proof.

My name is Ronald Vold, Dumont (address) Minnesota.

I represent the citizens of Tara Township, Traverse County, Minnesota, who are strongly opposed to the OTH-B radar transmitter in our area. At this time, I would like submit to you (the U.S. Air Force) our Petition containing 75 signatures, opposing the installation of the OTH-B radar transmitter in our area; and we want to be assured that this Petition is included in the final Environmental Impact Statement.

3-130

PETITION

We, the undersigned, residents and/or landowners in Tara Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 9, 1986

	Name:	Address:
1.	Ronald Vold	Dumont Mn.
2.	Karen Vold	"
3.	Elmer Chesteen	
4.	Helen Buckus	Graceville
5.	John M Smytewick	
6.	William Hess	Graceville
7.	Marvin Hoppe	
8.	Leonard Hoppe	
9.	Mrs Erwin Dietz	Graceville minn
10.	Erwin Dietz	Graceville minn
11.	James A Moorhead	Dumont, Minn
12.	Alice L Stevens	Dumont Mn
13.	Elton Stevens	
14.	Eugene Stevens	Dumont, Mn.
15.	Mary Jane Stevens	" "
16.	Larry B Seifert	
17	Selma Jepsen	Dumont, Mn.
18.	Ralph Gipson	
19.	Ellen Stewart	Dumont
20.	Marlene Sanowski	Dumont
21.	Roland Olson	Dumont, Mn.

Name	Address
21 Ronald Sopanen	Dumont
22 Kenneth Grunesch	Dumont
23 Elmer Krupnick	Dumont
24 Donald Eikeboff	Dumont
25 Marjorie A Donnell	Dumont
26 Cecil & Jan Vold	
27 Muriel Vold	Graceville, Mn
28 Jim & Connie Phalen	Graceville, Mn.
29 Paul & Barb Christen	" "
30 Robert & Jo Ellyn Christen	"
31 Chuck & Carol Bruns	" "
32 Joe & Mary Dietz	Dumont Minn
33 Tom & Wally Dilsaver	Dumont Minn
34 Phil & Enid Eikeboff	"
35 Stan & Debi Wiegman	Graceville Mn
36 Tom & Lonnie Wiegman	"
37 Norbert & Jean Beller	Graceville, Minn
38 Pat & Mary Peltier	Graceville, Mn
39 Herbert Beyer	Dumont Minn
40 Gertrude Beyer	Dumont Minn
41 Lucille Lund	Hickson, Ill.
42 Jim Vold	Dumont Minn
43 Carol Jannsen	Dumont
44 Richard Jannsen	Dumont
45 Helen Tritz	Dumont
46 Tom Tritz	Dumont
47 Loyal J. Tritz	Dumont

	Name	Address
49.	Kenneth A. Skoog	Graceville Minn
50.	Lois N. Skoog	Graceville, Mn.
51.	Lowell Vold	Dumont MN. 56236
52.	Dyana Siefert	Dumont, Mn.
53.	Gerald Gipson	Dumont Minn.
54.	Annie Gipson	" "
55.	Mr. & Mrs. Glenn I. Plaquet	Dumont, Minn.
56	Joe & Deb Ditz Jr.	
57.		
58.		
59.		
60		

PETITION

We, the undersigned, residents and/or landowners in [redacted] Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

	Name:	Address:
70	[redacted]	[redacted]
Duplicate	[redacted]	[redacted]
11	[redacted]	[redacted]
11	[redacted]	[redacted]
71	[redacted]	[redacted]
72	[redacted]	[redacted]
73	[redacted]	[redacted]
74	[redacted]	[redacted]
75	[redacted]	[redacted]

3-132

THE WHEATON GAZETTE
Thursday, May 8, 1986 — May 8, 1986

RESOLUTION

At a special township meeting of the Township of Tara held on May 5, 1986, the following Resolution was presented and adopted:

WHEREAS, a radar transmitter station in Tara Township consisting of approximately 4000 acres would result in a loss of several farm families and 20% of our township's agricultural land; and,

WHEREAS, environmentally, we are very concerned about being a military target, living near excessive radar radiation, the blockage of our roads, restriction of drainage, communications interference, and the restriction of air rights; and,

WHEREAS, economically, we are concerned that our land could be condemned, forcing farmers to sell out during a depressed period, which sale would result in a loss of tax revenue; and we question if the economic advantages for our local businesses and job opportunities would be justified, considering the burden to our township and that the construction crews would have their own employees, with housing being built at the proposed site, which site could become obsolete in the near future.

NOW, THEREFORE, BE IT RESOLVED: That we strongly oppose an Air Force Radar Transmitter Station within the Township of Tara and we prohibit the destruction of agricultural land for any reason other than roads, ditches, residential or agricultural development.

TARA TOWNSHIP — 19c

PETITION

We, the undersigned, residents and/or landowners in Croke Township, Traverse County, Minnesota, strongly oppose the GTE-3 (Green-Tipe-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June __, 1986

Name:	Address:
Joseph Fridgen	Dumont, Mn. 56236
Helen Ann Fridgen	Dumont, Mn. 56236
Betty Fridley	Dumont, Mn. 56236
Roger F Frisch	Dumont, Mn. 56236
Trey Frisch	Dumont, Mn. 56236
Debbie Frisch	Dumont, Mn. 56236
Connie Grimm	Dumont, Mn. 56236
Ed Grimm	Dumont, Mn. 56236
Cletus Doll	Rt 1 Dumont "
Merle Doll	Rt 1 Dumont "
Cory L Grimm	Box 83 Wheaton, Mn. 56236
Marilyn Timmer	Rt 1 Box 83 Wheaton 56236
Wm C Ruyton	Dumont
Harry V Olson	California
Ruth Ruyton Olson	California
Pat Ryan	Dumont, Mn. 56236
Idelle Fridgen	Dumont, Mn. 56236
Sylvester Fischer	Dumont, Mn. 56236
Patricia Fischer	Dumont, Mn. 56236
Joe Vanderwal	Dumont, Mn. 56236

3-133

Name:	Address:
Eugene Fridgen	Wheaton Mn.
Vernon Fridgen Jr	Dumont Minn.
Alice Fridgen	Dumont, Minn.
Marcella Schmidt	Wheaton, Mn.
Tom E Locher	Dumont, Mn
Dani Locher	Dumont, Mn
Ed B. Brink	Dumont Minn.
78 Philip J Brink	Dumont, Mn.

PETITION

We, the undersigned, residents and/or landowners in [redacted] Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Jan Vanderwal	Dumont, Mn.
[illegible] Vanderwal	Dumont
[illegible] Hedgen	Dumont
Shirley Fritz	Dumont
John Wist	Dumont
[illegible] Fischer	Herman Mn.
Florence Fellmer	" "
Harry Fischer Jr	Dumont
[illegible]	
[illegible]	
Vera L. Johnston	Wheaton
Merton J. Johnson	Wheaton Mn

3-134

September 8, 1986

TO: TRAVERSE COUNTY TOWNSHIPS OPPOSING THE OTH-B RADAR TRANSMITTER INSTALLATION:

As you well know, the public hearing is coming up on Wednesday night, September 10th at 7 p.m., concerning the OTH-B radar transmitter proposed for Traverse County.

If you have the original Petition for your township/area, please make a photocopy of it, and bring the original & photocopy to the hearing on Wednesday night. What we'd like to do is: have you (or a volunteer chosen from your area) present the Petition to the Air Force with the following information:

My name is _____, _____ Minnesota.
(address)

I represent the citizens of Campbell Township, Traverse County, Minnesota, who are strongly opposed to the OTH-B radar transmitter in our area. At this time, I would like submit to you (the U.S. Air Force) our Petition containing 53 signatures, opposing the installation of the OTH-B radar transmitter in our area; and we want to be assured that this Petition is included in the final Environmental Impact Statement.

It is very important that this Petition is turned in to the Air Force on Wednesday night at this hearing. So if you can't make it to the hearing, please have someone else bring it in and make the statement.

Also, please call me today when receiving this letter to give me the number of signatures on the Petition. Thank you so very much. If you have any questions, please call me at 563-8875.

Sincerely,

Marilyn Mathias

Marilyn Mathias
Route 1, Wheaton
563-8875

We, the undersigned residents and/or landowners in Campbell Township, Wilkin County, Minnesota, strongly oppose the OTH-B (Over-The-Horizen Backscatter) radar transmitter proposed for this area.

(53)

Dated: September _____, 1986

Name	Address	
M. J. Doyle	Campbell, Mn	9/3/86
Bonnie Dran	" "	9/4/86
Duane Dran	" "	9/4/86
Gabella Voss	" "	9/4-86
Violet Voss	" "	9/4-86
Dan Dybvad	Tenney Mn	9/4/86
Albert Gibbardson	Tenney Mn	9/4/86
James E Scott	Campbell, Mn.	9-5-86
Stan Ivers	Campbell Mn	9-5-86
Leonard Ragnes	Tenny Minn	9-5-86
Norbert Platt	Tenney Minn	9-5-86
Grace Platt	Tenney mn	9-5-86
Lavaine Church	Tenney Mn	9-5-86
Kenneth Hagenston	Tenney MN	9-5-86
Marion Harrington	Tenney Mn	9-5-86
Alfred J Mainthie	Tenney Mn	9-5-86
Lou & Manthe	Tenney, Mn	9-5-86
Myrtle Klindt	Campbell Minn	9-5-86
Jean A Daly	Campbell, MN.	9-6-86
LuMae Krump	Tenney, Mn.	9-6-86
Violet Nix	Campbell, Minn.	9-6-86
Bertha Steenbock	Campbell, Minn	9-6-86
Karen Daly	Campbell, Mn	9-6-86

We, the undersigned residents and/or landowners in Campbell Township, Wilkin County, Minnesota, strongly oppose the OTH-B (Over-The-Horizen Backscatter) radar transmitter proposed for this area.

Dated: September _____, 1986

Name	Address	
Ronald L Barth	Tenney Minn	9/3/86
Kathleen M Barth	Tenney, Mn	9/3/86
Eugene Kutzer	Tenney, Mn	9/3/86
Eugene Kutzer	Tenney, Mn	9/3/86
Robert G Krause	Tenney Minn	9/3/86
H Shattil	Tenney Minn	9/3/86
Joni Westhuber	Tenney, Mn	9/3/86
Mary Westhuber	Tenney Mn	9/3/86
Ruth Krause	Tenney mn	9/3/86
Phyllis Scott	Campbell Mn	9/3/86
Kathryn Voss	Tenney Mn	9/3/86
Helen Kutzer	Tenney MN	9/3/86
Mary Voss	Tenney, MN.	9/3/86
James E Voss	Tenney Mn	9/3/86
Wesley Voss	Tenney Mn	9/3/86
Clarice Voss	Tenney Minn	9/3/86
Valerie Hegel	Tenney, Mn	9/3/86
Charles Hegel	Tenney, MN	9/3/86
[illegible]	Campbell Minn	9/3/86
Karen A Anker	Campbell MN	9/3/86
Wm J Zoucha	Tenney, Minn	9/3/86
Marianne Zoucha	Tenney, Mn	9/3/86
Tony Zoucha	Tenney, Mn	9/3/86

We, the undersigned residents and/or landowners in Campbell Township, Wilkin County, Minnesota, strongly oppose the OTH-B (Over-The-Horizen Backscatter) radar transmitter proposed for this area.

Dated: September _____, 1986

Name	Address
Jillne Doyle	Campbell
Alden Steenblock	Campbell
Blaine Steenblock	Campbell
Ryan Steenblock	Campbell
Dale Steenblock	Campbell

We, the undersigned residents and/or landowners in Campbell Township, Wilkin County, Minnesota, strongly oppose the OTH-B (Over-The-Horizen Backscatter) radar transmitter proposed for this area.

Dated: September _____, 1986

Name	Address	
Donald J. Voss	Tenney Minn	9/3/86
Roy Lutzbach	Tenney Minn	9/4/86

PETITION

We, the undersigned, residents and/or landowners in Lessendorfville Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Irene Schwebach	Dumont, MN
Vernon Baldry	Dumont, Minn.
Noella Baldry	Dumont, Minn.
[illegible]	[illegible]
Lloyd V. Fritz	[illegible]
Lisa Fritz	[illegible]
Tenora Eikmeier	Dumont.
Randal Fritz	Dumont
Joanne Fritz	
Mark Fritz	On [illegible]

3-137

April 28, 1986

We, the undersigned, do hereby petition that we are adamantly opposed to the placing of the radar site here in Lessendorfville Township in Traverse County, Minn.

Jim Gray
Steve Hamm
Ron Bartsch
Marilyn Gillespie
Paul J. LeBeau
Doreen Peterson
William D. Grimes
Arthur R. Baker
Agnes Mahon
Sylvia Pederson
Adrian Rud
Adrianne M. Rud
Wilfred Meier
Duane Quin
Delores Backus
Gordon Quin
James Schwebach
Vernon Baldry
Joe Findlay Jr.
Gerry Jorgenson
Loren Pederson
Vincent Chaly
Jean Chaly
Delores Schwebach
Ted Hamm
Dorothy Hultgren
Eric Fritz
Wayne A Watson
Alvin Zimmerman
Stanley Zimmerman
Martin Hultgren

Armand Aswegen
Melvin Bedeau
Evelyn Bartsch
Helen Graff
Floyd Hultgren
Elsie Lindow
Lola Bartsch
Carol Stephen
Jason Blackwell
Anthony Grogan

April 28, 1986

A Petition

We, the undersigned, do hereby petition that we are adamantly opposed to the placing of the radar site here in Leonardsville Township of Traverse Co., Minn.

Dennis & Freidly
Virgil Fryjedly
Brian Lake
Fred Allen Fuhrman
Allen W Fuhrman
Vivian Pederson

3-138

April 28, 1986

A Petition

We, the undersigned, do hereby petition that we are adamantly opposed to the placing of the radar sites here in Leonardsville Township of Traverse Co., Minn.

Gloria Ringgen
Vicki Behrens
Vernon Behrens
Edsley Van Buren
Donald Van Buren
Ruth Murphy
Leonard Murphy
Alan Behrens
Arnold Cronfeld
Annie Cronfeld
Kenneth A Thorn

September 8, 1986

TO: TRAVERSE COUNTY TOWNSHIPS OPPOSING THE OTH-B RADAR TRANSMITTER INSTALLATION:

As you well know, the public hearing is coming up on Wednesday night, September 10th at ? p.m., concerning the OTH-B radar transmitter proposed for Traverse County.

If you have the original Petition for your township/area, please make a photocopy of it, and bring the original & photocopy to the hearing on Wednesday night. What we'd like to do is: have you (or a volunteer chosen from your area) present the Petition to the Air Force with the following information:

My name is _____, _____ Minnesota.
(address)

I represent the citizens of _____ Township, Traverse County, Minnesota, who are strongly opposed to the OTH-B radar transmitter in our area. At this time, I would like submit to you (the U.S. Air Force) our Petition containing _____ signatures, opposing the installation of the OTH-B radar transmitter in our area; and we want to be assured that this Petition is included in the final Environmental Impact Statement.

It is very important that this Petition is turned in to the Air Force on Wednesday night at this hearing. So if you can't make it to the hearing, please have someone else bring it in and make the statement.

Also, please call me today when receiving this letter to give me the number of signatures on the Petition. Thank you so very much. If you have any questions, please call me at 563-8875.

Sincerely,

Marilyn Mathias
Route 1, Wheaton
563-8875

P.S. Your township resolution is attached -- this should be turned in to the Air Force on Wed. night too.

3-139

WALLS TOWNSHIP

RADAR RESOLUTION

Whereas, a radar transmitter site in Walls Township of Traverse County, Minn. consisting of 3,000 to 6,000 acres more or less would result in a loss of farm families and as much as 25% of agricultural land; and

Whereas, environmentally we find great concern with health hazards to humans, wildlife and possible soil and water contamination from radiation, and possibly chemicals.

Whereas, we are concerned with the economic impact of the land used by the site, plus the lower land elevation on the surrounding area of land.

Now, Therefore, be it resolved: That we strongly oppose an Air Force Defense Radar System within the Township of Walls and we prohibit the destruction of agricultural land for this purpose.

18c

PETITION

We, the undersigned, residents and/or landowners in Walls Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 10, 1986

Name:	Address:
Cheryl Leininger - Dup	Wheaton
Jeanette Leininger - Dup	"
LeAnn Peyton	Dumont
David C Dell	Dumont
Gleanna Dell	Dumont
Theresa Thiel	Dumont
Gene Thiel	Dumont
Patty Peyton	Wheaton
Rochelle Peyton	Wheaton
Tom peyton	
Ruth Thiel	Wheaton
Orville Thiel	"
Robin Ulrich	Wheaton
Duane Ulrich	Wheaton
Ronda Leininger	Dumont
Ruth Peyton Olson	Land owner Walls Township
Harry N. Olson	Land owner
Roy Hormann	Wheaton
Shirley Hormann	"
Maxine Jorgenson	

Name:	Address:
Vernon T Jorgenson	
Bob Thiel	Dumont M.N.
[illegible]	RR1 Wheaton, MN
Clifford Lahr	RR1 Wheaton Mn
Monica Lahr	Wheaton, MN
Leslie Johnson	Wheaton,
Laurel Johnson	Wheaton, MN
Lisa Ellers	W Heaton MN
Ron Lee	Dumont MN
Jo-Ann Swanson	Wheaton, Minn
Marsha Sanda	"
Dean Sanda	Wheaton Minn.
Beverly Hall - Dup	Wheaton, MN
Margie E Thiesen	" "
Mike Thiesen	" "
Doug Haag	" "
Kathy Haag	" "
Frank Mark	" "
Wayne Mark	" "
Gail Thiel	Dumont, Mn
Duane Sanda	Wheaton, Mn
George Sanda	" "

C-140

April 24th 1986

Wells Township Meeting 102

We oppose The RAdar Transmitter SiTe IN The TRAverse CouNTy Area.

Sign

James Conroy
Albert Cuperus
Bruce Conroy
Ronald Ekker
Robert Lundquist
Beverly Gallup
Erwin A. Bartz
Dorothy Dreyhaupt
Joe Dreyhaupt
Peter Lund
Rodney Ekker
Richard Thiel
Leo Fiedler
Larry Ekker
Howard Lehrke
Paul Landa
Maryann Grisch
Arnold Grisch
Judy Peters
Jackie Springer
Elliott Schneider
[illegible]
Mike Petty
Tom Conroy
Wm Pfaff
Mark Fridley
Ken Peters
Daryl Jennings
Gordon Conroy - Mayor
Patty Reykdal - Secy
Charlotte Cuperus
Carla Tillotson
Jason Conroy

Wallo Township

Name:	Address:
William Conroy	28000 S. Gravel Rd Mul. no 47042 RR
Patrick D. Conroy	28000 S. Gravel Rd, Mulino OR. 97042
Colleen Tracy Vickat	1214 40th St SW Fargo ND 58103
Donna Conroy	555 E. Lionshead Cir. Vail Co 81657
Michael C. Conroy	311 W Bellflower Dr. Vail CO 81657
Leonard Morales	6 Hay Camp Rd Mc Clure Mn 55110
Patricia Marcus	6 Hay Camp Rd Mc Clure, MN 55110
Louise Conroy Shablow	5646 Chatsworth St. St Paul MN 55126
Brian Shablow	5646 CHATSWORTH, ST PAUL MN
Ron Conroy	57 So. Avon ST APT 32 ST. PAUL 55105
Lynn Conroy	57 So Avon St Apt 30 ST Paul, 55105
[illegible]	[illegible]
Adriane Conroy	3804 So Way St Chicago Ill. 60608
Dean Conroy	113 Carol Lane Mankato MN 56001

PETITION

We, the undersigned, residents and/or landowners in Malla Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Cindy Blasing	Wheaton
Carl Lemings	" "
Evelyn Lemings	Wheaton
Elsie Fibranz	Wheaton
Duard Grael	
Dale A. Meuhs	Dumont
Joann R. Meuhs	Dumont
Thomas Anderson	Wheaton

3-142

PETITION

We, the undersigned, residents and/or landowners in [illegible] Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Joanne Putnam	RR Tintah MN
Sherri Brigwald	RR Tintah MN
Douglas Davis	Tintah MN
Delaine Hawes	Tintah MN
Carol Davis	Tintah
Reginald R Hawes	Tintah, Minn.
Donald/Michael Chartichy	Tintah, Minn
Joe Chartichy	TINTAH MN.
[illegible]	[illegible]
Lucy McHawes	Tintah Minn
Gene Doyle	Tintah, MN
Jaime M Putnam	Tintah, MN
Brent Davison	Tintah Minn.

PETITION

We, the undersigned, residents and/or landowners in Tintah Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 10, 1986

Name:	Address:
Milton B Torgerson	Tintah Minn
[illegible]	[illegible]
Wanda Geerwold	Tintah, Minn
Joan Tiesche	Tintah Minn
Wesley Bromwold	Tintah, MN.
Cathy Bruce	Tintah, MN
John Bromwold	Tintah, Minn
Audrey Johnson	Tintah, MN
Karen Kolton	Nashua, Minn
[illegible] Bromwold	Wendell Minn
Donald Nettestad	
Robert Ross	Tintah, Minn.
John E Davis	Tintah Minn
Sigrud Bromwold	Wendell Minn
Ryan Burton	Tintah, Minn (Brunsville)
Brad Kolton	Campbell
Vernon Nettestad	Tintah
[illegible]	[illegible]
Todd Krebs	Wendell, Minn
Paul Daniels	Tintah Minn
Clinton Ross	Tintah Minn

(16)

3-143

PETITION

We, the undersigned, residents and/or landowners in Clifton Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

55

Dated: June 12, 1986

Name:	Address:
Rick Mathias	RR 1 Box 104 Wheaton Mn 56296
Marilyn Mathias	Route 1, Box 104 Wheaton, Minn.
Dan Young	Box 133 R#2 Herman Minn 56248
Richard Young	Box 133 R#2 Herman Mn
Jeff Young	Box 133 R#2 Herman Mn
[illegible]	[illegible]
Ila Jo Zimmerman	Rt 2 Box 159 Wheaton
Mike Young	Rt 2 Box 160 Wheaton
Arvilla Young	Rt 2 Box 160 Wheaton MN
Fred Robinson	Rt 2 Box 170 Wheaton Minn
Edwin Robinson	RR2 Box 170 Wheaton
Marlo Warholm	Rt 2 Box 121 Wheaton, Minn
Doris Warholm	Rt 2 Box 121 Wheaton, Minn
Edwin Simpson	Box 131 R#2 Herman, Minn 56248
Doris Simpson	Rt 2 Box 131 Herman MN 56248
Clyde Dobberstein	Rt 2 Box 132 - Herman Mn
John Deal	Rt 2 Box 132 Herman Mn 56248
Gilbert Deal	Rt 2 Box 130 Herman Mn 56248
Florence Deal	Rt 2 Box 130 Herman Mn 56248
Darrell Zimmerman	RR 2 Box 129 Herman Minn

Name	Address
Dian Zimmerman	RR2 Box 129 Herman MN
Gabriette Bruns	R2 Box 128 Herman Minn 56248
John R Bruns	Herman Minn. 56248
Doris Crandall	Herman Mn 56248
Grace Crandall	Herman Mn 56248
Shirley Findley	Herman, Minn. 56248
Joseph Findley	Herman, Minn 56248
Don Saulsgo	Herman Minn 56248
Helen Saulsgo	Herman minn 56248
Michael Botham	Herman Minn 56248
Vincent Castella	Herman, Minn 56248
Larry D. Cartell	Herman Mn 56248
George Kracht	Wheaton Minn 56296
Mary E. Hervey	Wheaton Minn 56296
[illegible]	Wheaton Minn 56296
[illegible]	Wheaton, Mn 56296
Arnold Rutgaliano	Wheaton Minn 56296
[illegible]	Wheaton Minn 56296
Wesley Johnson	Norcross Mn 56274
Mr & Mrs Paul Johnson	Norcross Minn 56274
Dennis C Hervey	Wheaton, Minn 56296
Elaine Hervey	Wheaton, Mn 56296
Michael Hervey	Wheaton, Mn 56296
Ralph A Tupper	Wheaton Minn 56296
Dianna R. Tupper	Wheaton Minn 56296

Name	Address
J Amos McBrown	W Leaton Mn
Clayton Thorson	Wheaton Minn.
Lenore Dee	Box 130 Herman Mn.
Lynn Dee	Box 130 Herman, Mn.
Edwin Crandall Jr.	Box 122, Herman Minn
Kathy Crandall	Box 157 Herman Mn
Dolly J Findley	RR2 Herman Mn.

3-144

PETITION

We, the undersigned, residents and/or landowners in Clifton Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: Sept. 5, 1986

Name:	Address:
Lynn Fickes	Herman, Mn.
Delbert Fickes	Herman, Mn.
Diane Zimmerman	Herman, Mn.

3-145

March 11, 1986

At the annual township meeting of the Town of Clifton, held on the above date, the following resolution was presented and adopted:

Whereas: Agriculture land is our basic asset in Clifton Township and considering if the radar station takes 4,000 acres permanently out of production, the monetary loss over a long period of years is astronomical. For example take Wheat at $3.57 a bu., Corn at $2.15 a bu., and Soybeans at $5.04 a bu., which is the local price as of March 6, 1986 and project them out at yields of 45 bu. for Wheat, 80 bu. for Corn and 30 bu. for Soybeans, the annual loss would be $646,320.00, which would have been spent locally. Consider this over the life of the land and that it is a production income that multiplies many times over in the processing and marketing of the commodity. These figures would nearly double if they were parity and much higher if they were target prices.

Now Therefore Be It Resolved: We prohibit the distruction of Agricultural land for any reason other than roads, drainage, ditches or residential development.

Marlo Warholm Chairman
Bill Zimmerman
Rickard Young
Ronald Hervey Treas.
Jerome Deal Clerk

March 11, 1986

At the annual township meeting of the Town of Clifton, held on the above date, the following resolution was presented and adopted:

Whereas: A radar station in Clifton Township would destroy 10% to 15% of our tax base and would create an additional burden on a small unit of government, (such as roads, drainage, ditches, garbage, security, etc.), to be paid for by the remaining tax payers, and;

Whereas: It would take highly productive land out of production, when it could be placed in an unpopulated, unproductive area and when completed there would be fewer jobs than from the production of that land, when considering the producing, processing, marketing, etc. of the product, and;

Whereas: It would cause interference in Television, Radio, especially business radios and create a target in an agriculture developed area, and;

Whereas: It adds to the cost of education and welfare, which the local support basically falls on agricultural land.

Now Therefore Be It Resolved: That we strongly oppose an Air Force Radar Station within the small Township of Clifton.

Marlo Warholm Chairman.
Bill Zimmerman
Richard Yourey
Ronald Hervey Treas.
Jerome Deal Clerk

3-146

PETITION

We, the undersigned, residents and/or landowners in MONSON Township, Traverse County, Minnesota, strongly oppose the OTH-B (Over-The-Horizon Backscatter) radar transmitter proposed for this area.

Dated: June 10, 1986

Name:	Address:
Vera Vollmers	Rt 2 Box 21 Wheaton Mn
Elton Vollmers	Rt 2 Box 21 Wheaton Mn
James B Yeary	R R 2 Box 105, Wheaton, Minn
Roger A Johnson	RR #1 Box 160 Wheaton Mn
Merritta Johnson	RR 2 Box 50 Wheaton, Mn
Chester Hasbargen (Taylor Township)	Rt. 2 Box 98 Wheaton, Mn
Lois Hasbargen	Rt. 2 Box 98 Wheaton, Mn
Marsha Beyers	Rt. 2 Box 107 Wheaton, Mn.
Nancy L Johnson	Rt 1 Box 160 Wheaton, Mn
Kenneth Nelk.	RR 2 Box 52 Wheaton Mn
Beverly Nelk	" " "
Virginia Schmidtke	RR 2 Box 53 Wheaton Mn
Judy Schmidtke	RR 2 Box 53 Wheaton Mn
Walter Schmidtke	RR 2 B 55 Wheaton
Peggy Schmidtke	Rt 2 Box 55 Wheaton
Mavis Peterson	R #2 Box 56 Wheaton Mn
Milton G Schmidt	R #2 Box 57 Wheaton Minn
Dave Schmidt	Rt 2 Bx 57 Wheaton, Mn.
Lonnie D. Schmidt	Rt. 2 Box 57 Wheaton, Minn.
Gerald B. Rusch	R 2 - Box 60 " "

Name	Address
Betty Russell	Wheaton
Hattie Pearson	Wheaton Minn 56296
Carne Pearson	Rt 2 Box 62 Wheaton, Mn 56296
John Ewing	Rt 2 Wheaton
Nancy Hodgen	RR 2 Box 54 Wheaton, Minn
Lee Schmidt	RR 2 Box 42 Wheaton, Minn
Jeanette Schmidt	Rt 2, Box 42 Wheaton
A Wahl	RR 2 Box 47 " "
Russ Wahl	RR 2 Box 47 Wheaton
Lois Dooley	RR 2 Box 46 Wheaton
Mattie Johnson	RR 2 - Box 32 Wheaton
Don Ellen	RR 2 Box 34 Wheaton
Ina mills	RR 2 Box 40 Wheaton
Leona Mills	RR 2 Box 40 Wheaton
Ann Peterson	RR 2 Box 24 Wheaton
Marilyn Larson	R 2 Box 71A Wheaton
Ellen Larson	RR 2 Box 71A Wheaton
Glenn Larson	R 2 Box 71 Wheaton
Viola Ehlers	R 2 Box 73 Wheaton
Vernon Ehlers	R 2 Box 73 Wheaton
Marlyn Rose	R 2 Box 67 Wheaton
Donald Kliebenstein	R 2 Box 68 Wheaton
Ruth Kliebenstein	Rt 2 Box 68 Wheaton
Wm Klock Wheaton	
Frieda Klock Wheaton	

Name	Address
Brenda Petersen	Rt 2 Wheaton
Alan Petersen	Rt 2 Wheaton
Gary Ehlers	RT 2 Box 61 Wheaton
Linda Ehlers	" 2 "
John Bornhoft	RT. 2 Wheaton
Raymond Erickson	RT-1 Norcross
Bob Sommer	Rt-1 Norcross
Beverly Erickson	Rt. 1 Norcross.
DeWayne Strandberg	Box 117 RR2 Wheaton Mn
Dennis Strandberg	Box 116 RR2 Wheaton Mn
Rick Schmidt	RR2 Box 88 Wheaton, Mn.
Gayle Kellen	Rt 2 Box 18 Wheaton Mn
Harold Allaten	RR2 Box 112 Wheaton Minn.
Heather Allaten	" " " "
Doug G. Anderson	RT 2 Box 64A Wheaton Mn.
Pamela J. Anderson	Rt 2 Box 64A Wheaton Mn.
Elaine Anderson	Rt 2 Box 64 Wheaton Mn
Melvin Winters	Box 27 RR 2 Wheaton, Mn
Gordon W. Anderson	R 2 Box 64 " "
Pauline L. Pike	R 2 Wheaton Minn 56296
Kenneth C. Boom	Rt 2 Wheaton, Minn.
Pam Path	Wheaton
David Path	Wheaton
Steve Kelle	RR2 Wheaton Box 18
[illegible]	RR 2 Wheaton Mn.

Myron Rudke Rt 2 Wheaton

[illegible] P.O. Box 513

[illegible] Box 158 Wheaton

[illegible] " " "

Clara Bayne Wheaton, Minn RT1 Box 160

[illegible] Wheaton Minn R.2 Box 56

[illegible] Rt 2 Box 57 Wheaton and

[illegible] RR 2 Box 41 Wheaton

Esther Mandal Box 36 W Heaton

[illegible] Rt 2 Box 75 Wheaton Minn

[illegible] RR 2 Box 75 Wheaton

[illegible] RR 2 Box 76 Wheaton

Jacqueline McClennon RR 2 Box 76 Wheaton

[illegible] RR 2 Box 35 Wheaton

Edulle Magnuson " " Wheaton

Dennis Klingsmon RR 2 Wheaton

Kathleen Klingsmon RR 2 Wheaton

Irene Ragnes RR 2 Wheaton

[illegible] Wheaton

Brenda Schultz RR 2 Wheaton

Nancy Ragnes RR 2 Wheaton

Edward Smith RR 2 Wheaton

Alfred Hardanger RR 2 W Heaton

[illegible] RR 2 W Heaton

[illegible] RR 2 Wheaton

Steve Rogne Rt 2 Box 24 Wheaton Mn.

Margaret Johnson Wheaton Minn.

Mabel Nesler " "

Florence Brickman

Geraldine Kassahn R. 2 Box 20 Wheaton.

[illegible] Kassahn

[illegible] Wheaton, Minn 56282

Darryl Rogne Wheaton, Mn

Judith J. Rogne Wheaton, Minn.

Fred Hardanger Wheaton, Minn.

Karen Hardangen Wheaton, Minn.

Nellie Peterman W Heaton Minn

Dawn Anderson Wheaton, Minn.

Donna Anderson " "

Keith Sorenson Wheaton Mn.

Sandra Sweeney Wheaton, Mn

Donald Brown Wheaton Minn.

Elmyra Brown Wheaton

3.3 Langford, South Dakota

3.3.1 Transcript

(The hearing at Langford, South Dakota, commenced at 7 p.m., September 11, 1986.)

Lt. Col. Clarke: Good evening, ladies and gentlemen. It's my pleasure to welcome you here tonight on the Draft Environmental Impact Statement which has been filed by the Air Force and is currently being evaluated on the Over-The-Horizon Backscatter Radar System.

My name is Lt. Col. Leonard Clarke. I am an active duty trial judge serving in the First Circuit located in Washington, DC, at Bolling Air Force Base. I have been asked to serve as presiding officer over this hearing to see that all parties having an interest in this matter receive a fair opportunity to be heard. The time that we have available for the hearing is from 7 o'clock until 10 o'clock.

The purpose of your opportunity to be heard is twofold. It is to provide you with a chance to receive factual information about the proposed Air Force action, and to ask any questions you might have about it. Thus, in this sense, this is a hearing, that affords the Air Force the opportunity to clarify points which may have been misunderstood. It is informational. Secondly, and most importantly, it is your opportunity to speak in this public hearing, and it also permits the Air Force to receive representative samples of public opinion as to the anticipated environmental impact on the proposed Air Force action. Your comments may be either oral or written and will constitute an integral part of these proceedings.

I am not here as an expert on this proposal or on the Draft Environmental Impact Statement which has been filed. Although I have familiarized myself with the Draft statement, my principal responsibility is to ensure that this hearing is conducted in an orderly fashion and is adequately recorded. I have not participated in the development of this proposal and I have not rendered any legal advice or assistance regarding it. Likewise, I will not be making any recommendations, input, or decisions with regard to whether the Air Force proposal is to proceed, be modified, or be totally abandoned.

On the gym floor here this evening are Air Force officials who are extremely knowledgeable about the details of this proposal. At this time, I'd like to introduce Colonel Jim Lee, Director of the Over-The-Horizon Backscatter Radar Program, assigned to the Electronic Systems Division, Hanscom Air Force Base, Massachusetts, and Dr. Sid Everett, SRI International. Gentlemen? Colonel Lee and Dr. Everett. (Both stood and were recognized.)

Also along with us this evening to assist Colonel Lee are several Air Force personnel, consultants to the Air Force, which Colonel Lee will introduce at a later time. In a few moments, Colonel Lee will

brief you about the Draft Environmental Impact Statement, the "how's and why's" of the Central Radar System, and the anticipated environmental impact.

Following his presentation which will last approximately 45 minutes, you will then have the opportunity to ask questions, either about his remarks or about the Draft EIS. The purpose of these questions is, of course, to clarify what he has said or that which is contained in the draft statement. After that, the questions and answers, you'll have an opportunity to make comments in either written form or orally here at this public hearing concerning the adequacy of the Draft EIS. Those of you who have already signed up, and I'll get to that more in a moment, may wish to reserve the questions you have until the public statements.

A verbatim transcript of this hearing will be prepared by Ms. Kegler who is a qualified court reporter, and will be used along with the written statements, and anything else that you may care to submit, in preparing the Final [Environmental] Draft Impact Statement. This will be used by senior Air Force decision-makers in evaluating the Air Force's proposal. The hearing is also being recorded in order that we ensure that all comments that are made here tonight are gotten down verbatim.

When I recognize any speaker, please state your name clearly and distinctly so that Ms. Kegler can hear you, and if you'll help with the names--if they're other than Smith or Jones or Clark, I'm stuck, so please spell it for her.

(An announcement was made that an individual's auto was losing antifreeze.)

Ladies and gentlemen, when you came in, you were given one of these questionnaires to fill out. You will notice that at the top we'd like your name and address. Then there is an area where you can check if you wish to ask questions today, or wish to offer a public comment today, or you wish a copy of the EIS. If you have a question, please check the question block. If you want to write the question down and have me ask it for you, I'll be happy to do so for you. If you don't want me to ask it, just put your name down and the general area of your question. I'll call on you and recognize you. If you wish to make a public comment today, please check the comment block. And at the conclusion of the meeting I will recognize you, and you will be able to make a public comment on the record.

If you don't wish to make an open public comment, you may make a written comment, either now or later, and I'll get to the later part later. You may write out your statement on the lines provided and on the back. They will also be put with the EIS.

I will now explain the agenda for this evening's hearing and outline the ground rules which we will follow. After Colonel Lee's remarks, we'll take about a five to ten minute recess for my court reporter to have a small break. At that time we will collect those questionnaires, and I will open the hearing for clarification and questions addressed to Colonel Lee. I will allow approximately 15 to 20 minutes for those clarifying questions. After that, we will move from the presentation portion of the hearing, where those who have requested to speak will be given a chance to do so, using either this podium or using the microphone speaker that I have set up.

If time permits, after public comment, those of you who wish to ask further questions may do so. We will remain here until 10 o'clock, if necessary, to answer any questions you might have. Those who wish to make an oral statement this evening are asked to fill out the area so we can put similar areas together. You should realize that neither oral nor written statements have any higher priority than the other. Each is afforded an equal weight and will be fairly considered by those making this EIS assessment. If you have filled out a card, at the close of Colonel Lee's remarks, please raise your hand and Lieutenant Brown will pick them up for you.

The other rules are as follows: If you wish to speak, I'll ask you for strict adherence to time restrictions for this hearing. And this will hopefully provide everyone a chance to speak, and doesn't allow just one person to dominate the entire hearing. Five minutes for elected officials or other officials who are representing a group. Three minutes for those individuals who are speaking individually for themselves. And, ladies and gentlemen, at the end of the five minutes or the three minutes, I will advise you that you have 30 seconds. I would appreciate it if you would attempt to wind up your remarks within the 30 seconds. You will be notified, as I said, and I do solicit your cooperation on these time guidelines.

Those who wish to submit statements may do so tonight, or may mail their comments to Headquarters Electronic Systems Division/SCO, OTH-B System Program Office, Hanscom Air Force Base, Massachusetts 01731, attention Lieutenant Brown. Please note these comments must be mailed within 45 days, which [comment] period ends on 6 October 1986. That's the important date.

Finally, as hearing officer, I want to briefly remind you of the twofold purpose of this public hearing. First, to provide the public with an additional means of presenting information to the decision-makers on the environmental impact to your community which may result from the proposed action. And second, to provide you with an opportunity to receive factual information about the proposed action and to ask questions of knowledgeable persons.

However, I would remind you, ladies and gentlemen, that this is not a courtroom for cross-examination of the speaker or the agency representatives. It is not a debate. It is not to obtain a vote. Therefore, I ask you to refrain from applauding or reflecting displeasure with the comments of any speaker as such action tends to detract from the purpose of this hearing and otherwise interferes with everyone's ability to be recognized and to freely speak.

At this time I now present Colonel Lee.

Colonel Lee: Thank you, Colonel Clarke. Ladies and gentlemen, I'm pleased to be here tonight, to address you on the proposed action on the construction and deployment of the Central Radar System. In our presentation tonight, we would like, first, to briefly review the environmental impact analysis process that we are following. Second, to give you a brief description of the OTH-B system, it's characteristics, purpose and scope.

Then Dr. Everett will summarize the major environmental concerns that we have identified and which are documented in the Environmental Impact Statement. I will return then for some concluding remarks, and I will end the formal presentation.

Before I begin, however, there are a few people that I would like to introduce to you tonight--some of these added specialists that will be here to help answer questions or to provide additional information for you. First, I'd like to introduce Dr. Gordon Guttrich. Dr. Guttrich is a systems engineer for the Over-The-Horizon Program and works for the Mitre Corporation. They have been the systems engineer for the Air Force on the OTH program since the early 1970s. Dr. Guttrich, himself, has been intimately associated with the program for about the last ten years, beginning with the Experimental Radar System and continuing through the current four proposed and current OTH systems. Dr. Guttrich, would you please stand?

(Dr. Guttrich rose and received applause from the audience.)

A topic that we know is of particular interest is the matter of land acquisition. When it comes to land acquisition, the Corps of Engineers carries out that responsibility for the Air Force. Within this area, that responsibility falls to the Omaha District Corps of Engineers and they're located in Omaha, Nebraska. And the Chief of the Real Estate Division that will carry that responsibility is Mr. Gary Blair. Would you please stand, Mr. Blair, and identify yourself? (Mr. Blair rose.) Thank you.

The actual negotiations, however, for the land, either the purchase or leasing--and I'll be speaking more on that in a little bit--will be handled out of the Riverdale, North Dakota, Real Estate Field Office. That field office is under the supervison of Mrs. Jackie Bratz. Mrs. Bratz, would you please stand? (Mrs. Bratz rose.) Thank you.

This is the second of three formal public hearings that we are having on the proposed action for the construction and deployment of the Central Radar System. We are following a set of requirements that the Air Force uses. These requirements are in line with the National Environmental Policy Act. That Act requires that anytime a major federal action is going to be taken that could have a major environmental impact, then we will go through a number of formal steps.

We have been in that process since the first part of the year. Beginning with the announcement, we held a series of scoping meetings. Following that, we submitted to the public for comment, the Draft Environmental Impact Statement. Many of you have received copies. We have some additional copies here tonight if you'd like to take one with you. We would ask, however, that you sign and give your complete name and address so we can also follow-up and provide you with a copy of the Final [Environmental] Impact Statement.

Following these public hearings, we will then take all this information that we have gathered together, and use it to prepare the Final Environmental Impact Statement. That statement then will be published at the end of November, and the final point in this process--and here I'll summarize all these points that I've just been making--is the Record of Decision. That decision will be where we will locate the transmit sites and the receive sites as well as the Operations Center for the Central Radar System. This decision will be made in the Office of the Secretary of the Air Force and, as I said, that decision will be made at the end of December.

Can we have the lights dimmed a little, please? Shown here is a schematic of the complete Over-The-Horizon Backscatter Radar Program (referring to slides). It really consists of four, separate radar systems. I'll give you some background information while we're waiting for the lights to be brought down. Then I think you'll be able to see the particular systems a little clearer.

The East Coast Radar System has already been funded, fully approved, and construction is nearly complete on that system. And we are now in the testing phase on the sector to the northeast part of that East Coast Radar System. That same northeast sector was used in the Experimental Radar System which we started developing in 1975. We tested that system from 1980 to '81 and verified that the system performance we required would be available with this type of a system. With that test information behind us, the Department of Defense and Congress approved and authorized the funds for the East Coast Radar System.

The West Coast Radar System, similarly, has been approved and Congress has authorized construction of the first sector. Construction of the Operations Center has already begun. The contract award for the remaining construction will take place very soon. The remaining two systems are the proposed Central Radar System and the Alaskan System.

As you can see, these four systems, together with the existing set of microwave short-range radars that are indicated across the north, then provide a complete surveillance area around the North American continent. Those outer boundaries of the OTH system extend out to about 1,800 nautical miles away from the transmit and receive sites. That added distance gives us a significant warning time in case there would be an attack from strategic aircraft out of the Soviet Union.

This is important to us and important to the defense of this country. This is an artist's concept of the Soviet Blackjack long-range strategic aircraft. This aircraft is currently under test in the Soviet Union, and if they maintain their schedule, this aircraft could be operational by the end of this decade.

In addition to the Blackjack aircraft, the Soviets are continuing to improve and modernize their existing force of long-range strategic aircraft. This is the newest version of the Soviet long-range aircraft, the Soviet Bear H. It can carry air launched cruise missiles. These aircraft have been modernized and on a regular basis fly in training missions towards the United States. The aircraft you see behind the Soviet aircraft is an Alaskan Air Command F-15 that has made an approach identification--really, an intercept of that aircraft as it approached the North American continent up in the northwest. There are similar occurrences, however, that also take place off the northeast coast of the United States. There have been Air National Guard aircraft operating out of Fargo on special alert status from the eastern base, that have made similar intercepts--identification of Soviet aircraft as they have made these regular missions heading towards the United States.

We currently, with our existing system, have no ability to detect and track those aircraft until they approach to within a couple hundred miles of the coastline. That's where we have our existing set of short-range microwave radar systems. The Over-The-Horizon Radar System will provide the surveillance, as I said, up to approximately 1,800 nautical miles. That translates directly into several hours of added warning time--time that is available to our National Command Authorities--to our decision-makers. That's time to consider options, to negotiate, to provide warning to the public, and increase the alert status of our forces--and to be prepared in case the attack does progress and we do enter into that type of an engagement.

That's why the Department of Defense is proceeding with the Over-The-Horizon Radar System--to provide us the added security that this type of long-range surveillance and detection system will provide.

I'd now like to show you some pictures, beginning first with the concept of the east coast radar system that is already funded and now beginning to test. This is the 180 degree surveillance coverage that is provided by the east coast radar system. There is a transmit site

located near Moscow, Maine, with three antennas. Each of the antennas is paired with a similar receive antenna at the receive site. In this concept photo, the transmit sites are shaded in red--the receive sites in the yellow beam.

From the transmit site, the beam is sent upwards towards the ionosphere where it reflects or refracts back down to the surface that great distance away. The return energy then comes back by the same path and is picked up by the very long sensitive receive antennas. Any aircraft flying within that zone, all the way down to the surface, will be detected and tracked by this type of system.

This is the transmit antenna, one of three for the east coast radar system. The antenna itself is approximately 4,000 feet long, and the tallest portion, off to your left, is 135 feet tall. The lowest portion, the lowest band of the six, is towards the middle right--35 feet tall. This is another picture taken at a later time of that same transmit site. You again see here the transmit antenna. In front of that antenna is a ground screen approximately 750 feet deep that extends the entire length of the antenna. But once the clearing and grading has been done for that level area, the entire portion is seeded in and vegetation is allowed to grow back in. There is also a fence that surrounds the entire transmit area.

This is the receive antenna for the east coast radar system. The backscreen to your right is 65 feet tall. The antenna elements are 19 feet tall. But this entire array extends approximately 5,000 feet long. For the West Coast as well as for the proposed Central System and the Alaskan system, the receive antenna will be approximately 8,000 feet long to give us better sensitivity, better detection and tracking capability.

The information from the receive antennas is sent to the Operations Center using those two white tropo dishes that are shown in this photograph. The proposed location for the Operations Center for the Central Radar System is Grand Forks Air Force Base. A similar one-story building, as shown here, would house all the computational equipment and the display units where the operators can sit and have displayed for them the tracks--the identification of those tracks as they approach the North American continent.

In that particular scene to the right, we have one of those three 60 degree sectors. As the aircraft are tracked, they are identified and coded for the operator. We have information that is sent to the center on pilot position reports, flight plans that have been filed--so that the system is automatically able to correlate tracks from aircraft that we detect with those known positions. We are then able to identify it and continue tracking potentially unfriendly aircraft as they approach the continent.

That system is now in testing. The performance indicates that it is accomplishing what it was designed to do. And on that basis, we are continuing to proceed with the remainder of the OTH system.

I'd like to talk very briefly now why we are locating in a particular section of the country for the proposed Central Radar System. You can see from both the East and West Coast Systems that there is a certain area that does not have surveillance coverage. There is a minimum angle that we can send these HF, high frequency, radio waves and have them still return to the earth and be able to detect aircraft. The Central System, for the East and West Coast sectors, will then fill in that coverage area. They will also, with the remaining two sectors, provide complete coverage for southern approaches to the United States. And, finally, they will link in the northeast part with that last system, that radar which is a part of the North Warning System. If you take the particular geometry as we have shown here, with 500 mile and 1,800 mile range, those other set of criteria--you end up with this particular section within the northcentral United States. The optimum location is shown in the southeast corner or North Dakota.

With that area defined then, we use a set of additional criteria shown here to identify candidate study areas. First, sufficient land to accomodate the antennas. We're looking at approximately 2,400 acres for both the transmit site and the receive site. We want relatively flat land without any obstructions rising more than about 100 feet per mile, or one degree. We want to be five miles from the transmission lines and we want to have an adequate separation from any population center as well. And, finally, more than ten miles from any established airway.

In addition to that general set of criteria, we then apply the set of criteria to identify and pair the candidate transmit site and receive site. First of all, the receive site needs to be within 125 miles of that optimum receive location that I previously identified. That's to ensure that we can have the coverage overlap that I previously indicated. For the receive site to be able to send the information back to the Operations Center using those tropo radio dishes, the receive site needs to be within 50 nautical miles of the Operations Center. And because the Operations Center with its some 400 personnel, and the required support structure for that, needs to be at a military installation, we then have this additional criterion that applies. That means that all the receive sites, then, are centered around that proposed Operations Center location.

Finally then, the transmit site needs to be within 150 nautical miles from the receive site and Operations Center. When you apply this combined set of criteria, the study areas, as shown on this map, are defined. Our first public hearing was held in Grand Forks and addressed the candidate receive study areas which are shown there--Thief River Falls, Dahlen, Goose River, Galesburg and Blanchard. Our second public hearing was held in Wheaton, Minnesota. There are three candidate study areas for the transmit site--The Wheaton North, Wheaton Southeast and Wheaton Southwest. The fourth candidate study area for the transmit

antenna is what we have identified as the Amherst study area. And we're holding this final public hearing in this community so that we can have the benefit of your comments and input in this decision process.

One of those study areas would finally be selected as the transmit site and there we would locate the four transmit antennas. Each of the antennas would occupy a sector of land approximately 5,000 feet by 5,000 feet, about 600 acres. This is one schematic layout of how those sectors could be located, with a sector facing the east, another the west, the southeast and southwest. But by maintaining those same boresites, there is some possible rearrangement as to how the sectors could be relocated. This is another alternative that would place all four antennas within a single area. This area would be approximately two miles across by about two and one-third miles deep.

The receive antennas each require about 600 acres also for a total area of about 2,400 acres. The receive site, however, is approximately 10,000 feet long by 2,600 feet.

I've given you a little description of the process that we will follow, showing you some of the actual photographs of the sort of hardware you might expect to see, were this area to be selected for the transmit site. I'd like now to turn this over to Dr. Everett to summarize the primary environmental concerns.

Dr. Everett: In my representation of the environmental concerns this evening, I'll summarize some of the elements. In the document, we divided the environment into at least 13 categories or topics. These are covered extensively in the document. I'll speak about several of them and some of the particular topics of some of them.

In the case of the environmental category, there is some differential between study areas. One of them has to do with topography. And topography is important because of the need to move earth to establish a level site for the transmit and receive ground screens and to clear a zone in front of the antenna. The flatness varies between the different study areas. Amherst is among the flattest. Generally speaking, grading is to be avoided if at all possible to minimize, or because it can lead to erosion and cause drainage problems--especially if drainage problems already exist. And, finally, much earth has to be moved, and it could become quite expensive.

Wherever the transmit or receive sites are constructed, there would be efforts made to control the amount of erosion. These methods are good design practices, such as design of the perimeter roads. Other measures are what are called mitigation techniques which includes silt fencing, and use of water to keep the dust down in the construction zone.

Another major feature of the environment is water--water resources of the area and water quality. Amherst has fewer water--what I want to say is fewer major surface water bodies than most of the other areas under consideration. Nevertheless, our strategy would be to minimize the effects on the surface water by attempting simply to avoid them. Existing drainage features would also be used whenever possible. Nevertheless, streams and drainage ditches may be rerouted and potholes and small ponds filled in, particularly in the area over which the ground screen would be layed. That's an area approximately 750 feet by about 4,000 feet.

Water required for either the transmit or receive operations would be required almost exclusively for human consumption. The amount of water required is approximately what is currently used by the residents of the area, a typical area of the size in this part of the country. There would be no impact on quantity of water. As to water quality, this water would be used primarily for what is called domestic use and would have nothing of a polluting nature added to it, other than what you have for human sanitation. Water would be disposed of in a manner that's consistent with federal and state laws and regulations. So we don't expect there to be any water quality effects.

Moving on to vegetation in the area, as we have seen in all our study areas, this type of vegetation is wetlands. First of all, the native vegetation of all of the study areas has been replaced by cultivation. However, wetlands do survive primarily along rivers and streams and even along drainage ditches. In some areas, prairie potholes are quite numerous. That's not so true in the Amherst area. The key thing about the wetlands, besides their distinction as a primary natural vegetation, is that they are important bird breeding areas. In most of the areas, state and federal agencies maintain them for breeding management areas as well.

Wildlife in the area is generally associated with the wetlands, particularly the birds. Moving first to mammals, mammals generally are associated with shelter belts and wooded areas that exist. They are both large and small animals.

A feature of the transmit and receive site will be the exclusion fence which will be constructed for safety purposes, that is, to protect humans and to keep animals out in order to protect the equipment from animals who can damage the ground screen and other equipment. The existence of this fence will exclude the larger mammals from using whatever habitat they might have normally been attracted to inside this fence. But that's not expected to affect the numbers of these wildlife. Small animals will be able to move in and out of the proposed area. Therefore, there will be no particular effect on their habitat. The question has been raised about the effects of the transmit radio waves on small animals. And the answer is that there is no effect on these animals.

In the case of birds of course, you know the central flyway is a major route in North America. The grain fields as well as the wetlands are attractors to these birds, and from the habitat point of view, the impacts on them will be minimized by trying to avoid impacting the wetlands themselves.

Now another facet of the bird question is the possibility of collisions with the antenna structures. The possibility hinges on a number of considerations: One, whether the birds are migrants making a long distance flight which would put them at very high altitudes, or whether they are migrants who are ending a segment of their flight in the areas like the wetlands--a resting place, feeding--or whether they're local birds that are generally flying at considerably lower altitudes than the migrants. As I've already indicated, nearness to wetlands or feeding grounds or resting areas would also influence the possibility of collisions. Finally, the ability of the birds to pick out the antenna structure against the sky or against the ground is the final factor.

This area has considerable uncertainty in it. But we feel that the collision potential can be reduced by measures such as avoiding areas that are attractive to the birds, if that is at all possible, and generally increasing the visibility of the antenna rays. And finally, the monitoring, if you will, of what is happening at the site to determine whether, first, there is a problem, and second, whether the measures taken to reduce the problem are effective.

I'd like to move on to several slides dealing with the economy. The construction employment at the transmitter or receive site will probably average approximately 100 over the three to five years of construction, peaking perhaps at 250. Hiring would be done by what's called the system contractor, who will be responsible for installing the antennas and all the support equipment, and any subcontractors that he might engage. We would expect that there will be local hiring, but the mix of local and nonlocal hiring is difficult to predict.

In the long term, when the site is operational, approximately 50 people will be employed at the transmit and 50 at the receive site. There is some opportunity for local employment at that time as well. The numbers of people that are being hired represent quite a small fraction of the existing labor force in all of the site areas we've looked at--on the order of a few percent. So we would expect unemployment, in the sense of reducing unemployment or increasing the labor force, is on the same order--that is, on the order of a few percent.

If we look at income, whether it's from wages of people who are employed or from expenditures in local businesses, either by subcontractor's buying materials or by employees spending money in the community, we estimate that on the order of three to four million dollars would be spent locally in the vicinity during construction.

That's a fraction of the total amount of money that is being spent to construct this system. But when you look at the breakout of the amount of money typically spent by the subcontractor in the community, that affects the community--is that type of fraction. So the next to last, as I point out, would add to the local economy. But now it would be lost income from farm operations, due to the fact that the farmland is taken out of production. It turns out that the increase in income from employment and other expansions in the region, would be larger than the net loss of farm income in the same region. However, the wages would be earned by different people and spent for probably a different mix of goods and services.

Last, on economy--I'll talk briefly about taxes. In acquiring land for the transmit and receive sites, land will be either purchased or leased or both. Naturally, the land and the improvements on it, if purchased, would be removed from the tax rolls. We've calculated if all the land were purchased, the tax loss would be about one percent of the tax revenue for any of the counties that are involved in the study areas.

What can be more significant, however, is the potential loss to the special townships or other kinds of taxing districts in the county. If all the land is purchased rather than leased, and if the full 2,400 acres is purchased--assuming approximate average yields on the farmland that was taken out of production, the--what I want to say--the taxes, that loss to the special taxing districts could be as high as 18 1/2 percent of its existing revenue. Again, that is for all purchased land rather than leased, and assuming all of that land is within the district's boundaries.

In the next three slides, I'll talk directly about the effects of the radiofrequency emissions from the transmitter. This radar operates on a high frequency band of the electromagnetic spectrum, the same part of the spectrum which includes amateur radio, citizens' band radio and a lot of international broadcast stations such as the Voice of America. Interference is possible both within those bands and what is said, out of band, due to harmonic relationships. So it is possible that it could interfere, in principal, with citizens' band radio, with TV, with Voice of America beacons.

The measures that could be taken--we don't expect any significant interference within these system. Those that might be interfered with are those within a mile or so of the installation. The Experimental Radar System, which is a predecessor to the East Coast Radar System, has operated for a number of years. And during that period of time there were no reports of interference that could be validated when the system was operated. Measures that would be taken in order to either prevent or reduce interference include what is called seeking clear channels. The operators of the radar will listen on the frequencies that they are assigned to use to be sure that nobody else is already transmitting.

The radar has the capability of operating on a variety of frequencies. If a frequency is already occupied, the radar will transmit on a different one. Systems like TV and navigation beacons can be interfered with only because their frequencies are multiples from what the Air Force radar operates on. So the strategy for avoiding interference of TV's is to not operate on that subharmonic frequency. And finally, the Air Force has prepared an interference avoidance plan to direct and guide the radar operators on the measures and steps to take--first, to avoid causing interference and second, if interference is reported, how to handle the situation.

There are electromagnetic hazards to certain devices. The three that are listed here are really the ones most interesting. There is no hazard presented to cardiac pacemakers outside the exclusion fence, or to fuel handling, and in most areas close in, to the use explosive devices such as blasting caps. HERD's are safe if carried in metal containers beyond the exclusion fence. Under certain circumstances, if the HERD's are being handled for use, the safe distance is actually around three to four miles beyond the antenna--or would make it two to three miles beyond the exclusion fence. This is the case where you're dealing with open leads on a device that is outside of the shield.

What the Air Force would do is take measures to notify all local authorities and people within the area, including posting signs in the vicinity of the installation.

My final topic is the human health aspects of RFR radiation. The radiation from the OTH-B radar is similar to that of a radio. The exclusion fence will be placed at a distance from the antenna so that the exposure to the public beyond that fence would be well below standards that have been set for exposure to this type of radiation. In addition, we extensively looked at the literature on the potential human biological effects--critically reviewed what has been reported. And our conclusion is that there is no evidence to indicate that there would be harmful effects to people outside of the exclusion fence. I'll turn this back now to Colonel Lee to wrap up.

Colonel Lee: In summary, this is the schedule for those key milestones which are a part of the environmental impact analysis. Following the public hearings--and I emphasize again that all that is spoken here tonight becomes a part of that Final Environmental Impact Statement. But equally important and perhaps more significant, your written comments that you provide tonight, or that you send to us before the 6 October date, will also become a part of that Final Environmental Impact Statement. And to the extent that you raise concerns or ask questions, that information will be provided by the Air Force also in that Final EIS. That document will be published and distributed at the end of November. We then have a mandatory minimum 30-day waiting period before the Air Force can file its Record of Decision. That decision is expected the end of December.

This process which identifies the study areas that are shown here--the Air Force will look to either purchase or lease the land in the final study area that is selected for the transmit site and for the receive site. The environmental process that we have been conducting is extremely important to ensure us that key body of information, including comments from the public, oral and written, is available to the decision-makers.

There are also, however, some additional factors that are used in the decision. Those factors would include such things as cost or construction, the cost of the land, the cost or availability of power, and finally, the ease of acquiring the land, either by purchase or by leasing. And so to assist us in that final point, if there are among you tonight landowners that either are willing to negotiate with the government or are strongly opposed to that, it would be helpful to us if you would also note that in writing to us, either tonight or at a later time.

This program is important to the Department of Defense. It is important to the nation. We have already begun two key parts of the Over-The-Horizon Radar Program, the East Coast and the West Coast. I trust that the information that's in the Environmental Impact Statement document that you have, the additional fact sheets, the material that you have heard here tonight--that you realize the need for the system, understand how it would take place and be constructed here in the central part of the United States, and major concerns and environmental effects that would take place. This concludes our presentation. Thank you.

Lt. Col. Clarke: Ladies and gentlemen, at this time I'd like to, in just a moment, go into a recess for about eight minutes by the clock. I would ask those of you who wish to ask questions or present questions, please turn those sheets in to Lieutenant Brown standing down at the end. Those of you who wish to make public comments, please bring those up to me. And we will reconvene, as I say, right about 8 o'clock. Thank you very much.

(The hearing was recessed at 7:57 p.m. and reconvened at 8:02 p.m., September 11, 1986.)

Lt. Col. Clarke: Ladies and gentlemen--I lost the piece of paper I was looking for. Please bear with me a second.

I'd like to take this time to acknowledge the presence of Barbara Hier who represents Senator Larry Pressler. She's from the field office in Aberdeen. Barbara, please go ahead.

(Ms. Heir rose.)

Mr. Heir: I'm the Congressman's aide.

Lt. Col. Clarke: All right. Questions and answers, ladies and gentlemen. I'm going to go down--as I say, we'll take 20 minutes and then we'll go to the statement period. Forrest Wixon. Just speak clearly.

Mr. Wixon: I'm Forrest Wixon at the Department of Transportation, the State Department of Transportation. My question is the area--the Amherst area appears to run approximately 19 miles south of U.S. 10, and then through that area--it's my understanding, I read the EIS--there would not be roads going transverse. Is this true or are there going to be access roads through there?

Colonel Lee: I showed a couple of tentative site arrangements--the one where all four antennas were grouped together, in that single area approximately two miles by two miles. We would, then, deny any access directly through that section. But there would be roads around that two mile by two mile area. And to the extent that it might have to extend a little bit further down into one of these sections, then we would, as part of the project, establish new roads again around that area.

In the alternate configuration, we had the four separate sections. We would establish and maintain the roads around those individual sections. For the ones that are oriented directly north and south, we should be able to locate the antennas within a section, so that we would be able to use the existing roads. If additional roads were required and they took the place of roads that had been blocked over by our site, we would establish those roads. But then the cost of maintenance from that point on would be back into the local county and state system just as the prior roads were.

If there were any special access roads that were required for our sites, then, again, we would construct them and we would maintain them for the life of the system.

Lt. Col. Clarke: Mr. Ed Mallett?

Mr. Mallett: What I would like to know, we got a structure that's 120 feet high. Is that going to be a problem?

Colonel Lee: The one degree elevation that I showed on that set of criteria translates to about 100 feet per mile. So a structure immediately outside the exclusion fence to the front could be as high as 100 feet and would cause no obstruction to our system at all. And that distance would increase linearly down from that point. So your 150 foot structure, as long as you were half a mile further on into that next section, there would be no problem at all.

Mr. Mallett: What if there was a problem?

Colonel Lee: We would have to consider that in the particular site selection of exactly where the antennas were located. If there were still an obstruction that's necessary, these are one of the considerations that we've been working and negotiating with all the landowners. We need to establish an area to meet our needs and still be acceptable to the landowners around the area, as well as those in the area who previously owned the land.

Lt. Col. Clarke: Mr. Harvey Binger. Are you here Harvey?

Mr. Binger: All I wanted was that Environmental Impact Statement.

Lt. Col. Clarke: Wrong stack. Larry Nolan.

Mr. Nolan: What about removing the snow in front of these antennas? Do you remove snow?

Colonel Lee: There's no requirement for any snow removal or maintenance of vegetation either. When the natural area grows back in, it can remain that way. There's no need to do any snow clearing over the section itself at all.

Mr. Nolan: Okay. You answered the next question I was going to ask. But you related to a state agency. Now, to a township--when you're putting these roads in, and you at the Air Force are entirely using these roads, does the township have to carry the burden of maintaining this road for your use then, with no reimbursement from you?

Colonel Lee: Let me try to answer that in really two time scales. During the period of construction of the system, where we have to construct new roads, we would maintain those during the period of construction and during the heavy traffic that we would have. And by heavy traffic, I'm still only talking about trucks bringing in construction for the antennas, the transmitter equipment, the prefab steel butler-type buildings that are used for housing the facilities. Once the system was complete, we're talking about an eight-hour shift--approximately eight to 12 people driving into that area in private vehicles. So the use of those roads beyond that area would be similar to what the local population would use. We would not propose or would not see the need for us to provide any maintenance for the roads, additional roads, to the extent that they took the place of roads that had been closed off by the sectors.

If, however, that presented a particular concern to the community, that's something again, that we would need to address and identify with you.

Lt. Col. Clarke: Does that answer your question? (Spectator nodded his head to indicate it did.)

Lt. Col. Clarke: Mrs. Cavanaugh? C-a-v-a-n-a-u-g-h. Mrs. Cavanaugh, did you want me to read the question?

(Spectator said she did.)

Lt. Col. Clarke: Mrs. Cavanaugh wants to know where is the route. Do you mean where will the site be? Is that what you're asking? I wonder if it goes across my land in Farmington Township, Day County, South Dakota. Is that the correct question, Mrs. Cavanaugh?

(Spectator nodded her head to indicate yes.)

Colonel Lee: I'm not sure whether we can find it directly here, but we'd be glad to provide that information to you afterwards. On page 2-16 of the Draft Environmental Impact Statement, the particular sections are identified that we have included within the boundary areas.

Lt. Col. Clarke: Mrs. Cavanaugh, either in a few moments or at the conclusion, Colonel Lee will sit down with you and you can point out where your land is, and he can tell you if it falls within the area. Is that acceptable?

(Mrs. Cavanaugh indicated it was.)

Lt. Col. Clarke: Thank you very much. David L. Weyleitner. I hope I didn't botch that up too much, sir.

Mr. Weyleitner: If the radar system is accepted into our area, are you going to maintain personnel such as security during the process of building and maintaining?

Colonel Lee: During the period of construction, the only security that we require is the kind you would have any time you're taking a large construction project--just to prevent vandalism or possible theft of equipment. During the period of operation, there will be a small security team that will be there on site 24 hours a day, seven days a week. Following the example that we are now using for the East Coast Radar System, once that system goes into operation, we would use federal civil servants to provide that security for us. That would be approximately 25 people total for the transmit site, three to five in any eight-hour shift. They would operate out of a single building. And they would have equipment to monitor the status of all of the four sites and would patrol, as required, those areas. Does that answer your question?

Mr. Weyleitner: Have you met any resistance in your other sites around the public and their attitude?

Colonel Lee: In the case of the West Coast Radar System, there was little, if any, opposition to the construction of the system. And, in fact, in several of the communities where we were considering locating

the transmit and receive sites, we had those communities very openly and warmly welcome us--and to a certain extent, competing to try to have the system located there.

In the case of the East Coast System, there was some opposition, particularly at the receive site where we had a lot of private blueberry bearing land. But other than that opposition--no, there was really very little there at the east coast as well.

Lt. Col. Clarke: Is there anything else?

(Spectator shook his head to indicate he had no further questions.)

Lt. Col. Clarke: Mr. Anderson, you have a comment, and I was also told you have a question, is that right?

Spectator: No question.

Lt. Col. Clarke: Tim Langley? Is that right?

Mr. Langley: That's right. I guess I'll direct my question to Dr. Everett. As I--Did I understand you to say that there's no reliable scientific evidence exists that electromagnetic pulses cause any problems to human beings?

Dr. Everett: Yes, sir.

Mr. Langley: Would it be correct to say that most of the studies that have been done on the effects of electromagnetic waves so far have to do with acute and dramatic doses of it, and that there have been very few studies done on the kind of long-term chronic impact that the waves might have on a community?

Dr. Everett: No.

Mr. Langley: Could you expand on that?

Dr. Everett: Okay. The only--going back to your first question, the way you phrased it, you used the word "pulse". In this case, these are continuous wave transmissions. So that makes that one an inaccurate statement. As to short-term acute versus chronic, there are studies as to long-term chronic as well in existence. Some are of the human life nature, and some are of animal studies. And the evidence is, as in the first case--there appears to be no indication that there is a hazard to humans from this type of radiation at this kind of power level.

Mr. Langley: I don't want to press my question time. I'll just ask one more. What is the basic reason that population centers were ruled out as a site for the radar transmission station?

Dr. Everett: That's actually the inverse of the focus you're taking. The concern there has more to do with sources of interference with the radar system. Population concentrations attract a variety of commercial enterprises, arc welding, radios, TV's - people generally doing things and generating electromagnetic energy in spurts. The criteria for staying away from population centers is, as a rule of thumb, to put some distance between the sources of that kind of energy and the receiving antenna especially, because it has to pick up very small, very low energy signals coming back.

Lt. Col. Clarke: Eugene Prunty, P-r-u-n-t-y. (No response from the audience.) I'll leave it up here in case he stepped out. Becky Johnson?

Ms. Johnson: I've got two questions. One is--in Aberdeen, which is 40 miles from here, the weather station there is scheduled to get WEXRAD enhanced doppler radar system. And I'm curious if this was addressed in the Draft Environmental Impact Statement as to any effects this system might have on it.

Dr. Everett: There is no interaction between this radar system and our radar system. I can speak with some authority about WEXRAD because the nature of this energy is such that they won't reach this radar, and this radar's transmissions won't reach to that radar. So there's no interaction compounding the effects at all.

Ms. Johnson: My second question was, in Day and Marshall Counties there are Indians and there is nontaxable land such as Indian land. We have some recreation and park lands and Department of the Interior lands. As the Draft EIS indicates that one percent would be lost on account of taxes or 18.5 percent in a special tax district or a particular township, have the overall impacts with the taxable land and the land that's already so limited been considered?

Dr. Everett: No. We did not factor in that in the estimate.

Colonel Lee: Let me add one more to that though. Your concern on the individual landowner's--in being asked to sell their land, particularly where that land had been in the family for several generations--was one very important factor that led to the approval by the Office of the Assistant Secretary of the Air Force to consider leasing as one option of obtaining the land. Another factor that went into that same approval, however, was recognition that by leasing, that tax revenue would still remain within the area. So to that extent, the choice of leasing would mitigate against that problem.

Lt. Col. Clarke: Does that answer your question? (Spectator indicated it did.)

Lt. Col. Clarke: Ms. Connie Williams asked that I place this in the record. Is there some assurance that should the project be implemented in Marshall County, the employees will reside in Marshall County? That's a question, and you indicated that was sort of a statement. Do you want to try to get an answer to that statement?

Ms. Williams: Yes, I do

Colonel Lee: Unfortunately, from your viewpoint, there would be no way that we could guarantee that the employees would live within that immediate area. In the same manner, if you were to take a job in some other community, there'd be no way that that new employer could require you to move. There are certain exceptions--in some cities, when this work for an agency that's funded by the city, when they do attempt to put those restrictions--there would be none of those applied to the employees for the Central Radar System.

Ms. Williams: I was correlating with the possible loss of tax revenue, hoping that the community and county could recoup--you know--if we were to lose the tax revenue by the land withdrawn, then there'd be "X" revenue coming back from the employees.

Colonel Lee: There still is that possibility, but then I remind you of the leasing which also would help to address that.

Ms. Williams: Right. Thank you.

Lt. Col. Clarke: I only have six requests for public comment. We can take a break from Q and A's now and listen to the statements, and then--I see one.

Spectator: I have a question on the acquisition of land.

Lt. Col. Clarke: Could you give me your name?

Spectator: Gene Cassels. I have a question on the acquisition of land. I have two questions. First of all, this is a question from another person. Have any Air Force personnel actually been on the proposed site or is the environmental statement based on studies or some older studies? Is this a new environmental study or is it based on old studies?

Colonel Lee: This is a new Draft Environmental Impact Statement. If you were to look back at the Environmental Impact Statement prepared for the West Coast Radar System and back to the one for the East Coast Radar System, you would find many sections of material that were similar--some of it identical, where there was no change--in describing some of the fundamental impacts. That's primarily the case in the description of the radar system and some of the characteristics--the

effects of that system on things like VOR's, other radio, TV interference. But the specific point--did we just, therefore, do a study--and come here on site? We did have people that came on site--that drove around the specific sections of land--that flew over the areas--that took, using video, pictures of the areas that we're looking at--working with state agencies--looking at maps--getting first-hand evidence from people who were familiar with the area--all of those were used in addressing and describing the environment that's there and the impacts of the radar system.

Mr. Cassels: My next question is--my other question is on acquisition of land. I'd like to know how flexible you people are within this predetermined area as to acquisition of land. Now my question being this: Supposing that the people in Day County--you couldn't get the land. How do you intend to acquire the land? Would you tend to do it by negotiation? Do you intend to use condemnation proceedings, or what? Eminent domain? And then, just a little further, supposing the people in one area of the proposed site wouldn't give it to you, are you flexible enough to move to another area where you could acquire it without condemnation proceedings?

Colonel Lee: Our preference is always to try to acquire the land through negotiations. That would be our objective for the Central Radar System, both at the receive site and the transmit site. The study area that we have identified here--the Amherst area--is large. And there is--just by the size of it, it provides a lot of flexibility. That was specifically so that we could have some ability, if we ran into a problem in a particular section, either due to something on the topography or a certain case where we had an individual that was just not interested in negotiating with the government at all. To that extent, we would be as flexible as we could in moving those site areas around.

I have to also say, however, that Congress does provide for the condemnation--the right of eminent domain--as you identified it--as a last resort, and this strictly is a last resort. The Air Force does not wish to use that option. So as much as we can, we will work with the people in the community, once the tentative study area has been identified, and try to find land that can be purchased or leased and site the antennas accordingly.

Lt. Col. Clarke: Let's move on to public statement. And the first person I'll recognize is Mr. James Conroy. Mr. Conroy? Mr. Conroy, are you here? (No response from the audience). Mr. Roger Schuller. Mr. Schuller, are you speaking for a group?

Mr. Schuller: I'm speaking as a landowner--yes.

Lt. Col. Clarke: All right. For a group, I'll allow five minutes.

Mr. Schuller: I'm just speaking as an individual landowner.

Lt. Col. Clarke: For yourself? Fine, sir. Three minutes.

Mr. Schuller: I guess that in our area, about the biggest problem is $1.25 corn and $2.00 a bushel wheat. Our concern is--in the past--has been the projects that have been proposed for this area and our awareness of land acquisition practices. I guess that, myself, I'm a little suspicious that in this area that those preferred sites, the designated areas shown, have already probably been decided. And really, what many of these things end up being is just a shell game to kind of divide and conquer the local group--in that everybody's so relieved when they aren't the ones, that they'll go home and forget about it.

I think that's one big concern. I guess it's true--we want you to know that we've got the highest price land in the country here. I wanted to get that on the record. (Audience laughter.)

I think some of the things like this area, we hope, provide us a little protection. Things like the flyway and stuff, and we got rid of a project. I guess it wasn't really safe--that was the Mandan project--because of the transmission lines that would have run down through this area. But make no mistake, it wasn't for that either. So I guess the main thing is the land acquisition practices, the requiring of the land for the project--of how that would be handled.

I don't think that there's anybody who's willing to go along with the deal, but we sure stand opposed to it, at least from our individual position.

Lt. Col. Clarke: Thank you very much, sir. I've got too many pieces of paper here. Gene Cassels?

Mr. Cassels: Yeah. I'd like to make reference to an article in the Fargo Forum and naturally, you people--you were at Wheaton--and you know that they were adamantly opposed, at least according to this long article in today's Fargo Forum that I happened to pick up. One lady stood up, and I can't speak for this group--but one lady stood up and asked if anybody wanted to sell their land to the Air Force, and nobody stood up--whatever that means.

This farm thing is a little different. Now, if we could be entirely assured that you'd take this land by negotiation and not by confiscation, that'd be one thing. But sometimes our government doesn't serve what are our best interests. I guess I've got no problem with it if the land is acquired through negotiation. They always say you can't rape a willing soul. In this case, if the people want to give up their

land, they want to lease it--if there are provisions made for the roads--if there are provisions made for the impact on the tax base--I guess I don't have any problem. But if the land is taken through condemnation, then I think we all have a problem.

Farms are a little different. These people up there at Wheaton told you the same thing--that many of these farms have been in their families for many, many years--100 years in many cases--and that presents quite a problem to the people involved. You've given a rather dispassionate objective analysis of the whole situation, which is fine. But you've looked at wildlife, you've looked a few things, but you really haven't looked at the human impact of condemnation proceedings for taking land. I don't think you addressed that properly. You say that you're receptive. Your land isn't involved. You can be objective about somebody else's land--just as Rogers said. If it doesn't turn out to be my land, I'll go home and forget about it. And I think maybe we're all a little that way. So I think I strongly object to it on that basis. I'm just not sure--promises here mean to me nothing. You can say these things, but further down the line, they're like politicians. Before election they promise you anything. If we could accept all the things that our politicians promise us before election, we wouldn't have no problems. It would make no difference who got elected.

We hope that the Air Force isn't that way, but we really have no insurance. Thank you.

Lt. Col. Clarke: Thank you very much. Sister Carol Quinn or Guinn.

Sister Quinn: I guess I'd just like to say that I'm a teacher. So I just want to let people like you know that you're coming into a state now that has the lowest paid teachers in the nation because there is very little money out here. And also, a part of the country, you know, that has less and less income. And yet we see, with less and less going to the schools and to the needy things that we have out here, that the military budget is just rising in astronomical proportions, and going to rise and rise and rise with all the things that they're voting into appropriations now.

And I sometimes fear, more than that the Russians are going to fly past or any of the other things that you have--I suspect this thing's going to be out of date in five years from some of the things I read--the rise of the unemployment in this country, because of so few monies going to the things that will benefit so many people--probably with $10,000 or $20,000 a year jobs, they're just being eliminated all over the nation, particularly in the midwest.

I fear the rise of that in the years to come more than some foreign country flying over here, to tell you the truth. Then the other thing--maybe you need to account for your president who hired you, in coming into a state and asking us for something. A state who sent its

entire legislative group to Washington, and he he didn't even come out of his rocking chair to say hello to the group. So whether or not your system is needed--I'm not smart enough to know that. But I think that needs to go on the public record, that when South Dakota comes to Washington, the least he can do is to greet us.

(Audience applause.)

Lt. Col. Clarke: Sister Mary Lou Geraets.

Sister Geraets: Hello, and I'd like to say that I strongly oppose the whole system. I am not afraid of the Russians coming over here, so I think there's no need for this system. I would say that what we need is conflict resolution and friendship-making so that we don't have to pour our monies into such a futile wasted kind of an endeavor.

You know where--up here they come and we've got to run and spend all this money to protect ourselves--and so--then a third thing is health. I have a concern on the radioactive or radiation, and I don't agree that there is absolutely no health hazard at all, you know, to the little animals. I think that we just don't care about them, and we just won't know whether their life is shortened. I think it does have a big effect on all animals, plants and all of us. We're all connected. We're all related so it would have an impact on our health too. Thank you.

Lt. Col. Clarke: I have no more requests for public comments. Are there any requests for public comments? Or do any of you have any other questions? We'll be--just a minute, sir. We'll be happy to remain here afterwards if you have any individual questions--and I saw two hands go up. And I'll start at this end. Your name?

Spectator: I'm Jim Luitjenns. I'm a farmer in the impacted area. Has this northcentral site--the whole thing now--has this been funded by Congress at this point?

Colonel Lee: No, it has not been funded by Congress. The current Air Force plan--and it's based upon the budget request that went over to Congress this last year--would be for the first construction funds to be authorized by Congress in the fiscal year 88 defense budget. That budget will go over to Congress, sent over by the President, the first of this next year, in January of '87. And during those next six to nine months then, Congress would consider, and both authorize and appropriate funds to start the systems. If, because of budget restrictions in the current FY 87 budget that Congress is now considering--if there are reductions in some of the funding, then it would be possible that this project would not be started until the FY 89 budget year.

Lt. Col. Clarke: Would you spell your name for the court reporter?

Spectator: L-u-i-t-j-e-n-n-s.

(The next spectator rose.)

Lt. Col. Clarke: Name?

Spectator: Eugene Prunty. P-r-u-n-t-y. I'm--the time of these meetings, was that set? To me, that's kind of--7 o'clock tonight--most businesses don't close up until six. By the time they get home and get cleaned up and drive to a meeting like this, the meeting has already started. Is that a reason--so that more people don't show up or. . .

Lt. Col. Clarke: I'll comment on the time. As the hearing officer, I set the time. The Air Force, I believe, in its public announcement, set the start time at 7 o'clock, and I cannot answer you why it's 7 o'clock.

Colonel Lee: Let me make one response. Certainly, the setting of the time was not to try to restrict the attendance or participation. Not at all. We tried to, in these three nights, ensure that we could make the rounds and be able to catch the people in an evening meeting. But I think the key point, again, is to remind everyone that the comments that you will send to us in writing are just as significant, and in some respects can be more significant, than the statements that will be made here at the public hearing.

So I'd ask anyone who is here tonight, and still wants to offer material or questions--please do that in writing to us. But probably more importantly--if you're concerned that there are people who are not here tonight who should be, and would have some positions to offer, then please pass the word to them. I believe we may still have some copies of the Draft Environmental Impact Statement--pick one up for them as well. We do want the input into this process. But that written input is extremely valuable.

Mr. Prunty: They aren't going to know that unless we tell them. And if they were at the meeting, they would have heard that, wouldn't they? And another question. . .

Colonel Lee: Before we leave that, sir--if you have knowledge of some specific names and could leave those with us, we will make sure that they have a copy of the document sent to them.

Mr. Prunty: And another thing--how much is the project going to cost?

Lt. Col. Clarke: How much was what, sir?

Mr. Prunty: How much is this to the taxpayer?

Colonel Lee: The estimated total cost of the Central Radar System is approximately 600 million dollars. To contrast that, in the balance so you have the full information, the complete Over-The-Horizon Radar Program, all four [systems] sectors, is estimated at 2.5 billion dollars. The East Coast and the West Coast Systems have already been approved as I identified in my remarks earlier.

Lt. Col. Clarke: Yes, maam?

Spectator: I have a question. My name is Marilyn Mathias from Wheaton, Minnesota, Traverse County, and we would like to know if the written material or statements that are submitted to you tonight will be published in their entirety in the Final EIS.

Lt. Col. Clarke: Yes, they will be. And I have asked Lieutenant Brown to try to ensure that those that were presented from Wheaton individuals tonight are noted in the Langford hearing. They will all be published in the back of the document, so you will see them all there. Whether or not they're broken out as you gave them tonight or last night, I can't comment on. But they will be there. What you gave me will be there.

Mrs. Mathias: In their entirety?

Lt. Col. Clarke: Yes, in their entirety. Are there any more questions, ladies and gentlemen? As I said, we'll remain around for anyone who has any. That being the case, please--yes, maam?

Spectator: Donna Symens. S-y-m-e-n-s. When you start these negotiations, are you talking about just a few people going out and negotiating with all of these people? And then all of a sudden you say you've got so much time to move? What I'm talking about is packing up a house and moving into another house. Maybe these people are going to have to sell their land to you. If they want to stay on farming and relocate, and somebody knows that they need farmland and charges them what they can't pay--so when you start out, are you going to take that into consideration in negotiating? That you're not going to say, all right, you've got 30 to 60 days to relocate and we're going in? If you're not out, that's too bad?

Lt. Col. Clarke: Maybe Mr. Blair could answer that.

Mr. Blair: Gary Blair of the Omaha District Corps of Engineers. The timing of the negotiations is entirely up to the Air Force need date. Now the time of construction is three to five years on the entire project. So for 2,400 acres, we would acquire that 2,400 acres when the Air Force says they need it. Now, I assume that for a three to five year construction project, we wouldn't go out there and say you have 30 days to get off the land.

We usually operate. And we have to, by law, give you 90 days notice to get off the land. But negotiations would be started well in advance of the funding, so we try to give you as much time as possible--up to a year to harvest your crops. But that is a negotiable thing. But with the timing on the funding and this project, I would think you'd have plenty of time to relocate and find other land and move. Does that answer your question, maam?

(Affirmative response from spectator.)

Spectator: (Reporter could not understand the name.) In your impact studies--some also mentioned it--could you expand on it a little? Does a lease go every year, or is there any way you intend to handle that?

Colonel Lee: We have not defined exactly what that lease would be. We have received approval to consider leasing as an option. With the minimum life of the system expected to be 20 years, the objective would be to try and have a long-term lease rather than a short-term lease. But we have had questions given to us concerning--is it possible to have a five year lease renewable, or a lease with points where you might increase the annual lease or decrease it based upon the value of the land at that time. There are many different ways that such a lease could be structured. And based upon the interest of the individual parties, we will look at those various options and try to come up with the best lease program that meets the needs of the landowners, as well as ensure that we have an equitable cost to the government as well.

Spectator: Dave Yeager, landowner. I'm wondering who is going to set the value of the farmland--the Air Force, or a group of people, or bankers?

Mr. Blair: By law, we're required to hire appraisers. And we always hire local appraisers in the area, because they're the most knowledgeable of farm value and land value. So by contrast, we hire the appraisers. The MAI does the appraisal. We review it once it's approved, and after the appraisal, start negotiations. And the first offer has to be the amount of the appraisal, and then it's negotiations from there.

Lt. Col. Clarke: Any further questions?

Spectator: Roger Schuller. Under that lease question, would the land at the time the project was scrapped or something, revert--be put back to it's original condition by the government, or would they just abandon it and walk off?

Colonel Lee: When the lease was negotiated with the landowner, those particular conditions would be spelled out in the lease. As you saw from the photograph, the large percentage of the individual sections is totally cleared. There's nothing done to that land at all. So the only affected portion is just a line of antennas themselves. And the

terms under which that antenna structure will be taken down and the buildings removed--it might be possible that the landowner would be interested in having the building remain to use for storage. But those specific items would be negotiated as part of the lease.

Mr. Schuller: We've got something we'd like you to tear down.

Colonel Lee: If there are buildings on the land--then, yes, we the government would have to tear those buildings down as a part of that project.

Mr. Schuller: Just as a private contractor, not as an owner. (Audience laughter.)

Colonel Lee: Just to ensure there's no misunderstanding, I want to go back and provide some clarification to a question that was asked before. All of the statements that you have made tonight and those that you submit in writing to us, will be included in the Final Environmental Impact Statement. That's to ensure that the full impact--and the words that I've used before, the full weight, of the public comment can be made available. But because I know there are people who are here tonight that have been at other meetings as well, I would like to suggest--with the approval of you as well, Colonel Clarke--there would not be a need to duplicate and put that same additional material just to have it also appear as a part of the public hearing at this meeting tonight. And also, I would suggest, if there are supplementary reports, that we would not go through and publish those reports as part of the Final EIS. But we would, however, reference and make sure that people knew how they could obtain them. Because the intent, when I said the full weight of public comment, was not to try to create an extremely massive document. But it was to ensure that the primary information would be available to those decision-makers.

Lt. Col. Clarke: You don't need my permission. But if there's any discussion, Mrs. Mathias, I recommend that occur after the meeting. Is there anything further? Ladies and gentlemen--

Spectator: Gene Cassels. I've got a further question. If this land is taken through eminent domain, through condemnation proceedings, when the Air Force is through with it, who will be given the opportunity to buy it back? Will it be the original landowner?

Colonel Lee: The usual way of handling disposal after the project has been run through is--that if we condemn the land, the United States owns it. And after 20 years, if the Air Force decides there is no longer a need for that land, the usual method of disposal is, by law, to turn it over to GSA, General Services Administration. And they are, by law, required to auction it off and sell it to the highest bidder. That is the usual method of disposal of the land when it was no longer needed.

Lt. Col. Clarke: Did you have a follow-up?

Mr. Cassels: My second question--do you intend to poll the landowners here in this group? I see the Wheaton group--they couldn't find anybody that was in favor of the project? Or do we have to do it ourselves afterwards?

Lt. Col. Clarke: As I indicated, the meeting is to get information from you--and hopefully for the Air Force to give information to you. It's not a vote. It's not a debate. It's not an election. I'm sure, after the meeting, if you'd like to come up and express your views, that will be taken into consideration by the people sitting here.

Mr. Cassels: You're saying that we don't have any options? Is that what you're saying?

Lt. Col. Clarke: No, not that you don't have any options. You're more than welcome to indicate them. We're not going to take a vote tonight. I'm not going to call for a vote.

Mr. Cassels: I didn't think you would either. I didn't expect it, but I wanted it to be on the record.

Lt. Col. Clarke: Anything else?

Spectator: V-o-l-k, Susan. You mentioned that the life expectancy was 20 years. What is the maximum life expectancy, and what will we do at the end of that time? Will that 600 million dollar project be abandoned?

Colonel Lee: The question, really, on life expectancy relates more to the period of useful effectiveness. The basics involved in the Over-The-Horizon Radar Program are not going to change in 20 or 30 or 100 years. The use of HF signals to refract off the ionosphere, and be able to capture and track aircraft, is not taken away as technology improves. They may be a way to improve transmitters, or the hardware that takes the electrical energy and signal conditions it, and provides the signals with a lot of the transmitter elements--so it would be possible to upgrade that hardware. Certainly, at the receive site, it's [also] possible to upgrade the hardware there.

When we talk to a minimum 20 year life cycle, that's so that the decision makers, and primarily the agencies involved in the operation and support, will do the planning--for the number of personnel and the kind of education and training capability they need, and the funding--to ensure that the program will be carried at least 20 years. To the extent that there still is the need to provide a surveillance area around the United States, this system would continue to be utilized, and it would be upgraded if necessary.

Lt. Col. Clarke: Ladies and gentlemen, I'd like to remind you again. Please remember again that you have until 6 October '86 to submit written materials to be included [with] in the transcript of this hearing, and those written statements will be carefully considered and addressed in the Final Environmental Impact Statement. Once again, oral and written statements and comments will be afforded equal weight.

Speaking on behalf of myself and for the Air Force members, I'd like to thank you very much for your courteous attention and adherence to the rules that I've set out. Please be assured that the Air Force decision-makers will carefully consider your viewpoints raised tonight and decide the ultimate course of action of the proposed Central Over-The-Horizon Backscatter Radar. Thank you, ladies and gentlemen, this public hearing is adjourned.

(The hearing was adjourned at 9:57 p.m., September 11, 1986)

3.3.2 Submitted Materials

Materials were received from:

Tim Langley, Watertown, SD*
Marilyn Mathias, Wheaton, MN
Judy Leininger
Joann Conroy, Dumont, MN
Bruce Conroy, Dumont, MN
Marcie Conroy, Wheaton, MN
Tom Conroy, Wheaton, MN
Alice A. Braun
James Conroy

*This letter was presented at the Britton hearing. See pp. 3-240 and 3-241 for the corresponding transcript.

South Dakota Peace and Justice Center
P.O. Box 405
Watertown, South Dakota 57201
November , 1986

Attn: DEIS on Central Radar System
ESD/SCO
Hanscom AFB, MA 01731

Dear Sir or Madam,

The following comments on the August, 1986, Draft Environmental Impact Statement (DEIS) on the proposed Central Radar System, Over-the-Horizon Backscatter Radar Program are submitted on behalf of the South Dakota Peace and Justice Center. These comments were prepared by Deb Rogers (P.O. Box 662, Pierre, SD 57501; 605-224-0146).

The DEIS is felt to suffer from four major flaws. It is too general, lacking specific data on most aspects of the affected environment and potential impacts. It is too optimistic, in places apparently substituting a "best case scenario" for the worst plausible case scenario more typically found in EIS's. It fails entirely to address certain potential impacts which could result from the proposed project. It does not give an adequate analysis of alternatives.

The DEIS has one major asset for which the preparers are to be commended. In most places it is clearly written and is careful to explain difficult technical concepts in terms that can be understood by people without training in that field.

In the remainder of these comments, specific concerns about the DEIS will be listed, and then general conclusions on its ability to satisfy National Environmental Policy Act and associated regulatory requirements will be drawn. There is no particular significance to the numbers assigned to the following specific concerns.

Specific Concerns

1. The Air Force states (2-8) it will seek to purchase 16 MW of electrical power. No discussion is provided on the potential impacts this could have on electrical power rate structures for other consumers hooked up to the same source of power. In Rural Electric Cooperatives in South Dakota, rate structures are related to the fraction of total and peak power obtained from hydroelectric plants on the Missouri River. A new, large consumer in an area can significantly lower the ratio of hydropower to coal-generated power. 18

2. The DEIS fails to include any mention of the construction or modification of electrical transmission lines needed to bring power into the transmit site. Depending on how and where this is done, it could constitute a significant impact to the environment or affected landowners. 19

3. The DEIS states the Air Force will seek to purchase 16 MW of power. It also states that the peak power output of the transmitter will be 1.2 MW. How will the rest of the power be used or dissipated? 20

4. The Air Force states (2-9) it will examine the land under the Installation Restoration Program to ensure no contamination exists at the end of the system's operating life. What substances may pose a problem? Some mention of underground fuel storage tanks is made. Will there also be a potential problem with PCB's in various types of electrical equipment? Will there be transformers, capacitors, or other equipment using PCB-contaminated oils? Will solvents or other chemicals be used in conjunction with maintenance of the various structures at the site? Will herbicides be used to control woody vegetation in front 21

of the radar? With the shallow groundwater tables possible at the potential sites, this type of contamination could move beyond the borders of the site. 21

5. The section on alternatives (2-28, 2-29) seems woefully inadequate. Three alternatives to the proposed action are briefly mentioned and immediately dismissed with little or no specific evidence presented. It appears the Air Force has already decided to go ahead with the proposed action and thus does not plan to use this EIS in making its decision, but rather as a public relations tool. The reader is left wondering how our national security is being served right now, if this proposed system is so essential that we are virtually "blind" without it. News reports of other existing and proposed mechanisms for detecting incoming planes and missiles are heard frequently. How does this system provide coverage not provided by these other mechanisms? Page 2-29 states that deferral of a proposed action is usually considered when the possibility exists that some feature of the proposed action or the setting in which it would take place is likely to change in such a way that environmental impacts would be lessened. The Air Force then states that such is not the case. However, recent trends in arms control negotiations suggest that there is at least a possibility that major changes in the "setting" may occur. Thus deferral should be considered as an alternative, along with no action and alternate mechanisms.

6. In any consideration of alternatives, the question of whether the Central Radar System will be "hardened" against the effects of electromagnetic pulse becomes important. If the system is not hardened, what will be its effectiveness if an atmospheric nuclear explosion preceeds other incoming planes and missiles?

7. The descriptions of soils and groundwater in the potentially affected environments are not site-specific enough to allow conclusions to be drawn about potential impacts. In addition, there are some internal inconsistencies due to the vagueness. For example, page 3-5 states that two major soil associations dominate the Amherst study area; one ranging from somewhat poorly drained to well-drained, and the other characteristically well-drained. However, page 3-9 emphasizes that floods are common in the Amherst study area in part due to poor local drainage of the soils. Specific information on soils and groundwater is necessary before assessment of potential impacts due to erosion (by wind or water), chemical contamination (see 2 above), or hydrologic alterations to the landscape can be made. 22

8. The description of populations and routes for resident and migrant birds is inadequate. No specific information on actual local routes commonly used by resident or migrant birds is provided. For example, for the Amherst study area it is stated that U.S. Fish and Wildlife personnel know that the James River (to the west) and Coteau des Prairies (to the east) are used as migration routes; however, no specific information on the extent to which birds pass back and forth between these relatively close areas is provided. Because of the lack of specific information on numbers or routes, no estimate of the total impact in terms of bird losses can be made. 23

9. No discussion is provided on the potential effect of the radar's electromagnetic properties on the ability of birds to navigate around it. The fact that some birds orient themselves based on magnetic fields is well-known, and a strong local alteration in the electromagnetic field must be considered as a potential contributing factor in bird collisions with the radar structures. 24

10. A number of federal- or state-listed threatened or endangered species have ranges or migration routes that may overlap the study areas. The Air 25

This letter was presented at the Britton hearing. See pp. 3-240 and 3-241 for the corresponding transcript.

Force apparently concludes, without specific data, that no impacts to any of these species will occur. This is an example of "best case scenario" often assumed in the DEIS. 25

11. No cultural site surveys were conducted for this proposed project, so potential impacts are impossible to assess. In another example of "best case scenario" the Air Force apparently assumes that "appropriate mitigation measures" (4-42) could be taken that would be entirely satisfactory. 26

12. No data are presented describing the existing electromagnetic environment at the study areas, making it hard to determine the extent to which cumulative impacts or interactions between various signals could present a problem. For example, interaction of the radar's signal with extremely low frequency radiation from powerlines may produce biologically significant results even though it doesn't present an interference problem. 27

13. A specific discussion of vegetation management techniques is lacking. How will graded areas be revegetated? What species will be used? How will the vegetation be managed to prevent growth of woody plants in front of the radar? What are some impacts of these activities? When areas involved will be on the order of several square miles, impacts could become significant. 28

14. A more specific discussion of the activities and impacts during earth removal and grading is needed. For example, what will be done with the excess earth? Specifics on topography and hydrologic alterations are needed. 29

15. The Air Force (4-4) states that "burial of streams would not significantly alter the natural surface drainage pattern or the groundwater flow of the site." Even given that plans call for diversion of streams in pipes, this conclusion is far too optimistic. Highly significant local alterations in water movement should be expected.

16. The Air Force (4-5) states that to mitigate increased downstream flooding caused by their wetland filling, drainage ditches will be dug to channel runoff into natural drainage features. This would actually have the effect of increasing, not mitigating, flooding. Retention ponds, also mentioned, make a little more sense as a wetland substitute, although they cannot serve the pollution-filtration and groundwater recharge functions of wetlands.

17. No data are provided on frequency and intensity of thunderstorms, hail, downbursts or tornadoes in the local study areas. This information is necessary to a discussion of the potential impacts on local weather events caused by the transmitter. Current meteorological investigations focus on the electromagnetic environment and its triggering (and being affected in turn by) various meteorological events. Man-caused electromagnetic radiation has been shown to influence atmospheric events (Helliwell et al., Science, Nov. 1975). This is a major potential impact totally neglected by the DEIS. 30

18. No specific air quality data are provided for the study areas, nor is there an adequate discussion of air quality impacts related to dust, formation of chemical pollutants in an altered electromagnetic environment, and so-called air ions. Perhaps due to the rural setting the transmitter site study areas would not be impacted by air quality considerations, but some figures on existing and estimated altered levels of TSP and positive to negative air ion ratios would be useful in determining the potential for impact. 31

19. The Air Force states (4-33) that the local income gain near the transmit and receive sites would be between 2.5 and 8 times the income loss resulting from the reduction in farming. It is not made clear what "income gain" figures this conclusion is based on. If the income referred to is that of the construction period (estimated on page 4-32), then it is grossly unfair to compare a 32

very short-term income gain with an essentially permanent loss. If the income gain referred to is that created by the hiring of 50 workers at a transmit or receive site, then some indication of the income levels involved should be given to document the conclusion. 32

20. The Air Force states (4-33) that the gained income at a site "would be earned by different people and spent for a different mix of goods and services, primarily non-farm." This gets to the heart of the socio-economic and political disruption that can occur in a small community when a significant economic alteration is imposed. These disruptions in the way a small community is functioning merit a much fuller discussion as they are clearly one of the major concerns of local citizens and existing businesses.

21. The Air Force states (4-33) that taking lands for the site could result in a tax income reduction of up to 18.5 percent for a given township (in the worst case). This could have a large effect on a small school system, and seems to contradict the later conclusion (4-34) that all area educational facilities are adequate for, and would not be burdened by, any anticipated needs related to the proposed action. More detail and site-specific numbers are needed to clarify the true impacts on a school system. 33

22. Appendix B presents calculations of radiation intensity at varying distances from the transmitter. Many simplifying assumptions are used in the calculations (B-4, B-5). When a simplified model is used to describe a real system, it is good science to provide some estimates of the amount of variability being left undescribed through use of the assumptions. This has not been done. 34

23. Appendix A and other parts of the DEIS emphasize that this radar signal will not be pulsed, but will rather be frequency-modulated (modulated through a frequency bandwidth of 5 to 40 kHz at a waveform repetition frequency of 10 to 60 Hz; page A-4). The conclusion drawn by the Air Force is that the bioeffects of radiofrequency radiation attributable to pulsing are not relevant in this case. However, chapter 4 clearly describes the fact that certain frequencies are more significant for the skull or whole body of people or animals of various sizes. Thus, if a frequency-modulated signal or one of its harmonics passed in and out of the frequency band biologically significant to a given individual, that would in effect be a pulse as perceived by that individual. This entire area should be fully discussed in the DEIS. The potential for significant physiological and psychological effects is present due to the fact that the waveform repetition frequency (which determines the perceived pulse frequency) will be in the frequency range of human brain wave and heart nervous system frequencies. 35

24. The Air Force states (C-2) that definitive statements on distances beyond which various types of equipment will not be affected cannot be made based on "educated judgements" or limited numbers of measurements. Why isn't this same caution applied in the case of statements concerning the safety to the human brain and body-- a far more complex system?

25. Graphs in Appendix C (C-14, C-15) show distances from the transmitter at which the groundwave will continue to exceed average background levels of radiofrequency "noise" at 6 MHz and at 25 MHz. These figures should be obtained for other frequencies the radar may operate at, as a straight-line relationship may not exist. Background levels at the study areas should be obtained, not estimated. Also, some estimate of the total population of people potentially experiencing a doubling or tripling in the amount of radiofrequency radiation to which they are exposed should be made for each transmit site study area. 36

26. The Air Force frequently refers to the ANSI standard for radiofrequency radiation exposure as its guideline in placement of the exclusion fence and assessment of the potential for health effects. However, page 4-61 states that the Environmental Protection Agency has considered lowering this standard by a factor of 10. It would be prudent of the Air Force to anticipate future changes in standards. | 37

27. Air Force contractors performing the bioeffects literature review were far too selective in the literature used; their selectivity had the end result of throwing out most of the reports that found significant effects at low RFR levels. | 38

28. The Air Force used "best case scenario" analysis in the bioeffects review, even though detailing all the problems with obtaining experimental evidence on such effects. They apparently conclude that lack of statistically significant documentation of effects constitutes proof that no effects will be experienced. Some of the difficulties in obtaining such evidence detailed in the DEIS include difficulty in finding suitable control groups, the fact that various frequencies affect smaller species differently from humans, the fact that smaller species have a lower Specific Absorption Rate, and the confusing influences of other uncontrolled factors on experimental results. | 39

29. The DEIS totally neglects cumulative and interactive effects of the radar's radiation with other sources in the region. For example, could it interact with powerline radiation to produce "beat" frequencies? | 27

30. In some cases where effects were documented for low levels of radiofrequency radiation, the DEIS concludes the results were irrelevant (eg: behavioral effects on various species were concluded to be irrelevant to humans). | 38

31. In other cases where effects were documented in the literature, the DEIS concludes that these effects do not constitute hazards, without presenting any biologically-founded evidence (eg: for alterations in the endocrine system, they conclude, "There is currently no evidence that such subtle effects are hazardous."). |

32. The DEIS section on bioeffects totally neglects the phenomenon-- well described for cardiac pacemakers-- that effects not found at higher, unnatural levels of radiation could suddenly become very significant when the radiation levels drop into the natural range commensurate with levels that biological organisms are adapted to respond to. | 40

Analysis of DEIS with Respect to NEPA

Regulations at 32 CFR 214.4(b)(1) specify that the Department of Defense (including Military Departments) shall assess environmental consequences of proposed DoD actions in accordance with 40 CFR 1500-1508. 40 CFR 1500+ contains regulations promulgated under the National Environmental Policy Act (NEPA). These regulations specify the following requirements.

Cover sheet: The DEIS meets this requirement.

Summary: The DEIS summary accurately summarizes the statement, and its defects are defects of the statement.

Purpose and need: The DEIS meets this requirement.

Alternatives including proposed action: According to 40 CFR 1502.14, "This section is the heart of the environmental impact statement...it should present the environmental impacts of the proposal and the alternatives in comparative form...rigorously explore and objectively evaluate all reasonable alternatives... include reasonable alternatives not within the jurisdiction of the lead agency..." The DEIS fails to meet these requirements (see Specific Concern # 5).

Affected Environment: The DEIS fails to describe the affected environment well enough to allow an understanding of specific effects (see Specific Concerns # 7,8,11,12,17,18,25).

Environmental consequences: The DEIS has an incomplete discussion of certain direct and indirect environmental effects (see Specific Concerns # 7,8,10,11, 14,15,18,19,23,24,27,28,30,31), and has essentially no discussion of other potential effects (see # 1,2,3,4,9,12,13,17,20,21,29,32).

List of Preparers: The DEIS meets this requirement.

Appendix: The DEIS meets this requirement nominally, although the lack of any supporting citations for the conclusions in the bioeffects review is a possible problem with respect to 40 CFR 1502.18(b).

Circulation of the EIS: no comment

Tiering: no comment

Incorporation by reference: This was done for the entire bioeffects literature review section, in effect. The problem with this approach is that persons wishing to review the DEIS may not have received a copy when it was first available, and thus have little or no time to seek out the materials so incorporated.

Incomplete or unavailable information: This is one of the most important problems with the impact analysis for the Central Radar System. According to 40 CFR 1502.22, when information on potentially significant adverse effects (in this case, bioeffects on humans) is lacking or uncertain, the Agency must either obtain the information (apparently through primary research) or else weigh the need for the action against the risk and severity of possible adverse effects. "If the Agency proceeds, it shall include a worst case analysis and an indication of the probability or improbability of its occurrence." The DEIS did neither in this case, instead concluding that uncertainties and lack of documentation on bioeffects could be taken to mean that no adverse impacts would be experienced.

Cost-benefit analysis: The DEIS has an extremely inadequate discussion of alternatives (see Specific Concerns # 5,6). A cost-benefit analysis would be useful to assess the existing substantial alternatives (not just differing sites for the same action).

Methodology and scientific accuracy: In most places the DEIS didn't provide the types of specific data that would require a discussion of methodology or accuracy. For calculations of signal intensity, see Specific Concern # 22.

Environmental review and consultation requirements: no comment

Respectfully Submitted,

Tim Langley

Tim Langley, Director

STATEMENT OPPOSING THE OTH-B RADAR TRANSMITTER IN TRAVERSE CO.

G1

My name is Marilyn Mathias. I live 5 miles east of Dumont in Dollymount Township, Traverse Co., Minnesota, along with my husband and two young children. We own and operate a farm, along with an aerial crop spraying business.

I would like to comment on the ground rules for this public hearing tonight -- allowing only 3 minutes for individuals to speak and 5 minutes for an organization or group to speak -- it's definitely unfair. How can we be expected to comment on the EIS in that short length of time when it took 10 hours to read it!! A public hearing took place in Morris last spring involving the Dept. of Energy and a proposed nuclear waste dump site. The format was allowing 5 minutes for individuals to speak and 10 minutes for groups/organizations; any unused portion of this time could be donated to a designated person. This would be adequate.

This so-called public hearing is supposed to be our opportunity to speak. Afterall, it involves our people, our land, our county and our future!! The Air Force has had two informational meetings here already at Wheaton -- meetings where this has all been explained to us before. Isn't it time for us to voice our concerns and get equal time?

Marilyn Mathias
Route 1, Box 104
Wheaton, MN. 56296

G2, G3, G6

276 words

My name is Judy Leininger. Our family farm is located in Wells Township Traverse Co which is located in the proposed SLW site.

We are opposed to the construction of a radar base in any area around Wheaton.

Prime agricultural land would be destroyed. This farm land is one of our countries greatest natural resources and a precious gift from God. We should be doing more to conserve this land for

-2-

future generations - not defacing and destroying it.

At the present time, the agricultural economy is poor in this area and throughout this great land. It hasn't always been this way - nor will it always be that way in the future. We do not feel this should be a consideration for destroying land for a radar system which, because of the stealth planes, is already obsolete.

-3-

If the system is built, what happens to the remaining land values? Will other farm families be leaving because of the radiation fear? If Wheaton's economy gains 35 employees and their families but looses many more farmers and their support, what happens to the values of your homes and businesses?

There are people who feel that we really have no choice in this matter. They say the government will do what they want no

4

matter what we say or do. But I would like to point out that We - Yes, We are the government. You and I are part of this government. The people who in the state and federal capitols only represent us, the members of the armed services work for us. — As part of the grass roots of the American government our family casts 5 NO'S to this proposed radar system!

Name: Joann Conroy
Address: Box 10, Dumont, Mn. 56236 G1, G2, G8

Statement of opposition to the Proposed Radar OTH-B Site at Wheaton, Mn.
Total of 533 words

I, Joann Conroy, am very much opposed to this Over the Horizon Back-scatter radar system. As a mother of three small children I see it as a threat not only to their health but also to their future and the future of Traverse County.

The proposed SW site would be as close as one half mile from our farmstead. There is NO way we could take the chance of living so close to such a potential danger as this with their welfare in mind. I know you claim there is no evidence at this time to support a potential health risk but those words have been heard many times in the past and it is now coming to the publics attention in various communities where they too have heard these words and where such things as safe nuclear testing and storage waste sites have indeed caused various health risks. We are not naive to the tactics the government has used to play out their experiments at the publics expense. We are not willing to be guinea pigs out here. Even if the site that is proposed near our farm was not chosen but one of the others in Traverse County instead I'm afraid it would still mean a move for many of us because of the exposure we'd still be in contact with to these non-ionizing radiation rays given off.

We are the 3rd and 4th generation of the Conroy family on the farmstead with hopes that our sons could someday also enjoy raising their families there. Farming is more than an occupation for most of us. It is a way of life. One that we'd like to pass on and see preserved. A good share of our farming operation is involved in the site also and so it creates many potential losses for us.

To add to this argument is not only the personal aspect but what is the future of such a system when the government is already testing planes able to go undetected by these radar systems. With the obvious fact of confidential material escaping into the enemies' hand how long until they too have it and thus would nullify the usefulness of such an expensive system. I have relatives and friends who live near the abandoned ABM-Anti Bilistic Missile site at Nekoma, N. D. To drive by there and see the waste of tax payers money you'd know why the local residents call this ABM site America's Biggest Mistake. Do we have to also see many of our neighbors and friends move away only to have history repeat itself.

I'm loosing faith in our government. Especially so after attending the public hearing held last night at Wheaton, Mn. What a joke calling it a public hearing when the Air Force personal take up half the time and then just cut it off when they want to go home preventing half of the people that had come prepared to speak to do so. Are we really a nation for the people. How we can critize the USSR for their lack of communication with their citizens but is our country so different? Why hasn't the government continued their research on these non-ionizing radiation systems? The environment is of major importance well how about the potential risks to our future generations. Let's have a through examation of all possible risks involved and realistic life span for our national defense before we spend the tax payers money and take the chance of destroying so many lives.

Joann Conroy

Name: Bruce Conroy

G6

Address: Box 10, Dumont, Mn. 56236

Statement of Opposition to the proposed OTH-B Radar site at Wheaton, Mn.

Total of 560 words and 3 charts

I live in Walls Township which is part of the Wheaton S.W. study site. The study site is only ½ mile from our home and includes most of our farm land. My wife and I have three healthy children ages 4, 2, and 5½ months. We are very fortunate our children like all the children in this community live in a healthy environment and I'm here tonite to help fight to keep it that way.

In the Sept. 7th, 1986 Fargo Forum Col. Lee stated, "Some Wheaton business people are aware of potential economic benefits from having a transmitt site located there. But whether or not that is in any way balanced off against the potential loss of income from farmland and more important the moving and disruption of family life--thats the tough question the community of Wheaton is dealing with."

Tough question? I think it's an easy question and the answer is NO, it doesn't balance off.

There are 37 families living in the S.W. study site and 52 families living within two miles of the S.W. site. There are many households with 4 or more family members these of course being younger families the future of this community. The placement of the OTH-B Radar Site in the Wheaton S.W. site would cause the distruction of too many family farms and force many families to move. That is not right!

Despite what we hear and read there is no quaranttee that Wheaton will benefit from this project. There is a saying "Only two things are for sure death and taxes."

A bare quarter of farmland in Walls Township assesed value of $26,604 with 156.8 acres of cropland contributes each year in taxes to:

LOST TAXES

	TAX	$/acre	2400acres	4000acres
County	$ 602.58	$3.84	$ 9,216	$15,360
Township	$ 74.76	$ .48	$1,152	$ 1,920
School Dist.	$ 806.48	$5.14	$12,336	$20,560
Totals	$1483.82	$9.46	$22,704	$37,840
20 Years			$454,080	$756,800

All of us in this community will have to make up this loss in taxes. We who are farming feel tax of $9.46 and acre is plenty. That's almost 4 bushel of wheat at today's prices.

Every acre of cropland in Walls Township is an economical benefit to this community. Each spring farmers spend cash for fuel, chemicals, seed and fertilizer. These expenses can vary from around $40.00 and acre to $70.00 or more depending on the land, crop to be raised and the farmer himself.

CASH EXPENSES

Cash Expense	Wheat	Soybeans	Corn
Fuel	$ 8.00/acre	$10.00/acre	$10.00/acre
Chemicals	$ 3.00/acre	$24.00/acre	$14.00/acre
Seed	$ 8.00/acre	$10.00/acre	$18.00/acre
Fertilizer	$24.00/acre	$18.00/acre	$28.00/acre
Totals	$43.00/acre	$62.00/acre	$70.00/acre
2400acres	$103,200	$148,800	$168,000
4000acres	$172,000	$248,000	$280,000

Now these figures don't include repairs, interest, wages, cash rent, insurance, utilities, and machinery payments. All which varies from farmer to farmer but still contributes to this community.

We must also concider the loss in crop revenue and what this loss in

farm land means to our local elevators.

LOST CROP REVENUE PER YEAR

	Wheat	Total Bushels	$2.40 Bu.	Elev. Loss
2400acres	45bu/ac	108,000	$259,200	$21,600
4000acres	45bu/ac	180,000	$432,000	$36,000
	Corn	**Total Bushels**	**$1.35 Bu.**	**Elev. Loss**
2400acres	80bu/ac	192,000	$259,200	$38,400
4000acres	80bu/ac	320,000	$432,000	$64,000
	Soybeans	**Total Bushels**	**$4.58 Bu.**	**Elev. Loss**
2400acres	36bu/ac	86,400	$395,712	$25,920
4000acres	36bu/ac	144,000	$659,520	$28,800

Using proven yields from the ASCS for Walls Township and today's cash prices we get an idea as to how much we could lose to this radar site.

Just in cash expense and the loss in crop revenue this community stands to lose between $384,000 a year to $776,000 a year. Despite what the environmental impact study claims in sec. 4 page 33, "If all land acquired for a site were productive (as opposed to idle or non-income generating) total annual income loss would range between $76,000 and $216,000 per site."

There is *more money* involved than just the profit generated off the acre. It's the monies spent to reach that profit.

A tough question? Does this balance off, the loss of family farms, people moving to protect their children from radiation so Wheaton might see some economic gains?

Bruce D Conroy

3-171

344 (0202)

This was my oral statement which I was not allowed to present at the Wheaton Meeting. I now present it as a written statement

I would like to address the issue of how honest the U. S. Air Force has been to the people of this community right from the first scoping meeting. At that first meeting in March our state representative received from Tom Manning, the Air Force Civil Engineer, this map, (exhibit A attached) a map which perfectly outlined the three Traverse County Study areas. We now find that that map was accurate, even down to each and every little jog and angle, yet this community was continually told that the Air Force did not have any specific study areas in mind.

Apparently credibility is an important factor for the U. S. Air Force. I have learned that in the eyes of the U. S. Air Force that some of us are credible people, and some of us are *not*. I question how the Air Force determines a person's credibility. Common Sense would tell me that perhaps the people who would be most directly affected by this facility should carry the most weight with your decision in the placement of the site. Shouldn't the person who could see the site, who lives and/or works next to the site, or would loose land to the site have more to say about it than the people that will drive by it once a year, if that?

Can you give a written guarantee to the people who will surround that fence that the quality of their lives will not be affected. According to your interview in the Fargo Forum there are no guarantees. How will it not change the quality of their lives when you state in the Environmental Impact Statement that you have yet insufficient information to predict whether or not there would be television interference. In the Impact Statement you state that mobile radios will be affected for a distance of 3 to 4 miles, and there will be am-fm radio interference for ~~~ 2 miles from the transmit area.

Conceivably, in most of the areas people could live directly on the other side of the fence. How do you plan to compensate these people? Can you give them a written guarantee? Shouldn't the people who live on or around the area be the most credible when it comes to the decision process, whether it be pro or con?

Can you guarantee a farmer that the rerouting of the water will not affect his land? Will you put it in writing? How do you plan to compensate him if it does, or will it just be his tough luck? G1, G3, G5, G8, G9

I also question the integrity of the entire environmental impact statement, as it is suppose to be an in depth study of the areas. One of the criteria has always been, and apparently still is, that the transmitter site be located 5 miles from any major power line, but on the same token the Environmental Impact Statement comes out stating that Wheaton N is the most likely candidate, and that area is, in fact, the only site which a powerline runs through. I question how in depth your study is when your own Lt., which I questioned in late August, stated the U. S. Air Force was unaware that the powerline existed. As absurd as it might sound, maybe you don't know it is there, as there is absolutely no mention of any powerline anywhere in the whole Central Environmental Impact Statement.

I further question the Air Force's motives with the total decision process. I question how you can make the specific site selection in December of this year, and wait until 1987 to talk to property owners, and make them an offer. I find after your site selection decision is made it is a little late to find out if indeed there is anyone who wishes to sell. It has been said that there are propperty owners that want to sell, and I question whether this is fact, or speculation. If so, do they even live in the site area, what percentage are they, and do they own enough land for the site, or will it adversely affect the quality and farming operation of their neighbor's lives.

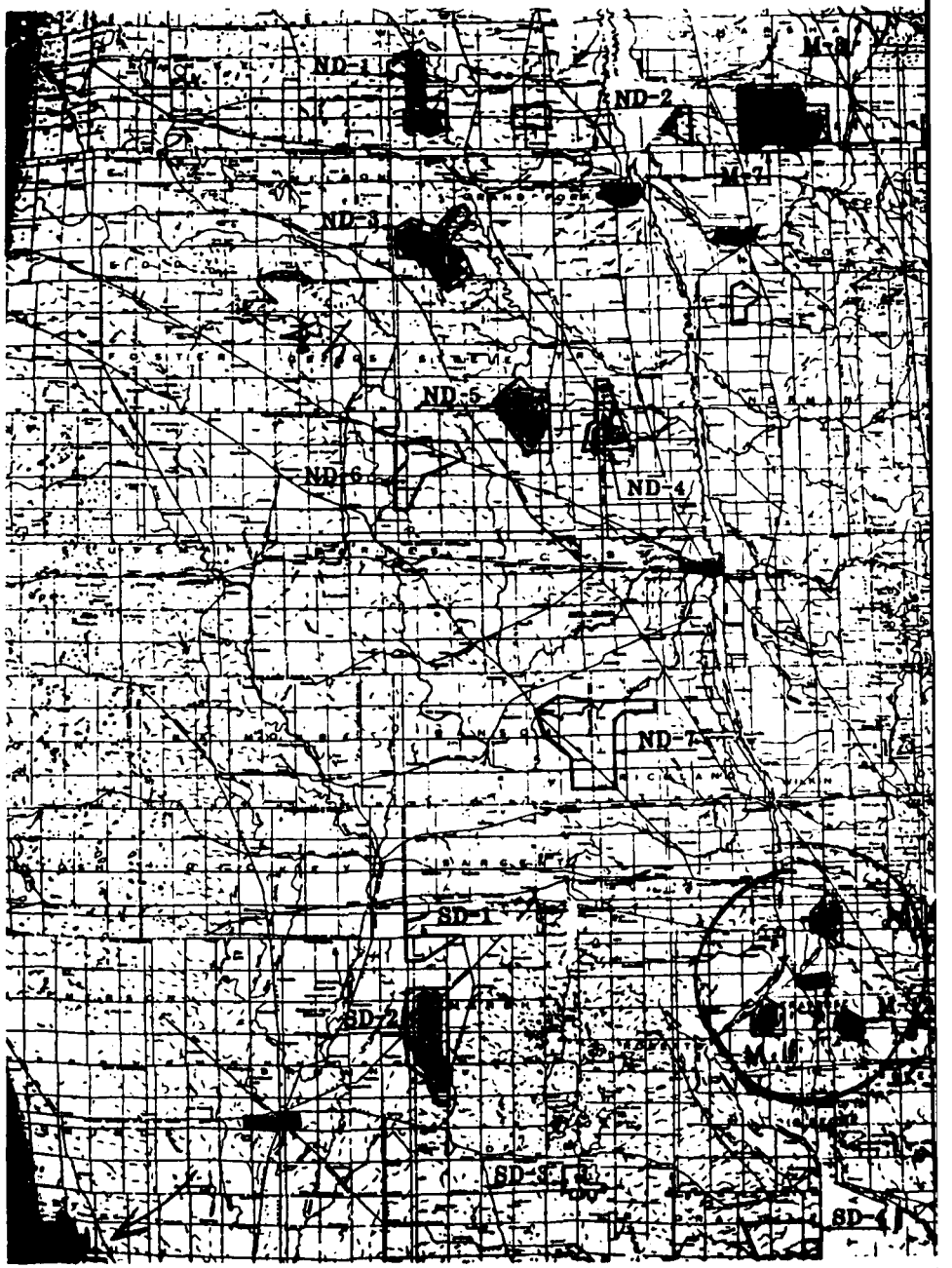
3-172

And last, but by far not least, this has an estimated life span for 20 years, and at that time, according to your environmental impact statement, on page 2-9 I quote "If the land was purchased it would be made available for other federal use." I would like to still be living here, my daughter will be 25, and my son will be 22, and it scares me to think what my family, and this community will have to put up with from the U. S. Government at that time, when you already own this land!!!!!!

I would like to go on record opposed to the radar site being located in Traverse County, Minnesota.

Marcia Conroy

Marcia Conroy
Rt 2 Box 2
Wheaton MN 56296



366 WORDS

G3, G8

My name is Tom Conroy I live one mile North of Wheaton, with my wife Marcie and 2 children, Anna 5, and Trent 2. We are Farmers and also own the Garden & Lawn Center in Wheaton.

I rent land that is in the Wheaton SW study area, and also rent land ½ mile to the south of the Wheaton N study area, and my parents live in the Wheaton SE study area. My Family and I will be directly affected by any Final site!

I have studied the Environmental Impact Statements for this central system and both Final Impact statements from the East & West coasts. It is quite evident that the consultant firm, that wrote this impact statement, for the Air Force called SRI International, stated just what the Air Force wanted to hear. But that is quite understandable, The Air Force pays SRI, and SRI is not going to jeopardize that pay check!

On the East & West coast "remoteness" "away from any known inhabitants" and "Out in THE BOONIES" were very important in the site selection process. This is apparently of no importance in the Central system when, in Fact, this radar base is 25% larger, and of course this area is by far more densely populated, by PEOPLE.

SRI and the Air Force discounts any findings by other groups of experts or other countries on the hazards associated with non-ionizing radiation. They only listen to Dr. Polson a so-called expert in radiation effects, and he is a consultant to SRI International. Incidentally most references in our impact study are pre 1982.

This Environmental Impact statement is no more than half truth printed on paper the way the Air Force wanted. There could be health hazards, TV and radio interference and a host of other problems associated with this Radar Base. If you need this monstrosity don't put it in Traverse county Put it "OUT IN THE BOONIES".

Please state for the record that I am against this Radar Base in Traverse County Minnesota and demand this letter be part of Final Impact Statement.

Tom Conroy
Rt 2 Box 2
Wheaton MN 56296

RE: OTH-B Radar System in Traverse County, Minnesota

My name is Alice Braun. I am a resident of Traverse County, MN and live between the three sites proposed for the OTH-B Radar System. We are quite close to the Wheaton North site. I feel that this system could have serious side effects in perhaps 10 to 15 years, because no one will tell us that it is completely safe.

Our son farms with us, and he and his wife hope to live on our farm and raise their family here. The idea of my children and/or grandchildren - or anyone else's children and/or grandchildren - suffering from malignancies or other serious diseases because of this installation upsets me more than words can say!

I wish to go on record as being against the OTH-B RADAR System in Traverse County.

Alice A Braun

3-174

694 words 1 of 3

G3, G6, G8

Statement of Opposition to the proposed Wheaton site at Wheaton, Mn.

My name is James Conroy. I live in Kanaranzi township 1 mile east of the proposed S.W. study site. My wife, Sandy, and I have five children ages 17, 14, 9, 4, and 1½.

In the S.W. area there are farms with proven yields of 45 bu. wheat, 80 bu. corn, and 36 bu. beans (soybeans).

The Farm Land Protection Policy states that these prime farm lands should not be used for any purpose other then agriculture when other none productive land is available. This is found under Chapter 73 section 4201-420.-4203-4204.

During the land soil testing done here in Traverse County these past couple years the sections in the S.W. study area were found to be top prime farm land with the soils consisting of Lamberly, Wazuahl, Lirdmar, Forndale, and Parnell.

I'm sure there is land that is less productive than this.

Drainage would also be a big problem if the sight were placed here.

The soil study proves that this area is of top grade prime farm land.

Wildlife:

This area is also heavily populated with wildlife. There are many white tail deer in this area which depend on the cover which is available at this time.

The water fowl in this area is extremely heavy in the spring and fall as the birds pass through There are also many sloughs and pot holes for wildlife to nest in during the summer months. Thousands of ducks and some geese use these wet lands. I believe the environmental impact study states these facts.

This radar would cause an extreme hazard for water fowl.

James Conroy

2043

Township: S.W. Study Site

If the site were put in Walls Township it would put a financial burden on the rest of Walls Township land owners. 2400 acres would add $1.00 per acre taxes and 4,000 acres would add about $1.75 per acre increase for land owners.. Over a twenty year period this would mean at least $454,000 increase on the 2400 acres site and over $757,000 increase on 4,000 acre site. This would be way too much of a tax burden to expect of Walls Township land owners.

3-175

James Conroy

3043

People: S.W. Study Site

When reading through the environmental impact study I find there is very little said about the affects of the GTM-8 radar on humans.

From listening to the Air Force meetings and reading local paper editorals they say nothing about harmful health affects. What is Uncle Sam trying so hard to hide? The Air Force funded a $5 million general health study at the Univ. of Washington School of Medicine. Rats exposed to electromagnetic radiation developed a disproportionate number of malignant tumors. The Air Force downplayed the study and would and will not fund new studies. Dr. Guy, who led the study, disagrees with the Air Force's conclusion, saying that it's "provocative".

I guess it will take much public pressure, as Dr. Guy said, to force our government into more studies.

I'm a Vietnam Vet. and the government tried to say agent orange was harmless. I guess we all know better now. Only thing is it's much too late. Lets not let something like this happen again. Stop the lies now!

Why does the government want to use humans as a study group and not more rats? Are we a cheap form of race that when these radars go into operation for a couple years and babies are born deformed, children start showing signs of cancer and so on, that the government will say, Oh! I guess the rats were right! How many bad things must happen before the government starts to care what happens out here? Face it, that radar, on Washington and you know darn well complete studies would be made first.

I would sure hate to be a person with a family living infront of these radar screens spraying radiation on my family knowing darn well we would all have a high cancer risk. So you see, more families would be affected than what is stated in the study. Many would have to move to protect their family.

This would destroy many families way of life.

James Conroy

3.4 Hillsboro, North Dakota

3.4.1 Transcript

The following proceeding was taken at a meeting of the Air Force at the Armory Building located in Hillsboro, North Dakota, on Tuesday, November 18, 1986, commencing at 7:00 p.m.

Colonel Bristol: Good evening, ladies and gentlemen. The National Environmental Policy Act and implementing federal regulations require all federal agencies to carefully analyze the potential environmental impacts of proposed actions, and to actually use those analyses in arriving at final decisions or recommendations as to whether and if so, how to proceed with a particular action.

The Air Force has prepared and distributed a Draft Environmental Impact Statement, a copy of which I have with me, and there are some additional copies that are available this evening. Plus for those of you who so indicate by filling out the comment sheet, about which I'll comment more in a moment, copies can be made available for you on an individual basis.

The Air Force, as I said, has filed a Draft Environmental Impact Statement concerning a proposed Central Over-The-Horizon Backscatter Radar System

My name is Lieutenant Colonel Matt Bristol. I'm a full time Air Force trial judge for the court martial trials, and one of the more pleasant duties that I get to perform from time to time is to preside over environmental impact hearings, such as this. That is an informal hearing designed to facilitate a two-way communication, part one of which is for the Air Force experts--and I am not one of those. I come from a completely different office, and my function is simply to serve as the presiding officer to set up the procedural ground rules to let the Air Force experts first brief you on this proposal--and its details and on the anticipated environmental impacts from the viewpoint of the Air Force experts--and then give you a chance to ask them questions concerning their briefings and any other matter that's raised in the Draft Environmental Impact Statement. And following that, to give you an opportunity, either as public officials, as designated representatives of private associations or groups, or simply as concerned private citizens to make statements for the record so that they may be considered by your government in deciding the appropriate actions upon the Air Force proposal.

We really are going to be informal, and I say that because I want you to be free to speak up and to speak what's on your mind. I don't want anyone to be hesitant or reluctant to speak for fear that this is too formal or that they might say something that is perceived as a dumb

question. There are no dumb questions and I'll probably ask a few myself this evening before the evening's out. And I want to encourage you, when we get to that time frame, to be free to ask any question or to express any concern that's on your mind.

Did everybody get one of the comment sheets? This is a one-page form that starts out with the three locations, and this is the first of three that we're going to be--informal hearings we're going to be conducting. And then there's a place for your name and mailing address, some other information and most importantly, a place where you can check the particular category of environmental impact that you happen to be concerned with.

For those of you who don't have them, Lieutenant Gale Brown, who's from the Program Office of the Backscatter Radar System from Hanscom, Hanscom Field, Massachusetts, is going to be passing out some more.

So that we can maintain a modicum of order concerning the asking of questions and the making of statements, I'm going to ask anyone who thinks that they would like to ask a question or to make a statement to fill one of these out. You don't have to indicate the content of the question or statement. You'll notice toward the bottom there's about 11 lines or so. You don't have to fill that out. All I really need to know is your name and address printed carefully enough so that I'll spell it correctly for the recorder.

In the upper right-hand corner--it's not designated--but if you're a public official, would you so indicate. And if you are the designated representative of a particular private association, would you simply write something to that effect. And finally, if you're just a concerned citizen, just write citizen. And the reason I ask that is--because the time limits that were in the notice of the hearing and the ones we're going to have to try to follow tonight are that--when we come to the statements, we have five minutes each for public officials or designated representatives of a particular private association, and three minutes each for those who are, like myself, just general concerned citizens.

Our order of proceeding is going to be--first, the briefings. And our briefings are going to come from Colonel Jim Lee, who's seated to my immediate right, who's the Director of the Backscatter Radar Program Office in Hanscom Field, Massachusetts, and Mr. John Mitchell, who's flown up from San Antonio, Texas, who is an expert in radiation bioeffects of this system. He's from the Air Force School of Aerospace Medicine at Brooks Air Force Base outside of San Antonio.

After their briefings, we're going to take a short recess so that all of you that wish to can fill out the comment sheet and someone will come by to pick them up. After that recess, we'll go right into questions. And I'll recognize people by calling out the names and I'll try to structure them so that we deal with one category of interest at a time. So that if we have radiofrequency effects and we have a number of people that want to talk about that, we can talk about that first and

then move to another subject. That's the importance again of your filling out the comment card and checking the particular category for which your particular interest falls.

We have a court reporter with us, Ms. Louise Christie, who's going to be taking down everything that's said verbatim, and that will be a part of the record. And we'll look at that record and that record will be folded in along with the Draft Environmental Impact Statement to be a part of the Air Force Record Of Decision.

Now you have until the 8th of December to submit copies of this sheet, so you can submit one if you want to make an oral statement tonight and you can take another one with you. We have plenty. And until the 8th of December, if you have any afterthoughts and want to provide something in greater detail, you can do that by mailing it to the office and address listed at the bottom of the form.

Whether a statement is made verbally tonight or it's made in writing and given tonight or given later before the 8th of December, that statement will have the same impact--will be considered to the same extent under any circumstances. So don't feel like you have to speak tonight if you prefer to wait and submit something by the 8th of December.

We're not going to have a debate tonight. We're not going to have a vote, and it's not really a referendum. That's not our purpose. It's just to facilitate this two-way communication. And so from the questioning standpoint I'll ask you--if your question is really more of a statement, if it's really to express a point of view and ask a question incident to the making of a statement, reserve that until the time for the statements begin.

And let's keep the questions themselves to getting clarification of a particular issue raised by a briefer or a particular issue that's in the Draft Environmental Impact Statement.

I'll monitor the times and do everything within my power to make sure that everyone here that wants to ask a question or be heard, can be heard.

We have some public officials I'd like to recognize with us this evening. Representing Senator Burdick's office we have Tom Stallan. Tom is seated somewhere in the back of the room. There he is back over in the far left. (Indicating). Representing U. S. Senator-Elect Kent Conrad, we have Kevin Carvell, who is also representing Congressman Dorgan, so, Ken, it's good to have you with us. Kevin, I'm sorry. I know, from having been on a couple of transition teams myself, that right after an election, that people don't necessarily have a lot of staff. So the concept of borrowing staff is a pretty good one. We also have Shirley Dykshoorn, who's from Governor Sinner's office, and she's

in the back of the room as well. And finally last, but not least, we have Jim Bugge, who's the Mayor, and probably someone that all of you know, of Hillsboro. Jim, it's good to have you with us.

Again, the object tonight is to let everybody have a chance to be heard and to give you some meaningful information so that you can make your minds up and ask the questions or give us some input.

One thing I can't stress enough--you know more about a lot of this than any team of experts can ever learn, because you live in the areas affected. You have the experience that comes from just being close to an area over a protracted period of time. And so this second part of tonight's communication, the part that flows from you to us, is just so important. And that's really the part that, to me, is the most important, and so don't hesitate to speak--don't hesitate to be a part of our proceedings.

Without further delay, I'm going to introduce at this time Colonel Jim Lee.

Colonel Lee: Good evening. It's a pleasure for me to be here tonight. I realize that I've had the chance to speak to many of you at some of the previous scoping meetings and public hearings. But this is an ideal opportunity to reach this large of a group in an area that could be affected by the selection of one of the study areas as a receive site. Or some of you may even be here from further south where we are looking at some tentative study areas for a transmit site for the Over-The-Horizon Radar Program.

As it was mentioned, I'm the Program Director for the Over-The-Horizon Backscatter Radar Program. My program office is at Hanscom Air Force Base, which is the Headquarters for the Electronic Systems Division of Air Force Systems Command. We have the responsibility for the development and acquisition of all electronic systems for the U.S. Air Force.

My main function is directing the construction, the integration and testing of the East Coast Radar System, which is currently in test, and the West Coast Radar System, which is about to be placed under contract and where effort will start there as well. But by virtue of that association, I end up also being the Air Force spokesman in the Central Radar System and the Alaskan Radar System, both of which are proposed.

I'm glad to have the opportunity to do that. I feel I probably have a lot of firsthand knowledge about the system and how it works. Most important to you tonight, I have a lot of visual aids to give you a very firsthand impact of what the system might look like if this area were selected. We've got several handouts that we've given you as well. They include some pictures of the East Coast Radar System, both the transmit and the receive antennas.

In addition, there are several fact sheets--some on the basic program. And I hope you will take special note of a fold-out question and answer sheet. I took--well, it turned out to be 23 rather than the top 25 most frequently asked questions about areas dealing with the size of the system or why it was needed, what it would look like, what are some of the potential impacts in such areas as interference with TV and radio. I deliberately left out the area of RFR bioeffects--the effects of radiofrequency radiation--because I wanted to have the opportunity firsthand to give Mr. John Mitchell, who's been very active working in this area for the Air Force for over the past 15 years.

What I would like to do tonight then is to give you a background description of the complete Over-The-Horizon Radar System, the four systems. I think we should bring the lights down, if we could please?

This schematic overlay on the North American continent shows those four OTH Radar Systems. As you can see, they provide a complete band around all the coastal approaches for the North American continent. The only area which is not covered is across the northern sphere of Canada and Alaska. As I will show you in a later slide, we have a system that's providing surveillance coverage of that as well.

For tonight, then, I would like to first emphasize the environmental impact analysis process that we are following. We're now in that public hearing process, one that has been extended so that we would have the opportunity for these three additional public hearings--the one here tonight, tomorrow night we'll be down in Britton, South Dakota, and then Thursday night in Thief River Falls, Minnesota.

Following the Air Force's announcement that we intended to develop, construct and deploy the Central Radar System, we came out into the area to hold scoping meetings to get information from those people that would be most affected by that. That information, together with other studies, was used in putting together the Draft Environmental Impact Statement that Colonel Bristol showed you earlier.

We're now in a formal part of the process of public hearings where, as it was stated, we have this two-way exchange of information. The complete transcript of the hearings and all the comments that we receive from you--as well as the responses that we develop to the questions that you raise in those, and any additional work that we need to do--will all be included in the Final Environmental Impact Statement. With the added extension in comment time, that Final Environmental Impact Statement will not be issued now until the early spring of this next year. And then, following a minimum of 30-day notice from the publishing of that Final EIS, the Office of the Secretary of the Air Force will be able to make its decision and provide notification of that decision.

As a part of the overall EIS process, we have been looking at many things. The Draft Environmental Impact Statement describes a system and some of it characteristics, but the document also looks at many of the potential environmental concerns.

All of these areas that are shown here--in land and minerals, to vegetation, to air quality, down to the electromagnetic interference and radiofrequency effects--are all documented in the Draft EIS. Rather than addressing each of these at the presentation tonight, I'm going to make comments about several of them as I go through my actual presentation, which is largely slides of the hardware itself. And I'll try to relate, as I go through that, to the specific areas of concern that you might have. I'll conclude my portion then, and turn it over to John Mitchell to cover that last area which we recognize many of you have a great deal of concern about--the human health effects.

This is another view of that complete surveillance coverage that we will have when all four Over-The-Horizon Radar Systems are in place. The East Coast Radar System has been fully funded--approved by Congress. Construction is complete, and we are now into testing of that first sector, the sector facing towards the northeast.

The West Coast Radar System has also been approved by Congress. We have already received funding for the first two sectors of that system, and we will be awarding the contract for that very shortly. And our budget request to the Office of Secretary of Defense for the FY88 budget includes the funding for the last sector to complete the West Coast Radar System. Also within that proposed Air Force budget, would be initial funding to start both the Central and the Alaskan Radar Systems as well.

Across the north we have a series of microwave, short range--that is short range compared to the OTH System--line-of-sight radars. These radars provide the other missing elements then--to be able to detect aircraft that would be flying down from the northern approaches. The OTH system is not able to look directly north. However, we are able to look in quite a northward direction, as you can tell from the two sectors--on both the east coast, the upper sector, and the upper sector on the West Coast Radar System. So with this complete system, for the first time we will have the capability to detect aircraft flying against the United States at distances out to 1,800 nautical miles, or in your standard statute miles, 2,000 miles.

We have a network of coastal radars that are around the coast but they're very similar to those North Warning and Seek Igloo CP radars. They're designed for the detection and tracking of aircraft, and we use and operate them in conjunction with the Federal Aviation Administration, the FAA. They are not able to detect aircraft or track them at distances much more than a few hundred miles, and at low altitudes their detection capability is even less than that. That translates into about a 30 minute or less warning time from when we would first pick up a large scale aircraft attack against the North American continent.

If I were to take the OTH system out in the East and West Coast, and extend that detection range out to 2,000 statute miles, that translates directly into warning time on the order of four to five hours. That's the capability that we're looking for--a capability to deny the opportunity to the Soviet Union of being able to launch a surprise attack against the United States. So it is a system that provides a significant addition to our deterrence capability. It is a defensive system, and one that's very important to us.

The reason that it's so important is shown here. This is an artist's concept of a Soviet Blackjack aircraft. This is more than just a concept, however. This aircraft is in flight testing in Russia today, and if they were to continue their current schedule, this aircraft could be operational by the start of the next decade. It is a long range strategic aircraft that would have the range to strike at targets on the North American continent.

This is a turboprop airplane, the Bear H, the latest version. Some people, when they have referred to this slide, have suggested that obviously they're way behind us, and they can't have that kind of long range capability because they're still using propeller aircraft. But at the speeds this flies, this is a fuel efficient aircraft and has the range capability of also striking targets within North America. This Bear has also been upgraded with air launched cruise missiles with an additional long range capability. So this poses a very real threat to the North American continent.

The aircraft behind the Soviet Bear H is one of our U. S. Air Force F15's. The AK on the tail refers to the Alaskan Air Command. The Soviets, on a regular basis, conduct training missions flying in towards the coastline of North America. A lot of that activity occurs around Alaska, but there is also significant activity that occurs around other coastline areas of the country. Typically, when we're able to pick them up, we send aircraft out, such as this F15, and we escort them or fly alongside until they leave our coastal areas.

These aircraft and other long range strategic aircraft are still being produced by the Soviet Union today. There is another long range aircraft that is being still turned out from the factory at about 30 aircraft a year. And we're aware that they're modernizing many of their other aircraft to give them increased capability. So with that threat, it's very important to us to have this Over-The-Horizon Radar Program.

The significance to the Central Radar System is that it covers those areas from the south where the Soviets otherwise, using these long range aircraft, would be able to make approaches--perhaps from staging bases in other sections of the country or from the world, including some of those in the southern hemisphere.

In addition, however, as we detect with the OTH system from the east and west coast, we will be operating out to our maximum detection range. This provides the opportunity with submarines or with other ship

vessels to be able to launch sea launched cruise missiles from either the east, west or from the southern coastline. So an added function of the Central Radar System is to ensure that we have the capability to detect and track and provide warning of those types of threats as well.

This is a concept of that same coverage to the east showing the transmit site, which is indicated there with a reddish pattern, at Moscow, Maine. The receive site is the yellowish pattern at Columbia Falls, Maine.

With three separate antennas, each covering a 60 degree sector, we're able to, at our choice, scan that entire four and a half million nautical miles, square miles. We're able to do that with a single system from that single location.

I'd like to show you what that system looks like as it is now in testing and as all the construction work is completed. This is the transmit site. There are three antenna sectors, each of them facing a boresite to a particular direction, so that each provides that 60 degrees of coverage.

Directly in front of that white building that you can see there in the foreground sector, is the transmit antenna. It's about 4,000 feet long. I'll show you some closer pictures of that in just a minute. But significant here is that you can see that entire area for the three [sectors] systems. In this case, the three sectors are somewhat separated. In other alternative sitings, and I'll show you some of those in a conceptual way, it would be possible to place them together.

As we look at the Central Radar System, we're looking at four such sectors. Each of them would have this transmit antenna about 4,000 feet long. Each sector would take about one section, about 600 acres. Each of those sectors would be about 5,000 by 5,200 feet. So for a total, looking at the sectors alone, we need about 2,400 acres for the transmit site.

This pictures also allows me to point out some of these environmental concerns and possible impacts. First of all, the area needs to be relatively flat. That is, we don't want any obstructions in front of the antenna area rising more than about 1 degree, which translates to about 100 feet for every mile. So a mile in front of the antenna, approximately where we would have the exclusion fence or boundary fence, that we would need to insure that there were no obstructions higher than that.

The area immediately in front of the transmit antenna has a ground screen laid on it. This is the only area that has to be extremely flat. Beyond that, the natural terrain is acceptable as long as, again, it falls within those obstruction criteria that I just mentioned.

Also, we need to insure that these areas are laid out in places where we do not have wetlands or other sensitive areas. So those factors get included as we look at the possible study areas. Those areas with much more rugged topography are not as desirable as those areas that are extremely flat. Similarly, those areas with a lot of drainage problems, areas where there are significant wetlands or marshes--those also ther would become less desirable.

This looks a little closer at that transmit antenna structure, the tallest portion of the six bands. There are six individual bands. Each covers a certain portion of the frequency spectrum. The tallest portion is 135 feet tall. The smallest is down to 35 feet.

This is one of the final and in fact, this is the third sector from the East Coast System. And you can see the grass which has started to grow back in front of the antenna. I'm sure it's hard for you to see back there because it is for me even up here--but there is a ground screen, which is like a chicken wire mesh, but with the openings 8 to 10 inches. It's laid out in the ground in front of the antenna. And so other than having that flat area which extends out about 750 feet, once the ground screen is laid and--the natural vegetation is allowed to grow back in. And we will even help that with seeding to insure that that vegetation does grow back.

Similar to the ground screen, there is a back screen. And you can clearly see it here. (Indicating.) Again, the same type of mesh. That is supported by that support structure for the entire transmit antenna. With a very long transmit antenna then, as well as a very long receive antenna, we represent the potential for bird collisions, particularly in this area which is known as the central flyway.

I mentioned that the tallest portion of the transmit antenna is 135 feet tall. The tallest portion of the receive antenna is 65 feet tall. By careful selection of the site areas, in particular avoiding those areas that would be a natural attraction for migratory birds coming down to stop to breed or to feed, we're able to reduce that potential. We can also reduce it by the use of shelterbelts, by trees, or also by lighting under certain conditions. These are all mitigation measures that we feel most significantly reduce that potential. And we would be working with the state and local agencies in the particular site selection to insure that that does not remain a concern.

These are the three antenna sectors for the receive site. Again, each is boresited to cover a 60 degree area. And for the Central Radar System, there would be four of these antenna sectors. Each of the antennas for the East Coast Receive Site is about 5,000 feet long. For the West Coast System as it is being placed under contract, and also proposed for the Alaskan and Central System, that antenna is to be about 8,000 feet long. That's to give us the improved detection capability against the small cruise missile size vehicles. So the size of the sectors required for the Central Radar System would be approximately

10,000 feet long by 2,600 feet wide, which comes out again to about 600 acres for each sector--a total of 2,400 acres for the four receive (sectors) sites. Depending again on how the particular antenna sectors were sited, you could have them distributed as shown here, or there are other configurations where they could be located much closer together.

This is a clearer view of the antennas themselves. They're the elements on the left. They are approximately 19 feet tall from the base of the ground. The element itself is a little bit less than that. The back screen on the right is the portion that's 65 feet tall, and that also has the back screen. Again, you can see that steel mesh. A similar ground screen extends out in front of the receive antenna about 750 feet and again runs the entire length of the array.

As is the case for the transmit antenna, we have a requirement that the portion directly in front of the receive antenna also be extremely flat. But beyond that, whatever the natural topography is, as long as it was relatively flat with no obstructions more than that approximately 100 feet per mile, there would be no further work that would need to be done. Again, if clearing was required, the area would be seeded and we would be able to put natural vegetation back inside the entire area.

Both the transmit and receive antennas are enclosed by a boundary fence, and you can see the receive fence that surrounds this receive antenna. A similar fence is around the transmit antenna.

In the case of the receive antenna, that fence is to keep animals and people from getting inside and doing harm to themselves or to the antennas. There is absolutely no radio energy emitted by the receive antenna. It's much like sticking an antenna outside your bedroom window hoping to get better FM radio reception. There is no energy associated with that at all.

The very long antenna is there to quietly listen and pick up these very faint radio waves that are coming back from that 2,000 miles that can be picked up and analyzed and turned into signals that we can translate into tracks of aircraft.

In the case of the transmit site, the antenna areas are surrounded by, again, a boundary fence or exclusion fence. First of all, again it's to insure that animals don't come in and damage the equipment. But in the case of the transmit system, there is radiofrequency energy that is emitted, similar to any type of a radio transmitter or a radio transmitter station.

We operate in the HF, High Frequency, spectrum from 5 to 28 megahertz. That's very similar to other HF radio stations. In fact, the Voice of America operates in that frequency band, and particularly at some of their installations, they operate [at] about half the power level that we operate from one of our transmit antennas.

Outside of the exclusion fence, the energy level will be below any level that could cause any potential human health or biological problems. And Mr. John Mitchell will discuss that in much more detail and would be prepared to answer any further questions that you would have in that area.

Before going on in showing you the Operations Center and a little bit more of how the system works, I call your attention, finally, to the little white dishes that are on the top of the power structure right next to that support building. Those are tropo radio links that send the information back from the receive site to the Operations Center. This type of a system works extremely well if the separation distance is no more than about 50 nautical miles.

In the case of the East Coast System shown here, that distance is about 47 miles. In the siting areas, looking at potential receive sites, it's this factor that caused us to put that same limitation of 50 miles around the proposed location for the Operations Center.

The signals are then sent to the Operations Center, picked by those dishes shown there and brought down--through the computer system and finally to the displays. In the case of the Central Radar System, the proposed location for the Ops Center is at Grand Forks Air Force Base. And here we would have the approximately 400 people that would be involved with the continuous 24 hour a day, 7 day a week operation.

The signals, after they're analyzed by the computer, are sent out to the operations room and brought forward on the displays, as is shown here. There are different operators that are involved with the tracking of the targets. There are other operators that are involved with correlating those tracks against known pilot position reports or flight plans that have been filed with the FAA.

Here we see one of our sergeants looking at a particular display, and it's a geographic display of that northeastern sector of the East Coast Radar System. It portrays, to the left, the eastern part of the United States, and you can see Greenland in the upper left center and the little island of Iceland. This is an actual display shot taken during one of our operations. And this particular event has the Air Force One aircraft designated on there. We tracked Air Force One as it flew all the way out to Iceland, so the system does work. It has the capability that it's supposed to have, and we're very pleased with the performance.

Trying to wrap that back around--from the requirement, from a sense of what the system would look like, and how it would perform, I'd next like to focus in on why we're considering the particular areas that we are for the Central Radar System.

As I mentioned, the East Coast and West Coast Systems are fixed. They are established. In the case of the West Coast [System], we've already started construction on the Operations Center and we'll begin the site preparation for the transmit and receive sites very shortly.

For the Central Radar System to be effective, we want it to overlap both the East Coast and the West Coast Systems. We want to ensure that there are no areas or potential gaps that an adversary might be able to take advantage of. And in the same way that they conduct training flights on a routine basis, we would expect them to use other kinds of training opportunities to find out where we might have gaps or potential vulnerabilities. And so we have a limitation on how far to the left or right that little dot representing the Central Radar System can be.

Similarly, we want the upper-right hand portion of the Central System to link up with the last radar which is a part of the North Warning System--again, to ensure that we have a total coverage. Because while the area looks like the East Coast Radar System is scanning that entire portion, at any one time it's only scanning out to 500 miles deep. And we would expect that most times we would be interested in the longer ranges for that increased warning time. So the [Central] System has to match up with the North Warning System. And also we need to link up and make sure that we do not allow the system to drop down far enough on the left-hand side that we would lose potential overlap with the West Coast System as well.

In spite of this country being as large as it is, those constraints end up with a fairly small defined portion within the north central part of the United States. Outside of that boundary we would not have the detection capability that we need. The system either would have gaps or we would not have the necessary overlap. If you want to try to pick an ideal location, it would be where that dot was located right down in the southeastern portion of North Dakota. However, there are some other criteria then, that further narrow this process down.

I mentioned that Grand Forks Air Force Base is the proposed location for the Operations Center. That's because it would be prohibitively expensive to construct a new base or a support structure to handle this group of some 400 people. Once we had set Grand Forks as the Operations Center then, that communication link with the receive sites requires that those areas be no more than 50 miles from Grand Forks.

There needs to be a separation distance between the transmit and the receive antenna because we're not a pulse type system that chatters away like a Soviet woodpecker, which some of you who are ham radio operators may be familiar with. We're a continuous wave system where we alternate some frequencies within a band width, and so for the transmitter to be able to operate separately from the receiver, one transmitting continually, the other receiving continually, we need that

separation of at least 50 to 75 miles up to a maximum of about 150 miles. So that criteria sets where we would have the transmit location within the same general area.

Then finally, we look at such things as airways so that we won't pick up false targets, or have the radio energy be bouncing off of commercial airliners and therefore giving us false indications. We also want to stay away from large population centers--in the case of the receive antennas, so they don't interfere with us. In the case of the transmit antenna, so that we reduce the possibility of radiofrequency interference and the number of corrective actions that we would have to take. All of these factors together have left us with the situation as we've described in the Draft Environmental Impact Statement.

We have the five study areas proposed as a receive site. We have four study areas to the south proposed as a transmit site. The conclusion of this environmental impact analysis process would be to select one receive site and one transmit site. From that point then, we would do further analysis work to determine the best possible location within that area for the actual receive or transmit sectors and their antennas.

Again, the location of wetlands, other possible obstructions, streams, topography, things that might cause potential erosion and drainage effects--all of these will be further considered in the location of the exact place for the antennas--as is the matter of availability of lands.

We're interested in purchasing or leasing land for both the transmit and receive site. And our choice is to do that with the government negotiating, through the Corps Of Engineers, with willing landowners, owners who are willing to lease or to sell their land. So to the extent that we could find those willing people and that all other factors are equal in some of these respective study areas, then that availability of land also becomes a consideration in the selection of the study areas.

Because of the topography and some of the other vegetation effects, the Dahlen, Goose River and Galesburg study areas are not as preferred as the Blanchard or Thief River Falls area. The Blanchard area, however, is much smaller and we have the tallest structure in the world that's located between--or in the United States--between Galesburg and Blanchard. The large antenna that's there, that further restricts our ability to place the antennas. So from an operational standpoint, Blanchard then becomes not as attractive as some of the other candidate site areas. So all of them are being considered. We can give you relative impacts and environmental effects, or the operational impact that I just gave you now, but the final decision process would be carried all the way through with your participation and that Record of Decision filed in the springtime.

Similarly, looking down to the south--of the transmit sites, from the environmental standpoint, the Amherst area and the Wheaton North area are environmentally preferred. But again, because of the greater flexibility that we had in finding site areas and location for the antennas, the Amherst area becomes more preferred than that Wheaton North area. Again, however, all these considerations are being worked throughout this entire process.

When a final selection is made, this is a potential site configuration for the four transmit antennas--each of them being about 600 acres, 2,400 acres totally. This is one of those alternative configurations--a little over two miles, perhaps as much as two and a half miles, by two and a half miles. On that basis, the total land involved would be ,000 acres. It doesn't need to be that large--we can slice off a corner on the lower left and lower right. However, we've drawn it this way because we recognize that we might leave the landowner with an uneconomic segment or remnant of the land, and therefore we would be willing to purchase or lease that portion of the land as well. That's why you've seen various numbers that have increased from the 2,400 acres up to as much as 4,000 acres for a two and a half mile square site.

If we were to put the antennas in this type of a configuration, we recognize that some of the roads that go through the sections and quarter sections would be closed off. As a part of our program in our construction effort, we would construct new roads. For any roads that weren't--did not have sufficient load bearing capacity, we would, as part of the program, upgrade those roads.

Another area that we know has been of concern to you--recognizing that the withdrawal of this amount of land may have a significant impact on the tax structure, there are certain mitigations that we're trying to work out with the public as well. One of them would be the continued maintenance of those roads to include the snow removal operations for the new roads that we built or even the roads that were required for our people around the study area. So that would offset some of the impact on some of the local townships.

This is another artist' configuration of how that might look in some of the areas around here. Continuing on with one other element on the tax impact, there is another section of public law that provides a provision--that if the federal government takes a large area away and affects the tax base for that school district--to receive federal aid. It depends on many factors. It's something that is calculated. It's worked between the government, the local school district and the state and federal departments of education. We've got the specific references to that public law. It's in place now. There are four locations in North Dakota that received aid under that law, one of them in South Dakota. It's not a widely known law compared with the impact 'd that's provided, for example, to the school district around Grand Forks Air

Force Base where there is a large additional amount of federal land, excuse me, federal aid that is provided. But this section too of the public law provides for assistance in this area as well.

This is a potential schematic for the receive site. We could locate two of those receive antennas together in the upper portion with that area then being approximately two miles by one mile--and then again the remaining two segments. Once again, depending on the topography, location of streams, the availability of land, we will determine the exact siting and either provide new roads--buying additional land remnants, if that were the appropriate thing to do. We want to work this out so that it best meets our needs as well as the needs of the people within the local area. And again, here is a concept of one of the possible ways of laying that out in the large land areas here.

So to summarize, we have, through this environmental impact analysis process, gone through from the initial establishment of a requirement. And that requirement has been revalidated through the Department of Defense and also through Congress, and it will, with the approved funding that would be requested from Congress, be then approved officially by Congress, in both the authorization and the appropriations bill.

We want to continue working with the areas through the rest of this analysis process. We look forward to some of your added questions--we look forward to all of your added questions tonight. We're hoping that between the facts that you have in front of you and the information we provide here tonight, that when you leave, you will understand the process, the system and its potential impacts on you.

With that--and the completion of the Central Radar System some several years from now, we believe that we will have a significant added peace-keeping capability for the United States. And that is the ultimate objective. We don't need a warning system if war starts. We need a warning system to insure that there is time for negotiations--for warning--for preparation of our people--so that we can avoid that possibility.

I'd like now, if we could bring the lights up, to ask John Mitchell to come forward and address the potential health effects from the radar frequency radiation.

Colonel Bristol: Before John talks about the health effects, I neglected to mention one thing at the outset. The folks that have been kind enough to make this facility available have asked that those of you who do smoke refrain from doing so except during the recesses and then out in the outside in the hallway area rather than here in the auditorium. Thank you very much.

Mr. Mitchell: Yes. Would you bring the lights up, please? All right. Thank you.

At this time I'd like to introduce another--one of my colleagues from the Air Force School of Aerospace Medicine, Dr. Jerome Krupp, who is here on the front row. Dr. Krupp is in charge of our Radio Frequency Radiation Bioeffects Research Program at the School of Aerospace Medicine, and he'll be assisting me this evening in answering any questions you might have in that area.

As Colonel Lee has pointed out, the issue of biological effects of radiofrequency radiation is not relevant to the receive site, but it has been a valid question that's been raised in terms of the transmit site. And for that reason, the Draft Environmental Impact Statement has devoted some 40 or 50 pages to describe what we believe to be the Air Force position. That this state of knowledge--

Colonel Bristol: I think you're going to have to put the mike closer to your face.

Mr. Mitchell: All right. Is that better? The Draft Environmental Impact Statement has about 40 or 50 pages that deal with the issue of bioeffects of radiofrequency radiation. This is an area that has been under the responsibility of the School of Aerospace Medicine for many years, and the information that is reflected in the Environmental Impact Statement is the kind of information that's available throughout the scientific community today. So it's not my purpose here this evening to review in any way the information that is included in the document, but simply to give you some background information that perhaps will convey to you why we feel so confident in the radiation safety aspects of this radar system.

Now, I'm sure all of you are aware that there are many sources of radiofrequency radiation in our modern society, starting with things like citizen band radios, mobile radios, telephone data links, certainly our AM/FM broadcast stations, many forms of radiation that are in our daily lives, and of course the numerous military systems as well. And just speaking from an Air Force perspective, I think it's important to have an understanding of how this data base has been developed. But in our Air Force environment today, taking into account all of our operating sites, we have about 100,000 personnel that are exposed to some form of radiofrequency radiation in their daily jobs. Many of these people are close to those sources and they work for careers of 20 to 30 years in doing that. So it's easy for you to understand why this is an issue with the Air Force--to satisfy ourselves in terms of personnel safety, and in that regard, we have developed a program over the years to take care of that question.

Now, in regard to Over-The-Horizon Backscatter Radar System--it was in about 1968 that one of the program offices at Hanscom Air Force Base came to the School of Aerospace Medicine. At that time they were considering the technology for the Over-The-Horizon Radar and they simply asked us about our knowledge about the potential biological effects. Well at that point in time, we really had very little

information that was relevant to HF Band systems, and it was in that time frame that the school developed a special exposure system--first one of its kind that was ever developed--and initiated the bioeffect studies that over the years has led to our understanding of this form of radiation interaction with biological systems.

Now since 1968, a great deal has been learned about biological effects, and in fact there's a very active community of researchers today that are involved with studying this question.

Just in 1978, there was a new professional society developed in this country just to study the radiation bioeffects. It's called the Bioelectromagnetic Society. It was formed in about 1978. They have annual meetings that are held all across the United States, and at each of those annual meetings there are some 200 research papers that are presented concerning radiofrequency and microwave bioeffects.

If you go into the literature base today, and I'm not sure whether the Environmental Impact Statement says this, but there are 5 to 10,000 references about the biological effects of such systems. So we feel confident that, in the information that is transmitted among these societies today, that there is a reasonable data base. And if you look at what has happened in the last four or five years, it's become clear that this information has been used to develop a whole series of new radiofrequency radiation safety guidelines. And these are the guidelines that are referenced in the Environmental Impact Statement, and these are the kind of guidelines that Colonel Lee referred to when he said that the levels outside our boundaries would be below these standards.

Now I'd like to just--to just relate a couple of these to you. In September of 1982 was the first new safety guideline that was developed in the United States and that was promulgated by the American National Standards Institute. They reviewed all of the literature, the research work at that point in time, and came up with a new frequency dependent guideline. And many others have been developed since that time that follow the same kind of frequency dependence.

In May of '83, the American Conference of Industrial Hygienists promulgated their occupational safety guidelines.

In July of '83, the International Radiation Protection Association--now this is a group of some eight or ten foreign nations who got together on an international basis and came up with safety guidelines, and they've published these in one of our professional journals in July of '83.

In April of this year, the National Council In Radiation Protection and Measurements published their new document that covers their position on radiofrequency bioeffects and in that, promulgated their new recommended safety guidelines.

And then more recently, in July of this year, the Environmental Protection Agency put into the Federal Register three options which offered--and have offered to take comments on three options for different safety guidelines that could be the basis for federal statutes in this area.

Now all of these have one thing in common. There is a commonality among them that is based on the fact that the threshold for adverse effects in the experimental research of using animals today is a value which we have termed as the absorbtion rate. And it's about four watts per kilogram. Now that number may be confusing to you. It's just a common denominator for describing biological effects, and most of the standards today are based on that same belief--that the threshold for an adverse effect is about four watts per kilogram. And some of the documents, like the Environmental Protection Agency document that was published in the summer of '84--they used a value that was about one watt per kilogram--so some variation on that, but not very much.

One to four watts per kilogram is generally used by the people that are setting the standards today. So if you look at all of those that have been promulgated in the last three to four years, again you find that the levels we're talking about from the OTH-B system, at the base boundary, are below any of those that have been set. So we think that those standards also have been set on a very conservative basis.

Most of those have at least a factor of ten safety built into them to begin with. They're conservative for some other technical reasons and--but in the final analysis, we feel like the Air Force has maintained a valid program on bio-effect's research for a lot of years, and have been involved in setting safety guidelines for a lot of our occupational work places and for systems such as the OTH-B--and in all of those circumstances have taken a very conservative approach. So we feel like it's a good position--we feel like it's valid--and it certainly makes sense throughout the community. So that really concludes the remarks that I'm prepared to make this evening, and later on at the appropriate time I'd be glad to entertain questions any of you might have. Thank you.

Colonel Bristol: Thank you, Mr. Mitchell. We're going to take now a ten minute recess. We'll come back at ten minutes after eight or approximately at that time. Again, get a comment sheet if you'd like to either ask a question or make a statement. Don't worry about filling out the bottom of it. Just your name and mailing address. You'll notice that about four items down, check if you want to ask a question. Just circle that if you want to ask a question or offer oral comments, comments here tonight from the podium.

If you want to submit written statements, you don't need to do that tonight. You can just check that off and submit them either on this form or some paper attached to this form.

On the top right of the form--if you're a public official, say what office you occupy. If you are the designated spokesperson for a particular club or organization, state the name of that club or organization, and if you're just a private citizen, like I am, just say private citizen or citizen, CIT., or what have you. And give those in to us at the head table, or Lieutenant Brown will be at the door to collect them, and I'll use these as the basis for calling upon people to ask questions when we return.

Most importantly, indicate the area, the air quality, health hazards, geology, water, visual impacts, land use, the area of your particular interest.

Thank you very much.

(Short recess was had.)

Colonel Bristol: In just a second I'm going to call on individuals who have completed a comment sheet and have indicated on their comment sheet that they wanted to ask a question. After I finish and there are just about, oh, a half a dozen of those, the great majority were wanting to state oral comments rather than questions. But after I finish going through those comments that were submitted in writing, I'll ask if there are any individuals who have thought of a question and would like to ask one even though they haven't filled out a comment sheet.

This will be the microphone that we'll use for anyone who wishes to ask a question or make a statement, and I hope it's not too inconvenient. But depending upon where you're sitting, how many miles you have [to] go to traverse to get to this microphone. I'll just lay it on the table and if you would just hand it to the person who immediately follows you, that will probably minimize the chance of it falling on the floor and becoming disfunctioning.

I'd first like to recognize Mr. Stuart Larson, who would like to ask a question. He indicates he's the Traill County State's Attorney. I always like to take the lawyers first because we speak the common language.

Mr. Larson: I knew I never should have put that down. The question has come up, through the Traill County Commissioners and through the County Auditor, it was alluded to by Colonel Lee earlier, was--what possibilities there are for replacing lost revenues on this particular piece of ground that would be purchased? From the county standpoint, a section of land in this area would generate approximately $1,400 in annual tax revenues. What program--what possibilities are there to replace that tax revenue?

Colonel Lee: There were two specific examples that I gave. They're ones that we have clearly identified at this point in time.

That's the opportunity to absorb some of that impact in terms of road maintenance. That's a mitigation measure that the Air Force has done in many of their other site locations.

The second one is the School Impact Aid Program, which is a federal law. And funds are annually appropriated to provide aid in that area. If there has been more than about a ten percent loss of aid as a result of that federal land being withdrawn, then the initial criterion has been satisfied. And there is a process that the local school district goes through then to become eligible for a portion of that federal aid. There may be other areas as well during the operation where we could assist the process, assist in the terms of trying to provide, as part of our normal operation, some way to offset some of the burdens or demands on the structure there.

The one thing that we cannot do, however, is directly contribute or pay taxes to directly offset those taxes. We cannot end up paying taxes to the system. We are, in effect, taxing ourselves. So in that latter regard, what we had identified as a key opportunity, and it came really as a result of the scoping meetings, and questions were brought to us, is to approve leasing as an alternative to direct purchase. So leasing the land has been approved through the Office of the Secretary of the Air Force.

If there are individuals who want to lease their land, we would be willing to set and negotiate that type of an arrangement. We would have a lease certainly for a 'ong term basis--a minimum of 20 years plus the period of construction, .s an example, 25 years. And we would want to set an initial rate and then renegotiate or renew that rate every so many years, five years for an example. But the specifics will be worked out with the Air Force in coordination with the Corps Of Engineers, and the actual negotiations then would still take place on an individual basis. That would keep the same tax revenue flowing into the area.

Mr. Larson: I appreciate the angle of leasing. However, on what basis would the lease be calculated on? Would it be calculated on present fair market value divided by the years of use or would it be calculated on the present fair market value of rents occurring in the area, and there is a significant difference in the two. Has that been discussed at all?

Colonel Lee: No. We've not discussed the details of how that calculation would be done. We would welcome suggestions or proposals from you as part of your comment sheets so that those can be evaluated by the same office in the Secretary of the Air Force. We're also getting advice from the Office of Economic Analysis as a part of the Office of the Secretary of Defense. They are the agency that gathers this information and attempts to find arrangements that can offset some of these impacts. The local Omaha District of the Corps Of Engineers is the office that would finally have the responsibility for negotiating

either the purchase or the lease, but they would be doing that as agents for the Air Force. And so we would be involved in some of that process as well.

That gives me an opportunity to introduce--and if I could, ask Jackie Bratz to stand? Jackie is here from the local Riverdale field office (ND). She's over there in the white sweater. She is one of the individuals that will be involved in that process.

Mr. Larson: Thank you very much.

Colonel Bristol: Thank you, sir. Let's see. Next up is Mr. Hal Habermann, who's the school superintendent of the Dakota School District No. 3, I believe it is. Mr. Habermann?

Mr. Habermann: That's correct. First of all, I'd like to make a comment tonight about how the potential impact would be to our district. We're talking about possibly 41 sections or portions of sections of land that would be going to the study area. Of course, we're talking about 2,400 acres, at a minimum, that would be for the receive site. If those 2,400 acres were taken completely out of our district, this economy would be that it would affect us to the sum of about $2.89 per acre for taxes lost, if that land was sold and not leased. And if you're talking about into our district, that translates to nearly $7,000 will be permanently lost from the tax shelter each year.

Besides that and I think it's a very important point, we have about 10 children living in that total area. If all 10 of those children were replaced, or displaced I should say, and none of us brought into that area, it would mean an additional approximately 15 to 16 hundred dollars, based on current foundation and tuition apportionment payments per child.

Now with high school students, we're talking about approximately $2,100, and some of those are high school students. So it's more than the $1,800, which is the lower level. So if you're talking then all of those students, that would be an additional amount of a loss, each and every year, of funds which would come from the state.

Leasing, of course, would set aside the permanent tax loss, but the space from the families who are, as far as I know, are residents of those areas--there would be no kids in those areas where they're down on enrollment, and the teachers might not have use of that area where available also. There are again families living within that area. That's my comment.

First of all, my question is--are particularly to two. Some of these were answered. At the impact aid, and you alluded to 10 percent of the total here, of course, that would not amount to 10 percent loss that would have come into our district.

Several questions that I would like to address--is that we communicate with the buses, and one of our buses would be in this area, and should that bus then be anywhere close to the sites or even north of the site, which might--we do have families living north of this site--what I would do is contact the bus by radio contact with that bus for that portion of time. That would be my first question.

Colonel Lee: I'm sorry. I should have commented a little bit about the potential interference effects during the presentation itself. Around the receive site, there would be absolutely no interference of any kind. There is no potential--there is no way for the interference to arise.

The receive antenna picks up signals that are so faint they can't interfere with anything else. That's why we need that antenna approximately 8,000 feet long. Even if you are operating near the transmit site, you would have no loss of contact, no interference. During a year of operation of the Experimental Radar System, we had no examples of the kind of interference that you're talking about, either from other ham radio operators or TV, AM or FM radio.

To further confirm that, I asked the Mitre Corporation, who provides the systems engineering support for the program office, to go out to our first sector of the East Coast Radar System and do some further updated measurements.

They did that with an AM/FM radio bought from Radio Shack. They had excellent FM reception--AM works. They had a small cheap television set located right outside of the boundary fence where the energy levels would be higher than they would be in other locations further away. Again, no interference effects. So for any type of short-wave communication, for television, for an AM/FM radio, for any of those types of potential interference, our evidence suggests that we would have none.

If there are indications where we do experience some, and it might be during the initial check-out in testing of the system, we can first of all block out the particular frequency that's causing the problem, including the harmonic of that frequency. And if that's not sufficient, we can work with the individuals that are affected and do some hardware work, if you will, a filtering on their television set or whatever communication system they have. The Air Force, as a part of its mitigation, would take care of that type of interference as well.

That's the reason, however, that we don't want to have the transmit site close to an extremely large population area. Because the potential for some of those random events where you would need to do something special is much larger--is much more for a larger group of people. There's no concern. The distance from cities--that criteria has nothing to do with the biological or health effects that were discussed.

Does that provide you with an answer?

Mr. Habermann: Yeah, yeah. One other comment here or one other question. During the construction period, there would be a large influx of construction workers. And I guess, hearing that, I would be curious to see, since you had that experience before in Maine, what number of children might be coming into a particular school district along with staying here during the construction period. Would I have to buy say 50 extra textbooks and then within a two month period have those textbooks lying there because the children are gone? Would any of those children remain in the district, which of course would offset any displacement of families, which I'd hate to see. But would they remain in the district? Or for instance, Hunter is two miles below the Blanchard study area where it starts. Or are we talking about a lot of people coming into our school district displacing families and say, for instance, living in Hillsboro and Grand Forks during the construction period and the operation period?

Colonel Lee: Based on our experience with the East Coast Radar System, we do not believe there would be any impact as you've identified there. During the actual construction work, the setting up of the foundations, erecting of the antennas, laying the ground screen, that construction work--we would expect the prime contractor, such as a General Electric or a Raytheon or GTE would hire local contracting firms to do that type of work, so we would not expect that those families would bring--that those people or workers would bring families into the area anymore than they do right now as they move from one construction job to the other.

For the small group of the prime contractor, people associated with the integration and check-out of the hardware, again, it's a small number of people. They would probably be there temporarily rather than permanently.

The final impact is for the 50 people that would be here at the receive site or at the transmit site. About half of those would be civil servants, federal wage grade, and we would expect that people from the local area would be able to compete for those jobs. So again, no net input of additional people and students into the area from that standpoint.

The other half, the other approximately 25 of the 50, would be people hired by the prime contractor to do the operation and maintenance support of the hardware itself. At the receive site here, for example, it may be that people from the local area, if they've got some of the technical skills or a previous background in some of the computer system work or radio transmitter type of work, that they could qualify for these kinds of jobs. But there may also be the possibility that some of these would come in from the outside area then, and also live within the community. So a long answer, but from a construction phase, we would expect negligible impact.

During the operation phase, there may be the possibility that a large number of families, up to as many as 25 or more, would come in and permanently live in the area. And of course, then their children would be looking for that education.

Mr. Habermann: And just one more final comment. The 10 percent impact aid or 10 percent of loss to this district would be the minimum before impact aid would be forthcoming?

Colonel Lee: That's under this particular public law, Section 2. And I don't have the reference right handy, but if you'd like to come up afterwards, I'll dig that out of the briefcase and give you a reference.

Mr. Habermann: Thank you.

Colonel Lee: Thank you.

Colonel Bristol: Mr. Mike Phillips, who's with the Grand Forks Chamber of Commerce. Mr. Phillips?

Mr. Phillips: Good evening. We just wanted to come down to Hillsboro to make some comments from the Chamber of Commerce on an area that hasn't been covered too much tonight, and that's the economic impact that the OTH would provide.

We'd be looking at approximately 450 additional individuals on base, the Grand Forks Air Force Base, and we'd be looking at about an $8 million payroll each and every year based on the figures that have been provided by the Grand Forks Air Force Base over the prior years. And if we take that times a multiplier, we'd be looking at around a $20 million economic impact into the area just from the Operations Center.

We feel that's a very positive impact, one that's a very long-term impact. And based on some of the facts and figures just brought up regarding the receive sites, I think that this is a very positive economic aid to the North Dakota, Minnesota, South Dakota, depending on where the locations are. But to this region of the Red River Valley and one that the Grand Forks Chamber of Commerce feels it's very positive and is in favor of the OTH-B.

Colonel Bristol: Thank you, sir. A Mr. L. Aarsvold from the Greenfield Township. I hope I pronounced that correctly, sir.

Mr. Aarsvold: That's close.

Colonel Bristol: Diplomat.

Mr. Aarsvold: I'm here this evening as a representative of Greenfield Township, one of the townships in which you have identified as being a potential site for the Over-The-Horizon System. I have several areas of comment, of concern.

First of all, I'll address some of those. The loss of revenue to the township which will amount to, if all four of the sections identified would be in the township, about $1,850 in local taxes plus a payment from the state road fund which amounts to $50 per maintained mile of road in the site area. And of course, we are currently operating at a maximum levy, which means that we would not be able to raise the levy to our patrons any higher to maintain the services that they're accustomed to.

Secondly, we are concerned about the maintenance of course, and the construction of township roads and the implications of the siting of the radar bases for the radar system would have locally. And you've addressed some of that, and we appreciate that.

Thirdly, there are some consequences involved with snow catch if we have started running up 15 to 20 miles of eight foot high wooden fence in this area. We have some snow problems, and the obvious implication of that is in the spring run-off. When waters from the spring run-off must be routed around those snowbanks that are piled up behind the wooden fence, and are going to concentrate water into township ditches that right now are operating at maximum levels, for the most part, and frequently are over capacity during that spring run-off period--those are concerns that we have regarding the snowcatch and water run-off.

You've addressed somewhat health considerations and our local residents of course are, I think, somewhat placated by your comments regarding the complications to health from the microwave readings.

I'm glad I had the opportunity to follow the gentleman from the Chamber of Commerce from Grand Forks, because there are also some negative economic implications for agricultural-related businesses in the entire area.

Assuming a 2,400 acre site, and concerning the inputs of $150 per acre annually in fuel, fertilizer, seed and so on, and multiplying that times a seven-time dollar rollover--you suggested three--we're looking at a loss of about 2 and one half million dollars to local elevators, to the suppliers of agricultural chemicals and seeds and fertilizers. And as you're certainly well aware, agriculture is in a difficult situation at this point, and I do not think any area--any area's business in an agricultural center can tolerate the loss of 2 and a half million dollars in direct input spent by farmers.

We are a zoned township--and of course I understand that federal law would take precedence over any local zoning ordinances--but there are some other implications as well. For instance, if we do in fact have permanent families or permanent residents moving into the area, and because of a construction we're looking at the likelihood of building roads to their homes and maintaining those roads and removing snow from them, and of course there are unforeseen costs that I suspect that we

cannot predict at this point, both that would precede and that would be incurred during and after construction. Things like the extra snow removal, road maintenance and also the perhaps the building of roads to accommodate the construction crews.

As I said, these are concerns that we, as a local government, have, and that we feel our patrons of the district or of the township also have. Thank you.

Colonel Bristol: Thank you very much, sir. I want to apologize to you. As I was going through these forms, I neglected to notice that on yours, you hadn't checked that you wanted to ask a question but only that you wanted to make comments and that resulted in my sort of taking you out of turn, and I apologize for that. Thank you very much for your input though.

What I'll try to do is just pull the ones that had indicated they want to ask a question, and conclude with any that haven't filled out a form who would like to ask one, and then we'll go to the statements.

Mr. Gary Smith of Hillsboro had a question concerning weed control. I believe Mr. Smith is from the Traill County Weed Control Office.

Mr. Smith: As a member of the Traill County Weed Control Board and Weed Office, I and the Board are opposed to the Blanchard study site. The blue book that you handed out states, and your picture shows, that it would turn to natural vegetation. That takes time, and who controls the weeds before it gets back to natural vegetation? 13

Colonel Bristol: That's the question, sir?

Mr. Smith: Yes.

Colonel Lee: On the East Coast System, again, there are certain areas where we do have weed control. And we use the same agents that are used by the local people in that area, approved by the officials. If there were particular agents that you would recommend, that had been approved, that we should also use as we're trying to seed and grow this vegetation back in, then we would certainly go ahead and use and apply them. So we're anxious to have the vegetation grow back for a control of erosion, for providing additional habitat for wildlife. And we would certainly want to do what made most sense in that regard. In that regard, we would ask you for advice and suggestions to ensure that we did the proper thing. 13

Mr. Smith: I hope, and I'm sure what you're telling me is true but in our dealings with other state and federal agencies, we don't have a lot of success in getting the job done.

The radar sites in Benson County--it's next to impossible to get it cleaned up. They just don't want to do it. That's tied to the Air Force.

Colonel Lee: The key answer in that regard, and you've already helped in the process by making your comments and asking a question here tonight, is to have that recorded in the record, so this concern is identified in the Final Environmental Impact Statement. If you have some other more specific comments and suggestions, I would encourage you to put them down in writing and then send them to us. The best way then is to have the response included as part of the Air Force's mitigation plan, so that it can be recognized up front and put into our requirements, the requirements that we would put on this system contractor during the construction phase of the program. 13

Mr. Smith: And what happens when you're done with the land? If you bought the land, what becomes--who's going to take care of the weeds when you're done with it, if you bought the land? That would also have to be in the contract.

Colonel Lee: Are you referring to after the construction work is completed, or when the OTH system, 20, 30, 40 years from now, was no longer needed?

Mr. Smith: Yeah, when it's no longer needed.

Colonel Lee: The responsibility for the land is handled by a different part of the government at that point in time. I don't have an answer for you. When the land no longer would be required by the Air Force for the OTH Program, it would be made available for other kinds of federal use, which means that if there were other needs, then those needs would be considered before the land were offered back for sale to the public.

If there were no other needs, then the land would be offered back for sale finally. During that period, I don't know who would be responsible [for weed control] but again, we'll take that as a noted item--a noted item that we need to respond to. 13

Mr. Smith: Thank you.

Colonel Lee: Thank you.

Colonel Bristol: Mr. Leo Gray.

Mr. Gray: I'm Leo Gray and I'm a resident of Greenville Township. Arden just sort of told us all about Greenfield Township. That was the name of my township until about 1910, but I'm in Richland County, Hakinson, North Dakota, and I'm an adviser for North Dakota State Township Officers Association.

I'm past state president and past national director to the National Association of Towns and Townships of Offices in Washington. And if the Defense Department decides to build the Backscatter Radar System in this area, the North Dakota Township Officers Association has the following recommendations:

First, the roads that will be used for construction and maintenance during the life of the installation will be designated by mutual agreement with the local governing boards and parties responsible for the construction, maintenance and operations of the life of the facilities. An on-site inspection will be made before start of construction, and roads will be maintained in as good or better condition for the life of the installation.

Two, the land that will be needed for the life of the installation will be leased so the tax base will not be lost by the governing bodies. The payments will be on an annual base with an update of payments to be in line with cash rent payments of similar land in the local area. At the termination of the operation, the land will be returned to its original condition at no expense to the owners.

And, three, meetings will be held with all landowners present so there will be fair and equitable payment to all owners.

Now, the comments I have deal with leasing of the land. We feel that this would be a lot more equitable to the local owners and the payment would be in order of the payment in lieu of taxes. I'm well familiar with this program because I was one that instituted getting that passed in Washington 28 years ago. That deals with the Bureau of Sport, Fishes & Game.

And at that time, back about 1959 or so, they designated North Dakota as wetlands. They labeled the whole state wetlands. We're good for raising ducks, nothing else. As you know, we are the prime pothole state in the nation. We raise more ducks than any other state in the nation and I doubt whoever found a good place to raise ducks.

Well, we had a lot of meetings with them and through these meetings we got a bill passed in Washington that's for payment in lieu of taxes. The land that the Bureau of Sport, Fish & Game owns and also the Bureau of Land Management, that is your forest lands and so on in North Dakota that constitutes--oh, boy, the Bureau of Sport, Fish & Game has about a million acres they own and it also, depending on who you talk to, they have for lease of up to 7 million more acres. And besides all of the Bureau of Land Management's forest land, which constitutes a large portion of the western part of North Dakota, but the payment that we finally got passed was three-quarter of a percent of the full value in lieu of taxes.

We found one problem with this. Not with the payment we felt was not fair but the congressmen that were around here preaching, looking

for new jobs or trying to get replaced or replace somebody else or continue on, they forget to appropriate enough money in Washington to make the full payment.

I go back to 1979/1980. We were 50 percent short in payment in lieu of taxes and this came back from the Bureau of Sport, Fish & Game land. That's 25 percent to the township and 75 percent to the local school district. Okay. We ended up 50 percent short two years. We're short again this year. They've been short almost every year but they're not appropriating enough to cover us. We hope to God, if you lease the land, that our congressmen hear us and make sure that enough money is appropriated for these things.

Colonel Bristol: Thank you, Mr. Gray.

Mr. Gray: I think that covers it for right now. I could go on for a long time. You can talk to me anytime.

Colonel Bristol: Thank you, sir. Mr. Bernard Gill.

Mr. Gill: The tax revenue's been well covered. The end use or mismanaging of what happened after this gizmo is over with has been touched on, but I think that is a very real concern of ours, that there are the deep concrete embracements and all that junk and it is, it's a real concern.

What happens--people up here tend to have a long-term frame of reference, and they wonder about the decades ahead as well as tomorrow. And Grand Forks getting $3 million or whatever it is they're all hot about. The one thing that I have wondered about and hadn't happened to come up yet--if those three fans of--fans, that's not what you call them. I call them fans. What did you call them?

Colonel Lee: Sectors.

Mr. Gill: Sectors. All right. If those three sectors of coverage are meaningful there, it seems to me that the central one, except for that one point you made and that the far edge doesn't touch that red dot up there, which is the end of the Alaskan--the Canadian shield, it seems to me that that would overlap the eastern and western sectors very well if it were up and down hundreds of miles here and a couple of hundred miles east and west. Is it that last red dot that defines this area?

Colonel Lee: You're exactly correct. If we didn't need to have that overlap at that last red dot, and that red dot represents the southern most coastal radar that's a part of the North Warning System--we need that overlap, and that's what prevents us from moving the sites further on down south.

Mr. Gill: And you mentioned that, and said something about miles and we can get--this is too big a meeting to try to get into those details, but the miles didn't add up. You said something about the miles that the Over-The-Horizon System can provide and the miles that are provided by those red dot installations. And I thought--I couldn't understand that, but that doesn't mean that it's not right. That simply means that it's something that needs to be considered. And it makes me wonder if it really has to be right here in, for instance, New York or Massachusetts. This doesn't seem like a heavily populated area but it's high value land. And there are quite a few people here and it seems to me that there are alternative sites which might be used. But I'm afraid you know more than I do on that.

Colonel Lee: Unfortunately, from your viewpoint at least, there isn't another alternative. There have been a lot of people, including the Mitre Corporation and some other separate contractor efforts that we've had, that have looked at potential siting areas. And the geometries do work out as I showed on that one chart. If we're going to have that overlap, then we do define a pretty narrow area.

As you said, we're unable to go either left or right or we miss the overlap on either end. If we go further north or south--if we go further north, we bring up that coverage from the south. What we want to do is have it as far down as we can have it and still have that linkage with that last North Warning System. And I'm sorry if I didn't do a better job--the problem is mine in not presenting it clearer also.

Colonel Bristol: Mr. William Matter.

Mr. Matter: I guess my question is--can water land on the system, flow over?

Colonel Lee: The first answer is--yes, it can. We would like to have natural drainage, which is probably the same kind of an objective as many of you have here. We would have some potential corrosion problems with that ground screen on a very long-term basis so that for that reason, we would like to have it leveled to where we did not have standing water for a long period of time. But other than that, as far as affecting the ability of the receive site to do its job, there should be no impact.

Mr. Matter: Now, I'm talking about water that is spilling in, when the whole section is covered with water. That doesn't bother it?

Colonel Lee: That's correct. It should not. And let me look over here at my chief engineer.

Dr. Guttrich: Assuming it isn't too deep, I presume.

Colonel Lee: Dr. Guttrich, if you would please stand? Dr. Guttrich is an associate department head from the Mitre Corporation. Dr. Guttrich has been associated with the OTH Program that the Air Force has had for over the last 10 years, and was involved in some of the testing work on the Experimental Radar System. And his answer was, as long as it's not too deep, and in the case we're talking about here where the water is just settling, we're not talking about, I'm sure, more than several inches deep of water for an extended period of time.

I know--I've seen pictures that some of you have sent, and the extensive, almost flooding I would call it, that occurs in some of these areas.

Mr. Matter: I have a picture here in my hand. Where there's one picture of the spring of the year if you would like to look at that. And I guess why destroy the prime farm land that we're trying to protect with this system? Once the topsoil is mixed with the subsoils, the productivity is lost forever and the value of the land is also lost.

Colonel Lee: That's one reason why we are looking at the more level areas as being preferred to those where we would have to do a lot of cut and fill, because then we essentially don't need to do anything to that precious topsoil. And that provides me a good point to return back to Mr. Gill, because you left another question that I really didn't answer.

Other than that portion where we sink the antenna foundations, we have done nothing to the rest--to 90 percent of the acreage.

The ground screen that is laid on top of the ground can easily be removed. That whole section of land then can be continued to be used without any need for a change.

If, as part of the leasing arrangement, it was negotiated that the Air Force could dismantle the tower structure, that's something for the receive site that also would be relatively easy to do. The only thing that you would be left with, along that entire row near the fence line, would be those concrete foundations down a few feet into the ground. I don't know what the expense would be involved in trying to remove those, but if that became important to the individual who was leasing the land, we'll look at that as well.

Does that take care of the one comment? Does that answer yours?

Mr. Matter: Yes, thank you.

Colonel Lee: Thank you.

Colonel Bristol: Mr. Joseph Hanson, County Commissioner from Finley, North Dakota.

Mr. Hanson: I guess I don't have a particular question in mind but I would like to make a comment that involves a request of the county, and we have a number of people. We have several [townships] counties in our county now that are affected. We have landowners residing within the county where their land is affected by the system and the landowners, they look for answers from someone.

I had a number of calls today. I was unable to answer any of the questions because we are almost completely at a loss too, as far as any specific information. They are very concerned about the land, which is natural. And I was wondering if some sort of a publication can come out periodically to these people advising them generally on what has happened.

We have townships in the northern part of the county that they seem to be far removed from the proposed site, and they're wondering what part would we have in this.

Colonel Bristol: I think Colonel Lee would like to address a comment to that.

Colonel Lee: The first and best way is to ensure that those people that might feel they're not getting the information are on the list to receive the Draft Environmental Impact Statement. They ought to have a copy of that if they don't already. We would ask that you can take some of these comment sheets back, ask those people to send in a request to that same office, Lt. Brown. We're just running through another production printing run because we expect that there will be a lot of requests for the document.

For those people who have received the draft, they will also then, several months from now, it will be early spring, will receive a copy of the final. There really wouldn't be any periodic updates, I think, that would be useful for you or that we could put out during that time.

If there are questions that any of them have, they can call directly into that office or directly into my office and we will take care of it. We will also commit to continue to work with the local media so that as events take place, we can ensure it's covered in the local newspapers.

So once again there, if there are some local newspaper publications in some of the smaller towns, have them get in touch directly with our Office of Public Affairs at Hanscom Air Force Base. And Mary Ferris--if you would stand in the back there--Mary Ferris is from that public affairs office. We'll ensure that those contacts with the media are maintained as well.

Then, finally, when the Record of Decision is made, that notice will go out to all individuals, to the media, to congressional individuals, to staff members so we will try to keep that information flowing as best we can.

Mr. Hanson: Would the county courthouse receive any information like this?

Colonel Lee: We could see that the county courthouse received copies of those documents just as well. So if we're--if you're unsure whether they have, or are on our list, well use one of those comment sheets to make that note.

Mr. Hanson: Thank you very much.

Colonel Bristol: I'm not sure if that's my mike or the other one? Probably the other one. It rolled a little bit too close to something.

Agnes Milles or M-I-L-L-E-S.

Ms. Milles: My husband and I are both senior citizens, and we're landowners in Greenfield Township in the middle of the site being proposed for the radar. And we were wondering--the land is our only income. We're unable to work and we must depend on it and it's really a hardship. And my second comment is that--if I listen to these gentlemen, some are worried about the control of weeds and the other about who is going to take care of them after the site. After they get all of those holes dug and with all of that soil on top of that ground, which is been there for 45 years, I don't think they're going to to have to worry about that for a couple of years. I think it's going to be one big mess, and I don't think there's going to be much growing there.

Now, my question is--when you buy the land, when they purchase the land, will we get that check in one big lump sum, or is that going to be spread out in the maybe three or four year period?

Colonel Lee: When the government completes that negotiation and the title transfer, you're paid in one lump sum at the beginning. And let me turn--I'm getting the affirmation, nodding yes. There are no provisions where we can allow you, for tax benefit purposes, to try to stretch the payments out. We're a good customer in that sense--that when the deed is transferred, you receive the total check.

Ms. Milles: Yeah. Well, we would be a little concerned either way, but I was just wondering.

Colonel Lee: That's one reason that if individuals--and I stress we're interested in trying to negotiate--are interested in possibly doing something like this, that they ought to get some advice to see

whether leasing or sale would be more advantageous. And I'm not trying to imply, you know, that someone who isn't interested is therefore out of the question. Not at all.

Ms. Milles: But I was just wondering because, naturally there would be a large sum coming off of the top, and then to get a new residence, there would not be much left for people, senior citizens like that, after the purchase was made. Not at the prices that I understand from the Impact Statement, that they want to pay for the land.

Colonel Lee: I don't believe, in the Impact Statement, we're trying to stress or state any particular land value. That's what would be handled through this appraisal process. If you were interested in trying to buy some replacement land to continue your farm, then there again would be provisions in the tax law that would allow you to defer any gains, any capital gains taxes if you will, from that payment for a certain period of time.

In addition if, as a result of this, you would end up moving, there is also some relocation assistance, some additional payments that are made. And those you can get information on by contacting that office of the Corps Of Engineers.

Ms. Milles: Yeah. I would really think that one statement which you have put out of Omaha was where you were allowing, I think it was $500, a limit for 50 miles for moving. And I don't think that would move a whole lot.

Colonel Lee: That was just one particular element of many elements. There are other categories of transfer systems that go as high as $15,000.

Ms. Milles: Well, it would have to be, because $500--but knowing the price of moving, no, I don't think it would go very far. It would have to be more.

Colonel Lee: There are several categories of relocation assistance and if someone is interested, this is a booklet that can be obtained through the Corps Of Engineers that describes some several different categories of aid--to include everything from you being able to take salvage value and still take what you may have in equipment or buildings off the land--helping you find a new residence--helping you in locating and building a new residence. There are several categories of aid that have been worked out over the years, and these are described in here--or again, contact Mrs. Bratz.

Ms. Milles: Thank you.

Colonel Lee: Thank you.

Colonel Bristol: That microphone has a voice of its own. Let's see if we had any other questions. I believe the balance of these addressed comments rather than questions. Did anyone else think of a particular question that they'd like to ask at this particular time before our transition into the comment period? The gentleman with his hand raised--sir, if you'd like to come down to the mike. Just state your name and address for the record, and I'm not a very good speller. If you think I might have trouble with it, if you could spell it for me, I'd appreciate it.

Mr. Milles: Okay. I'm Dan Milles. I'm a landowner and my question is--what is the cost difference of putting this satellite over something like this here over the radar, because you're going to have to have three towers versus one satellite. What is the cost difference?

Colonel Lee: The kind of job that we can do with this system cannot be done with one satellite. That's the first point. And the analogy would be somewhat like turning the lights off in this auditorium and with a very narrow beam of light from a flashlight trying to scan the entire area to see if I could locate where Mr. Gill was--if he had moved from the last time he asked a question, if that were the case.

It would take an extremely long period of time. By the time you had finished that entire scanning, you'd be starting back over--I don't know how many minutes, hours or days later. To do that kind of a job you would need a large number of satellites.

We don't have the technology right now to be able to do this wide area surveillance system with satellites. When we talked about this system, where the total estimate for the Central Radar System from $600 million is about $150 million per sector, we're able to cover about a million and a half nautical miles squared--or about two million square miles of surveillance with that one system for only slightly more than the cost of one AWACS (Airborne Warning and Control System) airborne radar program aircraft. So this is an extremely cost effective way to do the job--far cheaper than we could do with any other alternative. And there really is no other alternative that we see available in the near future.

Mr. Milles: Have you ever tried using the satellite? You can't say it hasn't worked, if you haven't tried it.

Colonel Lee: The only thing that I can restate again, and this, I assure you, represents the Air Force's position. And this document that we put out as a Draft Environmental Impact Statement was reviewed and approved at Headquarters, USAF--it went through a complete policy review there as well.

We have no cu..ent capability that can provide that wide area, long range, continuous 24-hour a day surveillance capability. The OTH-B system is the only one that we've got right now to do that job.

Mr. Milles: Thank you.

Colonel Bristol: Gentleman right here in the sweater and I recognize, that as soon as he's finished, the gentleman in the red sweater.

Mr. Seth: I'm a Greenfield County Supervisor, and what I'd like to ask is the roads. You said that you would maintain those--build us roads. Would you sign something guaranteeing that you will do this for us, because when we lose this tax revenue in our township, we have run over our limit. We have asked our people to come up with nine more mills to help us maintain our township. Now, would you guarantee it? Would they guarantee anything or is there a law? Would they guarantee it? I don't think you stated that clear enough.

Colonel Lee: What has happened in the past is that as a part of the Record of Decision packages, the accompanying paperwork, the Air Force in those memorandum identified the specific mitigation measures they were going to implement. If that's an extremely important issue to the people in an area that was being considered, and if they had made that known, then the key is to have that included in that accompanying memorandum.

That represents a commitment by the Secretary of the Air Force that these mitigation measures will be implemented. And that, short of having something down on public laws, is probably as good a guarantee as there is. That would then become a par' of the permanent operation of the system as long as it was there.

Mr. Seth: Can you also do that with drainage too, because we have drainage. All the water comes from the west moving to the east, and if you're out here in the spring of the year and you pile up the snow and the gentleman over there suggested an inch or two. When you go walking around, you know there's a lot more than an inch or two when people have got water up to the waist. You got to help them out. I mean we do have floods up here.

Colonel Lee: We understand that. We've seen pictures. We've had people call and remind us of that, and those are some of the factors that make a few of these study locations not as attractive as some of the others. This is an area that doesn't have an easy answer.

We say in the Draft EIS that we would do mitigation to ensure that we did not further aggravate that problem. But that's too quick and easy an answer. It needs thorough study. It needs work and support within that local area as well. So as a part of that final siting, if an area were selected, then we would need to work and establish the plan that would ensure that we did not further aggravate an already difficult situation.

Colonel Bristol: Sir, could I ask you to state your name for the record, please? I know we got your position but not the name.

Mr. Seth: Walter Seth, Greenfield Township.

Colonel Bristol: Thank you, sir. Yes, sir?

Mr. Peterson: Hello. I'm Jeff Peterson. I'm an area agronomist for the Blanchard and the Galesburg site. My question has to do with civil aircraft in the area in regards to aerial crop dusting. Can you address that issue?

Colonel Lee: There would be no restrictions at all on the use of aerial crop spraying at any of the receive sites. That would apply to any of the study areas that we're looking at for the receive site. Once that area was set up, and the grading completed, and right in the front of the antenna the ground screen laid--the things that we talked about before--aircraft could fly directly up to the border fence--would cause us no concern.

You might interfere, for those brief moments that you're there, with our signal reception but it's nothing that would be on more than a very short-term basis. It's something that we would be aware of, so that would cause no real negative effect on our operations. We would again place no restrictions on that type of activity.

Colonel Bristol: I see here also that Mr. Dan Willes had wanted to ask a question. Do you have one, sir, in addition to the one your wife posed? Mr. Willes? I probably misspoke concerning relationships here. I remember there was a previous question with the same last name, please.

Mr. Willes: I'm from the Blanchard area. I got one question here. It was brought up that you would clear this land. And how would you put these tubes in this ground without tearing this all up. For this getting rid of this water, and how high are you going to build this thing to keep the water off this area?

Colonel Lee: I'm not sure that I fully understand the question. Why don't you just try turning the mike about there. Thank you.

In an ideal situation, and there are some of them here within a few of the study areas where the land is adequately level, where we wouldn't need to do anything else at all except immediately in front of the receive antennas itself. So we're not going to, by our action alone, suddenly cause a need for a great number of additional drainage pipes or culverts or things like that.

Now, the area was brought up about the snow fences. And we recognize that this type of wood fence really would be a snow fence. The spring flooding that would occur as a result of that is something that we'll have to do some further review.

Mr. Peterson: Well, if you're sitting in this area, the Blanchard study area, you're getting the water from the west whether you like it or not. You're going to have to do something to keep it off us. That's a lot of water. What are they going to do?

Colonel Lee: We don't need to keep it off us.

Mr. Peterson: Well, it'll be on you.

Colonel Lee: That's what I said. There is no operational problem unless we're talking of levels several feet that remain for a long period of time. And again, what I said before is--that area of flooding is one of the areas or one of the considerations that makes this study area less attractive than some of the others that we have looked at.

Mr. Peterson: Thank you.

Colonel Bristol: Sir?

Mr. Keller: I got a couple of questions, I guess, and they were talking about snow all the time. What happens--

Colonel Bristol: Your name, sir?

Mr. Keller: Keith Keller, Hillsboro. What happens when that snow piles up 10, 12 feet from the fences? Is that system still operational?

Colonel Lee: Yes. The system is still operational. It has no impact on us. Our only concern in putting that fence up there would be to keep animals from getting in where they could perhaps get tangled up in the ground screen with their feet, or brush up and disturb the alignment of some of the antenna elements. But if the snow were as deep as you're suggesting, I don't think we have to worry about animals trying to get into that area either, so it would not impact us from an operational standpoint at all.

Mr. Keller: But you stated that the ground had to be fairly level for this system to operate, correct?--in forming in-between the screens?

Colonel Lee: That's correct but--

Mr. Keller: I mean snow has no effect or--snirt, as we ofte' up here get, has no effect on that if it piles up?

Colonel Lee: As far as from a receive site, Dr. Guttrich, would you estimate any significant effect?

Dr. Guttrich: Dry snow should not cause us difficulty.

Colonel Lee: Go ahead, if you would just talk a bit about that area.

Dr. Guttrich: We operate with--we operate with snow on the Maine site and it has not caused us any difficulties. I didn't realize we were talking 10 or 12 feet of snow. We'll have to examine that, but I think we can probably live with it under most conditions.

Mr. Keller: Well, the thing is here in North Dakota it isn't always dry snow. There's always the element of the dirt mixed in there. And as everyone knows, why, it's definitely not dry snow like they get in Maine.

Dr. Guttrich: Okay. We'll take your observation under advisement and we'll examine that. I thank you very much.

Mr. Keller: One other question I have is--as far as reaching to the south, if I saw the map correctly, why it's, your coverage only really extended a few miles beyond our southern border. Is that correct?

Colonel Lee: Well, if a few miles is 800 to 1,000 miles, depending on exactly where that coastline is. Obviously the possible area of transmission can start about 500 nautical miles from the transmit-receive site location. But for the Central System, what we're interested in doing is taking that 500 mile wide barrier and placing it all the way out to the limit where we are stretching across that area that picks up most of the coastline. And depending on whether you're looking right off the Caribbean or whether you're looking off the coast of California, those distances vary between 800 to 1,000 miles from the coast. So we've got that band of protection that would include any type of vehicle that would be able to penetrate and approach the coastline, either aircraft or, as I mentioned before during the presentation, the sea launched cruise missiles.

Mr. Keller: Yeah. I guess I saw that, but it looked to me like the Central System was mainly covering the United States. It wasn't really reaching out like the east and west coasts were.

Colonel Lee: Well, that's a problem with the artist's concept, the way it was drawn, because he took the same type of fans going from 500 miles out to 1,800 miles. We actually wouldn't be transmitting in that type of proportion. We would have the barrier out at the greater distances. And really that's the way that we'll operate most of the time with the East and West Coast Systems as well.

We'll put that barrier out to the larger distances, but we always have the ability there, though, to bring it back in.

Mr. Keller: Okay. Thank you.

Colonel Bristol: One last chance for any questions and we'll move into the oral statements for the record. Starting with those that have filled out these comment sheets. Yes, sir?

Mr. Stigen: I'm Richard Stigen. There's been a lot of speculation that this land could be used as a waste dump for either nuclear waste or chemical waste once the Air Force is finished with it. Is there any possibility or any assurance that they won't be used for that?

Colonel Lee: There is a statement in the Draft Environmental Impact Statement that says--if the system is no longer used, the land could be made available for other federal use. But again, all that meant was that other federal needs would be considered before it was offered for sale.

The key point is that any time a federal agency wanted to do something that could have environmental impact, the agency has to go through the same process that we have described and that we've been going through, from filing a notice of intent, scoping process, Draft Environmental Statement, public hearings, the full range of participation from the public, from the congressional people, and finally, even congressional approval. So the fact that the land were bought by the Air Force does not mean that it can be turned over to the Department of Energy, or some other federal agency, and used for another purpose. So you have the same adequate protection under that situation as you do right now for any of the lands.

The full legal process has to be completed before the land can be used for any purpose that would have a potential environmental impact.

Mr. Stigen: But ultimately the government would have the final word, right?

Colonel Lee: That is true now, without regard to who owns the land. So the issue of whether or not a section of land had been bought 40 years ago for an OTH System, that's kind of difficult to speculate. But it would be no more easier or difficult for them to go through the process on that land they already own, than considering other areas of land.

The key point is the process with the involvement of the public and the final approval by Congress. And you certainly have the opportunity to influence that process through your elected representatives, so that possibility really is not one that is practical or that we would expect at all.

Mr. Moran: May I ask a question?

Colonel Bristol: Yes, sir.

Mr. Moran: I'm Phil Moran from Greenfield Township and in paragraph 14 on the back of this paper, that was handed out tonight, it talks about using arc welders. If I was in a hurry to go out in the field and don't call you and fix a machine, what's going to happen?

Colonel Lee: I'm not sure if all of you heard the question. We--in this set of most frequently asked questions and answers, we talk about the potential interference effects that you might have on us if you were operating arc welders outside of the receive antenna.

The response in the paper said that we would locate the antennas so that we were not immediately adjacent to any large scale, you know, industrial type of arc welding situation. But there would be no way that we would want to prevent or could prevent you on your own land from using an arc welder on a temporary basis to do some farm repair.

The comment was suggested that we may ask you to coordinate with us, that is, notify the site, if you're going to be doing any type of extensive operation. But the first time we would be aware of it is--we would pick up that interference very quickly. And we might, in turn, then try to establish where the interference was coming from.

I assume that whatever the repair was, though, that it's not something that would take you several days or even perhaps several hours without either us being able to find out and to contact you, or you contacting us. So there should be no difficulty in restricting the kinds of use that you would make of your land outside of the receive site areas.

Colonel Bristol: Yes, sir, please?

Mr. Peterson: I'm Dennis Peterson from Grafton and I farm in the Blanchard area. I was wondering--if you live next to this antenna--in the middle of winter we have these 60-mile an hour winds and stuff. Would that antenna scream like a lot of the wires do, guide wires and stuff, so it drives us nuts if you're living next to it?

Colonel Lee: We don't have any evidence of that from our East Coast System and in the case of the transmitter-receiver antennas, they've been up for almost two years now with our permanent design.

In the case of the Experimental Radar Systems, they were of a slightly different design than the receive antennas. No, we did not have any singing. In fact, the structure has three elements almost like a support. That for the receive element, are fairly sturdy. And they're bolted down to a concrete footing. There's no singing that would take place there.

Mr. Peterson: On your ones out on the east coast, how close do the people live to your receive site--transmit site?

Colonel Lee: If you drive up from Bingham, Maine, from the center of town itself, I think the distance is about six miles. As you drive on up and go off the main road and take the small creek road--as close as a couple of miles from the first antenna sector, you can find some homes where there still are people that are living there.

Mr. Peterson: Still are.

Colonel Lee: That was a very unfortunate choice of words there. There has been--there have been no evidence of anyb[illegible] wanting to move out or needing to move out. There's been no interfere[illegible] that they have found with their radios or with their TV's. We've had some--the point I was trying to make--we've had some rather rural dwellings that are outside even the small town of Bingham that are still being used. Now in the case of the receive site, the antenna sectors there in Maine are in the middle of the blueberry-bearing country. There were not very many homes in that immediate area anyway, except for the period when the blueberries were harvested. Then some of the shacks and the small lean-to's that were there would be inhabited by the workers that would come in to clear the blueberries. But we know, on the basis of the East Coast System, nothing that would either suggest a problem or opportunity for movement of people, or people living or not living near either the transmit or receive site.

We will work the siting within a study area so that it best meets your needs, the availability of the land, the drainage problems, the presence of streams, those things that I talked about during my presentation.

Similarly at the transmit site. And again--and I hope it was emphasized and that you can appreciate a little bit more why we feel so confident--there is no problem for anyone living immediately outside or beyond the exclusion fence at any of the transmit study areas that we're considering as well.

Colonel Bristol: Yes, sir?

Mr. Rascheam: I'm wondering what kind of evidence you're talking about on this scope sheet here. It says the system will give you a three to four hour advance notice or warning. With that excess speed could they come over here from another continent within two and a half hours?

Colonel Lee: When you're looking at aircraft that have a supersonic capability--and the objective is to have long range and still be able to carry a significant payload--they can't do all of those things and fly the entire distance at supersonic speeds. Not in the near future--nothing that we can see right now today. So even as we do in our own systems, we would expect them to fly at subsonic speeds, 500, 600 miles an hour at most. Perhaps even in terms of some of the Bear aircraft, far less than that. So then, those equations turn out to give us three, four or five hours worth of warning time.

That's the same point though--that once those supersonic capable bombers approach the coastline, then they would, to ensure their penetration ability, I'm sure go to the increased speeds. And that then

even further cuts this limited warning time that we have right now. So instead of the 30 minutes, which is all we have right now, you're probably talking something more like 15 minutes.

Mr. Rascheam: Okay. The second one is--recently, within the past week or so, they've come up with this here germ warfare, biological warfare and so on and so forth. And terrorists can affect the people here with a disease. What can you use in the place so that the old people, so they are not affected by this germ. What about the effects of this type, this whole system outstanding out here in the middle of nowhere? How do you protect people from something like this?

Colonel Lee: I'm not familiar at all with this particular kind of a threat--I guess that's the way to put it. But the system could be defeated in a number of ways. Terrorists could certainly cut down certain elements of the system that make it not effective.

That's one of the reasons we have a small security team that's there. They're there primarily to ensure the integrity of the individual sectors. They will have the devices that monitor the sectors and they will be able to go out and actually do a patrol around the sectors to ensure that what they've seen is--perhaps some moose had broken in rather than terrorists who are trying to do some damage. But beyond that, anything on a significant basis, would probably be accompanied by all other kinds of warning as well. And so from that standpoint you know, the kind of warning that this system is intended to provide, warning in advance of an attack on the United States, would still be there.

Admittedly, the first priority--and its principle purpose--is long-range warning of aircraft systems. But the kind of terrorist activity that you're talking about certainly would provide warning for the nation as a whole also.

Mr. Rascheam: Third, do we have a Rail Gun that's not perfected, that's supposed to be able to launch a projectile from New York to Los Angeles in something like seven seconds. I don't think you can get more perfected than that in the present system that's operated now?

Colonel Lee: It's possible that in the future there will be many kinds of different weapon systems. The point is--right now--that the Soviets have a very capable set of long-range assets for strategic aircraft. Without some type of a system to provide warning against that, we don't have a deterrent capability. We're providing a temptation, if you will.

They're able to launch those aircraft and literally come within 30 minutes of the coastline on a large-scale basis without us having some kind of warning. There's no need for them to stress development of new exotic weapon systems when they can do the job already with their current systems, given the kind of capability or warning that we currently have. So as long as those assets are there, as long as the

long-range strategic aircraft is present, as long as the threat from sea launched and air launched cruise missiles is present, then the OTH System, in particular the Central Radar System, has a job to do. And it does it very well, sir.

Colonel Bristol: Thank you, sir. Sir, could you please just come to the microphone for a second and state your name for the record so that we'll have it. As I indicated before, everything is taken down verbatim to be a part of the record.

Mr. Rascheam: Eugene Rascheam from Walnut Grove.

Colonel Bristol: Thank you, sir. Gloria Porter?

Ms. Porter: Do you want the comments now?

Colonel Bristol: Yes, Ma'am. We just went into the comments.

Ms. Porter: Oh, okay. I have a few comments. I guess it's easy to be in favor of this if your home and living isn't going to be involved. It sounds like a pretty good system, but I'd like to address the socioeconomic effects on page S9 on the DEIS, the conclusion that there would be no significant adverse socioeconomic impact. That's wrong. This will affect each farm business that is impacted by the location of the receiver. A farm is an economic production unit for our national wealth. Our farms in America are our national treasure.

We manage three-fourths of our operation. A family farmer could lose most of their operation and be unable to locate land to replace the rental loss. Our inventory of equipment will be less needed, but we'll still have to pay for that machinery. We'll still have to cover our family living expenses, our farming operating costs and our feed costs, on less land and at projected lower prices with the farm economy.

As a dairy farmer, I'm concerned about the impact of stray voltage. And I know you didn't address this tonight, but just from the receiver, there will be some electrical charges in there. You know that. It says it in the book, and that will affect milk production, or it could on our dairy herd. And it could hurt health and reproduction.

According to a report to the Minnesota Department of Agriculture, a study of electromagnetic effects on the health and production of dairy cows, dated June 21, 1985, by Duane E. Dahlberg, Ph.D., Chairman of the Minnesota Pollution Control Agency, there is no way to predict stray voltage and the way it travels in the ground. But it does and it can cause an economic disaster for a dairy farm, and it also can influence health of the family. We have had no problems with this presently on our farm.

After studying the DEIS, I'm convinced by your process there is more concern about wildlife, birds and habitat than the residents, and their land, and family farmers in the Blanchard study area.

You have been insensitive to the extreme emotional, social, physical health and financial stress placed on our family, in addition to the already weak farm and rural economy. We farmers here in the Valley are working hard to survive. We're trying and it's difficult.

Just a minute. I brought a sample here so you can see what our good land looks like. Just take a look at this fertile black rich topsoil. It took thousands of years to make it the way it is. Our Red River Valley soil is some of the best soil in the entire nation, and once you start digging around in it, it's never going to be the same. Never. You can take that home, and if you put just nothing in it, it'll grow weeds just the way it is. It just came from my garden, frozen, this morning.

Private family farm land is not necessary to site a radar receiver. And you've proved that with your locations out east and also the locations out west, which I haven't ever been able to find where Rimrock, California, or Buffalo Flats. They must be like Timbuktu. They're very elusive on the map.

Anyway, prime farm land again is not necessary to site a radar receiver. The Air Force must address the alternatives as described in the 1959 Environmental Policy Act, Section 150214, A, B, E.

"Rigidly explore and objectively evaluate all reasonable alternatives, devote substantial treatment to each alternative, identify the agency's preferred alternative." In the DEIS book I don't believe a half a page on S-8 or one page on 2-28 rigorously considers the alternative site locations on federal land that you used, or other government land that has been used for these projects, or marginal nonproductive land that is not populated, as it was said earlier, family farm land.

I oppose this location on prime farm land. The Air Force must find an acceptable alternative system. As you have said, "Are you willing?" I'm not willing. Thank you.

Colonel Bristol: Thank you, Mr. Porter. Mr. David Holter?

Mr. Holter: I'm David Holter. I'm chairman of the Trail County Water Resource. I'd like to make a comment to a few of your engineering firms, the fellow over there that represented them. There is some comment about a 10-foot drift of snow, and I think he said he was going to consider that, and he hadn't thought about 10 feet of snow. But now if your fence is 10 feet high, and you've got that 10-foot drift of snow on the south side because of our first big storm that came from the north, he better wait a couple days. Because when we get the storm from the south, the north side is going to be full too so it won't be just the one side. It'll be 10 feet all over, and that happens. That happens.

Well, each of us has private concerns regarding the siting of the Backscatter System. Our concern as a water resource board is addressed to water management. In your documents you've addressed the wetlands problem, and in this Blanchard site there is no problem as far as wetland is concerned. It's farm land. And in this Blanchard site, we've got an Elm River Watershed area that the Water Resource Board is very concerned about.

In that water management area, we've three dams and two flood control project retention areas. And one of them is the one that we're very concerned about because of flooding.

These flood retention projects and these legal drains that we have in there are controlled by the Water Board--to sizing of pipes, and controlling of these ditches, and keeping these ditches clean.

If this Backscatter Radar Site is installed here, this could change these drains and these ditches and these culvert sizes, and we are very concerned with that.

Now, in the State of North Dakota as of now, the system we have that works now is working very good. And that is through the state legislature and the laws that they've passed to control the water projects and control ditches in our state. We've got some water laws that are working and these water laws are controlled and administered by the State Water Commission, which is chaired by our Governor Sinner, and they're passed down to our water boards. And we try to administer those as best we can in the way that we feel is right for the community and the people that are concerned here.

If there's anything in this area that is not just county concern, if it is concern outside of the county, we bring in the State Water Commission. And we request from them information on this and their ruling on whether this type of project should take effect.

If this system goes into the next phase, I hope that the Air Force will use and go through the process that every one of the taxpayers and landowners and farmers in Traill County have had to go through to get their water and their drainage problems solved. They're not all solved, but we're working on it, and we're trying to do the best we can. And we think we need a law in Congress to state the water laws that we have now.

Our County Water Board tries to control any changes that take place as far as sizing of pipes, as far as digging ditches, as far as increasing the size of the drainage ditch. As far as the township, the townships are working very good with us now. They're coming in with us to the meetings and requesting that they be allowed to increase the size of the pipe, to add a pipe, a culvert, to drain out a wet area or to control the drainage in one of their townships difficult ditches.

They come to our meeting, and we ask that they have the farmers come along with them that are affected by this. And if the township approves these farmers doing some ditch work and using township right-of-ways to run this water, and there's agreement among the people that are affected, then the Water Board will approve this. So in this next stage of this project I hope and pray that the Air Force will use all this information and contact the State Water Commission and the Traill County Water Board and make sure that if there's anything that's going to be changed in that area, that it's done through that process.

Now, we have these study areas out there that we are very concerned with. And the one that is real important is the one in that area out there on the west side, and O. L. Aarsvold was up here and referred to the Greenfield Township. There's about a 15-foot drop in the elevation from west to east up to your designated site area. And from there it levels off to more of about a five-foot drop, and we have a lot of problems now with the water coming off there and we're trying to control it as best we can.

We have a lot of flooding problems when we have a big rain. We had a big heavy rain last summer and we had a problem there. And if we have a real fast thaw-out this spring, we have a problem. And the thing that concerns our Water Board is--if this system goes in here, is some of this water going to be rerouted around the system or are we going to have a series of pipes that go through it to let the water continually to flow in the direction it's flowing now.

Now, in that area and a lot of areas in the county, it's very difficult to run water north or south, to reroute the water. To try to turn it to the north to go around something like this is very difficult. It takes a lot of patience and a lot of work, extra work. So the natural flow is to the east, so we are very concerned with this. And we think that those things are some of the important things that would cause us not to be the site to be picked for this. And we feel that you have some better sites involved in your study. Thank you.

Colonel Bristol: Thank you, sir. Mr. Jeff McInnes.

Mr. McInnes: My name is Jeff McInnes. I'm the--I wrote all of this down. I'm the Chairman of the Board of Supervisors for East Traill Rural Conservation District--and you've a little bit of the upper hand. I've not had 10 years to make up a slide presentation on the study area, but if I would have known this was coming up, I would have taken more pictures. Anyway, we as a board wrote a letter as far as our feelings. I'd like to read that to you now.

"The land in the Blanchard study area for the Backscatter Radar System is located in the middle of the Elm River Watershed.

Over the last 30 years, the Soil Conservation District has provided over $1,758,000 in land treatment measures, floodwater restarting structures, flood waves, channel improvement and tree plantings.

This amount does not include money extended by the county, townships, landowners and farmers in control of flooding and soil erosion. All of this effort and money could be wasted if parts of the Elm River Watershed System is disturbed, flattened, diked or changed.

If there are changes made in this Elm River Watershed, it could negatively affect the land at the radar site, the land around the radar site, the land upstream and the land downstream.

Therefore we, as Supervisors of the East Traill Soil Conservation District, oppose the location and construction of a receiving antenna for the Backscatter System for the Blanchard, North Dakota, study area.

We are also opposed to the removal of any trees or shelterbelts due to some high wind erosion factors in this part of the county."

Now, with this I have also prepared the pictures I could find at the Soil Conservation Office in our Blanchard area of water going over roads and dikes and things like that, and I had them printed on a sheet and I want to give this to you afterwards.

And then I have one question also. If this does go into effect, what is the time schedule as far as when this would happen, when the land would be bought, when would it be taken over? In other words, I also farm in the area and I'm curious as to like the '87 crop year or '88 crop year. What is the time schedule?

Colonel Lee: The Air Force plan right now is to request initial funding that would include funding for the purchase of land in the FY88 President's budget. That budget is still being put together. That's the request that the Air Force has--then we send that budget up to the Office of the Secretary of Defense. From there, of course, it has to go over and become the President's budget and be sent over to Congress in January. So it is possible that there would be money for the acquisition of the land as early as fiscal year '88.

The actual construction, and the timing of that, depends on how much money Congress authorizes for the OTH Program. Between the four sectors on the Central Radar System and the two sectors on the Alaskan Radar System, we have six sectors that need to be funded. And if we were to continue funding them at one sector per year, then you can go six years beyond the '88 budget and get some idea of how long, in the worst case, it might take.

But because of the importance of this system, though, and particularly with this increased threat that we're seeing, we are also looking at the possibility of trying to accelerate that. And if that is the case, in going over with the defense budget request, than we would be asking for the congressional support to do that. So that's about the best that I can give you as far as any estimate--nothing on an immediate basis during this next year for sure. '88 at the earliest time for the actual acquisition of the land. '89 would be the earliest for the start of the construction activity at the transmitter-receive sites.

Mr. McInnes: Thank you. Should I give these pictures to you or to the engineer talking about the water going over the road?

Colonel Lee: I'd like to take them. Thanks very much. We appreciate that.

Colonel Bristol: Dennis Peterson?

Mr. Peterson: As a landowner in the Blanchard site, I'm opposed to this Backscatter Radar System being built there because of the good land we have there. Half of my land could be taken away from me, and that will leave me with half an operation. It's tough enough now to make a living with the full operation. We have machinery for everything and then what do we with half an operation, not to go bankrupt.

Also, you never have addressed any issue of somebody renting land. They are left out in the cold. Thank you.

Colonel Bristol: Thank you, sir. Finally, I have a comment sheet from a Mr. Pat Matter. He may have spoken once before, but this is in reference to an oral statement rather than a question. I'm sorry. I put my foot in my mouth again. It's not unusual though. Good evening.

Ms. Matter: Yes, I'm from the Blanchard study area. I did a little looking up, and our soil is of the soils of the Glacial Lake Plain, and as it's defined under the Fargo-Hegne, I believe that's how you pronounce it, association.

That means it's nearly level, deep, poorly drained, fine-textured soil, and this was defined in the National Cooperative Soil Survey. The Fargo complex is silty clay and makes up the majority of this Blanchard site.

The site, the radar site that you are proposing, would take 2,400 acres and this Fargo operation soil is made up of 3,477 acres. If you would take out 2,400 acres out of this area, and you can't make anymore soil like this again, you know. So I'm wondering why would you take out this particular grade soil that we have for farming.

Also, the removing of excess water, maintaining and improving, filtering, streamability and controlling soil, blowing, are our main concerns, besides our crop production here in this area. Thank you.

Colonel Bristol: Thank you very much. As I previously indicated, I know many of you have probably had some thoughts about things that you may not have thought about before, just based on the exchange of information that's occurred tonight.

The comment period for submitting any type of written comments or suggestions, whether you use this form or not, is until the 8th of December, 1986, by sending them to the Headquarters Electronics Systems Division along with the address to Lt. Brown at Hanscom Air Force. So even though you haven't made any comments tonight, if you think about something after you get home, after you think further on the subject, please fill out the sheets and submit them.

Those are all the comment sheets that I have. Is there anyone else who would like to make a statement? Yes, sir? If you'd come forward?

Mr. McGillan: I'm Hart McGillan of the Traill County Commissioners. And I'd also like to have the last word here tonight. We, on the commission, have written letters to each of our senators, legislatures, opposing this in Traill County. And it happens to be in my area that I represent 13 townships in Traill County, and this happens to be my area.

And I was just looking at a report there. And in the Hunter School District where they would lose about $1,800 just in this one area, I mean one township, so that just gives us an idea that this shows us what the taxes we will lose in the schools as well. And like I said before, that our board has opposed this all the way through, and that is all I have to say about that at this time. Thank you.

Colonel Bristol: Thank you, sir. I'd like to thank all of you for coming out this evening and being a part of this process. It is a learning experience for us, as it is perhaps for some of you. And I assure you that a written transcript, verbatim, of everything--every word that's been spoken this evening, will be prepared and will be a part of the record of this hearing, as well as any submissions that you make prior to the 8th of December, 1986, time frame.

Sir, did you wish to make a statement? I'm sorry. You may come forward.

Mr. Oxford: I'm John Oxford. I live over at Galesburg over by Fuller's Lake of the Canada National Wildlife. But I've been going by missile sites for about 15 years, 5 days a week, driving school bus. And if the Air Force is going to take care of roads that are on these sites, they're in trouble, because they have a terrible time keeping the missile site driveways.

Colonel Bristol: Thank you, sir. Well, thank you very much, again, for coming out and good evening.

(WHEREUPON, the proceeding was completed at 9:50 p.m., November 18, 1986.)

3.4.2 Briefing Slides

OTH-B RADAR SYSTEM COVERAGE

Environmental Impact Analysis Process

WHAT: PROCESS FOR ANALYZING IMPACTS OF A PROPOSED ACTION

WHY: HELP DECIDE WHETHER AND HOW TO PROCEED

STEPS: SCOPING MEETINGS

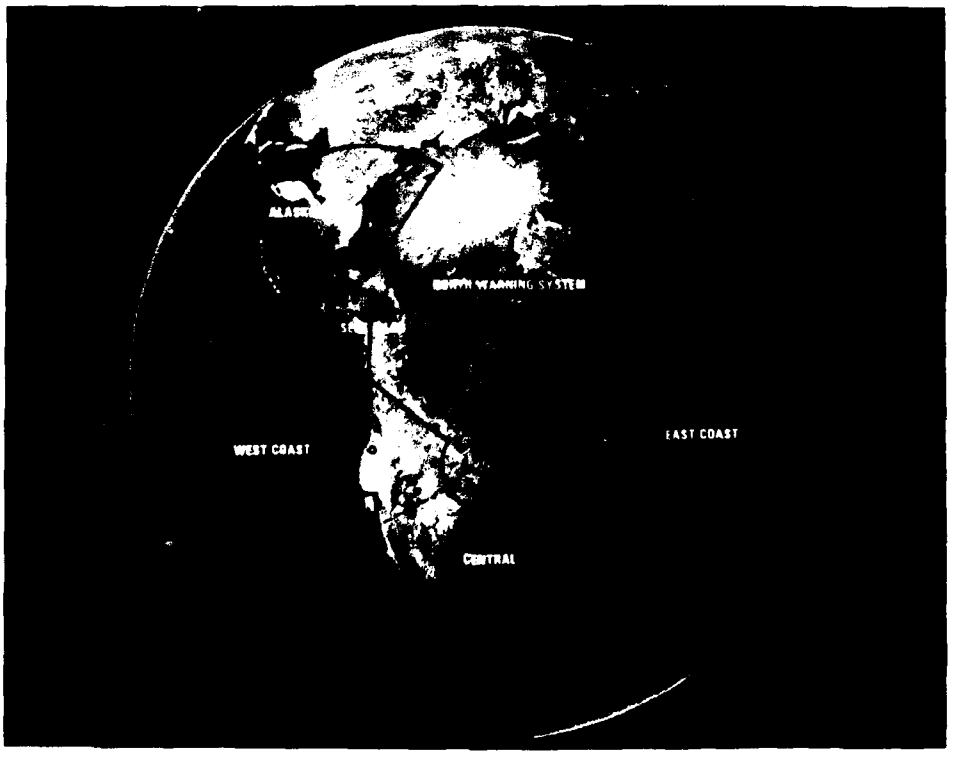
DRAFT ENVIRONMENTAL IMPACT STATEMENT

PUBLIC HEARINGS

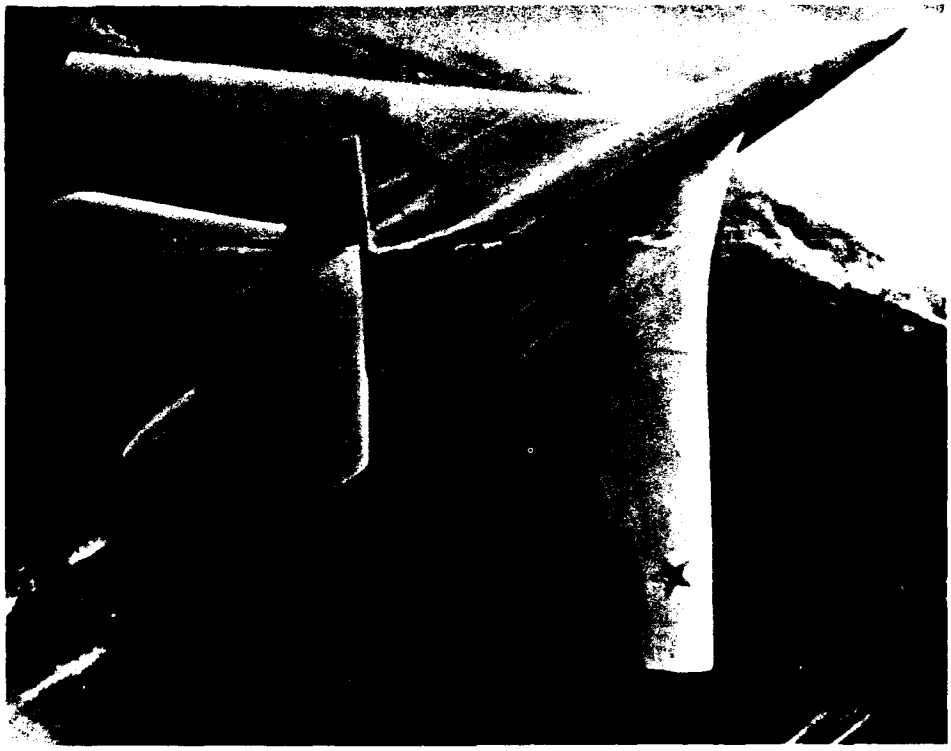
FINAL ENVIRONMENTAL IMPACT STATEMENT

AFFECTED ENVIRONMENT

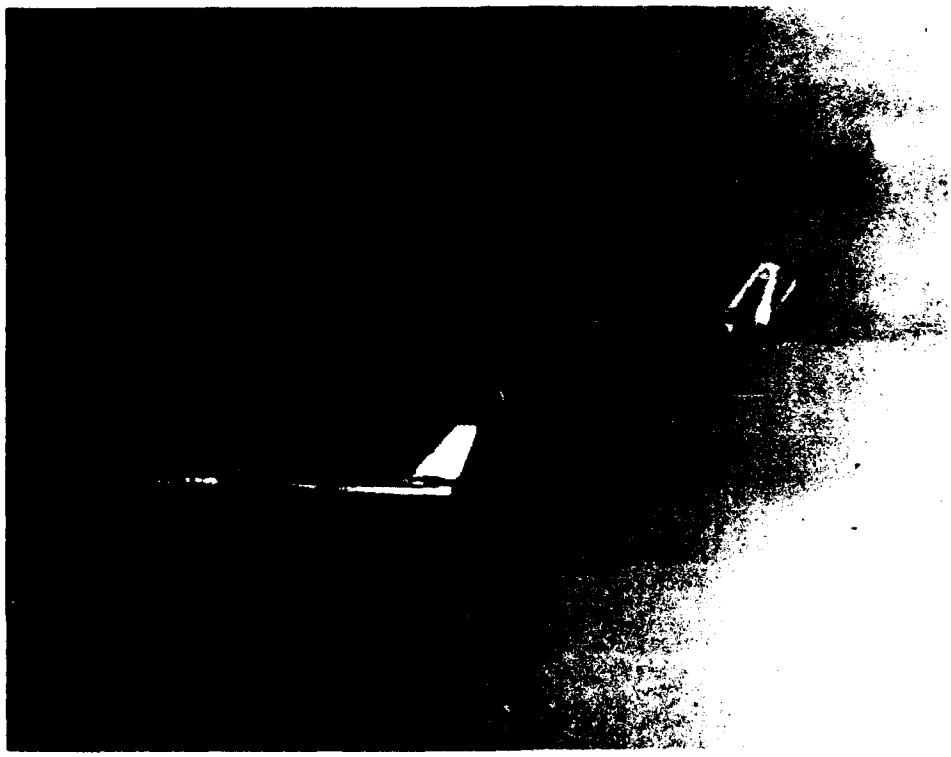
- Land and Minerals
- Water Resources
- Vegetation
- Wildlife
- Air Quality
- Population
- Economy
- Housing
- Community Services and Facilities
- Aesthetics
- Cultural Resources
- Electromagnetic Environment (Interference)
- Human Health (Radiofrequency Effects)



SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS

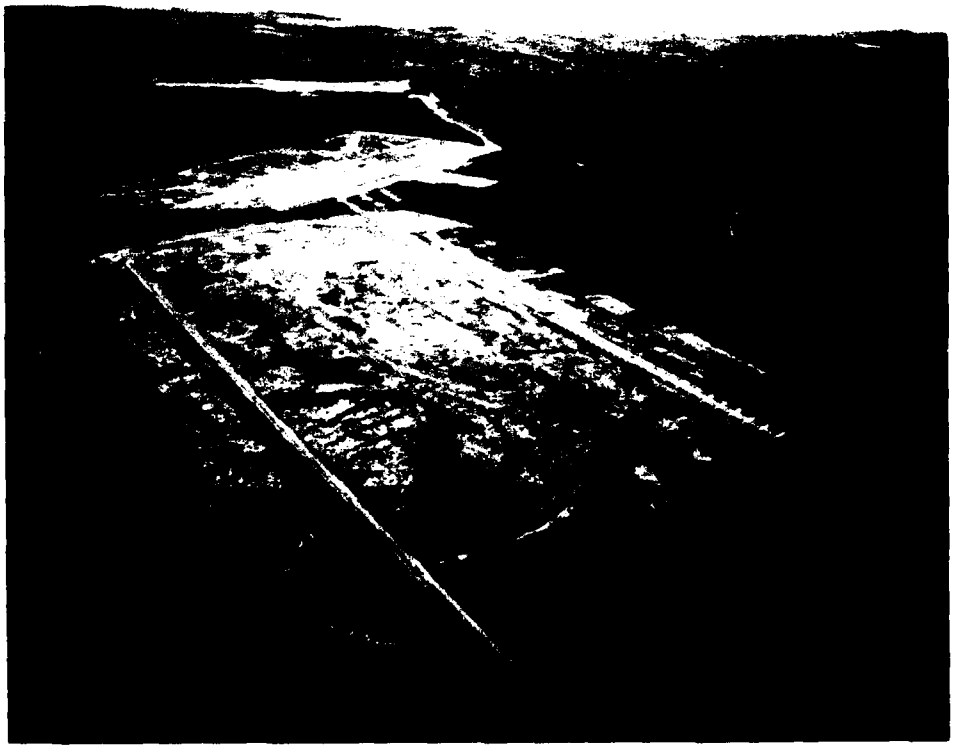


SOVIET BLACKJACK MANNED STRATEGIC BOMBER

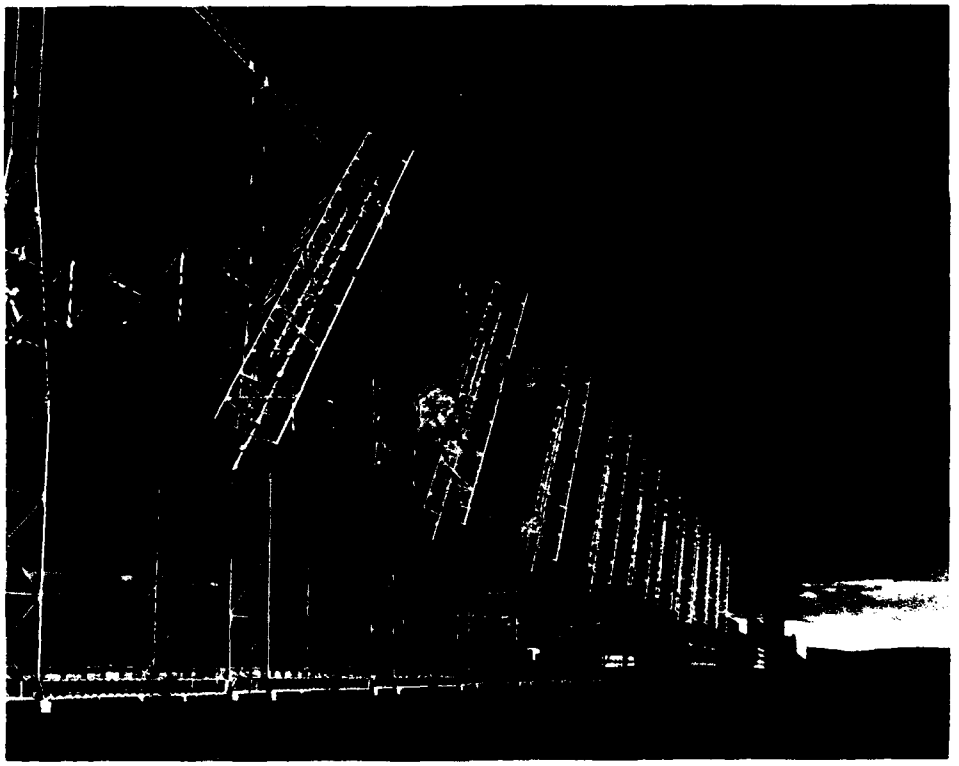


SOVIET BEAR H BOMBER AND AAC F-15 AIRCRAFT

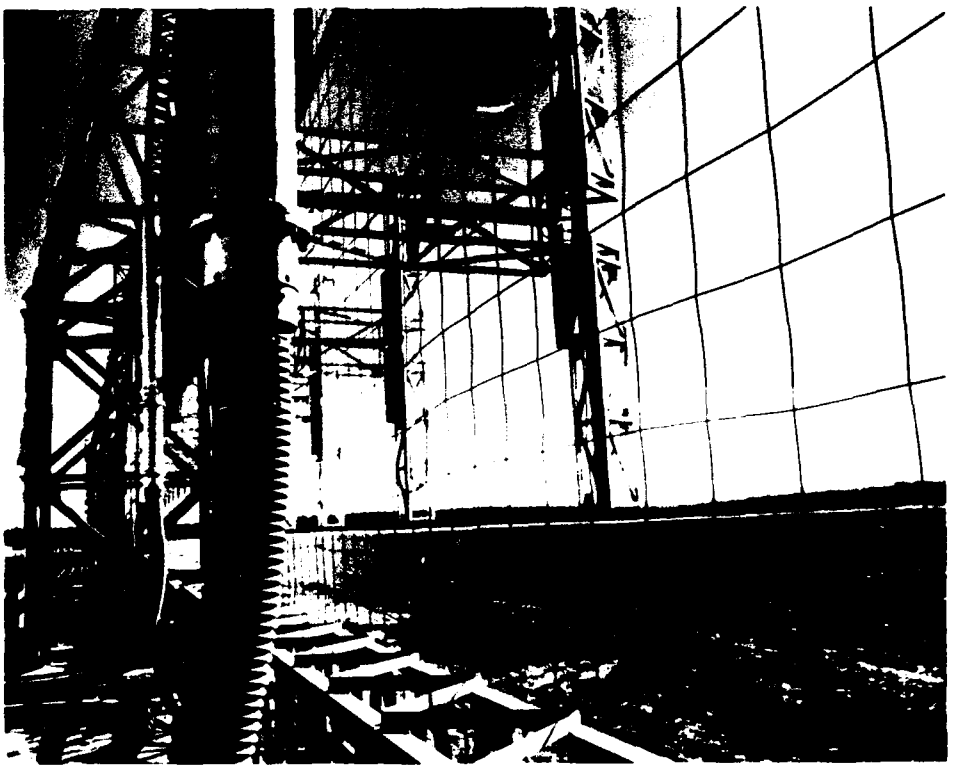
OTH-B EAST COAST RADAR SYSTEM CONCEPT



THREE SECTORS AT TRANSMIT SITE — EAST COAST RADAR SYSTEM

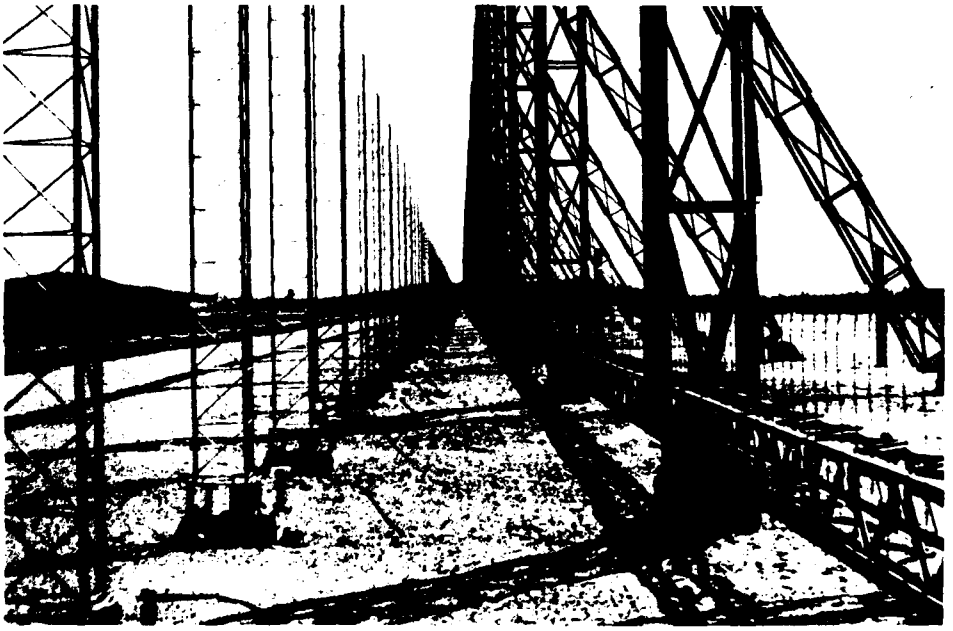


TRANSMIT ANTENNA — EAST COAST RADAR SYSTEM

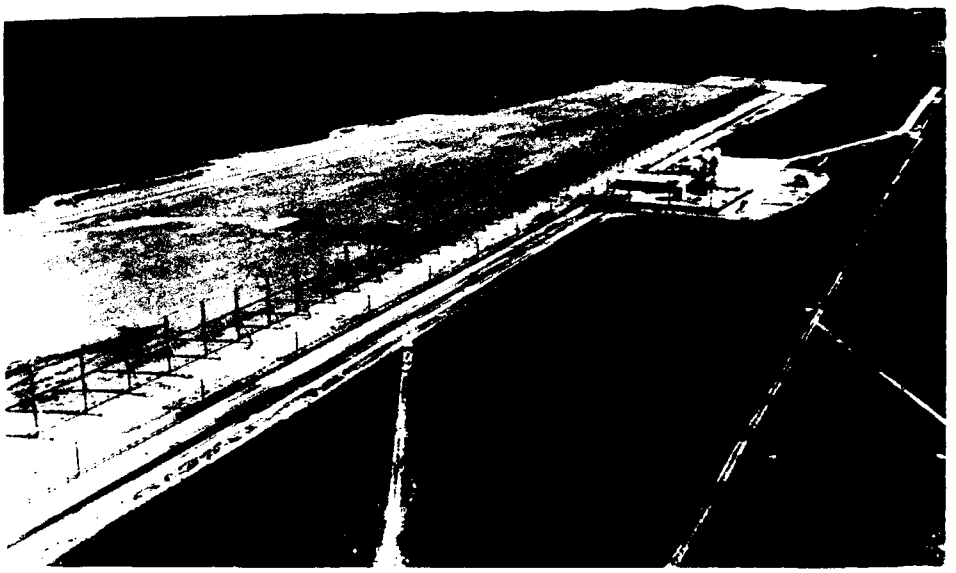


TRANSMIT ANTENNA STRUCTURE SHOWING BACKSCREEN

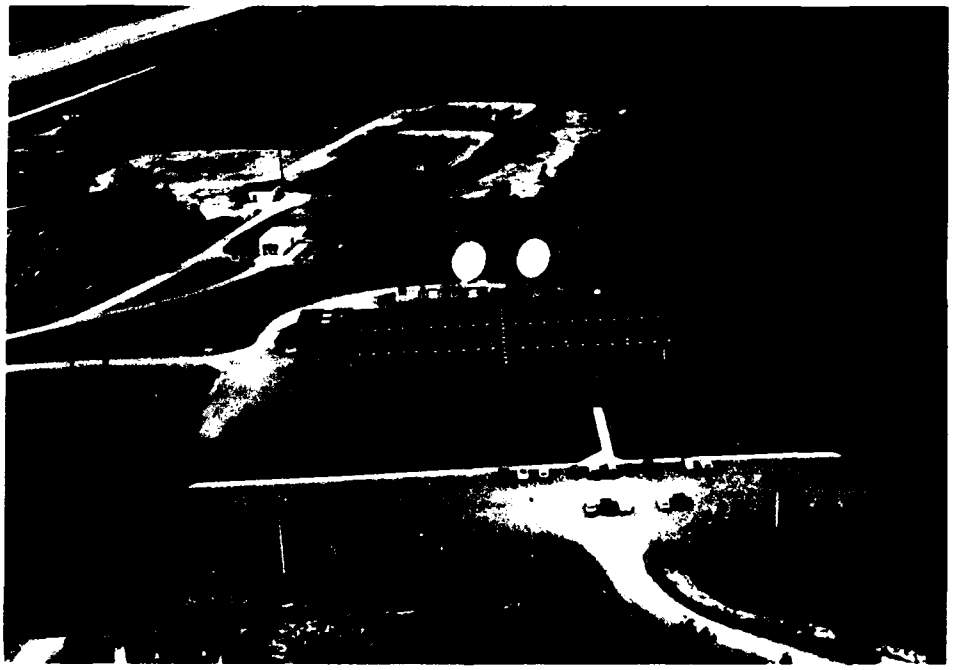
THREE SECTORS AT RECEIVE SITE — EAST COAST RADAR SYSTEM



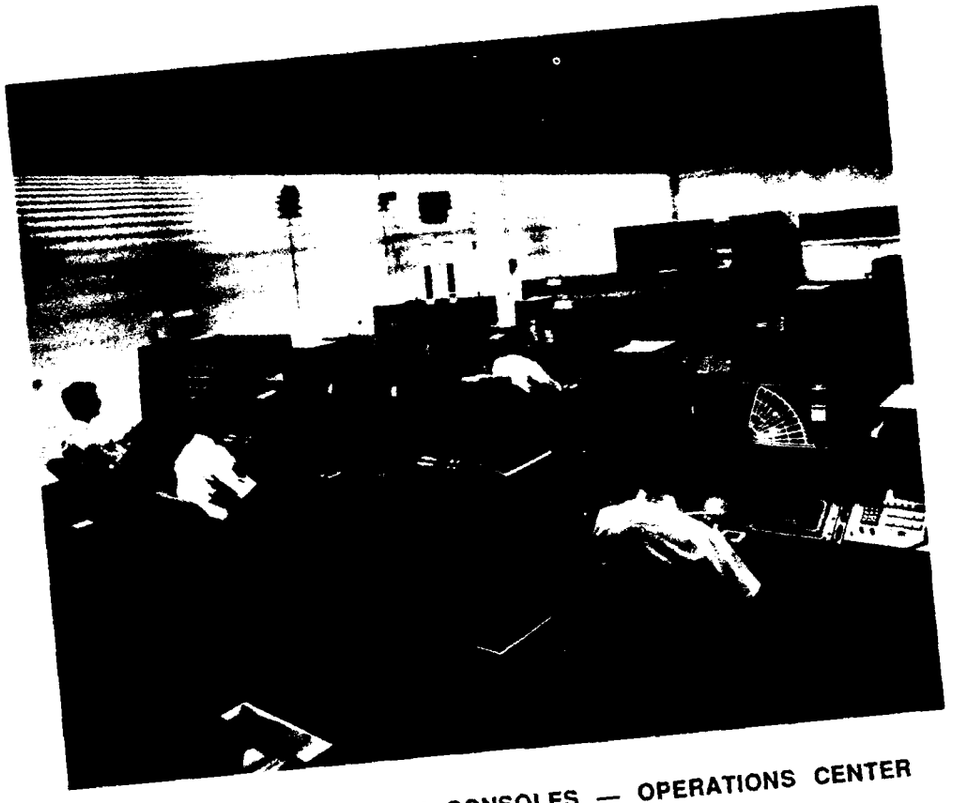
RECEIVE SITE ANTENNA AND BACKSCREEN — EAST COAST RADAR SYSTEM



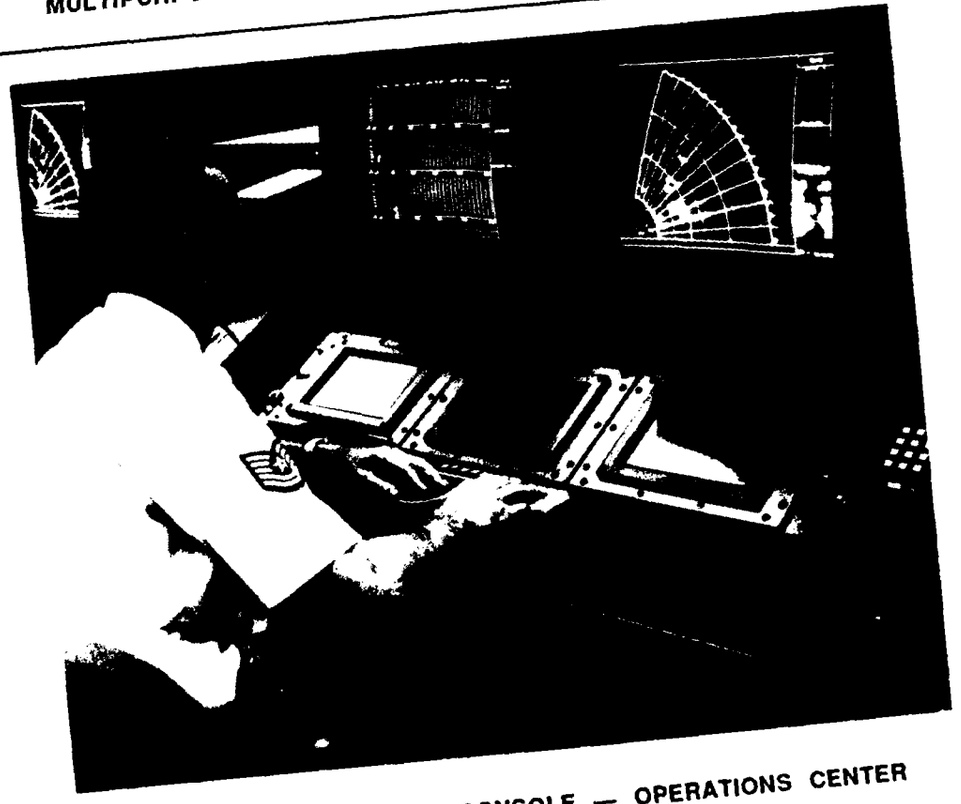
SECTOR ONE AT RECEIVE SITE — EAST COAST RADAR SYSTEM



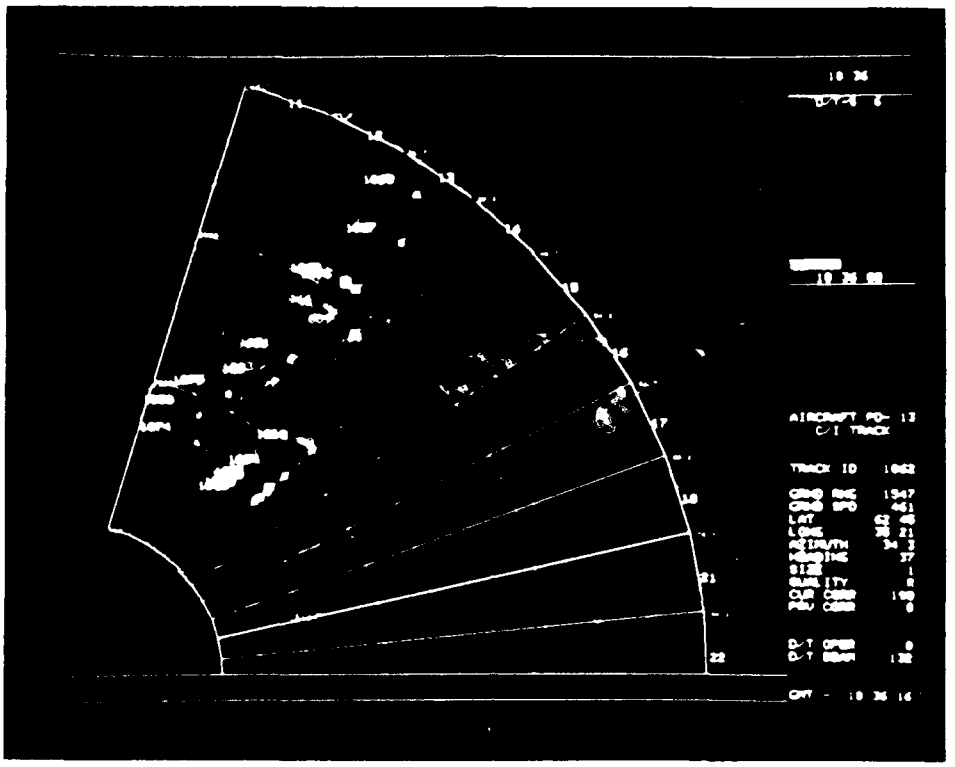
OPERATIONS CENTER — EAST COAST RADAR SYSTEM



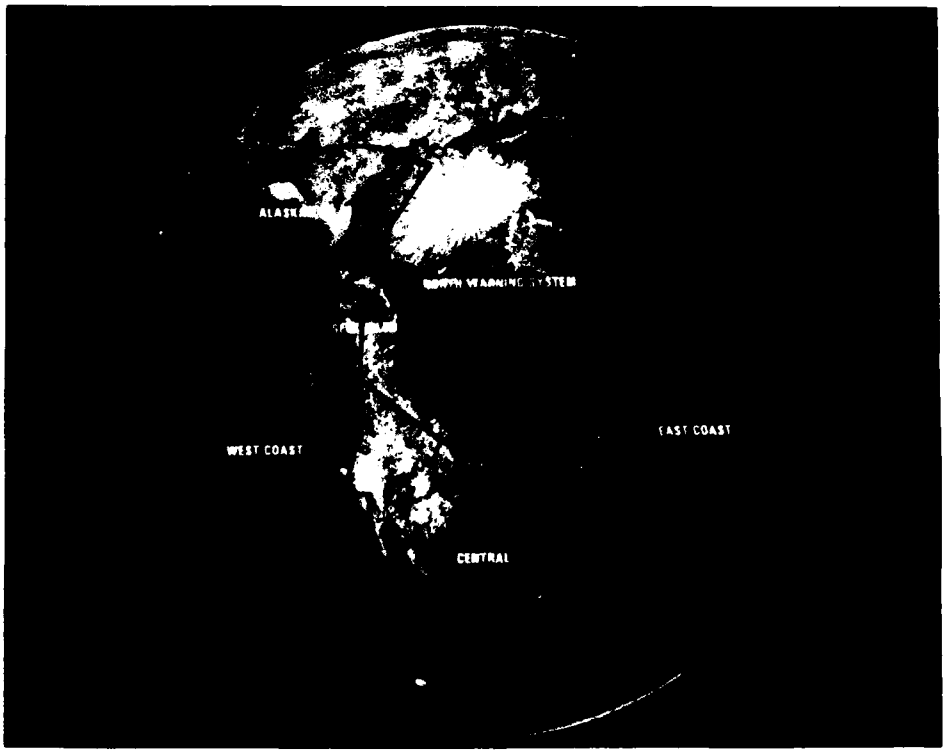
MULTIPURPOSE DISPLAY CONSOLES — OPERATIONS CENTER



MULTIPURPOSE DISPLAY CONSOLE — OPERATIONS CENTER

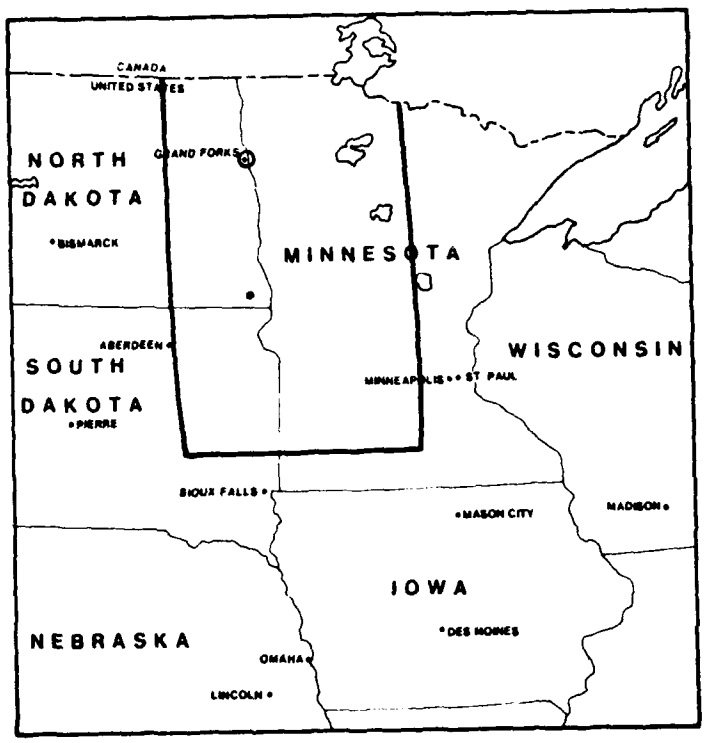


GEOGRAPHICAL DISPLAY — OPERATIONS CENTER

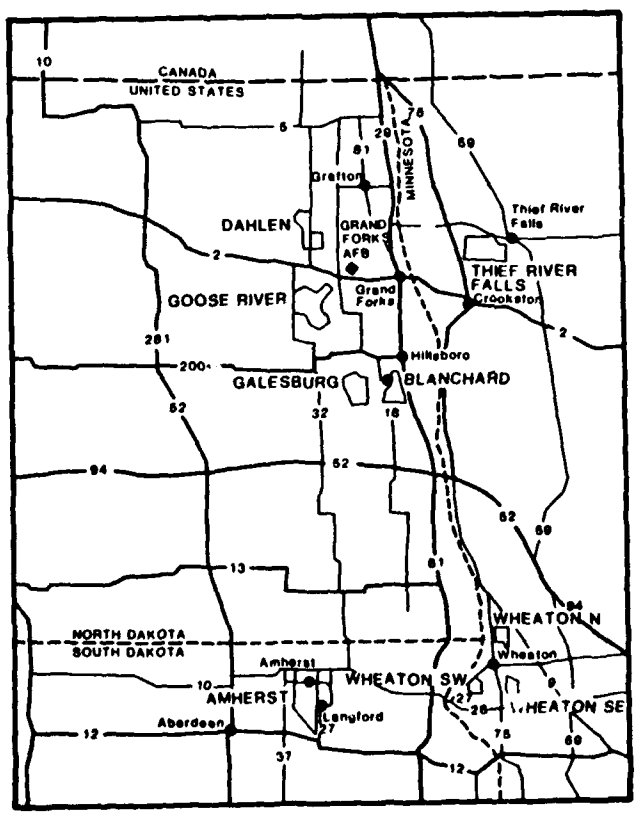


SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS

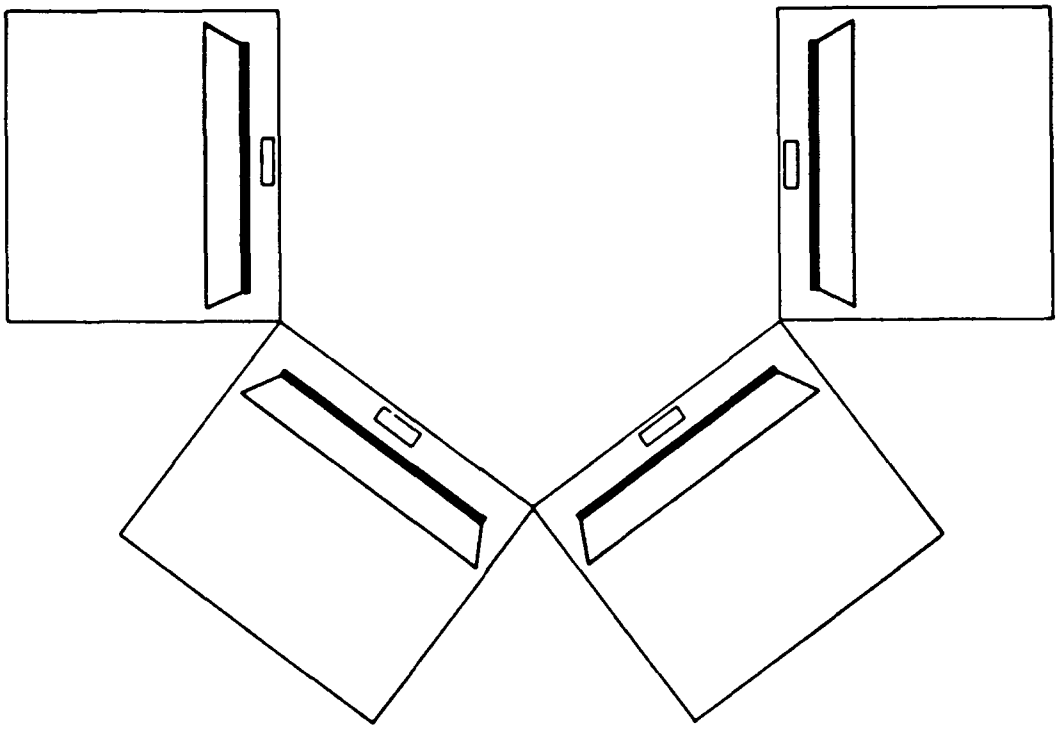
SITE SEARCH AREA FOR THE CENTRAL RADAR SYSTEM



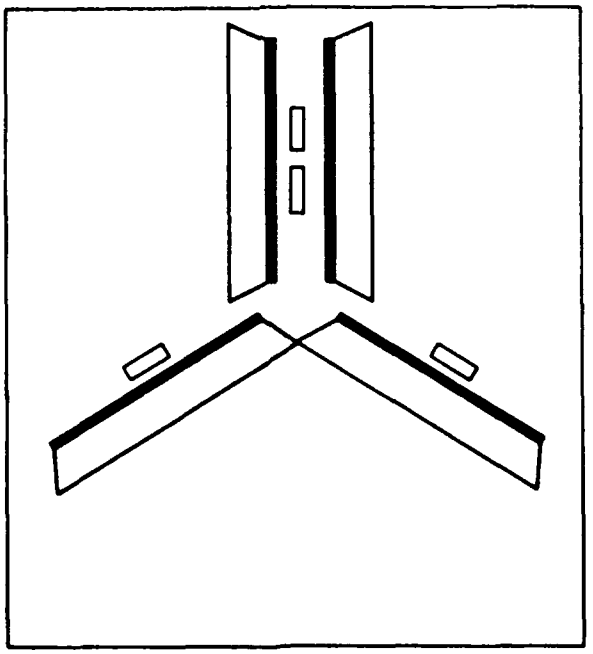
CENTRAL RADAR SYSTEM STUDY AREAS



CRS Transmit Site Schematic

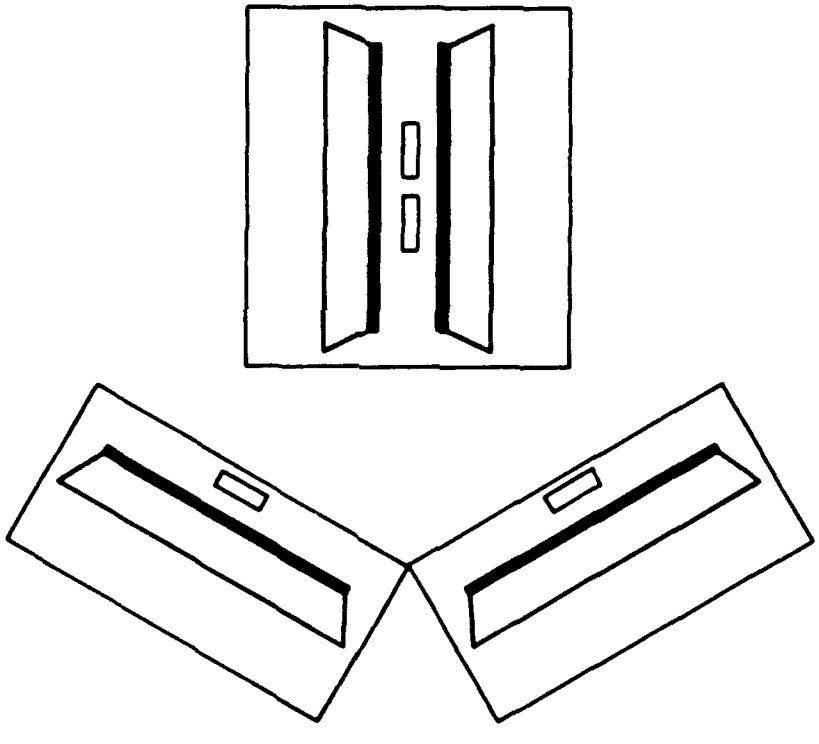


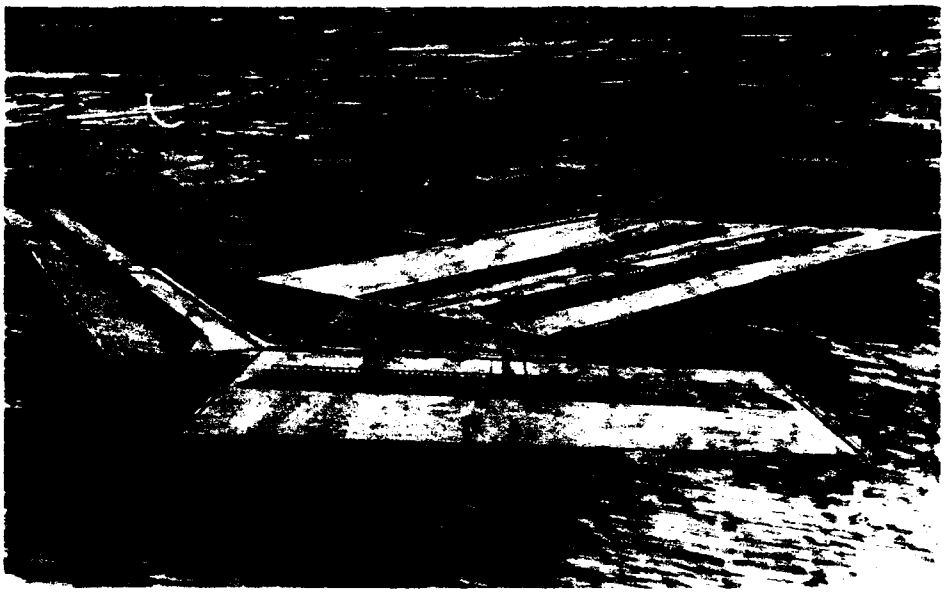
CRS Transmit Site Alternate Schematic



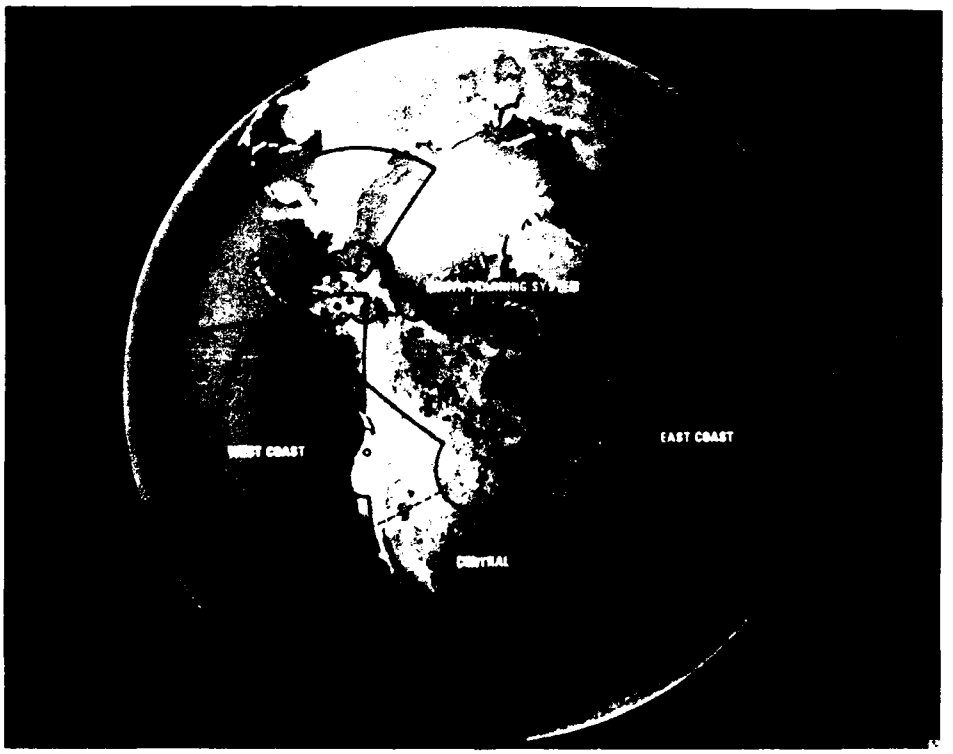
ARTIST'S CONCEPT OF CENTRAL RADAR SYSTEM TRANSMIT SITE

CRS Receive Site Schematic





ARTIST'S CONCEPT OF CENTRAL RADAR SYSTEM RECEIVE SITE

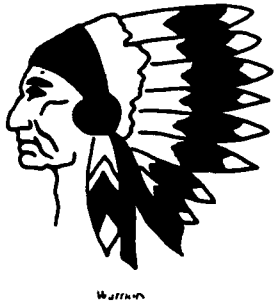


SURVEILLANCE COVERAGE WITH OTH-B RADAR SYSTEMS

3.4.3 Submitted Materials

Materials were submitted from:

Hal Habermann, Superintendent, Dakota Public School District No. 3, Hunter, ND
Leo W. Gray, Advisor, North Dakota Township Officers Association, Hankinson, ND
Gloria Porter, Grandin, ND
Jeff O. McInnes, Chairman of the Board of Supervisors, East Traill Soil Conservation District, Hillsboro, ND
T. J. and Esther Holman, Clifford, ND
David Holman, Clifford, ND



Dakota Public School District No. 3

Hunter, ND 58048
HAL HABERMANN, SUPERINTENDENT
874-2266

Dakota Elementary
Hunter, ND 58048
Delores Carpenter, Principal
874-2322

Dakota High School
Arthur, ND 58006
Ronald Fried, Principal
967-8344

November 12, 1986

Lt. V.G. Brown
ESD/SCO
Hanscom AFB, MA 01731

RECEIVED
NOV 18
2ND cy

G4, G6, G9

3-216

Dear Lt. Brown:

The Board of Education of Dakota School District #3 would like to thank you for sending us a copy of the Environmental Impact Analysis of the proposed construction of the Over-The-Horizon Backscatter Radar Program. We also thank you for scheduling another hearing to allow us to learn more about the proposed system and have our concerns addressed.

In preparation for the hearing at Hillsboro, November 18, 1986, we have prepared the following data relating to the portions of our school district lying in the Blanchard study area as outlined. Attached is a photocopy of this area with our school district land area superimposed. As you will note, portions or all of 41 sections lie within the Blanchard site. Six families of our school district with their ten children live within this area.

A typical section of land (640 areas) in Bohnsack township within this area generates approximately $1850.00 dollars of tax for our school district each year. This translates to about $2.89 per acre. If a minimum of 2400 acres is removed from our tax roles for a receiver site as proposed, this would mean a tax loss to our district of $6936.00 per year. If families with students in school are displaced, it would mean an additional loss of $1555.00 per student of state per pupil support in foundation and tuition apportionment payments. As you can see, the monetary loss to our district is significant and is a concern for us.

We would like to have you address the following questions either by letter or at the hearing at Hillsboro on November 18th:

1. How many families might be displaced by the actual location of the receiving site here?

PRESIDENT OF BOARD
Kenneth Koertz
Hunter, ND 58048

CLERK OF BOARD
Mrs. Mary Merkel
Hunter, ND 58048

BOARD MEMBERS
O.T. Aarsvold — Gregory Radcliffe
Peter Lundvall — Charles Ross, Jr.
John Porter — Peggy Williams

2. Is the loss of the tax base permanent or will there be compensatory impact aid allocated to the school district? If so, how much impact aid can we expect and how long will it be allocated?

3. Will the land be leased or sold to the federal government?

4. How will bus radio communications be effected, especially if our bus has to travel on the north side of the site? How near to the site will we experience radio interference?

5. What kind of an influx of families might we experience in the school district during the construction period and when the site is operational? Would the families be living in our school district, in Hunter or Arthur, in temporary housing on the site, or will they be living elsewhere, i.e., Hillsboro, Grand Forks, etc. How many children might we expect during the construction period and permanently thereafter?

We thank you for your attention to these questions. We look forward to your response either by letter or at the meeting. A delegation of the Board of Education of Dakota School District will be present for the hearing.

Sincerely,

Hal Habermann
Superintendent

HH/re

ENcl
as

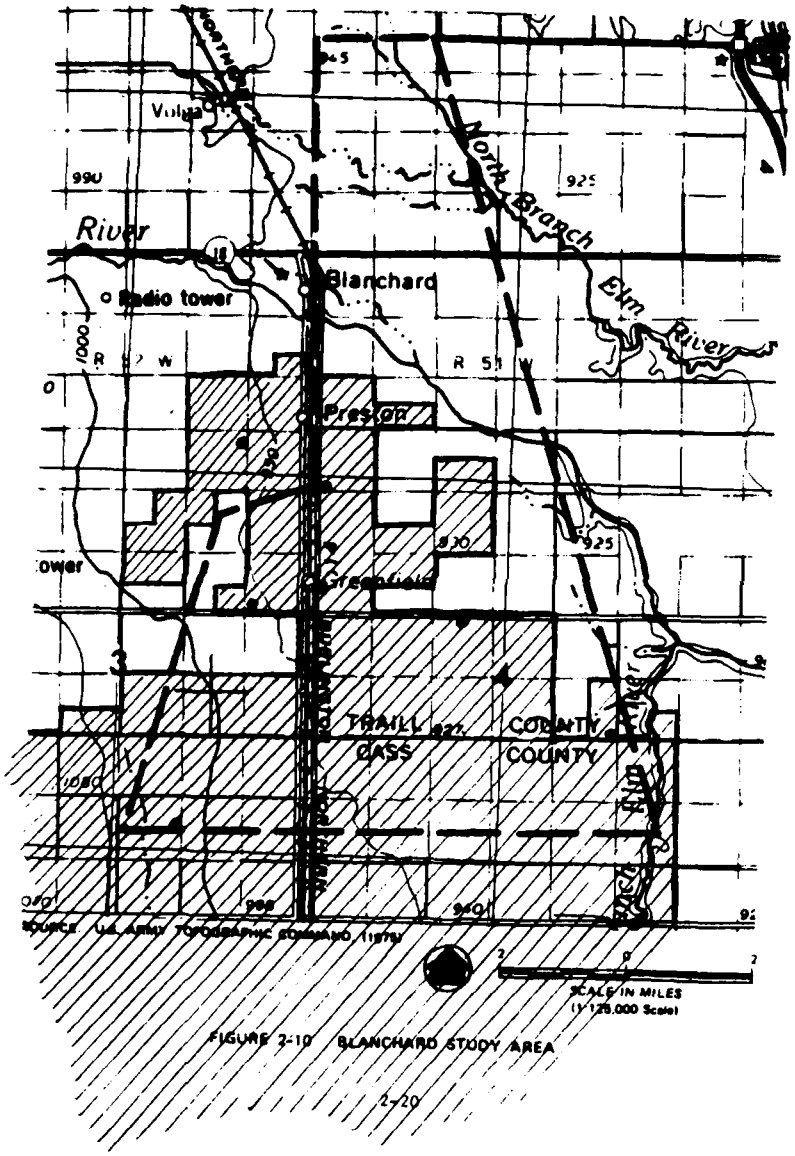


FIGURE 2-10 BLANCHARD STUDY AREA

2-20

3-217

North Dakota Township Officers Ass'n.

PRESIDENT CHESTER LARSON, Enderlin N D 58027
VICE PRESIDENT OSCAR ERIE, Leeds N D 58346
TREASURER NOLAN VERWEST, Finley N D 58230
SECRETARY JACK ARMSTRONG, Enderlin N D 58027

DIRECTORS
DON DE FOE, Pembina N D 58271
JOHN ERICKSON, Wilton N D 58579
JOHN OXTON, Hope N D 58046

NOV 18 1986

NOVEMBER 20, 1986

G4, G7

I AM LEO GRAY, RESIDENT OF GREENDALE TOWNSHIP, RICHLAND COUNTY, HANKINSON, NORTH DAKOTA. I HAVE BEEN A TOWNSHIP SUPERVISOR FOR 27 YEARS FOR GREENDALE TOWNSHIP. I AM VICE PRESIDENT OF THE RICHLAND COUNTY TOWNSHIP OFFICERS ASSOCIATION, PAST STATE PRESIDENT OF THE NORTH DAKOTA STATE TOWNSHIP OFFICERS ASSOCIATION AND PAST NATIONAL DIRECTOR FOR NORTH DAKOTA ON THE NATIONAL ASSOCIATION OF TOWNS AND TOWNSHIPS BOARD WITH OFFICES IN WASHINGTON, D.C.. I AM NOW AN ADVISOR TO THE NORTH DAKOTA STATE TOWNSHIP OFFICERS ASSOCIATION.

IF THE DEFENSE DEPARTMENT DECIDES TO BUILD THE BACKSCATTER RADAR SYSTEM IN THIS AREA THE NORTH DAKOTA TOWNSHIP OFFICERS ASSOCIATION HAS THE FOLLOWING RECOMENDATIONS.

1- THE ROADS THAT WILL BE USED FOR CONSTRUCTION AND MAINTAINANCE DURING THE LIFE OF THE INSTALLATION WILL BE DESIGNATED BY MUTUAL AGREEMENT WITH THE LOCAL GOVERNING BOARDS AND THE PARTIES RESPOSABLE FOR THE CONSTRUCTION, MAINTAINANCE AND OPERATION FOR THE LIFE OF THE FACILITIES. AN ON SITE INSPECTION WILL BE MADE BEFORE START OF CONSTRUCTION AND THE ROADS WILL BE MAINTAINED IN AS GOOD OR BETTER CONDITION FOR THE LIFE OF THE INSTALLATION.

2- THE LAND THAT WILL BE NEEDED FOR THE LIFE OF THE INSTALLATION WILL BE LEASED SO THE TAX BASE WILL NOT BE LOST BY THE GOVERNING BODIES. THE PAYMENTS WILL BE ON AN ANNUAL BASE WITH AN UPDATE OF PAYMENTS TO BE IN LINE WITH CASH RENT PAYMENTS OF SIMILAR LAND IN THE LOCAL AREA. AT THE TERMINATION OF THE OPERATION THE LAND WILL BE RETURNED TO ITS ORRIGINAL CONDITION AT NO EXPENSE TO THE OWNERS.

3- MEETINGS WILL BE HELD WITH ALL LAND OWNERS PRESENT SO THERE WILL BE FAIR AND EQUITABLE PAYMENT TO ALL OWNERS.

Leo W. Gray

LEO W. GRAY, ADVISOR
RT. 1, BOX 110-A
HANKINSON, ND 58041

PHONE (701) 242-8284

Nov. 18,1986 Comments on Central Radar System:

Gloria Porter
rr 1 Box 63
Grandin, ND. 58038
701-436-4026

Easy to be in favor of your home & family is not involved

SOCIOECONOMIC EFFECTS: G3, G6, G8

NOV 18 1986

On page S-9 of the DEIS the conclusion that there would be no significant adverse socioeconmmic impact is WRONG.

This will effect each farm business unit that is impacted by the location of the reciever. A farm is an economic production unit for our national wealth, a national treasure.

We rent 3/4 of our operation; a family farmer could loose most of their operation and be unable to locate land to replace the rental loss. Our inventory of equipment will be less needed, but we would still have to pay for the machinery, cover family living costs, farm operating and feed costs on less land and projected lower prices.

As a dairy farmer I am concerned abou t the impact of "stray voltage" from the reciever effecting milk production, dairy herd health and reproduction. According to a report to the Minn, Dept. of Agriculture, "A STUDY OF ELECTRO -MAGNETIC EFFECTS ON THE HEALTH AND PRODUCTION OF DAIRY COWS" June 21, 1985, by Duane A. Dahlberg,Ph.D. there is no way to predict the way "stray voltage" travels in the ground, but it does, and it can cause economic disaster for a dairy farm.

After studying the DEIS, I am convinced by your process, there is more concern about wild life, birds and habitat than the residents, their land and family farmers in the Blanchard study area.

You have been insensitive to the emotional, social, physical health, and financial stress placed on our family in addition to the already weak farm and rural economy. WE ARE WORKING HARD TO SURVIVE.

Please take a look at our fertile black rich top soil that took thousands of years to create. Our Red River Valley soil is some of the best in our entire nation. Good land is the most valuable family farm asset to continue our business.

PRIME FAMILY FARM LAND IS NOT NECESSARY TO SITE A RADAR RECIEVER!

The Air Force must address the alternatives as described in the 1969 National Environmental Policy Act, sect. 1502.14, (a) (b) (e).

Rigorously explore and objectively evaluate all resonable alternatives.

Devote substantial treatment to each alternative

Identify the agency's preferred alternative

In the DEIS ,I don't beliveve ½ page S-8 or 1page 2-28 rigorously considers alternative site locations on Federal, marginal, non-productive land that is not populated family farm land.

I OPPOSE THIS LOCATION ON PRIME FARM LAND, THE AIR FORCE MUST FIND AN ACCEPTABLE ALTERNATIVE SYSTEM.

I'm not willing

3-218

NOV 18 1986

East Traill Soil Conservation District
Chairman of Board of Supervisors
Jeff M'Innes
Hillsboro, N.D.

Comments to Air Force
Lt. Brown,

G5

The Land in the Blanchard Study area, for the Backscatter Radar System, is located in the middle of the Elm River Watershed.

Over the last 30 years the Soil Conservation District has supervised over One million Seven Hundred Fifty Eight Thousand dollars ($1,758,271) in Land Treatment measures, floodwater retarding structures, floodways, channel improvements and tree plantings.

This amount does not include money spent by the county, township, land owners, and farmers to control flooding and soil erosion.

All of this effort and money can be wasted if any parts of the Elm River watershed system is disturb, flattened, dyked, or changed.

If there are changes made in this Elm River watershed, it could negatively affect the land at the Radar site, the land around the Radar site, the land upstream, and the land downstream.

Therefor, we as supervisors, of East Traill Soil

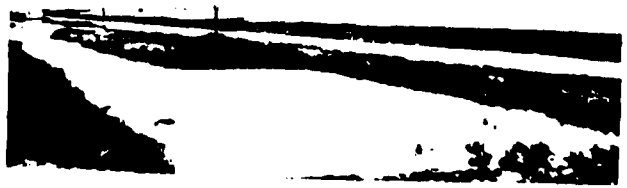
conservation District oppose the location and construction of a receiving antenna for the Backscatter Radar System at the Blanchard N.O. Study area.

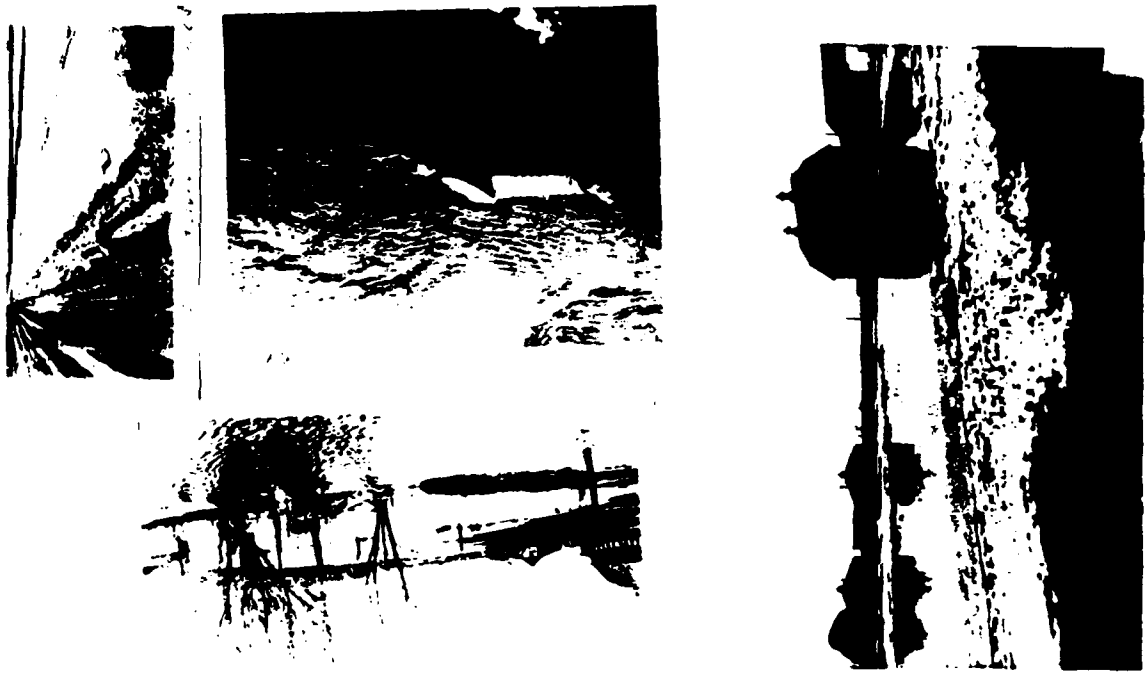
I have also enclosed pictures of flooding water in the Blanchard Study Area

Also we oppose the removal of ~~and~~ any trees or shelterbelts due to the high wind erosion factors in this part of the county.

Chairman of the Board of Supervisors

Jeff D. McInnes





G4, G6, G7, G8

We oppose the Over-the-Horizon Backscatter Radar System for three reasons.

1- We are elderly landowners and we will lose our means of support-

2- Prime family land and our home will be destroyed.

3- It will create financial problems when the land is removed from the tax rolls.

4- It will be a health hazard.

5- County and township roads will be deteriorated during and after construction.

6- The land will possibly be "chopped up" and become difficult to farm.

7- The land could be used for a nuclear refuse dump when the system becomes obsolete-

Esther Holman
R.R. 1 Box 64
Clifford, N.D.
58016

11-18-86

NOV 18 1986

G2, G4, G6, G8

Being a land owner & farmer in this area.
I'm very opposed of the Over the Horizon Radar system.

1. You'll be taking my entire farm.
2. The price you are willing to pay makes no sense. The land here is worth just as much to me, as anything East of me or wherever.
3. If I was able to keep farming the land, I would be in a hazard area dangerous to my health & my families health.
4. It can be put up in the sky. Cost shouldn't enter in considering the land we have to do on the land here & compared to the toilet seats putting it up in the sky should be a deal.
5. Our small towns in the area would be no more.
6. Also being the Pres. of the Clifford Farmers Co-op. you would come in & destroy business our forefathers worked all their lives to build.

David Hahn
Clifford

3-223

3.5 Britton, South Dakota

3.5.1 Transcript

The following proceeding was taken at a meeting of the Air Force at the High School Auditorium located in Britton, South Dakota, Wednesday, November 19, 1986, commencing at 7:00 p.m.

Colonel Bristol: Good evening, ladies and gentlemen. The National Environmental Policy Act requires that any federal agency which proposes to take a specific action which could have environmental impacts must make a careful analysis of those impacts and fold that analysis into the decision making process when deciding whether and if so, how to pursue a particular proposal.

The Department of the Air Force has prepared and distributed a document that is called a Draft Environmental Impact Statement, copies of which are available here this evening. It's a fairly thick document which describes a proposed Central Over-The-Horizon Backscatter Radar System. The purpose of our meeting tonight is for me to conduct an informal public hearing upon the Air Force proposal, and specifically upon that Draft Environmental Impact Statement.

My name is Matt Bristol. I'm a Lieutenant Colonel in the Air Force and I'm a full time trial judge, that is, a lawyer who spends most of his days in court with felony type trials involving members of the Air Force. It's a bit of a break in my normal routine and quite a pleasant break for me to be able to come and preside over these hearings.

I'm not an expert on this proposal. I don't really know much more about it than most of you. I didn't have anything to do with its development or the legal advice that led to it. And again, my purpose is to moderate these--this hearing, to establish the minimal necessary procedure ground rules so that all who wish to be heard have a chance to be heard, and then to be quiet and allow the hearing to proceed.

I want you to keep one thing in mind, and that is that this is essentially a two-way communication, with everything that's said becoming a part of the record that will be included in the decision package that goes to the Secretary of the Air Force when any type of recommendation is made concerning this proposal. So we have a court reporter, Miss Louise Christie, who's taking down everything that's uttered by me or by you or by anyone who is recognized--to either ask a question or make a statement. And whether you elect to make a verbal statement tonight as a part of these proceedings, or whether you elect to delay that and make a written statement at anytime prior to the 8th of December, your statements or comments will be a part of the record. They'll be entitled to the same weight. The only difference will be that any statement you make after tonight won't have the benefit of being discussed this evening and perhaps highlighting other questions which other members of the group may have which your particular question suggests.

Because we do have a limited time, we've established some time limits. But before I get into those, let me just explain, as far as the hearing itself. It's not our purpose to have a debate on the merits of the proposal, or to have some type of referendum on whether it should be adopted in any form. The concept is, first of all, to let the Air Force experts give you a basic information package, a briefing if you will, about the proposal. And they'll let you have a chance to put them on the spot and ask them questions to get a point clarified about anything that's contained in their briefing or anything that's contained in the Draft Environmental Impact Statement.

And then after that occurs, then it's your turn, and the communication runs this way, from you to us--for you to have an opportunity to make statements concerning what perhaps you know better than anyone else, and that is how this program might impact upon the area where you live, the area which you know better than anyone else. So it's that two-way communication, and I urge you to remember at all times that this is an informal hearing. There is no such thing as a dumb question. There is no such thing as a matter that is too simple to warrant going into. I want you to just shed any inhibitions that you may have, and at the point in the program when it's time to get the inputs from you, don't be hesitant to come to the microphone and ask a question or to make a statement. Your views are really, in many ways, the most important part of this information gathering process, without which, perhaps the right decision won't be made.

The way we're going to proceed is as follows: First of all, to my right, Colonel Jim Lee, who is the head of the Air Force's Program Office for the Backscatter Radar System, which is based in Hanscom Air Force Base, Massachusetts, will brief concerning the system. And then Mr. John Mitchell, who is an expert on radiation science and specifically the radiating bioeffects of this kind of program, this kind of radar system. We'll brief on that matter and following that, we'll take a short recess.

I hope most of you have been able to get a copy of the comment sheet. If you haven't, Lieutenant Gale Brown, who's at the door, has plenty more. But anyone who thinks, after having heard the presentation, if they would like to ask a question or to make oral comments as a part of this hearing, I'd like to ask you to fill out one of these.

In the upper right-hand corner, even though it doesn't call for it, I'd like you to indicate whether you're a public official. And if so, state what office you occupy, or whether you are the designated representative of a private association like a club or a fraternal association or that type of thing, or whether you're just here in your individual capacity as a concerned citizen. In which case, just put citizen.

If you'll look at this form, you will see that in addition to your name and mailing address, it also has an area where you can check the particular subject area in which your interests may lie. For example, health hazards or biological impacts or water quality. What we'll do at the recess is collect these documents. I'll try to put them in a sequence where they are grouped by category of interest, and then following the recess we'll have questions posed to the speakers and then statements made by you addressing any particular matters. And I will recognize people by calling from these sheets.

After we finish with all the sheets, if anybody who did not fill out one of the forms would like to ask a question or make a statement, I'll ask for you to come forward at that time. And if you'll just use this microphone to my right, announce your name. If it's something that you don't think I can spell, and I'm a notoriously poor speller, spell it out so that we'll have your identification correct for our record. And then proceed to ask the question or to make the statement that you would like to make.

The time limits tonight for public officials and designated representatives of specific private associations will be five minutes for the making of a statement. And for ordinary citizens, three minutes for making a statement. If after everybody has made a statement and has spoken and we have time remaining, then we'll be able to take additional time. But the important thing is that everyone who wants to speak gets a chance. So if we have someone who wanted to speak 20 minutes, the result would be that perhaps others of you that would like to speak wouldn't have a chance. So for that purpose, we can't loan time or borrow time. We just have to stay within the individual time limits.

Sometimes people have both a question and a statement. If it's really more of a question seeking clarification of something one of the briefers mentioned, then do it during the question period. If it's more of a statement that is something expressing a point of view rather than asking a question, reserve it, even though it may involve a question, until the portion of the program where we are making oral statements on the record.

We've been asked to ask you to refrain from smoking during the program this evening, at least in the main room here. During the recess I'm sure you'll be able to take a cigarette break out either in the hallway out there or immediately outside the building itself.

Without further comments on my part, I'd like to introduce Colonel Jim Lee, the Director of the Over-The-Horizon Backscatter Radar Project Office.

Colonel Lee: Good evening, ladies and gentlemen. It's a pleasure for me to be here tonight in the community of Britton. I recognize many of you from some of the previous scoping meetings and public hearings. We're glad to have the opportunity to come to this public hearing here

in Britton tonight though, to ensure that as many as possible in this particular area have a chance to see firsthand what some of the potential impacts might be.

Now, we're going to show you that- there's some pictures of the actual transmit antennas, the land involved and the individual sectors.

One of the individuals that I have met and talked with on the phone, maybe with several times, I would like to introduce tonight the Mayor of Britton. We wanted to acknowledge her and ask her to please stand. Delores Henahan. Thank you.

Mayor Henahan: Thank you, James.

Colonel Lee: I've got several slides that I want to show both to describe the system and what it's intended to do, and also then to show the kinds of potential impacts they might have. To assist you beyond tonight, we have several handouts that were given to you. In particular, I want to call your attention to one that is a fold-out. It includes not the top 25 questions, it turns out to be 23 questions, those most frequently asked about the program in the areas of dealing with the size of the antennas, the amount of land required, the potential for interference of radio and TV and also, most important, why the system is needed, and why this particular Central Radar System is needed. So you can refer to that. If you have some additional questions, to clarify or to go further in detail, we'd be glad to handle those during the question period.

If we can have the lights down then, let me begin with the slides. Can we cut those other top lights out, please? Thank you.

The proposed program is the Central Radar System, one of four systems that make up the Over-The-Horizon Backscatter Radar System.

The four systems are shown here on your right. The East Coast System--that system has been fully approved and funded by Congress. Construction is complete, and we are now testing the first sector, the northeastern most sector. The system opposite on the far left is the West Coast Radar System. Similarly, Congress has approved the West Coast Radar System and has provided funding to us for the first two of the three sectors.

The Air Force, in their proposed budget for next year, has requested the funding for the final sector that would complete the West Coast System in the '88 defense budget request.

The system to the upper left, the Alaskan Radar System, and then the four sector Central Radar System, are both proposed radar systems. We are going through the environmental impact analysis process on both of these systems. The key point from this slide, however, is to note the complete range of coverage that the OTH System provides around the coastline of the North American continent.

The area that's open to the north is covered by another surveillance system, and I'll show that in another chart in just a few minutes.

I mentioned the environmental impact analysis process. It consists of these major steps. We began with the Air Force announcing--providing a notice of intent to construct and deploy the Central Radar System. We then carried through scoping meetings, contacts with the area, with individuals, with representatives of state and federal and local agencies. The information that we obtained during that time period was used to prepare the Draft Environmental Impact Statement, that blue document that Colonel Bristol referred to earlier. And again let me emphasis that we have additional copies available. If we run out of them tonight, again, please leave your name and address and we'll make sure that you get a copy of that Draft EIS.

We're in the last part of the formal process, the public hearings. We had a series of three earlier public hearings, and then at the request of the public--of citizen's requests that you made directly to the Air Force, to the Program Office, also requests that you made to your congressional representatives--the comment period was extended twice. And we went ahead with three additional public hearings, one that was held last night in Hillsboro, North Dakota, the one tonight here, and tomorrow night the final public hearing will be held in Thief River Falls, Minnesota. The complete transcript of that information, all of the letters, comments that you send into us by December 8, and the additional work that we will do--in providing answers to your comments or questions for further clarification, what's needed on the basis of what is introduced here tonight--will all be included in that Final Environmental Impact Statement.

Because of the added delays or extensions of the comment period, that Final EIS will not be published until the early springtime. Again, after a minimum of a 30-day waiting period, the Secretary of the Air Force will then be able to announce and we will file the Record of Decision on the selection of the preferred received site area as well as a transmit site area.

As a part of this process, we have been looking at why this system was needed. We described what the system is, but most importantly we consider the potential environmental impacts. All of these areas are summarized, they are documented in the Draft Environmental Impact Statement. Several of them I am going to comment on as I go through the presentation itself tonight rather than talking separately to each one of them now.

The last one, the human health or bioeffects, we are going to separately address. Mr. John Mitchell will do that then after I finish my portion of the presentation.

This is another view of the complete surveillance system that will be provided when the OTH System is then able to link up with the Alaskan radars, the Seek Igloo System, and the North Warning System. That East Coast System has the capability from its transmit and receive site pairs in Maine to detect aircraft out as far as 1,800 nautical miles, or translated into statute miles, about 2,000 miles.

We currently have a set of coastal radars. They're very much like the radars that are represented by the small circles across the northern tier of Canada and Alaska. Those are microwave line-of sight radars, and they're limited in detection range to a few hundred miles. At low altitudes that detection range is much less. So for a large scale attack of strategic aircraft against the North American continent, our dependence on those coastal radars alone would give us no more than 30 minutes or less of warning time from when those aircraft first approached the coastal radars until they had advanced into the homeland of North America.

The Department of Defense is very concerned about the lack of warning time that we have with this existing set of radar systems. That's the reason for the proposed Over-The-Horizon Radar Program. That 1,800 nautical miles, or 2,000 statute miles, translates into a warning time of several hours. And you can do the mathematical calculations yourselves as well. Even with the strategic aircraft capability, the aircraft would probably fly in at subsonic speeds to conserve its fuel and then make the final penetration at supersonic speeds. So at an average speed of 500 miles, we're still now providing about four hours of warning time with that East Coast Radar System. And we're verifying that kind of performance as we are into the testing right now.

Under normal conditions, that East Coast and West Coast Radar System will be doing the detection and tracking out at its maximum range. We will have a surveillance band about 500 miles deep that will continually scan over that 180 degrees on the East Coast and the West Coast.

What the Central Radar System does is, first of all, provide that same type of detection and surveillance for aircraft that would approach from the south. And second it allows us to completely cover the coastal areas, linking up the East and West with the East Coast and West Coast Radar Systems

Well you might ask--why do you need that on the East and West? Because while the other systems are detecting aircraft, we have the presence of an additional threat, the sea launched cruise missile. And one of the specific requirements that the Central Radar System addresses and meets is the ability to also detect and track, provide warning of those sea launched cruise missiles.

The importance of that is shown here. Without an OTH type of system, with only the 15 to 30 minutes of warning that our coastal radars provide, we have a situation where we can provide a temptation, really, for the Soviet Union to launch a surprise aircraft attack against the North American continent.

We have a warning capability against ballistic missiles, but without the OTH System we don't have an equivalent warning system for the long range strategic aircraft.

This is a Blackjack. It's an artist's concept, but this aircraft is flying today in the Soviet Union. It's in flight testing, and if they continue on their current schedule, this aircraft will be operational by the start of the next decade.

The aircraft on the left here is a Soviet Bear H. Recently the Soviets began, for the first time, production of a new strike version of the Bear aircraft, a long range turboprop aircraft that's been in their inventory for many years. This is that new aircraft, the Bear H. It has the long range capability to strike targets in North America. It also carries air launched cruise missiles which can be launched against our country.

On a regular basis the Soviets fly these Bear aircraft in training flights headed towards the North American continent. And on a regular basis, as we're able to detect them, we sent aircraft such as this Alaskan Air Command F15, out to intercept and track along and fly as those aircraft are flying along the coastline. Just as those events take place outside of Alaska, they also take place on the eastern side of the country, the northeastern approaches. And of course the Soviets with other basing have the capability, really, to strike from any direction.

It is this concern about these long-range strategic assets--aircraft that the Soviets are continuing to produce, to modify and improve--that leads us to say the system is so very important to us today. It's a deterrent system. It provides added warning time for negotiations, for warning of the people, to try to do what it's intended to do--to prevent a possibility of a surprise strike against North America.

This is a concept of the East Coast System, to point out a little bit more how that system works. From a single transmit site, with the patterns noted in the reddish tone, we send signals out which bounce off of the ionosphere and extend out to that 2,000 statute miles. The return energy, noted with the yellow shading, comes back to the receive antennas where it is picked up and then sent and analyzed in the Operations Center.

This is the East Coast Radar System, the transmit site, located outside of Moscow, Maine. You can see three individual sectors. Each of them are boresighted or faced to provide a 60 degree coverage. For the Central Radar System there would be four such sectors involved. Each sector, for the Central Radar System, would be approximately 5,000 by 5,200 feet or about 600 acres. So for all four of those individual sectors, a total land requirement of 2,400 acres would be required.

Looking at the sector in the foreground, and directly in front of that white building, is the transmit antenna itself. It extends about 4,000 feet long.

This is that transmit antenna, the tallest portion of which is 135 feet tall. There are six antenna arrays. The shortest one is 35 feet tall. So for each one of those four sectors, there would be a transmit antenna, such as this, along the one edge.

You can't see it very well in this photograph, but there is a ground screen, a mesh something like chicken wire mesh but with the dimensions eight to ten inches wide, that is laid out on the level ground directly in front of the antenna. This is to help focus and direct the radio beams, the energy that is transmitted from the transmitter elements.

This is a shot of the back screen which is supported by the structure that you saw on the previous photographs. That same type of screen is what is laid out in front of the antennas, and again- it is used to help focus that radio energy.

This is the accompanying receive site--again, three sectors for the East Coast Radar System. Four sectors would be required for the Central Radar System.

In this case, the receive antenna for the East Coast System is about 5,000 feet long. For the Central Radar System as well as the West Coast and Alaska, that receive antenna is about 8,000 feet long. That's to give us a better detection capability against the smaller sized air launched and sea launched cruise missiles.

One of the things I'd like to point out is the level land directly in front of the antennas. That is one of the criteria that is used in trying to determine some of the preferred locations, not only within the study area but then as we site those antennas in specific land sections. Beyond that immediate area where the ground screen is located, however, the precise--the flatness is not as important. And many of the areas that we have looked at, really, would require no additional cut and fill or grading at all.

This is that receive antenna. On the left is the antenna array of antenna elements, about 19 feet tall from the ground. On the right side is the back screen supporting structure. Again, there's a back screen.

This extends 65 feet tall. And there's a ground screen in front of the antenna that extends 750 feet and runs again the entire length of the antenna array.

As we look again at one of those antenna sectors, let me call your attention to a couple of other key features of the system. The first is that you can notice the cedar fence that surrounds the antenna sector. In the case of the receive antenna, that's to ensure that animals or people do not wander inside the antenna where they can do damage to themselves or to the antenna--for example, getting caught up in that ground screen area.

In the case of the transmit antenna, that boundary fence or exclusion fence serves two purposes. The first again, to keep animals and people out from damaging the system. But the second is that the transmitter is a high power radiofrequency emission or radiation system. It does send out high energy radio waves in the high frequency, HF, radio spectrum. That's the frequency of 5 to 28 megahertz. But that's also the same frequency that's used by your ham radio operators. The Voice of America has radio stations within this frequency range. And in fact, some of them transmit at about half the power level that we do from our transmit antenna here.

Outside of that exclusion fence, the energy level is such that there will be no long-term or short-term health effects--no biological effects--as a result of that radio energy. An explanation of why we can confidently make that statement, and what that means, will be handled in much more detail--and in response to your questions, in whatever level of detail you would like--by Mr. John Mitchell. And as stated, he has been involved in doing studies and research on this type of radar system for over the past 15 years.

The information from the receive antenna is sent by a tropo radio link to the Operations Centers. The white dishes there are the antennas to receive that information. They work best at a distance of about 50 nautical miles. And so that's going to become important siting criteria as we look at the locations of the receive and transmit site with respect to the Operations Center.

Inside the Operations Center, that information is analyzed by the computers and displayed on these control displays, manned by Air Force personnel during the permanent operation at the Operations Center. And the total number of people involved at the Operations Center is about 400.

At either the transmit site or receive site, there would be about 50 people permanently employed, all but three or four, civilian. Half of them, civilian federal wage grade civil servants that would provide security for the site area. The other half, civilians that would be hired by the prime contractor, a General Electric or a Raytheon, to provide for the operation and maintenance of the equipment itself.

Looking a little closer at one of the displays, the type of information that's presented is shown in the geographic display on the right-hand side--which shows that northeastern sector. Looking a little bit closer at that, the New England area is the bottom left-hand corner. You see the large outlined area of Greenland and off to the right, a smaller island area--of Iceland. And one of those numbers up there designates Air Force One, which we tracked as President Reagan flew to Iceland. This is a part of the normal tracking operations that we are now doing on this East Coast System, verifying the performance and the capability it has to track--detect and track vehicles out to those long distances.

All of that, then, is the reason why we need this system and a description of what the system would look like in this area. What I'd like to do in this next portion of the presentation is define why we are looking in this particular area as a potential transmit site as well as identifying the other areas for receive and transmit site areas.

If we were to look at the East and West Coast Systems which are already in place, we want to have that overlap coverage with both of those systems. That means that that little white dot that's in the center of the Central Radar System cannot be moved too far either left or right or we would end up with a gap, a gap that potentially an adversary with sea launch cruise missiles would be able to take advantage of.

Similarly, to the upper right-hand corner of the Central Radar System, we have the sector intersecting with that red circle. That's the southern most radar system which is a part of the North Warning System. We want to also, again for the same type of safety reasons, ensure we have complete protection, complete detection capability. We want the overlap there as well.

When you put those constraints in, there's only a very limited movement in where the center for the radar system can be. That translates to this area--that's shown in yellow here. And from the geometries, from the previous chart, the ideal location would be where the dot is shown--in the southeastern portion of North Dakota.

Because of the large number of people involved with the Operations Center, some over 400 people, we need to locate the Operations Center at an existing military installation. The cost to set up and provide the service structure for that many military people would be prohibitive in terms of cost. So the proposed location for the Operations Center is at Grand Forks.

If you recall my comments about sending the receive signal information from the receive antennas back to the Operations Center, that distance can be no more than 50 nautical miles. And so we set up a series of possible locations 50 miles from Grand Forks Air Force Base

for the proposed receive site. The distance between the receive and transmit sites should be no more than 150 miles, nautical miles, and needs to be at least 50 miles. Because this type of system, instead of being a short pulse system, is a continuous wave [system] where the transmitter is operating continually and the receive system is continually picking up the energy as it is coming back. And so there needs to be enough separation distance so that the very sensitive receive antenna could not receive any direct input from the transmit antenna.

The result of applying these criteria, and some additional ones which include such things as an adequate separation from any airwaves--is shown here--in the case of the receive antennas, ensuring that we are at least five miles from any high voltage, high power line--and ensuring that we're an adequate distance from anything that could represent an obstruction and therefore reflect energy off either the transmitter or reflect energy that would be coming back to the receive antennas.

As I mentioned, we had the public hearing last night in Hillsboro and put a great deal of emphasis on some of the concerns and the questions related to the receive sites. The proposed transmit study areas are shown as this Amherst area and three study areas around the community of Wheaton.

In terms of the work that's documented in the Draft Environmental Impact Statement, there are--from an environmental basis--some preferred site areas or study areas. For the receive site those preferred study areas, from an environmental standpoint, are Blanchard and Thief River Falls. For the transmit site the preferred study areas, again from an environmental standpoint, are the Amherst area and the Wheaton North area. For most of these other study areas that I did not mention, there are concerns with wetlands, with topography that is a lot more rough and would require significant clearing and grading, and therefore potential disruption of the drainage patterns. We recognize that that's a very serious concern in many of the receive study areas.

As the process is carried along then, and one of those study areas would be selected for a receive site and a transmit site, we could end up with this possible configuration for the four transmit antennas. Again, each one of those sectors is about 600 acres, for a total of 2,400 acres. It will be possible, however, to put them all into a single area--about two and a half miles by two and a half miles squared would translate to about 4,000 acres, instead of the 2,400 acres. The reason this is shown in this way, is that we could slice off the lower left-hand and lower right-hand corners of that land. But if that ended up with the landowner having an uneconomical remnant to continue production, then the Air Force would be willing to buy or to lease that land as well. So if you include all of those possible segments as well, then you could have an area as large as this. But, again, for the four individual sectors alone, they would total up to 2,400 acres.

This is an artist's concept of what that might look like for the four transmit antennas here in the sections as they are outlined. I would like to emphasize that the Air Force has the approval to lease land as an alternative to direct purchase. While direct purchase is the normal preferred option, because of the concerns in such things as tax losses or people that are interested in keeping the land in their name, we will also consider and will negotiate--with the interested landowners--a leasing agreement.

A particular example for you to consider might be--taking this minimum 20 year operation period, five years additional to allow for either the construction, installation and checkout time--we would ask for a long-term lease then of that 25 years, with an initial rental rate based on whatever the fair market rental rate would be in the area at the time the negotiation would take place. Appraisers who are familiar with the area would go with the landowner over that area, would go over the information, and would do the appraisal--both on the purchase price as well as establishing a lease price. And that's what would be the initial offer made to the landowner. And then a fair price, either for purchase or an arrangement for leasing, would be negotiated between the landowners and the Corps of Engineers acting as agents for the Air Force.

For the receive site, this is one possible schematic, again, for the four receive antennas. And again a concept of how that might be laid out in this part of the country.

Through this process, we have attempted to get the input from the communities, and we have done that. We have received a great many letters. There are many questions that are asked in those letters. They are going to be answered either by referring to the specific answers that we have prepared to a set of these representative questions--or as new questions are asked, specific information responding to them will be provided in the Final Environmental Impact Statement. We wanted to ensure that you had the information on what the system would look like and some of the reasons that we're here in this particular area.

The results of this, as I said earlier, will be included in the Final Environmental Impact Statement, and that document then would be published by the Department of the Air Force in the early springtime.

This concludes my portion of the presentation on the Over-The-Horizon Radar Program. It's an extremely important program to the Air Force and to the Department of Defense. And because of this added surveillance capability and the added deterrence that it provides, we believe it's a very important system to the nation as well.

I'd now like to ask Mr. John Mitchell to address the concern on health effects as a result of the transmit site.

Mr. Mitchell: Thank you, Colonel Lee. I'd like to take a moment to introduce another one of my colleagues from the Air Force School of Aerospace Medicine, Dr. Jerome Krupp, who's here on the front row. Dr. Krupp is in charge of our Radiofrequency Radiation Research Program at the School of Aerospace Medicine. The School of Aerospace Medicine is located at Brooks Air Force Base in San Antonio, Texas. And for a number of years we have had the sole responsibility in the Air Force for investigating the radiofrequency radiation effects, and then from those data, establishing the safety guidelines that are used throughout the Air Force and our Air Force workplaces.

Since that is one of the concerns that has been expressed in terms of environmental considerations for the Over-The-Horizon Backscatter Radar, the Draft Environmental Impact Statement devotes a large amount of its content to addressing that issue. In fact, there is some 40 or 50 pages in that document. And I would encourage you to take a look at that if that is an area of your interest.

The purpose here tonight is not to go over all those 40 or 50 pages in detail, but to provide you with some background information which I hope will let you know why we have such confidence in the radiation safety aspects of this system.

I'm sure you're all aware that there are many forms of radiation emission in our modern society. Most of us use microwave ovens in our homes. We have CB radios in our automobiles. We use the AM/FM radio, TV station information. There are certainly telephone data links around the country--just a wide assortment of things, and of course numerous military installations. And in speaking on behalf of the military systems, that is why we have a research program at the School of Aerospace Medicine. For in fact if you look across our installations around the world today, in the Air Force systems we have more than 100,000 employees, both our civilian and military in uniform, that work in some low level RF fields as a part of their daily jobs.

Many of these employees are close to those forces as they would be if people go to work at the OTH-B Sites. And many of them are just working in other areas where the levels are much lower. But all of them see some form of this, and they see it five days a week, eight hours a day, and for careers, professional careers, that span some 20 or 30 years. So it is easy for you to understand why we would have some concern for the radiation safety aspects of this kind of an environment and as I said before, the School of Aerospace Medicine has that responsibility.

Now, in regard to the Over-The-Horizon Backscatter Radar. In about the 1968 time frame, the people at the Electronics System Division at Hanscom Air Force Base were beginning to look seriously at the OTH-B technology. And they themselves asked the question about whether or not there would be biological effects associated with the frequencies in this frequency range.

They came to the School of Aerospace Medicine, asked us for advice on that issue. And in fact, at that time we had very little information on HF and biological effects. And so it was in that time frame that we put together a team. We did not have a device to study these effects at the time. We took some assistance from the National Bureau of Standards and from the Naval Research Lab, and of our science and engineering staff at the School of Aerospace Medicine. And we developed a special exposure system which was then used to study the biological effects of HF band radiation.

A great deal has been learned since 1968. And in fact not only in this frequency range, but in the frequency range of many of our other systems, we have developed a very good understanding of the way these kinds of RF fields interact with biological systems, how that energy is handled by the biological system, and what levels of radiation can have significant effects.

At the school today, we have about 24 people on our staff that are involved full time in this. In addition to that, we have a contractual program. We spend about three to three and a half million dollars a year upon research with 30 or more of our academic institutions that are spread around the United States. So in fact we have a very competent team of people that have addressed this issue.

We're not alone in this business. There are--our sister services have come with their programs, as do many other government laboratories. The Environmental Protection Agency has had their own research program for a number of years. If you look at all of this work today, there are more than 5,000 references that are available to assess the biological effects of such radiation.

In 1978 the scientific societies decided that it was time that a new professional society be developed just to hear and to have scientific dialogue on these kinds of findings. And so the Bioelectromagnetic Society was formed, and since 1978 they have had an annual meeting. At those annual meetings, there are always more than 200 research papers presented. There are 3 to 4 hundred people that attend these meetings and those 3 to 4 hundred people are involved in the research on a daily basis looking across all the microwave and radiofrequency spectrum to assess these biological effects.

Now for many years, the United States and most of the free world used a single value to establish whether or not such fields were hazardous. That was the so-called 10 milliwatt standard. It was an average power density of 10 milliwatts per centimeter squared averaged over any six minute period, and it was used across the frequency spectrum.

Well, some of the things that came out of our HF band studies, and some of the work that has been developed by many others in our academic institutions, have led us to know that the way this energy is absorbed

and distributed in the body is a strong function of the radiofrequency. And so that, in fact, you need a frequency within the standard if you are going to have a standard that's based on good scientific rational.

So in 1982, when the American National Standards Institute began to review the data base to set a new standard, they went over all the information that was available. And in 1982 they promulgated a new Radiofrequency Radiation Safety Guideline, and that was the first of the significant frequency dependent guidelines that were set in the free world.

In May of 1985, another professional group, the American Conference of Governmental Industrial Hygienists, took their review of the bioeffects literature. And they established a new special limit value guideline, again, for the same reasons.

And in July of 1983, an international body that had been working a number of years, the International Radiation Protection Association which is made up of some 11 or 12 different nations--they got together, and in that time frame they published interim guidelines for both occupational and general population standards.

Then in April of this year, our own U. S. National Council On Radiation and Protection and Measurements published a new, rather detailed book that describes a summary of the bioeffects literature and again establishes their recommendations for safety guidelines.

And in July of this year our Environmental Protection Agency published in the Federal Register three options which they have given to the citizenry at large to consider--in terms of whether or not they want to adopt one of these standards as a federal guideline. So in all of these--all of these standards that we have today, that have been developed in the last four or five years, they have one thing in common. And that is that there is a general consensus on the threshold value for an adverse effect in biological systems.

These standards only differ in the conservatism that is applied to that threshold value. So it's--I think it's rather significant that in all the different bodies that have looked at this information, that we have come to a reasonable consensus. Because today in the science field, there is generally--there will continue to be dialogue and debate about what constitutes safe levels. And so I think that it's significant that we have come to such a consensus on this one issue.

Now, even the most conservative of those standards are going to be higher at the frequency of the OTH-B System. So that is to say--that at the base boundary of the OTH-B transmitter site, that the radiation levels outside the boundary fence are going to be lower than the lowest of the standards that are recommended today for the protection of personnel in a general population setting.

Now in the Draft Environmental Impact Statement, and some of the things that I could speak to tonight would get into all of the numbers, of the way we describe these safety guidelines--I know that's confusing. It's confusing to the people that work in the field, and even more confusing for those that don't work in the field, but I'd like to give you just a couple of numbers that perhaps would help put this in a little better perspective.

For instance, microwave ovens is a very common household device that most of us have in our homes in this day and time. I certainly have one in my home. When they're sold new, they're allowed to leak one milliwatt per centimeter squared at any point around the seal. As they degrade over some period of use of their lifetime, they're allowed to leak five milliwatts per centimeter squared. Now, the numbers that we're talking about from the OTH-B System at the base boundary is about a tenth of a milliwatt or less.

Now, those are different frequencies. There are some other complexities involved with that, but it's not a bad analogy.

Another item that I would like to mention is the CB radio. A lot of people have those in their automobiles. If you can take a typical CB radio and then--a lot of those operate the same frequency of the OTH-B, 27, 29 megahertz I believe. The--when you key the mike on a CB radio, you could have about a half a milliwatt a few feet from the antenna. So depending on where the antenna is located, that would be an exposure level from that. So that's not to take from other of the other data that's in the Draft EIS, but it's just to give a little perspective on the numbers that we're talking about--in terms of potential impact on the state of health.

Now, I'd like to just take a couple of more minutes to address a couple of questions that have been raised, either in the letters to the Program Office, or perhaps in some of the earlier public hearings. I'm not sure of the exact source of that, but I was asked to comment on these two things.

One is what is generally described as the Moscow Embassy exposure. Our United States Embassy in Moscow was subjected to low level radiofrequency radiation fields from 1953 to 1977--for more than 20 years. Our State Department became aware of that certainly by the early 60's. They took teams of people over there and measured the signals. And they also set into motion some investigations of biological effects concerning that system.

Many reports have been issued, and many reports in newspaper accounts and one thing or another that had described illnesses where the people were employed in those embassies. So the State Department, in about 19--about the mid 70's, I guess, gave the contract to a John Hopkins University, and they did a very thorough study of whether or not there was anything to the reports about the effects on our employees of the U.S. Embassies.

They took a data set--and they were able to find that there were some 1,800 employees that worked in the embassy during that time frame, and some 1,200 dependents that either lived at the embassy during that Moscow Embassy. They went out to get a controlled population because you really can't do those kinds of studies unless you have something to compare it against. So to take a controlled population, they found more than 2,500 employees and 2,000 dependents from the embassies in Budapest, Leningrad, Prague, Warsaw and several other of our U. S. Embassies in foreign countries.

The John Hopkins University review of this is many pages. They went back and did medical follow-ups on many of the people, and their conclusion was that there was really no discernible differences in the state of health of these employees based on that microwave exposure. Also, those microwave exposures were extremely low. They could not have been more than a few microwatts per centimeter squared--and this, like I say, measured over a long period of time, and measured at different places in the embassy.

The embassy is a big place. You can't just measure the incident fields from the outside of the building. But you have to assess where people work--what those energies were at those levels--so I'm reasonably impressed that the John Hopkins Study is a good follow-up to the embassy story. And if anyone would really like the details on that, I'd recommend that report for your review. It is publicly available.

Another issue that has been raised, tentatively, has to do with stray voltages affecting dairy cattle, and there are a lot of reports in the literature. It comes in a lot of different forms--from dairy farms, one thing or another, where there have been stray 60 hertz signals around many of the facilities. It's not an uncommon thing. You look for it--you'll find a number of those. But in no way can that be related to a system like the OTH-B. There just is no such fields that are promulgated from our system that would have impact on the dairy herds.

Well, that concludes the remarks that I am prepared to make this evening. Later on, I'll be glad to answer any questions that any of you might have. I also hope that by providing some background of the fact that the Air Force does have a very active interest in radiation safety, I hope that I have conveyed to you that we have taken a conservative approach in all of our systems across the country. And certainly the OTH-B is no exception to that. Thank you very much.

Colonel Bristol: For the benefit of those of you who came in after we started, take a copy of the comment sheet. If you think you'd like to ask a question of either of the speakers, or if you'd like to make an oral statement during the period following all of the questions when each of you will have a chance. Each of you who desires to do so, come to the microphone and make a statement that can be a part of the record.

You don't have to fill out the bottom portion of this--which is an optional area if you wish to make your statement on this actual sheet and submit it by itself. But primarily just your name and address--indicate here whether you wish to ask a question or whether you wish just to offer oral comments. And up in the upper right-hand corner, indicate if you're a public official and if so, what office you hold--whether you're a representative of a private association or whether you're here just in your individual capacity as a concerned citizen.

We'll collect these documents after a recess, which we're about to take for about 10 minutes. And then I'll gather those together and use those as the basis for calling upon each of you to come forward for the questions and then for the statements. We are not--we are talking about the general time frame up until 10 o'clock. But we'll take the time that's necessary so that each and every one of you who has a question or who had a statement that you care to make, can be heard--staying, with respect to the statements, within the time limits that I previously outlined--five minutes for public officials or the designated representative of an organization, and three minutes for all else.

Thank you very much. We'll be available during the recess if there are any questions. And we'll recess now--and go by the clock on the wall--til about 10 minutes after 8. If you'll come back to your seats, we'll convene.

(Short recess was had.)

Colonel Bristol: I know it's going to be a little bit awkward for some of you--but as I call people, and I'll start that in just a few minutes for the questions, if you could try to make your way down and across the front or across the back to the microphone over to my right. And use that as the podium, if you will, from which to ask the questions and make a statement. Do watch out, as you walk, for the various cords and wires that are on the ground. It's sort of a mine field. It's a test to see if you can make your way successfully through it to get to the microphone.

But before we get to the questions, I'd like to bring Colonel Lee back to the microphone to introduce some of the members of his staff and the experts that he's brought along with him that can assist him in responding to any questions that you may have.

Colonel Lee?

Colonel Lee: Thank you. You were introduced to John Mitchell and to Dr. Krupp covering that very important area. I also want to reintroduce to many of you Dr. Sid Everett from SRI International. They have been doing the support work for us in preparing the Environmental Impact Statement documents. Dr. Gordon Guttrich is an associate department head from the Mitre Corporation. He is my chief systems

engineer for the OTH Program, and has been involved with this system and the Environmental [Experimental] Radar System for over the last 10 years. Dr. Guttrich? (standing)

I have a newcomer in the Program Office as of a few months ago. He worked for me before. I brought him out here because he's going to be also tied in with this program. However, I had no idea there was a special link here with the community of Britton as well. Major Fran Veldman, back over in the corner, is chief of my west division and is married to the former Eileen Buiskar from Britton. And so he had a chance--in fact his family is staying here until he's able to get base housing. They're at Hanscom Air Force Base, so I'm glad that Fran could be with the team here tonight also.

Any of the real estate dealings, the negotiations for either purchase or the lease of land would be handled by the Omaha District Corps of Engineers. The specific contact would be out of the Riverdale [ND] office, and here from that office is Mrs. Jackie Bratz, back over to your right.

There is a pamphlet that describes the real estate acquisition procedures. Her full name and address, and phone number, is provided there, so you can feel free to contact her for any follow-up questions in that area. And then also, if you need any other information--copies of these brochures--Lieutenant Gale Brown, back at the door, and Ms. Mary Ferris from out of public affairs at Hanscom Air Force Base, are also here as part of the team. Thank you.

Colonel Bristol: I have mentioned to some of you already, just to supplement Colonel Lee's remarks--we have a couple of boxes of these Draft Environmental Impact Statements. And we really would like to distribute all of them tonight rather than haul them back from whence we came. And we do have another box out in the car for tomorrow night's hearing. But for those of you who haven't had a chance to read this, not that you necessarily want to read all of it--but it's fairly well indexed and has a summary in the front. I encourage you to stop by on your way out and pick up a copy.

All right. We'll begin with the questions now. Repeating again, that if you have a statement that you wish to make and a question incident to that statement, hold off until we get to the statement's portion of the program. But right now it's primarily to clarify a particular point that one of the two speakers may have made or a point that's mentioned in the Draft Environmental Impact Statement.

Mr. Roger Schuller? Claremont, South Dakota. Mr. Schuller or is it Schulter? Schuller. Got a question concerning land use.

Mr. Schuller: Yes. I'm Roger Schuller from Claremont and I live in the--just outside of the proposed area in Amherst. But we own land in the area that's proposed and I have three or four questions.

Colonel Bristol: You might want to get just a little bit closer to the microphone, Mr. Schuller.

Mr. Schuller: I have three or four questions to ask. One, how come the Amherst site was so much larger than the three sites in the Wheaton area? In other words, out of the four sites, the Amherst one seemed--well, it's larger than all the Wheaton sites put together. How come that was so much larger?

Colonel Bristol: Okay. We'll take these one at a time. I'm going to move this microphone down to Colonel Lee cause he's going to take most of them up.

Colonel Lee: Within that area that we defined, there were many additional criteria that were used. And these are also identified in the Environmental Impact Statement. Airwaves was one, major high voltage transmission lines was another. The western boundary within the study area was another factor.

Within the Wheaton community itself, there was several--either transmission lines, power lines, that restricted the size of those individual areas--and also we needed to be a certain minimum distance from the town itself. In the Amherst area, there are few, if any, obstructions for an area that's, you know, seven to ten miles wide and ranging in the north to south direction as identified in the EIS. So it wasn't anything that we did, or you did, or that nature did other than the fact that as the community has developed and grown up, the land area in this Amherst study area is just different in characteristics from the area around the Wheaton study area.

Mr. Schuller: Then the next question was the railroad. There's an active railroad that runs through Weston Township in particular. Does the railroad exclude that land, or land from a certain perimeter around it, from being eligible to be in the transmit site?

Colonel Lee: The only exclusion there would be to insure that these 5,000 by 5,200 foot sectors did not cross that railroad line. We wanted to make sure that there would be adequate separation from that, but there would be nothing else that would prevent that from therefore being considered as a site area.

Mr. Schuller: The railroad could run through your site area as long as it didn't intersect with the transmit line. Or you would just keep it excluded from--lets' say, in other words, you had the blocked area. Would you exclude the railroad from the two miles by two miles entirely or--

Colonel Lee: That's correct. For that particular configuration.

Mr. Schuller: Okay. But if it was outside of that configuration by a half a mile--no problem?

Colonel Lee: That's my understanding. There should be no problem.

Mr. Schuller: On land outside of the area, if there is interest outside of the area proposed, will that be acceptable. Or is the difference in miles and that, between your sites in North Dakota or Minnesota, make it impossible to move out of this Amherst area? In other words, could you move four or five miles north or could you move south?

Colonel Lee: There are two different factors that are involved here. The first is the operational concerns. If you were to move too far west of the present Amherst area, you would be outside of that original study zone that we had defined--and that's to provide the required overlap between the East Coast and the West Coast Radar Systems.

If you were to move that area much further south beyond the present area, then the distance between the transmit site--if it were located there--and some of the potential receive sites might be excessive. And therefore that would not be a suitable candidate.

The other area, though, is the environmental concerns. This process that we're following under, the The National Environmental Policy Act, is to consider the environmental impact factors with that area. If an individual had a portion of land that was outside the immediately defined area, and if he asked the Air Force to consider it, and it fell within the environmental description that we had contained within the Environmental Impact Statement--then we could take a look at it and see whether it would also meet the operational factors as well.

Mr. Schuller: Do you have to be notified in writing by a certain date to be included in this Environmental Impact Statement? In other words, if somebody showed up on the 15th of December and said they wanted to sell land to you outside of the area, would that create a problem?

Colonel Lee: Yes, it would--in the sense that we would not be able to consider that. The description that would be in the Final Environmental Impact Statement--all the comments and letters--areas that the public has asked us to look into--questions that they would like to have us answer--added comments in certain areas, those all have to be received by the Department of Air Force by the closing date then December 8.

Mr. Schuller: So if anybody was interested in selling outside of the area, they would have to notify you in writing, not orally, but in writing by December 8?

Colonel Lee: That is correct.

Mr. Schuller: I guess my last question--I got a lot of questions but this would be my last one at this time--when will we know if the site is going to be 2,400 acres or 4,000 acres?

Colonel Lee: That's a difficult question to give an exact answer right now. In the Final Environmental Impact Statement, we will recommend or identify a recommended receive site and transmit site. To the extent that we can--between now and the time that that Final Environmental Impact Statement is prepared, reviewed and approved by the Department of the Air Force--to the extent that we can find and have contact with landowners to establish availability of land, then it may be possible to have that identified within the document itself. And certainly with any potential interested landowners, they would have some idea of whether or not their land was a possible location for the antennas. But as far as any detailed siting, or any further negotiations with individual landowners to actually set up a contract for sale or leasing, all of those things would follow the Record of Decision--and in terms of the actual lease or purchase, would follow Congress' appropriating of funds for that particular purpose.

Mr. Schuller: Will it be the landscape itself that makes you decide whether it's 4,000 acres or 2,400 acres? It's not the--it's not those that want to sell to you that are going to decide. But why are you are going to decide for a bigger one? Will it be the landscape, the geographic situation, that will make a 4,000 acre site necessary? Or is it something on the other end in North Dakota that's going to make it necessary?

Colonel Lee: It's a combination of those factors right here, at that particular area that we're looking at. The one I mentioned was whether or not putting it in that large configuration would otherwise leave an owner with an uneconomical remnant of land to farm. That's why we would extend that area down to the square configuration.

If we use that type of a configuration, it would require that the Air Force would provide additional roads. And it could be, as a part of the mitigation measures to counter some of the tax problems, that the Air Force would maintain those roads for a certain period of time as well, so there are many factors like that.

The natural geography--and streams that might be there--the location of a railroad running through the area--as well as the willingness and availability of land in those particular sections--that would finally determine exactly what that configuration would be. And again, no final decision on the exact siting locations would be made until after that Record of Decision was made, and until we did some further siting studies.

Mr. Schuller: Well, I'll just make one comment- that if it was on- if you're purchasing land because it's uneconomical to farm, you probably could buy the whole country.

Colonel Bristol: Thank you, sir. Next up Mr. Don Franzen.

Mr. Franzen: Well, I'm just here to learn as everyone else. This is my first experience in attending one of these meetings. But I do know, despite a few strangers in our midst. And I was wondering if the Air Force was going to accept testimony from people at this public meeting from people living outside of our community. I feel if there are--you should not do that. I feel that our community is the ones that should be testifying here instead of people from a long ways off, and that's all I have to say.

Colonel Bristol: Okay. Well, at least my understanding of the procedural rules is that anyone who transports themself here and has a particular point of view that they'd like to express, can do so. But of course they indicate their mailing address on the comment sheet. So to the extent that that may be relevant to the issue, then that could be considered at the same time.

Mr. Franzen: Could we have a show of hands from all the people in the area that are here?

Colonel Bristol: A show of hands of individuals who reside within--what area would you describe, sir?

Mr. Franzen: Oh, 30 miles.

Colonel Bristol: Within a 30 mile radius of this room?

Bystander: That's totally irrelevant.

Colonel Bristol: It may be irrelevant.

Bystander: If it's an issue for South Dakota, it's an issue for all of us here.

Colonel Bristol: Okay. Well, just let the record reflect a number of individuals, perhaps half of the individuals here, raised their hands. Mr. Larry Nolan?

Mr. Nolan: All these--I've got four questions and all of them are community interest questions. How much money will it take to clean up the radar site after its usefulness is over? And do you have this budgeted into the cost of the project, or will that be up to the community?

Colonel Lee: We don't have an estimate on--to use your words--what the cost would be to clean up after the system was no longer required. The first point is while we talk to a minimum 20 year time period, just as we have many other systems--including the B52 aircraft that are flying out of Grand Forks Air Force Base that were designated for

lifetimes much less than the time they're still currently in use, and very effective--this OTH-B System can well be effective 20, 30 or 40 years.

If the land is purchased and is then federal land, there would be no requirement, as a part of that condition, for the Air Force to remove, clean up or whatever words you would use. The Air--the land would remain as federal property until some other use were determined. But let me quickly add, because this has been a concern that many people have raised. If the land is no longer required for the Over-The-Horizon Radar System, then it could be made available for other federal use. All that means is that other needs by agencies would be considered before the land would be offered for sale again to the public. But if an agency had a particular need or requirement that involved an environmental impact, the same process that we have been going through here would be required. That means notice of intent, scoping process, Environmental Impact Statements, public hearings--the full involvement of the community.

Now, the second part of it--have funds been budgeted then. In terms of direct purchase, we would not budget funds. Depending on the use that were later to be made of that land, the Air Force at that time would have to budget the funds to make whatever changes were required to suit that next use. If the land were leased, however, certain conditions would be negotiated as a part of the lease.

If you notice from the photographs of the site areas, the vast majority of the land is untouched. The ground screen is something that can be removed very easily. In the case of either the transmit site or the receive site, the only permanent things that are done are antenna foundations that are set in the ground along the boundary line of the fence area itself. So exactly what would be done with that would have to be determined in the individual negotiations of the lease. And the funds required for correcting that, if that were a case or condition of the lease, would have to be considered then in that negotiation process.

Mr. Nolan: So looking from a community standpoint, we'd be not only taxed for tax purposes. But leasing still would be best. We'd have--as a community we'd have better control of the land afterwards.

Colonel Lee: After the lands were no longer required, it would then revert back to that landowner. So, yes, the control--the ultimate control of the land after we're finished with it remains with the landowner.

Mr. Nolan: When the project is funded, will the funds for operation of the radar site over the 20 year projected life--now I hear it's 25--of the project also be funded, or do you have to go back annually to get operation funds?

Colonel Lee: When we make our request to Congress, initially it is for the funds to construct the system. And there is a separate appropriations account--there is a separate set of committees and subcommittees that review and approve the requests for those funds.

The operations funds are O&M money that falls into a different appropriations category, and they are appropriated year by year for the continued operation of the system. But finally, let's make sure that we have this clear--we again talked, for purposes of planning, for a minimum of a 20 year life cycle. But the actual operational lifetime of the system could be 20, 30 or 40 years or more.

This system can continue to operate effectively. It may be desirable to do certain upgrades in some of the electronics. But the physics involved, the phenomenology--all of that will continue to be effective as long as we have a requirement for this type of long range wide area surveillance.

Mr. Nolan: The coal gasification project in Beulah, North Dakota. I don't know if you're familiar with this. That's what prompted this question.

Federal funds came in. It was an economic boost to the community. Now they dropped out and these kinds of concerns. I'm looking at community concerns. Okay. When talking to Moscow, Maine, officials, the community there has not been reimbursed for forest fires caused by the construction crew and septic sludge left by the construction crews. Now, you are a part of that community. Why don't you treat them better than this?

Colonel Lee: The first thing I would do is ask you to give me the specific reference and contact, and I will get in touch with him. And if he has those complaints and has not officially made them to the Air Force, I'll tell him how he may do that. If it is something that the contractor needs to have corrected and he hasn't done that, we can ensure that that is taken care of. But his best opportunity, and I would hope he would feel free to do that, is to contact the Air Force directly, and not work through some third or fourth party.

Mr. Nolan: Well, I asked- I asked him what he would- what we should be looking for as officials here in our townships. And he mentioned that they have--they got some--they have some of this covered by insurance, but it hasn't--that hasn't been covered. They thought the Air Force should reimburse them. And then the septic sludge left by the crew, they have to clean that up. And they thought the Air Force should do that, and I can give you his name.

Number four, I claim no knowledge of transmission lines and how much power it takes. But you're going to be bringing very likely two lines for the power to the radar site, very likely. Now, will you request in the bid by the companies to include that the transmission lines follow section lines and not cross-country? Can you do that?

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Colonel Lee: I can't offer you a direct answer to that. I'm not familiar with what the local and state requirements might be. We would first of all follow those requirements, and if that meant that they should follow along those particular lines, we would certainly support that. I'll have to provide some additional information in the Final EIS to give you that answer.

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Mr. Nolan: We're better off with the PUC then, Public Utilities Commission, to make sure those things can be taken care of then?

Colonel Lee: We may have that answer. It's just that I don't have it here tonight. We have done some study with a contractor who has been in contact then with the local power companies that will be involved in all of the study areas. It's just that I don't have that information with me here.

Mr. Nolan: Okay. Thank you.

Colonel Bristol: Thank you, sir. Mr. Roy Pulfrey?

Mr. Pulfrey: Before I start, I'd like to state that I was born and raised within the Amherst site area, and I now live in Aberdeen.

My first question is--your slides of the site in Maine showed land that has been defoliated and leveled. Do you plan to sterilize the land within the exclusion fence and if not, how will it be made--how will it be vegetated and maintained?

Colonel Lee: Depending what time of the year you ended up taking your slides, you would get entirely different views. In the case of some of that area, in the blueberry barrens, it's extremely difficult for things to grow back, and so we have a pad, a natural pad, that's been placed where the ground screen area is.

In the case of the transmit site, in the previous public hearing I showed a slide looking at the antenna from the side where the green grass had grown back in. And the one where I described a ground screen here tonight--you could have seen the green area that was growing in. That was the third sector, the one that was most recently completed.

We cleared and in many cases had to dig out boulders in that area. And so if some of that grading and clearing area recently was done, then the full vegetation has not grown back in.

In the case of the land that's shown around here, we would expect that that vegetation would be a lot more prompt in recovery. We would work with local people to see what is best suggested, either from the environmentalists, from the fish and game people, or from your local agricultural agronomists. We would, as soon as the ground screen area was laid, would want to have that grown back in with vegetation as soon as possible whatever would grow best and be a natural item here. There is absolutely no sterilization.

If there is anything required for weed control--and this was a point that was brought up last night--for certain noxious weeds or to inhibit the growth of some large trees, such as they do along the power line areas--any chemicals that we would use in that sense would be those that were approved and used by the farmers and the people in the local area.

Mr. Pulfrey: Okay. My next question will be a two-part question. It has to do with the radiation and health aspects. Will the surrounding areas be continually monitored for levels of radiation and will this information be public?

Mr. Mitchell: It's a common practice for--upon installation of any system like this--that there will be a survey as soon as it comes up to power. So there will be a good understanding of the radiation levels around the boundary of the site.

Now, once the site goes into operation, those levels really don't change significantly. They are periodically monitored, if there's a reason to do that. And for instance, in the Draft Environmental Impact Statement, I believe that information is in there from the radiation survey that was done in the system up in Maine.

Mr. Pulfrey: Will that information be public?

Mr. Mitchell: That will be public knowledge, yes.

Mr. Pulfrey: Okay. Then my next question has a few parts to it, but it also deals with the same subject. What if standards for radiation, such as that produced by the transmit site, are revised to lower levels and areas outside the exclusion fence are receiving doses above those revised levels?

Mr. Mitchell: The levels that I talk to tonight that--in all of the standards--still have quite a margin of safety in them. So that I think it's unlikely that the levels would. And the measurements also are much different. And I mentioned a value I think tonight of the lowest level being around a tenth of a milliwatt, where, in fact, in the projected values, I believe it's more like .02 milliwatts per centimeter squared. And also we'll find in the Draft Environmental Impact Statement, as we find in most systems that come on the air, that our calculated values are conservative, so there's a lot of conservatism built into that.

I would assume that final decision as to if, in fact, some day the levels--that they would lower the standards at a level that would be below what we have at the base boundary--then that would be a subject of negotiation between the site people and, for instance, if it's EPA that has levied that and they have compliance requirements, then that would be negotiated between them. But frankly, that's highly unlikely that that would happen.

Mr. Pulfrey: Let me read the rest of my question.

Colonel Bristol: You might want to get closer to that microphone or maybe you need to lower the microphone.

Mr. Pulfrey: The rest of my question is what will happen in Grand Forks--oh, pardon me. How will landowners and residents in those areas be compensated? Part of what you said would answer that. What would happen if unforeseen negative environmental or health impacts occur?

Mr. Mitchell: Questions are occasionally raised around many of our sites, and they're dealt with on a one-on-one situation. I can tell you, from personal experience in dealing with these matters, that we've never had an incident around one of our radar systems where we've had that problem--where it's turned out to be something that had to be dealt with. So our history of this, because of the fact that we have a conservative approach to this, is really quite good.

I'm not sure that fully answers your question. I guess the answer to that question is--it will be dealt with on a site-for-site basis. So if you have that problem, it would have to be dealt with through the parties involved.

Mr. Pulfrey: Okay. I have submitted a list of questions, of which the ones I asked here are a part, and I expect the answers will be in the final draft of the Impact Statement? 15

Colonel Lee: That is correct. They will be.

Mr. Pulfrey: Thank you.

Colonel Bristol: Sister Mary Lou, I probably won't pronounce this right, Geraits. Could you lower that a little bit, Fran?

Sister Geraits: I guess it's okay. Is this the time for questions only?

Colonel Bristol: Yes. For questions.

Sister Geraits: Oh, I thought it was comments. Can I make a comment?

Colonel Bristol: I won't make you go back to the seat and do that circuit again. Proceed with what you have.

Sister Geraits: Okay. Well, my understanding is that artificial electromagnetic radiation is hazardous to living creatures in three areas: physical, psychological and genetic--genetical. So I strongly oppose the source of radiation that this system will have for us, and it isn't just that if it would be in the Amherst area. I'm opposed to it in any area so, and also I do not see it as a necessary way for us to be protected, you know, as a defense kind of thing.

Colonel Bristol: Did you have any particular question based on what Mr. Mitchell previously had said about the lack of any health hazards incident to the radiation? Do you have any specific question based on what you know of Dr.--of Mr. Mitchell that you'd like to ask?

Sister Geraits: Well, the accounts that I have read of the Moscow Embassy radiation don't leave me as optimistic as it does you, Doctor. Like, for instance, two of the children were sent back with, was it some kind of cancer of the blood or something like that. And I don't remember the exact facts, but like I think there were hundreds or like 50 to 100 people, at least, that suffered ill-effects from that, and also low level radiation, not just the High Frequency, you know. Even from fluorescent lights.

Those of us who are more--what is the word--susceptible, that's it. You know, some of us are more susceptible than others of us, and so I'm just hoping that we're thinking of the susceptible people too instead of just saying, well, that's okay if a few are, you know, zapped.

Colonel Bristol: I think Mr. Mitchell wants to just make a brief response to that.

Mr. Mitchell: Yes. Just a brief comment on the Johns Hopkins study. It of course was a very complex study. And one of the conclusions that they arrived at was that to live and work in a foreign embassy is not the most healthy environment. And so while there were some effects noted, there again, in looking--in studying very hard to compare those with matched controls as well as they could be.

Now, their conclusion was that there was not a discernible difference in both mortality and morbidity. That's the reason I also recommended that--those people who obviously have some knowledge in this area and some concern, and I would recommend, you know--that you get a copy of that report and read it and thereby draw your own conclusions.

In terms of the fact of the standards being applicable to all personnel and all states have held our young and old--the general population standards, that's exactly what they've taken account. The threshold for an adverse effect is basically the same for people, and then it's a matter of whether they handle that. So in all instances you'll find that in most of the standards that deal with both occupational and the environmental, the environmental levels are much lower. And indeed, these numbers that we're talking about are much lower, and there's specifity to account for that.

Colonel Bristol: Thank you very much. I realize that some of you on this side are having difficulty hearing the answers and so what I'm going to ask the speakers to do from now on is to do just like I'm doing now. Come up to the podium and use this microphone and speak directly into it, and then perhaps everyone will be able to hear the responses to the individual questions.

Next we have Russ VanWagner. I hope that was reasonably close? Russ VanWagner. Perhaps it was just the writing that I missed. You can use that microphone there, if you'd like to.

Oh, are you Gene Cassels?

Mr. Vanwagner: No. He just asked me to bring that down.

Colonel Bristol: Okay. I'll put this one in the file. Thank you.

Mr. Vanwagner: For the record, my name is Russ VanWagner. I come from Aberdeen. I guess that, for the gentleman who was down here earlier, I don't live in the impact area. But I feel like I'm a South Dakotan and I am a taxpayer too, and I guess that makes me feel like I got some reason to be up here anyway.

Colonel Bristol: Speak a little closer into the microphone, if you will, so the people on the far end can hear you.

Mr. Vanwagner: Okay. My first question is about the survivability of the system. I'm wondering if it's hardened against electromagnetic pulse?

Colonel Bristol: The first question is about the survivability of the system, whether it's hardened against electromagnetic pulse

Colonel Lee: The entire OTH System, as you could note from the pictures of the slides--it's not a hardened installation. The requirement is for advance early warning. It's to prevent those kinds of actions from ever taking place. So consistent with that then, there has been no attempt to provide those kinds of additional hardening levels, either in terms of the physical structure or the other equipment associated with it.

Mr. Vanwagner: Okay. I guess that leads into my next question. What good can it do? I mean, what exactly--what kind of warning does it give? Who does it give this warning to, or is this some sort of a basis for a ballistic antimissile type of installation? Or what happens when they see something coming? Do we all just jump in the basement?

Colonel Lee: The objective of the system is to provide several hours of additional warning for a large scale aircraft attack. The information from the OTH System, the Operations Center, is sent to the Region Operation Control Center and on to Cheyenne Mountain. It will be made available to the national command authorities, and of course that finally is the President. He has the opportunity, with the information that the Soviets may be massing an attack, to consider further negotiations with them.

The objective is to prevent a surprise attack. Having the system itself there, with that kind of a capability, should give second thoughts to the Soviets or anyone else that might be thinking of starting that kind of an attack. If they were to go ahead and launch aircraft headed towards the North American continent, then there would be that time for negotiations. If the attack continued to progress, there would time for warning the general population--warning time which we don't have right now. There would also be time to ensure that our forces could respond, if that was the final decision from the President as well.

Mr. Vanwagner: Okay. Has it been funded yet, the system that you're going to put here?

Colonel Lee: No. The Central Radar System has not been funded yet. One of the actions that we do as part of this environmental impact analysis process is to complete it, to have the Record of Decision, as a part of that final debate in Congress for the funding.

Mr. Vanwagner: I see. When do you think it will be--the debate will come up for the funding?

Colonel Lee: As I mentioned earlier, the Air Force plans to include initial funding to start both the Alaskan and the Central Radar System in the 1988 budget request. That Air Force budget request is at the Office of the Secretary of Defense right now, and if approved, would go over to the President and be sent as the 1988 President's budget. That normally is submitted to Congress the first part of the year. And then through the six to nine months that follow, Congress would consider, debate and then finally go authorize the program and the funds for it.

Mr. Vanwagner: Okay. Thank you. I guess my question is for the doctor. I haven't read the Johns Hopkins study. I read a different book or looked at a different book called, The Zapping Of America. And I was wondering--they feel quite a bit differently about--well, for instance, the Moscow incident, and about the electromagnetic radiation in general. They feel like our standards are way too high and way too dangerous.

What I need to know, I guess, is what's the title of the Johns Hopkins study?

Mr. Mitchell: First off, let me comment on Paul Brodeur's book, The Zapping Of America. That was published about 1976, '78, in that time frame, and it was actually published before the Lilienfeld Report was completed, I believe, and if so, it was very close. And of course, The Zapping Of America, by Paul Brodeur, was a very vastly written book based on a number of articles he published in the New York area, I believe--and a lot of anectodotal things in there that don't match with any of the science that's been done in this field.

The reference on Lilienfeld's Report, I do have here. I'd be happy to give that to you.

Mr. Vanwagner: Thank you very much.

Colonel Bristol: Thank you, sir. Terrance Meidinger?

Mr. Meidinger: I just have a few questions. One is just to clarify the intent to purchase 16 megawatts of power and versus the requirement of a transmitting station for 1.2 per face or per array. What's the discrepancy there?

Colonel Lee: Do you want to--I'll take them one at a time. The question dealt with the fact that in the Draft Environmental [Impact] Statement we talked to the total power requirement of 16 megawatts for the transmit site. We want to ensure that there is an adequate amount of current available to the system on a total 24 hour basis with a very high reliability performance.

The amount of power that's radiating from an individual antenna is, as I have stated, about one megawatt. There is the efficiency factor. There is the power that's required within the building itself. There is the heat, especially during the winter months here, for all of the four sectors. There is power requirements for the monitoring of the areas that we will be doing for the site security. So all of those things summed together--and then for a very conservative factor, which has been applied--we have just stated, as a general requirement, 16 megawatts for a transmit area.

Mr. Meidinger: Okay. The other question is regarding what skills, training would be required of long-term personnel working at and maintaining the site?

Colonel Lee: With the civilians--and I mentioned there would be 50 of them and then emphasized about half of them would be the site security people, following the example of the East Coast Radar System and we'll be doing that for the West Coast as well. Those would be federal wage grade civil servants. So beyond having a high school education, being able to pass a minimum of a secret security clearance, which means having a background investigation, there would be no other requirements for that type of a position.

The other positions will require some type of a technical background, and I don't mean by that a college education in engineering. But either some trade school or some prior military experience in the operation, in the maintenance of electric systems, computer systems.

In some cases, there are training programs that can provide this. We have many instances of foreign countries where, as a part of the training program itself, the contractor has trained people to go ahead and provide for the operation and maintenance of the system. Exactly what kind of skills will be available in the area and the ability to contract to hire people directly here or to train them or to bring them in from the outside is all something that is pretty difficult to put a guess at right now.

But to the extent that there are people here--and I know that you have many technical schools, trade schools within the area that provide that type of training--there should be good job opportunities.

Colonel Bristol: Tim Langley? You've checked all the blocks I see, Tim. Good.

Mr. Langley: I've wide interests. I'm also a part of that minority of people that will probably be buried in a cemetery more than 30 miles from here. I live in Kranzburg, which is a small town east of Watertown, South Dakota. So I've been exposed to the first health hazard of electromagnetic radiation, which is the need to drive 100 miles over winter roads to get to the hearings.

I'm here because I am a designated representative of the South Dakota Peace & Justice Center. That is a 700 plus membership organization of people from the State of South Dakota. A few of them live in the immediate area. Somewhat more of them live in the three county area that the Amherst region touches. Many more of them live within the 100 to 200 mile radius that the Environmental Impact Statement indicates that the electromagnetic field would be slightly altered. Most of them are taxpayers and even the few that don't pay taxes are covered under the Bill of Rights. So on all of those grounds, I guess I consider myself a local spokesperson at heart.

We are concerned about some of the things that we saw in the Environmental Impact Statement. So we commissioned a woman named Debra Rogers of Pierre, who is a biologist and environmental researcher, to go after the Draft Environmental Impact Statement with a fine tooth comb, and really bring out all of the issues that are there--that maybe a lay person wouldn't be competent to really bring out.

Her work includes the same kind of independent research of the Etis Pipeline, the proposed low level nuclear water dump at Igloo, and the proposed PCB incinerators at Madison. She's coming up with 32 specific comments and questions about the Draft Environmental Impact Statement which our organization, the South Dakota Peace & Justice Center, endorses and wishes to formally submit to the Air Force to be responded to in the Final Environmental Impact Statement.

It makes pretty dry reading so I'm not going to read all 32 of the statements or paragraphs or questions now, but I would like to maybe give you just a brief overview of what's in general in the packet that I want to hand to the officers here tonight.

The first thing is that we commend the clarity of the report's language. You know, it's not written in a way that lay people can't understand the point. It's very clear and very readable, and we appreciate that.

The four questions or objections that we have to the general methodology of it, however, are that in many ways it's too general. It lacks very specific data and detail narrative about many of the important impacts and effects that are alluded to in the document and that maybe a few paragraphs are devoted to, but that we would like to hear more about. We specify those areas where we think the initial draft is too general.

We also think that in some ways it may be too optimistic, and I don't want to suggest that in anyway that it's a virtue to be pessimistic. I guess, in general, it's a virtue to be optimistic but in the technical sense of continually presenting the best case scenario, the most benign interpretation of the data, and kind of giving short-shift to the less benign interpretations of the data or the worst case scenario, we'd like to see the whole range of possible implications dealt with equally.

Certain potential impacts that we outlined there are completely passed over in silence. They're really not dealt with at all on the report, and we'd like those questions responded to.

And, finally the fourth criticism or objection that we have is that it mentions, perfunctorily, the idea that you could have an alternative to the site, but it really doesn't analyze possible alternatives in very great detail. Again, it passes over those very quickly and leaves a person with a feeling that it's inevitable and unavoidable that the site should be built. And we'd like to see some of those alternatives to building the site expanded on so that again we have some basis to judge the general recommendations of the report.

I will read just a couple of the particular questions too so that I don't leave them entirely up in the air, so that you can get some flavor of some of the particular points.

Point 2. The Draft Environmental Impact Statement fails to include any mention of the construction or modification of electrical transmission lines needed to bring power into the transmit site. Depending on how and where this is done, it could constitute a significant impact to the environment or effective landowners.

Point 5. The section on alternatives seems inadequate. Three alternatives to the proposed action are briefly mentioned and immediately dismissed with little or no specific evidence presented.

Point 6. In any consideration of alternatives the question of whether the Central Radar System, and this has already been brought by a previous speaker, the question of whether it would be hardened against the effects of electromagnetic pulse becomes important. If it isn't hardened, what will be its effectiveness if an atmospheric nuclear explosion proceeds other incoming planes and missiles?

The Air Force states--this is Point 19. The Air Force states that the local income gain near the transmit and receive sites would be between two and a half and eight times the income loss resulting from the reduction in farming. It isn't made clear if the--or what the income gain figures are based on. If the income referred to is that of the construction period, then it seems unfair to compare a very short term income and an essentially permanent loss. If the income gain referred to is that created by the hiring of 50 workers at the transmit site, then some indication of income levels involved should be given to document the conclusion.

So there are 32 items that run on like that. And I know that there are a wide variety of different points of view in the audience, and many of us are just not certain what to believe and what we think about it. But I guess that we're all maybe at one--in feeling a need to really be able to talk as equals with the Air Force and to really negotiate with the Air Force in the best interests of the community. And the Peace & Justice Center is hopeful that the questions that we submit to the final report will be contributed to that dialogue. Thanks very much.

Colonel Bristol: Thank you, sir.

Mr. Mitchell: Thank you.

Colonel Bristol: Gene Cassels? That's the last of the comment sheets that I have that indicate a desire to ask a question. So after Mr. Cassels finishes, I'll ask if anyone else that didn't fill out a comment sheet would like to ask a question and then we'll go into the statements.

Mr. Cassels?

Mr. Cassels: I'd like to explore the electrical power needs of this radar site. Now, from information I have out of the East River Management's Report, the requirements are described as 11 megawatts and 6 million kilowatt hours. Would that be a--would that be a correct assumption?

Colonel Lee: We may not be able to give you a direct answer right here, but obviously you've got some follow on questions or points that you want to make. So if you'd proceed with those while we'll try to dig up some of this information.

Mr. Cassels: All right. Then you have another impact that was alluded to just briefly. The transmission lines. Is it correct that you're going to need two separate transmission lines feeding this site?

Colonel Lee: For reliability purposes, we would like to have access to two separate lines. That's to ensure that this system will be up and operating on a continuous basis.

Mr. Cassels: How will the power be solicited? Would it be on a bid basis? You know, at the Rapid City Air Base, there's been quite a discussion as to who can bid on it. South Dakota has a minimum law that anybody--I don't know. Perhaps federal law supersedes state law. Would that be a correct assumption?

Colonel Lee: I understand there are some concerns about the Grand Forks' situation. I'm not prepared to comment. It probably wouldn't be appropriate for me to.

In the normal situation, all of these things are handled on a competitive bid basis. That's the way that we award our contracts for the main construction. That's the way that the prime contractors award subcontract efforts. It's all done, wherever possible, on a competitive bid basis.

Mr. Cassels: What will be the size of the lines bringing the power in? I mean, I'm alluding to the size of the towers that would be required to transport power to the site?

Colonel Lee: As far as the final length of line going into the site itself, I don't have an answer. Again, that's something that we will go ahead and get that information in the Final EIS. I know that where we have tapped in to lines in the past has been lines that were at the 115 KC level.

Mr. Cassels: I thought I read someplace that the Air Force required 230 KV? Would that be correct or incorrect? That's a substantial line. You're going to have to have large towers and the impact on the community would be outside of the site area if you ran two separate lines across the land. We have a lot of problem with power lines over in Minnesota, transmission lines that have a lot of problems with it. Basin Electric has had problems because of crossing the land.

Colonel Lee: No. We do not have a requirement for the 230. In some of the--in looking at some of the possible sources of power, some of them did have lines that were at that level, but as far as our requirements, the 115 will be adequate.

Mr. Cassels: I guess that's all I have on that. Would it be all right for me to make a comment now or are you going to reserve that til later?

Colonel Bristol: We're just about getting there. Why don't you do that since you're already at the microphone, sir?

Mr. Cassels: Okay. One gentleman, and I have no idea who he is, wanted to restrict comments to people within 30 miles. I think that's extremely shortsighted in the United States, for all the reasons of free speech, free assembly, whatever.

I happen to represent the township supervisors of Farmington Township in Dade County and the area is almost triangular down in there. We don't know anybody that's currently living in that area that wants this site in that area. Perhaps there are some, but as I understand, the supervisors have asked everybody in that area and nobody wants this site located in this area.

Bob Mercer of the American News has asked me frequently why you don't--why we didn't want it. And I really didn't have a definitive answer for him on that, aside from the fact that we didn't want it. And I asked a person who is in the area who doesn't happen to be in the Farmington area who happens to be up probably in Newport Township.

And I says, "What are your reasons for not wanting it in this area?"

"Well," he says, "it's my home."

I don't think the most eloquent speech maker or the most gifted writer could describe the situation any better than that simple working man and farmer described it. He didn't want to lose his home. Thank you.

Colonel Bristol: Thank you, sir. Were there anyone--did anyone else have a question they'd like to ask, perhaps getting a point clarified that's been made by one of the speakers? Yes, sir. Would you like to come down? When you get to the microphone, sir, if you'd state your name and address for the record?

Mr. Saunders: My name is Ray Saunders. I live in Britton.

Colonel Bristol: Yes, sir.

Mr. Saunders: The farmers around here do not only have animals and persons, we also have crops. Is there any effects, possible effect, on the crops that we grow, particularly genetic effects as well as whatever other effects?

Colonel Bristol: Yes, sir.

Mr. Mitchell: No, no effects.

Mr. Saunders: Okay. We'll take your word for it, for now.

Mr. Mitchell: It's well established.

Colonel Bristol: Okay. I'm ready to go into the oral statements, if there are no other questions. James Wigdahl?

Mr. Wigdahl: I'm part of an organization that Gene Cassels alluded to earlier that the township supervisors set up. They acted as a nominating board. They picked an individual in each of the eight townships.

Colonel Bristol: Why don't you use this one. This one seems to work a little better. Why don't you stick this right up there.

Mr. Wigdahl: The township supervisors in a selected area acted as a nominating board and they selected eight individuals to act as our representatives in this matter.

Now, one of the things they wanted us to do was to find out what the opinion was of the residents actually living in this map area, and I have the results here of Newport Township. I asked 37 to 39 households I reached for comment, and one individual in each of the 37 households responded to these following questions:

Do you want a radar site in Newport Township? One said yes, 35 said no, and 1 was undecided.

Do you want power lines constructed in Newport Township to supply the electricity to the radar site? Two said yes, 35 said no, there was no undecided.

And the third and final question was, do you wish to be living near a military facility? Two of them said yes, 35 said no, and there was no undecided.

Now, I don't have the finalized survey results of Steana, Weston, Farmington, Hanover North, Claremont, North and South Detroit, but they will be made available to Colonel Lee as they are finalized.

Now, I have some oral reports given to me by the representatives of Weston Township and North and South Detroit, and they said their findings were very similar to these findings, that I have come up with in Newport Township. Some additional concerns that these people in these townships have had were the tax loss, and they were still concerned about these health problems. They weren't entirely satisfied that this is as harmless as we're getting led to believe, and they are worried about troubles during the construction phase.

Colonel Bristol: Thank you, sir. Lanny Torguson?

Mr. Torguson: My name is Lanny Torguson and I represent North Hanover Township and I've taken a consensus and that they have found no one that wants this radar site on their property.

Colonel Bristol: I don't have any other comment sheets that have the block checked that the parties wanted to make oral comments. Does anyone else care to make any comments?

As I indicated before, if you don't for any reason make comments tonight, or even if you do, you can still make further comments anytime prior to the 8th of December. And those comments will be given the same consideration and folded into the Final Environmental Impact Statement just in the same manner as anything that is stated and recorded here tonight.

Were there any other people that would like to make statements? Yes, sir? This microphone seems so much better than the other, I'm just going to start sharing it with you all.

Mr. Davies: My name is Jay Davies. I'm from Aberdeen. I just have one quick question which is--how much research has been done, if any, on the possible effects of this type of site on weather or meteorological events, thunderstorms, tornadoes or such possible increase in this type of weather because of the electromagnetic radiation?

Colonel Bristol: Thank you, sir.

Colonel Lee: The first point I'd make is that we are really like a higher powered HF radio station. There is no electromagnetic phenomena associated with the transmission from the transmitter site.

The second point is that we have been, on a limited basis, certainly during the Experimental Radar System, operating this type of a system for almost a year. There have been many other experimental systems that operated for various periods of time going back to at least the last ten years. And we are now, of course, operating the East Coast Radar System.

There has been no direct research, that I'm familiar with, that tries to tie an operation of an OTH with some of these effects. Because the analysis done, as they considered this type of a system, determined that the relationship did not exist.

We are sending a beam of energy that reflects off or refracts through the ionosphere as far as a thousand miles away from the site that you're looking at. It's the same type of a situation that occurs any time a certain frequency level encounters an area where there are a lot of free electrons. And that is the situation in the ionosphere, and so it's just a natural physical phenomena, that those beams are refracted on through. We're not aware of any direct effects.

If anyone could point out some studies of some areas where they think something is--needs to be looked further, we would be glad to consider that. But at this point we do not see any need for further research in that area.

Mr. Davies: Thank you.

Colonel Bristol: Anyone else care to make a statement?

Mr. Meidinger: Yeah, I have one further statement. Okay. This all right?

Colonel Bristol: Yes, sir.

Mr. Meidinger: I personally contacted Senator-Elect Dashel--his staff; and there's a lady here from Senator Pressler's Office. I would think that if you have any objections to this site and your impact in it or whether you're not, that perhaps you should write them a letter, contact them or what, expressing your dissatisfaction or satisfaction with this site in this particular area.

They both reassured me, and their staff has reassured me, that they are concerned with it. And they made a point simply that it hasn't been funded yet and Congress has the power to fund this.

Now, whether they will or whether they will not or whether it'll be a reasonable alternative, it can be affected this way. So I would urge you to contact them.

Colonel Bristol: Thank you. Anyone else?

I'd like to thank all of you for coming out this evening. It's your involvement and the contributions of all of you that go to make this system work.

I think this is a unique system that we have, where the operational--I mean from the military standpoint, you'd think where you want to give primary consideration to the operational aspects of the system--and the requirements where they are forced to compete and to be considered side-by-side with the environmental impacts--and to have all of those considered at the same a time by the Secretary in making a judgment as to what action to propose to the Congress with respect to this particular system, so your contributions are a very real and important part of that process.

Again, thank you very much for being such good hosts to us, and for being with us this evening. Good night.

(WHEREUPON, the proceeding was completed at 9:25 p.m., November 19, 1986.)

3.5.2 Submitted Materials

Materials were received from:

Tim Langley, Watertown, SD*
James Wigdahl, Langford, SD

*This letter appears in the Langford, SD section, pp. 3-165 through 3-167.

RR1 Box 26
Langford, S.D. 57454

November 19, 1986

Col. Jim Lee
ESD/SCO
Hanscom AFB, MA 01731

Dear Colonel Lee:

The Radar Watchdog Assn. has been conducting a telephone survey of residents inside the proposed siting area near Amherst.

In Newport Township 37 of 39 households were reached for comment, and one individual in each of the 37 households responded to the following questions:

Do you want a radar site in Newport Township ?

YES 1 NO 35 UNDECIDED 1

Do you want a power line constructed in Newport Township to supply electricity to the radar site ?

YES 2 NO 35 UNDECIDED 0

Do you want to be living near a military facility ?

YES 2 NO 35 UNDECIDED 0

Survey results of Stena, Weston, Farmington, Andover North, Claremont, South Detroit and North Detroit will be made available to you as they are finalized.

Sincerely:
James Wigdahl
Chairman, Radar Watchdog Assn.

cc: Honorable Thomas Daschle, U.S. Senator, Aberdeen S.D.
Janelle Toman, UPI, Box 1059, Pierre, S.D. 57501

3.6 Thief River Falls, Minnesota

3.6.1 Transcript

The following proceeding was taken at a meeting of the Air Force at the City Auditorium located in Thief River Falls, Minnesota, on Thursday, November 20, 1986, commencing at 7:00 p.m.

Colonel Bristol: Good evening, ladies and gentlemen. The National Environmental Policy Act, and various regulations and implementations of that act, require that anytime a federal agency proposes to take any action which could involve a significant impact to the environment, that that agency conduct a study of those potential impacts--and line up those impacts right alongside the operational aspects of a particular system and in effect, fold in the analysis of those environmental concerns and considerations into the overall decision process as to whether and if so, how to implement a particular proposal.

Now in this case, the Department of the Air Force, as a federal agency, has proposed and has published its Draft Environmental Impact Statement on the proposed Central Over-The-Horizon Backscatter Radar System.

I'm a member of the Department of the Air Force, but I'm not an expert on this particular proposal. In fact, I have nothing to do with it. My formal duties are as a military trial judge for court martial trials. If any of you have been in the service, you know that we have a substantial criminal jurisdiction, so it's akin to your district court or felony court criminal jurisdiction. But my purpose tonight is to be a hearing officer at what will be an informal hearing upon the Draft Environmental Impact Statement.

I use the term hearing, but I want all of you who have questions or who would like to make a statement to think of it in a more relaxed sort of a meeting. I don't want anyone to hesitate at the appropriate time to ask a question for fear that it might be a dumb question or to hesitate to speak your mind for fear that it might not be appropriate. This is the time for you to speak your mind and ask a question.

The sequencing of this evening's hearing is going to be sort of a two-way communication format, starting with some briefings from the experts who will outline the proposal for you, and outline some of the anticipated environmental impacts. That's sort of the time for all of us to listen and write down any questions that might be suggested by what they mention or fail to mention in their presentations--or if you have a chance to see this Draft Environmental Impact Statement, copies of which we have available tonight--about an inch thick with a blue cover--any questions that might have been raised in your mind after reading it or scanning that particular document.

We're going to have a recess after about an hour, the first hour, which will be taken up by two different briefings. And during that recess, if you haven't had a chance to get one already, I'm going to encourage you to fill out one of these comment sheets.

Basically your name and your mailing address, whether you wish to ask a question--there's a block to check, or whether you would just like to make an oral statement, or submit a written statement.

There are other things that you can check this form for, for example, if you'd like to receive a copy of the Draft Environmental Impact Statement or a copy of the final report. Up in the upper right-hand corner, there's not a place to do this, but if you're a public official, kindly write down that fact and what office you occupy, whether it be a local office or a county or state office or federal. If you represent--if you're the representative tonight of a particular private association, group or club, then write that down and the particular name--the name of the association. And lastly, if you're here just in a private citizen capacity, just write down citizen.

The most important part of this is to check a particular subject area or areas to which your interests may pertain, for example, air quality, biological impacts, visual impacts and that sort of thing. During the recess, if you'll give those to me or to Lieutenant Gale Brown at the back of the room, or to any of the other members of the Air Force group that are here tonight--I will collect them--sort of rack them up in order of the subject matter so that we can sort of deal with one subject at a time, and first go to the questions of the speakers and then go with the oral statements.

We'll try to set it up so that as many people who would like to speak can do so. In order to do that, at least at the outset, we have to have a few ground rules. One of them is we'll try to keep the statements separate from the questions. In court, I always get cross examination type questions that are really more stating a point of view than asking a question. If your question is more in that nature, which is fine, reserve it for the period of time when we're making statements. If you have a question that seeks clarification of a particular point, or if you have a question that is coupled with a statement, again let's reserve that for the portion of time set up for the statements.

I'd like to introduce Karen Diehl, who's here tonight representing Senator Boschwitz's office--and it's nice to have you here with us this evening, Karen. And also the members, the two principle briefers this evening--Colonel Jim Lee, who's the head of the Air Force's Backscatter Radar Program Office at Hanscom Air Force Base, Massachusetts, and with him, Mr. John Mitchell, who's from the Aerospace Medicine School that the Air Force has in San Antonio, Texas, where the weather, I think, is a little bit milder tonight than it is either here or in Massachusetts. And he is an expert on the bio-radiation effects of this and other similar type of systems.

I don't know, but I presume from the nature of this gathering place, as has been the case previously, that those that have made this facility available would appreciate that you not smoke during the course of the meeting, but rather reserve that during the recess or in the outer areas. So again, we'll proceed first with the briefings, short recess, time to fill out the comment sheets. Then we'll go to the questions--then we'll go to the statements.

We'll stay here till everyone has a chance to speak. And if you don't fill out a sheet and you decide, based on someone else's question or just an afterthought, that you'd like to ask one after I've gone through all the sheets, I'll ask if anyone else that hasn't filled out one would like to speak.

My purpose and my only purpose is just to ensure an orderly hearing--and to ensure that this two-way communication process is unimpeded and each of you have an opportunity to be heard.

Without further delay, I'd like to introduce Colonel Lee.

Colonel Lee: Good evening. We thank you for having us here in this auditorium tonight. We're very much appreciative for the large group that's here because it makes--the purpose of this portion of the meeting is to provide you with the basis of understanding why it is that we need the Over-The-Horizon Radar System, and in particular, the Central Radar System.

We want to give you an understanding of what the hardware--the actual transmitter and receiver antenna elements--would look like--a sense of what the antenna sectors, the amount of the land involved, would also look like. We want to describe a little bit the environmental impact analysis process that we have been going through and finally, to explain why it is that we're looking at this particular section of the country for siting of the Central Radar System.

In the handouts you received tonight there are several separate folders, including a small brochure that gives pictures of the East Coast Radar System. But in particular, I want to call your attention to the fold-out which is the top--if you will, 25 but there's only 23 on there, most frequently asked questions dealing with areas of why do we need this system, what will it look like, the kind of capability it has, and the amount of land involved.

The area of biological effects is not addressed in that particular set of questions and answers. We're going to take care of that material with the presentation that Mr. Mitchell presents, and also then with the opportunity for you to ask more detailed questions of him. So I hope that at least during the break you get a chance to glance at those questions. They may answer many of them that you have had already. And if you need still further clarification, then you can use that as a starting point for your additional questions.

The proposed action that we're dealing with tonight is the construction and deployment of the Central Radar System. The Central Radar System, in the lower center area that's outlined here--it's one of four Over-The-Horizon Radar Systems. The one in the far right, the East Coast Radar System, is already fully approved and funded and construction is now complete.

The system on the left, the West Coast Radar System, has also been approved and we're getting ready to start construction on that system. The one in the center, the Central Radar System, and the upper one, the Alaskan Radar System, are both proposed. And we are conducting this environmental impact analysis process for both of these radar systems.

In the blue document that Colonel Bristol referred to, the Draft Environmental Impact Statement, you will find a description of the system itself and why it's needed. You will also find a description of many of the different areas that could be potentially--environmentally concerning to you. There is a summary of those impacts in that document. That's all intended as a part of this formal process that's outlined in these key five steps shown here.

Beginning with the official announcement that the Air Force intended to develop, construct and deploy the Central Radar System, we were then into this area for a series of scoping meetings. The primary purpose here was to acquaint you with the system and to get information back from you on those special areas of concern and potential environmental impacts. That information was used to develop this Draft Environment Impact Statement that I mentioned.

We're here in the final of a second series of public hearings. The first set of three hearings were held the first part of September. There were apparently many people in some sections that could be affected by the program that felt that they did not have enough information to fully consider and evaluate the proposal. And so based upon the many requests that we received at the Program Office at Hanscom Air Force Base, and the many requests that were received through your elected officials, as well as the questions that you sent directly to Headquarters Air Force--resulted in the decision to hold these additional public hearings.

We held our first in this second set at Hillsboro, North Dakota, on Tuesday night--with about 400 people attending. Our second public hearing was in Britton, South Dakota, last night--with about 150. And then this our final hearing tonight.

You may have seen from newspapers and hearing the radio, that it was noted that there was a lot of opposition to the program at both these locations. In terms of the comments that were presented and questions, that is true. But I also want you to know that there were many expressions of support. We have received them at the Program Office directly by letters and phone calls--and also with individuals that contacted us after these meetings, so I would encourage you

tonight, if you have opinions one way or the other, to express them. Or if you feel uncomfortable, for whatever reason, then you can still feel free to contact us directly at the Program Office, or to speak to any of the Air Force members after the presentation tonight.

Following the hearings and the publication of the Final Environmental Impact Statement--that will also address all of these areas and the additional information and responses that we gather--the Air Force will then make its Record of Decision selecting the site areas. This will not take place, based upon the extension of time and the additional public hearings, until the early spring of '88.

These are the potentially affected areas of the environment as a result of the proposed Central Radar System. All of them are described in the Draft Environmental Impact Statement.

Rather than going over each of them individually as a separate part in the briefing, I'm going to identify several of them as I go through the actual description of the system. If there are particular areas, however, that you would like to discuss further, then please ask questions about them then when we get into that period of the hearing tonight.

I think we have some difficulty with the projector. Just a minute, please.

Colonel Bristol: While they're finishing that up, I might just mention a couple of things. A complete verbatim, that is word for word, transcript of this evening's hearing is going to be prepared by our court reporter, Louise Christie, who's going to be taking down all the statements. So at a later point when we get to the questions and statements, be sure, if you speak, to speak clearly and state your name for the record so that everything that you say will be a part of the record.

Colonel Lee: We'll try to do the best we can. We have a jamming on our slide projector so we're going to force it by hand. We'll try to still show you the pictures.

This is an artist's schematic of the overall coverage that will be provided by the Over-The-Horizon Radar System. That East Coast System, where the construction is now complete, is now in testing with the first or the northeastern sector. It provides the capability to acquire, detect and track aircraft out to a distance of about 1,800 nautical miles away from the site, or about 2,000 statute miles. For an aircraft flying just under supersonic speed at about 500 nautical miles an hour, that translates to a warning time of about four hours. We would be able to acquire and detect a large aircraft attack against the North American continent as much as four hours before those aircraft would approach the coastline.

If you look at the small circles across the north tier, Alaska and across the top portion of Canada, those are a series of line-of-sight microwave radars. They're limited in range to a couple hundred nautical miles.

We currently have a similar set of coastal radars ringing the coast of the United States. There is--these existing systems, line-of-sight microwave radars, limited to this few hundred mile detection range. That translates to a warning time of 30 minutes or less. And if it is a supersonic aircraft that is penetrating at the high speeds, we could have 15 minutes or less warning from the time we first detected an aircraft until that aircraft had come over the coastline of the North American continent. That's the basic reason why this system is so important. It's why Congress has approved and funded the East Coast System and--as well as the West Coast System.

With those two systems, when they are fully in place, we will have that capability for aircraft approaching the shores from either side. We leave a very important gap at that point, however. Aircraft could make those same approaches towards the continent from the south, either using other staging bases, or massing to a point south of the United States, and then using that open corridor to come in without any warning other than that last 15 to 30 minutes of warning. In addition, we have a new threat, the sea launched cruise missile.

The OTH System, in trying to provide that maximum warning, will have a surveillance area about 500 miles deep, that will be at the outer limits of those arcs on the East Coast and the West Coast Systems. So while those systems are at those maximum ranges, the Central Radar System will provide an inner band of protection all along the coastline for both the East and West Coasts, as well as all along the southern approaches of the country. So we will ensure that there are no windows of vulnerability--opportunities where the Soviets could launch their sea launched cruise missiles--again without our having any warning. The Alaskan System will complete that total coverage--covering those approaches from the northwest.

The reason that that's so important is shown here. (Indicating.) This is an artist's concept of the Soviet's long range strategic aircraft, the Blackjack. This aircraft is more than an artist's drawing. It's currently in flight testing in the Soviet Union. If they continue on their present schedule, this aircraft could be operational by the start of the next decade.

In addition to this aircraft, we have the older Bear aircraft. They're a turboprop aircraft, but still with a long range and the capability to strike targets within the North American continent.

Shown here is an Alaskan Air Command F15. It has approached, made an intercept with a Soviet aircraft and will escort it as it is flying along the coastline up in Alaska. On a regular basis, the Soviets launch aircraft against the United States in a training mission. And as we are able to, and under certain circumstances then, we will launch aircraft up to intercept and track them and trail them as they make their approaches, and then finally fly out of the area. These events, which take place on a regular basis around Alaska, also occur on the eastern portions of the country.

This particular aircraft is the newest version of the Bear. After about 15 years, the Soviets began producing this latest model, their strike aircraft, the Bear H. It also has a capability to launch air launched cruise missiles. Those smaller sized vehicles are also a part of the requirement for the Over-The-Horizon Radar System--to be able to detect and track those vehicles.

That Soviet threat is the reason that this type of system is so important to us, and it's not a threat that just stands there dormant. It's a threat that continues to grow.

The Soviets are placing a much greater emphasis on long range strategic aircraft. And we suspect part of the reason why, is that we have had this warning system and a capability to deter against ballistic missiles, but we have had no such capability against the long range strategic aircraft.

This is the area of coverage that's provided by the East Coast Radar System. The portions with the slightly reddish coloring represents the fans, the radar energy or signal that is sent out from the transmit site at Moscow, Maine. The yellow pattern is the return signal that comes back to the receive antennas at Columbia Falls, Maine--again, with that signal going out, bouncing off the ionosphere out to about 2,000 statute miles, and returning back.

This is the transmit site at Moscow, Maine. There are three sectors. Each of them, boresighted, are pointed to cover a 60 degree coverage. So all three systems together provide that full 180 degree or half a circle coverage.

For the case of the Central Radar System there will be four such sectors. The amount of land that we're talking about for the transmit sectors for the Central Radar System is about 5,000 by 5,200 feet or about 600 acres. So for four of those sectors, there would be a total requirement of approximately 2,400 acres.

The transmit antenna itself is shown just in front of the white building. It runs the entire length of that sector, about 4,000 feet long. Directly in front of that antenna is a ground screen that's very much like a chicken wire mesh, but with the openings about eight to ten inches square.

The transmit elements here are about 135 feet tall for this portion of the transmitter array. There are six of these arrays, however. And the smallest or shortest one is only 35 feet tall. As I mentioned--directly in front of the transmitter extending out to about 750 feet is this ground screen. But once that land is leveled and the ground screen is laid on top of the area, then we see--with natural vegetation and you can see the green grass that is growing back into this area--and this was the sector that was most recently completed for the East Coast System.

There is a similar screen material that is supported by the structure behind the antennas, the back screen. It is shown more clearly in this slide here. And again, like the ground screen, it's intended to provide a better focus of that radio signal or energy so it is directed upwards and out towards the ionosphere.

This is the accompanying set of three sectors for the receive site. And if the Thief River Falls study area was selected as a receive site, there will be four sectors of land, such as this--again, each pointed in the direction to cover that 60 degrees of coverage.

In the case of the East Coast System, this receive antenna is about 5,000 feet long. For the West Coast System, however, as well as for the Central and the Alaskan System, we're increasing this antenna length to about 8,000 feet. That's to give us a better detection capability against the smaller sized sea launched and air launched cruise missiles.

This system just very quietly sits there and listens. There is no radio energy associated with the receive antennas at all. There is no signal that is being sent out from the antenna. Instead, it is receiving this very, very faint signal that is returning from that transmit--some 2,000 nautical miles away. So there is no possibility of any type of interference with radio, TV--any type of use that you would make of the land immediately surrounding that sector area.

The receive antenna elements that are shown--here on the left is a set of receiver elements about 19 feet tall from the ground. Again, there is a ground screen that extends about 750 feet directly in front of that antenna. And there is also the back screen that is shown then to the right. The supporting structure for that back screen is 65 feet tall. So again, for the transmit site we have the tallest section coming down to as low as 35 feet tall. For the receive site, we have the set of four antennas, approximately 10,000 feet long with the back screen 65 feet tall.

This is another picture of one of those receive sectors. For the Central Radar System we would need four sectors of land--each of them would be approximately 10,000 f(t long by 2,600 feet. That turns out to be approximately 600 acres, for a total land requirement of about 2,400 acres for the receive site.

I emphasize the lack of interference for the receive site. I would also like to emphasize that while we do have a radio signal that is sent out from the transmitter site, we're able to, with the design of the system and the type of signal we use, also ensure that there is no interference to other users of the High Frequency, HF, radio spectrum, and also that there should be no interference to radio, TV broadcasting or any other type of use. We can provide that assurance by blocking out particular frequencies that would be involved, as the transmitter computer controls that. And also there are certain things that we can do to try to minimize that potential of interference--even if necessary, to put some filters on a particular TV set.

In the case of the Experimental Radar System, which ran from 1980 to '81, we had no reports of this type of interference. And just at the end of October I sent a team from the Mitre Corporation, who provides our systems engineering, up to the East Coast Radar System--using a Radio Shack AM/FM radio, also an off-the-shelf small portable TV that was purchased. They remained outside the fence in front of the transmit antenna, and had no interference effects at all on any of those, as well as the two-way communication system that they operated right directly in front of the transmit antenna area out to several miles away.

The area itself, in both the transmit and receive sector, is fenced off. And you can see that cedar fencing shown here. It needs to be a nonconductive material. For the receive antenna here, the fencing is to ensure that animals don't get in and do damage to the ground screen or to the antenna elements, and also then to provide some security for the area itself. That exclusion fence or boundary fence for the receive site will completely enclose the area.

For the transmit antenna, we will similarly have a boundary fence or exclusion fence around the entire transmit sector, each of the four sectors. Outside of that exclusion fence the amount of radio energy, the energy content of that radio signal that is sent out, will be at such a low level that we can, with confidence, say there will be no biological effects on either a short-term or a long-term basis as a result of that transmit energy. And this area is one that we're going to have Mr. Mitchell talk about in more detail--and again, as I emphasized, to answer as many questions as you would have in this area.

The signal information from the receive antenna is sent from the little white dishes, that were shown on the previous chart right near the building--received by these white dishes here at the Operations Center. That type of communication link works best at about 50 nautical miles. That is one of the reasons, as we'll explain later, why the receive site areas are all within about a 50 mile radius of the proposed Operations Center.

Inside the Operations Center, the energy information sent back from the antenna is analyzed by the computers and brought out to these displays. At the displays there are various military operators that provide the detection, the identification and tracking of aircraft, and comparing those tracks with known flight path information that we have obtained from pilot position reports or in coordination with the FAA.

Looking at a particular one of those displays, we see a geographic display on the upper right-hand corner. And looking at that display in more detail--to the left, outlined in red, is the northeastern part of the United States. And this large area here is Greenland and the small area up there is Iceland. And if it was clearer and I could have you come up here, I could point you to the particular symbol that is the Air Force One, President Reagan's aircraft, as we tracked it all the way to Iceland during a part of our testing program. That was when he was over there for the talks with the Soviet Union.

That point is made to assure you that the system is working. It does what it's intended to do, and the schedule is proceeding along very nicely with that East Coast System.

That's a summary, then, of why this system is so important and an idea of the kind of hardware, as we call it, that you would have for us to be able to deploy and operate this system.

I'd now like to focus on the criteria that put us in this area of Minnesota and North and South Dakota for the sites. I mentioned that the East and West Coast Systems were approved, construction has started, those positions are fixed.

The dot representing a center of the Central Radar System area really does not have much flexibility in where it can be placed. If it is moved further to the right, we will not have an adequate overlap with the West Coast Radar System. And similarly, if it moved to the opposite direction, we would leave an open area for the East Coast System. We also want to insure an overlap with the coastal North Warning System--that bottom red circle, for the North Warning System.

That set of geometries very narrowly defines and limits the area in which we could site the Central Radar System. If we had the choice, there is no question about it--that we would be looking for land that was totally unproductive, that was owned by the federal government, that could be easily obtained, and we could go ahead with the project. But that land does not exist within this area, and that area is defined here in this slide.

The optimum location is that black dot that's just inside the southeastern portion of North Dakota. That's where you balance that overlap between the East and West Coast Systems and provide the necessary overlap ideally for the North Warning System as well.

At the Operations Center for the Central Radar System there will be about 400 people. It would be cost prohibitive to try and set up another military installation to be able to support that large a group of people. For that reason, we use an existing military base for the Operations Center. And for the Central Radar System, that's proposed to be Grand Forks Air Force Base.

I mentioned, in the earlier chart, that the receive sites need to be within about 50 miles of that area. And so that's going to define an arc where we can locate the potential receive sites. Thief River Falls, the study area that we've identified here, falls just within that 50 mile nautical radius from the eastern direction of the Operations Center.

There also needs to be a separation between the receive site and the transmit site--at least 50 miles, no more than approximately 150 miles. And again, you would like to have that transmit site area lined up.

With those basic facts, then, we consider a number of other criteria. We would like to the have the sites separated from any large industrial areas or large cities. In the case of the receive site, we want to make sure that we're several miles away from a large town, such as Thief River Falls, so that there is no potential for electromagnetic interference from things that would represent the community, or your industry from affecting our system.

In the case of the transmit site, we have certain separation distances from town so that--while we can control that electromagnetic interference that might cause interruption to some radios and TVs by keeping a minimum separation distance from a town--we insure that if there are those few incidents, we will be able to take the corrective action with a few cases rather than with the potentially several hundred. And again, that's strictly with regard to interference with such things as radio and TV. As far as locations for the transmit site as a result of biological effects--again, outside that boundary fence there are no such effects.

The result of all of these criteria has been the selection of study areas that are defined here--the Dahlen, Goose River, Galesburg and Blanchard areas for receive sites in North Dakota and Thief River Falls, Minnesota. And then the four areas--three around Wheaton, Minnesota, one that we labeled the Amherst, South Dakota--as candidate study areas for the transmit antenna.

The different environmental concerns have been examined and documented in the Draft EIS for each of these areas. And there are many of these features that make some of the study areas less desirable than others. For example, the more rugged topography, the presence of additional wetland areas, the presence of flooding, particularly during

the springtime that is more serious in some locations as others, result in an identification of Blanchard and Thief River Falls as the environmentally preferred receive study areas.

However, the Blanchard area is much smaller and gives much less flexibility in trying to site the four sectors for the receive site. So from that standpoint, from that operational standpoint alone, it is less preferred than some of the other areas, such as this larger Thief River Falls area.

Similarly for the transmit site--from a consideration of the environmental concerns as documented in the Draft EIS, the Wheaton North and the Amherst are the environmentally preferred then study areas. Again, in looking at the comparison of sizes, there is considerably more flexibility in the Amherst area. And on that basis, it would be more preferred than some of the other study areas for the transmit site.

At the transmit study areas, four sectors, as shown in this possible configuration, would be sited. Again, each of these is about 600 acres. This is a particular configuration--an alternative one is shown in the next chart. The four antennas could be placed in a single area--approximately two and a half miles square. That would result in a total of about 4,000 acres instead of the 2,400 acres. Part of the reason that the acreage is increased here is to allow the possibility that the corner sections on the bottom, both on the left and right-hand side, could represent smaller portions of the land that would be uneconomic remnants for an individual to continue farming. For that reason, the Air Force would be willing to buy or to lease those additional portions of the land as well. If you take those additional possible areas and--the land and all could grow as large as 4,000 acres.

This is another artist's concept of how that might appear in the land area in this part of the country. For both the transmit site and the receive site, the Air Force is willing to consider both direct purchase as well as leasing. The desires of the land owner is something that we would work with. There are certain advantages in considering leasing. One of the most significant, in terms of the community, is that the taxes that are paid by the land owner would continue to come into the area--to the county, to the district--and representing a continued revenue source then for the school districts, for maintenance of the roads and such things as that.

For the large amount of acreage that would be removed by direct purchase, there are some opportunities for additional mitigation to be brought back to the community. Some of the examples could include road maintenance for the additional roads that we would build around the transmit and around the receive sectors. There is also a provision in public law under a Section 2. It isn't a provision that is used very much in the country, but it does exist in law and is funded. Under this section of the public law, if there were more than a ten percent loss in taxes going into the school district, then that district would be eligible for federal assistance under a certain formula calculation.

And that would consider such things as the additional state aid that already was provided, as well as the total amount of revenue coming into the district.

If purchase was the preferred option and this impact did result, then we in the Air Force would work with you and the school district in identifying how that process would take place, and insuring that the proper contacts were made both with the state and U.S. Board of Education.

For the receive site, this is one possible configuration. Again for the antenna segments on the left and right-hand side--each were about 600 acres. And we have a total, then, of about 1,200 acres in the single area of land in the north where you would have the antennas facing left and right.

Again, we show an artist's concept of what that might look like. Again, to the extent that the sectors were placed across sections, we would establish new roads where roads were blocked. Those roads would be maintained as required, and as a part of the agreements that the Air Force would reach with the communities in the mitigation plans.

Finally, pulling all of these considerations together, including the input that the communities are providing us--the objective of this purpose in going through the environmental impact analysis process is to, in the Record of Decision, select one of those study areas as a transmit site and one of the study areas as a receive site. And then on the basis of the topography, location of streams, availability of land, in terms of willingness of people to negotiate for sale or lease, the specific sitings of the antenna would take place.

This gives you a background and description on the importance of this system. It's important, not only to the Air Force--it is our mission to provide this type of surveillance. We have no other system that can provide this kind of capability. While there are AWACS airborne radar systems, the cost of one AWACS aircraft is only slightly less than the cost of one of these four sectors. And with one of the four sectors in the OTH system, we're able to provide surveillance over an area of almost 2,000 square miles on a continuous 24 hour a day basis. The cost to try to do that with literally several hundred AWACS aircraft would be totally cost prohibitive.

Other alternatives have been suggested, such as the use of satellites. That type of solution is not practical today and won't be for some time to come. There are several key technology advances that need to be made before we'll have that type of long range, wide area surveillance capability using satellites.

We look forward to the questions and comments that you would have regarding the system and environmental impacts. I've addressed several of those dealing with the system itself and the land areas. But now I'd like to ask Mr. John Mitchell to specifically talk to the biological concerns, and again those concerns are related to the transmit site only.

Mr. Mitchell: Thank you, Colonel Lee. I'm John Mitchell from the Air Force School of Aerospace Medicine. We're located at Brooks Air Force Base in San Antonio, Texas. I have another colleague from the school with me tonight, Dr. Jerome Krupp. Dr. Krupp is in charge of our Radiofrequency Radiation Research Program at the school.

As Colonel Lee has stated, we don't have a radiation propagation problem for the receive sites, but that is an issue that's been raised for the transmit site. And we know there's interest here for the whole system. And so our purpose here this evening, in this segment, is to tell you of the Air Force background on radiofrequency radiation effects and why we have the confidence to say--this does not represent a hazard to the civilian populous that would be around this system.

And my purpose here this evening is not to go into the details that are in the Draft Environmental Impact Statement. That blue book, which we have copies available here this evening, devotes about 40 or 50 pages to our position on radiofrequency radiation safety.

It talks about the state-of-art, as it's known today, the data base, what that means in terms of the kind of emissions that would come from the OTH System, and describes that in sufficient detail. And I would recommend that to all of you to take a look at it if you have a concern in that particular area.

I'm sure you're all aware that in our modern society there are many forms of radiofrequency radiation emitters. You're familiar with things like our citizen band radios that many of us have in our automobiles, our microwave ovens that we have in our homes, our AM, TV broadcast stations, certainly the air route surveillance radars that are used around the country to control the flight test of commercial aircraft, and of course numerous military systems around the world.

Just speaking from the Air Force perspective, I think it's important to point out that if you look at all of our Air Force facilities around the world, we have more than 100,000 personnel. This is our military-civilian work force that work around our RF emitters on a daily basis. So we have a very large population of people that are exposed to some form of radiofrequency radiation in their daily jobs. And most--many of these people work for careers of 20 to 30 years at these jobs. And so it should be no surprise that that is one of the key research areas that we have in the Air Force today--and that is to have some awareness and some assurity of the safety aspects of the radiofrequency radiation effects issue.

The responsibility for developing that data base or conducting the research programs, and for recommending the safe levels that are used in our work place and for those that are used for the civilian populous around our systems, that responsibility resides within the School of Aerospace Medicine, and particularly in the Radiation Sciences Division where Dr. Krupp and I work.

In regard to the Over-The-Horizon Backscatter Radar System--it was in about 1968 that the people from Hanscom Air Force Base and the Electronics System Division contacted the School of Aerospace Medicine. They were getting involved in the technology for the Over-The-Horizon Backscatter Radar, and they came to us and asked us about the biological effects of this kind of a system. And in 1968, frankly, we did not have very much information to rely on.

To gain that information we developed some specialized systems. We built the first exposure system at Brooks Air Force Base to look at the biological effects of HF band radiation. It was designed with a team of scientists from the National Bureau of Standards, from the Naval Research Laboratory and from our own scientists at the school. This system was put into operation, and in the past ten or so years we have learned a great deal about how this form of RF energy interacts with biological systems and what constitutes safe guidelines.

At the school today, in this business, we have 24 people that are full time employees to look at radiofrequency bioeffects. We also have an extramural, or what we call a contract program, that goes out to some of about 30 academic institutions around the United States. And we have people, for instance, over at the University of Rochester School of Medicine, the University of Washington School of Medicine, of Purdue, MIT. I could name the list of 30. You would recognize most all of them. You'd recognize them as institutions where they have very credible scientists to investigate these kinds of issues. And certainly we rely on them as well as our own in-house research to develop the kind of information that is available today.

Now, we're not alone in this business. For the past 10 or 15 years there have been a number of other active researchers. There are other federal agencies. Certainly the Army and Navy have had their programs as well. The Environmental Protection Agency has had its special research area. And all of these scientists together make up a body of about 300 scientists in the United States today that involve medical science disciplines that are studying the effects of radiofrequency radiation.

In 1978 in this country, there was a new society, professional society, formed specifically to meet once a year to present this data base and talk about the biological effects and to develop safe guidelines. That's the Bioelectric Magnetic Society. They have an annual meeting. Each year at those meetings there are more than 200 research papers that are presented, and our Air Force team is a natural part of that group as well.

For most of the--for about 20 years, the United States and most of the free world used one value to describe whether radiofrequency radiation was safe or hazardous.

Colonel Lee: John, can you get closer to the microphone?

Mr. Mitchell: And it was this so-called 10 milliwatts standard--the 10 milliwatt average power density averaged over any six minute period. So for many years that was used as the safety guideline. But it was recognized since the late 70's that the way RF energy is deposited in biological systems is a strong function of the frequency. And based on that, the new groups that would begin to look into revising the safety standards have taken that into account. So now, since 1982, there have been a number of new radiation safety guidelines that have been developed in the United States and around the world that are now used to establish safety boundaries for systems such as the OTH-B.

In 1982, the American National Standards Institute were the first to promulgate their frequency dependent standard. In 1983, the American Conference of Governmental Industrial Hygienists promulgated their structural limit values standards for radiation safety.

In July of '83, an international body made up of about 11 or 12 different nations--it's called the International Radiation Protection Association--they took a look at the complete data base and they set new interim safety guidelines. So we have those--and in April of this year, 1986, the National Council on Radiation Protection Measurements published their recommendations on safety. And some of you may also be aware that in July of this year, our own Environmental Protection Agency published in the Federal Register three options for new safety guidelines. So there have been--each of these independent bodies have looked at the data base independently, have made up their own line about what constitutes safe levels, and have then published their own guidelines.

Two additional documents that I will recommend to you, if you want to take a look at another opinion on radiofrequency radiation bioeffects--one of those was published by the Environmental Protection Agency in 1984 and this was really the basis, it's a very thick document, it's available from them. And it is the document that they've used to come up with the three options that they published in July.

The National Council of Radiation Protection Measurements in July of this year published their biological effects and exposure criteria. And that too is a fairly thick document which summarizes all of what is known about the state-of-the-art of bioeffects. So my purpose in relating these to you tonight is--first off, I think it's important that you realize that there has been a good body of medical science that has been looking at this problem for a long time.

As Colonel Lee stated, we have many of those operations in the Air Force, and so it is our concern for radiation safety. And we've--and the Air Force has taken a very conservative approach in applying those safety guidelines to all of our operating systems. And that is the same approach that has been taken on the OTH-B.

These standards also have one thing in common. Essentially all of them are based on a consensus for the threshold for biological effects. We have a term called Specific Absorbtion Rate, without necessarily meaning anything to most of you. But it's a common denominator which would describe this form of biological effects. And all of these bodies that have looked at the literature and come with their own standards have a general agreement on the value of that factor, the threshold for biological effects.

They only differ in the conservatism that is applied to that standard. So there is a range of values that range from about 10 milliwatts down to about a tenth of a milliwatt across those spectrum standards. Most of them start with the same threshold value.

Now, the terminology for--that you see in the Draft EIS you will see the terms SAR, Specific Absorbtion Rate, and you'll see the term Power Densities. I'd like to try to put those into perspective for you with these standards--keeping in mind that the lowest standards at the frequency of the OTH-B System, that we know of today--the lowest recommendation that anyone has made is about a tenth of a milliwatt per centimeter squared. And the levels outside the boundary of the transmit system will be below that.

I'd also like to put that into perspective with something that you may be more familiar with. For instance, microwave ovens. You're probably not aware that when you buy a new microwave oven off the shelf, it's allowed to leak one milliwatt per centimeter squared. That is perfectly acceptable. And in its lifetime it's able to decay, to leak as much as five milliwatts per centimeter squared. It's a little bit different frequency. As you move away from that leak point, the levels do go down. But that is a point to put this whole subject of exposure to RF fields in a little better perspective for you.

Another example--on citizen band radios, most of the typical CB radios are four watt power. When you key the mike on that radio, you'll have about a half a milliwatt per centimeter squared within three or four feet of the antenna. And that operates, incidently, very close to the frequency of the OTH-B Radar. So I just wanted to offer those few things. If there are any questions about clarification on those views, I'll be glad to talk about those later.

I'd like now to address just a couple of points that have been raised in some of the correspondence that have come back to the Air Force, either in some of the public meetings or in letters. One of these deals with the subject that is often identified as the Moscow Embassy exposures. Some of you may be aware of that.

In 1953 through 1957, we became aware of the fact that our U. S. Embassy in Moscow was being radiated with RF signals. It went on for more than 20 years. Our State Department knew about it at some point in time. They made a number of measurements, so there was a good recording of these signals. The exposure levels on the embassy were extremely low. They were in the few microwatts per centimeter squared range.

But they did track that. And then there were many reports and some points raised about the health status of some of the employees that had worked with the embassy. So in about the mid 70's, a contract was given to the Johns Hopkins University in Baltimore, Maryland, to investigate this. They've discovered that there were about 18--more than 18 hundred employees that worked at the embassy in that period of time when the RF fields were on the embassy--and about 1,200 dependents.

Then they went out to get a controlled population out of our other U.S. Embassies in other countries. And they came up with about 2,500 employees and about 2,000 dependents from embassies in Budapest, Leningrad, Prague, Warsaw and several other sites. They took all of these. They sent questionnaires to these people, trying to follow-up on medical records and in fact, did some physical exams. And they ended up evaluating somewhat over 1,000 people I believe.

And the conclusion of the Johns Hopkins study, which was published by Dr. Lilienfeld in 1978, was that there was no discernible differences in either the mortality or morbidity rate in these personnel. So while that's been raised as an issue in the OTH-B, it's really not a relative piece of data that could be related to that.

So--another question that comes up once in a while about stray voltages affecting dairy cattle and somehow that's been associated with the OTH-B. Well, those fields are as--there are some reports in the literature around 60 hertz leakage fields around dairy farms. And in fact those problems are well identified. We're well aware of them, but we have no such propagated fields from the OTH-B. And so that's not a relevant point in terms of looking at biological effects.

Now, I'd like to stop at this point. As Colonel Lee said, I'd be happy to entertain any questions that any of you might have on the subject of RF bioeffects. But I hope, in sharing this information with you tonight, at least I've been able to convey to you the sincerity that we have in terms of the fact that we do have a bit of a vast knowledge of information in this area. It's not just our knowledge--it's the data base that the United States has today. And from that, we've used that in a very conservative way. And we think, by doing that, we have avoided the problem of any RF bioeffects from the system. So thank you very much.

Colonel Bristol: For the benefit of those of you who may have come in after we started, we're going to be taking a recess in just a few moments for about ten minutes. If you haven't got a copy of one of our comment sheets, and you'd like to either ask a question, make a

statement or if you'd just like to manifest your desire for a copy of either the Draft or the Final Environmental Impact Statement, now is the time to get a copy during the recess. We'll be collecting them.

Indicate in the upper right-hand corner, in addition to the other information that's called for on the sheet, whether you're here as a public official, as a representative of a private association, or here simply as a concerned citizen. And also indicate the subject area to which your interest pertains. We'll collect all those and then I'll use these as a starting point for recognizing the members of the group who, first of all would like to ask questions of the speakers, and secondly, who would like to make a statement or read a statement into the record.

You'll note from this sheet, it has the address to which comments may be made at any time between now and the 8th of December. So if you think of something later on, regardless of whether you make a statement tonight or ask a question tonight, as long as you send it in by that 8 December date--your statement, your question, will be a part of the record just the same as if you've made it this evening.

I have about five minutes after eight. It may or may not be right, but in any event, at about 15 minutes after eight we'll resume and start off with the questioning period.

When I recognize individuals, you'll notice there's a podium with a microphone right in the center of the hallway. That'll be the place to which to go and from which to ask questions or to make statements. Thank you very much.

(Short recess was had.)

Colonel Bristol: We are in the second part of this evening's program. A number of people have told me that it's a little bit hard to hear from the front with people using this microphone. And we're going to do the best we can, and I'll ask those who ask questions or to speak to get up right close to that other microphone and speak into it so that we can hear you as well.

If anyone has trouble hearing me or anyone speaking from this microphone, I want you to raise your right hand and I'll try to shout a little bit harder, at least to the limits of my ability.

You know, after each of these hearings I've had people come up to me and either ask a question or make a comment that I thought--just as a layman, you know, as somebody who's not an expert on this--was fairly interesting and something that I hadn't heard before. And they'd say something to the effect that--well, I was hesitant to speak--I didn't feel like, you know, that it was that important, or that I should take the time to speak. And I guess the point I want to make is--don't be shy.

I've got a number of written statements. We are going to have some time limits to make sure that everybody can he heard when we get to the statements. Basically that is, if you're a public official or if you are the designated representative of a private association, you're going to have a five minute time limit for the making of statements. And if you're here as a private citizen, that'll be a three minute time limit. You can say an awful lot in three minutes. You can say an awful lot in five minutes, even for a lawyer. But regardless of the circumstances, when we get to the end of the time after everyone's spoken, if there's time remaining, we'd be happy to have further statements. The key thing is that everyone has a chance to speak.

Jay Blake--or something to that effect--I'm terrible at pronouncing names. If you go to that podium in the back there, Jay, I'd appreciate it. What we'll do on these questions is after you've stated your question, then Colonel Lee or Mr. Mitchell or--and he'll be introducing--Colonel Lee, fairly soon the other members of his team--will come, whoever the appropriate expert is to answer your question, will come to the microphone here and answer it.

Mr. Blake: The question I have might be a little lengthy. Bear with me please. Given that three of the four sites are located on or near the U. S. coast, why Minnesota/North Dakota? It would appear that locating the system in Texas would allow enough overlap to the south. Is this merely a punishment for the fact that Minnesota didn't vote for Ronald Reagan in 1980 and 1984?

Colonel Bristol: Let me ask Colonel Lee. I understand your question and I'll let Colonel Lee address it. Okay. And if you have any follow-up questions, I'll let you ask those.

Colonel Lee: If you would go back to several years earlier, we were considering the possibility of a two sector OTH-B System for the central area of the country. And if that were the only requirement to provide detection surveillance of that southern area, then you're exactly correct--that system could be moved further on south. But if you also note from the overlap areas that I show, there is a certain minimum range, approximately 500 miles, that represents that minimum distance where the radio energy goes up to the ionosphere and back down to the surface. That entire area, some 500 miles, has absolutely no surveillance at all.

Moreover, when the OTH-B System, for it's maximum warning, is operating out at it's maximum detection range, the barrier that it has established in its tracking is extending then from about 1,500 to 2,000 statute miles. So when it is scanning in that area, there is nothing that is providing any further scanning all the way into the coastline. That's why we need the requirement for the two additional sectors in the Central Radar System, because the new threat that has appeared since those earlier days when we were only looking at two sectors, and the sea launched cruise missile.

We both have air launched cruise missiles--but you're correct, we can detect the aircraft that would launch those missiles, even though we might be able to then not track the missiles once they were coming in--but more important, that sea launched cruise missile firmly establishes the requirement for those additional two sectors. When you tie all four systems together, the only effective solution is to do it with a single place. And as I explained in my presentation, that means this narrow defined area within the north central part of the United States.

Mr. Blake: Thank you.

Colonel Bristol: Mr. Lou Blake.

Ms. Blake: It's Lori.

Colonel Bristol: I'm sorry. I made a similar mistake last night. I'm not doing well on gender. Lori?

Ms. Blake: I have three questions. Is that okay?

Colonel Bristol: Yes.

Ms. Blake: Okay. My first one is--given the four hours of prewarning, what would then be the course of action in those four hours?

Colonel Bristol: All right. We'll start--we'll take these one at a time. Would you like to read the rest of them or are they related questions?

Ms. Blake: I can read all three. Okay.

Colonel Bristol: Okay.

Ms. Blake: Secondly, how will the detector determine if the incoming planes are a military attack or a commercial airliner approaching? The third question is--concerning the northern detectors in Canada- my question is--won't that be the weak spot since they only .ive 30 minutes prewarning? Or is the East and West Coast overlapping his area?

Colonel Bristol: Thank you.

Colonel Lee: You're correct in the amount of warning that the system will provide for aircraft that would be launched against the United States. That additional time of warning provides, first of all, a deterrent capability. Right now, without that type of system, it's possible for the Soviets to launch a surprise aircraft attack against the North American continent. And they could be confident that we would have no way of detecting that full attack raid until those aircraft are literally within 30 minutes or less of the coastline.

To the extent that we don't have that capability then, that provides temptation to them to consider--as part of their strategy, their options--using an advanced surprise attack with their large number of strategic aircraft. We have a warning system against ballistic missiles, so this type of system is not for that. It's to provide the deterrence against them launching a surprise attack. But carrying that a little bit further--once the attack were under way if that was their objective--then that additional warning time is used and is provided from the Operations Center, to the Region Operations Control Centers that control all the interceptor aircraft, on to Cheyenne Mountain. All of the sensors that provide warning data for this country, and for Canada as well, are located there.

The results of that assessment are provided to the President, to the National Command Authorities, and so that quick turn around of information means that the President would have, at his option then, the opportunity to try to continue further negotiations, if we were in that kind of a status or posture with the Soviet Union. It wouldn't be a last minute surprise. We could still try to do something to prevent it.

The entire objective of this system is to prevent that surprise attack, to prevent war from starting. That advance warning gives time to do that, and also again--if the attack were to continue to progress, we have warning time for our own people as well, and warning time if that final or that last minute thing that you don't want to do--but if it was necessary, we have warning time then for our own forces as well.

For your second question, the detection of military or civilian aircraft--we were able to track President Reagan's Air Force One as it went all the way to Iceland. We had the information on the flight plan. We were able to see an aircraft was flying along that approach and we could correlate it with the flight plan information that's also stored in the computer. And the computer system automatically, changing the color of the flag, told us that that matched up against a given flight plan. It was not a hostile threat.

All the flight plan information from the FAA, not only our own air traffic control centers in this country, but in coordination with Canada, with Newfoundland--all of that information is fed directly to the computer at the Operations Center. The computer plots and keeps track of those known commercial airlines' tracks, or military tracks--and only those aircraft tracks that don't correlate, that we cannot positively identify, are then passed on to the Region Operations Control Center so that they can take further action to try to positively identify whether it was a potentially hostile aircraft.

Your final question about the approaches to the north. I mentioned that the OTH-B System is a very cost effective way of providing an extremely wide area of long range surveillance capabilities. If we had our wishes, we would put an OTH System facing directly north. But

because of disturbances from the Aurora--I think you've seen them sometimes here in Minnesota too, the Northern Lights--it's not possible for us to, on a very reliable basis, to have the same type of detection system. For that reason, we continue to rely on those microwave short range radars, the North Warning System. That will give us warning as those Soviets first begin to come in on the mainland of the North American continent.

While we would like to have additional warning, at least we still have several hours from the time they first approach that northern tier of Canada or Alaska until they're down into the heartland of North America and the United States where their main strategic targets would be located. So that system still provides a very important function. It provides the link across the north that matches up with the remaining OTH-B System. And it's why we think that the entire system is so important to complete. Does that answer your question?

Ms. Blake: Yeah.

Colonel Lee: Thank you.

Colonel Bristol: Arlene Jagol, J-A-G-O-L? This one has written on it--read for the record and answer. I don't--if you would like for me to read what's written on this document, I'd be happy to do that. Or if you have a question that you'd like to ask, I'll be happy to take that question as well.

Ms. Jagol: I would ask one. Contamination of near-surface aquifers by spills of oil or gasoline during construction, by leaks from underground fuel storage tanks during operation, and by interference by shallow antenna foundations with the ground water system should be a concern for all of us. How would the Air Force guarantee that our ground water supply would not be contaminated?

Colonel Bristol: Okay. For those of you who didn't hear that, I'll read that question again. The question deals with concerns about contamination of ground water, and precedes with the observation that contamination of near surface aquifers by spills of oil or gas--gasoline during construction, by leaks from underground fuel storage tanks during operation, and by interference by shallow antenna foundations with the ground water system should be a concern of all of us. Colonel Lee, would you care to respond to that?

Colonel Lee: This is a good opportunity for me to introduce some of the other specialists with me, because I'm going to ask Dr. Sid Everett to answer this particular question. Dr. Everett is with SRI International. He is an environmental scientist. Dr. Everett has been the principal investigator in preparing the Environmental Impact Statement document that we're using for the proposed Central Radar System.

Before he comes up, though, let me just quickly introduce the others while I'm here. And then we can--when it's a question they should answer directly, they can come up. Dr. Gordon Guttrich, at my far right. Dr. Guttrich, would you stand please? Dr. Guttrich is the chief systems engineer on the OTH-B program. He is an associate department head from the Mitre Corporation. They work for the Air Force as part of our Program Office.

Next to Dr. Guttrich is Mrs. Jackie Bratz, from the Omaha District of the Corps of Engineers. Mrs. Bratz is from the field office of [at] Riverdale [ND], and her office would be directly involved with the purchase or leasing of land. Jackie, would you stand? So when it comes to some additional questions in these areas, I'll have those people come directly up.

Dr. Everett, would you answer this question, please?

Dr. Everett: Ground water contamination of course has become a major concern in recent years. Most of the problems that you hear about and worry about are those that have been left to us by past actions. Tanks that were constructed underground either improperly, or because we were inadequately informed about the conditions there, or inadequately aware of the behavior of the materials that were being stored there--but today measures to prevent contamination are well known. Things in the area of gasoline or other liquid stored underground, for example, can be well contained by double-walled tanks.

The possibility of spills can be checked by monitoring levels in these tanks with the possibility of leakage. And measures such as these would be taken by the Air Force in designing, planning and designing and constructing facilities.

The Air Force will also, in the course of designing, either directly by its own staff or contractor personnel, be working with state and local officials to be sure that we are aware of the immediately local conditions and the expectations that they have for construction practices, storage practices, etc. And I think that we can be reasonably confident that all the measures that are judged appropriate by people in the know, problems of this type will be taken.

Do you have a follow-up question?

Ms. Jagol: I have another question for you.

Dr. Everett: Same subject?

Ms. Jagol: No. We live near a TV tower and have interference on all but one channel. What kind of interference can we expect from the OTH-B, and what measures will the Air Force take to prevent this? What distance from this TV tower would the OTH-B be located?

Colonel Bristol: I know these microphones are causing problems on both ends, but just a reminder again. These questions are written down so they won't constitute a problem. But our court reporter has to actually hear the spoken question or comment, or else it simply won't be a part of the record. We want everyone's comments to be a part of the record, so even if it's necessary to shout into the microphone--and we'll try to do that on this end as well. I'll ask you to try to do that. Colonel Lee.

Colonel Lee: I see it from the question, the comment sheet, that you're from the Thief River Falls area. So let me, in the first part of the answer, assume that you're talking about a TV tower that's here in this area and potential interference that you might expect. Again, the receive antenna does nothing more than sit and listen for very faint energy that's coming back from a location 2,000 miles away.

That energy level is so small that the only way we're able to pick it up is to use an antenna that's two miles long. There is no way that any other type of existing system would be able to even detect or be aware that that signal energy was there. So as far as anyone located here in the receive site, it would be impossible for there to be any interference with TV, radio, communications or any other kind of electronic device that you would have. That kind of an effect just cannot take place because of the extremely low energy level in that radar system.

There are higher energy levels that you would receive standing outside--or trying to get reception just from other CB radios or other transmissions that may be within several miles of where you're located. Our levels, coming back from that distant location, again could not be picked up by any of these receiving devices. Does that answer your question?

Colonel Bristol: Mr. John Omdahl? Is that reasonably close, Mr. Omdahl?

Mr. Omdahl: That's right.

Colonel Bristol: I hope so.

Mr. Omdahl: Is this just the question period or a question and comment period now?

Colonel Bristol: This is the question period. If you have a comment that you would like to make incident to the asking of the question, since you're already at the podium, you may proceed. If it's more of a statement, with just an incidental question, then it might be appropriate to wait. I'll let you be the judge of that, sir.

Mr. Omdahl: I can make my comments later on, is that correct?

Colonel Bristol: Yes, sir.

Mr. Omdahl: Okay. If adjacent land to the OTH-B site is devalued by rerouting for drainage, what recourse will rural landowners have?

Colonel Lee: The objective, first of all, in siting the receive antennas in the area, would be to try to ensure that the potential for those kinds of environmental impacts be to the absolute minimum. In considering the particular locations to place the antennas, we would work in coordination and cooperation with the land owners, as well as with the water commission for those agencies that are involved with that type of work, to determine what's the best approach.

In many of the areas that we're looking at, there will be no need to do anything to the land area. The Draft EIS talks to the possibility, in a general sense, that if you had to locate the antenna across a stream area and therefore had to reroute the stream, you would try to do it in certain ways. And you would take appropriate mitigation measures. But the objective would be to try and pick those land areas and locate the antennas where that type of effort would not be required.

I can't give you a more definite answer as far as what your recourse would be, because in developing the project our goal would be to ensure that that type of an impact did not occur.

Mr. Omdahl: Do you believe that there would be no devaluation of land near the site?

Colonel Lee: The Air Force does not see any basis for taking a position that says land outside the receive antennas is going to be less valuable. The same use could be made of the land after the OTH antenna is there as was made before the antenna was placed. There would be no impact on any kind of operations. We would be a good clean neighbor. We would see no reason for the value of that adjacent land to go down.

Mr. Omdahl: Maybe this might be a good time to address another question that you answered in this handout sheet about crop spray. It said that you could spray up to the boundary fence. How about the airplane flying over the antenna?

Colonel Lee: There would be no difficulty as far as we were concerned. There will be no restricted air space established over the receive site itself. We have that 65 foot high antenna--that if the crop duster were not careful, it could represent a possible obstacle to him. But as far as flying over that area, there should be no problem.

The reason we defined it in terms of boundary fences was just to ensure that we're making the point--that whatever the use of the land outside of that area, that use could continue. And if that involves aerial crop spraying, then the aerial crop spraying could continue as well.

Mr. Omdahl: Is that true for the transmit site as well?

Colonel Lee: No. There are some added restrictions on the transmit site. In the case of the transmit site, there is a radio energy that is being sent out, that radar signal. We will establish the restricted zone about 5,000 feet above ground, extending out approximately a mile in front of the antenna area and perhaps a half mile on either side. That's to ensure that that area is identified on all of the aviation maps. That's as a safety measure for people that might be flying ultra-light aircraft or even hot air balloons that might, by chance, remain in that direct area for a significant portion of time.

For a crop duster, he would be able to spray right up to the fence line, even with the transmit antenna on. Because the portion of his body that would be subject to that kind of very long wavelength energy, again, would pose no danger to him.

The options that we have and I attempted to get--to define--in the answer--we could, by selecting the particular frequency during that time period when the crop spraying was desired, or by reducing the power level, or by temporarily shutting down for that short duration, still be able to allow that crop spraying in the area immediately adjacent to the transmit antenna as well.

Mr. Omdahl: Okay. One last question. Would the Thief River Falls receive site match up with the Amherst as a transmit site?

Colonel Lee: Yes, it would.

Mr. Omdahl: Okay. Thank you.

Colonel Bristol: Connie Omdahl?

Ms. Omdahl: Could you please explain the decommissioning process once the radar site is no longer operational?

Colonel Bristol: Thank you.

Colonel Lee: Decommissioning is a technical term which refers to those actions that would take place when the systems were no longer needed. First, to clarify that point--while we talk to a minimum of a 20 year cycle for the system, as long as there is a requirement for a long range wide area surveillance system, the OTH-B System that we're proposing to deploy here will be able to meet that requirement--and that extends beyond the 20, 30 or 40 years.

Those of you who are outside of Grand Forks Air Force Base may recall that when the first B-52 bomber flew, people were talking lifetimes of 15 or 20 years. But that system is still used today. It has been upgraded or modernized with new avionics, but it still meets the needs and is very effective. The same is true for the OTH-B System.

But if you would still, in a theoretical basis then, consider what might happen 20, 30 or 40 years from now when the Air Force pulls down the system--if the land had been leased, and again I emphasize that the Air Force is willing to lease for this land rather than direct purchase, the land would be returned to the land owner.

If there were particular terms and conditions in the lease that called for removal of some of the structure, that would be negotiated as a part of the lease.

I hope you noticed from the photographs of the receive site--there is no permanent effect or impact on the vast majority of the land. The ground screen can be pulled up. The only thing that's left is the row of the antenna elements and the back screen itself. And those are both set on rather shallow concrete foundations. There is no impact. The land can be restored to farm production use.

If the government had purchased the land and no longer required it, there are certain procedures that we have to follow through to ensure that there has been no adverse environmental impact or possible contaminants within the area itself.

But at that point in time other possible federal uses could be considered. That is to mean, however, that before the land was offered for sale back to the public, you would have to consider if there were other requirements still within the federal government. The point that needs to be emphasized here, however, is that the land cannot be transferred from one agency to another just because another agency says they have a requirement for it.

And in fact, if that proposed use could have a potentially environmentally serious impact, any type of a major environmental impact, then that agency would have to go through the same type of process that we've been going through here. They would have to file a notice of intent. They would have to announce that to the public. They would hold scoping meetings, issue a Draft Environmental Impact Statement, conduct public hearings, issue a Final EIS--and during the whole process, the public would have the opportunity for impact, for voicing their opinions. So in that sense, if you're considering what potential uses might be made of the land 20 or 30, 40 years from now, your concern should be no different than if an agency were to announce today--we want to make this use of the land. The public has the opportunity to be involved, to comment--and if they don't want that action to take place, they have the opportunity to try to keep it from taking place.

So there should be no concerns on your part that this, in speaking directly to the question that's been asked of us many times, there is no way that this land could be directly transferred or used as a nuclear waste storage dump site. There is no way that that could take place.

Ms. Omdahl: I guess part of my question is--are you going to leave that fence as it is if it is federal land and there's no further use for that land?

Colonel Lee: The fence is not unlike some of the fences that are around many farmlands. I realize, however, that fences are not normally used in some of the areas here. It's difficult to see now what might be the impact 20 years from now with that fence remaining up or having to be taken down.

Are you suggesting, from what you've seen tonight, that you think the fence is aesthetically not pleasing, and should be removed, or that it would have some serious impact?

Ms. Omdahl: I feel it's definitely very unpleasing to look at.

Colonel Lee: All right. That's noted for the record.

Ms. Omdahl: And I have another question, if I may ask it, and it prompts another question. The U. S. Government and VA Hospitals are denying a link between the use of Agent Orange in Southeast Asia and the present health problems of veterans. Presently, the Air Force is saying, about this radiofrequency radar, that testing for health hazards has been inconclusive. Will it still be inconclusive when local citizens begin to show the physical effects of this radiation?

Colonel Lee: The question, and let me restate it for some up here that may not have heard it as well--the comparison was made between the Agent Orange and alleged refusal of the government to recognize that, with potential or inconclusive evidence as cited in the Draft EIS on RFR effects.

If I could--let me ask you to comment on that, please?

Mr. Mitchell: I'm certainly not an expert in Agent Orange, but it's my understanding it is a toxic chemical and there is certainly a value for that. In terms of the RF radiation, that is a noncumulative kind of transmit phenomena. And certainly--is not related in the same way as a toxic substance.

Ms. Omdahl: I'm afraid that does not appease me.

Colonel Bristol: All right. I don't think our answers are going to have that effect, Ma'am. It's just a question that you may ask and that we may do our best to answer. David Spengler?

Mr. Spengler: My question was concerning the location of the sites in the southern U. S., and it was already answered.

Colonel Bristol: Thank you, sir. This is either Ann Dyndal or Ann something else that rhymes with Dyndal.

Ms. Dyrdal: It would be Dyrdal.

Colonel Bristol: Dyrdal.

Ms. Dyrdal: Okay. I have two questions.

Colonel Bristol: Ma'am, would it be asking too much if you could come to this microphone, if you'd like? Make it a shorter distance.

Ms. Dyrdal: Okay. Colonel Lee stated Thief River is a more ideal site because of the large area of land. How much weight will the petitions and resolutions opposing the project carry in the Air Force's decision making process?

Colonel Lee: Would you like to state your second question now?

Ms. Dyrdal: The second is, has there been any study of health effects to residents of the general areas surrounding a receive site?

Colonel Lee: That first question dealt with the weight of the public opinion--of the direct comments that we're receiving--and I assume by that you would include the comments that we've received so far in letters and phone calls, and the comments at the public hearings.

These are certainly considered. They're a part of the Final Environmental Impact Statement. That information is together submitted to the Office of Secretary of the Air Force, and Secretary Aldridge will have the responsibility for that final decision. He will be aware of the impact in terms of comments that have been offered, the number of them, the kind of information that's presented. But at the same time, I have to hasten to add that there have been many people that have contacted us and have said that they are willing to sell or lease their lands to us. So that information also will be presented as a part of the final package to the Secretary of the Air Force, and will as well influence the decision he would finally make.

As far as any study of long-term impacts on a receive site, I don't mean to be facetious at all, but it's really akin to determining the long-term impacts of having a wooden fence across a two mile area of land. The receiver absolutely has no electromagnetic environmental impact at all. It is strictly an antenna that is placed in the ground. This antenna happens to be 19 feet tall, and there are several hundred of them in a straight line. The height of them is less than many of the CB antennas that you place--to try to have an improved reception. I don't believe there's anybody that thinks there's an environmental impact in placing that CB antenna on their roof, and there's certainly no environmental impact from any of the receive antenna elements.

It just is a totally passive device that is able to pick up radio stations from hundreds of miles away. It is able to pick up other HF transmissions that could be coming from across the ocean, and is able to pick up the very faint signals that we send out from our transmit site. So there is no cause for concern and no need for study in that area.

Colonel Bristol: Donavon Dyrdal? The other half of the family. You can use this microphone too, sir, if you'd like.

Mr. Dyrdal: I have several questions, so maybe I should ask them there.

Colonel Bristol: Fine, thank you.

Mr. Dyrdal: Well, my first question would be directed to Colonel Lee. I'd like to ask a few questions. Two with follow-up, if I may.

Colonel Lee, could you describe briefly how the grading procedure and requirements is done for the receive site antennas.

Colonel Lee: I'm sorry, Mr. Drydal. I didn't hear part of that question. Would you state it? How the what? Grading or rating?

Mr. Dyrdal: Would you state briefly how the grading procedure and requirements for the receive site antennas, how this is done, what the grading--

Colonel Lee: Grading, in the sense of leveling the land--or in the sense of grading, leveling?

Mr. Dyrdal: Yeah. Grading. Yeah.

Colonel Lee: The only area that has to be extremely flat is that area that's directly in front of the receive antenna itself. That's where we place this ground screen that extends the 750 feet in front of the antenna. Beyond that, there could be variations on the land. Many of the areas that we've driven by would require no grading or very, very minimal grading at all. We would, working with recommendations from people in the area--if grading was required, we would do that so that we would--did not cause erosion--that we did not cause the blowing of land. We would water spray, or revegetate as soon as possible to ensure that we did not contribute to any adverse environmental impact. So that process would be done doing the same procedures that you would use here on your fields.

Mr. Dyrdal: Okay. Does the Air Force require the contractors to strip off the topsoil and stock pile it and then lay it back down when the grading is done for the strip of land that does require where it has to be flat for the antenna, that 750 foot strip that's referred to?

Colonel Lee: If grading was required, the only smart thing would be to take that topsoil off to do grading, and then deposit that topsoil back in the area. Because we want to have vegetation grow back there as well. That's important for us. It's a part of making sure that we create minimum environmental impacts, and it's important in case that land were to be returned to farm production. So yes, we would follow through with that requirement.

Mr. Dyrdal: Okay. Thank you. My second question, the General Accounting Office twice questioned the need for the Central Radar System, in 1983 and again in 1986. When does the Air Force still plan to build this system?

Colonel Lee: In 1983, the GAO did do an independent assessment of the OTH program. But it was not the Central Radar System. It was on the East Coast and West Coast Radar System. And their basic concern was whether or not we should continue with the production of that system before we had actual testing information on the first sector that Congress had authorized back in 1982.

That study recommended that the Secretary of Defense direct the Air Force to reassess the effectiveness of the system. The Air Force did that in 1983. We provided our recommendations to the Office of the Secretary of Defense and then, in turn, over to the congressional committees. The committees agreed with the Air Force and not with GAO. They approved the East Coast System and fully funded it, and they approved and have fully funded the West Coast System.

GAO is often asked, on many different appropriations--from power systems, rural electrification, federal projects, as well as state projects--to make recommendations. And whether or not Congress goes along with them, I'm not sure what the final tally score is, but the important use of these recommendations is for Congress to have some independent assessment of alternatives.

In this most recent 1986 GAO study that you're referring to, GAO looked at the Central Radar System along with several other types of warning systems. They asked that the Air Force again re-evaluate whether the Central Radar System was necessary. Because their basis was to question whether or not we would have the capability to detect and track the small vehicles--the threat that I described, both air launched cruise missiles and sea launched cruise missiles. So similar to 1983, they were looking for more conclusive evidence that that kind of a capability was not only present, but had been fully tested and verified.

The information that the Air Force is preparing and will send back to the Office of Secretary of Defense and to the congressional committees, will provide the evidence that says--that capability is present. And I regret I can't discuss that in detail, but we are confident again, that Congress will agree that the capability will be there, still taking into account GAO's separate independent assessment.

Mr. Dyrdal: Okay. The information I received on that is--it was evaluated on--number one, evaluated on the cost and benefits. Number two, on the results of current testing. And the unclassified portions of this report agree with what you're saying, that the East Coast was fully funded and if we are talking about the same report, the West--the one sector was funded on the West Coast System?

Colonel Lee: No. There are two sectors now.

Mr. Dyrdal: There are two sectors there?

Colonel Lee: So the June of '86 report, of course, was issued before final congressional action had been taken on the '87 defense budget so it was not up-to-date in that sense.

Mr. Dyrdal: Okay. And I believe in that statement report it recommended that a CR--CRS System not be funded, and Congress also requested that they did not solicit comments from the Department of the Defense.

Colonel Lee: I'm sorry, I missed that last part. They requested?

Mr. Dyrdal: The congressional request, and so they requested also that they did not solicit comments from the Department of Defense.

Colonel Lee: I appreciate what you may have had access to--in this classified report, but I assure you that the information on how the Central Radar System will perform is being provided to those congressional committees. We are aware of the GAO report. There is an Air Force position, a Department of Defense position that is being sent back on it.

Mr. Dyrdal: Thank you. My third question I would like to direct to the individual from the Mitre Corporation.

Colonel Lee: In the Mitre Corporation?

Mr. Dyrdal: Mitre Corporation. I'm sorry.

Colonel Lee: Why don't you go ahead and ask the question and then I will--it may be something that while I'm up here I can take care of also.

Mr. Dyrdal: Some of the questions that I have raised have been based on the information available at some of the meetings. One of the questions in the siting criteria--I'm sorry I do not have this document with me at this time to be more specific. But I believe it was dated September of 1985, and under the topic/facility column, it stated that the interference generators may not be desirable within a 5 to 25 mile distance of the receive site. This particular question was answered by the Air Force. And there seems to be quite a bit of discrepancy from the siting criteria from the Mitre Corporation. Is that correct?

Colonel Lee: Mitre Corporation.

Mr. Dyrdal: I don't know the exact name. What is the exact spelling of that, sir?

Colonel Lee: It's M-I-T-R-E, but it's pronounced Mitre--but that's all right.

Mr. Dyrdal: Okay.

Colonel Lee: The document that you're referring to was a set of general selection criteria that we were using when we were first considering possible areas. In September of '85 we had not determined the precise boundary areas for either the transmit or the receive sites. Our concern for the very long sensitive receive antennas was that we would not be close to an area that would have significant interference on us. That was the issue--not that we would cause interference to someone else.

For a large city--community--such as Grand Forks, with heavy industrial use, with a lot of traffic, with other operations there that would create electrical interference--a 25 mile separation distance at a minimum would be appropriate.

For a community such as Thief River Falls--a 3 to 5 mile, again depending on the orientation, would be more than appropriate. If the antennas were located directly west of here, and were not further north than the line of Thief River Falls, then the only possible concern would be for that antenna facing eastward, and only for the upper portion of it. Again, from our review of the kinds of things that you have in Thief River Falls, the study area as we defined it, certainly meets our requirements for the receive antenna. And there again, in that sense, there are no inconsistencies between that minor assessment--which they, by the way, did at my direction, and it was a report provided to me so that the Program Office could consider how we continue with the siting process.

If you have some further specific questions on that memorandum and want to put them in writing, I'd be glad to provide answers in the Final EIS, or I can discuss it with you afterwards rather than taking the time here.

Mr. Dyrdal: Okay. Thank you, Colonel.

Colonel Bristol: Bob Glass?

Mr. Glass: Well, I guess one of the questions just got answered by that speaker there. I wondered why the mechanics of this--you couldn't put the thing closer to the base, but I suppose that is because of the interference of the operations that are at the base. Is that correct?

Colonel Lee: Yes.

Colonel Bristol: Yes, sir.

Mr. Glass: And another thing, I was just wondering here--they speak of the value of land is close to, or shouldn't suffer any devaluation. Is there anything that can be done for the person that might have a farm on the other side of this deal you're building? Or is it like a freeway that cuts off the land? Is there any compensation for that person?

Colonel Bristol: I'll give Colonel Lee a stab at this. I think it may be more of a legal question like a taking of a portion of the property, inverse condemnation type issue, but let me let Colonel Lee address it.

Colonel Lee: We recognize that the large area antenna sectors that we're looking at may cut off some roads. So I'm assuming that you mean that you may have to go another half a mile or mile further on down south, before you can turn over, perhaps, to have access to another part of your land. Is that the type of question?

Mr. Glass: Yeah, yeah. That's the question. And how wide are these, is this space area? Is it about two miles, from what I understand?

Colonel Lee: Two miles long and about a half a mile wide. And if we were to locate a single antenna sector, the antenna sector that would be facing to the west, we would create a new road that would run that entire length. If we built along the county road on one side, we would establish a new road of equal capability on the other side.

It's true that if you were trying to cut right across between the sections or a quarter section, that road would no longer be available. And there wouldn't be any direct way that we could provide you compensation for that. But we would want to work with you and discuss any land owners immediately adjacent to any area where someone, for example, had offered land for sale--so that we could understand possible impacts and try to minimize those.

Mr. Glass: Well, these four antennas are kind of put into question, so to speak. They're not straight out for three or four miles, and it's more or less what the diagrams on the slide presentation.

Colonel Lee: The single cluster referred to the transmit antennas only. We would not be able to use a single cluster like that for all four receive antennas. The only possible clustering would be the two that faced towards the east and west. And in that case, you'd have a single area of land about two miles long by one mile wide. Any other

siting would have the antennas separated, again with each one, one mile by half a mile. The same would be true for the antenna sectors facing to the southeast or southwest. And again, we would create roads along the length of those antennas if that were required. Or if we cut off a section, a quarter of a section, and the land owner did not feel that that was economical to continue, then the Air Force would be willing to purchase or lease that additional portion of the land as well.

Mr. Glass: What distance of--I noticed in looking through some of the pamphlets here about arc welding. What's the distance? How close, or I don't see anything in specifics there.

Colonel Lee: If there were any large scale arc welding operations, such as someone who did that for a business on an eight, ten hour a day basis with several large units, we would take that into account in our siting. We would not want one of the receive antennas directly adjacent to that.

If you're referring, however, to the kind of arc welding that most of you would do as farmers--where you brought a portable unit out to a field to repair something that had broken on the spot--that type of short-term arc welding operation would not cause us a concern. It would interfere with our system on a temporary basis. We might ask, as a courtesy, for you to notify us, the site manager, ahead of time if that were the case. But I assure you that if you did not notify us, we would be aware that that type of interference was taking place.

Mr. Glass: What distance are we talking about here?

Colonel Lee: We estimate--at approximately a half mile on the other side for the type of normal arc welders that you would have on a portable basis.

Mr. Glass: Okay. I've--I noticed in one of your slides there, it looked like you had a--I couldn't tell if it was a pavement, or if it was a hard surface, but it looked like quite an area by the antennas. Is that a gravel area or paved, or has there been some kind of chemical to keep the weeds down?

Colonel Lee: That particular receive antenna location is outside of Columbia Falls in some rather unique soil. It's blueberry bearing country. The low bush blueberries grow there. It's soil that isn't suitable for very much else, and there's a lot of the normal crops just do not grow there. We did not do anything to sterilize that area.

In fact, our choice is to have natural growth come back in. But in the case of that receive antenna there, because of the acidity of the soil, we spread a layer just to be uniform across the entire ground screen area. There occasionally are some growths that are beginning to come up now. But in the photograph that you saw--which was taken of the last sector, the one that we just finished construction in the last few months--you did not see any vegetation growing back up there at all.

Emphasizing again, in looking at an area outside of Thief River Falls, where we see the kind of growth that you have, we would ensure that that growth took place back over that area.

Mr. Glass: Another question here. I suppose this is a premature question, but perhaps I should phrase this a little bit different. But are you people more interested in leasing than buying?

Colonel Lee: From the terms of the administrative element of it, it's easier for the Corps Of Engineers to negotiate a direct purchase of the land. Because of the concerns that were expressed by many of you in the scoping meetings and earlier hearings, we received approval from the Office of the Secretary of the Air Force to lease land as well. So if you're asking for what is the position of the Air Force, leasing versus purchase, we are willing to do either. It's a function of what the individual business arrangements might be wanted by that land owner. We're willing to deal with him individually and establish and do what he would like to have done.

Mr. Glass: And I don't suppose you'd be able to have any figures in mind. I imagine that's a premature part of this question?

Colonel Lee: Well the basic element of the question, I think, is important. Either way, for purchase or for leasing, an appraiser that was familiar with the area, that had done appraisals in the area, would be used. The Corps Of Engineers personnel, with that appraiser and with the land owner, would go and look totally over that land, and would establish the fair market value for purchase and for leasing. And that fair market value for leasing would represent the rental values that some of you are getting or paying in this area.

In terms of a lease arrangement, we recognize that prices can go up and down, and we would want to protect our interests as well as protecting your interests as a land owner. As an example, if we look at a 25 year, long-term lease, we would establish an initial fair market rental value. And after a period of time, for example five years, that value would be renegotiated again, so that if the value went up, you would have the benefit of that.

As far as what the exact prices are in the area right now, you probably know better than we. But when it comes time for the actual purchase or leasing, we will do that through an appraiser that's familiar and has worked in this area.

Mr. Glass: Well, I have a comment on this, but I think that can be followed in the comment section. How about--do you wish to locate this where it's more of a well traveled highway, or the availability of roads out--we'd like to tell you we have a few county roads here. I'm just trying to figure out where you're going to put this darn thing, if it comes to that.

Colonel Lee: We have a lot of flexibility. If we can use the existing county roads and that doesn't cause an impact in the area, then that's the most cost effective construction method for us. But if it's necessary to move it over into the middle of some section, then we will create the new roads around it, both for us to have access, and then it would provide you permanent access around that area as well.

Mr. Glass: I think that perhaps the rest of what I have to say will probably follow in the comment categories.

Colonel Bristol: Paul Aakre? Paul, you can use this microphone if you prefer.

Mr. Aakre: Yeah, I have a couple of the earlier questions were answered. I just had one--that in regards to the land purchasing and perhaps what Bob was alluding but--and this is a question--number 6.

As all of us know, in the last--say five years ago--our land values were probably typically up in the $600 to $1,000 an acre value at that time. And as we all know, right now much of the land could be purchased perhaps for $200, $300, $400. What would happen then, if the Air Force came in and was to purchase some land and it was appraised at today's value--that $200 to $400, and that particular owner owed a mortgage that perhaps was at the $1,000 an acre land. Would that owner then be required to pay off that mortgage? It's probably kind of a legal type of question.

Colonel Lee: I'd like to answer the first part of that, and then see if Jackie Bratz may be able to help out with a little bit more. You're right. There is a certain legal aspect to that question and one that would involve you as well as a particular bank and the terms that they had established, as well as the IRS also.

We recognize that in many cases the value of some of this land is much less than some of you may have paid for it several years ago. While it would be nice to say that we ought to pay you that increased value of land, we're not able to do that. It isn't a matter of our own direct policy, as our own choice, per se. That's the way the Congress has established it as well.

We would not be able to get approval for the funds to purchase the land, if we were to pay whatever price an individual may have paid several years ago. We have to deal with the land owner in the same way that another individual would deal--on an arm's length business arrangement. So in that kind of a situation you would be unable to pay the full loan value. The bank, depending on how your loan was structured, may have some options.

As far as looking at whatever other assets you might have or trying to auction off other equipment that was associated with that land operation? But I'm not sure that we could or should try to give a more detailed answer. I believe it would depend on the specific arrangements you had on your loan. Am I correct there, or is there something else you'd like to offer, Mrs. Bratz?

Mrs. Bratz: Yes. The only thing that I would like to offer--

Colonel Lee: Would you come up to the mike too, please?

Mrs. Bratz: The only thing I would like to offer is we do have some flexibility in negotiations. Now, if the amount owed on the land is way above that, then there is the option of condemnation through the courts. This is made up of, if you go like--with the jurors, this is made up of local people--and this is taken into consideration in the award. Does that answer your question?

Colonel Bristol: Al Hermonson?

Mr. Hermonson: I got a couple of questions for Colonel Lee, regarding the map showing the coverage of the Central Backscatter System. We're told that the range is about 2,000 miles, but about 1,500 to 2,000 of that is over the Continental United States. And the small areas of overlap in the East and West Coast and the Gulf of Mexico are not going to give us an additional four to five hours lead-time. It seems to me that that maximum of 500 miles might give us, at the most, one hour of lead-time from any attack. Is that not true? And is that area that we're referring to, that small fringe area, already covered by existing radar systems?

Colonel Lee: There are really several points to the answer. The first is--yes, we do have coastal radars. I mentioned that they're limited to a range of about 200 miles. But they're line-of-sight radars which means that the energy goes straight out. And because the earth curves away from the radar, if an aircraft were to fly in an extremely low altitude, or if an air launched cruise missile were launched in at a low altitude, or a sea launched cruise missile were launched, those coastal radars would not be able to provide very much, if any at all, in the sense of warning--or detecting that those vehicles were approaching.

If you look at some points, it may appear that the southern sectors of the Central Radar System are indeed scanning over land rather than the water. But for a Central Radar System--on the schematic we plotted that entire area extending from 500 nautical miles out to 1,800 nautical miles. But in actual use, we would be scanning again that outer limit--the limit that includes the immediate offshore area going across the southern part of the United States that heads down towards Mexico. Yes, there's more land area there, but in general, that distance from about 1,000 to 2,000 statute miles covers a significant portion of the water area where we do not have adequate detection today.

In terms of the time that that would represent, yes, that's not four to five hours for an aircraft coming up those coastal areas. But for the aircraft, if they were approached from either the eastern or western in an attempt to come in from the south, we would first be able to pick them up in one of those eastern or western radar systems.

The main impact or requirement for the Central System is to not leave that area open, and therefore again inviting a possible surprise attack.

Mr. Hermonson: Well, a couple questions, then, to follow up. Where do you propose or what do you feel is the supposed air attack is going to come from, since the Soviets have essentially no intercontinental range planes and no refueling capabilities? Where's the air attack going to come from?

Colonel Lee: First of all, you're incorrect in terms of them not having an intercontinental range. And second, you're also incorrect in saying they do not have an air refueling capability. They have both of those capabilities, and we have seen and witnessed that type of capability.

It has been reported by the Secretary of Defense to Congress--and if some of you are interested, there is a publication that you can order from the Government Printing Office, Soviet Military Power, that includes many photographs that have been taken of the Soviet systems, artists' concepts of some of those that are currently in test. So that capability is there.

The second point is the Soviets are not limited in their sphere of influence to strictly launching aircraft from the eastern portion of their country, and coming in over Alaska or Canada or directly from the northern approaches. They have airfields that they use, and have used with Bear aircraft, in many other parts of the world. And some of those represent possible locations where a strike could also take place.

Mr. Hermonson: And about the submarine launch cruise missiles. When will the Soviets have that capability, and is it not true that we have a 100 percent surveillance of their submarines so that we already have that possibility covered?

Colonel Lee: In the proposal for the Central Radar System and in the Air Force's recommendation to have the initial funding for a portion of that included in the '88 defense budget, the position that's taken clearly--is that we need the system because we do not have that capability. It represents a significant investment in terms of total Air Force dollars and the Department of Defense dollars. And for that reason, there certainly would be no need to try to have a system that really had a requirement that could be met by some other type of system.

There is no alternative system that we have or will have in the near future to provide that kind of detection for the cruise missile threat.

Mr. Hermonson: When will they have cruise missiles? When is it estimated?

Colonel Lee: They do have cruise missiles already.

Mr. Hermonson: In operation on submarines?

Colonel Lee: I can't comment on operational dates on the submarine part of it. The same technology and the same vehicles for the sea launched cruise missiles are those that are used and have been used in their air launched cruise missiles.

Mr. Hermonson: And as a final question, I'd like to ask you for a scenario when the Soviets would attack by air from any direction, and especially from the south, since we're talking about the south here, with their limited capabilities in the air. And in that scenario it would not include all of the attacks, including ballistic missiles, you know, taking into account that nuclear weapons could be placed on any ship in any of our ports or they can be carried in the suitcases. It just seems to me that the scenario of a surprise attack by air or cruise missiles from our southern flank is ludicrous at this point.

Colonel Lee: I respect your opinion on that possible scenario. I assure you that there are many other scenarios, including scenarios that Congress and the various committees and the Department of Defense believes are possible. And those scenarios, which include and are based on the Soviet concept that you try to mass as many of your forces together for a continuous all-out attack, suggest that under that type of scenario, they would attempt to launch their long-range aircraft hours ahead of a launch of ballistic missiles. And in that manner, they would be able to bring to bear all of that force at one time--to take out our complete command and control system, as well as our potential strike forces that can go back against them. So that is one possible scenario.

But I do not want to debate or try to suggest the scenarios, back and forth, because they're largely what if's. And each of you has your right to an opinion on what might be possible. The position that we have taken within the Department of Defense is that there is a threat. And the Central Radar System is key to filling the gap in a complete network of OTH systems.

Colonel Bristol: Daniel Berg? Daniel, you can use this one if you like.

Mr. Berg: My name is Daniel Berg. I'm here representing the Minnesota Pollution Control Institute. I have several questions.

First of all, a procedural question. In that comment there that you've already received from the Minnesota Quality Board, they mention a fact that there may be a requirement for a state environmental review, as well as the one you're carrying out right now, a federal environmental review, which would probably take the form of an environmental assessment worksheet that you think will take three or four months to accomplish, or possibly a state environmental statement which may take a year.

And I was wondering, since you've received that letter, if you've had some time to consider what your intentions are in that regard?

Colonel Bristol: Thank you, sir.

Colonel Lee: Yes, we received your letter at the Program Office at Hanscom Air Force Base. The stack of letters that we received on the Central Radar System, so far, is that tall. (Indicating.) And I read every one of them before coming out here to these hearings, so I did read your letter. We just recently received it. We have not passed it onto SRI, who is our contractor and the experts in this area.

There is a question on how the cooperation takes place between the EIS process that we do within the federal government and the state process--we do, I know, work together and cooperate in. The extent to which a federal EIS can supplement or take the place of a state EIS is an issue that I'm not personally familiar with, but that will be addressed and comments noted in the Final EIS. So in any event, we would still carry through the process from what we're currently doing with the Final Environmental Impact Statement.

Mr. Berg: Okay. I have another procedural question. In both the Minnesota Pollution Control Agency's comments and the Minnesota Department of Natural Resource's comment letter, they criticize the fact that you've identified study areas but not--have not precisely sited the place where you're going to be putting these arrays and the arrangements. And for that reason, we do not have the opportunity to really see what specific resources would be impacted. And I was wondering--you answered part of my question, which was when you will be doing it? You said there would be a Record of Decision which will be after the end of the Final Impact Statement that's finished. In other words then, after that time we have an opportunity to comment on that.

Colonel Lee: We would ask, and you've already done that, that you provide comments on the general study areas as we have defined them--and to the extent that you're able, even to make recommendations on pros and cons of portions within the study. The choice we made was a deliberate one. We wanted to pick several alternative study areas to get maximum flexibility, both in terms in environmental impacts and also in terms of the availability of land and willingness of landowners to negotiate for sale or lease of that land.

We're not able to be specific in trying to determine an exact site location in every study area. We need to establish what is the preferred study area based on the environmental impacts that we have identified.

Beyond that, in sort of a tiering process, we would do any additional environmental study work that's necessary, including coordinating with the state and local agencies to minimize any impacts within the area. Specifically, mitigation plans would be developed. We'll identify some of those in the final Record of Decision and then would work with those agencies.

Mr. Berg: I have kind of a technical question to ask, for me anyway. One of the things--

Colonel Bristol: Could you stand a little closer to the mike?

Mr. Berg: One of the things you talked about in the health risk effects portion of your Draft Environmental Impact Statement is the average intensity of radiofrequency radiation and then what do you know, it'll be below about a one-tenth of a milliwatt per centimeter squared outside of the exclusion fence at the transmit site. I was wondering, does this radar also peak? Are there--I mean, you're talking about an average. What are the peaks? What are the nature of them and the duration of them?

Colonel Lee: The question dealt with describing the difference between the peak and the average values we've used, in terms of the standard milliwatt per square centimeter. Mr. Mitchell, can you comment on that?

Mr. Mitchell: Some of the--of course many of the systems we have are pulse systems, and often a standard radar, for instance like an air route surveillance radar, it has a peak to an average ratio of something like a thousand to one. In this particular system, it's an FM/CW system, and so you really don't have that same concept. There will be some variations in the signal strength, but it's nothing like a real pulse system. So the measurements of the real average value and the average power density measurement is the relative term, in terms of bio-effects. So you really don't have a peak, a peak value to deal with.

I'd also like to say that in our bioeffect studies, when you have even peak fields that are a thousand times higher--and if you measure the true average value properly, then the bioeffects is based on the average value and not the peak value. So there are not any unique effects from peak fields even at a ratios of a thousand to one.

Colonel Bristol: We're going to have to move onto the statements, and I've got a handful of them. And if we don't get started on them soon, I'm afraid some of you might not have a chance to be heard. And once we finish those, if there are any remaining questions, I'd be happy to entertain them.

Karen Diehl, from the office of Senator Boschwitz, asked to make a brief statement. And I'll ask Karen if she'd like to come forward and do that now. Are you still here?

Ms. Diehl: I just wanted all of you to know that I'm here simply as a listener, as most of you are tonight. And if you have comments that you would like me to take back to Rudy, I've got my notebook. Just give me your name and your comments, and we'll take them back and they will be sent to Washington. Thank you.

Colonel Bristol: Senator LeRoy Stumpf has submitted some written statements that I've been asked to read into the record. A letter addressed to Colonel Lee's office. "I appreciate your extension of the schedule for comments on the receiver site requested by several of us. I also appreciate the opportunity to have the questions that have come up, by the landowners and township residents in the area, answered.

"It's hard for a non-technical person to know the extent of hazard connected with this receiver site, and I believe it's the duty of the Air Force and the community that's supporting the siting to provide the knowledgeable resource people to address the concerns that the people have brought up.

"I also appreciate the tremendous undertaking that local township residents have done with their town meetings. They have brought up a number of legitimate concerns and have educated the entire community about the Backscatter Radar Receiver Site.

"I am sorry I'm unable to attend this important meeting, but I do want to show my concern for the safety of the residents in the area and share my concerns."

Mr. Curtis Swanson requested to make a statement. I'll remind you all of the time limits that pertain. Mr. Swanson, you indicated you were speaking in your capacity as a township supervisor. Therefore, you have five minutes, sir.

Mr. Swanson: I'm speaking on my own behalf.

Colonel Bristol: All right, sir. Thank you.

Mr. Swanson: I'm Curtis Swanson of Ray Township of rural Thief River Falls, and my farm's included in the EIS study area. I'm in opposition of this project because of the implications of the health, the economic well-being of this area, and the use of good agricultural land.

The study area consists of very good ag land which is on the eastern edge of the Red River Valley, consisting of some of the most productive soil in the world. Our local economy depends on the ag production which creates new wealth every year as a renewable resource.

However, this land is not a renewable resource. And I want to emphasize that the land is not a--we cannot make any more of this.

The project of this size, using from 2,400 to 4,000 acres, would destroy our timber, a natural resource which has been handed down from generation to generation. And in my case, I've been farming land which has been in our family for 105 years. Each generation is responsible for its preservation--and whether it stays in the family or not, it is always farmed.

How can a project designed to protect our land and country be allowed to ruin or injure so much of what it is meant to protect.

The EIS shows that there will be a very small benefit for the local area with increased employment. How many are going to live in this area? A portion of the employment will be military people during the operation. And I believe that all or most of the military people, along with the civilians, will commute or be transported from the Grand Forks area, which will provide no economic value to this area.

As a resident, I think the meeting held at Best Western, which was put on by the Jobs of Thief River--I'm always looking for information that would help me understand this project. I signed the form that was circulated on the belief that it would be kept--used to keep me more informed.

In retrospect, the meeting was, as I understand it, was very one-sided, providing us with little or no information concerning any detrimental effects that it could have.

I also feel the Job's use of this sign-up sheet as proof of willing sellers, of which I had not intended the use for. Also Jobs, from the City of Thief River Falls, has gone on the record supporting this project. How many people and businesses do they truly represent. In visiting with many business owners and managers, I find there is not the support for the project that is claimed. They are very concerned that the impact this will have on their businesses, which are already suffering from some very tough economic times.

The OTH-B needs more plots of land, each a half mile long or wide and two miles long at a minimum. That will require the sale of land by many landowners. I feel that it will force the sale by people who do not want to sell, and may be forced to use the condemnation or the use of the eminent domain. Thank you.

Colonel Bristol: Thank you, sir. Mr. Scott Olson. As I said earlier, ladies and gentlemen, this isn't really a referendum or a vote but rather just a chance to exchange views. So I'd appreciate it if you could keep the applause to a minimum so we can proceed through the statements.

Mr. Olson, you may proceed.

Mr. Olson: I'm Scott G. Olson. I'm secretary/treasurer of Pennington County Farmers Union. I'm presently farming 1,300 acres west of Thief River Falls with 700 of those acres located within the proposed radar sites.

On October 29, 1986, the county commissioners of Pennington County Farmers Union was held. The resolution was presented in opposition of locating an Air Force radar facility in Pennington County. This resolution is as follows: "Whereas a radar facility in Pennington County consisting of a minimum of 2,400 acres would result in a loss of farm families of 18.5 percent of agricultural land in townships in which it will be located; and whereas agricultural land is a basic asset and the income from which supports all of their businesses income; and whereas the radar project would take productive land out of production and result in fewer jobs and from the production of land; whereas, the radar project would add to the per acre cost of human services, such as education in the remainder of the county; whereas, we're concerned that the land will be condemned, forcing farmers to sell during a depressed period.

"Now, therefore, be it resolved that we strongly oppose the location of an Air Force radar facility within Pennington County."

This resolution was unanimously adopted by the members of the Pennington County Farmers Union and will be presented to the Minnesota State Convention, November 23rd through the 24th, 1986.

I will now present a memo from the Williston Union President of the Minnesota Farmers Union. Subject: Proposed use of agricultural land by U.S. Air Force in the establishment of a radar site in Thief River Falls.

"I'm aware that there will be a public hearing tonight to discuss a proposed military radar complex in your area. Similar hearings have been previously held in Cass County in western Minnesota to discuss virtually the same type of military installation. The issue in each of these proposals essentially boils down to the appropriate use of the prime agricultural land.

"The Farmers Union Policy is to protect agricultural land from non-agricultural development. The proposed radar facility, in our estimation, is not a suitable use for farmland. We're aware of considerable opposition to the radar site of Pennington and Traverse County, and we applaud the deeply-rooted opposition to this military complex by our members of this part of the state. We're aware that other organizations and individuals share in this philosophy. Again, we support your efforts.

"If there is anything the Minnesota Farmers Union can do to help oppose this radar installation, please let me know. Williston, Minnesota Farmers Union."

In closing, I would like to make one thing clear. My land, my business and my home is not for sale. Thank you.

Colonel Bristol: Thank you, sir. Mr. Vern Spengler.

Mr. Spengler: My name is Vern Spengler and I've been asked to speak as a resource person for the group that is entitled Citizens for Protection of Rural Environment. We each make decisions each and every day based on the information we have available. Based on the--much of the information that has been available both up to and prior to this hearing, many citizens and local officials have made decisions and thereby the pros and cons of this project without adequate economic impact information. I would like to share some of that with you this evening.

Fifty new jobs in the area sounds really great, particularly for an area that has been struggling with a lot of adverse economic conditions. But before we jump to conclusions, let's examine all of the data available.

Unfortunately, income of 50 new jobs is not all brand new wealth. There is a trade-off. Farmers in this area generate income wealth too. The average farm, the average farmer in northwestern Minnesota spends approximately $161,000 each year on farm inputs and family living expenditures. I'm using an average farm in this area of 805 acres. Their 2,400-acre tracts would displace approximately three farms. If 4,000 acres are used for the receive site, approximately five farms would be displaced. If three farms are lost, this would result in a loss of approximately $483,000 of farmer money coming into our rural communities, primarily Thief River Falls and surrounding communities.

If the maximum of 4,000 acres or five farms were taken, approximately $805,000 could be lost as a trade-off to the additional jobs created by this project. The source of this information is the annual report of the Dahl Farm National Program of Thief River Falls AVTI. This report is compiled from the average of 300 farms in northwestern Minnesota, farmers who keep our records as far as the management of education program.

The accounting proof and procedures are standard accounting procedures, and average figures for the years 1983 through '84 were used in the above calculations.

The individual farmer's records are confidential. The average numbers that I said here are confidential information. I'm presently the individual responsible for compiling that data.

As the above numbers apply to both crop and livestock farms, and in the designated area there are a number of very productive livestock

operations as well as croplands, particularly a number of very outstanding area operations. I mean the area pertaining to, as Mr. Swanson said, a lot of good agricultural land. There's obviously some wasteland too, some ridges and some marshland. But according to Colonel Lee's comments, those areas probably would not be used, and good agricultural land apparently would be used. And that would result in, I think, in a maximum offsetting loss.

Thus, if we were to say that 50 new jobs at $20,000 each could result in a million dollars of new income to the area, the offset for that would be, in the case of 2,400 acres of land, could consume about $483,000 operating loss or about 50 percent of that gain.

In the case of 4,000 acres of land that can be consumed by the project, $800,000 in offsetting loss. There would be very little economic benefit to the local communities from this project. There are a number of other economic disadvantages to farmers in the area and landowners in the area affected by this project.

We must realize that the Air Force does have eminent domain. And even though there may be a number of willing sellers, there are a number of farm families who are not willing to sell their land, which is located on or in-between tracts that are needed. That land will be taken by eminent domain and if their debt is greater on that land than the current market price, it could be addressed as a severe economic loss to those individuals.

I think we need to realize too that there are some other economic disadvantages to farm families, particularly those farming near the site. The inconvenience of traveling a distance around the physical site could result in extra costs of farming operations. The matter of ending up with triangular or odd shaped fields can result in extra costs of farming operations, extra costs of seed, fertilizer, chemicals, chemical crops and so on.

The matter of drainage really, Colonel Lee, could be a very serious matter in this area. There has been a problem of excess rainfall. And with flat land it is important that the drainage systems be adequate to maintain and they do require continuous maintenance so that area too needs to be addressed.

Colonel Bristol: Thank you, sir. Mr. Mark Sundeen? I have a written statement which will become a part of the record, but if you care to make an oral statement supplementarily to that, sir, you're welcome to.

Mr. Sundeen: Yes, I would like to make another statement. My name is Mark Sundeen. I live in rural Thief River Falls. I'm representing the Agassiz Audubon Society. This is a local chapter of the National Audubon Society.

We have slightly over 100 active members and we operate a wildlife sanctuary four miles southeast of Warren, Minnesota, and adjacent to the Thief River Falls radar study area.

My group, we have the following position to take: "The Agassiz Audubon Society believes that many questions have not been answered concerning the Thief River Falls OTH-B Radar Receiver Site, especially questions concerning the potential effect on migratory birds. For this reason, we must give public notice in opposition to the site, especially if the radar receiver is placed within one-half mile of the wetland complex known as Goose Lake-Pembina Wildlife Sanctuary area. The way the radar screen will be built, 65 feet tall and a total of 35,000 feet long, will surely have bird collisions, especially on foggy fall evenings during migration. At those times the birds travel very close to the ground and easily collide with the structure. To minimize this damage, the site should be located as far as possible from any natural areas.

"Even located in an area some distance from the Goose Lake Swamp, the Agassiz Audubon Society believes that there will be considerable loss of numbers of birds during migration."

We notice that the Environmental Impact Statement did not provide data on potential number of collisions. As I'm sure you're aware, a single radio tower, however high the proposed structure, can cause many thousands of bird deaths due to collisions in a single migration period. I researched this topic, and although I could find no quantitative data pertaining to bird collisions due to structures that are 65 feet tall, there is a lot of quantitative data pertaining to bird collisions into structures that are higher than that.

To give you an idea of the magnitude of the collisions that we're talking about--during a two-day period in 1983, it was foggy--there were 30,000 bird collisions resulting in death at a single radio tower located at Eau Claire, Wisconsin. These numbers are important to us.

As I mentioned earlier, our group operates a nature center known as the Wetlands Pine Audubon Sanctuary, which has a large number of birds during the fall and spring migrations. With such a receiver site located in the south or southeast, we are concerned that the birds utilizing the sanctuary will decrease due to collisions. Thank you.

Colonel Bristol: Thank you, sir. Meryl Lundeen?

Mr. Lundeen: I'm Meryl Lundeen. I'm from rural Pennington County and I was asked to come tonight as a member of the National Farmer's Organization. In our state convention, back in September, we passed a resolution which reads as follows: "Be it resolved that the Minnesota National Farmer's Organization is opposed to the use of prime agricultural land for purposes other than agricultural production, such as the Over-The-Horizon Backscatter Radar System, nuclear waste disposal, so forth, that would have harmful effects on life or land."

I also want you to know that this resolution will be on the floor of the National Convention in Nashville, Tennessee, the first week of December. And I have no reason to believe that it won't be unanimously passed there because our organization is made up of farmers who believe that our good land was made for producing food for the world, and not for putting up something that's not anything but agricultural production. Thank you.

Colonel Bristol: Mr. Don Stewart?

Mr. Stewart: My name is Donald Stewart. I'm a community development director for the City of Thief River Falls and also executive director of Jobs, Incorporated. We would like to take this opportunity to explain our position on the project.

Jobs, Incorporated, is a private non-profit community economic development corporation. We rely on private, public and public contributions in order to reach the goal of providing new jobs and retaining existing jobs in our area.

Jobs, Incorporated, became involved in the project in February when it was brought to our attention that the U. S. Air Force is considering this area for siting of the OTH-B System.

A meeting, not well-publicized, was held in Crookston on February 25th. Our organization attended the meeting and was able to get the Air Force to come to Thief River Falls that evening to meet with approximately 20 community leaders.

When it became apparent that areas in western Pennington County might be directly affected, we were able to arrange to have the Air Force hold a scoping meeting in Thief River Falls on April 29th.

Throughout the environmental public review process, we have worked with and through the press, held meetings and attended township meetings to see that the public was informed of the impacts of the project. Any project, no matter what its nature, has impacts on the area where it is sited.

Early in our involvement, we asked many of the same questions that have been raised by concerned citizens since the first hearing on the DEIS which was held in Grand Forks in September.

Obviously, because of the nature of our organization, we cannot afford to be involved in a project that will be detrimental to the safety or well-being of the citizens of our area. We believe that such issues have been adequately addressed and that this receiver facility, which is largely a passive installation, represents no threat to public safety. We too believe that environmental concerns and in particular, the issues regarding the impact on our tax base needed to be addressed.

The information prepared by the county auditor and submitted to the public meeting here on October 23rd--it was stated that the annual loss to Pennington County, which would be spread countywide, ranged from $14,000 to $22,000 depending on the township or townships in which the facility was sited.

The loss to any one individual's township, again depending on the location, could range from $200 to $1,800 annually. The Air Force has a number of times made public assurances that loss of taxes, particularly to the townships, would be mitigated by improving roads or providing for permanent maintenance of roads, for example.

There are obviously other areas of a personal nature that should be addressed. We hope that the information presented in this hearing tonight will allay the concerns of those of you who have not been able to attend the previous information sessions put on by the Air Force.

It is for this purpose that federal law requires that any action undertaken by any level of government, no matter who owns the land, will be subjected to the environmental public review process.

We were and continue to be assured by the Air Force that no one will be forced from their homes. That land will be acquired at fair prices only from willing sellers and eminent domain condemnation procedures will not be used if they can possibly be avoided.

We have, in writing, the names of over 20 landowners from the area under consideration who, if they can obtain a fair price, are willing to sell or lease their land. There are at least two sites of adequate size for the complete facility that would require no relocation proceeds, no destruction of woodlands to wetlands, and would be over a mile from the nearest homestead.

Jobs, Incorporated, feeling that it has received satisfactory answers to the many concerns, have been involved in the promotion of siting the receiver facility in Pennington County because of the 125 to 250 construction jobs that would result over a two or three year period. More importantly, up to 50 permanent civilian jobs, most of which can be filled by our many unemployed or under-employed, will be created. A conservative estimate of the value of these jobs is between $600,000 to $800,000 per year.

We have submitted to the Air Force our written comments along with letters and documentation of support from elected officials. Our position has not changed. And we continue to believe the siting of the OTH-B receiver facility will be a benefit to a large majority of the citizens of northwestern Minnesota, Pennington County and Thief River Falls.

We thank you for your efforts in allowing the public to be involved in the decision-making process of this important project.

Colonel Bristol: Thank you, sir. We need to take just a very, very short in-place break so that our court reporter can change her tapes. And I'm going to ask a Mr. Greg Dyrdal, who's the next one up. I've got about six to go and that'll conclude the comment sheets for those who indicated the desire to make an oral statement.

Mr. Dyrdal: I'm opposed to the project for the following reasons: Number one, loss of tax dollars for the local townships and school district.

Number two, I am concerned about the possible long-term health effects to the residents at the receiver as well as the transmitter site.

Number three, the devaluation of the area of the surrounding site.

Number four, if my farm were involved in the site, I would stand to lose half of my productive acres, leaving me with a large amount of substantial debt which I could no longer serve.

Number five, loss of farm dollars spent on local agri-businesses which provide a number of jobs for our community, and--

Number six, I think the individuals responsible for the location of this project should respect the rights of others that are presently in the area for the long-term and do not wish to have a radar site as well as the possible nuclear waste dump in the future. Thank you.

Colonel Bristol: Thank you, sir. Mr. Tom Kenville?

Mr. Kenville: First of all, for those of you arrived late and did not get one of the brochures that they were handing out in the beginning--we've ordered some more of those, and you can pick them up here at the Jobs, Incorporated, office in the near future.

I was asked to look into this project from day one. I don't believe I've missed a meeting. I guess the thing I would like to do is thank Colonel Lee and his staff for being up front with us and answering all of our questions as we proposed them to him. He did that verbally, as we requested--kept us posted of all the changes and updating.

He did deviate from normal government procedures when we requested him to answer these questions in writing, which he has done twice. Now this evening here, this second half, and I guess we appreciate the Air Force being up front in answering our questions--and we request now, as they determine a site, that a committee be set up of township board members, county commissioners, school board members and get every input possible for the optimum evaluation and commitment involved. And I really feel that if there is a tie between leasing and purchasing, the lease method obviously would have little or no tax complications on those townships, counties, school districts. Thank you, Colonel Lee.

Colonel Bristol: Thank you, sir. Mr. David Miller?

Mr. Miller: My name is David Miller. I'd like to offer the following comments on the proposed radar site in Thief River Falls.

There seems to be a big question over the human health risk factor for the Central Radar System. It is my understanding that there will be a need for a great amount of electricity that is necessary to make the site operational. Both the American National Standards Institute and The International Radiation and Protection Associations use a specific absorption rate of four watts per kilogram. The Environmental Protection Agency states that adverse effects can occur as close as one watt per kilogram.

There has been very little clinical studies done on the effects of radiofrequency radiation. The health risks affect livestock and all life around the area as well as humans. There is also a question as to how this project would affect the surface water quality.

In regard to the township where this radar project would be located, it appears that the local landowners would be taxed at a higher rate than in accordance with the other townships. In my township an estimate was made that $17,000 would have to be made up by the remaining taxpayers in the county, township and school district. But the farm economy is at such a critical financial situation at present, how would the landowners come up with additional taxes.

There is also a question on who pays the new ditches and roads to go around the radar site. It would cost more money to transport the students, snowplowing, and maintenance of the roads. This additional cost would probably be way over the estimate cost given. There is a big question on what the land around the project would be worth, and if the landowner had to sell, if there would be a number of buyers.

I feel the project would hurt the farming community, land values and local business economy, and the landowners that are still on the project. For these reasons, I oppose the project.

Colonel Bristol: Thank you, sir. Faith Rud.

Ms. Rud: I too, first of all, would like to thank the Air Force personnel for being forthcoming with us tonight--unlike the consultant that was hired by the Jobs, Incorporated. He had a very condescending attitude towards those of us who had questions to ask--even to the point of, you know, ridiculing us publicly.

I also have a letter from State Representative Bernie Leader from District 2A. He is a state representative from Polk County, Norman County and Clay County. I have a copy of the letter that he has sent to Lt. Brown. "Dear Lieutenant Brown, the Air Force proposes to locate the

receiver site for the OTH-B Radar System in the area of Thief River Falls, Minnesota, has created controversy and apprehension in the local area. Although there has been efforts to create a better awareness of the problem, there is a real concern of lack of credibility in the process in coming to the attention the government has received by the media in recent months. This is generally the feeling of those close to the site in the Thief River Falls area. Their concerns are related to environmental, health, jobs and other economic issues as an aftermath of the project.

"In a rural setting with strong cultural ties, it is important to consider these impacts that may have social and economic changes. Although rural residents of the community have had a chance to study the project from documents provided by the Air Force, they have come to a strong consensus in opposition to the OTH-B project."

Mr. Olson: Excuse me, Mr. Chairman.

Colonel Bristol: Excuse me. Just one second.

Mr. Olson: I think the TV interview in the back corner is very distracting to most of us here, and especially to the people presenting.

Colonel Bristol: Thank you, sir. If we could ask--if you could just hold off a little bit on that, perhaps until the balance of the speakers. I think we only have about 10 to 15 minutes, and I appreciate that. And I noticed that also, but I was hesitant to address it. Ma'am, you may continue.

Ms. Rud: Okay. "In their opinion, the uncertainties have not been satisfactorily addressed--and recommend that you remove the site from the Thief River Falls area from consideration. Sincerely, Bernard Leader, State Representative."

I also have a comment to make on my own behalf. I'm a resident of Calvin Township in Polk County on the northwest edge of the proposed radar site. I'm opposed to the location of the Central OTH-B Radar Site for many, many reasons. There are many personal reasons that I have, and there are many much more broad reasons that I have.

We enjoy the quality of our rural life. We enjoy the wildlife. We enjoy the fowl. We enjoy the spaces. We enjoy the wooded areas and the wetlands. We also enjoy the privacy that we have. We very much enjoy the fulfillment that we receive from running a successful farming operation for almost 25 years. We also very much enjoy maintaining the childhood farmstead for our extended family and for our children.

We do not want to lose our home. We do not want to live by this unsightly monstrosity. And then there are many other reasons. I don't believe that this project will generate 50 jobs and I also do believe that if it could potentially become a nuclear waste site when it's decommissioned.

The Environmental Impact Statement says that the land will be used for other public projects. Public land is public land. Sure, another hearing probably will have to take place. It's easier for a public project to be located on land that's already owned by the government. But also as a farm management partner and as a professional planner, I believe that luck is good planning carefully executed. Things happen because people plan them. People develop implementation strategies and perform the actions to get things done. You get what you plan for. And a society that plans for war, gets war. Our government is planning for a war at an unprecedented rate. That is the major reason that I'm opposed to the entire--this entire concept. It's part of a war plan.

I believe that the money and talent that this project will cost should be put into planning for peace--should be used to foster cultural exchanges--to increase understanding of other cultures--for diplomatic matters. There are any number of matters that we can pursue towards a peaceful end.

There's also a general agreement that there will be no winners even in a limited nuclear exchange. It's doubtful with the weapon systems that exist that there could even be a limited exchange. And when you think of the atmospheric, the environmental and the human destruction that would occur as a result of even a limited exchange, I propose that it is immoral to design systems that would leave survivors of a nuclear exchange. Medical centers will be gone, medical personnel will be devastated, the ozone layer will be destroyed, there will be radiation burns, poisoning, blindness, and destruction, be destroyed. There will be no safe food or water. The political, the social and economic institutions will be destroyed and on and on.

The quality of life for those left will be absolutely insufferable, and that's the position the social responsibility takes. The living will envy the dead. And I believe that the more confident we are that we could defend ourselves against this type of an exchange, the greater the likelihood that we will have a nuclear exchange.

I also believe that this threatens my family's constitutional right to life, liberty and property. It is an immoral position. It is on those bases that I oppose this installation and this entire concept.

Colonel Bristol: Thank you very much. Mrs. Erving--is it Ebenson? Evenson.

Mrs. Evenson: Evenson.

Colonel Bristol: Why don't you use this microphone, Ma'am.

Mrs. Evenson: I'm Ann Evenson from Red Lake Falls Township. I'm a farm wife. I've been here for 38 years and I'd like to address my comments specifically to a letter to the Thief River Times which was

relevant to the use of the OTH-B Air Force Radar Project 20 years down the road, and comparing it to the Nekoma Missile Base, that you all know is nonfunctional now.

I want to set the record straight on that project. My father, at that time, was a member of the North Dakota State Legislature. And I have, in my possession, certain salient facts that clearly indicate that that was a pork barrel project with tremendous political overtones, which this project does not have. And I really feel that the record should be clearly understood that this was a pork barrel project. This is not.

And I also want to ask the opposition--what option do you have to offer to provide the protection that this radar project will provide for this area? When trouble comes, as it surely will, are you prepared to accept the responsibility of the consequences without complaint? Remember you're signing away your lives to slavery or even possibly death warrant if you would refuse this project. Thank you.

Colonel Bristol: Mr. John Omdahl? This is the last statement that I have and after that, then I'll call for verbal. Mr. Omdahl?

Mr. Omdahl: My name is John Omdahl. I reside in Pennington Township in Polk County. Tonight I wish to speak out against the Central Over-The-Horizon Backscatter Radar System. I don't consider myself tied to any political party, but instead I am issue oriented.

There are many reasons why I oppose this system at this time in this location. Some of those reasons are--would have an adverse effect on wildlife and birds, on families and farm operations, on agri-businesses and local economy, on soil conservation and on watershed district, on county and township roads, not to mention the potential health effects to humans and animals near or inside the fence. I also question whether or not this system is already obsolete before construction begins, and whether or not we want our tax dollars spent on this type of project.

The president's campaign promise of six years to balance the budget sounded like a good idea. However, it is military projects like this which are cutting into this nation, to pile up record federal budget deficits while driving American businesses and farms into bankruptcy, cutting school lunch programs, our bridges and highways and water systems have crumbled. Are we really enhancing the security of our nation, education, health care, food stamps, mass transit--and even the arts and humanities are cut back in the name of frugality while hundreds of billions of dollars are lavished on spending in the name of defense?

All of us have to ask a question--when is enough military spending enough? This country has a record grain surplus when people in the world, nation, this state and county are going hungry. I have tried to be patriotic and loyal and hate our enemy but again, I'm very confused.

Just as I was feeling comfortable hating the Ayatollah in Iran, I learned the president had been secretly sending him arms. Libya and Colonel Khadafy seem like another good source to hate, to drop our bombs on, but now we find out the administration has failed to relay this information.

Syria is the latest terrorist-supporting culprit and of course, our grain will be used as a weapon against them. We should all be asking the question of the morality of restricting food to our enemies while supplying our enemies with arms. Since I am just a simple peasant out here in the back woods, I can't expect to keep abreast of all the decisions of Washington's back moves on which people are a part of the intricate trade.

Therefore, I have observed for the past 10 to 15 years the amount of grain purchased by the Soviet Union, the ultimate. This grain purchased created an economic boom for rural America, but while on the other hand, the most immediate threat to my home and my land has come from our own government in the form of nuclear waste dumps and questionable military projects in this area. I realize many of you may not agree with this material analysis, and for those of us who objected to the radar sitings, we may have been labeled communist sympathizers.

However, I was led to believe, during my age as a student and then teacher of government, that we live in a free country with a constitution that provides for the fundamental freedoms of speech, press, assembly, petition and religion, to name a few. I know of many who would like to speak out at this meeting, but are either too timid or have felt their dreams of speech suppressed because of intimidation of the local powers that be. Whether intimidation comes from covert actions by the highest officials at the national level, or childish actions by the officials at the lowest level, this is an abuse of power. Do not forget that we, the people, are the government and our elected officials are our representatives in service.

In January, let us all be sure that our well paid elected representatives in Washington hear our position on the funding of this radar project. Thank you.

Colonel Bristol: Thank you, sir. The gentleman was correct, that there have been a number of comment sheets that cover questions and comments and I've gotten about four or five others and asked if we can finish those. I'll ask for further. Mr. Daniel Berg? I'd ask you, from now on, if we could, to keep the statements strictly to three minutes so all who wish to speak can. I'll do the best I can as sort of a time keeper.

Mr. Berg: Yeah, I'll be very brief, sir. I just wanted to tell everybody here that I'm available at the meetings and I will be available to ask any questions about what my comments were on that part of the Environmental Impact Statement and our rationale, and could

perhaps hear what you have to say with regards to the comments and your indications. And don't forget that Karen Diehl is also here representing Rudy Boschwitz. Talk to her, if you can.

Colonel Bristol: Thank you. Mr. Al Hermonson.

Mr. Hermonson: Just a couple of brief comments. One is the feeling that it's too late. This should be a national debate. The local people here haven't really got the wherewithal to argue this debate. And I think since the Central System has not been funded, I think it's incumbent on all of us to go home and write at least three letters about our feelings to our elected representatives.

The case should be thought of not only the environmental but political, social, militarization--and the bottom line, the moral question that's been brought up a couple of times here. I think our foreign policy and military apparatus has created and grossly exaggerates the Soviet threat. I believe that we have not negotiated in good faith nor used diplomatic means available.

I believe this ABM--or this radar system violates the ABM Treaty--in those provisions that state that all major radars must be at the borders of the country and faced outward. It violates the same provisions of the treaty that we have argued about, the--of course they're Soviet radars. The technical interpretation--but it doesn't say that all major radars must face outward at the borders. This one does not obviously. And then sometimes I wonder what are the real reasons for this system. Is it really for those reasons that have been stated? Maybe it's going to be used to either pick up drugs--and that might be a good reason--but we ought to deal with it on that basis and not on some other basis.

For sure it's going to create more jobs and more promotion in the Air Force. And thereby there's a momentum and vested interest amongst you here tonight from the Air Force. And then in closing, the Central Over-The-Horizon Backscatter Radar is an expensive, probably obsolete, easily jammed, essentially useless in any realistic scenario in the foreseeable future. I believe it's just one more unnecessary step in militarization of our society which will well lead to the termination of life here on earth.

Colonel Bristol: Thank you. Donavon Dyrdal.

Mr. Drydal: My name is Donavon Drydal. I've been farming in this area since 1957. The fourth generation just arrived. I own land in the study area. I'm very concerned about the location of the OTH-B Radar System. My concern, such as the economic impact of the rural environment, and in general, our whole way of life has already been affected by the Air Force. But I will confine my remarks to one specific issue.

Soil and water are basic resources in agriculture. We continually strive to protect these resources in our farm management equipment procedures. With this in mind, I would like to offer a description of a part of the land in the study area.

A portion of the projected Ditch 25, also known as the Black River, is classified as a protected waterway. From the east edge of Section 11 of Gray Township to the Black River, a distance of about two miles, the fall of the land to the west is a 38 foot drop to natural ground level or approximately a 48, pardon me, a 43 foot drop to the bottom of Ditch 25.

Topographical maps also show that to the Black River from a point three miles east there is a fall of 50 feet. At a point three and a half miles east, the drop measures 80 feet. The major soils in the study area are fine sandy loam. These are very fragile soils and highly subject to wind and water erosion. The Black River is located in loam type, medium to high erosive, lower class 86 soil, subject to wind and water erosion. In these types of soils we start encountering problems as we approach a five point drop per mile.

Under an ideal place situation, two of the antennas will be parallel, north and south, taking about two miles of land with two diagonal ones at 45 degrees--approximately 45 degree angles taking at least another mile of land, approximately. This means that it would be almost impossible for the system not to cut across natural waterways in the area.

If it were located near the parcel of land you are describing, it would displace three natural waterways and one dam improved natural waterway, which is the Black River. This change in the waterways would seriously affect the flow of water drainage from the fields and could easily upset the delicate balance and cause flooding. A large amount newly disturbed--pardon me--a large amount of newly disturbed land would exist during the construction of new grading requirements. Planting grass is not always effective since you don't always get a good growth the first time you plant. Therefore, it is likely to be a period of time where the area has no protection against water erosion.

The Air Force plans to build--construct an 18 to 20 mile exclusion fence to keep out wildlife. I'm in great suspense. It'll act as the usual snow fence. As the snow melts in the spring, water will move with the fall of the land and may cause severe water erosion under a rapid snow down condition. We have to be careful not to leave deep rows for our fields to follow, because they will become large gullies in the spring under the above described conditions. Usually summer fallow and winter fallow are utilized to protect the land from erosion.

The shelterbelts are planted approximately 880 feet apart across the open area. They make the snow melt more slowly, hold the water and the snow also from piling too high. The exclusion fence will do none of these things. A heavy rain or rapid melt could fill drainage systems and we will lose tons of top soil.

A large percentage of the land in the Thief River Falls study area is affected by these topographical considerations. I'm afraid that the necessary changes in the drainage patterns coupled with loss of shelterbelts and other erosion control measures will destroy much or the farmland in the area of the radar site. No amount of grading and preparation will change the natural soil of the land. I ask that the Air Force give serious consideration to this matter. Thank you.

Colonel Bristol: Thank you, sir. Mr. Bob Glass?

Mr. Glass: Well, I've been designated here tonight to try to pick up some information and to try to learn as much as I could. We've heard about the economic benefits that the local area and the local towns, the local towns closest to the project, is going to derive from this project. I don't know--I wondered if we aren't kind of counting our chickens before they hatch. The federal project in Grand Forks, 20, 30 years ago, was called the Grand Forks Air Force Base. I don't know how much wealth was pumped into the community when that was built. But I do know one thing--if you go down in that area, it hasn't changed much in the last 30 years.

And another thing we hear about is negotiation and I hope, if this project does come to pass--and I certainly hope it doesn't--but if it does come to pass, I hope that you people remember that word. I sit listening to hear what would happen if the old $500 an acre on the land, and it was land that was approximately worth $1,000 an acre here four or five years ago, and all of a sudden things go haywire and they don't build anything here. And now they're getting $200 or $300 an acre value. That kind of turns a person's stomach when you realize what you're going to have to do. I realize some of this is probably under control but I think in any condemnation proceedings, I've always been told that it's three times the appraised value. I think there would be a small amount in total cost to the project, and that it would certainly ease some of the ill feelings that go along with something like this.

Now, I realize now with the way the land has gone down I'm unable to change that. But on the total cost of the project, it doesn't make that much difference. But if you go out there, and I know what this condemnation proceedings--they'll say they'll price it and there isn't too much you can do about it. And of course it's established. That's the way they do it all over, but I've often felt that anything, not only this project but on their part or any type of a project where your land is taken away from you, they should not only give them what it's worth, but several times more.

When you get in a legal suit, people will sue for medical injuries and they'll sue for mental anguish. There's a lot of mental anguish in there, and there's a lot of other things that you can't--suppose that you were born here, or grew up here. I've seen this happen in many towns. People were born and lived in that house. And all of a sudden they tear it down and they move into apartment housing and that really hurts some of these people. I'm sure it takes a lot of years off their lives. And that's another thing that we just can't--it's hard to put a price tag on it, but I think somewhere, someway somebody ought to try.

Colonel Bristol: Yes, thank you very much. Ms. Connie Omdahl.

Ms. Omdahl: My name is Connie Omdahl. I live in Urban Township in Polk County Minnesota. I wish to make comment not only to the Air Force representatives present tonight, but also to those in the audience, including the promotor of this radar project.

I feel a great deal of appreciation should be given to Don Dyrdal of rural Thief River Falls for his efforts in trying to inform the citizens of this community, that research and educating one's self is what has to be done. Whether one is for or against the project, one must be fully objective before rubber stamping anything that could prove to be of medical impact to our community.

I wish to comment on what I perceive as a potential connection with this radar project in the high level issue. To explain the next step in the high level pursuit of that issue, I wish to quote from the Federal Register, Volume 49, Number 236, Rules & Regulations, page 47,715:

"Before proceeding to sight the explorer shaft, there needs to be testing in the studies of the appropriate depth of the depositories and the DOP will hold a public hearing in the vicinity of the site to inform the residents of the site characterization plan and receive their comments.

"When the site territory characterization itself has been completed, public hearings are to be held in the vicinity of each site being considered for development as a repository to inform the residents of the area that the site is under consideration and shall obtain their comments and possible recommendation of the site.

"The statements are sent within 50 days of notice of disapproval to Congress of all of this action. However, Congress has the final say about passing a joint resolution, approving the President's recommendation, within the next 90 days of continuous session. From that point on, the DOP will seek, from the NIC, authorization for such repository."

And in view of the above I view the above as simply a formality, similar to this evening. I think all of you know that if the government wishes to do something, they will proceed to do so.

Fact: The Nuclear Waste Policy Act of 1982 is really in a hold position.

Fact: The first policy of Texas and Washington have a DOP tied up in a federal court in a lawsuit. This is a delaying process. If they are successful with the lawsuit, the second round of depository states and sites, such as to empty this cycle located within the Thief River Falls area, will become more of a first round site.

Fact: I was under the impression that there was given the Atomic Energy of Canada Unlimited 31 million dollars this year to assist in their underground research laboratory in crystalline granite blocks. This facility is at La Broquerie, Manitoba, 80 miles north of Roseau, Minnesota.

Fact: The hydrology, geology, seismology and other data collected at La Broquerie will be used by DOE when they decide on a location for the site characterization study.

Fact: The Minnesota Governor's Nuclear Waste Task Force has stated the following, quote: "Federal ownership of land makes access to do testing and construction more convenient for the Department of Energy. Two of the three 'first-round' sites were on land already owned by the federal government." Unquote.

Fact: The map overlays of the Thief River Falls Radar Site and the DOE's site overlap.

Fact: In January, 1987, the appropriations will be voted on for the Over-The-Horizon Backscatter Radar Project. A telephoning and letter writing campaign will begin for a zero appropriations for this radar project.

A very brief note on the Midwest Interstate Low Level Radio Anti-waste Commission. This seven state contact covers only the areas of the low level waste issue on November 12 in St. Paul, and I'm wondering how many of you are aware of that. I find this kind of a citizens or responsible waste spokesman.

Colonel Bristol: All right. As I indicated before, I've exhausted my supply of comment sheets. I didn't want to leave anyone out. Did anyone care to make a statement that hasn't? Yes, sir. All right. If you'd like to ask a question, you may. Why don't you use my microphone? State your name for the record.

Mr. Hafkau: Peter Hafkau. Will additional power need to brought in, or is the local power adequate for the Over-The-Horizon Backscatter? Do new power lines need to be ran in? If so, what kind? Where will they come from? How is it--second question--

Colonel Bristol: Why don't you stop there and let him talk about that one?

Mr. Haukaa: Okay. Okay.

Colonel Lee: We have done a preliminary review of the kinds of power systems and the power grid that would be available within this area. And it certainly is adequate for the power that's required for the receive site. We're looking, at the most conservative estimate, at about two megawatts of total electric power for the receive site. We would be able to tap into existing lines. The only requirement possibly for a new line would be from that line into the site area itself.

Mr. Haukaa: Okay. And I was wondering, how is the drainage affected around the site? If flooding is not desirable for the site, is water coming off the site dumped on the nearby land at an increased rate causing crop damage, or is the water to be held behind current roads and controlled flows through existing culverts? The northwestern part of the Thief River site is subject to often periodic flooding.

Colonel Lee: We're aware of that--potential flooding situation in this study area as it is in the case in many of the other study areas as well. To the maximum extent possible, we would like to use the natural drainage features of the area. We recognize that in some cases water does stand for a long period of time. In terms of the operation of the receive site, that does not in itself cause a serious problem or cause the system to not work as it's intended. So we would not have a requirement in that sense to raise the level and therefore cause a total drainage onto the adjacent area.

Beyond that, I don't have the expertise to say what specific techniques would be used. But the requirements would be established to follow the same procedures that you would use. We do not want to cause any flooding problems. To the extent that the land can be left in its present condition and the existing culverts and drainage systems will be used, certainly that's the perfect choice. This is a sensitive area. We recognize it and it will be thoroughly studied and worked as the project would proceed.

Mr. Haukaa: This is my last question as a township officer. Who owns the roads that will be put in place to go around the site that the Air Force builds and maintains to offset the roads that were obstructed or roads maintained by the Air Force to offset local tax losses? Townships, counties, or Air Force, or who owns the roads?

Colonel Lee: I'm not sure I can give you a complete accurate answer. To the extent possible, along some of the sections we would use existing county roads. The intent--when I said that we would construct new roads--would be to make those roads available for the public's use. So if it were possible in the land acquisition proceedings to buy the land but still have those roads available, then the permanent maintenance would undoubtedly be done by the Air Force making payments to the same county or local area that provided for the road maintenance.

In an area such as this, we would not propose to have our own road maintenance equipment--or snow plows to go ahead and provide complete snow clearing for the several miles that will be around the individual sectors. So my estimate is that we would end up making payments to the local agencies that provide for similar operations on the county roads.

I'm looking to the back to see if Mrs. Bratz can give me any further information on what the ownership of that area where we would set up the new roads would be--but certainly, the intent would be to have them remain available for the public use. This would be a part of the commitment that would be made.

Mr. Haufkau: Thank you.

Colonel Bristol: Did anyone else care to make a statement or ask a question? Gentleman in the blue jacket and then, Ma'am, I'll get you next. If you'll state your name for the record, sir?

Mr. Rader: My name is Tony Rader and I'm a current resident of the City of Thief River Falls, moving into the study area and hopefully in the near future.

Sitting here tonight, I listened to both sides express their views. And I've come to other meetings that pertain to this same subject, and everybody here or the vast majority is looking at it from the rural standpoint, not from a national standpoint. With just cause.

There have been a few views spoken from the City of Thief River Falls, not the city officials but business orientation questions. I think there is one thing that's being overlooked, and that's the agricultural base that's here. The dollars that are generated from the agricultural land produce the tax dollars that fund these projects and give us a national defense. If you take that away, you don't generate new jobs. You're taking away the monies that provide these jobs and this service to our country.

I wondered how in-depth the City of Thief River Falls and Jobs, Incorporated, considered that fact when they decided to back this project, and how in-depth the Department of Defense looked into the fact that this is a suppressed farm economy. And you are being met with local banks, not just in Thief River Falls, in Crookston and Grand Forks and all over, who have money invested in this farmland. And you come in and buy this farmland for $200 an acre and somebody has spent $1,000 an acre--it's going to have a detrimental effect, not only on the economy here, but also on a nation as a whole. Thank you.

Colonel Bristol: Thank you, sir. Ma'am?

Mr. Omdahl: I have a statement taken over the phone from Wally Lake, President of the Community for Agriculture, which is out of Fergus Falls.

Quote, "Agricultural land should be maintained as agricultural land. Development which could jeopardize the agricultural liability of farmland should not be allowed to occur. If the OTH-B radar receive station must be constructed, construction should take place in a less agricultural area."

And then I have a final personal comment. A local legislature recently commented that the Air Force is not in the business of community development. We all must be responsible for the direction our community is taking. As local citizens, we must not be misled into thinking that the Air Force cares about the impact of this project and our way of life.

Colonel Bristol: Thank you. Any other statements anyone care to make? I'd like to--yes, sir?

Mr. Autry: I just have a question on the area of jobs. A number of times now we have talked about 50 jobs or whatever. Does somebody know what type of civilian jobs would be created and that--what educational requirement levels would it fit the need of, you know--available people and so on? Paul Autry from Angus.

Colonel Lee: For the 50 people that would be employed on a permanent basis here for the receive site, only two to three would be military. They would be supervisors on the individual site. They would be probably senior enlisted personnel. We would expect that they would live in the local area. There would be no provisions made to provide transportation back and forth between here and Grand Forks Air Force Base.

The rest of the 50 people would be civilians. About half of them would be federal wage grade civil servants, people that would compete for, be brought into the rolls as civil servants. This hiring would be done by the Civil Service Commission. This is the process that we're currently going through on the East Coast Radar System. This is the same process that we're following for the West Coast and would intend to use for the Central System as well.

These people would be wage grade federal servants. An idea of the approximate salary range, as we look currently at the East Coast Radar System, would be approximately $20,000 per year. The only requirements for these people would be that- high school graduates typically, and be able to pass a background investigation to have a security clearance--secret level would be sufficient to allow their employment at the site area.

The remaining almost half of those 50 people would be people that would need more of a technical background. They would be the people that would actually sit and monitor the equipment and do some types of maintenance action on the equipment itself.

Typically, the areas involved would be some type of hardware electronics background, perhaps in computer background--the kind of skills that you would find either as a result of a trade school program or a four year enlistment as a maintenance person in the Air Force or the Army. There is also the possibility of the prime contractor providing additional training. There are several examples where that contractor, a General Electric or a Raytheon, as a part of the program, train people so that they would have the skills available to provide this kind of operation and maintenance.

To the extent that they could find those people within the local area--that already were trained or with some minimum additional training to do the job--that would be the cost effective way for them, rather than bringing in people and paying relocation costs to bring them from outside. So on that basis, we would estimate that a significant portion of those 50 jobs could come from within the local area. We can't make that as a promise. We can't tell you exactly where they would live, but to the extent that the site area in the siting of the antenna would be close to the Thief River Falls, your community appears to offer many advantages that would attract those people to live right here within the community. Thank you.

Colonel Bristol: Yes, sir.

Mr. Hermonson: Follow-up on that one. Apparently there's been a letter from the Mayor of Moscow, Maine, adjacent to the East Coast site. As stated, that there were no local people hired on that site. Could you verify or deny that, sir?

Colonel Bristol Your name, sir?

Mr. Hermonson: Al Hermonson, Polk County.

Colonel Lee: When I was describing the status of the East Coast Radar System, I stressed that the construction effort had been complete on the basic hardware antennas, and we're currently in testing on the first sector. It's still in development testing. It has not been accepted by the Air Force. It is not in an operational status.

From that standpoint, the hiring of the permanent people for both the site security as well as the operation and maintenance has not taken place. There are a couple of people that have been hired by General Electric, the contractor, that are providing some very limited site security, but it's only right now at the receive site in one building- just checking the access of people coming into the building area itself. When we go operational at a later time is when we will have the requirement for those additional people.

The positions have just been authorized for the federal wage grade civil servants. Hiring actions would be taking place over the next year. That hiring will be handled by the Civil Service Commission and we would expect people within the local areas to be available for that.

It's unfortunate that--tracing back to the early development work on the Experimental Radar System, there are undoubtedly many people in Moscow, Maine, or Columbia Falls, Maine, who can't understand why they don't feel the impact of this system yet. But again, the correct answer--it is not operational, so the numbers of people required for 24 hours a day, 7 days a week, across all three sectors, have not yet taken place.

Colonel Bristol: Yes, sir?

Mr. Watson: How will this be maintained, the radar site? Will it be mowed or will it be left growing to weeds?

Colonel Bristol: Your name, sir?

Mr. Watson: Curtis Watson.

Colonel Bristol: Curtis Watson? All right. Thank you for that statement.

Colonel Lee: We're aware that in some of the right-of-way areas, for example here, that there are certain chemicals that are used that are approved by your local and state agencies to retard the growth of tree-like vegetation. It's possible that that type of applying or application would be appropriate for that ground screen area or immediately in front of the antennas. Other than that, if there is a medium growth vegetation form grass, that's probably what would be used.

In the case of the East Coast System they're using such a grass--that it tends to maintain itself without growing into the long tall weeds. The only problem that you would have in any type of normal mowing operation would be the chance of picking up or catching that ground screen. And so we're attempting to use the vegetation that would not require frequent care, in that sense.

Beyond that area, if it was required to do periodic mowing, there would be no problem. That could be done without any difficulty at all. Again, there is no problem with interference there. And if there were, for that short period of time, that's something that the site area would be able to take care of.

Mr. Watson: Would you mow it enough to take care of weed growth so that they wouldn't spread into the adjoining field?

Colonel Lee: The area of weed growth is also a concern. We recognize that. We've had questions in that area in our previous public meetings and in this sequence also. And yes, we would be good neighbors in that sense also. We recognize that we would need to take care of those same weeds to ensure that they did not cause problems for the adjacent sections of land.

Colonel Bristol: I'd like to personally thank all of you for coming out and taking part in this. As I said before, it was a two-way communication, and you certainly fulfilled your part of that bargain. And it's--we appreciate it. I appreciate your coming forward and participating so that the Air Force can have the benefit of your expertise, that kind of expertise that comes from living for a long time in an area, and really knowing that area better than anyone else.

Thank you very much. It's been our pleasure to be here. Good night.

(WHEREUPON, the proceeding was completed at 11:00 p.m., November 20, 1986.)

3.6.2 Submitted Materials

Materials were received from:

John and Connie Omdahl, Warren, MN
Leroy Stumpf, State Senator, 1st District, Plummer, MN
Mark A. Sugdin, Agassiz Audubon Society
Sam Genereaux, Thief River Falls, MN

NOV 2 0 1986

2 ND Copy

Mr. Mrs. John Omdahl
Route 2, Box 42
Warren, Mn. 56762
September 28, 1986

Central Radar System - Over-The-Horizon-
Backscanner-Radar-Program
Draft Environmental Impact Statement
Attn: Lt. V. A. Brown
ESD/SCD
Hanscom AFB, Ma. 07131

Lt. Brown:

In complying with the October 6, 1986 deadline for public response, the following are questions my wife and I have concerning the Over-The-Horizon Backscanner-Radar-Program.

Please answer with a simple Yes or No on the following questions:

1. As you know, the Dept. of Energy has designated this area west of Thief River Falls as the "NC-6" site. If you acquire this same approximate area by usurpation for your Backscanner-Radar-Program, will a portion of this become the nuclear dumpsite the DOE has sought?
Yes___ No___

2. If this project is undertaken, will it become obsolete or bargained away with a treaty within a few years such as the ABM system was? Yes___ No___

3. Can you guarantee us (the nation) that this radar system will function? Yes___ No___

4. Or is this a military spending project only? Yes___ No___

5. Is this project in any way related to the Star Wars Research "SDI?" Yes___ No___

6. And will SDI make this system obsolete? Yes___ No___

The following are questions and comments. Please give a brief and specific answer to those questions and comments.

1. How many jobs will be gained versus how many people will be displaced in this specific site area by your radar program?

2. Does this project in any way protect us from a Soviet threat, or would our time and energy be better spent in a peaceful effort?

3. Can you guarantee that this radar system will not interfere with our business band/telephone operations, or other forms of communications such as television, radio, etc?

4. How many rural roads and drainage systems will be disrupted?

5. How will you reimburse the county and townships for land removed from the tax rolls?

6. How will this radar system affect the bird migration pattern? How will this affect the tremendous wildlife population in this area?

7. Why was your public hearing held on a primary election night when voters could not be at the poles and at your hearing at the same time?

8. The U. S. budget is in such a deficit condition and getting worse daily. How can you justify spending this kind of money for a radar system that is going to tell us of incoming missiles; at that stage, what difference does it make?

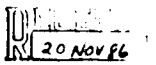
Final comment:

Northwestern Minnesota has been bombarded in the last year first with the nuclear dump issue (which is only in a temporary state of limbo and due to resurface after the 1988 elections), then your grand plan for some radar facility, and also the upcoming lowlevel issue (Midwest Regional Compact). What is the next plan on a government scale, or private scale? Why is this area so popular? Do you feel that because agricultural areas are in economic constraints, farmers will grab up your land-buying offer? This bombardment of our area will be resisted by us. For beginners, we and others have signed a petition against this radar program. If pursued, I can assure you that you have not heard the last from us.

John Omdahl
Connie Omdahl

cc: Senator Dave Durenberger
Minnesota Public Interest Research Foundation

LEROY STUMPF
Senator 1st District
Route 1, Box 47
Plummer, Minnesota 56748
and
306 State Capitol Building
St. Paul, Minnesota 55155
Phone (612) 296-8660



Senate
State of Minnesota

November 17, 1986

HQ Electronic Systems Division/SCO
OTH-B Systems Program Office
Attn: Lt. V. G. Brown
Hanscom AFB, MA 01731-5000

Gentlemen:

Proposed OTH-B Site - Thief River Falls, MN

I appreciate your extension of the schedule for comments on the receiver site requested by several of us. I also appreciate the opportunity to have the questions that have come up, by the landowners and township residents in the area, answered.

It is hard for a non-technical person to know the extent of hazard connected with this receiver site and I believe it is the duty of the Air Force and the community that is supporting the siting to provide knowledgeable resource people to address the concerns that the people have brought up.

I also appreciate the tremendous undertaking that local township residents have done with their town meetings. They have brought up a number of legitimate concerns and have educated the entire community about the backscatter radar receiver site.

I am sorry that I am unable to attend this important meeting but I do want to show my concern for the safety of the residents in the area and share my concerns.

Sincerely,

LeRoy Stumpf

LS:mjj

COMMITTEES • Education • Agriculture and Natural Resources • Transportation • Taxes • Local Government

3-282

20 Nov 86

POSITION STATEMENT
FROM THE AGASSIZ AUDUBON SOCIETY
ON THE THIEF RIVER FALLS
OTH-B RADAR RECEIVE SITE

The Agassiz Audubon Society believes that many questions have not been answered concerning the Thief River Falls OTH-b Radar Receiver Site and must give public notice in opposition to the site, especially if the radar receiver is placed within ½ mile or less of the wetland complex known as Goose Lake/Pembina Wildlife Management Area. The way the radar screen will be built - at least 65 feet tall and 35,200 feet long will impact birds due to collisions, especially on cloudy fall evenings during migration. At those times birds travel very close to the ground and could easily collide with the structure. To prevent the radar screen from doing the maximum amount of damage, the site should be located as far as possible from any natural areas.

Even located in an area some distance from the Goose Lake Swamp, the Agassiz Audubon Society believes there will be considerable loss in numbers of birds during migration. Our group operates a nature center known as the Wetlands, Pines and Prairie Audubon Sanctuary which has large numbers of birds during the fall and spring migrations. With such a receiver site located to the south or southeast, we are concerned that the number of birds utilizing the Sanctuary would decrease due to the higher incidence of collisions.

In all the sites, whether for receiver or transmitter, there is a great possibility of environmental damage. It would behoove the Department of the Air Force to carefully consider whether this complex is needed at all.

Signed: Mark A. Naglon (member)
For: Agassiz Audubon Society

20Nov96

NATIONAL FARMERS UNION
INSURANCE COMPANIES

Member Mile High Club
National Sales Honor Award
Genereux Agency, Inc.
Samuel J. Genereux, Agent

P.O. Box 488
Thief River Falls, Minnesota 56701

Office 218/681-2800
Home 218/681-5848

Sam Genereux

Insurance Representative for the National Farmers Union Ins. Co.

In reference to "Over the Horizon Back Scatter Project" in Western Pennington County & East Polk County:

I believe that the farmers and all people who reside in the area of the project should decide for themselves whether they desire the "Over the Horizon Back Scatter" to be built in their community.

A vote of the area should be allowed and the majority should rule. This is the American way. The rest of us should not involve ourselves in this decision.

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4 COMMENTS

This section has been published in a separate volume identified as Part IIB.

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5 RESPONSES TO COMMENTS

Public comments on the Draft EIS are contained in the transcripts of the public hearings (Section 3), in the materials submitted at those hearings (also Section 3), on the comment sheets submitted at the hearings or later by mail (extracted and printed in Section 4.1), and in the letters (Section 4.2). Responses to those comments follow.

Many comments or questions concentrated on a relatively few subjects. Instead of treating each of these comments separately, one general response has been written to cover all aspects of each such subject that were raised in the comments. Some specific comments on these subjects, as well as all other comments, are treated individually. As a consequence, the reader will find a comprehensive treatment of a number of subjects of high interest in one location.

The general responses are located at the beginning of this section. Each is labelled and also divided into subsections with headings, where useful. Responses to all other comments follow. Except for the general responses, the location of each comment in this document is referenced at the beginning of the response.

5.1 General Responses

G1. Environmental Impact Analysis Process (EIAP)

The process that the Air Force followed leading to the preparation of this Final EIS and the Record of Decision that will follow has conformed to the requirements of the National Environmental Policy Act and implementing DOD and Air Force regulations. Beginning with the filing of a Notice of Intent to prepare an EIS on the proposal to construct and operate the Central Radar System (CRS), the Air Force conducted an extensive scoping process involving many informal public meetings attended by more than 1,500 people; extensive newspaper, radio and TV coverage; and contacts with individuals, organizations, and state and federal agencies.

Following release of the Draft EIS to the public, the Air Force held three public hearings. The extensive public involvement resulted in far more requests for EIS copies than the Air Force had expected. Several additional print runs were made, and copies were sent to all individuals who requested a copy as soon as copies were available. In response to numerous requests by the public as by well as state and federal officials, the Air Force twice extended the comment period and also held a second set of three public hearings.

The effort of carrying out the EIAP for the CRS frequently taxed the ability of the Air Force System Program Office at Hanscom Air Force Base to respond as quickly and as completely as many would have liked. The Air Force regrets any misunderstandings or inconveniences that resulted from this situation.

Complete transcripts of the six public hearings are printed in Section 3 of this document. The many written comments and letters that were submitted are also printed in their entirety. As stressed by the hearing officer at each of the public hearings, the Air Force has given equal weight to written materials and oral remarks made at the hearings.

After waiting the required minimum period of 30 days from notice that the Final EIS has been released, the Office of the Secretary of the Air Force will issue the Record of Decision (ROD). If the decision is to proceed, the ROD will state the Air Force's decision on the location of the operations center, transmit site, and receive site and include the mitigation strategy to be implemented as part of the CRS program. The ROD would also specify additional environmental studies that would be part of the final process for land acquisition and siting of the transmit and receive antenna sectors. The public will be notified of the issuance of the ROD through news releases to the media in the three-state area.

G2. The Need for the Central Radar System

The Threat

Long-range strategic aircraft of the Soviet Union pose a continuing threat to the United States. Although the general public considers the four-engined, turboprop TU-95 "Bear" to be an old aircraft, the majority of the Bears in the Soviet inventory consists of improved "Bear-G" models and the newer "Bear-H" model, which can launch AS-15 long-range cruise missiles. Bear aircraft are frequently encountered west of Alaska and off the U.S. East Coast, and they regularly engage in training missions simulating an attack against North America. The Soviets also have the "Blackjack" strategic bomber, which they may begin deploying in the very near future. The Soviet threat was described at each of the public hearings. For example, see pp. 3-4 and 3-5 and the accompanying briefing charts on pp. 3-24 to 3-26.

The current emphasis on SDI, the Strategic Defense Initiative, does not reduce the need for surveillance of the strategic aircraft and cruise missile threat. The SDI program is intended to counter the ballistic missile threat and, in effect, to make such weapons ineffective. The need to deter attack from conventional strategic aircraft will remain. If arms reduction talks are able to eliminate or reduce the number of ballistic missiles, a possible consequence would be greater Soviet emphasis on strategic aircraft. The OTH-B radar systems would then become significantly more important.

CRS Coverage

The surveillance coverage of the four OTH-B radar systems is illustrated in the briefing charts used at the public hearings (see p. 3-24). East Coast Radar System (ECRS) coverage begins about 500 miles from the Maine radar site and extends out to about 2,000 miles. By virtue of the geometry of the radar beam path from the transmit site to the ionosphere and back to the earth's surface, the CRS will not be able to cover areas less than about 500 miles away. The CRS sector facing east will survey the 500,000-mi^2 gap left by the ECRS, overlapping the ECRS coverage enough to ensure that targets being tracked can be handed over from the ECRS to the CRS with no loss of track information. Similarly, the CRS sector facing west will cover the 500,000-mi^2 gap left by the West Coast Radar System (WCRS), again with sufficient overlap for continuous coverage and handover of tracks. The southwest- and southeast-facing CRS sectors will cover the southern approaches to the U.S.

In addition to aircraft, the CRS is required to detect and track much smaller cruise missiles, that could be launched from submarines or from aircraft such as the Bear H. Without the east- and west-facing CRS sectors, cruise missiles launched by submarines from near-shore ocean areas could not be detected. The south-facing sectors extend the surveillance coverage against submarine launched cruise missiles into the ocean areas to the south, and also deny the use of southern approaches for undetected aircraft attack.

The area to be surveyed by the CRS is not covered by other systems. The maximum detection range of the coastal microwave radars jointly used by the FAA for air traffic control and by the Air Force for air defense is 200 miles for aircraft at 30,000 feet altitude. Against an aircraft at 1,000 feet, the detection range falls to 39 miles. Cruise missiles are expected to fly at very low altitudes where the coastal radars can provide little, if any, warning.

Alternatives to the CRS

The CRS is the most cost-effective alternative available to provide the required surveillance coverage. The cost of a network of satellites to cover the near-shore areas is estimated to exceed $10 billion to establish initially; significant annual costs would be incurred as well. Equally important, additional development effort is also needed before such a system could be implemented. Airborne surveillance radars, such as the Airborne Warning and Control System (AWACS), are an important complement to the OTH-B radar systems, but many systems would be required to provide the same continuous 24-hour-per day surveillance coverage. Therefore, because the cost of one AWACS is only slightly less than the cost of one CRS sector, an AWACS fleet is not a cost-effective alternative. The limited range of coastal microwave radars, particularly against low-flying cruise missiles, makes them inadequate for the CRS mission.

The alternative of taking no action does not meet mission requirements. The East and West Coast Radar Systems, which have already been approved, deny the opportunity to launch a surprise attack from those directions. The same surveillance protection to the south is necessary to complete the deterrence against surprise attack from any direction. With the advent of sea-launched cruise missiles, the need to establish deterrence against a surprise attack makes surveillance of the near-shore areas an essential part of the U.S. deterrence strategy.

It would be desirable to extend the OTH-B coverage to the northern approaches as well. However, auroral disturbances in the ionosphere at high latitudes prevent the OTH-B from reliably detecting and tracking targets. Microwave line-of-sight-radars are the only available alternative. The Air Force's North Warning System program is replacing the DEW Line with new solid-state radars to maintain this line of detection. These new radars also have a limited detection range, but their location in the far north maximizes the warning time for an aircraft or cruise missile attack against North America.

Warning Time

The United States has a set of long-range radar systems to provide warning of an attack by ballistic missiles. The ballistic trajectories flown by these missiles, whether Intercontinental Ballistic Missiles (ICBMs) or Sea-Launched Ballistic Missiles (SLBMs), make it possible for powerful line off-sight radars, such as PAVE PAWS radars or Ballistic Missile Early Warning System (BMEWS) radars, to give warning before missile impact. The OTH-B radar system provides an equivalent warning against the atmospheric threat posed by strategic aircraft and cruise missiles.

Having the ability to warn against attack ensures that our strategic forces remain effective as a deterrent against surprise attack. The Soviets are unable to destroy our ability to retaliate as long as we have warning of an impending attack.

The OTH-B radar systems will provide several hours of warning against attack by long-range aircraft. This warning time would allow our forces to be alerted and the public to be warned. Furthermore, unlike the case of ballistic missiles, which cannot be recalled after launch, warning of a aircraft attack would also provide time for negotiations to prevent the attack from proceeding.

The OTH-B system is able to distinguish between potentially unfriendly aircraft and commercial aircraft. Flight plan information and pilot position reports are continuously entered into the OTH-B computer system so that radar tracks can be correlated with known aircraft movements. The presence of one or more unknown, and therefore potentially unfriendly, aircraft causes the OTH-B operations center to notify the Sector and Region Operations Control Centers (SOCC/ROCC) and

the North American Aerospace Defense Command (NORAD) where information from other sensor systems as well as OTH-B is available to the National Command Authority.

The OTH-B radars are part of an air defense system. They are not part of, and do not contribute to, any defensive capability against the Soviet ballistic missile threat. Inferences that the CRS violates the Anti-Ballistic Missile (ABM) Treaty because it is located in the north-central part of the United States distant from the southern U.S. borders are incorrect. The treaty specifically excludes air defense radars.

Long-Term Effectiveness

The planned lifetime of the CRS is 20 years. This is a nominal period that is being used in planning to ensure that adequate funding and personnel resources are programmed. The 20-year period is also a requirement for logistics support. Based on experience with other radar and electronic systems, the CRS will be useful for more than 20 years because electronic components will be improved as new equipment becomes available. The use of HF radio waves for over-the-horizon detection and tracking will not become obsolete in 20 years. Thus, if national interests continue to require surveillance of ocean areas against potential attack, the OTH-B system will be effective in meeting that need.

The use of a portion (5-28 MHz) of the high-frequency electromagnetic spectrum where wave lengths vary from 60 meters to approximately 10 meters will be effective against both current and projected threats. These wavelengths are about the same as typical aircraft dimensions, making it very difficult to render an aircraft less visible to the OTH-B radar. The Air Force is confident that the OTH-B radar will be able to perform its mission against any Soviet threat well into the next century.

Development of the OTH-B radar system began over ten years ago with the Experimental Radar System in Maine. This system verified the performance characteristics of the OTH-B during a year of testing from 1980-1981. Completion of the CRS is not expected until the early 1990s, but the time lag from start of the ECRS to completion of the CRS is the result of phasing OTH-B funding to keep it within annual Congressional and DOD constraints. Results of testing with the first ECRS sector have proved the system's performance.

Because the OTH-B radar uses radio energy reflected back from the earth's surface, an aircraft cannot underfly the system coverage. The ionosphere ranges from 50 to 300 kilometers (30 km equals approximately 100,000 feet), making it also impossible for an aircraft to overfly the system.

The detection range of the OTH-B radar depends only on radar frequency and ionospheric characteristics. At night or during the winter, the electron density in the ionosphere is lower. This requires that lower frequencies be used to achieve the same range. Given that small cruise missiles are detected more readily at higher frequencies, certain combinations of night, winter, and low sunspot number (which also reduces electron density) may affect the OTH-B radar's ability to detect cruise missiles. However, weather conditions, including the sub-zero winters in Minnesota and the Dakotas, have no effect on OTH-B performance.

The Government Accounting Office (GAO) has published two reports questioning the effectiveness of the OTH-B system. In its first report, the GAO questioned proceeding with the WCRS without waiting for the results from ECRS testing. In the second report, GAO questioned proceeding with the CRS without test data that demonstrated that cruise missiles can be detected. The DOD position was, and is, that test data were adequate to proceed with the WCRS (which Congress subsequently approved and funded), and that subsequent test data were sufficient to proceed with the CRS. (Funding is requested in the current FY88-89 Defense Budget Request that was submitted to Congress in January 1987). (Refer also to the comment portion in the Thief River Falls hearing, pp. 3-261 and 3-262.)

Vulnerability to Attack

The OTH-B radar system is intended primarily to provide early warning of an attack on North America. It does not serve as a command-and-control system and is not, therefore, "hardened" to survive an attack directed against it. The system is designed to be highly reliable and available continuously to detect an attack on North America with essentially no system downtime due to equipment failures. The costs to defend such a system against direct attack, including terrorist attack, would be excessive. Armed security personnel will patrol the transmit and receive sites, but will not be capable of repelling a large-scale attack on the facilities.

The OTH-B system's role as a warning system makes it highly unlikely that the OTH-B would be considered a military target; destruction of the site would, by that very action, provide warning of an attack in progress.

The OTH-B system is effective in the presence of electronic countermeasures (ECM). Its ability to rapidly change frequency and the location of the specific area under surveillance makes it very difficult for an adversary to disrupt its operation effectively.

Funding Status

The FY88 defense budget request, submitted to Congress in January 1987, includes the funds required to complete the final sector of the West Coast Radar System. It also includes funds to acquire land for the

Central and the Alaskan Radar Systems. The FY89 portion of the two-year FY88-89 budget request includes funds for the first sectors of the CRS and the ARS. Current Air Force plans are to request funds to continue the program at two sectors per year, with the final two CRS sectors funded in FY91. Approval of the current FY88-89 defense budget request will constitute Congressional authorization for the CRS and ARS and appropriate funds to begin both programs.

G3. Study Area Selection

Location in Prime Farmland

The process that resulted in selection of the five receive site study areas and four transmit site study areas is described in the Draft EIS (pp. 2-9 and 2-11) and was also presented in the public hearings.

The region in eastern North and South Dakota and Western Minnesota, which consists predominantly of prime farmland, is the only geographic location from which the necessary surveillance coverage can be provided. If the transmit and receive sites were further west, where it has been suggested there is less productive land, the surveillance coverage to the east would not overlap with that of the East Coast Radar System. Similarly, more easterly sites would leave an uncovered area within the minimum range of the West Coast Radar System. The north-south location of the transmit and receive sites is limited by the need to cover the southern coast of North America while adequately overlapping the northern portions of the ECRS and WCRS coverages.

Moving the southwest- and southeast-facing sectors further south would increase coverage to the south. However, that would significantly compromise CRS performance because the siting region was defined by considering the frequency-surveillance range combination that would optimize cruise missile detection. Also, the overlap of the four CRS sectors required to hand off targets between adjacent sectors would be lost if the CRS sectors were split into two sites.

The Air Force considered other possible locations that were suggested, as well. Each was evaluated against siting criteria including the amount of land required, separation from sources of interference distance from the operations center (for potential receive sites), and feasible pairings of transmit and receive sites. No additional siting areas met these criteria.

Land Area Requirements

The amount of land required for the CRS is dictated primarily by the size and power of the antenna systems needed to achieve the OTH-B detection performance. Sufficient land is required at the transmit site so that RFR levels at the boundary fence are well below the health-based standards for exposure to this form of energy. Land is needed at the

receive site to accommodate the very long antenna used for cruise missile detection and to separate the antenna from vehicular traffic and other potential sources of interference.

Each of the four transmit sectors will require about 600 acres in a plot measuring about 5,000 feet by 5,200 feet The total requirement is therefore about 2,400 acres. However, the specific location of the antennas, particularly the two facing southeast and southwest, may produce land segments that are uneconomic to farm. In such a case, the government would purchase or lease those segments as well as the land actually occupied by the CRS. For example, if all 4 sectors were placed within a single square approximately 2 1/2 miles on a side, 4,000 acres would be required. The specific antenna layout, and therefore the land required, will be determined considering the natural features of the land (e.g., topography and water bodies) as well as its availability.

Each of the four receive sectors will also require about 600 acres, measuring about 10,000 feet by 2,600 feet. As with the transmit site, however, the specific antenna layout may result in land segments that would be uneconomical for the owner to use, and the government would therefore also purchase or lease these segments.

Specific Siting Criteria

Both the East Coast and West Coast Radar Systems are located in remote areas. Remoteness has the advantage of minimizing potential interference from other sources of electromagnetic energy on the OTH-B systems. The absence of communities or a large number of dwellings also reduces the number of potential interference problems that the Air Force has to resolve as part of its commitment not to interfere with other electronic systems or with broadcast reception. The low RFR levels that exist outside the transmit site exclusion fence pose no health hazards, so the preference for remoteness is not related to human health effects.

The particular criteria used to determine the boundaries of candidate CRS study areas were intended to minimize the potential for the mutual interference effects described above. After the study areas were selected and identified as candidate transmit or receive sites, the interference criteria were again used to evaluate the specific sites.

Given the Air Force's commitment to correct any interference problems with radio, TV, or other systems, the potential number of such corrections is significantly reduced if there are no population concentrations closer than 10 miles directly in front of, or 5 miles behind, the transmit antennas. For a receive site, the separation distance can be smaller, depending on the local electromagnetic (EM) noise background, but the criterion still serves as a useful starting point.

The criterion restricting the CRS sites to locations more than 5 miles from a high voltage transmission line applies only to the receive site. At closer distances, EM noise may interfere with the receive system and degrade its ability to detect targets. The objective of the criterion is to avoid having a power line directly in front of the antenna where arriving signals might be reflected off the power line. Such scattering of energy would create more background noise. When possible siting areas were first evaluated in late 1985, the power line across the Wheaton North study area was overlooked, and the Wheaton North site was subsequently identified as one of four transmit study areas. By the February 1986 scoping meetings, the Air Force was aware of the power line, and specific reevaluation determined that the area was still suitable for as a transmit site. (Inadvertently, the August 1986 Draft EIS contained an older map that had not been updated.)

The criterion to stay 10 miles from airways was intended to avoid or minimize potential interference effects on the OTH-B system. Large numbers of aircraft could reflect or scatter the transmitted OTH-B beam and create noise or false target information in the receive system. On the other hand, aircraft in an airway near the receive site could scatter the energy returning from targets and reduce the receive system's detection performance. In assessing the potential for problems at a specific siting area, the type of airway, its location, and its orientation; the type and frequency of traffic; and the antenna location and orientation must be considered. For both the Thief River Falls study area and the Amherst study area, such an assessment indicated that the nearby airways would not pose interference problems for the OTH-B radar.

G4. Land Acquisition

The Process

A thorough description of the process that would be followed in acquiring land for the CRS sites appears in the pamphlet "Land Acquisition Procedures" published by the Corps of Engineers. The pamphlet is reprinted at the end of Section 5. A point of contact for additional questions is also provided. Although the pamphlet describes the process of purchasing land, the Air Force is also willing to lease land. The Omaha District of the Corps of Engineers will handle both the sales and lease processes as agents for the Air Force.

The Air Force and the Corps of Engineers will contact all affected landowners after the Office of the Secretary of the Air Force issues the Record of Decision announcing the selection of the transmit and receive site areas. The Air Force will select specific locations for the transmit and receive antennas considering the results of additional environmental studies, the availability or ease of acquiring land within the area, and any natural features such as topography that would affect the ease or cost of construction.

Funds for land acquisition have been requested in the FY88 defense budget. Depending on the subsequent funding schedule for construction of the four sectors, one to three years may elapse before construction begins on certain plots of land. The Air Force will consider permitting farming operations to continue until site preparation work must begin. This added benefit to the landowner would be considered in negotiating the purchase or lease provisions.

If a landowner requests to lease his or her land, the Corps of Engineers will negotiate a long-term lease whose annual payments will be reevaluated periodically. The lease payments would be at fair market value, reflecting payments made by others for equivalent land. Specific terms and conditions, including the interval between reevaluation of the lease payments and any conditions on returning the land at the end of the lease period, would be negotiated separately with each landowner.

The transcripts of the hearings (printed in Section 3 of this document) contain additional information and answers to other questions on land acquisition. More information is also available from the Riverdale Office of the Corps of Engineers.

Deactivation

When the land for the transmit and receive sites is no longer needed for the OTH-B system, it will be made available for other uses following established procedures. If the land had been leased, it would be returned under the provisions of the lease. If it had been purchased, the government would first consider it for other federal use before offering the land for sale.

Consideration of other federal needs does not mean that the land would be turned into a nuclear waste dump, a concern repeatedly raised by the public in letters and at the public hearings. (See the remarks on decommissioning on p. 3-259 of this document.)

Operation of the CRS will have no effect on future use of the land at the transmit or receive site. After deactivation, removal of the groundscreen in front of the antenna would make the entire area of each sector, except for the antenna structure, available for farming.

G5. Drainage and Flooding

The flat topography of all of the study areas and the grading done over the years for agricultural use contribute to problems with surface runoff, drainage, and localized flooding in the areas. Cooperative efforts of farmers and local and county governments has led to intensive management of runoff through ditching, regrading, culverting, and other techniques. Managing runoff has reduced flooding and decreased costly

interruptions of agriculture. However, a delicate balance exists between factors that affect runoff (surface grade, vegetation, roads, culverts, etc.) and flooding. Changes to a relatively small land area can affect large land areas both upstream and downstream.

Flat terrain is a requirement of the OTH-B radar system. The study areas, particularly those chosen as preferred locations by the Air Force, will require minimal grade alterations to install the OTH-B facilities. The natural topography and the agriculture activity has created large, open, flat relative well-drained areas where the radar backscreen and groundscreen could be installed with only small surface changes. Most of each site will be unaltered because it will be contained within the exclusion fence and will not have facilities of any kind, other than the exclusion fence and access road.

The Air Force will consult with state, county, and local agencies and districts responsible for drainage management prior to and during the development of site grading and drainage plans for the selected sites. Engineering plans will ensure that construction of the OTH-B radar facilities will involve minimal alteration of existing drainage patterns. Retention ponds, settling basins, culverts, and other drainage management facilities will be designed in accordance with appropriate agency requirements.

G6. Economic Impacts

After the CRS begins operating, approximately 50 people will be employed at the transmit site and a like number at the receive site. Two or three individuals will be enlisted military personnel, who will live in the local community rather than at the site. In fact, the entire staff will live within commuting distance in the nearby communities. About 30 people at each site will be operations and maintenance personnel hired by the firm responsible for operating the system. Under contract to the Air Force, this firm will build, install, and checkout the CRS. It will also hire the operations and maintenance staff and provide any required training. Interested individuals would apply to the contractor after one is selected.

The balance of the staff at each site will be security personnel. At the East Coast Radar System, these personnel fill federal wage-grade civil-service jobs. If the same approach is used at the CRS, local residents will have an opportunity to fill these positions by applying in the usual manner.

During the construction period, jobs will also be available. The system contractor will select subcontractors, including firms from the regions of the transmit and receive sites, to supply particular goods and services. Hiring will be done by these subcontractors.

The Draft EIS describes the potential fiscal impact on school districts and other entities whose revenues are derived from property taxes. The Air Force recognizes the possible consequences of such revenue loss. It sought and received approval to lease the land it requires in part to mitigate those consequences. In leasing, the owner would continue to pay property taxes. Road maintenance costs are addressed in Response No. G7. Under certain conditions, acquisition of property within a school district may make the district eligible for an entitlement under Section 2 of Public Law 81-874. After specific transmit and receive sites are chosen, the government will work with potentially affected local communities to determine possible specific impacts and to seek appropriate mitigation measures, including assistance to school districts, if available.

Construction and operation of the CRS will alter the local economy. At each site, about 50 people will be employed and approximately 1 to 6 farmsteads will be displaced. Income from the new jobs will substantially exceed that lost by the displacement of farming activity. However, the CRS employees will spend their income on a different mix of goods and services, resulting in some shift in the composition of the local economy and in gains and losses to individual businesses. Relocation assistance will be provided to people who are displaced by the CRS project (see Response No. G4).

Operation of the CRS will not restrict land use or property adjacent to either the transmit or receive sites; both farming and recreational uses can continue. Hunting will not be restricted. Virtually all farming equipment, including land-leveling devices, closed-circuit TV, and electronic monitoring devices, may be used without problem to either the CRS or the farming activity. However, arc welders could interfere with the CRS receive system. Therefore, the Air Force will not locate the receive site near large-scale arc welding operations and may ask for advance notice of the use of arc welders for short-term, on-farm repairs.

CRS sites will neither pose a hazard to adjacent land nor interfere significantly with farming operations. In addition, the government will pay fair market value (or lease rates) for all land that it acquires. Therefore, the Air Force does not expect the value of land near the CRS sites to change because of the presence of the CRS.

The Air Force will ask the Federal Aviation Administration to establish a restricted zone around the transmit site. Aerial crop spraying will be permitted up to the boundaries of the transmit site on an individual basis as required. Pilots will not be endangered by the radar beam. There will be no restrictions at the receive site.

G7. Roads

The Air Force recognizes that the amount of land needed for the transmit and receive sectors, and the need to fence these sectors will affect use of the road network in the area. The Air Force will mitigate this impact by constructing roads around the sectors, opening those roads to public use and providing for the year-round maintenance (including snow removal) of those roads.

At the transmit site, each antenna sector requires a land area approximately one mile square. For the two antennas facing east and west, each sector can be located on a single section of land. The southwest and southeast sectors will each cross more than one section. One site layout would place all four sectors in a contiguous area approximately 2 by 2-1/2 miles. In this arrangement, the entire area would be fenced, and existing roads through the fenced area would be closed.

At the receive site, each antenna sector would cross two or more sections of land. If the sectors were not contiguous, each would require a fenced area approximately 1/2 mile wide by almost two miles long. For the sector facing east, the Air Force would build a new or upgraded road at the mid-section line running north and south. The east-west roads crossing between the section and mid-section roads would be closed, and the entire area fenced.

Several alternative arrangements of the antenna sectors are possible. Copies of the briefing charts used in the public hearings show some of these arrangements (see Sections 3.1.2 and 3.4.2). Natural land features, environmental study results, impacts on the surrounding area, and the ease of acquiring the necessary acreage will determine the site layout.

New roads constructed by the Air Force will be built and maintained to existing standards in the area. If existing roads must be improved for site construction or for year-round use during operation, the Air Force will take responsibility. To mitigate impacts on local and county maintenance of roads caused by the removal of land from the tax base or by the creation of new roads, the Air Force will assume responsibility for maintaining the perimeter roads surrounding the site for the duration of the operational life of the CRS.

To minimize impacts during construction, roads on the site will be kept open to the public until the new or improved perimeter roads have been completed. Nevertheless, impacts on individuals may remain. The Air Force will attempt to minimize such impacts by working with the potentially affected businesses, farmers, and landowners during the siting and land acquisition process.

G8. Radiofrequency Radiation (RFR) Bioeffects

The Draft EIS summarizes the results of an extended critical review of over 8,000 published reports of studies of RFR bioeffects. This continuing review has been sponsored by the Air Force School of Aerospace Medicine, which itself has carried out and sponsored research on RFR bioeffects for almost 20 years. The review considered all forms of RFR over a very wide range of frequencies (10 kHz to 30 GHz) irrespective of the specific characteristics of possible radiating devices. In assessing the health risks of the CRS, however, the frequencies at which it will operate, the amount of power that it will radiate, and its mode of operation (continuous, not pulsed) were taken into account.

Although the review applied rigorous criteria in assessing bioeffects reports, the Air Force did not conclude that the absence of documentation of statistically significant effects constitutes proof that no effects will occur. (See Sections 4.14.1.2, 4.14.1.4, 4.14.4, 4.14.5, and 4.14.6 of the Draft EIS.) Rather, given all the considerations in evaluating research results, it concluded that there was an absence of reliable scientific evidence demonstrating the likelihood of harmful effects. Thus, although no one can guarantee that effects will not occur, the evidence--or lack thereof--indicates that adverse effects are highly unlikely.

The topic of human health effects was addressed in separate presentations at the November 1986 public hearings at Hillsboro, North Dakota; Britton, South Dakota; and Thief River Falls, Minnesota, by Mr. John Mitchell from the Air Force School of Aerospace Medicine at Brooks Air Force Base, San Antonio, Texas. Mr. Mitchell's presentations are included in the transcripts of these hearings (see pages 3-183 through 3-184, for example). The transcripts also include Mr. Mitchell's responses to related questions or concerns on the subject of RFR bioeffects.

Nonionizing Radiation

Nonionizing radiofrequency radiation (RFR) from the OTH-B system differs from ionizing radiation associated, for example, with nuclear power-generating stations. The technical discussion in Section 4.14.2 of the Draft EIS describes how RFR can or may interact with biological organisms. These mechanisms differ completely from the ways in which ionizing radiation affects biological organisms. Ionizing radiation can generate cumulative effects at any level of exposure; RFR (at the levels that will occur outside the OTH-B exclusion fence) does not. Ionizing radiation may be associated with radioactive substances that may be taken up into the bodies of plants, animals, and humans: RFR is not. Nuclear power plants generate potentially hazardous waste materials; RFR generates no hazardous waste. Therefore, "contamination" of crops or livestock in the vicinity of the OTH-B system is not possible.

Effect versus Hazard

An effect observed as the result of exposure to an agent might not necessarily constitute a hazard. Other factors also play important roles. For example, infrared radiation (IR) is, like RFR, absorbed by the human body. Like RFR, it causes (among other effects) a warming of the tissues, but because its wavelengths are much shorter than those of RFR, it is absorbed in the outermost layers of the skin. Such warming constitutes an effect of IR on the body. If one is cold, as on a cold day, the warming is a beneficial effect. If one is hot, as on a summer day, then the possibility exists that additional heating may be hazardous. The fact that the IR causes an effect does not of itself constitute a hazard.

Similarly, some RFR effects are by their nature considered hazardous. For example, continued long-term exposure of mice throughout pregnancy may, if the levels are very high, give rise to birth defects. This is clearly a hazardous effect. (The levels associated with the OTH-B system are thousands of times too low to cause such effects.) Other effects are difficult to categorize as hazardous. For example, using very accurate chemical tests, some scientists have reported that the levels of certain hormones in the blood of rats change in response to RFR exposure. Similar changes in the same hormone occur naturally when the rats are exposed to stressful conditions, for example, as in moving the rats' cages into a new room with different sounds and smells. RFR exposure is termed a "stressor" under such circumstances, but such stress may be beneficial, enabling the rats to cope better with their new environment by facilitating their immune system response to any new challenges.

Other effects, such as reported fluctuations in the binding and release of calcium ions in chicken brain halves in test tubes exposed to amplitude-modulated RFR, are virtually impossible to categorize as hazards, because scientists are unable to agree whether the effects have any physiological significance.

With regard to the OTH-B system, however, the RFR levels in the areas surrounding the system will be so low that the existence of any effects whatsoever is highly unlikely.

Proof of Safety

Science cannot prove with certainty that any agent is safe, i.e., that adverse effects will not occur. To do so would require performing an infinite number of tests covering all possible exposure scenarios. For example, a scientist might expose 100 different strains of bacteria to an agent and find no effect. But this does not preclude the possibility of finding effects in the 101st strain tested. On the other hand, scientists do make statements about probabilities. If the above scientist had conducted 100 tests, he would conclude that the probability of seeing an effect in the 101st test was low, and he would

be extremely surprised to see an effect. Thus, science cannot say that there will be absolutely no effects from exposure to an agent, but rather that there is a certain probability associated with an effect.

In the case of the OTH-B system, based on the 30-40 years of research that have been carried out on the biological effects of RFR and on the many thousands of scientific papers that have been published (and summarized in the Draft EIS), the probability that any effects will be seen is judged to be effectively zero. That is, no cases of adverse health effects will be seen that are attributable to RFR exposure. This may be contrasted with effects due to exposure to other agents that are expected to cause health problems in agricultural communities, for example, pesticides and even exposure to sunlight, which is known to cause premature aging of skin and skin cancer. Thus, although research can never demonstrate that a risk does not exist, it can establish probabilistic bounds on possible risks, and if these bounds are sufficiently low, it can say for all practical purposes that the risk is zero.

Soviet Standards

The Soviet exposure standards for RFR are discussed in Section 4.14.1.3 of the Draft EIS, along with standards for other countries. As stated there, exposure limits in the U.S.S.R. are considerably lower than those of Western countries. Consequently, some speculate that either the Soviets know of some harmful effects of which Western scientists are unaware or the Soviet government is much more protective of its citizenry than Western nations, which should follow the Soviet lead. In fact, neither of these speculations appears valid.

In 1974, ANSI published a Radiation Protection Guide of 10 mW/cm^2, which was in effect until 1982. For approximately the same period, the Soviet standard was 10 microwatts/cm^2, or one-thousandth of the ANSI standard. However, although the Soviet standard was lower, it was virtually unenforceable: the Soviets did not have portable electronic equipment capable of measuring RF power density until the late 1970s; hence, they could not determine if people were actually being exposed at levels above the standard. In addition, the Soviet military was specifically exempt from the standard.

In 1982, ANSI adopted a frequency-dependent standard, based on the concept of specific absorption rate (SAR). The radiation protection guide limited whole-body average SAR to 0.4 W/kg, a level that incorporates a safety factor of 10 below SARs deemed to cause effects that might, under some circumstances, be considered hazardous. The Soviets have also made considerable changes in their standards, also incorporating a degree of frequency dependence, and increasing permissible exposure levels somewhat. Very recently, a paper in the Soviet scientific literature called for adoption of the 0.4 W/kg-SAR basis to set a new Soviet standard. Thus, the apparent discrepancy between U.S. and U.S.S.R. standards may be resolved in the next few years.

The University of Washington Study

The Air Force School of Aerospace Medicine funded a 3-year, million-dollar study at the University of Washington at Seattle to compare the effects of exposure of 100 rats of RFR with the effects observed in 100 other rats that were not exposed. Although this was called a "low-level exposure" study, the exposed rats were irradiated with an average SAR of 0.2 to 0.4 W/kg, the latter being the current ANSI exposure limit for humans. Exposures were 21 hours per day for 25 months. One hundred fifty-five different measures of health and behavior were monitored.

The results revealed few differences between the exposed and control animals in these measures, and most differences that did occur were either not statistically significant, or came and went, indicating that they were most probably due to random, chance fluctuations not associated with RFR exposure. However, one difference was striking: primary malignant tumors were found in 18 of the 10 exposed animals, but in only 5 of the 100 control animals. This is statistically significant, and at face value suggests that RFR can cause cancer in rats (and, by inference, in humans). However, as Professor Guy recently pointed out*, this may in fact not be so.

Several reasons cast doubt on the conclusion. For example, malignant tumors occur normally in the strain of rat used. The rate observed in the control group was less than that normally expected. The rate observed in the exposed group was about that expected. Therefore, the difference was due not to an increase in cancer in the exposed rats, but rather to a decrease in cancer in the control group. When all tumors (malignant and nonmalignant) were considered, no difference between the exposed and the nonexposed groups was noted. Additionally, with other cancer-causing agents such as toxic chemicals, one type of cancer typically predominates. In this study, no single type of tumor predominated, nor was the incidence of any single type of tumor unexpected on the basis of previous studies. Finally, the comparison of tumor incidence was just one of 155 different comparisons made in the study . Statistically, one would expect at least some of the measures to differ on a statistically significant basis just by chance alone. Thus, the case for RFR causing cancer in the exposed rats is greatly weakened by the above considerations. As Professor Guy has pointed out, "to demonstrate reliably a connection between microwave irradiation and the development of any one kind of tumor might require a study hundreds of times larger and more expensive than the Seattle study--a size that might be infeasible."

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*K.R. Foster and A.W. Guy, "The Microwave Problem," Scientific American, Vol. 255, No. 3 (September 1986), pp. 32-39.

Despite the fact that extensive research has yielded little reliable evidence of the existence of health effects at low RFR levels, the Air Force continues to conduct a comprehensive research program investigating bioeffects issues. The investigations range from subcellular to whole animal studies and have covered the frequency range from VHF to millimeter wave emissions. They are carried out at some of the world's most prestigious institutions and the results are published in the open scientific literature.

G9. Electromagnetic Interference (EMI)

The potential impact of the OTH-B on other electronic, including telecommunications, systems is addressed in detail in the Draft EIS (see Section 4.13.2.2.1 and Appendix C). Although several types of systems could be affected by EMI arising from OTH-B transmissions, corrective measures exist to avoid or minimize those impacts. The Air Force will take whatever actions are necessary to eliminate all interference problems identified by the public.

Potential EMI impacts are a concern only in the vicinity of the transmit site. The receive site uses long, very sensitive listening antennas that are totally passive. No RFR is emitted by the receive antennas and, therefore, no interference will be caused by the OTH-B radar system near the receive site.

The Air Force does not expect the CRS to create any EMI that will disrupt radio, TV, citizens' band radio, or other broadcast systems near the transmit site. Every radar transmitter has the potential to create EMI on the frequencies it uses or in frequencies that are harmonics (i.e., integer multiples) of the frequencies being used. The most direct way to resolve a specific interference problem is to avoid using the particular frequency that is the source of the interference. In the case of the OTH-B, the computers that control the transmitter operation can be programmed to "lock-out" specific frequencies.

The Air Force already has a list of frequencies in the 5 to 28 MHz band that may not be used by the OTH-B. These include the Amateur Radio Bands and distress, calling, and guarded frequencies (see p. A-3 of the Draft EIS.) If other frequencies are identified as causing particular interference problems, they will be added to the list of excluded frequencies.

Based on experience operating the Experimental Radar System in Maine between 1980-81, the Air Force does not expect any disruption of radio, TV, or other communication systems by the CRS. Potential interference effects were also evaluated in recent tests on the first sector of the East Coast Radar System. No effects on AM or FM radio reception were observed, even when the radios were directly outside of the transmit sector exclusion fence. Similarly, TV reception was not

affected as measured using a low-cost, off-the-shelf portable TV directly outside of the exclusion fence. Reception was equal to that in the community of Bingham, Maine, 7 miles away. During the past year and a half of testing with the first transmit sector, the Air Force has received no complaints of interference.

During the initial checkout of the CRS and during the operational period, the Air Force will acknowledge and respond to all reports of suspected interference. If the interference is due to the CRS (which can be demonstrated if the effect remains when the transmitters are cycled off and on in a controlled manner), and if establishing additional exclusion frequencies is not effective or practical, the Air Force will correct the interference at no cost to the individual by other equipment modifications, e.g., adding filters to TV receivers.

The potential for interference to the CRS at the receive site by other systems also exists. The public has recognized this and is concerned with possible restrictions on activities near the antenna sectors.

The Air Force does not plan to restrict activities outside the boundary fences surrounding the receive site and the transmit site. No EMI problems associated with any type of farming, recreation, or business operation outside of the transmit sectors is expected. A restricted airspace zone around the transmit site will be established with the Federal Aviation Administration, but provisions to allow aerial crop spraying up to the boundary fence will be established on an individual basis as required.

Similarly, no restrictions will be placed on farming or recreational activities outside of the receive sectors. Some business activities, e.g., a large-scale arc welding operation, could cause interference to the receive site. This concern will be taken into account in the final site selection. Arc welding required to repair farm equipment would be occasional, short-term events and would not disrupt long-term operations. If other interference problems arise at the receive site, the Air Force will work with local individuals and communities to minimize the impacts of such interference on the OTH-B system.

5.2 Specific Responses

1. (See p. 3-54.) A long-term health study beginning before operation and continuing through the period of operation is unlikely to provide scientifically and medically meaningful information. Available evidence from studies of humans and long-term studies of animals indicates that RFR does not increase the incidence of cancer or of cardiovascular disease. Therefore, if it were to occur, the effect would be extremely small. The magnitude of any such effect on the population near an OTH-B radar would likewise be extremely small. The study would have to detect

a very small effect against the background of the normal incidence of disease, morbidity, and death that results from infection, lifestyle (e.g. alcohol consumption, cigarette smoking, drug abuse), and diet. In these circmstances, an epidemiological study would be of little value because there would be an insufficient number of persons in the study to provide the statistical base necessary to detect the effects of such a weak agent. Also see Response No. G8.

2. (See p. 3-54.) This question was addressed by Mr. Mitchell at the Britton hearing. See p. 3-237 of the hearing transcript. Also see Response No. G8.

3. (See p. 3-55.) See the related information on RFR studies on pp. 3-252 through 3-254 of the transcript of the Thief River Falls hearing.

4. (See p. 3-57.) Mr. Mitchell addressed this case at both the Britton and Thief River Falls hearings. See pp. 3-231 and 3-232 and p. 3-252 through 3-254 in the hearing transcripts, respectively.

5. (See p. 3-62.) The statements do not correctly describe the impact of public opinion on Air Force actions. The Air Force identified several alternative study areas. To the extent that two areas are found to be equally suitable on the basis of environmental and operational factors, the Air Force would use other criteria for its final selection. The ease of acquiring land would be a major criterion, simply because direct negotiation for purchase or lease of land would be the most timely and would ensure that the project could proceed without delays. The Air Force would prefer avoiding problems associated with public controversy or issues separating farmers and townspeople. However, decisions on rejecting an area or moving to another area need to be made on the basis of technical, operational, or environmental reasons rather than public opinion. Colonel Lee has consistently used this rationale throughout the Environmental Impact Analysis Process. News media or other references to Colonel Lee's remarks, however, have sometimes been incomplete or inaccurate.

6. (See p. 3-63.) During an additional scoping meeting held in June 1986 in Wheaton, Minnesota, Colonel Lee explained to a small group of community business persons and farmers that the term "radiation" often evokes strong feelings that prevent an objective evaluation. The public generally associates "radiation" with ionizing radiation from nuclear devices rather than with nonionizing electromagnetic radiation emitted, for example, by radio stations, CB radios, microwave ovens, and light bulbs.

During the same scoping meeting, references were made to articles dealing with the West Coast and East Coast Radar Systems. These articles stressed the importance of locating the sites in remote, unpopulated areas. The same methods for calculating RFR field strengths and judging possible effects on human health were used for the Central

Radar System (CRS) EIS as for the EISs for the earlier systems. Remoteness was stressed for the earlier systems to ensure that other systems would not interfere with the OTH-B radar and to minimize the effort necessary to mitigate any interference effects on radio, TV, or other broadcast systems. Based on subsequent test data from the East Coast Radar System, the Air Force is confident that such interference effects are not discernible beyond the immediate area of the transmit site. Also see Responses No. G3 and 147.

7. (See pp. 3-67 and 3-68.) The statements about interference effects are incorrect. On page 4-49 of the Draft EIS, potential interference resulting from harmonics of the OTH-B frequencies is discussed. Several solutions to such interference are available, beginning most directly by having the OTH-B system not operate on the frequencies that create the interfering harmonic frequencies. The Air Force position has been--and is--that any interference resulting from operation of the OTH-B transmit site will be corrected by the Air Force. Also see Response No. G9.

8. (See p. 3-71.) The statement that U.S. standards are 1,000 times greater than those of the U.S.S.R. is incorrect. The current U.S. standard is 1 mW/cm^2, while the Soviet standard is 0.01 mW/cm^2 (see pp. 4-60 through 4-65 of the Draft EIS); thus, the ratio is 100:1. Standards under consideration by the U.S. Environmental Protection Agency include options that imply values as low as 0.1 mW/cm^2, which would make the ratio 10:1. As noted on p. 4-45 of the Draft EIS, the highest level of RFR to which the general public could be exposed outside the exclusion fence is estimated to not exceed 0.02 mW/cm^2. Thus, the expected exposure level as close to the CRS as the public may come is approximately equal to the Soviet standard. At greater distances, the exposure level rapidly decreases and quickly falls below the Soviet standard. Also see Response No. G8.

9. (See p. 3-73.) See Response No. G8.

10a. (See p. 3-74.) This case study is among the reports reviewed in Section 4.14.2.1 of the Draft EIS. It is described in detail in the primary reference for the human health effects section of the Draft EIS ("Bioeffects of Radiofrequency Radiation: A Review Pertinent to Air Force Operations," by L.N. Heynick and P. Polson, Report USAFSAM-TR-83-1, USAF School of Aerospace Medicine, Brooks AFB, Texas, 1983). The facts are that:

(1) Intensities of the beams were known and monitored by the U.S. over a considerable period of time. Consequently, actual exposure histories of individuals who worked at the embassy could be estimated with a considerable degree of accuracy.

(2) The highest exposure levels (up to 0.015 mW/cm^2) were recorded in the period from June 1975 to February 1976. From 1953 to May 1975, maximum exposure was 0.005 mW/cm^2 for 9 hours per day. After February 1976, maximum exposure was fractions of a thousandth of a mW/cm^2 for 18 hours per day. Therefore, except for approximately 9 months out of 25 years, the exposure was less than the level adopted about 1970 by the Soviets as their exposure standard (0.010 mW/cm^2), and was a thousand or more times lower than the U.S. standard set in the early 1970s.

(3) Over 1,800 employees at the Moscow embassy and more than 3,000 of their dependents were identified for an epidemiologic study covering the period 1953 to 1976. A comparison group consisting of over 2,500 employees who worked at nine Eastern European posts and 5,000 of their dependents was also identified for the same time period. In all, 4,388 employees and 8,283 dependents were studied.

(4) The results of a mortality study showed no evidence that the Moscow employees experienced any higher total mortality or increased mortality for any specific causes of death through 1978. Nor was the mortality experienced by the Moscow dependents different from that of the comparison dependent group.

(5) Alterations in a group's health status produced by the introduction of some health hazard would, in all likelihood, be indicated first by an increase in the frequency of nonfatal morbid conditions. Evidence of such an increase in Moscow employees relative to employees in the comparison group was sought; hundreds of comparisons were made based on information obtained from the medical records of the two employee groups. The study group was found to have a large variety of health problems, many of which were serious; but to a great degree, the risks of developing these problems were shared nearly equally by both the Moscow and comparison groups. For only two categories were the rates slightly higher: protozoal infections in male Moscow employees and most of the common kinds of health conditions (summed together) for both male and female Moscow employees. However, there was no consistent pattern of occurrence relative to actual exposure to microwave radiation, and therefore it was extremely unlikely that these increases were related to microwave exposure.

(6) Health status was also studied by analyzing responses to a detailed health questionnaire. In this instance, some noteworthy excesses in the Moscow employee group were observed. Both men and women reported more problems with their eyes; however, most problems were due to correctable refractive errors. The men reported more problems with psoriasis, and the women reported more problems with anemia. The Moscow group, especially the men, reported a variety of symptoms (after their tour of duty) much more frequently than the comparison group: more depression, more irritability, more difficulty concentrating, and more memory loss. However, no relationship between the occurrence of these symptoms and exposure to microwaves was found . Those four symptoms were found to have occurred most frequently in the group with the least exposure to microwaves.

(7) A similar pattern was found for dependents. No consistent differences were found among adult dependents in the Moscow and comparison groups. The dependent children studied had many health problems, the vast majority of which were similar in both groups. Only the occurrence of mumps in the Moscow children group was definitely greater than in the comparison children group. Congenital anomalies occurring after arrival at the different posts were studied. Although anomalies had occurred, no difference could be detected between the Moscow group and the comparison group.

In summary, with very few exceptions, an exhaustive comparison of the health status of the employees who had served in Moscow with those who had served in other Eastern European posts during the same time revealed no differences as indicated by their mortality experience and a great variety of morbidity measures, with the rather minor exceptions described above. For those exceptions, an increase in occurrence of a health effect was actually correlated with lower microwave exposure. These findings refute the implication that exposure to microwaves caused adverse health effects.

10b. (See p. 3-75.) This statement deals with direct currents, direct current fields, and ELF (30 Hz-300 Hz) fields. The mechanisms of interaction of these fields with biological organisms is such that comparison with the HF (3,000,000 to 30,000,000 Hz) RFR of the OTH-B system is not relevant. See Section 4.14.2 of the Draft EIS and the corresponding sections of the referenced detailed review and critique for a scientific discussion of mechanisms of interaction of RFR with biological entities.

10c. (See p. 3-76.) Webster's Third New International Dictionary defines "synergism" as "cooperative action of discrete agencies...such that the total effect is greater than the sum of the two or more effects taken independently." There is no valid scientific evidence of synergistic effects from one or more electromagnetic fields. On the contrary, overwhelming scientific evidence indicates that RFR effects from a variety of sources are additive. This is the premise for virtually all RFR exposure standards worldwide, both Western and Eastern European. Western nations have established frequency-dependent standards as the threshold based on a whole-body average SAR of 4 W/kg for possibly hazardous effects. The 1983 Soviet standard is likewise consistent with modern understanding of the dependence of RFR bioeffects on heat load, but it includes larger margins between the levels at which effects are seen and the recommended exposure levels, probably because of philosophical differences between the Soviet and Western standard-setting procedures. (See also Section 4.14.1.3 of the Draft EIS and Response No. G8.)

The terms electromagnetic synergistics (EMS) and electromagnetic synergistics syndrome (EMSS) are apparently freshly coined, for they are not used in the scientific literature on RFR bioeffects. In light of the lack of valid scientific evidence for synergistic effects, the introduction and use of the terms appear inappropriate.

10d. (See p. 3-77.) The OTH-B transmitter operates in the HF band (3 MHz-30 MHz). It does not radiate microwave energy, nor does it induce DC or ELF currents in the earth. The two cited possibilities are therefore specious.

10e. (See p. 3-77.) This is not correct. See Section 4.14.1.3 of the Draft EIS for a discussion of exposure standards. The 1 mW/cm^2 value appears in several standards for a specific band of frequencies.

10f. (See p. 3077.) This statement contradicts the statement made 15 lines above that "appreciable heating occurred only at levels of 100 mW/cm^2 or above."

10g. (See p. 3-77.) All research on the biological effects of RFR depends on actual research on animals and on living systems, both in the U.S. and the U.S.S.R. In the U.S., design and analysis of such experiments are guided by statistics and reported in those terms in the published scientific literature. In the U.S.S.R., statistics also play a major role in the design and interpretation of scientific experiments. However, due to considerable historical differences in the way in which the Soviets publish, they frequently do not include details of statistical treatment, making it difficult to verify the results and conclusions that they present.

10h. (See p. 3-78.) This is speculation. It presumes that one can identify animals that always respond with an increase in some parameter and animals that always respond with a decrease in the same parameter in response to the same magnitude of stimulus from an agent. No valid

scientific evidence in the RFR bioeffects literature supports such speculation. On the contrary, when an increase is seen in one animal's response and a decrease is seen in another's, it is most likely that the changes are due to some other uncontrolled factor in the experimental situation, or are the result of some random, naturally-occurring variation in the responses of both animals.

At thermal levels of interaction, many hundreds or thousands of times greater than levels to which the general population will be exposed by the OTH-B system, RFR does affect blood chemistry. See Sections 4.14.3.7, and 4.14.3.8, and 4.14.3.9.

10i. (See p. 3-78.) See Response No. 10c.

10j. (See p. 3-78.) Most, if not virtually all, valid scientific research on RFR bioeffects has been conducted under experimental situations where the exposure dosimetry is accurately known. Exposure facilities include microwave anechoic shielded rooms, shielded waveguide exposure facilities, wholly enclosed stripline exposure facilities, and so on. Control experiments are conducted with situations identical to actual exposures, except that no RFR is present.

10k. (See p. 3-78.) Scientific consensus does exist and is the basis for establishing scientifically valid exposure standards worldwide.

10l. (See p. 3-78.) Contrary to this statement, in only a very few situations has modulation (specifically, amplitude modulation) of RF carriers at sub-ELF (not ELF) frequencies been reported to cause biological effects. One is the case of "calcium efflux." Athough two laboratories have reported extensively on finding such effects, other laboratories have not been able to reproduce them. Furthermore, nothing indicates that such effects would pose a hazard to human health. Also see Response No. G8.

Finally, such effects have not been demonstrated for frequency-modulated RFR, the form used in the OTH-B system. A radiofrequency field modulated at ELF is not the same as adding an RF carrier and an ELF signal. To produce modulation requires a process analogous to multiplication, not addition.

10m. (See p. 3-80.) See Response No. 200.

10n. (See p. 3-80.) The fact that effects are largely independent of RFR frequency is the basis for concluding that only thermal mechanisms of interaction are occurring. (See Section 4.14.2.2 of the Draft EIS.) Frequency-specific effects are needed to demonstrate so-called nonthermal mechanisms of interaction. If it is agreed that the effects are largely independent of frequency, then this implicitly concurs with the fundamental basis of standard-setting, namely that SAR is the most important criterion.

10o. (See p. 3-80.) The symptoms described are also referred to as "asthenic syndrome" by the Soviets. Western medical practice generally does not accept the syndrome because it is of no diagnostic use whatsoever. Everyone at one time has experienced one or many of the symptoms so described. Many or most of the symptoms can be associated with psychosomatic problems (general stress) rather than organic disease. Except for the most severe symptoms claimed (particularly cancer), Western medicine treats these symptoms rather than trying to diagnose their cause, because decades of experience have shown that this is effective. Thus, the microwave/asthenic syndrome claimed by the Soviets is not generally recognized in the West. Also see Response No. 10A.

10p. (See p. 3-82.) Interaction mechanisms are discussed on pp. 4-68 through 4-75 of the Draft EIS. They are also treated at greater length in the two reviews and critiques referenced at the beginning of the Draft EIS section on human health effects (p. 4-52). The theories of Becker, Marino, and Nordenstrom rely on fundamental mechanisms of interaction addressed in the referenced Draft EIS section. Mechanisms other than thermal are given consideration in the Draft EIS, and those studies reporting relevant "nonthermal" interactions are described in the two referenced reviews.

11. (See p. 3-89.) No electrical noise or hum emanates from the transmit arrays. No objectionable wind noise has been heard at either the transmit or receive sites on the East Coast.

12. (See p. 3-91.) An OTH-B radar system cannot malfunction in any way that endangers the public. No malfunctions would involve an explosion or release of chemicals. Certain malfunctions could cause the radar scanning to be interrupted or cause the transmitters to cease emitting RFR. If scanning were interrupted for more than a very brief period, transmission would be stopped until the problem could be corrected.

13. (See pp. 3-188 and 3-189.) The Air Force will ensure that an adequate weed control program is established at both the transmit and receive sites. It will coordinate the development of this program with the appropriate state and local agencies, including the county weed control board, and will ensure that vegetation growth over the antenna sectors does not adversely affect adjacent land. The Air Force will continue this program for the duration of Air Force ownership or lease.

14. (See p. 3-236.) State public utilities commissions regulate power companies and their activities. Whether power lines to the CRS sites would be routed along section lines depends on the policies and practices of these commissions. The Air Force will not request that section lines be followed because, in specific circumstances better known by the commissions and the power companies, other routing may be superior.

15. (See p. 3-237.) See p. 4-370 of this document for Mr. Pulfrey's questions and references to the Air Force responses.

16. (See p. 3-240.) See pp. 3-165 through 3-167 of this document for Mr. Langley's letter and references to the Air Force responses.

17. (See p. 3-241.) The transmit site requires two separate (i.e., independent) 115 kV power lines. The receive site requires one 12.5 kV power line.

18. (See p. 3-165.) The effect of the CRS demand for electricity on the rates charged by the supplier is speculative. The size and direction of any effect will depend on the characteristics of the supplier's generation capacity and the manner in which the supplier chooses to meet the demand. If the CRS demand is large enough, the responsible state public utilities commission may exercise oversight. In its "Annual Outlook for U.S. Electric Power 1986," covering the period to 1995, the U.S. Department of Energy projected that the growth rate of total electricity generation capacity in the North Central region of the U.S. will exceed the growth rate of total electricity demand. The oversupply situation suggests that the CRS power demand will not cause rate changes.

19. (See p. 3-165.) The possibility of significant impacts on the environment or on landowners arising from constructing power transmission lines will be addressed by the potential power suppliers, in the manner required by the authorities that issue permits or other approvals.

20. (See p. 3-165.) Each sector at the CRS transmit site will emit a maximum of 1.2 MW of power. However, it will require 3.6 MW of input power because high-power transmitters are inefficient. Thus, the four-sector CRS will require 14.4 MW to operate the radar transmitters. The remaining 1.6 MW will be used for facility heating, ventilation, air conditioning, lights, and miscellaneous equipment.

21. (See p. 3-165.) No unusual substances will be used or stored on the CRS sites. Diesel fuel, gasoline, cleaning solvents, and common construction materials will be stored in limited quantities. All storage facilities will conform to federal, state, and local standards and other requirements. Oils with PCBs will not be used. Vegetation management may include use of EPA-approved herbicides similar to those commonly used in agriculture. To minimize environmental impacts, vegetation management will be coordinated with concerned resource agencies.

22. (See p. 3-165.) The Draft EIS statements are not inconsistent. Soils that are characteristically well-drained can become poorly drained if located on flat, waterlogged land.

23. (See p. 3-165.) More detailed information about populations and routes of resident and migrant birds will be gathered, if necessary, after the Air Force selects the study areas for the transmit and receive sites.

24. (See p. 3-165.) Theories of animal migration that indicate that animals make use of the earth's weak magnetic field are specifically concerned with the earth's geomagnetic field. That field is a DC or steady-state one. The electromagnetic field created by the OTH-B system is an AC one, with frequencies between 5 and 28 MHz, and has no DC or steady-state component. Furthermore, no evidence exists that radar systems of any kind have adversely influenced the migration of any animals. Indeed, radar systems have been used by wildlife experts to track the migration of birds.

25. (See p. 3-165.) The Air Force did not conclude, in the absence of specific information, that no impacts to threatened or endangered species would occur. Page 4-18 of the Draft EIS states "Once a study area has been selected, specific sites for the sectors would be selected. If a field survey of the sites determined that the project might affect federally listed endangered or threatened species, formal consultation to comply with Section 7(c) of the Endangered Species Act of 1973 would be requested from the USFWS. Additional studies would be conducted, if necessary, to determine exactly where sensitive habitats are located within the study area. If significant habitats cannot be avoided, the resource would be evaluated and actions taken to mitigate the loss of habitat as much as possible." State-listed species will be addressed in a similar fashion.

26. (See p. 3-166.) As the Draft EIS text continues on p. 4-42, the Air Force would take "appropriate mitigation measures consistent with federal and state laws and regulations." This means that the Air Force would follow procedures established under 36 CFR 800.4 to comply with the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended), Section 2(b) of Executive Order 11593, and any other applicable laws and regulations. In consultation with the appropriate State Historic Preservation Officer, the Air Force would identify and evaluate properties within the affected areas for their eligibility for the National Register of Historic Places and would determine potential impacts on those properties. As needed, the Air Force would develop procedures to avoid or mitigate adverse effects on cultural resources and would request comment from the Advisory Council on Historic Preservation.

27. (See pp. 3-166 and 3-167.) "Beat" frequencies occur when two sources are extremely close together in frequency. This is not the case with the OTH-B radar and powerline frequencies. Interference generally results because of the high levels of amplification inherent in instrumentation and electronic systems. Such amplification mechanisms do not appear to pertain to biological hazards, and therefore it is very unlikely that any biologically significant results would occur when interference effects are not a problem.

28. (See p. 3-166.) Various suggestions, including reestablishing prairie vegetation, have been made for revegetating cleared areas. However, control of weeds to protect nearby agricultural crops is important. Detailed information on grading, revegetation species, and plant control will be developed after the Air Force selects the transmit and receive study areas. At that time, the Air Force will seek local advice on vegetation management.

29. (See p. 3-166.) After study areas for the transmit and receive facilities are chosen, specific locations for the antennas will be selected. Detailed, site-specific engineering and mitigation plans, including wetlands maps and erosion and sedimentation controls, will then be prepared for each location. Site selection will consider erosion, stream crossings, and impacts on surface water bodies. Mitigation measures will be specified to comply with local water quality and discharge regulations. Also see Response No. G5.

30. (See p. 3-166.) The Helliwell reference is apparently incorrect. No Helliwell article was published during the month of November 1975. The correct reference may be C.G. Park and R.A. Helliwell, "Magnetosperic Effects of Power Line Radiation," Science, Vol. 200, pp. 727-730, May 19, 1978. This article points out that high-voltage lines radiate some power at 60 Hz and harmonics of that frequency. These waves penetrate the ionosphere and interact with electrons in the magnetosphere some 15,000 miles above the earth's surface. The resulting interactions are complicated and difficult to observe, but they are not known to affect meteorological events near ground level. Moreover, the frequencies used by the OTH-B system are so far removed from those discussed by Helliwell that this phenomenon is not pertinent.

31. (See p. 3-166.) The sections on air quality in the Draft EIS (3.6 and 4.6), which were based on local information, demonstrate that no measurable effect on local air quality would result from construction and operation of the CRS. The electromagnetic energy radiated by the system would not affect air quality by influencing the formation of chemical pollutants or "air ions."

32. (See p. 3-166.) The cited conclusion is based on the income of 50 employees at a transmit or receive site compensated, as the Draft EIS notes on p. 4-33, at the average pay rate for civilian employees at Grand Forks AFB.

33. (See p. 3-166.) In considering potential impacts on school districts, the Draft EIS distinguished between facilities and fiscal matters. The Draft EIS concluded, in Section 4.10.1, p. 4-34, that facilities were adequate to accommodate additional students. In Section 4.8.3, p. 4-33, it noted that there could be significant fiscal impacts on a particular school district (or other body such as a township dependent on property tax revenue). Also see Response No. G6.

34. (See p. 3-166.) The validity of the estimates based on the simplified model is addressed in Section B.8. There, the results of measurements at the Experimental Radar System are presented. They show that the method yields generally conservative estimates.

35. (See p. 3-166.) This comment speculates that frequency-dependent biological responses constitute a "tuned circuit" in the electrical engineering sense, and that if such a circuit is "swept" by the frequency-modulated signal or its harmonics, effects might occur. Such effects are extremely unlikely because the power densities of the modulated carrier to which people may be exposed are many times lower than those known to cause any effects, whether the carrier is CW (continuous wave) or pulsed. The harmonics are at least one ten-millionth (70 dB) less intense and of no consequence biologically.

36. (See p. 3-166.) The field levels at which interference effects can be seen in electronic equipment are a complicated function of the equipment's shielding, amplification, frequency response (filtering) characteristics, and other factors. The levels can range over biologically incomprehensible values (e.g., individual amplifiers may have gains of 10 to the power of 12). By contrast, biological organisms are much more uniform in their responses to external stimuli. Thus, the statements, cited from p. C-2 of the Draft EIS, apply to electronic instrumentation generically, but not to the human population. In that case, human exposure standards include safety factors to protect the most susceptible members of the population.

Ionizing radiation is believed to be capable, theoretically, of causing effects at any level of exposure because of the possibility of a single photon causing molecular damage. This is not the case with RFR; the scientific evidence to date indicates the high probability of the existence of a threshold level for effects, below which no effect will be seen (see Response No. G8). Estimating the population whose exposure to RFR is doubled or tripled is not useful because those levels are hundreds, thousands, or more times less than levels demonstrated to cause effects.

37. (See p. 3-167.) The Air Force has, in fact, stayed abreast of developments in standard setting. A discussion of the EPA alternatives for controlling public exposure to RFR has been added to the text of the Draft EIS at p. 4-61. (See the Errata.)

38. (See p. 3-167.) The assessment of potential RFR bioeffects from the OTH-B system included literature that reported finding significant effects at low RFR levels. How these studies were assessed is discussed on pp. 4-65 to 4-67 of the Draft EIS. No reports were "thrown out." Rather, the probability that the findings truly represented a potential hazard in the present context was assessed as described.

The behavioral effects in question were typically obtained in highly contrived laboratory situations in which rats were starved to 80% of their normal body weight and then required daily to perform a lever-pressing operation correctly in response to various stimuli and test conditions to obtain a food reward. These procedures are well-established and have scientific validity for the species being tested, but it is difficult to imagine the basis for extrapolating the results to a human population.

For the specific example of alterations in the endocrine system, observed effects are generally only a small fraction of the magnitude of changes occurring naturally, either as apparently random responses to the stress of everyday living or as periodic (e.g., circadian) changes. Hence the statement that it is difficult to assess the significance of the effects in terms of hazard to the organism. Any such assessment, in the absence of evidence of harm, is speculation.

39. (See p. 3-167.) The Air Force did not conclude that lack of statistically significant documentation of effects constitutes proof that no effects will be experienced. See Sections 4.14.1.2, 4.14.1.4, 4.14.4, 4.14.5, and 4.14.6 of the Draft EIS. Given all the considerations discussed in those sections, the Air Force concluded that there was an absence of reliable scientific evidence demonstrating the likelihood of harmful effects. Also see Response No. G8.

40. (See p. 3-167.) Cardiac pacemaker performance standards require that they perform without interference below a field strength of 200 V/m. The described phenomenon does not occur with present-day pacemakers. In the case of biological organisms, none have been shown to date to respond to RFR levels "in the natural range" (i.e., to background RFR levels in the OTH-B frequency range).

41. (See p. 3-266.) The Air Force will work with the responsible state agencies to determine what specific state environmental documentation may be required and will cooperate with the agencies in producing this documentation after the transmit and receive siting areas have been selected.

42. (See p. 4-2.) The exact boundaries of the receive site have not been determined. The location of the Thief River Falls study area under consideration as an area in which a specific location for the site might be selected is described in the Draft EIS on pp. 2-15 and 2-21.

43. (See p. 4-2.) The OTH-B radar system uses frequencies in the range 5 to 28 MHz.

44. (See p. 4-2.) At least two sources of power have been identified at each transmit study area. Each source has the reliability sought by the Air Force. The amount of power needed will allow the Air Force to ask for competitive bids to supply the power and construct the power lines. At the receive site, less power will be required, and the power company serving that area will be able to supply the power as it does to its other typical customers. Distance to power lines was not a site selection criterion. See Responses No. 14 and 17.

45. (See p. 4-3.) The operations and maintenance concept for the CRS requires contractor personnel to provide operations and maintenance support. The Air Force estimates that approximately 30 operations and maintenance personnel would be required at the transmit site and a similar number at the receive site. The system contractor, who will build, install, and checkout the CRS, will be responsible for providing the support personnel, including any training required. See Response No. 167.

46. (See p. 4-4.) The Air Force, in consultation with utility companies, will consider the specific circumstances in deciding what to do about above-ground or underground utilities that cross locations under consideration for the transmit and receive sites. The power, telephone, natural gas, or water lines may be rerouted; for those not rerouted, access procedures will be jointly established.

47. (See p. 4-8.) Gravel is available within a reasonable haul distance of all study areas. In particular, ready-mix concrete/sand and gravel suppliers are located in Mayville and Hillsboro, Traill County.

48. (See p. 4-12.) During construction, a variety of equipment will generate noise. During operation, however, the noise sources will be limited to vehicles driven by the site staff and the standby power plant, when it is occasionally tested.

49. (See p. 4-15.) The Draft EIS states that all study areas are within flyways. The areas differ somewhat from one another because of minor differences in wildlife habitat. For example, in the Blanchard study area, there are fewer breeding areas and therefore less attraction for birds.

50. (See p. 4-15.) Interference with shallow wells is not expected. Site areas will be graded, but surface water will still run off the sites. The grading itself should not affect groundwater recharge, and therefore wells will not be affected.

51. (See p. 4-23.) The requirement for an unobstructed horizon above 1 degree will tend to guide placement of the CRS away from tall structures such as grain elevators. The RFR will not affect the elevators or their operation.

52. (See p. 4-24.) The cited values represent an approximate range of average values in 1984, which were lower than in the immediately preceding years. Values for specific acreage may significantly exceed this range.

53. (See p. 4-25.) Each antenna sector requires about 600 acres. At the transmit site, the land ensures that RFR levels at the exclusion fence will not cause any adverse human health effects. The land must be cleared of anything that would obstruct the minimum 1-degree horizon clearance required in front of the antenna.

54. (See p. 4-25.) The OTH-B system is able to detect and track aircraft and cruise missiles down to the surface of the earth or water. Notice of unidentified, low-flying aircraft could also be provided to those agencies responsible for interrupting the flow of drugs into the U.S.

55. (See p. 4-26.) The implication in this question that the CRS will cause burns 3 miles distant is incorrect. It is not possible to receive RFR burns from the OTH-B system, either in the air or on the ground outside the exclusion fence. See Response No. 62.

56. (See p. 4-27.) The Air Force appreciates receiving this information. It has been added to the study area map. (See the Errata.)

57. (See p. 4-29.) Although the federal government is not bound by local zoning ordinances, the Air Force will strive to comply with the intent of local community planning and zoning.

58. (See p. 4-38.) Although the overall dimensions of the CRS antennas are substantial, the structure is "airy" and will be much less intrusive visually than a building of the same dimensions. Visual impacts could be reduced by using vegetative screens, selecting exterior colors to minimize contrast, avoiding the use of highly reflective surfaces, and clearing woodlots and shelter belts only where it is necessary for safety, operational reasons, or security.

59. (See pp. 4-5, 4-7, 4-8, and 4-41.) Thank you for the information. It has been added to the Draft EIS on p. 3-18. (See the Errata.)

60. (See p. 4-42.) The cited report, "Bioeffects of Radiofrequency Radiation: A Review Pertinent to Air Force Operations" (USAFSAM-TR-83-1), was also cited in the Draft EIS. This sizable document expands on the summary of RFR bioeffects provided in the Draft EIS and includes specific references to the literature reviewed. Rather than attach a copy of this report to every Draft EIS, the Air Force chose to cite it, assuming that those individuals with special interest in this topic would request a copy.

61. (See p. 4-42.) A discussion of the EPA alternatives for controlling public exposure to RFR has been added to the text of the Draft EIS at p. 4-61. (See the Errata.)

62. (See p. 4-42.) A discussion of shock and burns has been added to the RFR bioeffects text at p. 4-75 of the Draft EIS following Section 4.14.2.4. (See the Errata.)

63. (See p. 4-43.) See Response No. 61.

64. (See p. 4-43.) The necessary text changes have been made on p. S-6 of the Draft EIS to state the bioeffects threshold in terms of SAR. (See the revised Summary in this volume.)

65. (See p. 4-43.) Changes to the text following the last paragraph on p. 4-45 of the Draft EIS have been made. (See the Errata.)

66. (See p. 4-43.) To state the power density more precisely, the text on p. 4-71 of the Draft EIS has been changed. (See the Errata.)

67. (See p. 4-44.) Thank you for the information.

68. (See p. 4-44.) The Draft EIS outlines in general the actions to be taken to control erosion and protect surface water. The cut-and-fill estimates, which were meant only to be representative of typical requirements, were used to compare the study areas. See Responses No. G5 and 29.

69. (See p. 4-45.) See Response No. 61. The Minnesota Pollution Control Agency, not EPA, derived the 0.05 mW/cm^2 power density limit. Nevertheless, the average power density expected outside the exclusion fence surrounding the CRS transmit site will be less than this value. "Peaking" of power densities will not occur. The OTH-B radar is a CW (continuous wave) system, and the Draft EIS estimates of average power density are based on the radar's scanning program. The radar would not transmit if the scanning program was interrupted.

70. (See p. 4-46.) See Response No. 41.

71. (See p. 4-47.) Permissible exposure levels have been established for humans, but not for birds or small animals. As noted on p. 4-87 of the Draft EIS, however, the literature on RFR bioeffects indicates that, because small animals absorb much less incident RFR energy at the OTH-B frequencies, no effects would be discernable on small animals living within the exclusion fence even though the levels within the fence could be harmful to humans.

72. (See p. 4-47.) See Response No. 24.

73. (See p. 4-47.) See Response No. 29.

74. (See p. 4-47.) Revegetation and resulting species changes will be evaluated with agency assistance when mitigation plans are developed.

75. (See p. 4-47.) The potential for bird collisions with the CRS structures is discussed extensively on pp. 4-20 to 4-29 of the Draft EIS. In addition to the mitigation measures described there, the Air Force is evaluating alternative receive antenna designs that would, by virtue of their openness and lack of backscreen, greatly reduce the hazard.

76-82. (See p. 4-48.) The Air Force appreciates these comments and the information they contain. The Draft EIS has been revised. (See the Errata for changes to pp. 3-25, 3-29, 3-31, 3-32, 3-34, 3-35, and 3-37.)

83. (See p. 4-48.) See Response No. 75. If bird losses proved to be substantial, the Air Force would investigate means to compensate for the losses by such measures as creating additional breeding habitat for affected species.

84. (See p. 4-49.) High value fish and wildlife resources will be identified with the help of state and federal resource agencies and will be avoided to the extent possible in the selection of specific transmit and receive sites.

85. (See p. 4-49.) The suggestion to enhance wildlife habitat by managing the area enclosed by the exclusion fence contradicts one of the strategies to minimize certain potential environmental impacts. For example, to minimize bird collisions, the CRS antennas should be placed so as to avoid locations of bird movements. Consequently, enhancing waterfowl habitat would be inconsistent with this strategy. Encouraging occupancy by small animals could lead, directly as by rodents or indirectly by large predators, to greater damage to the facilities. The Air Force will consider enhancement suggestions, but will carefully evaluate them considering all aspects of the situation.

86. (See p. 4-49.) See Response No. 25.

87. (See p. 4-49.) Listed or proposed National Natural Landmarks will be avoided to the extent possible in the selection of specific transmit and receive sites.

88. (See p. 4-51.) See Response No. G3, "Land Area Requirements."

89. (See p. 4-51.) See Response No. G5.

90. (See p. 4-51.) See Response No. G6.

91. (See p. 4-51.) See Response No. G6.

92. (See p. 4-54.) The Air Force accepts the recommendations and will include them in the mitigation plans prepared for construction and operation of the CRS.

93. (See p. 4-54.) This correction has been incorporated on p. 3-39 of the Draft EIS text. (See the Errata.)

94. (See p. 4-55.) Investigation into the issuance of permits for the use of explosives suggests that explosives are seldom used in the vicinity of the study areas. Nevertheless, the Air Force will issue public notices and post signs concerning the potential hazard.

95. (See p. 4-55.) See Response No. 29.

96. (See p. 4-56.) See Responses No. 75 and 83. In addition, the Air Force will maintain contact with state and federal wildlife agencies.

97. (See p. 4-56.) The Air Force appreciates this information and will make use of it in further analyses of the potential for bird collisions and in the preparation of mitigation plans. Also see Response No. 96.

98. (See p. 4-61.) The Draft EIS describes the basic operation of the OTH-B radar system. Additional information on the theory of radar systems, and on HF radar systems in particular, can be found in: Introduction to Radar Systems, by N.I. Skolnick, and Ionospheric Radio Propagation, by Kenneth Danier. More specific information about the operational use of the OTH-B system is not available.

99. (See p. 4-62.) See Response No. 46.

100. (See p. 4-76.) The Experimental Radar System was, in fact, operated at full power (see p. C-17 of the Draft EIS). The successor to the ERS--the East Coast Radar System--has been operated at full power during testing over the last year. These tests demonstrated satisfactory performance and led to the decision to proceed with additional systems. Measurements also validated the methods used in this EIS to estimate the RFR levels (see Section B.8 of the Draft EIS). Additional land would be required for the ECRS if its receive antennas are lengthened, which the Air Force is considering to improve their ability to detect and track aircraft and cruise missiles.

101. (See p. 4-77.) The size of the antenna arrays has not changed. An error in the Draft EIS altered "9,000" feet to "19,000" feet on p. 4-24. (See the Errata.)

102. (See p. 4-77.) The CRS would present no hazard to the fireworks factory because the receive site, which would be the nearest CRS facility, does not radiate electromagnetic energy.

103. (See p. 4-127.) The data necessary to support a net economic analysis were, in fact, supplied in the Draft EIS. The underlying data assumptions and estimates are shown on pp. 3-40 to 3-55. The analytical results are given on pp. 4-30 to 4-36. There, population impacts, employment changes, income changes, construction expenditure estimates, tax impacts, agricultural impacts, and other items are specifically detailed. This material provides both the source data and the expected changes in values as well as the estimated regional impacts.

These same sections defined the relevant economic variables, including population, employment, personal and per capita incomes, taxes, farm incomes and values, educational needs, roadways, and landfill requirements.

The time frame for an impact analysis must be appropriate for the proposed project; no single standard exists. In addition, projects of significant impact warrant greater analytical detail than do projects of minor consequence. In public works projects, which have an expected life of 50 to 100 years, a comparable period should be used. Short-term projects require an analysis comparable to the project's life expectancy. In projects with minimal impacts, great detail is inappropriate because that would imply more impact than estimated or expected. CRS impacts are expected to be short-lived, most significant during the construction period, and diminish to relatively minor impacts over the modest 20-year life of the system. Therefore, the analysis was appropriate for the scope and projected impact of the project.

Multipliers were used throughout the analysis, where appropriate. The consequences of the multiplier were referred to as "indirect" effects.

104. (See p. 4-127.) Because no particular sites or contractors have been selected for the CRS system, it is impossible to estimate accurately the extent to which local materials and labor are likely to be used during construction. However, standard initial estimates based on the U.S. Census of Construction Industries are reflected in Sections 4.7 through 4.10 of the Draft EIS. See Response No. 45 for information on the operations staff.

105. (See p. 4-128.) The ANSI standards are based on the incident power level averaged over six minutes, as cited in the footnote on p. B-19 of the Draft EIS. For reference, Figures B-5 through B-10 give both maximum and average values of power density. As noted on p. B-16, the ratio of these values is 7. The OTH-B radar radiates continuously at a constant power level; power variations result only from the scanning process. That situation is very different from that of pulsed radars, in which the ratio of peak to average power is often as large as 1000.

The high conductivity characteristic of the soils in the region has been fully accounted for in the method used to estimate power density (see p. B-11 of the Draft EIS). At greater distances, the relationship of power density to distance changes from $1/R^2$ to $1/R^4$. The soil conductivity determines the distance at which this transition occurs. Beyond this distance, surface wave propagation follows a $1/R^4$ law regardless of conductivity.

106. (See p. 4-128.) The OTH-B signal has constant amplitude; the carrier frequency is varied, or modulated. This variation in frequency is described as "sawtooth" because the frequency changes linearly with time to a certain limit, then switches back to its initial value. The amplitude is not varied during this time. Adey's research has involved amplitude-modulated waveforms, and Adey himself has shown that the calcium efflux phenomenon does not occur with CW waveforms.

107. (See p. 4-128.) Immune system and behavioral effects are discussed in the Draft EIS, where it is noted that such studies are performed in many countries, including the U.S.S.R. The point is made that although effects may be seen, these effects are seen only above certain exposure levels. The magnitudes and nature of the effects are smaller than or comparable to those occurring naturally in everyday life. Therefore, they do not necessarily constitute hazards, per se, and, it is highly likely that they will be completely absent in populations exposed at levels many, many times less than levels reported to cause effects. Also see Response No. G8.

108. (See p. 4-128.) EPA has measured RFR levels in many places in the United States. Its findings are summarized on p. 4-58 of the Draft EIS. Text has been added to the Draft EIS at p. 4-61 to address EPA's recent proposal of alternatives for controlling public exposure to RFR. (See the Errata.)

109. (See p. 4-128.) Dr. Nordenstrom has reported clinical observations of changes in non-operable cancers resulting from DC currents applied directly to the inside of the body by using electrodes. His theory is considered highly speculative because many other factors, including the placebo effect, may be involved in explaining some of his reported findings. The OTH-B signals are in the HF band, and Nordenstrom's speculations do not pertain to the OTH-B situation.

110. (See p. 4-128.) See Response No. G2.

111. (See p. 4-128.) The major area of surveillance coverage for the CRS will be the near-shore ocean area extending from the coastline out to approximately 2,000 miles from the CRS. The CRS computer system will routinely compare aircraft tracks with all flight plans and pilot position reports. The techniques for doing so have already been established and are in use at the East Coast Radar System.

112. (See p. 4-128.) See Response No. G2.

113. (See p. 4-128.) The blind spots of the East and West Coast Radar Systems are not covered by existing line-of-sight microwave radars. The latter's range is at most a few hundred miles, and they cannot cover down to the ocean's surface beyond the horizon. Also see Response No. G2.

114. (See p. 4-130.) See Response No. G8.

115. (See p. 4-135.) The number of families that might be displaced at either the transmit or receive site is estimated to range from 1 to 6, with 4 and 5 being the most common number.

116. (See p. 4-135.) The answers to these questions are unknown. The system contractors, who will hire the site employees, won't be selected for several years. Even then, it will be impossible to predict either the family composition or where the employees will live.

117. (See p. 4-138.) The East Coast Radar System transmit site is near Moscow, Maine. OTH-B radar operations were carried out during 1980-81 by the Experimental Radar System. The first sector of the East Coast Radar System has been operated for only limited hours since November 1985. No study of health effects in Maine related to the OTH-B radar system has been conducted, and none are planned for the reasons detailed in Comment No. 1. Also see Response No. G8.

118. (See p. 4-138.) No interference with operation of the CRS is expected from snirt.

119. (See p. 4-140.) See Response No. 106 and also Responses No. 111 and 120.

120. (See p. 4-140.) The effect described has been reported not in the ELF band, but rather in the frequency band below that--the sub-ELF band. The effect is mentioned in several sections of the Draft EIS (including 4.14.2.2, 4.14.2.4, and 4.14.3.5.2). The phenomenon is not directly relevant to the present case because the OTH-B RFR is FM-CW (frequency-modulated continuous-wave), not amplitude modulated. Adey's results show that the phenomenon does not occur with continuous wave RFR, which is constant amplitude. Also see Response No. 106.

121. (See p. 4-140.) These adverse effects are discussed on pp. 4-75 to 4-86 of the Draft EIS, where it is stated that, in general, the effects are observed only if the power density (or specific absorption rate [SAR], when referred to absorbed energy) exceeds certain high levels. These effects are not apparent when the power level (and SAR) falls below those levels. The exposure levels (and SARs) of the population near the CRS transmit site will be many orders of magnitude (i.e., many multiples of 10) smaller. Therefore, the likelihood of such effects occurring as a result of exposure to the CRS is vanishingly small. Also see Responses No. G8 and 107.

122. (See p. 4-143.) See Response No. 11.

123. (See p. 4-143.) The antenna structures are susceptible to lightning strikes, so it would be hazardous to work outside near the antennas if a storm is in the immediate area.

124. (See p. 4-143.) See Response No. 13.

125. (See p. 4-144.) The suggestion is a good one. Table 2-1 (p. 2-14) in the Draft EIS has been revised to show the township names. (See the Errata.)

126. (See p. 4-144.) The Draft EIS maps were based on maps issued by the U.S. Army Topographic Command. Although the 1975-issue maps were used as the baseline details from the latest available U.S. Geological Survey 7.5-minute series topographic maps, aerial photos, a 1986 U.S. Army Corps of Engineers real estate investigation, field observations, and public and agency comments have been added. Also see Response No. 153. (See the Errata.)

127. (See p. 4-149.) The OTH-B radar will not operate in any of the amateur radio bands, including the 30-meter and 12-meter. Table C-3 on p. C-22 of the Draft EIS has been revised. (See the Errata.)

128. (See p. 4-161.) The strength of the OTH-B radar signal declines significantly as the distance from the transmitters increases. Consequently, the energy in the beam at 2 miles is much less than that at 1 mile. How much less can be determined from Figures B-5 through B-10. In general, the RFR strength varies inversely as the square of the distance from the antenna to a certain point and beyond this point varies inversely as the fourth power of the distance. See Appendix B for a complete discussion.

The effects of RFR on small animals within the exclusion fence is discussed on pp. 4-86 and 4-87 of the Draft EIS. Given the RFR levels that will exist outside the exclusion fence and the levels of energy absorption required to produce effects in humans, swine face no special risk despite poor heat regulation mechanisms. The amount of heat that a pig outside the exclusion fence would absorb would be a miniscule fraction of its own metabolic heat production.

129. (See p. 4-161.) City wells were mentioned primarily because information was readily available on sources of municipal water. The Air Force is aware that there are many farm wells. Wells located within the fenced sites will be closed, but otherwise the CRS will not affect either the supply or the quality of wellwater. See Responses No. 21, 29, and 50. The CRS will not warm surface water; the power entering the ground will be a small fraction of that delivered by the sun.

130. (See p. 4-161.) See Response No. G7. No hazardous materials will be transported. Gasoline and diesel fuel, small quantities of solvents for equipment maintenance, and common construction materials (e.g., hydraulic fluid) to be used will require care in handling, but will present no special risk.

131. (See p. 4-181.) See Responses No. 126 and 153.

132. (See p. 4-185.) The Air Force will consider any claim that operation of the CRS is unsafe and, if the claim can be substantiated, will resolve the situation by correction, compensation, or other means warranted by the circumstances. If administrative remedies are not satisfactory, suit may be brought against the Air Force.

133. (See p. 4-185.) See Response No. G8.

134. (See p. 4-186.) See Response No. 132.

135. (See p. 4-187.) The RFR levels meet the exposure standards established to protect human health everywhere outside the exclusion fence surrounding the transmit site. Therefore, the CRS would not be unsafe as far as 180 miles away.

136. (See p. 4-200.) Local purchases are goods and services acquired from merchants and contractors in the vicinity of the transmit or receive site. Non-local purchases are goods and services imported from a distance such that no local business or contractor receives a direct payment.

137. (See p. 4-200.) The CRS design specifications call for a very reliable supply of power. This reliability can, in principle, be achieved in a number of ways, such as constructing a power plant solely to supply the CRS. However, the reliability requirement can also be met by existing, "local" suppliers if the distribution network has certain characteristics, such as reliable components and duplicate delivery paths.

138. (See p. 4-202.) See Response No. 5.

139. (See p. 4-208.) The Air Force does not plan to construct a 16-MW standby power plant for the CRS transmit site because it has identified separate power sources that can supply the necessary power with the required reliability and redundancy. Similarly, the Air Force does not plan to construct a standby power plant for the West Coast Radar System. See Response No. G2, "Vulnerability to Attack."

140. (See p. 4-209.) The quoted sentence from p. 4-42 contains an error (see the Errata); it should read "In all cases, the highest values of average power density to which the general public would be exposed just outside the exclusion fence would be less than the maximum permissible values adopted by ANSI (ANSI, 1982). The other sentences referenced in the comment are correct, but the phrases "below the value

recommended as safe," "below the ANSI standard," and "well below those [values] permitted by the ANSI standard" all mean that the standard is more than met. Also see Response No. G8.

141. (See p. 4-210.) See Responses No. 23, 75, and 83.

142. (See p. 4-210.) The U.S. Fish and Wildlife Service provided information for the Draft EIS and has reviewed that document. Although the gray wolf, bald eagle, peregrine falcon, and piping plover may occur in the Minnesota study areas, no critical habitat for threatened or endangered species has been designated within Polk, Pennington, or Traverse counties. Peregrine falcons and bald eagles do pass through the area, but any effects are likely to be minor because no critical habitat exists in the area.

The Minnesota Natural Heritage Program provided the information about the state endangered and special-concern species included in the Draft EIS. The Program did not identify the marsh hawk and the burrowing owl as occurring near the study areas.

Other birds mentioned in the comment may occur in the area, but little is known about their particular vulnerability to collision. In general, nonmigratory birds are less susceptible to collision hazards.

143. (See p. 4-211.) See Responses No. G5 and 29. Detailed engineering design will address the drainage and flooding issues.

144. (See p. 4-221.) The Air Force will consider the location of the experimental windbreak and its research value during the selection of specific antenna sites, if Wheaton Southeast is selected as a site area.

145. (See p. 4-240.) Page B-7 of the Draft EIS describes how the average power density is derived from the maximum power density. The maximum power density would be experienced if the observer was stationary. Beam scanning reduces the exposure by a factor of about 7. It would be virtually impossible for anyone on the ground or in the air to stay within the scanning radar beam. If the scanning should be interrupted, the RFR transmission will be stopped. (Also see Response No. 12.)

146. (See p. 4-240.) The remainder of the paragraph from which the quoted sentence was taken, in fact, defines "significant heat load." Specifically, evidence shows that RFR is not teratogenic for exposures below 1 mW/cm^2. Increased maternal temperature (1-2^oC) for a prolonged period is required for teratogenic effects of RFR to be seen.

147. (See p. 4-242.) See Response No. G3, "Specific Siting Criteria." "Remoteness" as used in the environmental documents for the East Coast and West Coast Radar Systems was sought to minimize potential electromagnetic interference effects. Based on subsequent test data from the East Coast Radar System, the Air Force is confident that such

interference effects are minimal beyond the immediate area of the transmit site. The remoteness criterion was not specified for health reasons. The implication of a population concentration near the transmit site is that, if a particular interference effect is encountered, the number of individual corrective actions that the Air Force would take to eliminate the problem (one for each affected individual) would be greater than if the population density was low.

In the case of the receive site, separation from population concentration is required to ensure that other devices do not interfere with signal reception at the very sensitive receive antennas.

148. (See p. 4-266.) The Draft EIS text inadvertently may imply that the literature reviewed is not relevant to the CRS situation. The literature review on which the health assessment was based covered all forms of RFR and all frequencies between 10 kHz and 30 GHz, but beyond determining the characteristics of the RFR, the review did not concern itself with the characteristics of specific radiating devices or systems. The assessment of the possible impacts of the CRS RFR on humans considered the relevant portions of that literature to draw conclusions for the specific characteristics of the CRS radiation.

149. (See p. 4-266.) This statement is a summary of Section 4.14.3.1, beginning on p. 4-75 of the Draft EIS. As the Draft EIS states there, Soviet literature has reported effects from low-level RFR, but the bases of these reports are very uncertain. Taken together, epidemiological studies do not give clear evidence of harm for such exposures. Also see Response No. G8.

150. (See p. 4-271.) See Response No. G3. The variety of study area sizes is the outcome of applying the site selection criteria.

151. (See p. 4-287.) The Draft EIS was written during the spring and summer of 1986.

152. (See p. 4-287.) The Air Force identified three proposed study areas near Wheaton, Minnesota, during the public scoping meeting that began in February 1986. The exact boundaries of the study areas had not been determined at that time. During the additional scoping meetings held in Wheaton in June 1986, a general description of the three areas was provided. In response to questions concerning which specific townships and sections were included in the areas, Colonel Lee stated that this information, along with maps of the study areas, would be included in the Draft EIS.

153. (See p. 4-287.) The depth of the impact analysis was commensurate with the scale of the areas under consideration. The Air Force always expected to do more detailed investigation of the study areas after the EIS was published prior to selecting specific sites. At the scale that was used, some details could be overlooked, especially if the

information sources employed were not comprehensive or up-to-date. This possibility is one reason why public scoping meetings and public hearings on the Draft EIS are required by regulation. Also see Response No. G3, "Specific Siting Criteria."

154. (See p. 4-287.) The bounds of the study areas are the results of applying the site selection criteria, as described on pp. 2-9 and 2-10 of the Draft EIS. Also see Response No. G3, "Specific Siting Criteria."

155. (See p. 4-287.) The referenced newspaper article incorrectly linked the transmit antenna length (5,000 feet) with the receive antenna length (9,000 feet) in the context of a single antenna array. The Air Force has no plans to extend the length of the transmit antennas.

156. (See p. 4-287.) The presentation made by Colonel Lee and Dr. Everett during the first portion of the public hearing was intended to summarize the proposed Central Radar System and the associated environmental impacts. The question and answer period provided the attendees an opportunity to bring up specific concerns not addressed in the Draft EIS. A restricted airspace zone around the transmit site will be established with the Federal Aviation Administration, but provision to allow aerial crop spraying up to the boundary fence will be established on an individual basis as required.

157. (See p. 4-287.) See Response No. 147.

158. (See p. 4-287.) A worst-case estimate of ground conductivity was used in the Draft EIS to calculate RFR levels (see Section B). The Air Force will measure the ground conductivity in the selected transmit site and will measure the actual RFR when the CRS is tested to determine more accurately the proper distance for the exclusion fence and to ensure that the fence is correctly located.

159. (See p. 4-287.) The minimum required acreage was stated to make clear the amount of land that would actually be occupied. The amount of additional land that will be needed cannot be predicted because it depends on the location of the specific sites selected with respect to roads and to natural and man-made features that should be avoided, as well as on ownership patterns and the possible creation of uneconomic segments of farm land that the Air Force would purchase. See Response No. G3, "Land Area Requirements."

160. (See p. 4-287.) The engineering design of the CRS sites will use available information and experience to plan surface water flow on the sites. If particular problems arise after CRS construction, the Air Force will address those according to the circumstances. See Response No. G5.

161. (See p. 4-287.) The Air Force position has always been that any corrective action required to eliminate interference effects caused by operation of the OTH-B radar system will be done by the Air Force at no cost to the affected individual. Colonel Lee's comments have reflected that position. If television interference problems occurred, the Air Force would correct them, either by changing the OTH-B transmitting frequency, installing filters on the affected TV sets, or possibly changing the TV antenna. Also see Responses No. G9 and 7.

162. (See p. 4-287.) See Response No. G2, "Long-Term Effectiveness."

163. (See p. 4-316.) See Response No. 156.

164. (See p. 4-327.) The CRS transmit and receive sites each require a minimum of 2,400 acres, or about 4 sections, of land. The maximum amount of land required might be 4,000 acres, or 6 to 7 sections (see Response No. G2, "Land Area Requirements"). The system will not require as much as 32 sections.

165. (See p. 4-346.) The map of the Wheaton Southeast site has been revised to show the Mathias airstrip. (See the Errata.)

166. (See p. 4-351.) Governor Sheldon's farmstead is in the extreme southern border of the Amherst study area. Although the site is not now a recorded national or state registered historic property, it is a Historic Site Lead pending professional verification and evaluation. The Air Force will treat potential impacts on this site as described in Response No. 26.

167. (See p. 4-362.) About 50 people will be employed at the transmit site and a like number at the receive site. All but two or three of these people will be non-military civilians. About half of the staff will be operations and maintenance personnel hired by the contractor responsible for operating the system. The remainder will be security personnel. If the same approach that is used at the East Coast Radar System is used for the CRS, the security positions will be federal wage-grade civil-service jobs. Local residents will have an opportunity to fill these positions.

168. (See p. 4-370.) See Response No. G2.

169. (See p. 4-370.) The planned lifetime of the system specifically proposed is 20 years. Because advances in technology are to be expected, modifications to improve the performance of the system are likely as time passes.

170. (See p. 4-370.) The transmit and receive sites must be separated by 50 to 150 nm from one another to prevent the transmitters from interfering with reception of the signal reflected from the target (see p. 2-3 of the Draft EIS).

171. (See p. 4-370.) See Responses No. G3 and 154.

172. (See p. 4-370.) The specific locations selected for the transmit and receive sites will be selected considering operational and environmental factors, cost, and the ease of acquiring the land.

173. (See p. 4-370.) See Response No. G4.

174. (See p. 4-370.) See Response No. G4.

175. (See p. 4-370.) See Response No. G6.

176. (See p. 4-370.) Response No. 167 notes that CRS operation will have two general types of positions. One type will be a civil-service position, and an interested individual would apply in the usual manner. The other type of position will be related to OTH-B system maintenance. Staff for these positions will be hired by the system contractor, so interested individuals would apply to this contractor after one is selected. Jobs will also be available during the construction period; hiring will be done by the firms selected to supply goods and services.

177. (See p. 4-370.) The Air Force will monitor the radiated CRS beam during system testing and periodically during its operational life. This information will be available to the public.

178. (See p. 4-370.) The Environmental Protection Agency is considering several proposals for regulating public exposure (see Response No. 61). Even the most stringent proposed standard is higher than the RFR level expected outside the CRS exclusion fence. See Response No. 132 for remarks on compensation.

179. (See p. 4-370.) Pilots of aerial spraying aircraft will not spend enough time in the CRS beam to suffer unsafe exposure. Also see Response No. 156.

180. (See p. 4-370.) The use of an Operational Plan for RF Interference Avoidance is specifically intended to avoid disturbing other users of the HF frequency band. Changing environmental conditions do indeed require changes in the OTH-B transmitting frequency, but such changes will be made using the established interference avoidance procedures. The Air Force does not envision any circumstances that would require operating on frequencies that would directly result in interference effects. Also see Response No. G3.

181. (See p. 4-370.) See Response No. 18. See Responses No. 14 and 17 for information about the transmission lines.

182. (See p. 4-370.) See Response No. G2.

183. (See p. 4-392.) If the Thief River Falls study area is selected for the CRS, a receive site will be constructed there; the transmit site will be a great distance further south. Because only the transmit antennas radiate energy, the mobile radio system will suffer no effects from operation of the CRS.

184. (See p. 4-392.) The CRS receive site will not affect a cathodic pipeline protection system; OTH-B receive antennas do not emit RF energy. The CRS transmit site will not affect a cathodic protection system on a pipeline outside the exclusion fence.

185. (See p. 4-395.) The Air Force provided a preliminary response to these questions on October 22, 1986. A copy of this response is attached at the end of this section.

186. (See p. 4-400.) The Air Force appreciates the detailed observations provided in this letter. Detailed site-specific vegetation and wildlife data will be gathered and mitigation measures planned after the study areas have been selected. The information in this letter will be helpful in that regard.

187. (See p. 4-403.) These six questions are answered as follows: No, No, Yes, No, No, and No, respectively.

188. (See p. 4-403.) Each site will employ approximately 50 people. The range of the number of farmsteads that could be displaced at each site is estimated to be 1 to 6.

189. (See p. 4-403.) See Response No. G2.

190. (See p. 4-403.) The Air Force does not expect the CRS to cause interference when it begins operating. Nevertheless, it will take whatever actions are necessary to eliminate all interference problems identified by the public (see Response No. G9).

191. (See p. 4-403.) See Response No. G7 for a discussion of roads. Just as for roads, the number of drainage systems that would be disrupted depends on the specific site locations.

192. (See p. 4-403.) See Response No. 175.

193. (See p. 4-403.) These questions were answered in Section 4.5 of the Draft EIS.

194. (See p. 4-403.) The Air Force regrets the scheduling conflict that arose. The hearing in Grand Forks was scheduled without properly recognizing that Thief River Falls residents would be more likely to attend the hearing in North Dakota rather than the Minnesota hearing held in Wheaton two nights later. A separate hearing was subsequently held in Thief River Falls on November 20, 1986.

195. (See p. 4-403.) The purpose of the CRS is to detect and track aircraft and cruise missiles, not intercontinental ballistic missiles. The CRS and its companion systems will give many hours of warning against attack by long-range aircraft. (See Response No. G2.)

196. (See p. 4-436.) The comment quotes only a portion of the sentence on S-6 of the Draft EIS. The full sentence reads "In the few cases in which irreversible adverse effects of exposure were found, such effects were absent for average power densities below 1 mW/cm^2." The average power density outside the CRS exclusion fence will be about one-tenth of this value. Also see Response No. G8.

197. (See p. 4-436.) Appendix C, in part, examined the hazard to users of EEDs posed by the presence of the CRS. EEDs will not be used in the operation of the CRS. Therefore, the fact that lightning can discharge EEDs is not relevant.

198. (See p. 4-436.) The ERS and the CRS are similar in many respects. In particular, they are the same type of radar operating in the same radio bands in a similar fashion. The CRS will cover a larger area for 24 hours every day, but these and other differences are not crucial to understanding, estimating, or assessing the possible impacts of the CRS.

199. (See p. 4-436.) The statement is referring only to RF interference. Radios operating in the HF bands can be heard at great distances around the world, so interference is theoretically possible anywhere. Telecommunications and other electronic equipment is susceptible to far lower energy levels than humans. No danger to human health exists beyond the exclusion fence at the transmit site. Also see Response No. 36.

200. (See p. 4-439.) The symposium, in fact, was concerned with the potential bioeffects of high-voltage power transmission lines. Because the operating frequencies are very different, the symposium content is not relevant to OTH-B bioeffects issues.

201. (See p. 4-246.) Access to the CRS sites will use existing section roads as much as possible, with any new roads to the facilities departing from the nearest section road or state highway. The access roads cannot cross the areas within the exclusion fence without either interfering with the receive site operation or exposing vehicle occupants to RFR from the transmitters. As long as that rule is followed, the access roads may come from any point of the compass.

202. (See p. 4-288.) The Air Force response to questions on health effects at the transmit site is: beyond the boundary exclusion fence, there are no long-term adverse health effects due to RFR. See Responses No. G8 and 1.

203. (See p. 4-395.) The Air Force recognizes that individual property owners may experience an additional tax burden if a large amount of land is purchased for the CRS because the government would not pay taxes on that land. This shift in tax burden could be minimized or partially offset in several ways, for example, by leasing land (See Response No. G7) or by assisting school districts (See Response No. G8). A more specific response cannot be made until the exact locations of the four receive antennas have been determined.

204. (See p. 4-395.) This question cannot be answered until the antenna locations are determined and the details of specific road closings and road replacements are developed.

205. (See p. 4-395.) See the attachment to this section and Response No. G9.

206. (See p. 4-395.) See the attachment to this section and Response No. G9.

207. (See p. 4-395.) See the attachment to this section.

208. (See p. 4-395.) Specific road closings and new road construction cannot be determined until the CRS antenna locations are selected. Also see Response No. G7.

209. (See p. 4-395.) See the attachment to this section and Response No. G4, "Deactivation."

210. The proposed CRS, which operates in the HF (High Frequency) band, is the only type of radar system that can meet the mission requirements. No other projects or systems are planned for the land selected for the CRS. Also see Response No. G4, "Deactivation."

211. (See p. 4-395.) A non-conducting material would be used for the boundary fence around the antenna sites. Treated wood is being used at the East Coast Radar System.

212. (See p. 4-395.) The CRS land requirements have been determined based upon the mission requirements and system characteristics. The Air Force does not plan any expansion of the site areas.

213. (See p. 4-395.) The Air Force will lease the total land area, or portions thereof, according to the requests of the individual landowners. See Response No. G4.

214. (See p. 3-234.) In response to an expression of interest (see p. 4-366), the Air Force expanded the Amherst study area slightly to include property that may be available.

OMAHA DISTRICT

CORPS OF ENGINEERS

LAND ACQUISITION PROCEDURES

GLOSSARY

This pamphlet is intended to provide general information to property owners and others interested in the policies and procedures of the Government concerning the acquisition of real estate interests.

STEVEN G. WEST
COLONEL, CORPS OF ENGINEERS
DISTRICT ENGINEER
U. S. ARMY ENGINEER DISTRICT, OMAHA

1. DETERMINATIONS OF VALUE:

The Corps of Engineers intends to pay each owner a price for his property which is just and reasonable, consistent with its authorities from Congress and with guidelines set forth in Federal Court decisions. In furtherance thereof, but only as a guide to the Corps of Engineers, appraisal of the property will be made by a professionally qualified appraiser familiar with local market conditions in the vicinity of the property to be appraised. The appraiser may be an employee of the Corps of Engineers or a private appraiser with whom the Corps of Engineers has contracted. Owners or their representatives will be contacted by these appraisers and invited to accompany them during their inspections of the property. Landowners are encouraged to point out to the appraiser anything that they feel may have a contributory value to the property. All factors bearing upon values within the scope of law will be given full consideration in preparation of these appraisals. The price to be paid for the acquisition of the property, however, will be the amount either as mutually agreed upon as the result of purchase negotiations or the sum determined by the local United States District Court under eminent domain proceedings, as hereinafter explained.

2. ACQUISITION BY PURCHASE:

It is the policy of the Corps of Engineers to acquire title to project land expeditiously by purchase through negotiations. Negotiations will be conducted generally the same as between private parties. Before the initiation of negotiations, the Corps of Engineers will establish an amount which it believes to be just compensation for the property and will make an offer to acquire the property for the full amount so established. In no event will such amount be less than the approved appraisal of the fair market value of such property. The Corps will provide the owner with a written statement of, and summary of the basis for, the amount established as just compensation, including where appropriate a separate statement showing the amount for damages to his remaining land. The opinions of owners will be given full consideration in all negotiations. When an agreement as to purchase price is reached, the owner will be requested to execute an offer to sell, which will include all the terms and conditions of the sale. When accepted and executed by the Government, this offer forms a contract of sale.

It usually takes less than 90 days from the date an offer is accepted until the check is delivered, provided the title is clear.

If the acquisition of only a part of a property would leave its owner with an uneconomic remnant, the Corps will offer to acquire the entire property.

After payment of the purchase price or deposit in court of funds to satisfy the award of compensation in an eminent domain proceeding to acquire the real property, the Corps will reimburse the owner to the extent deemed fair and reasonable, for expenses he necessarily incurred for (1) recording fees, transfer taxes, and similar expenses incidental to transferring title to the property to the United States, (2) penalty costs for prepayment of any preexisting recorded mortgage entered into in good faith encumbering such real property, and (3) pro rata portion of real property taxes allocable to a period subsequent to the date of vesting title in the United States, or the effective date of possession of the property by the United States, whichever is the earlier.

3. EMINENT DOMAIN ACQUISITION:

As stated before, it is the policy of the Government to purchase rights required in the property whenever possible. Under no circumstances is an owner compelled to sign an offer to sell. However, if a mutually satisfactory agreement cannot be reached between the owner and the Government after a reasonable period of negotiations, the Government will have no recourse but to acquire the property under eminent domain proceedings filed in the local United States District Court, in order to allow a judge or jury to determine just compensation for the property to be acquired. Offers and counteroffers by the owner and the Government during purchase negotiations will not be binding in such proceedings, on either the owner or the Government.

In the event of such eminent domain proceedings, the Government will deposit in the Registry of the Court the sum it estimates to be just compensation for the acquisition of the property. The Court will permit the owner to withdraw nearly all of the amount deposited, provided the owner's title is clear. The amount which may be withdrawn is discretionary with the Court. The withdrawal does not in any way prejudice the owner's right to go ahead with his claim for more money than the sum deposited. Inquiries about withdrawals should be made to the local United States Attorney who will represent the Government in the eminent domain proceedings.

Should the owner and the Government be unable to agree by stipulation in the eminent domain proceedings to a mutually satisfactory settlement, it will be necessary that any matters of dispute be determined by a trial in these proceedings. The trial will be conducted in accordance with the established rules and procedures of such Court. No attempt is made here to relate such rules and procedures. All parties will be permitted to present evidence to the Court for the purpose of supporting their views as to the value of the property acquired. The Court or jury will determine the compensation to be paid by the Government for the property.

4. TITLE CLEARANCE:

The law requires that the title to an owner's land be approved before it can be bought by the Government. If defects in the title are found and they can't be taken care of otherwise, the Government cannot pay the owner immediately for the property, but will then be required to file eminent domain proceedings in order to clear such defects in the title. When such proceedings are instituted only for purpose of clearing the title, there usually is little for the owner to do other than to cooperate with the United States Attorney to the extent that he can in correcting the defects found to exist.

5. RESERVATION OF IMPROVEMENTS AND CROPS:

Except in the few instances where the Government needs particular improvements in connection with the project, the owner may salvage the buildings or improvements on the property. He is not required to do so. The agreed salvage price will be deducted from the Government's payment for lands acquired. The improvements must be removed from the land within a specified period. The reservation of the right to remove improvements will be included as an item in the contract for the purchase of the property or in a stipulation in eminent domain proceedings, as appropriate.

Owners will be encouraged to reserve the right to remove growing crops except in rare cases where there is a probability that possession of the land will be required prior to the harvest season. If this occurs, payments will be made for the fair value of the growing crops as they exist.

6. POSSESSION OF LANDS:

Owners and tenants of land utilized for agricultural or related purposes will be allowed to remain on the property, if consistent with project requirements, until the crops have been harvested. It is anticipated there will be no instance where scheduling will require displacement of persons or vacation less than 90 days after purchase negotiations are initiated.

7. UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970:

The purpose of this Act is to provide for uniform and equitable treatment of persons displaced from their homes, businesses or ranches by Federal and federally assisted programs and to establish uniform land acquisition policies for Federal and federally assisted programs. In carrying out the responsibilities of land acquisition by the Government, individuals and families at times must move from their dwellings, ranches and businesses and relocate elsewhere. This may cause serious

problems to the people involved. It is the earnest desire of the Corps of Engineers to reduce to a minimum the inconveniences and problems resulting from its real estate activities. Public Law 91-646, which was passed by the Congress and signed into law by the President on January 2, 1971, eliminates many of the existing differences in relocation benefits incidental to acquiring real estate by various Federal agencies. This law provides for furnishing relocation assistance to people who will be displaced by a project which is partly or totally financed by Federal funds and authorizes many new and important benefits to them. The kinds of payments authorized to be considered pursuant to Public Law 91-646, among others, are:

Moving and Related Expenses. Any displaced person, business or ranch operation may be eligible to be reimbursed for actual reasonable costs of moving from the acquired property for a distance of not to exceed 50 miles, except where the displacing agency determines that relocation beyond the 50-mile area is justified. Reimbursable items include dismantling, disconnecting, crating, loading, transporting, unloading, temporary storage, reinstalling and insuring. Within certain limitations, a displaced person, business or ranch operation may elect to apply for a fixed amount rather than prove actual expenses incurred in the move. A person displaced from a dwelling may elect to receive a moving expenses allowance, determined according to a schedule, not to exceed $300.00, plus a dislocation allowance of $200.00. A person who is displaced from his business or ranch operation may elect to receive a fixed payment in an amount equal to the average net annual earnings of the business or ranch operation and such payment shall not be less than $2,500.00 nor more than $10,000.00. Such payment can only be made as to a business after it is determined that the business cannot be relocated without a substantial loss of existing patronage and that such business is not part of a commercial enterprise having at least one other establishment not being acquired which is engaged in the same or similar business. Where only part of a ranch is acquired, payment will be made only if it is determined that the ranch meets the definition of a ranch operation prior to the acquisition and that the property remaining after the acquisition is no longer an economic unit.

Supplemental Housing Payment for Homeowners. In addition to being paid for the property acquired by the Government and the reasonable expenses of moving, a homeowner who is displaced by the program or project MAY be eligible under the law for a supplemental housing payment if necessary to assist in the purchase and occupancy of a comparable, decent, safe and sanitary house; provided the person has owned and occupied the present home not less than 180 days prior to initiation of negotiations to acquire the property.

Supplemental Housing Payments for Tenants and Certain Others. Tenants and those homeowners who have owned their homes less than 180 days but more than 90 days, must have lawfully occupied their dwellings for not less than 90 days prior to initiation of negotiations to acquire the property in order to be eligible to receive a supplemental or additional amount in excess

of the rent presently being paid or would have paid necessary to enable the person to lease or rent a decent, safe and sanitary dwelling adequate for his needs for a period of not to exceed four years and the supplemental amount cannot exceed $4,000.00. Should the person elect to buy a home instead of renting, he could use the supplemental amount determined, again limited to $4,000.00, to apply toward the down payment and closing costs, except that the person must in this case equally match each dollar in excess of the first $2,000.00 of any supplemental payment in order to be entitled to the maximum supplemental payment determined to be applicable.

Additional information regarding the provisions of this law is contained in an explanatory brochure, copies of which are available at this time.

8. INCOME TAX PROVISIONS:

Responsibility for the administration of the Federal Income Tax Laws rests with the Internal Revenue Service. As presently written, these laws contain special provisions with respect to gains derived from the sale of real estate, including sales made to the Government. Any questions concerning the application of these provisions should be referred to the appropriate District Director of the local office of the Internal Revenue Service.

9. CEMETERIES:

If any owner or tenant knows of any private burial or cemetery on their property, please inform the District Engineer so that suitable arrangements can be made with next-of-kin to relocate the remains or take other appropriate measures to preserve the remains in place.

10. CORPS OF ENGINEERS ASSISTANCE TO OWNERS:

The District Engineer and his staff assigned to land acquisition are always desirous of providing every assistance possible for the benefit of owners and their tenants. All affected owners and tenants are urged to contact the Chief, Real Estate Division, at the addrress listed below for any assistance they may desire in regard to their particular situation:

Chief, Real Estate Division
Omaha District, Corps of Engineers
1612 U.S. Post Office & Courthouse
Omaha, Nebraska 68102-4910
Telephone: (402) 221-4321

11. RIVERDALE REAL ESTATE OFFICE:

The negotiations for the acquisition of lands which would comprise the Over-The-Horizon Backscatter Radar Program in the three state area of Minnesota, North Dakota and South Dakota will be conducted by personnel of the Riverdale Office. The Chief of the office is: Mrs. Jacquilynn P. Bratz.

The address is as follows:

Riverdale Real Estate Office
U.S. Army Corps of Engineers
Administration Building
Riverdale, ND 58565
Telephone : (701) 654-7411, extention 31

MEMORANDUM FOR RECORD 22 October 1986

SUBJECT: Inquiries on Central Radar System

We recently received a letter dated September 30, 1986 from Donavon D. Dyrdal, Thief River Falls, Minnesota. The letter requests answers to 12 questions regarding the selection and land use for the proposed Central Radar System. An area west of Thief River Falls is one of five candidate study areas being considered as a receive site for the OTH-B radar system.

Mr Dyrdal's letter will be included in the Final EIS along with answers to the specific questions. In the interim, the attached information sheet provides answers to the majority of those questions. It is being provided to Congressman Strangeland's office in response to their request for an early response on several of the more significant concerns.

James A. Lee

JAMES A. LEE, Colonel, USAF
DIRECTOR, OTH Radar Systems

1 Atch
Receive Site Information

RECEIVE SITE SELECTION AND LAND USE

As described in the draft Environmental Impact Statement (EIS), the final receive site will have four antennas. Each antenna will be on a sector of land about 2 miles long by 1/2 mile deep. Each sector will be totally enclosed by an exclusion fence of treated wood or other non-conductive material.

Outside of the exclusion fence, there should be no interference or restrictions on the land use. Normal recreational use of the land outside of the fenced sectors will be allowed, to include hunting and use of firearms.

Similarly, there will be no restrictions on the use of high tech farming practices, for example, closed circuit TV, radio-controlled equipment, laser beams or other electronic monitoring devices. Equally important, the receive site will not cause any electromagnetic interference with these devices or practices.

The only area of potential concern is any extensive use of arc welding directly in front of the receive antenna. While the exclusion fence provides about 1/2 mile separation from the antenna, it may be necessary to keep arc welding operations from approaching any closer than one mile from the antenna, that is, an additional 1/2 mile beyond the fence.

Crop spraying in the area of the receive site would also be unaffected. Aerial spraying aircraft would be able to fly up to the fenced areas.

The Record of Decision to be made by the Air Force following publication of the Final EIS will be to select a study area for the transmit site and a study area for the receive site. Additional environmental work together with meetings and discussions with landowners, local and state officials, will be used to select the specific location of the receive antenna sectors within the selected receive site study area. We envision additional community meetings as well as discussions with interested landowners as we attempt to narrow down to a single specific location for the four antennas. The selection of the specific antenna location within the study area would not be made until well into 1988 at the earliest.

The environmental impact analysis process that the Air Force is following is specifically for the proposed Central Radar System as described in the draft Environmental Impact Statement. The process is one which is established by law and which all federal agencies must also follow before undertaking any action which could have a major environmental impact. Land which was identified and selected for the OTH-B could not be simply diverted for an alternate use by another federal agency. Similarly, the site could not be diverted for use for some other type of radar system different from the system and concept described in the Central Radar System EIS. The purchase or lease of land for the transmit and receive site will not occur until Congress approves the Central Radar System by authorizing and appropriating funds for the program.

The Draft EIS refers to a 20-year life for the Central Radar System. This is a minimum time period. If the need for an OTH-B surveillance system continues beyond that time, the proposed OTH-B system will be able to continue meeting that need. If and when the Central Radar System is no longer needed, any proposed uses of the land

involving potential environmental impacts would again require a complete environmental impact analysis process. The public would again be involved in that process as they have been in this decision process.

6 ERRATA FOR PART I

The following errata pertain to the Draft EIS issued in August, 1986. They include changes resulting from responding to submitted comments, as well as from discovery of typographic and other copy errors. Fragmentary paragraphs at the top of a page are counted as paragraph 1. The Summary has been revised and reprinted in this volume.

Section 2

p. 2-11 para. 5, line 2: change 5 to 4.

p. 2-12 Figure 2-6: the town identified as Blanchard is actually Hillsboro.

p. 2-14 Table 2-1 has been revised to include township names and is attached.

pp. 2-17 through 2-25 These figures have been revised and are attached.

p. 2-31 para. 1, line 8: "inhibit" should be "inhabit."

p. 2-33 para. 3, line 6: "exlusion" should be "exclusion."

p. 2-33 para. 3, line 7: change "breaks" to "belts."

Section 3

p. 3-15 para. 1, line 2: "acquifer" should be "aquifer."

p. 3-18 para. 2: delete.

p. 3-18 para. 3: replace with:

"The town of Amherst obtains municipal water from a well 950 feet deep that taps the Dakota aquifer. The water exceeds federal drinking water standards for total dissolved solids, sulfate, and chloride (Missouri River Basin Commission, 1980; API, 1983)."

p. 3-18 para. 5: replace with:

"The town of Andover obtains municipal water from relatively shallow wells that tap the glacial till. This supply is less mineralized than the supplies that tap the deeper Dakota formation. However, the Andover supply exceeds the federal drinking water standards for total dissolved solids and sulfate (API, 1983)."

"The communities of Langford, Pierpont, and Claremont are bulk users of the B.D.M. (Brown, Day, Marshall) Rural Water System, Inc., as are hundreds of homes and farms in and around these communities. Two wells, approximately 200 feet deep, which are northeast of the city of Britton, provide water to the system. Treatment of the water in the BDM system consists of the removal of manganese and iron, and the addition of chlorine and fluorine."

p. 3-23 para. 2, line 2: change 8,000 to 6,700.

p. 3-24 para. 1, line 5: change 8,800 to 4,300.

p. 3-25 para. 5: add following last sentence: "Further investigations in the study area could reveal additional occurrences of these species."

p. 3-25 para. 3, line 9: "and" should be "are."

p. 3-26 para. 2, line 1: "Weaton" should be "Wheaton."

p. 3-29 para. 3, sent. 2: replace with:

"Migratory birds pass through this region in spring and late summer/early fall traveling along the eastern edge of the Central Flyway (Dakota areas) and the western edge of the Mississippi Flyway (Minnesota areas), major north-south arteries for migration in North America."

p. 3-29 Section 3.5.2.1: change subsection title to: "Migratory Flyway;"

p. 3-29 para. 4, sent. 2: replace with:

"The breeding grounds extend from the Nebraska "sandhills" in northern Nebraska north to the Siberian tundra and west into the Mississippi Flyway states of Minnesota, Wisconsin, and Iowa."

p. 3-29 para. 1, sent. 4: replace "Central Flyway" with "Central and Mississippi Flyways."

p. 3-29 para. 1, sent. 5: replace "Central Flyway" with "these flyways."

p. 3-31 para. 2, sent. 1: change "flyway" to "flyways."

p. 3-31 para. 2, sent. 2: change "flyway" to Central Flyway."

p. 3-32 Section 3.5.2.4: replace title with: "Nongame Bird Populations."

p. 3-32 para. 1, sent. 1: replace "nonmigratory" with "nongame."

p. 3-32 para. 1, sent. 2: replace "local" with "these."

p. 3-32 para. 1, sent. 3: delete "local."

p. 3-34 para. 1, last sentence: insert "In rare occasions," in front of "the Piping Plover."

p. 3-35 para. 1: insert following the paragraph:

"Other species identified by the Minnesota Natural Heritage Program as having potential occurrence near the study area include:

Loggerhead Shrike (Lanius ludovicianus) - state threatened
Upland Sandpiper (Bartramia longicauda) - state special concern
Forester's Tern (Sterna forster) - state special concern
Short Eared Owl (Asio flammeus) - state special concern
American Bittern (Botaurus lentiginosus) - state special concern
Prairie Vole (Microtus ochrogaster) - state special concern
Spotted Skunk (Spilogale putorius) - state special concern
Western Hognose Snake (Heterodon nascius) - state special concern
Snapping Turtle (Chelydra serpentina) - state special concern"

p. 3-37 para. 1, sent. 1: replace "these birds have been known to nest in the area and have lower level flight characteristics than waterfowl" with "these birds are residents of the area and are not simply migrating through at high levels."

p. 3-39 para. 7, sent. 2: insert following the sentence:

"More local, major air pollution sources are heating plants in Grand Forks, Fargo, and Wahpeton, North Dakota, all more than 20 miles from the nearest study area."

p. 3-39 para. 7, sent. 3: change "Another" to "A;" delete "also."

p. 3-39 para. 7, sent. 4-5: replace with:

"These plants, which use fuel oil, coal, or natural gas, are categorized as major sources. They must operate under permits issued by the North Dakota Department of Health. No significant air pollution problems have arisen in eastern North Dakota, and all NAAQS have been met in this region."

p. 3-42 Table 3-4: "Trail" should be "Traill."

p. 3-45 para. 2, line 13: "reflect" should be "reflects."

p. 3-56 para. 3, line 7: delete "this."

p. 3-62 para. 1, line 4: "Sec" should be "Sections."

Section 4

p. 4-2 para. 5, line 6: "al;so" should be "also."

p. 4-5 para. 5, line 3: "spils" should be "spills."

p. 4-6 para. 4, line 11: "wuld" should be "would."

p. 4-8 Table 4-2, footnote 3: "in" should be "on."

p. 4-13 para. 2, line 1: change "is" to "are."

p. 4-17 para. 2, line 8: input "and" following "antennas."

p. 4-17 para. 5, line 3: change "transmit and receive sites" to "transmit or receive site."

p. 4-24 para. 1, line 8: "19,000 should be "9,000."

p. 4-31 para. 5, line 6: change "area" to "areas."

p. 4-35 para. 1, line 3: "informatni" should be "information."

p. 4-36 para. 7,, line 1: change "2,400+" to "2,400 or more."

p. 4-38 para. 4, line 9: "informatin" should be "information."

p. 4-41 para. 4, line 4: "areas" should be "area."

p. 4-42 para. 4, line 9: insert "less than" following the word "be."

p. 4-45 para. 4: insert following the paragraph:

"In addition, the power density just outside the exclusion fence will also be lower than the most stringent option recently proposed by the EPA for controlling public exposure to RFR (see Section 4.14.1.3).

"Furthermore, the electric field associated with a power density of 0.02 mW/cm^2 is about 9 V/m. This is well below even the perception threshold (caused by localized warming) when considering potential hazards from shock and burns at the lower frequency end of the OTH-B operational band."

p. 4-46 para. 3, line 14: "trasmitters" should be "transmitters."

p. 4-49 para. 4, line 12: delete hyphen and fill line.

p. 4-61 para. 5, line 1: "force" should be "Force."

p. 4-61 last para.: delete last sentence and insert following the paragraph,

"On July 30, 1986, the Environmental Protection Agency (EPA) announced four alternative approaches to limit the public's exposure to RFR (51 FR 27317-27339). Three of the approaches involve regulation. For frequencies above 3 MHz (which includes all of the OTH-B frequencies), alternatives 1, 2, and 3 would limit whole-body SARs to 0.04, 0.08, and 0.4 W/kg, respectively. In the fourth option, information and technical assistance programs would be conducted in lieu of adopting federal regulations.

"In the regulatory options, whole-body SAR would be directly related to frequency-dependent, incident power-density values. The Federal Register notice does not provide details on a proposed mathematical relationship between far-field power density and frequency that would specify the power density so as to limit the SAR to the values proposed in the three alternatives. The relationship might be the one employed in either the 1982 ANSI standard or the 1984 IRPA interim guidelines.

"If the ANSI standard is used, the most stringent option (0.04 W/kg) would limit environmental exposure to 3.6 mW/cm^2 at 5 MHz, falling to about 0.11 mW/cm^2 at 28 MHz. If the IRPA interim guidelines are used, the SAR values would imply limits of 0.2 mW/cm^2 at 5 MHz, falling to 0.1 mW/cm^2 at 28 MHz.

"Section 4.13.1.3 indicates that just outside an exclusion fence 4,000 feet from the OTH-B array, the power density would not exceed 0.02 mW/cm^2. Thus, even if the most stringent EPA alternative was adopted, public exposure to RFR from the OTH-B system would be lower than the permitted level."

p. 4-71 para. 3, sent. 1-2: should read, "Outside the exclusion fence, the average incident power densities will be 0.02 mW/cm^2 or less. The mean SARs and temperature rises would therefore be one-fiftieth of those cited above."

p. 4-75 para. 3: insert following paragraph 3,

"4.14.2.5 Shock and Burns

"There has been recent interest in identifying hazards from RFR in the 10-kHz to 3-MHz and somewhat higher frequency range. Such relatively low-frequency fields can charge capacitive objects such as ungrounded vehicles, fencing, metal roofing, and other ungrounded conductive objects such as the human body. When a grounded human makes contact with such a charged body, or when a charged human (initially ungrounded) makes contact with a grounded object, discharge current can flow, and electric shocks or RF burns are possible. Even when shocks or burns do not occur, excessively high, localized SAR can occur in the hands, wrists, or ankles.

"The threshold current for RFR burns occurring on the finger due to contact with a conducting surface is approximately 200 mA, and the threshold SAR for vigorous and possibly damaging local heating (based on diathermy treatment experience) is 50 to 120 W/kg. The highest current through the ankle of an adult human observed in the course of experiments at about 40 MHz was 12.7 mA/(V/m). At the 1982 ANSI standard of 1 mW/cm^2, this is equivalent to 780 mA. This, in turn, would give rise to an SAR of 243 W/kg in the ankles. ANSI specifies a maximum partial-body SAR of 8 W/kg. To meet this value, the power-density exposure would have to be reduced to approximately 0.13 mW/cm^2.

"Considerable experimental work has already been carried out by two independent research laboratories under Air Force sponsorship to define the potential hazards for RFR shock and burns better. However, additional work in these important areas is required. Preliminary indications are that the revision of the 1982 ANSI safety standard (publication of which is anticipated in 1987) will incorporate provisions for protecting against shock and burns.

"In the OTH-B system, exposures outside the exclusion fence will be limited to less than 1 mW/cm^2. At that level, the likelihood of hazard from shock is almost nonexistent because direct stimulation of nervous tissue cannot occur at frequencies greater than approximately 200 kHz. The likelihood of RFR burns is also very small. Finally, as indicated above, at exposure levels of less than about 0.13 mW/cm^2 (which will be the case outside the CRS exclusion fence), the highest localized SARs induced in the hands, feet, or ankles of a human will be less than those specified in the existing ANSI standard."

Section 5

p. 5-2 para. 8, line 1: "B.S.C.D." should be "B.S.C.E."

Appendix C

p. C-22 Table C-3 has been revised as follows:

Table C-3

AMATEUR RADIO BANDS NEAR THE RADAR'S FREQUENCIES

Common Terminology	Frequency Band (MHz)
40-m band	7.0 - 7.3
30-m band	10.1 - 10.15
20-m band	14.0 - 14.35
15-m band	21.0 - 21.45
12-m band	24.89 - 24.99
10-m band	28.0 - 29.7

Table 2-1

CRS STUDY REGIONS AND AREAS

North Dakota-North

Dahlen (Receive)

Township	Range	Sections	Township Name
T. 153 N.	R. 56 W.	1-18	Plymouth
T. 153 N.	R. 57 W.	1, 2, and 11-14	Nash
T. 154 N.	R. 56 W.	5-8 and 13-36	Elkmount
T. 154 N.	R. 57 W.	25, 26, 35, and 36	Dahlen
T. 155 N.	R. 56 W.	5-8, 17-20, and 29-32	Medford
T. 155 N.	R. 57 W.	1-3, 8-17, 20-26, and 36	Cleveland

Goose River (Receive)

Township	Range	Sections	
T. 148 N.	R. 55 W.	5 and 6	Beaumont
T. 148 N.	R. 56 W.	1-5	Westfield
T. 149 N.	R. 55 W.	16-21 and 27-34	Lind
T. 149 N.	R. 56 W.	2-11, 13-29, and 32-36	Loretta
T. 149 N.	R. 57 W.	1-5 and 8-12	Ora
T. 150 N.	R. 55 W.	4-9 and 17-19	Grace
T. 150 N.	R. 56 W.	1, 2, and 7-35	Logan Center
T. 150 N.	R. 57 W.	1, 2, 9-17, 20-29, and 32-36	Rugh
T. 151 N.	R. 55 W.	31-33	Larimore

North Dakota-South

Galesburg (Receive)

Township	Range	Sections	
T. 143 N.	R. 53 W.	4-9	Dows
T. 143 N.	R. 54 W.	1-3, 11, and 12	Page
T. 144 N.	R. 53 W.	4-9, 16-21, and 28-33	Galesburg
T. 144 N.	R. 54 W.	1-17, 20-28, and 33-36	Broadlawn
T. 144 N.	R. 55 W.	1	Colgate
T. 145 N.	R. 53 W.	7, 15-22, and 27-34	Norman
T. 145 N.	R. 54 W.	1-3, 9-17, 20-29, and 32-36	Edendale

Table 2-1 (Continued)

Blanchard (Receive)

Township	Range	Sections	Township Name
T. 143 N.	R. 51 W.	2-11	Bell
T. 143 N.	R. 52 W.	1-4 and 9-12	Hunter
T. 144 N.	R. 51 W.	4-10, 15-22, and 27-35	Bohnsack
T. 144 N.	R. 52 W.	1, 12-15, 22-28, and 33-36	Greenfield
T. 145 N.	R. 51 W.	4-9, 16-21, and 27-34	Bloomfield

Minnesota-North

Thief River Falls (Receive)

Township	Range	Sections	Township Name
T. 152 N.	R. 45 W.	1-10	Polk Center
T. 152 N.	R. 46 W.	1-12	Belgium
T. 152 N.	R. 47 W.	1 and 12	Euclid
T. 153 N.	R. 44 W.	3-10, 15-22, and 27-34	Sanders
T. 153 N.	R. 45 W.	All	Bray
T. 153 N.	R. 46 W.	All	Brandt
T. 153 N.	R. 47 W.	1, 12, 13, 24, 25, and 36	Angus
T. 154 N.	R. 44 W.	31-34	Norden
T. 154 N.	R. 45 W.	7-11, 14-23, and 26-36	Numedal
T. 154 N.	R. 46 W.	7-36	Helgeland
T. 154 N.	R. 47 W.	12, 13, 24, 25, and 36	Brislet

Minnesota-South

Wheaton North (Transmit)

Township	Range	Sections	
T. 128 N.	R. 45 W.	5-8, 17, 18, and 20	Redpath
T. 128 N.	R. 46 W.	1-3	Monson
T. 129 N.	R. 45 W.	5-8, 16-21, and 28-33	Tintah
T. 129 N.	R. 46 W.	1, 11-15, 22-27, and 34-36	Taylor

Table 2-1 (Concluded)

Wheaton Southeast (Transmit)

Township	Range	Sections	Township Name
T. 125 N.	R. 45 W.	1-4 and 9-11	Leonardsville
T. 126 N.	R. 45 W.	16, 21-23, 25-28, and 33-36	Dollymount

Wheaton Southwest (Transmit)

Township	Range	Sections	
T. 125 N.	R. 47 W.	3-10	Parnell
T. 125 N.	R. 48 W.	1, 2, 11, and 12	Arthur
T. 126 N.	R. 47 W.	4-10, 15-22, and 27-34	Walls
T. 126 N.	R. 48 W.	12-14, 14, 23-26, 35, and 36	Windsor

South Dakota

Amherst (Transmit)

Township	Range	Sections	
T. 123 N.	R. 59 W.	1 and 2	Andover
T. 124 N.	R. 59 W.	1-6, 8-16, 22-27, and 34-36	Framington
T. 125 N.	R. 59 W.	All	Newport
T. 125 N.	R. 60 W.	1, 12, 13, 24, 25, and 36	Claremont
T. 126 N.	R. 59 W.	All	Weston
T. 126 N.	R. 60 W.	1, 12, 13, 24, 25, and 36	South Detroit
T. 127 N.	R. 59 W.	4-9, 16-21, and 25-36	Stena
T. 127 N.	R. 60 W.	1, 12, 13, 24, 25, and 36	North Detroit
T. 128 N.	R. 59 W.	16-21 and 28-33	Dayton
T. 128 N.	R. 60 W.	13, 24, 25, and 36	Portage

Grand Forks Air Force Base (Operations Center)

Township	Range	Sections
T. 152 N.	R. 53 W.	11, 14, 23-27, and 34-36

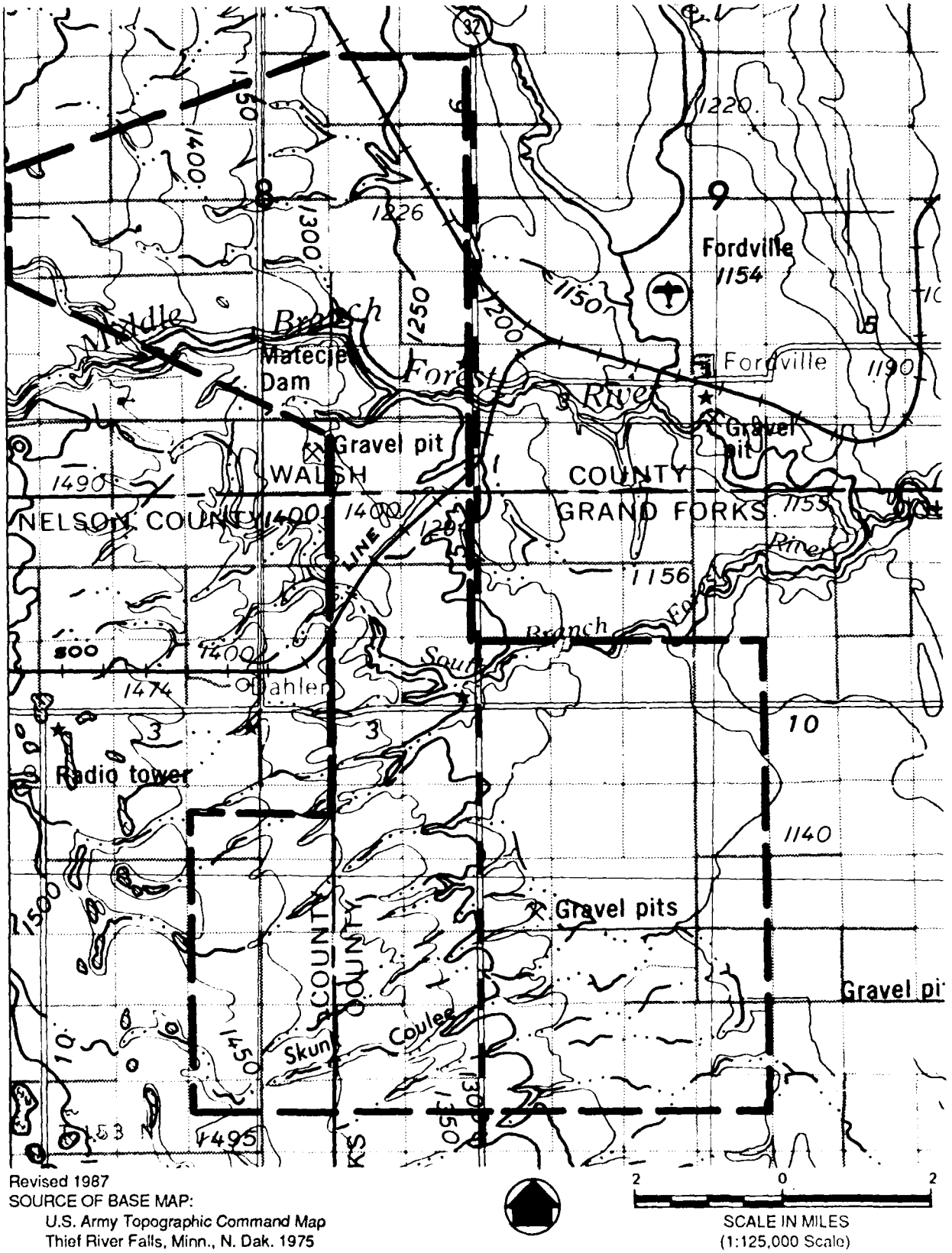
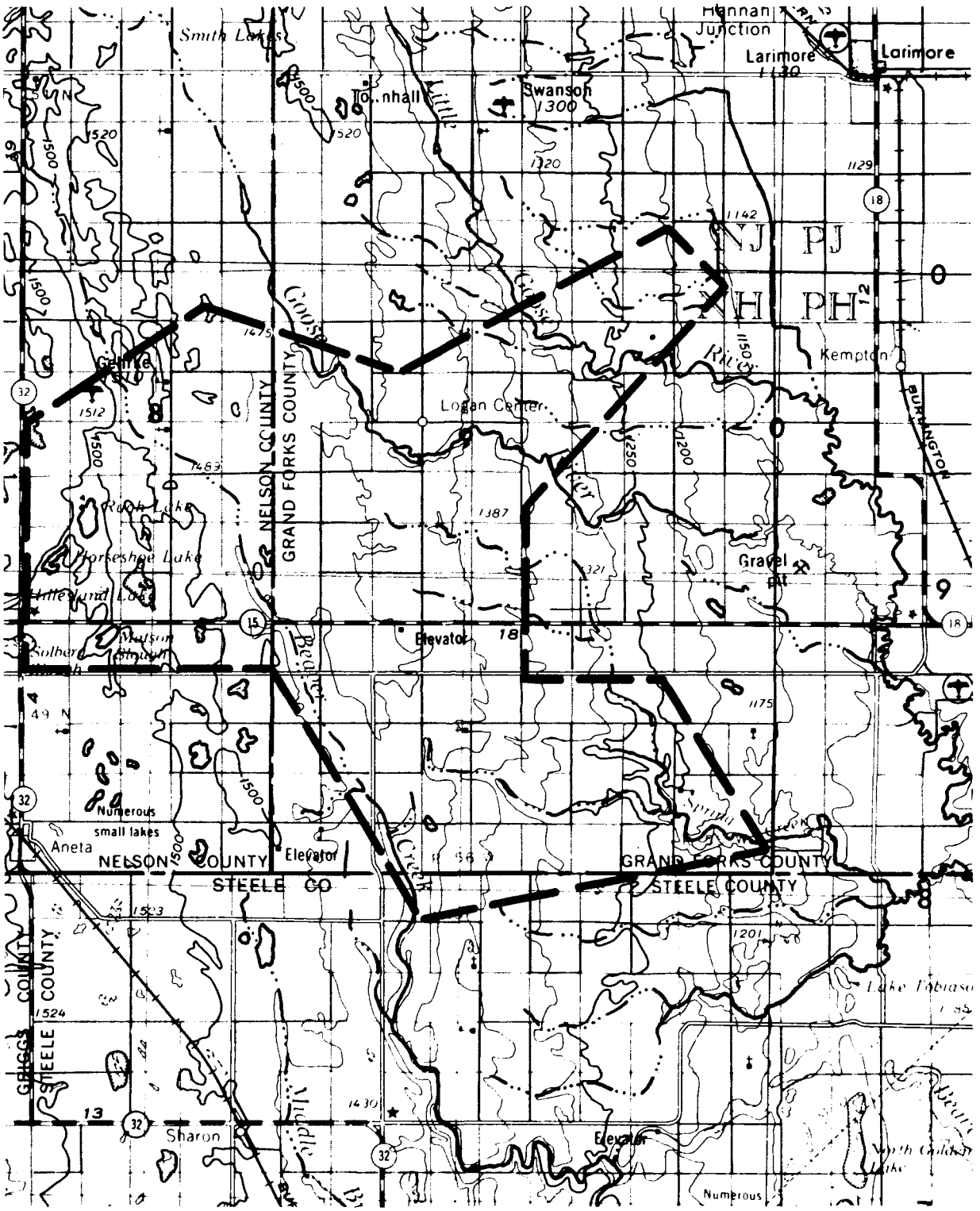


FIGURE 2-7 DAHLEN STUDY AREA



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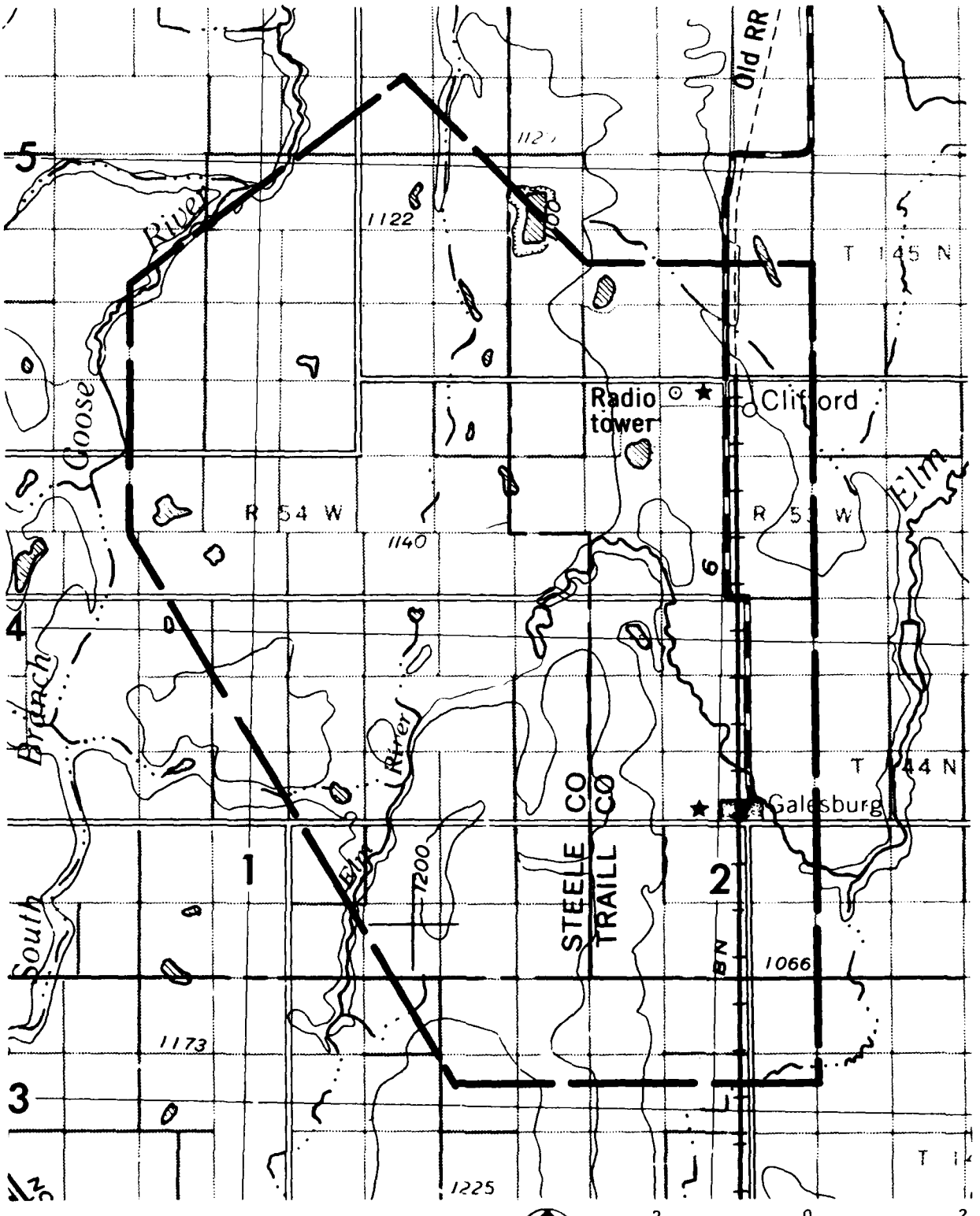
SOURCE OF BASE MAP:
U.S. Army Topographic Command Map
Grand Forks, N. Dak., Minn. 1975

FIGURE 2-8 GOOSE RIVER STUDY AREA



Revised 1987
SOURCE OF BASE MAP:
U.S. Army Topographic Command Map
Grand Forks, N. Dak., Minn. 1975

2 0 2
SCALE IN MILES
(1:125,000 Scale)

FIGURE 2-9 GALESBURG STUDY AREA

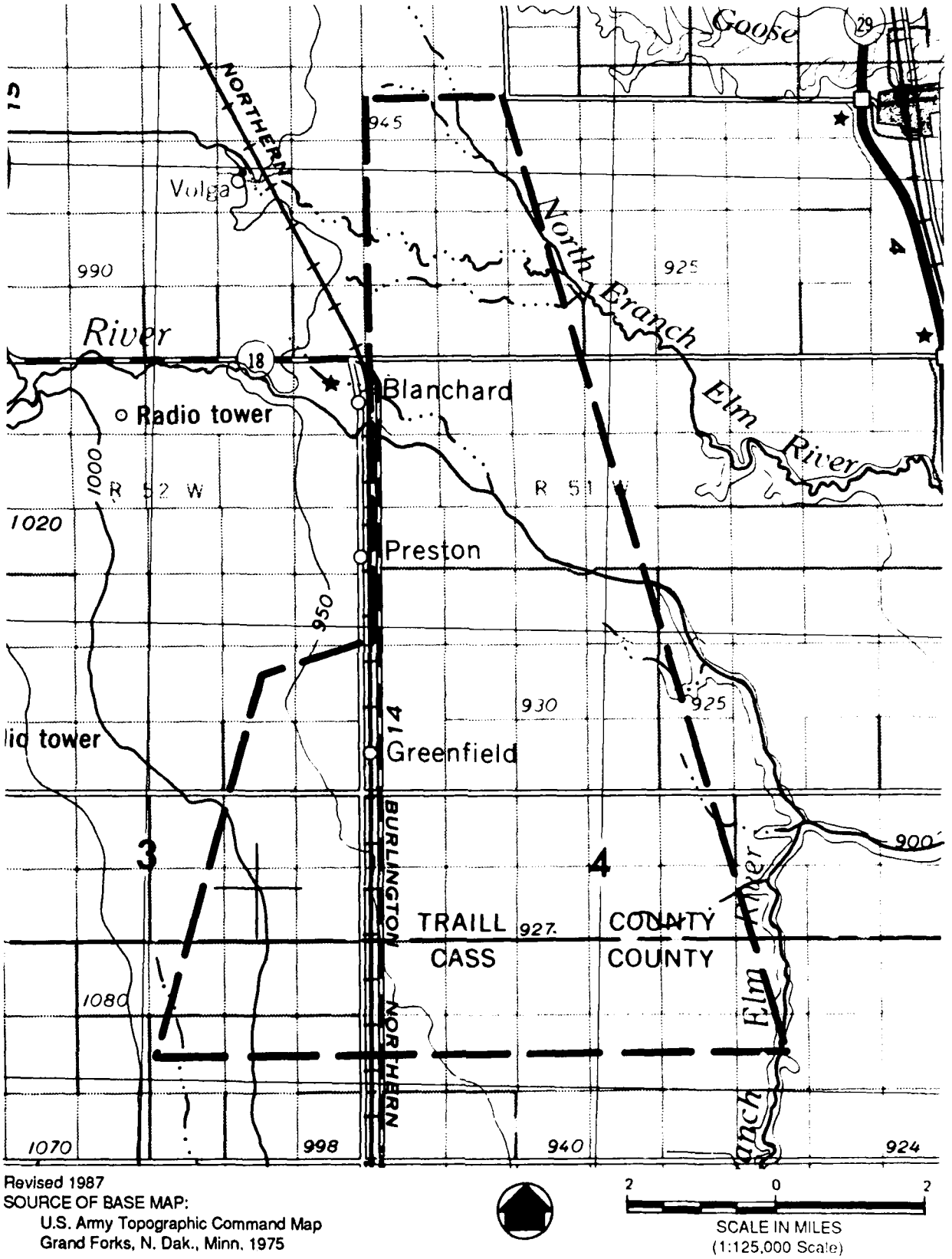
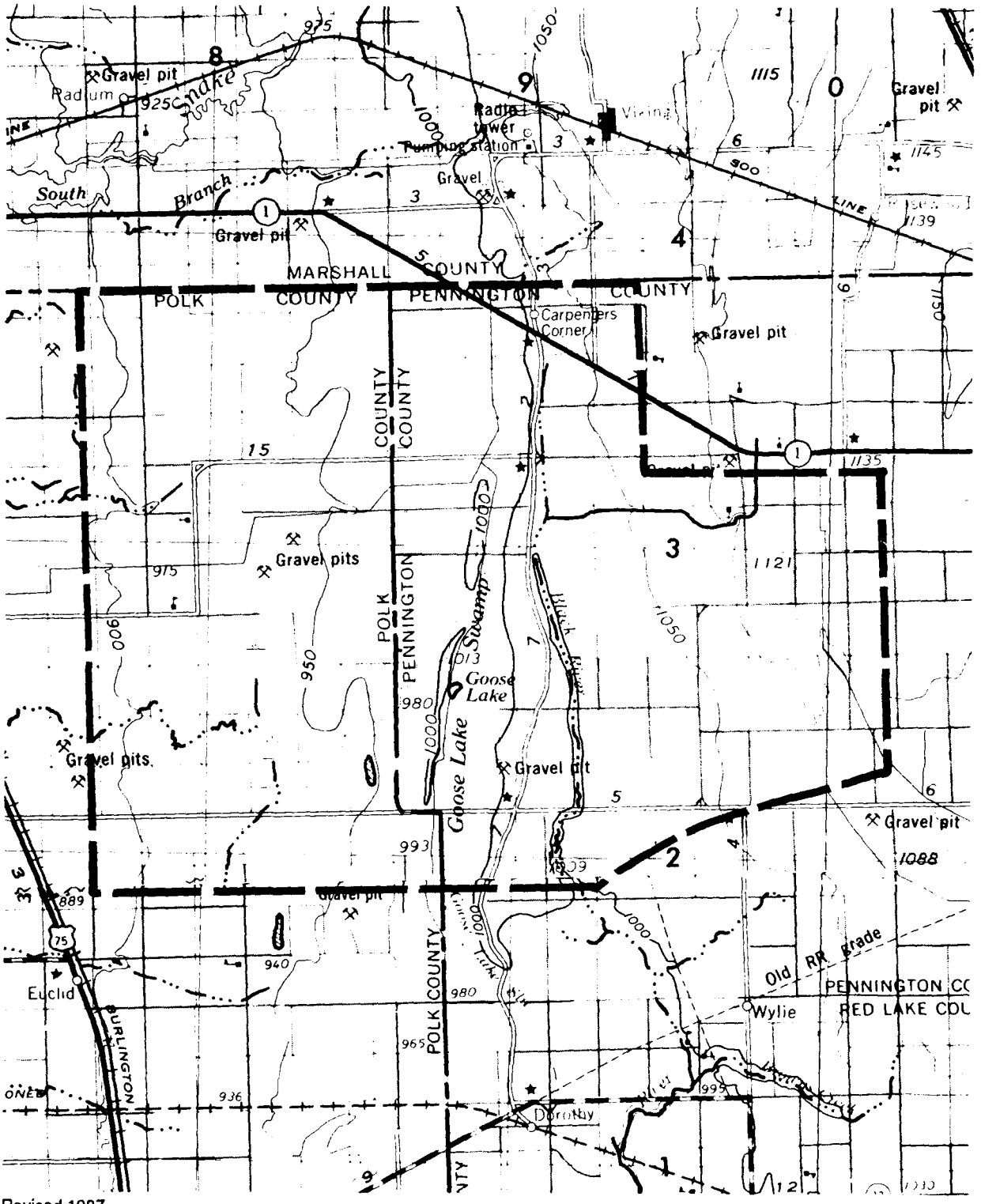


FIGURE 2-10 BLANCHARD STUDY AREA



Revised 1987

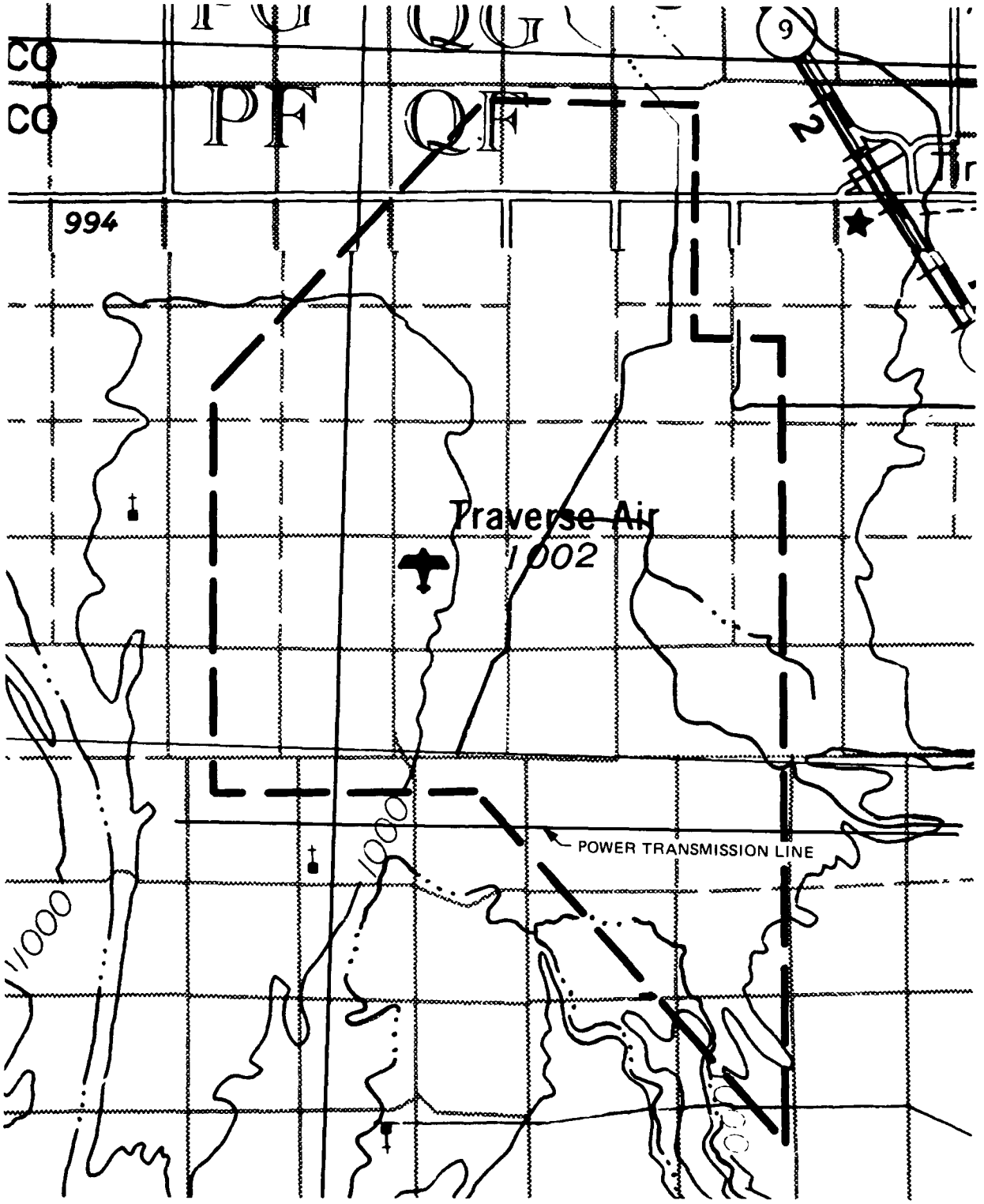
SOURCE OF BASE MAP:

U.S. Army Topographic Command Map
Thief River Falls, Minn., N. Dak. 1975
Grand Forks, N. Dak., Minn. 1975

3 0 3

SCALE IN MILES
(1:189,400 Scale)

FIGURE 2-11 THIEF RIVER FALLS STUDY AREA



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SOURCE OF BASE MAP:
U.S. Army Topographic Command Map
Fargo, N. Dak., Minn. 1975
Milbank, S. Dak., Minn., N. Dak. 1975

1 0 1
SCALE IN MILES
(1:83,300 Scale)

FIGURE 2-12 WHEATON NORTH STUDY AREA

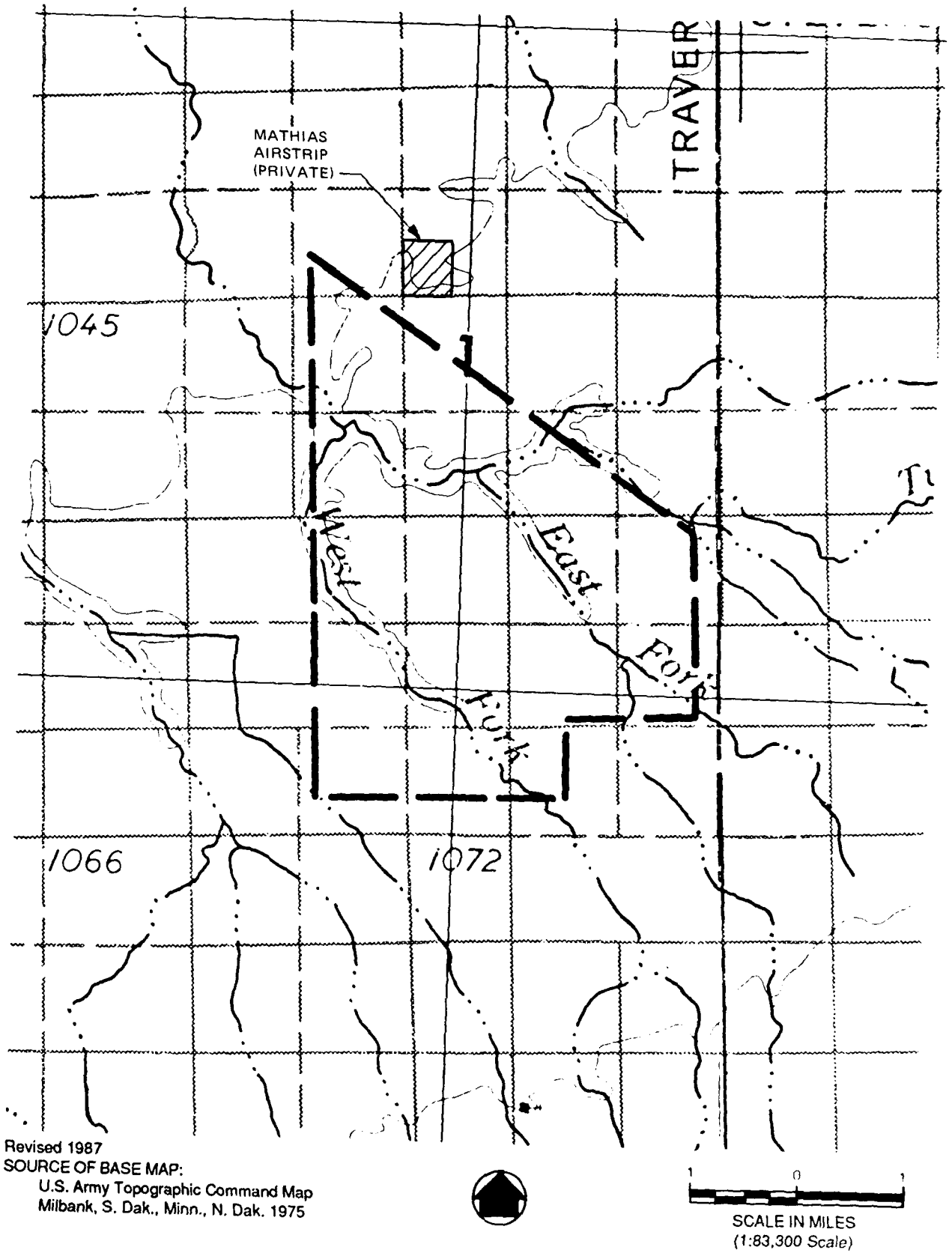
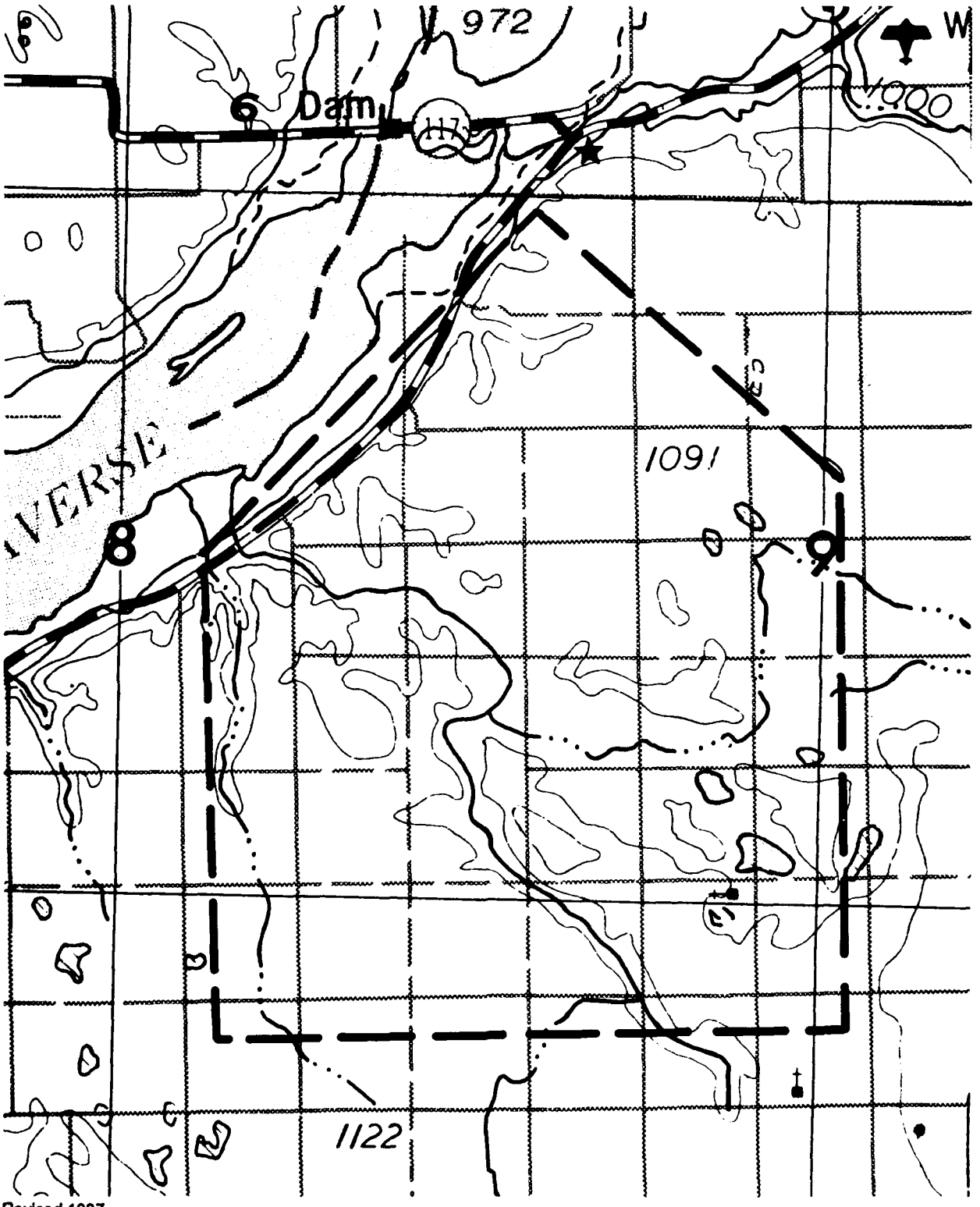


FIGURE 2-13 WHEATON SOUTHEAST STUDY AREA

METCALF & EDDY



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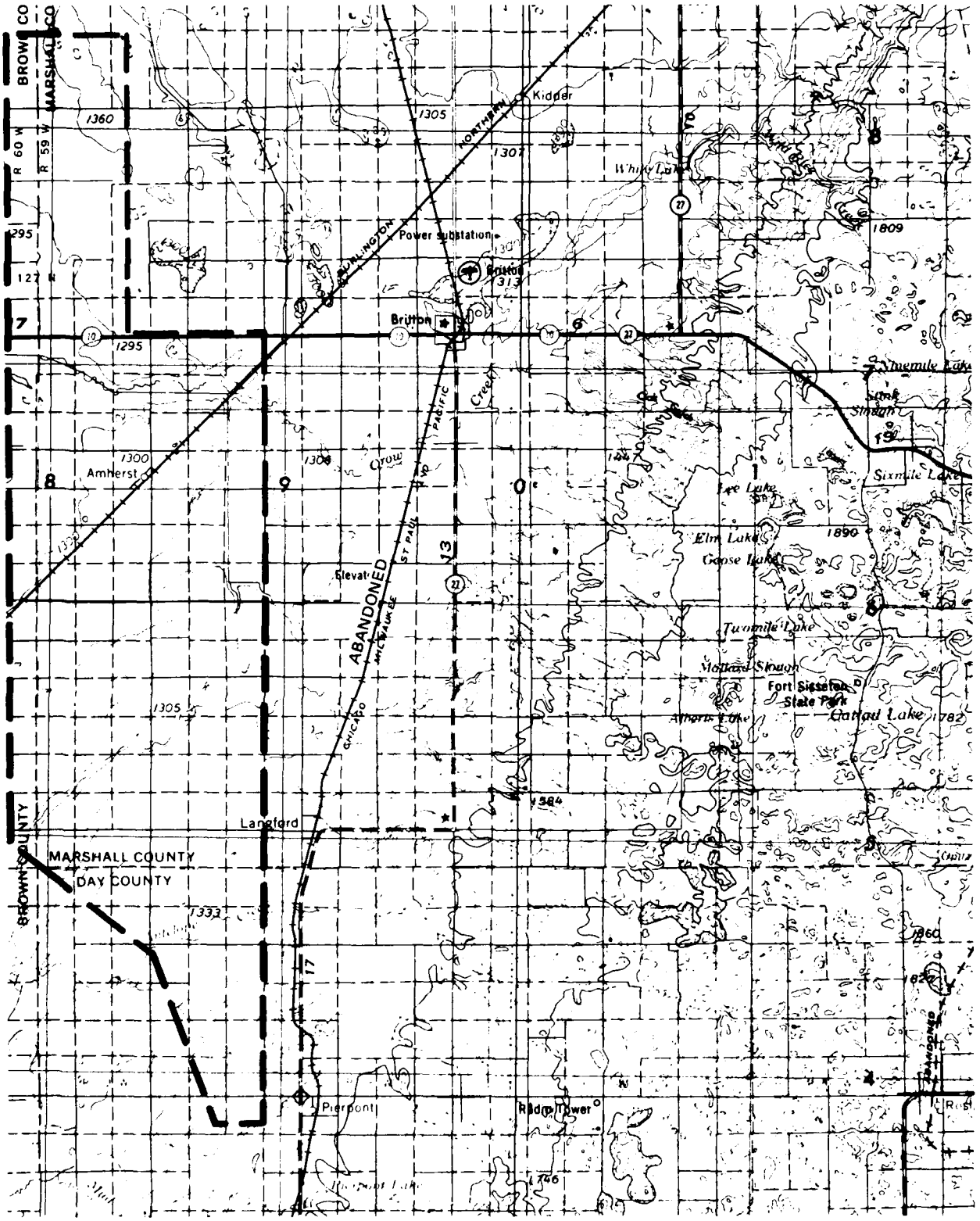
SOURCE OF BASE MAP:
U.S. Army Topographic Command Map
Milbank, S. Dak., Minn., N. Dak. 1975

FIGURE 2-14 WHEATON SOUTHWEST STUDY AREA

METCALF & EDDY



Revised 1987

SOURCE OF BASE MAP:
U.S. Army Topographic Command Map
Milbank, S. Dak., Minn., N. Dak. 1975

3 0 3
SCALE IN MILES
(1:250,000 Scale)

FIGURE 2-15 AMHERST STUDY AREA

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444 N. Capitol Street
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Eric Balzar
HQ AFOTEC BDM/OA
Kirtland AFB, NM 85117-7001

C. R. Boston
Oakridge National Lab
Oakridge, TN 37831

Mr. John Mitchell
HQ USAFSAM/RZP
Brooks AFB, TX 78235

Mr. W. A. Nixon
HQ AFESC/DEVP
Tyndall AFB, FL 32403

Lt. Col. Dave Wood
AFOMS/SGPR
Brooks AFB, TX 78235

ESD/SCO
Hanscom AFB, MA 01731

ESD/DE
Hanscom AFB, MA 01731

ESD/JAG
Hanscom AFB, MA 01731

ESD/PA
Hanscom AFB, MA 01731

HQ TAC/DRCD
Langley AFB, VA 23665

HQ TAC/DEE
Langley AFB, VA 23665

HQ TAC/LGK
Langley AFB, VA 23665

HQ AFSC/SDED
Andrews AFB
Washington, D.C. 20331

HQ AFSC/DEMV
Andrews AFB
Washington, D.C. 20331

HQ USAF/LEEVP
Bolling AFB
Washington, D.C. 20332-5000

HQ NORAD/NPD
Peterson AFB, CO 80914

HQ Space Cmd./DEPV
Peterson AFB, CO 80914

HQ SAC/DEP
Offutt AFB, NE 68113

2152 ISS
Grand Forks AFB, ND 58205-6346

321 SMW/DE
Grand Forks AFB, ND 58205-6346

U.S. Army Corps of Engineers
Omaha District
Attn: MRORE-P
6014 U.S. Post Office and Court House
Omaha, NE 68102

Federal, State, and Local Government Agencies

Carl H. Altenbernd
Lake Agassiz Regional Council
321 North 4th
Fargo, ND 58103

Arnold Andersen
Chairman, Day County Commission
Route 1, Box 2
Bristol, SD 57219

Clifford Anderson
Division of Office of Planning
Planning and Review
Minnesota Pollution Control Agency
520 Lafayette Rd.
St. Paul, MN 55155

Mr. Gaylon Baker, *Director*
South Central Dakota
Regional Council
P.O. Box 903
Jamestown, ND 58501

Fred L. Ballou
Thief River Falls
Area Vacational Technical
Institute
Highway One East
Thief River Falls, MN 56701

Ronald L. Bell
Agassiz National Wildlife Refugee
RR 1
Middle River, MN 56737

Representative Charles Brown
Room 211
SOB
St. Paul, MN 55155

Mr. Maurice Chandler, Coordination
Single Point of Contact
Intergovernmental Review
Minnesota State Planning Agency
550 Cedar Street
St. Paul, MN 55101

Gene A. Christianson
Chief
Environmental Health Section
North Dakota State Department
of Health
1200 Missouri Avenue
Box 5520
Bismarck, ND 58502-5520

Congressman Dorgan
P.O. Box 2579
Bismarck, ND 58502

Gregg Downing
Minnesota Environmental
Quality Board
110 Capitol Square Building
550 Cedar Street
St. Paul, MN 55101

Pam Dryer
Natural Resources Coordinator
North Dakota Parks and Recreation
Department
1424 W. Century Avenue #202
Bismarck, ND 58501

Shirley Dykshoorn, Director
Office of Intergovernmental
Assistance
14th Floor
State Capitol Building
Bismarck, ND 58501

Milton G. Eckstrom, Jr.
District Office
Congressman Vin Weber
919 South First Street
Willmar, MN 56201

Doug Faiman, Director
Administrative Services Division
North Dakota State Highway
Department
600 E. Blvd.
Bismarck, ND 58505

Mr. Bill Franz
Regional EIS Coordinator
U.S. Environmental Protection
Agency
230 South Dearborn Street
Chicago, IL 60604

Mr. Douglas E. Frisch
Major, City of Dumont
Box 12
Dumont, MN 56236

Richard J. Gross
Governor's Counsel
Governor's Office
Capitol Building
Bismarck, ND 58505

Bruce Hagan, Commissioner
North Dakota Public Service
Commission
State Capitol
Bismarck, ND 58505

Pat Hemmy
Area Director, Aberdeen Area
Bureau of Indian Affairs
U.S. Department of the Interior
115 4th Avenue, South East
Aberdeen, SD 57401

Marvis Hogen
Secretary of Agriculture
Anderson Building
Pierre, SD 57501

Howard Jensen
Mayor of Bristol
Box 396
Bristol, SD 57219

Sheila Jimenez
Staff Assistant to
Congressman Tom Daschle
P.O. Box 1536
Aberdeen, SD 57401

Mr. Tom Jorgens, Executive Director
Northwest Regional Development
Commission
425 Woodland Avenue
Crookston, MN 56716

Mr. Clarence Juelich
City Clerk
Wheaton City Hall
Box 868
Wheaton, MN 56296

Helen Jurchen
NW RDC
425 Woodland Avenue
Crookston, MN 56716

Stuart J. Larson
Soil Conservation Service
Room 324
Federal Office Building
102 N. 4th Street
Grand Forks, ND 58201

Bruce Laughlin
State Representative
Box 375
Finley, ND 58230

Sue Lillwald
Chamber of Commerce
P.O. Box 514
Thief River Falls, MN 56701

Mr. David Maritin
Executive Director
Arrowhead Regional Development
Commission
330 South 1st Avenue, East
Duluth, MN 55802

Al Meyer, Chairman
Traill County Commission
Galesburg, ND 58035

Roger D. Monson
Community Development Corporation
Finley, ND 58230

James R. Myers
Chief of Operations
State Capitol Building
Pierre, SD 57501

Helen M. Ninje
Mayor of Clifford
Garfield and 2nd Street
Clifford, ND 58016

Mr. John Ostrem, Executive Director
Headwaters Regional Development
Commission
722 15th Street, NW, Box 906
Bemidji, MN 56601

Jack Quinlivan
City Planner
Box 528
Thief River Falls, MN 56701

Mr. Bill Robinson
Single Point of Contact
Program Administrator
Office of Intergovernmental
Assistance
Office of Management and Budget
14th Floor - State Capitol
Bismarck, ND 58505

Glenn Roloff
U.S. Forest Service
1824 N. 11th Street
Bismarck, ND 58501

Mr. Irv Rustad, Director
Lake Agassiz Regional
Planning Council
321 North 4th
Fargo, ND 58102

Dennis Sevigny
Grafton Chamber of Commerce
Box 632
Grafton, ND 58237

Joe Sizer
Assistant Director
Minnesota State Planning Agency
Room 100, Capitol Square Building
St. Paul, MN 55101

Mark Steichen
Deputy Secretary
DWNR
Joe Foss Building
Pierre, SD 57501

Jeff Stingley, Secretary
Department of Game, Fish, and
Parks
Anderson Building
Pierre, SD 57501

Dick Tolbers
U.S. Fish and Wildlife Service
50 Park Square Court
400 Sibley Street
St. Paul, MN 55101

Ms. Connie Treidt
Single Point of Contact
State Government Operations
State Capitol Building
Executive Office
Pierre, SD 57501

Mr. Dale Vodehnal
Regional EIS Coordinator
U.S. Environmental Protection Agency
One Denver Place
999 18th Street
Denver, CO 80202-2413

Ken Wald
Office of Planning
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55146

Mr. Julius M. Wangler, Director
Red River Regional Planning Council
P.O. Box 633
Grafton, ND 58237

Gene Wiegand
Urban Planner
City of Aberdeen
P.O. Box 1299
Aberdeen, SD 57401

Jerry Wigness
City Clerk's Office
City of Thief River Falls
Box 528
Thief River Falls, MN 56701

Lt. Col. Bob Wooley
AF REP, FAA
Federal Building
601 E. 12th Street
Kansas City, MO 66106

Area Director, Minneapolis Area
Bureau of Indian Affairs
U.S. Department of the Interior
15 South Fifth Street
Minneapolis, MN 55402

Director
Office of Environmental Project Review
Department of the Interior
Room 4260, Interior Building
18th and C Streets, NW
Washington, D.C. 20240-0001

County Auditor's Office
Day County
710 W. First
Webster, SD 57274

Commissioner
Department of Energy and Economic Development
900 American Center Building
150 East Kellogg Boulevard
St. Paul, MN 55101

East Grand Forks Town Clerk's Office
303 NW 4
E. Grand Forks, MN 56721

Regional Forester
Eastern Region, Forest Service
USDA
Henry S. Reuss Federal Plaza
Suite 500
310 W. Wisconsin Avenue
Milwaukee, WI 53203-2211

Regional Forester
Eastern Region, Forest Service
USDA, Federal Building
P.O. Box 7669
Missoula, MT 59807-7669

Fargo Planning and Development
201 4 Street N
Fargo, ND 58102

Regional Director, Great Lakes Region
Federal Aviation Administration
2300 East Devon Avenue
Des Plaines, IL 60018-4686

Finley City Hall
Finley, ND 58230

First District Association of Local Governments
P.O. Box 1207
Watertown, SD 57201

Grand Forks County Planning Department
Court House
212 S. 4th Street
Grand Forks, ND 58202

Grand Forks Planning Department
404 2 Avenue N.
Grand Forks, ND 58202

Herman Council Board
Town Hall
Herman, MN 56248

Hillsboro City Hall
Hillsboro, MN 58045

Larimore City Hall
122 W. Main Street
Larimore, ND 58251

Mayville City Armory
332 Center Avenue S.
Mayville, ND 58257

Commissioner
Minnesota Department of Agriculture
90 West Plato Boulevard
St. Paul, MN 55107

Commissioner
Minnesota Department of Natural Resources
500 Lafayette Road
St. Paul, MN 55146

Commissioner
Minnesota Department of Transportation
Transportation Building
John Ireland Boulevard
St. Paul, MN 55155

Director
Minnesota Historical Society
Historical Building
690 Cedar Street
St. Paul, MN 55101

Executive Director
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

State Planning Director
Minnesota State Planning Agency
100 Capitol Square Building
550 Cedar Street
St. Paul, MN 55101

Moorhead City Clerk
500 Center Avenue
Moorhead, MN 56560

Regional Director, Midwest Region
National Park Service
U.S. Department of the Interior
1709 Jackson Street
Omaha, NE 68102

Regional Director, Rocky Mountain Region
National Park Service
U.S. Department of the Interior
P.O. Box 25287
Denver, CO 80225

North East Council of Governments
405 Eighth Avenue, NW
Suite 201, Berkshire Plaza
Aberdeen, SD 57401

Northwood City Hall
12 North Raymond
Northwood, ND 58267

Planning and Development
District III
P.O. Box 687
Yanktown, SD 57078

Portland City Hall
702 Arnold Street
Portland, ND 58274

Regional Forester
Rocky Mountain Region, Forest
Service
USDA
11177 W. 8th Avenue
Box 25127
Lakewood, CO 80225-0127

Regional Director, Region 6
U.S. Fish and Wildlife Service
U.S. Department of the Interior
Denver Federal Center
P.O. Box 25486
Denver, CO 80225

Regional Director, Region 3
U.S. Fish and Wildlife Service
U.S. Department of the Interior
Federal Building, Fort Snelling
Twin Cities, MN 55111

Chief
Division of Environmental
Coordination
U.S. Fish and Wildlife Service
U.S. Department of the Interior
Room 402, Hamilton Building
18th and C Streets, NW
Washington, DC 20240-0001

U.S. Fish and Wildlife Service
223 Federal Building
P.O. Box 250
Pierre, SD 57501

Warren City Clerk
126 W. Johnson
Warren, MN 56762

Media, Libraries, and Individuals

Allen Anderson
Box 29
Osnabrock, ND 58269

Arlene and R. G. Anderson
Box 63
Andover, SD 57422

Sheila R. Anderson
RR1, Box 30
Clifford, ND 58016

Duane Bartsch
Manager, Industrial Marketing
Otter Tail Power Company
215 S. Cascade
Fergus Falls, MN 56537

Mr. and Mrs. Leroy Behrens
RR 1, Box 101
Wheaton, MN 56296

Ronald R. Belanus
RR 1, Box 101
Cavalier, ND 58220

Mr. Robert Berg
RR 1, Box 31
Chokio, MN 56221

Mr. and Mrs. Jerry Berger
R. 1, Box 34
Norcross, MN 56274

Brian Bohnsack
RR 1, Box 80
Hillsboro, ND 58045

Arne Boyum, Editor
North Dakota League of Cities
Bulletin
Box 2235
207 E. Broadway
Bismark, ND 58502

Reverend Daniel E. Cole
P.O. Box 435
Thief River Falls, MN 56701

Mrs. Marcie Conroy
RR 2, Box 2
Wheaton, MN 56296

Dorinda Daniel
Box 30
Webster, SD 57274

William C. Davis
Midwest Environmental
Services, Inc.
315 E. Bdy.
P.O. Box 211
Bismarck, ND 58502

William R. Devlin, Editor
Steele County Press
Box 475
Main Street
Finley, ND 58230

Joseph Dill, Editor
The Forum
Box 2020
Fargo, ND 58107

Robert Evanstad
1120 16th Street N
Apt. #4
Fargo, ND 58102

John R. Finnegan, Editor
Pioneer Press
55 E. 4th Street
St. Paul, MN 55101

Mrs. Barbara Frisch
Rt 1, Box 116
Wheaton, MN 56296

Mrs. Gerald Frisch
RR Box 64A
Dumont, MN 56236

Mr. Roger F. Frisch
Felix Frisch & Sons, Inc.
Dumont, MN 56236

Gordon Garnes, Editor
Public Opinion
120 3rd Avenue NW
Box 10
Watertown, SD 57201

William I. Gatheridge
Box 53
Humboldt, MN 56731

Sister MaryLou Geraets
1500 N. Main
Aberdeen, SD 57401

Bernard I. Gill
Box 325
Hillsboro, ND 58045

Marcella Gonsorowski
Route 2
Newfolden, MN 56738

T. J. Gray
Lakehead Pipe Line Co., Inc.
P.O. Box 665
Bemidji, MN 56601

Del Griffin, Editor
American News
124 South Second Street
Box 4430
Aberdeen, SD 57401

Nancy J. Haglund
Route 2
Red Lake Falls, MN 56750

Bill Harbeke, President
First Bank Wheaton
1024 Broadway
Wheaton, MN 56796

Hecla Independent
Hecla, SD 57446

Al Hermodson
Route 3
Crookston, MN 56716

Merle Holdon, Manager
Sheyenne Valley Electric Cooperative
Box 217
Finley, ND 58230

Floyd Houland
702 4th Ave. E
Ada, MN 56510

Larry Ingalls, Editor
Reporter and Farmer
Box 30
Webster, SD 57274

Mike Jacobs, Editor
Herald
Box 998
Grand Forks, ND 58206

Mr. Joe Kalla
Chairman
Wheaton Community
Development Corporation
Wheaton, MN 56296

Scott Karnik
KXPO Radio
Box 312
Grafton, ND 58237

Ron Kennedy, Manager
Red Lake Electric Coop, Inc.
P.O. Box 430
Red Lake Falls, MN 56750

Mr. Tom Kenville
Jobs Incorporated
413 East Third Street
P.O. Box 514
Thief River Falls, MN 56701

Joel Kramer, Editor
Star Tribune
425 Portland Avenue
Minneapolis, MN 55488

Ron Kyllo
Box 56
Hunter, ND 58048

Maynard B. Laymor
Route 2
Warren, MN 56762

Marvin Lundin, Editor
Thief River Falls Times
P.O. Box 100
Thief River Falls, MN 56701

Gene Lundquist
RR 2, Box 13
Wheaton, MN 56296

Susan MacDonald
KXJB TV
P.O. Box 1397
Grand Forks, ND 58201

Mrs. Thomas K. McAndrews
6435 Margon Ave. So.
Minneapolis, MN 55432

James McKenzie
607 S. 5th Street
Grand Forks, ND 58201

Keith Meyer, Editor and Publisher
Box 49
Hillsboro, ND 58045

George W. Mo re, Editor
Tribune
Box 1498
707 E. Front Avenue
Bismark, ND 58501

James A. Morlock, Editor and
Publisher
Tribune
Box 7
Ipswich, SD 57451

Eugene M. Morton, Editor
Bugle
Main Street
Langford, SD 57474

Charles Naplin
Route 5, Box 82
Thief River Falls, MN 56701

Dan Nilles
Route 2, Box 7
Blanchard, ND 58009

Donald O'Leary, General Manager
Traverse Electric Cooperative,
Inc.
P.O. Box 66
Wheaton, MN 56296

Lind Osberg, Editor
South Dak a Municipalities
214 E. Capitol Street
Pierre SD 57501

Duane Otto, Manager
Cavalier Rural Electric Coop.
Box 749
Langdon, ND 58249

Mrs. Hattie Phillips
RR 2, Box 13
Webster, SD 57274

Ronald and Gloria Porter
RR 1, Box 63
Grandin, ND 58038

Kenneth Price
Stephen, MN 56757

Larry Rad
Route 3, Box 152
Warren, MN 56762

J. Sanchez
P.O. Box 5548
San Jose, CA 95150

Katherine Satrom, Chairman
North Dakota Workmen's
Compensation Bureau
Russel Building
Highway 83 N.
Bismarck, ND 58501

Wayne D. Satrom
RR 1, Box 70
Galesburg, ND 58035

Bill Schwalm
Physics Department
University of North Dakota
Grand Forks, ND 58202

Skip Seiser
UPI
P.O. Box 1934
Bismarck, ND 58502

Mr. and Mrs. Carl Simpson
RR 1, Box 133
Tesney, MN 56582

Leon O. Skarperud
220 1st Avenue N.W.
Mayville, ND 58257

Alan G. Smith
RR1, Box 1
Galesburg, ND 58035

Morri E. Spenser, Publisher
Independent
Box 148
Groton, SD 57445

Keith Steva
DIGI-KEY Corp.
701 Brooks Avenue South
Thief River Falls, MN 56701

Ervin Strandquist
Route 2, Box 161
Newfolden, MN 56738

Joe Stroot, Jr.
Box 99
Euclid, MN 56722

Joel Swanson, G.M.
KTRF-KSNR Radio Corp.
P.O. Box 40
Highway 32 North
Thief River Falls, MN 56701

Sally Thompson, Editor
Hillsboro Banner
Box 49
Hillsboro, ND 58045

Ken Tischart
Red Lake Falls, MN 56750

Don Tisher
Box 235
Amherst, SD 57421

Clarice Torgerson
Jobs, Inc.
P.O. Box 514
Thief River Falls, MN 56701

Curtis Tweto
Highway 15 West
Melville, MD 58254

Edward Weihand
Box 87
Euclid, MN 56722

Gene Wenstrom
Box 1077
Elbow Lake, MN 56531

Duane Wimpfheimer
Route 1, Box 114
Euclid, MN 56722

Terry Woster, Editor
Capital - Journal
404 E. Sioux Street
Pierre, SD 57501

Terry Woster, Editor
The Times
404 E. Sioux Street
Pierre, SD 57501

Charles Zammert
Box 93
Euclid, MN 56722

Aberdeen Public Library
519 South Kline Street
Aberdeen, SD 57401

Alexander Mitchell Library
519 South Kline
Aberdeen, SD 57401

Britton Public Library
N. Main Street
Britton, SD 57430

Carnegie Regional Library
7th & Griggs
Grafton, ND 58237

Cold Regions Research
Engineering Laboratory
Hanover, NH 03755

Crookston Public Library
Crookston, MN 56716

East Grand Forks Public Library
223 NW 2
E. Grand Forks, MN 56721

Edna Ralston Public Library
Larimore, ND 58251

Fargo Public Library
102 3 Street N
Fargo, ND 58102

Grand Forks Public Library
2110 Library Circle
Grand Forks, ND 58201

Groton Public Library
209 N. Main Street
Groton, SD 57445

KCCM 91.1 FM
Box 72
Concordia College
Moorhead, MN 56560

Mayville Public Library
Mayville, ND 58257

Moorhead Public Library
115 S 6th Street
Moorhead, MN 56560

Northwood City Library
515 S. Park
Northwood, ND 58267

Park River Public Library
Box S
Park River, ND 58270

Red River Scene
Valley Publishing Co., Inc.
118 South Main Street
Crookston, MN 56716

Warren Public Library
314 E. Johnson Street
Warren, MN 56762

Waubay Clipper
Waubay, SD 57273

Webster Library
800 Main Street
Webster, SD 57274

West Fargo Public Library
401 7 Street E
West Fargo, ND 58078

Wheaton Gazette
Wheaton, SD

Wheaton Public Library
901 First Avenue N.
Wheaton, MN 56296

The following were added for the Final EIS.

State Delegation

Rep. Curt Alankin
53 1st Ave., SE
Mayville, ND 58257

Larry Cutler
State Representative
Box 32A
Claremont, SD 57432

Steve Cutler
State Representative
RR1, Box 4
Claremont, SD 57432

Kent Frenchs
State Representative, District 7
Rt 2, Box 47
Wolvrat, SD 57279

Dolores McClernon
For State Representative
District 11A
Rt. 1, Box 109
Browns Valley, MN 56219

Senator Roger D. Moe
Senate Majority Leader
District 2
Room 208, State Capitol
St. Paul, MN 55155

Leroy Stumpf
Senator, 1st District
Rt 1, Box 47
Plummer, MN 55155

Sen. Malcolm S. Tweten
State Senator
District 20
Box 65
Buxton, ND 58218

Agencies and Organizations

O. L. Aarsvold, Clk-Trsr.
Greenfield Township
RR2
Box 12
Blanchard, ND 58009

Arnold Anderson
Chairman
Day County Commission
710 West First Street
Webster, SD 57274

Clarence H. Anderson
Chairman
Sanders TWP
Rt. 5, Box 56
Thief River Falls, MN 56701

Area Director
Aberdeen Area
Bureau of Indian Affairs
U.S. Department of the Interior
115 4th Ave, SE
Aberdeen, SD 57401

BDM Rural Water System, Inc.
P.O. Box 49
Britton, SD 57430

Cary Backstrand, P.E.
N. Dakota State Water Commission
900 East Boulevard
Bismarck, ND 58505

Edward Barlege
City Hall
Wheaton, MN 56296

Daniel Berg
Minnesota Pollution Control Agency
520 Lafayette Rd.
St. Paul, MN 55155

Gene Berger
Chairman Redpath TWP
RR1 Box 35
Norcross, MN 56274

Larry Belmont
Chamber of Commerce-Thief River Falls
P.O. Box 514
Thief River Falls, MN 56701

Arthur G. Bilden
Mayor
City of Northwood
Northwood, ND 58267

Harvey C. Binger
Conservation Officer
Dept. of Fish, Game & Parks
Box 925
Britton, SD 57430

James Brekke, City Auditor
PO Box J
Hillsboro, ND 58045

Brown County Auditor
25 Market Street
Aberdeen, SD 57401

Willard Bruce
VIP Operations Manager
Valley Industrial Park, Inc.
PO Box 4675
Valley Industrial Park, MT 59231

Bureau of Planning Management
Director
Washington, D.C. 22040

Bob Carlson
Mayor
City of Thief River Falls
Box 528
Thief River Falls, MN 56701

Donald Caswell
Mayor, City of Galesburg
Box 52
Galesburg, ND 58035

Jim Coffman
Agriculturist
Minn-Dak Farmers Cooperative
RR 1 Box 10
Wahpeton, ND 58075-9705

John Collins
Pres. Farmers State Bank
Mellette, SD 57461

County Courthouse
Finley, ND 58230

Wesley Davidson
Office of the Auditor
Nelson County
Lakota, ND 58344

William R. Devlin
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Alexander B. Dickie, P.E.
County Planning
PO Box 746
Grand Forks County Auditor
Grand Forks, ND 58201

John C. Ditmore, Chairman
Minnesota Environmental Quality Board
100 Capitol Square Building
St. Paul, MN 55101

Art Donnell
Northwestern Public Service Company
General Offices
3rd & Dakota Street
Huron, ND 57350

David Eblen
Traill Co. Farmers Union
RR1, Box 84
Hillsboro, ND 58045

Leo W. Gray, Advisor
North Dakota Township Officers Assn.
Rt 1, Box 110-A
Hankinson, ND 58041

William L. Grimes
President
Wheaton-Dumont Coop Elevator
1115 Broadway
Wheaton, MN 56296

Arden N. Grundvig
Int'l Union of Operating Engineers
Local 49
PO Box 1715
Grand Forks, ND 58206

Ruth Gullicks
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Winten A. Gunderson
Polar Communications Corp.
Box 270
Park River, ND 58270

Mr. Floyd Hallan
Clerk
RR1, Box 61
Thief River Falls, MN 56701

Joel Halvorson
Chairman, Greenfield Township Board
Box 124
Galesburg, ND 58035

Glenn O. Halvorson
Mayor
City of Warren
Office of City Clerk
Warren, MN 56762

George Hanson
Chairman
Marshall County Commission
PO Box 130
Britton, SD 57430-0130

Joseph H. Hanson
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Cole Hendry
SD State Emergency & Disaster Service
Box 633
Aberdeen, SD 57402-0633

Dale Henegar
Commissioner, ND Fish & Game Dept.
100 N. Bismarck Pressway
Bismarck, ND 58501

Delores B. Henehan
Mayor
City of Britton
PO Box 91
Britton, SD 57430

Core Henry
South Dakota State Energy &
Disaster Serv.
Box 633
Aberdeen, SD 57402-0633

Walter Hjelle
Highway Commissioner
North Dakota State Highway
Department
600 East Boulevard Ave.
Bismarck, ND 58505-0700

David J. Holler, Chairman
Traill County Water Resource Board
Box 10
Hillsboro, ND 58045

Richard Howard
Secretary
Dept. of Transportation
700 Broadway Avenue E
Pierre, SD 57501

Earl Hubert
MN Dept of Natural Resources
Box 500
Lafayette Road
St. Paul, MN 55146

Norman Humphrey
SD Department of Transportation
PO Box 1767
Aberdeen, SD

Hubert H. Humphrey, III
Attorney General
State of Minnesota
State Capitol
St. Paul, MN 55155

Loren R. Irvine
ICI Top Pork Inc.
18930 Lotus View Drive,
Eden Prairie, MN 55344

Dale A. Jepsen
Northwestern Public Service Co.
3rd & Dakota South
Huron, SD 57350

Barbara Johnson
Attorney
MN Public Interest Research
Foundation
2412 University Ave S.E.
Minneapolis, MN 55414

Terry Johnson
Pres. Britton Chamber of Commerce
Box 8
Britton, SD 57430

Kent Jones, Commissioner
North Dakota Dept. of Agriculture
State Capitol
Bismarck, ND 58505

Richard Juelfs
Chairman
Stena Township Marshall
RR2, Box 160
Britton, SD 57430

Thomas J. Kalitowski
Executive Director
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Kent Keelyne
Field Supervisor
U.S. Fish & Wildlife Service
PO Box 986
Pierre, SD 57501

Henry Knapp
Engineering Manager
Missouri Basin
Municipal Power Agency
3005 W. Russell
P.O. Box 84610
Sioux Falls, SD 57118-4610

Tom Knudsen
Agricultural Manager
Minn-Dak Farmers Cooperative
Route 1, Box 10
Wahpeton, ND 58075

Dr. Gary Krapu
Research Biologist
Northern Prairie Wildlife Research
Center
U.S. Fish & Wildlife Service
PO Box 2096
Jamestown, ND 58042

Joseph M. Kurcinka, Supervisor
Environmental & Management Analysis
Section
MN Department of Natural Resources
Box 500 Lafayette Road
St. Paul, MN 55146

Tim Langley
Rep. SD Peace & Justice Center
Box 405
Watertown, SD 57201

Stuart A. Larson
Traill County States Attorney
PO Box 188
Hillsboro, ND 58045

Nikki LaSorella
Women Against Military Madness
3255 Hennepin Ave. S.
Minneapolis, MN 55408

Bruce A. Likness
Town President
Town of Langford
Marshall County
P.O. Box 23
Langford, SD 57454

Miles Lund
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Marshall County Auditor
PO Box 30
Britton, SD 57430

Thomas P. McGuigan
National Audobon Society
Minnesota Audobon Council
330 City Place
730 Hennepin Ave.
Minneapolis, MN 55403

Jeff McInnes
East Traill Soil Conservation
District
Chairman of Board of Supervisors
Hillsboro, ND 58045

Minn-Dak Farmers Co-op
Route 1, Box 10
Wahepton, ND 58075

Alan Mitchell
Attorney General's Office
1935 W. County Road, B-2
Roseville, MN 55113

Stanley M. Moore
North Dakota Farmers Union
PO Box 2136
Jamestown, ND 58402-2136

Leo Murphy
Traverse Soil and Water Conservation
District
11 - 10th St. N.
Wheaton, MN 56296

ND State Highway Dept.
600 East Boulevard Avenue
Bismarck, ND 58505

ND State Water Commission
900 East Boulevard
Bismarck, ND 58505

National Farmers Organization
National Headquarters
720 Davis Avenue
Corning, IA 50841

Nelson Co. Commissioners
PO Box 585
Lakota, ND 58344

James Nichols, Commissioner
State of Minnesota
Department of Agriculture
90 W. Plato Boulevard
St. Paul, MN 55107

Brad Okrina
Administrator
Northeast Economic Development
Association of South Dakota
405 8th Ave NW
Suite 201
Aberdeen, SD 57401

Mr. & Mrs. Milo Olson
Farmington Township Supvs.
Rt 1, Box 48
Langford, SD 57454

Scott G. Olson
Pennington County Farmers Union
Secretary Treasurer
Rt 1, Box 284
Thief River Falls, MN 56701

Kenneth Olson, Auditor
Auditors Office
Pennington County
Thief River Falls, MN 56701

Orville W. Overmoe
Traill County Social Service Board
PO Box 190
Hillsboro, ND 58045

Scott Parsley
East River Electric Power Cooperative
Drawer E
Madison, SD 57042

Mr. Norman Peterson
Acting Director
NW Regional Development Commission
PO Box E
Thief River Falls, MN 56701

Michael Phillips
Grand Forks Chamber of Commerce
110 49th Ave. S.
Grand Forks, ND 58201

Steve & Nancy Raguse
County Commissioner
District 5, RR 2, Box 24
Wheaton, MN 56296

Dave Ricks
NW Economic Assoc.
13101 NE Highway 99
Suite 200
Vancouver, WA 98686

Leo A. Ruberto, Ph.D.
Superintendent of Schools
Independent School District NO. 564
Zeh and LaBree
Thief River Falls, MN 56701

Rural Coalition
2001 S. Street NW
Suite 5000
Washington, D.C. 20009

Charles Rydell
ND State Dept. of Health
State Capitol
1200 Missouri Ave
PO 5520
Bismarck, ND 58505

John A. Scharf
Minnesota Dept. of Natural Resources
701 Iowa Ave.
Morris, MN 56267

John Shafer
National Park Service
MCE
PO Box 25287
Denver, CO 80225

Gary Smith
Traill County Weed Control Officer
Box 526
Hillsboro, ND 58045

Larry Smith
U.S. Fish & Wildlife Service
50 Park Square Court
400 Sibley Street
St. Paul, MN 55146

LtC Don Solwald
TAGMN/ANG
Veterans Service Building
St. Paul, MN 55155-2098

Donald Stewart
Jobs, Inc.
PO Box 528
Thief River Falls, MN 56701

Richard Symens
Chairman
Weston Township Supr.
RR1, Box 72
Claremont, SD 57432

Mark Sugden
Agassis Audubon Society
RR1, Box 37
Thief River Falls, MN 56701

Sherman Thykeson
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Town of Langford
Box 191
Municipal Finance Officer
Langford, SD 57454

Traill County
Office of the States Attorney
PO Box 188
Hillsboro, ND 58045

Traill County Social Service Board
PO Box 190
Hillsboro, ND 58045

Traill County Water Resource Board
Box 10
Hillsboro, ND 58045

U.S. Fish & Wildlife Service
S.D. Office (ES)
PO Box 986
Pierre, SD 57501

David C. Washburn
Steele County Board of Commissioners
PO Box 275
Finley, ND 58230

Gilman Wastvedt
Vice-Chairman
Traill County Board of Commissioners
PO Box 188
Hillsboro, ND 58045

James A. & Kay Weignand
Weignand Air AG, Inc.
Rt 1, Box 47
Wendell, MN 56590

Robert Welford
U.S. Fish & Wildlife Service
50 Park Square Court
400 Sibley Street
St. Paul, MN 55146

M.S. Zschomler
Field Supv., Habitat Resources
U.S. Fish & Wildlife Serv.
1500 Capitol Ave.
Bismarck, ND 58501

Individuals

Paul Aakre
Rte. 1
Angus, MN 56712

Harold Aker
Thief River Falls, MN 56701

George and Kay Ahlsten
RR 2 Box 99
Wheaton, MN 56296

Melvin Alberts
Rt 1, Box 81
Amherst, SD 57421

Gordon L. Amundson
Box 105
Langford, SD 57454

Larry Anderson
2016 S. Washington
Grand Forks, ND 58201

Mrs. G. Carol Anderson
2020 Stirling Street
Rapid City, SD 57702

Scott and Raymond Anderson
RR 1 Box 37
Langford, SD 57454

Lawrence V. Anderson
RR1, Box 64
Beardsley, MN 56211

Vernon Anderson
RR5, Box 140
Thief River Falls, MN 56701

Gordon W., Elsie Anderson
Rt 2, Box 64
Wheaton, MN 56296

Arvid Anderson
Wheaton, MN 56296

Anita Antrim
Worcross, MN 56274

Kenneth & Mary Arens
RR 1, Box 44A
Graceville, MN 56240

Mr. & Mrs. Walter Armbrust
401 8th St. No.
Wheaton, MN 56296

Frank Armstrong
Thief River Falls, MN 56701

Mrs. James Arnhalt
RR 1, Box 5
Campbell, MN 56522

Robin Asp
Route 1, Box 140
Thief River Falls, MN 56701

Fae Aukes
Rt. 1 Box 57
Norcross, MN 56274

Eldred Ayers
RR 1 Box 231
Thief River Falls, MN 56701

Richard Barrett
Rt 3
East Grand Forks, MN 56721

Daryl M. Barron
Grandin, ND 58038

Kathleen M. Barth
RR 1, Tenney, MN 56582

Anne and Warren Bartz
4130 Morril Lane
Minneapolis, MN 55406

Phyllis and Roland Bauer
Box 44
Dumont, MN 56236

Mrs. Edward Baxter
RR 2, Box 20B
Graceville, MN 56240

Steve Beatty
3750 Texas Ave. S.
St. Louis Park
Minneapolis, MN 55426

Gary Beck
Box 110
Hecla, SD 57400

Ken Beckman
The Hunter Grain Co.
Rt 2, Box 30
Mayville, ND 58257

Lavonne Beckuis
RR 1, Box 82
Nashua, MN 56565

Vernon, Lenora Behrens
1702 Broadway
Wheaton, MN 56296

Paul & Pearl Behrens
RR1, Box 101
Wheaton, MN 56296

Randy, Vicki Behrens
RR1, Box 49
Dumont, MN 56236

Mr. & Mrs. Floyd Behrens
RR1, Box 66
Dumont, MN 56236

Louise and Robert Bell
Route 2 Box 72
Gardner, ND 58036

Jerry Bennett
2309 Nicolas Dr.
Fullerton, CA 92633

Len Berdahl
Dahlen, ND 58296

Ralph Berg
Route 3
Box 521A
Park Rapids, MN 56470

Agnes Berger
201 10th St. No.
Wheaton
MN 56296

Gordon and Laura Berger
3450 153rd Ave. NW
Anoka, MN 55304

Verdell and Patricia Berger
420 S. 6th
Breckenridge, MN 56520

Leon Berger
7845 Newman
Arvado, CO 80005

Sophie and Paul Berger
Box 55
Norcross, MN 56274

Roy & Doris Berger
RR 1 Box 40
Norcross, MN 56274

Lynne K. and Gene Berger
RR1, Box 35
Norcross, MN 56274

Leon Delbert Berger
Route 2, Box 2
Wheaton, MN 56296

Clara Berger
Rt 1, Box 160
Wheaton, MN 56296

Joel Berkas
8075 Edgewood Dr.
Mounds View, MN 55432

Jennie Berkas
Rt 1
Hillsboro, ND 58045

Jean W. Bernard
500 River Street
Grand Forks, ND 58201

Otto and Leon Bertsch
Bertsch Trucking, Inc.
Hillsboro, ND 58045

Pearl Bertsch
Box 135
Hillsboro, ND 58045

Otto and Patricia Bertsch
P.O. Box 15
Hillsboro, ND 58045

Hazel Bird
103 1st St. SW
Hillsboro, ND 58045

Arthur C. Birkeland
Box 475
Bristol, SD 57219

Leane Bistodeau
Route 1 Box 35
Claremont, SD 57432

Sandra and Harland Bistodeau
Route 1 Box 5
Claremont, SD 57432

Lou A., Jay Blake
323 Atlantic Ave. Apt. 2
Thief River Falls, MN 56701

Roy C. Boe, Jr.
Claremont, SD 57432

Christeen Borsheim
707 1st Ave. N.
Wheaton, MN 56296

Maynard Bosse
RR Box 114
Britton, SD 57430

Ed Brandsted
RR 1 Box 73
Galesburg, ND 58035

James M. Braun
R 2, Box 128
Wheaton, MN 56296

Quirim Braun
Route 2
Wheaton, MN 56296

Alice Braun
Wheaton, MN 56296

Caroline E. Brink
Box 68
Dumont, MN 56236

Lois Broesder
RR1
Nashua, NH 56565

Michael Bronson
PO Box 2176
Palmer, AK 99645

Keith Brown
5806 Aspen Lane
Kansas City, MO 64152

Perry Brown
Box 5
Campbell, MN 56522

Howard Brown
R2, Box B-24
Blanchard, ND 58009

Duane C. Browning
Rt 8, Box 16
Thief River Falls, MN 56701

Alan Bruce
RR2, Box 81A
Wheaton, MN 56296

Myron Budke
Rt 2, Box 25
Wheaton, MN 56296

Charles Bug
RR1
Chokio, MN 56221

Russell Buisker
RR1, Box 133
Britton, SD 57430

Dolores Bullert
Box 34, Route 3
Webster, SD 57274

Donald Bullis
Box 7
Tintah, MN 56583

Steve & Kathy Burgess
RR1, Box 97
Rosholt, SD 57260

William C. Buss
RR 1 Box 41
Norcross, MN 56274

Roger F. Carpenter
Hunter, ND 58048

Clark Carpenter
RR1
Thief River Falls, MN 56701

C. Kevin Carson
RR1, Box 156
Langford, SD 57454

Charles Carson
Route 6
Fergus Falls, MN 86537

Eric Carter
Rte 1
Campbell, MN 56522

Gene Cassels
RR 2, Box 210A
Groton, SD 57443

Mrs. Sherman Cavanaugh
Countryside C 24-W
Benson, MN 56215

Kathy Cavanaugh
Box 221
DeGraff, MN 56233

Everett Christianson
Rt 1, Box 45
Cummings, ND 58223

Russell Coenen
RR2
Red Lake Falls, MN 56750

Richard Cole
RR1, Box 43
Langford, SD 57454

Donna Conroy
555 E. Lionshead Circle
Vail, CO 81657

Donald Conroy Constr.
PO Box 486
Wheaton, MN 56296

Bruce & JoAnn Conroy
Rt 1, Box 10
Dumont, MN 56236

James Conroy
Rt 1, Box 12
Dumont, MN 56236

Copaneer Farm
Box 41-0041
Hillsboro, ND 58054

Prof. James Coter
Division of Science & Math
University of Minnesota-Morris
Morris, MN 56267

Ellen Cotone
2675 E. Larpenteur
St. Paul, MN 55109

Sam T. Courey, Jr.
Courey, Schwinn & Kodadek
Attorneys at Law
Suite 300, 400 Marquette Avenue
Minneapolis, MN 55401

Gary L. Crown
205 Stanley Dr.
Santa Barbara, CA 93105

Duane A. Dahlberg
Concordia College
Moorehead, MN 56560

Jack Dalrymple
Box 220
Casselton, ND 58012

Daniels Farms, Inc.
RR1
Tintah, MN 56583

Mr. & Mrs. John Daniels
RR 1 Box 10
Tintah, MN 56583

Carol Daniels
Rt 1, Box 9
Tintah, MN 56583

Jay Davis
PO Box 523
Aberdeen, SD 57402

Richard & Charlott Davison
Tintah, MN 56583

Day County Bank
Pierpont Branch
Pierpont, SD 57468

Eileen Denholm
109 10th Ave. SW
Aberdeen, SD 57401

Donald & Wallace Diedrich
RFD 3
Warren, MN 56762

Mr. & Mrs. Joseph Dietz
Rt 1, Box 28, Dumont, MN 56236

Frank Dobias
Route 5 Box 66
Thief River Falls, MN 56701

Lyn Dodson
Valley Fertilizer & Chemical
Tintah, MN 56583

Gordon C. Donnelly
State Bank of Wheaton
P.O. Box 395
Wheaton, MN 56296

Rev. Eugene Doyle, Pastor
Church of St. Gall
Tintah, MN 56583

George Duckwitz, Jr.
RR1, Box 38
Holloway, MN 56249

Duane Dumas
Box 426
Grand Forks, ND 58201

Donovan & Ann & Greg Dyrdal
Rt 1, Box 216A
Thief River Falls, MN 56701

Mrs. Irene Eblen
704 1st Ave. N.E.
R-1 Box C-40
Hillsboro, ND 58045

Thomas Eblen
RR 2 Box C45
Hillsboro, ND 58045

David Eblen
RR1, Box 84
Hillsboro, ND 58045

Wes Ecker
Box 175
Dumont, MN 56236

Dean & Verna Ecker
RR 1 Box 76
Grandin, ND 58038

Wes Ecker
RR 1 Box 77
Grandin, ND 58038

Don Eckert
Ayr, ND 58007

Theodora D. Economou
Martin, Nelson & Glasrud
109 East Sixth Street
P.O. Box 66
Morris, MN 56267

Scott Edwards
Box 161
Britton, SD 57430

S. Ehlers
6712 Bisby Lake Dr.
San Diego, CA 92119

Mrs. Vernon Ehlers
R 2, Box 73
Wheaton, MN 56296

Ray W. Ehlers
Rt 1, Box 48
Wheaton, MN 56296

Robert J. Eidmann
RR1, Box 28
Andover, SD 57422

Maynard C. Eikamp
602 5th Street
Britton, SD 57432

Fred B. Eikamp
Box 61
Britton, SD 57430

Harry Eisenbeis
P.O. Box F
Hillsboro, ND 58045

Robert James Endlemenn
Rt 1, Box 28
Andover, SD 57422

John R. Engel
616 8th Street S.E.
East Grand Forks, MN 56721

Robert James Englemann
Rt 1
Angus, MN 56712

Tom Ensrud, President
McVille Commercial Club
McVille, ND 58254

Robert James Erdmann
Rt 1 Box 28
Andover, SD 57422

Orville G., and Floyd Erickson
Hunter, ND 58048

Robert C., Clarence, Margaret Erickson
RR 1 Box 7
Langford, SD 57454

Paul S. Erickson
Route 1 Box 83
Galesburg, ND 58035

Douglas Erickson
Rt 1, Box 55, B-1
Roseau, MN 56751

John Erikson
RR1
Red Lake Falls, MN 56750

Merle Escher
Dumont, MN 56236

Mrs. Erving Evenson
Rt 2, Box 153
Red Lake Falls, MN 56750

Kenneth Ewertz, Chairperson
Dakota Public School District No. 3
Hunter, ND 58048

Frank L. Farrar
Attorney at Law
Farrar & Spiry Bldg.
PO Box 919
Britton, SD 57430

Mrs. Emelie (Berkas), Duane Femrite
8709 Beard Rd.
Bloomington, MN 55431

Joseph Findlay, Jr.
RR 2 Box 126
Herman, MN 56246

Sharon A. Finke
709 2nd Ave. So.
Wheaton, MN 56296

First Interstate Bank of Fargo, N.A.
Trust Division
Main at Broadway
Fargo, ND 58214

Elwina Fischer
Box 101
Dumont, MN 56236

Harry Fischer, Jr.
RR1, Box 91
Dumont, MN 56236

James Fisher
Box 1419
Watford, ND 58804

Kent France
Route 2
Norcross, MN 56274

Clyde Fredrickson
Box 451
Britton, SD 57430

Kenneth Frey
RR1, Box 67
Claremont, SD 57432

Florence Frickman
Rt 2, Box 28
Wheaton, MN 56296

Alice Fridgen
Box 146
Dumont, MN 56236

Art Fridgen
Dumont, MN 56236

Mark Fridgen
RR1, Box 70
Wheaton, MN 56296

Betty L. Frisch
Box 85
Dumont, MN 56236

Sister Herman Joseph Frisch
St. Paul's Priory
2675 E. Larpenteur Ave.
St. Paul, MN 55109

Milo & Loyal Fritz
RR1
Graceville, MN 56240

Melvin Fryberg
RR1, Box 93
Arthur, ND 58006

David A. Funston
217 So. Mandan St.
Bismarck, ND 58501

David Furman
1011 5th St., PO Box 517
Britton, SD 57430

Roger Furman
Box 29
Britton, SD 57430

Harvey L. Gabbert
Box 1318
Grand Forks, MN 58201

Harry Gainor
Box 11
Milnor, ND 58060

Beverly Bartz Gallup
701 1st Ave. So.
Wheaton, MN 56296

Dwight Garrett
RR 2, Box 28
Mayville, ND 58257

Richard W. Gehrke
Box 456
Hillsboro, ND 58045

Sam Genereux
Box 488
Thief River Falls, MN 56701

Sister Mary Lou Gerseta
1500 N. Main
Aberdeen, SD 57401

Mary Gierde
RR1
Angus, MN 56712

Mrs. Marilyn Gillespie
Rt 1, Box 10
Johnson, MN 56250

Mary Gjerde
14095 Mona Lane
Whittier, CA 90602

Robert Glass
RR1
Angus, MN 56712

Craig Godfrey
Motorola Radio Communications Rep.
PO Box 414
Morris, MN 56267

Mark Goltz
Box 236
Amherst, SD 57412

Melea Gran
Box 136
Campbell, MN 56522

James Gray
Box 484
Graceville, MN 56240

Kenneth & Marilyn Griesbach
RR 1 Box 49
Hunter, ND 58048

Reynold A. Griess
Rt 1, Box 99A
Park Rapids, MN 56470

Dennis Grohn
300 Maple
Sauk Center, MN 56378

Sandra Groneberg
RR 2 Box 116
Wheaton, MN 56296

Dennis Groneberg
Route 2
Wheaton, MN 56296

David Grothe
RR1, Box 243A
Thief River Falls, MN 56701

Arden N. Grundvig
Box 1715
Grand Forks, ND 58206

Gil Gullickson
925 2nd Ave.
Brookings, SD 57006

Mr. & Mrs. Clarence Gullickson
Box 56
Tintah, MN 56583

Mrs. Richard Gullickson
Rl, Box 36
Claremont, SD 57432

William Gullickson
Tintah, MN 56583

Sandra Gunderson
9401 E. Bedahochi Dr.
Tucson, AZ 85749

Winten A. Gunderson
General Manager
Polar Communications
PO Box 270
Park River, ND 58270

Allan Gustafason
Rt 1, Box 99
Plummer, MN 56748

Hal Habermann
Superintendent
Dakota Public School District No. 3
Hunter, ND 58048

Jim Hahn
Route 1 Box 334
Richville, MN 56576

Floyd Hallan
RR1, Box 61
Thief River Falls, MN 56701

Joel Halvorson
Chairman, Greenfield Township Board
Box 124
Galesburg, ND 58035

Kenneth & Dorothy Halvorson
RR 1, Box 105
Hillsboro, ND 58045

Ms. Laverne Hamre
Box 260, Rt 1
Thief River Falls, MN 56701

Donald & Barbara Hansen
Box 33
Hunter, ND 58048

Emil & Beva Hansen
Box 45
Hunter, ND 58048

Larry Hansen
RR1, Box 40
Claremont, SD 57432

Kevin D. & Cynthia Hansen
RR1, Box 76
Hillsboro, ND 58045

Donald & Anne Hansen
Rt 2, Box 103
Wheaton, MN 56296

Bruce Hanson
Banchard, ND 58009

Court Hanson
Box 1
Blanchard, ND 58009

George Hanson
RR1, Box 38
Claremont, SD 57432

Joseph H. Hanson
Route 1 Box 104
Finley, ND 58230

LaVerne Hanure
Rt 1, Box 260
Thief River Falls, MN 56701

Peter Hapka
RR2, Box 43
Thief River Falls, MN 56701

Ruth Hartberg
RR1, Box 28
Langford, SD 57454

Mrs. Roy M. Hasbargen
Box 125
Dumont, MN 56236

Janet Jean Hasbargen
RR 2 Box 97
Wheaton, MN 56296

Bradley & Lois Hasbargen
Rt 2 Box 98
Wheaton, MN 56296

Wallus & Fred Hasburgen
Route 2
Wheaton, MN 56296

Darlene Hastings
RR1, Box 149
Britton, SD 57430

Agnes Haugen
130 6th St. Southeast
Mayville, ND 58257

Caron Haugen
Clifford, ND 58016

Elaine Hawes
Nashua, MN 56565

Valarie J. Hawes
Rt. 1, Box 52
Tintah, MN 56583

Blair Healy
RR1 Box 2C
Langford, SD 57454

Charles & Valeria Hegel
Rt. 1, Box 105
Tenney, MN 56582

Jeffrey Heig
1301 Crestview Drive
Watertown, SD 57201

Donald Hein
Town of Andover
Andover, SD 51422

Daryl Heininger
RR1, Box 30
Wheaton, MN 56296

Vance Hemen
RR2, Box 133
Britton, SD 57430

Rueben Hermann
Rt 1, Box 33
Langford, SD 57454

Al Hermodson
Rt 3
Crookston, MN 56716

Warren David Hermreck
RR1
Thief River Falls, MN 56701

Dr. Harry C. Hershey
140 W. 19t Avenue
Columbus, OH 43210

Mrs. W. Hertwig
Blanchard, ND 58009

George & Corine Hess
Rt 2
Warren, MN 56762

Roger A. Hible
RR 1 Box 147
Thief River Falls, MN 56701

Gladys Hillstrom
Route 2, Box 175
Red Lake Falls, MN 56750

Mr. & Mrs. William Hoffman
Campbell, MN 56522

Esther Holman
RR1, Box 64
Clifford, ND 58016

Mr. & Mrs. Brent Holtz
Box 139
Tenney, MN 56582

Norma & Dean Holtz
Box 139
Tenney, MN 56582

Glenn & Carol Holtz
RR1, Box 38
Wheaton, MN 56296

Mrs. Helen Homan
Rt 1, Box 6
Beardsley, MN 56211

Marvine Honea
2615 5th Avenue N.
Grand Forks, ND 58201

John & Clara Honzo
RR 1, Box 19
Chokio, MN 56221

Ronald Hork
RR1
St. Hillard, MN 56754

Jo Van Houel
Rt. 1 Box 113
Campbell, MN 56522

Keith Hoverstad
1223 Edgewood Dr.
Thief River Falls, MN 56701

James W. Howes
1801 S. Flagler Drive, #1002
West Palm Beach, FL 33401

Louis & Carilyn Hugg
Rt 5, Box 108
Thief River Falls, MN 56701

Sister Florence Huneger
904 10th Ave. NE
Aberdeen, SD 57401

Jerry Hunt
Cakota Woodworks Inc.
Kindred, ND 58051

Hunter Grain Co.
Hunter, ND 58048

Douglas Hupke
Box 93
Langford, SD 57402

Mr. Clayton Hutton
RR1, Box 35
Hillsboro, ND 58045

Lyle Impecoven
Box 435
Britton, SD 57430

Ella Impecoven
Box 607
Britton, SD 57430

Loren R. Irvine
ICI Top Pork, Inc
18930 Lotus View Dr.
Eden Prairie, MN 55344

Morris Jacobson
Box 59
Northwood, ND 58267

Buddy & Bev Jacobson
RR 1 Box 40
Hillsboro, ND 58045

Jon, Arlene Jagol
RR 5 Box 72
Thief River Falls, MN 56701

Myron Janke
Tenney, MN 56582

Donald Jarrett
RR2, Box 179
Britton, SD 57430

Ronald R. Jarrett
RR1, Box 154
Britton, SD 57430

Royal Jerde
RR1, Box 20
Langford, SD 57432

Lorrie Jerde
RR2, Box C58
Hillsboro, ND 58045

David Jesse, Mgr.
Lake Region Electric Assn.
PO Box 341
Webster, SD 57274

Mrs. Lillian John
Box 204
Hillsboro, ND 58045

Sharon & Neil Johnson
1605 1st Ave. N.
Wheaton, MN 56296

Mr. & Mrs. Vernon G. Johnson
315 2nd St. SE
Hillsboro, ND 58045

Robert D. Johnson
6503 233nd Place SW
Mountlake Terrace, WA 98043

Dale Johnson
Box 175
Pierpont, SD 57468

Vernon & Mavis Johnson
PO Box 114
Hillsboro, ND 58045

Walter C. Johnson
R 2, Box 32
Wheaton, MN 56246

Roger Johnson
RR 1, Box 160
Wheaton, MN 56296

Paul Johnson
RR1, Box 32A
Borcross, MN 56279

Fritz & Margaret Johnson
Rt 2, Box 31
Wheaton, MN 56296

Manetta I. Johnson
Rt 2, Box 50
Wheaton, MN 56296

Tom Jones, Sc.
RR1, Box 53
Langford, SD 57454

John Juelson
P.O. Box 207
Hillsboro, ND 58045

Keith Kaldor
Pres., Traill Co. Farm Bureau
Hillsboro, ND 58045

Lee Kaldor
RR1 Box 61A
Hillsboro, ND 58045

Mrs. Harold Kalsnes
RR1, Box 146
Thief River Falls, MN 56701

Geneva A. Keane
59 East Lynnar Dr.
Fargo, ND 58102

C. M. Keintz
County Commissioners
Box 73
Eden, SD 57232

Gary Keller
10790 Ravenna Rd. #302
Twinsburg, OH 44087

Richard Keller
3301 17th Ave. SW
Fargo, ND 58103

David W. Keller
3600 Swenson #344
Las Vegas, NV 89109-2912

Faye and Russell Keller
Box 123
Tintah, MN 56583

Richard Keller
Box 149
Tenney, MN 56582

Jerry Keller
Nashua, MN 56583

Lloyd Keller
Rt 1, Box 150
Tenney, MN 56582

Tate, Kathy, Steve, Wendy Keller
Rt 1, Box 4
Tintah, MN 56583

George W. Kerestes
815 Duke Drive #213
Grand Forks, MN 58201

Jim Killingbeck
624 S. Hannifin Street, Apt. 4
Bismarck, ND 58501

John Thomas Kinney
8 Dawson Ter.
Livingston, NJ 07039

Floyd Kliner
PO Box 55
Euclid, MN 56722

Kathleen Klugman
RR 2, Box 26
Wheaton, MN 56296

Dennis Klugman
Wheaton, MN 56296

Mr. & Mrs. Arnold Knudson
RR2, Box 145
Hillsboro, ND 58045

John Knudsvig
PO Box 4
Clifford, ND 58016

J. Kopanger
804 Reeves
Reno, NV 89503

Mrs. Winnifred Kopanger
Hillsboro, ND 58045-0041

Al Kosen
Cambell, MN 56522

Herman Krajeck
3120 W Tillman St.
Appleton, WI 54911

Raymond Kraling
Traill County Water Resources Board
RR2, Box B-17
Blanchard, ND 58009

Mr. & Mrs. Ken Krause
Rt 1, Box 2
Tintah, MN 56583

James, Shirley Krenz
RR2, Box 105
County Road 11
Wheaton, MN 56296

Florence Krieger
255 Texas St., Apt. 202
Rapid City, SD 57701

Mrs. Dick Kringen
Aztec Trailer Resort
Space A-29
4220 East Main Street
Mesa, AZ 85205

Frances & Liz Kritzberger
RR2, Box 102
Hillsboro, ND 58045

Mr. & Mrs. Paul Krugen
Box 72, RR1
Beardsley, MN 56211

Dale Kurth
RR1, Box 2
Claremont, SD 57432

Francis Kutzberger
RR 2, Box 102
Hillsboro, ND 58045

Kelly S. Kyllo
1012 1st Street So.
Wahpeton, ND 58075

Korey V. Kyllo
Arthur, ND 58045

Ron Kyllo
Box 56
Hunter, ND 58048

Mr. & Mrs. Gerald Kyllo
Route 1, Box 61
Hunter, ND 58048

Rob LaCoursiere
322 Cardinal Ave.
Thief River Falls, MN 56701

Sharon LaCoursiere
Box 100
Thief River Falls, MN 56701

Ruby A. Lamberton
126 S. 1st St.
Webster, SD 57214

Joyce Landeis
RR1, Box 71
Dahlen, ND 58224

Tim Langley
Box 405
Watertown, SD 57201

Bernard Lehman
RR 1, Box 7
Tintah, MN 56583

Mr. & Mrs. Daryl Leininger
Chairman, Walls TWP
Rt 1, Box 30 Wheaton, MN 56296

Judy Leininger
Walls TWP
Wheaton, MN 56296

Michael Lemmon
Rt 2, Box 16
Andover, SD 57422

Erik Levandowski
320 Broadway
Thompson, ND 58278

Eldren, Mavis & Merton Lichtsinn
East Highway 27, Box 805
Wheaton, MN 56296

Kevin Lichtsinn
RR1, Box 69
Dumont, MN 56236

Montfred Liknes
112 Elm Street
Langford, SD 57454

Chuck Liknes
Box 412
Britton, SD 57430

Craig Likson
Box 72
Dumont, MN 56236

Richard H. Link
Campbell-Tintah School
Superintendent's Office
Ind. School Dist. No. 852
Campbell, MN 56522

Shirley Litch
RR1, Box 132
Langford, SD 57454

Mr. and Mrs. Melfred Locken
R 1 Box 66
Aneta, ND 58212

Peder M. Locken
RR 1 Box 65
Aneta, ND 58212

W. E. Loe
PO Box 179
Pierpont, SD 57468

Carole Loeslie
Rt 1, Box 15
Warren, MN 56762

Mr. & Mrs. Walter Lubben
Norcross, MN 56274

Mrs. Jim Ludewese
Route 1, Box 60
Boumont, MN 56236

Sharon Lueker
RR1
White Rock, SD 57277

Paul Luitjens
1016 N. 17th St.
Fargo, ND 58102

Berneta Lundquist
4105 Birchmont Drive NE
Bemidji, MN 56601

Mark Lundren
RR1, Box 89
Trail, MN 56684

Jeanette Shaw Lynch
1041 N. 8th St.
Fargo, ND 58102

Norman Magman
RR 2, Box 35
Wheaton, MN 56296

Ed Mallett
Box 587
Britton, SD 57421

Jim & Sybil Mann
Box 181
Campbell, MN 56522

Vonie Manthey
Box 204
Hillsboro, ND 58045

Pat Marcus
6 Hay Camp Road
North Oaks, MN 55110

Agnes G. Marihart
717 5th St. W., #107
Graceville, MN 56240

Dale, JoAnne Marihart
Box 23
Dumont, MN 56236

David Marihart
Route 1, Box 20A
Dumont, MN 56236

Agnes G. Marinet
717 5th Ave. St. #107
Graceville, MN 56240

Richard Marske
RR2, Box 13
Andover, SD 57422

Janet Jean Masbarger
RR2, Box 97
Wheaton, MN 56296

Mr. & Mrs. Donald Mathias
902 5th Ave. No.
Wheaton, MN 56296

Rick & Marilyn & Jessica Mathias
Mathias Aerial Spraying
RR 1 Box 104
Wheaton, MN 56296

John Mattson
324 Main Ave. No.
PO Box 100
Thief River Falls, MN 56701

Ardath May
Rt 1, Box 6
Andover, SD 57422

James McChesney
Campbell, MN 56522

Richard & Delores McClernon
RR1, PO Box 142
Tenney, MN 56582

Charles McDonnell
Graceville, MN 56240

Mr. & Mrs. Donald McInnes
RR2, Box 141
Hillsboro, ND 58045

Robert M. McSparron
Box 643
Hillsboro, ND 58045

Dunbar, Mildred, Jon, Liz McSparron
Box 72
Grandin, ND 58038

Tom & John McSparrow
Rt 1, Box 73
Grandin, ND 58038

Terrance E. Meidinger
1005 18th Avenue NE
Aberdeen, SD 57401

Harry Melander
824 Raymond Ave.
St. Paul, MN 55114

Morris & Kathleen Melander
PO Box 55
Hunter, ND 58048

Mrs. Malvin Melin
Route 2
Red Lake Falls, MN 56750

Mildred L. Meyers
208 1st Ave. So.
Wheaton, MN 56296

Terry E. Meyers
Galesburg, ND 58316

Virginia Miller
316 Hamline
Grand Forks, ND 58201

David Miller
RR1
Thief River Falls, MN 56701

Wendy Miller
Rt 1, Box 4
Tintah, MN 56583

Ira, Leona Mills
RR 2, Box 40
Wheaton, MN 56296

Kirk Moeckly
Box 406
Britton, SD 57430

Mrs. Junelle Moen
Box 117
Galesburg, ND 58035

Mr. & Mrs. Ewald Moerer
509 13th Street N.
Wheaton, MN 56296

Michael Moher
222-27th Avenue South
Grand Forks, MN 58201

Stanley Moore, President
ND Farm Union
Box 2136
Jamestown, ND 58402-2136

Francis Mord
RR 1, Box 28
Wheaton, MN 56296

Christy & Tom Morgan
Rt 1, Box 83
Tntah, MN 56583

Brent Moritz
21144 Twinlakes Road
Elk River, MN 55330

Tawnya Morkrid
Rt 1, Box 151
Thief River Falls, MN 56701

Kelly Mosbeck
RR2
Red Lake Falls, MN 56750

Robert Motter
RR1
Clifford, ND 58016

Mr. & Mrs. John Motter
RR1, Box 63
Hope, ND 58046

William P. & Patricia J. Motter
Route 1, Box 55
Hunter, ND 58048

John J. Mullen
Box 525
McVille, ND 58254

Mr. Walter E. Murray
Graceville, MN 56240

Norma Nasek
602 16th Ave. N.
Wahpeton, ND 58075

Isabelle Nehring
46 Fisher St., PO Box 444
Fort Fairfield, ME 04742

Kenneth, Joan, & Beverly Nelk
Rt 2, Box 52
Wheaton, MN 56296

Paul & Myrtle Nelson
803 1st Ave. S.
Wheaton, MN 56296

Deane E. Nelson
Box 313
Hillsboro, ND 58045

Duane & Evon Nelson
Hillsboro, ND 58045

Larry Nelson
Hunter, ND 58048

Nelson Implement, Inc.
Box "F"
Highway 59 North
Thief River Falls, MN 56701

Wayne J. Nelson
RR 1 Box 17A
Langford, SD 57454

Michael B. Nelson
RR 1 Box 35
Langford, SD 57454

Leslie O. Nesvig, President
First State Bank
PO Box 6
Omega City Plaza
LaMoure, ND 58458

Ronald Niesche
Box 24
Tintah, MN 56583

Dennis Nilles
Hillsboro, ND 58045

Larry Nolan
Weston Township
RR1, Box 72
Claremont, SD 57432

Francis M. Nord
RR1, Box 28
Wheaton, MN 56296

University of North Dakota
Dept. of Physics
Box 8008, University Station
Grand Forks, ND 58202

Walter Nosek
Wahpeton, ND 58075

Melvin Nyberg
RR Box 93
Arthur, ND 58006

Aagot, Jerome Nysveen
RR 2, Box 80
Hillsboro, ND 58045

Dean Olhoft
Norcross, MN 56274

Mr. & Mrs. Wm. Olhoft
Norcross, MN 56274

Muriel K. Oliver
1258 NW Summit Ave.
Portland, OR 97210

Milo Olsen
RR1, Box 48
Langford, SD 47454

Fred Olson
Box 115
May, ND 58759

Ruth Olson
Box 22
Langford, SD 57454

Vickie Olson
Box 49
Clifford, ND 58016

Clifford F. Olson
Box 524, 1204 4th St.
Britton, SD 57430

Donald and Betty Lou Olson
RR1, Box 111
Thief River Falls, MN 56701

Richard A. Olson
Box 63
Langford, SD 57454

David Olson
RR1, Box 24
Langford, SD 57454

James Olson
RR1, Box 45
Langford, SD 57454

Mr & Mrs. John Omdahl
Rt 2, Box 42
Warren, MN 56762

Eldor & Stella Omdahl
Rt 2, Box 45
Warren, MN 56762

Jerome Osness
Box 49A
Langford, SD 57454

Morris Ostmo
RR2, Box 110
Northwood, ND 58267

Sherry Page
Rt. 1 Box 211
Thief River Falls, MN 56701

Delores Payton
Dumont, MN 56236

Craig Pearson
Tintah, MN 56583

Mrs. Nellie Peterman
R 2, Box 43
Wheaton, MN 56296

Henry Petermann
Box 65
Tintah, MN 56583

Roy Petersen
R 2, Box 56
Wheaton, MN 56296

Fanny B. Peterson
Box 506
Laremore, ND 58251

Dale & Erma Peterson
Box 61
Hunter, ND 58048

Dennis & Geraldine Peterson
RR #1 Box 68
Grandin, NK 58038

Allen W. Peterson
Rt 2, Box 70
Wheaton, MN 56296

Dolores & Philip Petterson
1405 Broadway
Wheaton, MN 56296

Mabel & Inez Peyton
310 S. 9th St.
Wheaton, MN 56296

Mr. & Mrs. Tom Peyton
Dumont, MN 56236

Mike Peyton
RR1, Box 69
Wheaton, MN 56296

Mrs. Bill Peyton
Rt 1, Box 9
Dumont, MN 56236

Mr. & Mrs. Michael Peyton
Wheaton, MN 56296

Michael Phillips
Grand Forks Chamber of Commerce
110 49th Ave. S
Grand Forks, ND 58201

Verne Platt
RR 1, Box 160
Tenney, MN 56582

Paul Ponte
R 2, Box 6
Blanchard, ND 58009

Ryan Poole
RR 1
Wheaton, MN 56296

Mrs. Linda Poole
Wheaton, MN 56296

Bernice & Keith Porter
Box 111
Hunter, ND 58048

Ann & John Porter
Box 134
Hunter, ND 58048

Lynn Porter
Box 542
Hillsboro, ND 58045

Joel C. Porter
Grandin, ND 58038

Gene & Daphne Porter
RR1 Box 71
Grandin, ND 58038

Duane & Marcine & Diane Porter
RR1, Box 53
Tintan, MN 56583

Glenn & Grace Porter
RR1, Box 62
Grandin, ND 58038

Post Master
City of Wheaton
Wheaton, MN 56296

Eugene Prunty
RR2, Box 47
Andover, SD 57422

MaryAnn Przymes
1504 3rd Avenue So.
Wheaton, MN 56296

Roy A. Pulfrey, PE
1722 Melody Lane
Aberdeen, SD 57401

Mr. & Mrs. James Putnam
Box 66
Tintah, MN 56583

Jessica, Jacinta, Jean, Jim & Jeanne Putnam
RR1, Box 51
Tintah, MN 56583

Lloyd Putnam
Rt 1, Box 207
Bismarck, ND 58201

Jerome Quanrud
226 W. 4th St.
Warren, MN 56762

Sister Carol Quinn
1500 W. Main St.
Aberdeen, SD 58045

Mrs. Dale Quist
RR1, Box 27
Langford, SD 57454

Lorine, Warren, Virgil & Sharon Raddatz
RR1, Box 100
Wheaton, MN 56296

Loren & Robin Radebaugh
RR 1, Box 58
Grandin, ND 58038

Brett & Gerald & LaMae Radebaugh
RR1, Box 57
Grandin, ND 58038

Burton Rademacher
RR1, Box 88
Amherst, SD 57421

Anton P. Rader
710 1/2 Red Lake Blvd.
Thief River Falls, MN 56701

Larry & Barb Raguse
RR 1, Box 147
Tenney, MN 56582

Marvin & Vyone Raguse
RR 1, Box 25
Tintah, MN 56583

Irene Raguse
RR 2, Box 26
Wheaton, MN 56296

Lyle & Gloria Raguse
Route 1, Box 115
Tenney, MN 56582

Dianne & Douglas Raguse
Rt 1, Box 99
Nashua, MN 56565

Kathy Ranney
403 8th St. No.
Wheaton, MN 56296

LeRoy & Shirley Reckner
Rte 1, Box 18
Norcross, MN 56274

Tom Reid
RR3, Box 16
Hillsboro, ND 58045

William T. Reints
Box 57A
Langford, SD 57454

Wes & Luella Reisenburg
Route 2, Box 13
Hope, ND 58046

Paul M. Retzleff
Box 88, RR1
Aneta, ND 58212

Harris Richardson
RR 1, Box 161
Tenney, MN 56582

Lilas Riley
Rt 2, Box 15
Faulkton, SD 57438

Anthony Ringger
Box 52
Dumont, MN 56236

Margaret M. Ringger
RR 1, Box 50
Dumont, MN 56236

Robert Ringger
RR1
Graceville, MN 56240

Brian & Betty Rinke
RR 1, Box 1106
Wheaton, MN 56296

Richard S. Roberts
Attorney at Law
Broadway Office Building
P.O. Box 25
Wheaton, MN 56296

John Rodgers
Nodak Electric
Box 1478
Grand Forks, ND 58201

Don R. Roehr
RR2, Box 129
Britton, SD 57430

Alan Rogahn
Heart Butte School
School District No. 1,
Pondera County Heart Butte, MT 59448

Harold & Lorraine Rogahn
7974 142nd Ave. N.W.
Anoka, MN 55303

Dolores Rogahn
820 E. Summit, #9
Fergus Falls, MN 56537

Marcus H. & Hope L. Rogahn
Box 93
Wendell, MN 56590

Duane Rogahn
RR 1, Box 155
Tenney, MN 56582

Doreen Rosevold
Rt 2, Box 122
Mayville, ND 58257

Faith & Larry Rud
Rt 3, Box 152
Warren, MN 56762

Mr. & Mrs. Ted Rygh
RR1, Box 63
Galesburg, ND 58035

Ruth Rust, Clerk
Hillsboro Public Schools
Hillsboro, ND 58045

Marvin Sand
RR 1 Box 2
Clifford, ND 58016

R. C. Sandahl
Lakehead Pipe Line Company, Inc.
P.O. Box 665
Bemidji, MN 56601

Duane Sander
660 Faculty Drive
Brookings, SD 57006

Curtis Satrom
Grandin, ND 58038

Margaret Satrom
RR 1 Box 67
Hope, ND 58046

Rick Satrom
RR 1 Box 82
Grandin, ND 58038

Paul Satrom
RR1, Box 58
Galesburg, ND 58035

Mr. & Mrs. Maynard Satrom
RR1, Box 66
Hope, ND 58046

Larry Satrom
RR1, Box 7
Clifford, ND 58016

Mr. & Mrs. Roy Satron
R2, Grandin, ND 58038

Ray Saunders
Box 127
Britton, SD 57430

Eldon & Elaine Saunders
Hunter, ND 58048

Marlyn Schaefer
Rt 2, Box 52
Wheaton, MN 56296

Ed Schentez
414 Nicolett
Minneapolis, MN 55401

Mr. & Mrs. Walter Schlichtmann
Box 165
Hillsboro, ND 58045

Henry Schlictmann
RR1, Box 37
Hillsboro, ND 58075

Raymond Schlictmann
RR1, Box 67
Hillsboro, ND 58045

Keith Schmidt
Box 153
Roslyn, ND 57261

Lee Schmidt
PO Box 8
Edmore, ND 58212

Walter Schmidthe
RR2, B #55
Wheaton, MN 56296

Robert & Lois Schmitz
Beardsley, MN 56211

Vernon Schmitz
Box 34
Beardsley, MN 56211

Eunice Schmitz
Rt 1, Box 67
Wheaton, MN 56296

James Schneider
Box 1537
1000 East Divide
Bismarck, ND 58505

Margaret Schneider
Wheaton, MN 56296

Wilbert Schneider
Wheaton, MN 56296

Mr. & Mrs. Maurits Scholin
348 North Crocker Avenue
Thief River Falls, MN 56701

Melvin Scholin
Box 791
Thief River Falls, MN 56701

Thomas Scholin
RR5
Thief River Falls 56701

Arthur, Arnold, & Lorine Schornack
Box 252
Hillsboro, ND 58045

Roger Schuller
Box 7
Claremont, SD 56432

Fred Schumacher
Rogne-Schumacher Seedfarm
RR2, Box 231
Kindred, ND 58051

Jodi Schwartz
Program Associate
2001 "S" Street, NW
Suite 500
Washington, D.C. 20009

James Schwebach
RR 1, Box 44A
Dumont, MN 56236

Ambrose & Evelyn Schwebach
RR Box 46
Dumont, MN 56236

Keith Seaver
Box 241
Portland, ND 58274

Howard Seaver
816 8th Street
Portland, ND 58274

Roxanne Shelstad
Rural Route
Doran, MN 56530

John Sherburn
RR1, Box 189
Britton, SD 57430

Jan Shown
1215 W. Dakoto
Aberdeen, SD 57401

Ray Shuck
Box 63
Tintah, MN 56583

Erwin Simpson
Box 131, Rt 2
Herman, MN 56248

Allan Sine
Britton, SD 57430

Sky Tractor Company
RR 2, Box 36
Hillsboro, ND 58045

R. T. Small
1515 East 38th
Spokane, WA 99203

Mrs. Duane Smart
RR1, Box 36
Hillsboro, ND 58045

Ruth D. Smith
513 Caddy Ave.
Moorehead, MN 56560

Randy & Colette Smith
809 W. 7th Street
Wahpeton, ND 58075

Gary & Glenda & Jeffrey Smith
RR 1, Box 9B
Cummings, ND 58223

Dan Downey, Denise Lund Smith
RR1, Box 32H
Norcross, MN 56274

Scott Sorbig
Route 2, Box 167
Red Lake Falls, MN 56750

Mr. & Mrs. Harvey Sorensen
Rt. 1, Box 154
Wheaton, MN 56296

Ronald Sorenson
Box 12, RR2
Kathryn, ND 58049

Steven Sorvig
Rt 1, Box 61C
St. Hilaire, MN 56754

David & Verne Spengler
RR 4 Box 168
Thief River Falls, MN 56701

Roger St. Sawver
Box 346
Britton, SD 57430

Linda Steele
1312 W. Arch St.
Aberdeen SD 57401

Steiger Farms, Inc.
RR2
Red Lake Falls, MN 56750

Keith and Shelly Steve
RR4, Box 10
Thief River Falls, MN 56701

M. O. Stokke
Box 225
Pierpont, SD 57468

Harold & Marlin Stokke
RR 1 Box 84
Grandin, ND 58038

Merle Stokke
RR1
Grandin, ND 58038

Gilman A. Strand
Portland, ND 58274

Luann Streed
1009 Second Ave. No.
Wheaton, MN 56296

Thomas M. Stringer
Williams, Mitz, Krekelberg & Stringer
Attorneys at Law
Post Office Box 117
Fergus Falls, MN 56537

Judy A. Stumf
Rt 1, Box 58
Tintah, MN 56583

Bernadean & John Swanke
Route 1, Box 40
Wheaton, MN 56296

Kirk Swanson
RR 109A
Claremont, SD 57432

Curtis W. Swanson
Route 5, Box 83
Thief River Falls, MN 56701

Kevin Swanson
Vernon Swanson & Sons
RR1, Box 19
Langfod, SD 57454

William K. Sylvester
Rt 5
Thief River Falls, MN 56701

Irwin Symens
RR1, Box 53
Claremont, SD 57432

Paul Symens
RR1, Box 89
Amherst, SD 57421

John Tate
Bohnsack Township
RR1, Box 51
Hunter, ND 58048

Edward & Mae Tate
Box 225
Grandin, ND 58038

Doug Tate
Grandin, ND 58038

Terry Texey
PO Box 580
Huron, SD 57350

Ron and Rodney Theil
RR1, Box 10A
Dumont, MN 56236

Mr. & Mrs. Gerald Thiel
Dumont, MN 56236

Mr. & Mrs. Bob Thiel
Dumont, MN 56236

Orville & Ruth Thiel
Wheaton, MN 56296

Dale Thompson
605 SW 2nd St. R-B
Rugby, ND 58368

Annello Thompson
Blanchard, ND 58009

Mr. & Mrs. Ralph Thompson
Blanchard, ND 58009

Leonard Thompson
Box 204
Blanchard, ND 58009

Elaine Thompson
Clifford, ND 58016

Scott Thompson
First Interstate Bank of Fargo, NA
Trust Division
Main & Broadway
Fargo, ND 58214-0001

Larry R. Thompson
Hillsboro, ND 58045

Edyth Thompson
RR1, Box 33
Clifford, ND 58016

Ardie Thorson
PO Box 92
Page, ND 58064

Mr. & Mrs. Bruce Thorsrud
Box 75, RR 1
Grandin, ND 58038

Joel Thorsrud
RR2, C #37
Hillsboro, ND 58045

Cynthia & Gregory Thrall
1106 Tolle Court
Billings, MT 59105

Tibbits Engineering
735 11th Street East
Glencoe, MN 55336

Lorne Tillburg
Box 166
Britton, SD 57430

Gary L. Timm
Rt 1, Box 83
Wheaton, MN 56296

Mr. & Mrs. Phyllis Tisher
PO Box 181
Amherst, SD 57421

Dean Toelle
RR 1, Box 15
Tintah, MN 56583

Lloyd & Esther Tofte
1409 North 14th Street
Wahpeton, ND 58075

Gerald Tollefson
Box 337
Portland, ND 58274

James Tompkins
1212 N. Main
Webster, SD 57274

Daniel Torguson
RR1, Box 10
Andover, SD 57422

Clayton Toso
Graceville, MN

Mr. & Mrs. Norman Townsend
Box 24 RR 1
Andover, SD 574 ?

Mr. & Mrs. Joseph Tritz
Box 425
Graceville, MN 56240

Kenneth S. Tritz
Box 72A
Dumont, MN 56236

Mr. & Mrs. Loyal Tritz
Dumont, MN 56236

Todd, JoAnn, Lori Ann, & Candy Tritz
R1, Box 45
Dumont, MN 56236

John, Shirley & Daniel Tritz
RR 1, Box 74
Dumont, MN 56236

Donald Tritz
RR1
Dumont, MN 56236

Terry & Lois Tritz
Rt. 1, Box 18
Johnson, MN 56250

Donald Ugham
RR2, Box 96
Northwood, ND 58267

Linda & Bev Ulland
1700 25th Ave. S.
Fargo, ND 58103

Bessie Ulland
225 6th Ave. SE
Mayville, ND 58257

Ruth Urness
Rt 1, Box 15
Petersburg, ND 58272

Byron Utter
PO 127
Langford High School
Langford, SD

Russ Van Wagner
324 4th St. SW
Aberdeen, SD 57401

Jo VanHoul
Rt 1, Box 113
Campbell, MN 56522

John Vein
Box 329
Niagara, ND 58266

David Vietor
Treasurer, Lowell Township
RR 2 Box 138
Britton, SD 57430

Ronald Vold
Rt 1, Box 43
Dumont, MN 56236

Arnold Vold
Rt. 1 Box 17
Johnson, MN 56250

Susan Volk
RR2, Box 78
Britton, SD 57430

Kenneth H. Volla
Route 2 Box 29
Mayville, ND 58257

Alvin Vollmers
1402 Broadway Street
Wheaton, MN 56296

Vere & Ellen Vollmaus
RR2, Box 21
Wheaton, MN 56296

James E. Voss
R 1, Box 106
Tenney, MN 56582

Edna L. Wagner
RR1, Box 15
Andover, SD 57422

Richard S. Waldner
Newport Colony, Box 41
RR1
Clairmont, SD 57432

Russell Waters
RR 1, Box 71
Hillsboro, ND 58045

David Wegleitner
Box 252
Langford, SD 57454

H. W. Weible
5038-29 Ave. S.
Minneapolis, MN 55417

Allen Weick
1608 Broadway
Wheaton, MN 56296

Harold Wells
Box 29
Houghton, SD 57449

Mrs. Herbert Welte, Jr.
Ash Grove Farm
RR1
Aneta, ND 58212

Robert Werran
Clifford, ND 59016

Jessie West
Rt 1, Box 50
Langford, SD 57454

Donald Wetenkamp
R 1, Box 16
Tintah, MN 56583

Father William Wey
St. Peter's Parish
Box 38
Dumont, MN 56236

Wheaton-Dumont Coop Elevator
1115 Broadway
Wheaton, MN 56296

Lee R. Wical
P. O. Box 29274, Code PP212
Honolulu, HI 96820

Alvic Wieland
RR2, Box 187
Red Lake Falls
MN 56750

Harvey S. Wiemann
444 W. 7th Ave.
Webster, SD 57274

James Wigdahl
RR 1 Box 26
Langford, SD 57454

Florence Willard
RR 1, Box 77
Nashua, MN 56565

Connie Williams
Box 898
Britton, SD 57430

Mrs. Joyce Wilson
225 N. 2nd Ave.
Sauk Rapids, MN 56379

Mabel Winter
RR 2 Box 29
Wheaton, MN 56296

Lorence & Melva Winter
RR 2, Box 27
Wheaton, MN 56296

Mark Wismer
Box 147
Britton, SD 57430

Richard Wismer
Route 2 Box 23
Britton, SD 57430

Gale Witham
635 So. 11th St.
Aberdeen, SD 57401

Forrest D. Wixon
Environmental Engineer
S.D. DOT Bldg
Pierre, SD 57501

Robert Woell
303 Robin Hood Court
Bolling Brook, IL 60439

Wesley Wolfgram
Box 289
Niagara, ND 58266

Robert A. Wurst
237 N. Kneale Avenue
Thief River, MN 56701

Danice Young
R 2, Box 133
Herman, MN 56241

Leonard Zuehlke
Britton, SD 57430

Mrs. Stanley Zych
Graceville, MN 56240

Media

Britton Journal (Print Media)
Britton, SD 57430

Jo-Anne Byrne
UPI
301 4th Avenue, South
Suite 285
Minneapolis, MN 55415

Camilla Carroll
KCCM-Radio
Box 72
Concordia College
Moorhead, MN 56560

Sue Ellison
KFGO-Radio
Box 2966
Fargo, ND 58108

Kate Hadelin
WCCO-TV
90 South 11th St.
Minneapolis, MN 55403

Clay Haswell
Associated Press Bureau
511 11th Avenue South, Rm. 404
Minneapolis, MN 55415

Randy Howell
City Editor
Grand Fords Herald
Box 998
Grand Forks, ND 58206

Randy Howell
Herald
Box 8137
University Station
Grand Forks, ND 58202

KKAQ
News Director
PO Box 218
Thief River Falls, MN 56701

KTRF
News Director
PO Box 40
Thief River Falls, MN 56701

Joe Kafka
Associated Press
PO Box 368
Pierre, SD 57501

Donna Larson
512 Arnold Ave.
Thief River Falls, MN 56701

Donna Leslie
KSFY (TV)
Box 1520
Aberdeen, SD 57401

Paul Levy
Star & Tribune
425 Portland Avenue, South
Minneapolis, MN 55488

Brenda McBride
KKXL Radio
505 University Avenue
Grand Forks, ND 58201

Craig McEwen
The Forum
PO Box 69
Moorhead, MN 56560

Bob Mercer
American News
PO Box 4430
Aberdeen, SD 57401

Jeff Meyer
Associated Press
Box 2020
Fargo, ND 58107

Bob Prowse
WDAY-TV
Box 2466
Fargo, ND 58108

Keith Seaver
NJOB Box 241
Portland, ND 58274

Skip Seiser
UPI
PO Box 8159
Fargo, ND 58109

Arvid Sinstelie
Chief Engineer
KXJB-TV4
PO Box 2926
Fargo, ND 58108

David Somdahl
KCCM 91.1 FM
Box 72
Concordia College
Moorhead, MN 56560

Scott Swanstrom
KTMI-TV
PO Box 1878
Fargo, ND 58107

Janelle Toman
UPI
PO Box 1059
Pierre, SD 57501

John Vanvig
Herald
Box 8137
University Station
Grand Forks, ND 58202

Darryl Veldhouse
KDSU-FM
Box 5347
Fargo, ND 58105

WDAZ-TV News
Box 638
Grand Forks, ND 58201

Dale Wetzel
Associated Press
Box 1018
Bismarck, ND 58502

Libraries

Pearson Elementary School
710 4th Avenue North
Wheaton, MN 56296

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Distribution List Addendum

Mr. Heinrick Woizeschke
R.R. 1, Box 79
Nashua, MN 56565

Mr. Clinton Ross
Box 14
Tintah, MN 56583

Mr. Randy Murray
Route 2
Wheaton, MN 56296

Mr. Merton Johnson
Route 1
Wheaton, MN 56296

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Dumont, MN 56236

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Route 2
Wheaton, MN 56296

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Route 1
Barrett, MN 56311

Mr. John Scharf
Dept. of Natural Resources
Route 1
Morris, MN 56267

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Rural Route 1
Barrett, MN 56311

Senator Charlie Berg
State Capitol Building
Room 328
St. Paul, MN 55155

Mr. Lance Lundquist
Evster Realty
1112 - 1st Avenue North
Wheaton, MN 56296

Mr. and Mrs. Roger Schmidt
Dumont Grain
Dumont, MN 56236

Wheaton-Dumont Elevators
Attention: Mr. Orval Kohls
Wheaton, MN 56296

Mrs. Barb Johnson
Attorney at Law
MPRIG
2412 University Ave., S.E.
Minneapolis, MN 55414

Mr. Paul Sortland
Attorney at Law
710 Black Building
118 Broadway
P.O. Box 1882
Fargo, ND 58107

Mr. Joh Mathias
604 - 5th Avenue North
Wheaton, MN 56296

Mr. and Mrs. William Rinke
18 Brook Street
Morris, MN 56267

County Commissioners
Stevens County Courthouse
Morris, MN 56267
Attention: Chairman

Mr. K. J. Benner
Benner & Associates
1251 N. Kent Street
St. Paul, MN 55117

Superintendent
Herman School System
Herman, MN 56248

Superintendent
Graceville Schools
Graceville, MN 56240

Dr. Charles E. Carson
Rural Route 6
Fergus Falls, MN 56537

Mr. and Mrs. Randy Behrens
Route 1
Graceville, MN 56240

Dr. Robert Brambl
University of Minnesota
Dept. of Plant Pathology
495 Borlaug Hall
1991 Buford Circle
St. Paul, MN 55108

Board of Education
Wheaton Public Schools
Wheaton, MN 56296

National Farmers Organization
18 - 10th Avenue North
Wheaton, MN 56296
Attention: President Holtz

Mr. Bill Christianson
President, National Farmers
Organization
Box 431
Battle Lake, MN 56515

Mr. Marlo Warholm, Chairman
Clifton Township Board
Route 2, Box 121
Wheaton, MN 56296

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Grandin Cooperative Oil Company
Grandin, ND 58038