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This study examined the feasibility of providing CT scanning capability to Veterans Administration and Department of Defense Health Care Facilities through a shared mobile CT unit. This study found a significant financial benefit over two fixed CT Scanner units at every demand level tested. The author cautioned against the drawbacks such as the scanning unit or transportation failure, but concluded exceptional benefits even taking the drawbacks into account.

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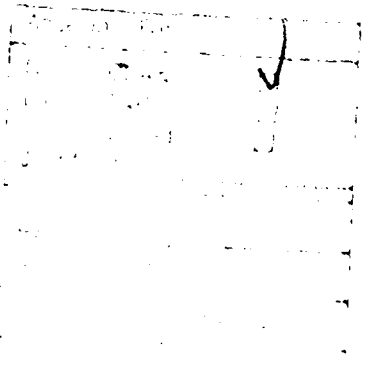
PROVISION OF CT SCANNING CAPABILITY TO VA/DOD HEALTH CARE FACILITIES THROUGH A SHARED MOBILE CT UNIT:

A FEASIBILITY STUDY

A GRADUATE RESEARCH PROJECT
SUBMITTED TO THE FACULTY OF
BAYLOR UNIVERSITY
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF
MASTER OF HEALTH ADMINISTRATION



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by

MAJOR STEPHEN L. WHITE, MSC

27 July 1984

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CHAPTER I

INTRODUCTION

PROBLEM DEVELOPMENT

New medical technology seems to spring into existence almost daily. Scarcely a single issue of a newsmagazine or edition of a major newspaper fails to carry at least one story announcing a new device, technique or treatment for one or another of mankind's ailments. This mass media exposure generally follows closely on the heels of publication of scholarly articles in professional journals read by the health care practitioner. The new technology thus described is eagerly tried throughout the medical community, and once accepted as efficacious, an intense demand for the diffusion of the technology is created. This demand is not only fueled by the desire of physicians to be "state of the art" but by the hopes and sometimes desperation of the consumer. As a result of this demand, hospitals compete for the health care dollars represented by both groups through seeking to obtain and utilize the latest in diagnostic, therapeutic, or support equipment. Given the rapidity with which advances are coming to light, costs become staggering. Many believe this never-ending spiral of acquisitiveness is the chief culprit in the enormous increase in health costs experienced in the United States since 1965. It has been estimated that 21% of the total increases in hospital costs experienced

from 1969 to 1979 was a direct result of the increased utilization of new technology in the health care delivery system. [1]

Attitudes toward different types of technological advances also tend to differ given the nature and effect of the technology. A new device or technique that offers obvious clinical relief or a curative effect is much easier to "sell" to practitioners and public than a device or technique which does nothing more than duplicate something already available through similar devices or techniques. Thus, if the two categories of technological advancement are identified as diagnostic or therapeutic, the therapeutic advancement is of more immediate interest since it offers a tangible benefit. Even if the benefit is only palliative in nature, conforming to the "halfway" technology described by Lewis Thomas, the demand is normally far greater for it than for a new "definitive" diagnostic procedure.[2] There are significant exceptions to this generality, the most prominent being the CT scanner.

The CT scanner was first manufactured by EMI Corporation in 1972 as a prototype for clinical studies of the brain in England. While the device received immediate acclaim from practitioners, EMI failed to recognize the clinical significance and potential demand, estimating a need for only 25 units. By 1974, however, it had become the darling of the neuroradiologic world, and was alternately damned for its high costs and praised for its clinical effectiveness. Whole-body CT equipment was finally produced in 1975, again by EMI, but with this development came a host of commercial competitors so that in 1976 at least 22 separate companies were selling products relating to CT. [3]

Health planners, government regulators and politicians, seeing the impending explosion in acquisitiveness and in consideration of the huge cash outlay required for purchase of a single machine, sought to slow the diffusion of CT into the nation's health care delivery system. The American Hospital Association published guidelines proposing that a minimum 2500 projected scans be the criteria for purchase and installation by a hospital.[4] State Certificate of Need (CON) agencies were thus able to restrict such installations on the basis of over capacity. However, there were few restrictions for consortiums of physicians or other commercial entities which desired to provide CT scanning services. Consortiums of hospitals as well used a shared-service basis to gain access to this technology. The net effect of the initial period of growth was that although there was a perceptible slowing of diffusion, steady pressure remained and still exists throughout the health care delivery system for obtaining CT scanning devices.

As the CT scanner became more common, researchers in many fields found previously unimagined uses for the device. Improvements in second and later generation equipment reduced scanning time, improved resolution, and provided much more rapid output. Older, more hazardous invasive diagnostic procedures were replaced by the relatively danger-free CT scan, with accuracy as good as or better than the technique replaced. Recent articles in professional literature attest to its efficacy in many specialty areas and will be discussed in a later section.

Hospitals and medical centers within the Federal sector were predictably slower than non-federal institutions in obtaining and using CT scanners. While the civilian institution has considerable freedom within the confines of regulations imposed by state and Federal agencies, Federal facilities are subject to absolute control by virtue of funding restraints. And so, as of the annual American Hospital Association survey conducted at the end of 1981, of 334 Federal hospitals reporting, only 44, or 13.2%, had CT devices.[5] Compare to that the 21.8% of non-Federal hospitals which were so equipped during the same year.[6] By the end of 1982, those numbers had grown to 15.7% and 28.0% respectively.[7] Since that time, however, things have changed rapidly. In the Veterans Administration, the largest single health care entity in the United States with 171 hospitals, there were 47 operational scanners and 23 more under procurement or being installed as of January 1984.[8] This uncharacteristically rapid acquisition of new technology in the Federal sector seems predicated on the consensus that the benefits of CT outweigh the costs by virtue of its safety and cost-effectiveness in many circumstances.

Further, it now seems that the CT scanner will continue to be integrated into Federal sector facilities at the most rapid rate supportable. The VA plans to buy 15 or more units per year until all facilities are equipped with one or more devices according to need.[9] The Air Force plans to place CT scanners in all hospitals over 100 beds.[10] The Army currently has at least one operational CT scanner in all medical centers and plans to purchase approximately five additional scanners per year for installation in other medical

activities.[11] Equipment currently being considered for installation in Army facilities is programmed at $1.2 million for each location, including purchase of the device and all necessary installation expense.[12] This figure is a reasonable estimate for a typical installation, provided no construction is required beyond minor renovation of existing facilities. These plans all add up to an incredible amount of money, and a natural reaction is to question whether there could be a more effective means of securing technology of this nature for beneficiaries of Federal health care facilities.

That question has certainly occurred to our elected representatives in the Congress of the United States, as evidenced by a series of efforts to deal with ever-rising costs of health care. Perhaps one of the more significant efforts was the passage on 4 May 82 of Public Law 97-174, entitled the Veterans' Administration and Department of Defense Health Resources Sharing and Emergency Operations Act. It is an amendment to Title 38 of the United States Code, with the stated purpose of promoting "greater sharing of health-care resources between the Veterans' Administration and the Department of Defense" as well as to provide for contingency support of the Armed Forces during war or national emergency. (See Appendix 1 for the text of the legislation.) The underlying restriction is quite clear:

> Section 2.(a)(1) There are opportunities for greater sharing of the health care resources of the Veterans' Administration and the Department of Defense which would, if achieved, be beneficial to both veterans and members of the Armed Forces and could result in reduced costs to the Government by minimizing duplication and underuse of health-care resources. (Emphasis by author.)

Among the provisions of this article is a specific charge to the head of each medical facility of the VA or DOD to conclude sharing agreements identifying resources to be shared and establishing reimbursement incentives. The sole caveat is that only excess capacity, defined as that not used in treatment of primary beneficiaries, can be "shared" or "sold." However, according to guidance contained in a mimeographed pamphlet provided attendees at implementing workshops conducted in various cities across the US, both "current and future capabilities should be considered" when sharing agreements are concluded. (Emphasis by author. Full text of the pamphlet is provided as Appendix 2.)

Clearly this legislation has opened the way to regionalization and shared services encompassing all Federal sector facilities. Shared services have long been recognized as one way to reduce costs, through optimal utilization of capacity, but incentives for doing so have been lacking within the Federal sector. Bayne-Jones Army Community Hospital (BJACH) has for several years had a contractual agreement with the Veterans Administrative Medical Center (VAMC) at Alexandria, LA, but rarely have physicians at BJACH chosen to refer patients to that facility. Definitive care at VAMC for most medical conditions is not authorized for the majority of beneficiaries of BJACH and the quality of services available largely unfamiliar to physicians at BJACH. The services covered in the contractual agreement were also available at Brooke Army Medical Center, San Antonio, Texas (BAMC) via transportation provided by United States Air Force (USAF) aeromedical evacuation aircraft. Physicians at BJACH are much more likely to utilize these services than those of VMC owing

to close ties with the consultant services there and a desire to provide the patient with the best care available in the Army system.

A means does exist to permit sharing of CT equipment which circumvents most of the stock arguments against shared services. A CT scanner may be installed in a mobile van and the service moved in its entirety from hospital to hospital, rather than requiring staff and patients to travel to a fixed facility. This concept is hardly new; successful ventures of this nature have been established by consortiums of hospitals and private corporations, and are operating now in many areas of the country. One such company, Shared Medical Resources, a subsidiary of MEDIQ Corporation, is headquartered in St. Petersburg, FL, and operates 35 mobile units in five states, providing CT services on a contractual or fee-for-service basis on-site.[13] There appears to be a significant potential for cost savings in both acquisition and annual operating expense available to the Federal facilities in this area if access to CT technology were provided on a shared basis through a mobile CT scanner.

GEOGRAPHICAL CONSIDERATIONS

West Central Louisiana is the site of three Federal sector inpatient facilities, located within one hours' driving time of one another. The largest facility is the Veterans' Administration Medical Center (VAMC) located in Pineville, Louisiana, a northern suburb of Alexandria, Louisiana. (See the Map located at Appendix 3.) VAMC is operational as a full-service medical facility with 280 acute care beds and 94 long-term care beds. Outpatient and psychiatric inpatient services are also available. Total admissions during 1982 were 5820. Also located in the Alexandria area is England Air Force Base (EAFB). A small base, the hospital has 25 beds, with admissions for 1982 of 1884. Fort Polk, Louisiana, the site of Bayne-Jones Army Community Hospital is located some 50 miles southwest of Alexandria, near the Texas-Louisiana border. BJACH is a 169-bed facility, opened in August 1983 as a replacement for a WWII era cantonment type facility. Admissions for 1982 were 5773.[14]

None of these three facilities presently have a CT scanner installed. VAMC has requested a CT scanner as a part of an ongoing renovation, to be completed in the 1988-1989 time frame. That request is awaiting action. BJACH has submitted all necessary documentation for purchase of a CT scanner under the Medical Care Support Equipment (MEDCASE) Program, but no commitment has been received. Additionally, it seems likely that considerable renovation or even new construction will be require to permit installation of a CT scanner based on existing engineering specifications for load-bearing capacity and air

conditioning in BJACH. EAFB is not large enough to support a permanently installed CT scanner and no plans for provision of services have been developed other than to continue to purchase services locally.

EAFB and VAMC now purchase CT services from St. Francis Cabrini Hospital (SFC) or Rapides General Hospital (RGH) in Alexandria, LA almost exclusively. BJACH has in the past utilized several sources, including Beauregard General Hospital in DeRidder, LA; Lake Charles Memorial Hospital, Lake Charles, LA; and both hospitals previously mentioned in Alexandria; since April, 1984 except for emergencies or when aeromedical evacuation was involved, CT scans have been purchased from Shared Medical Resources through an on-site mobile service.

PURPOSE OF THE STUDY

The purpose of this study is to evaluate the feasibility and cost-effectiveness of shared mobile CT scanning as a means of providing access to this diagnostic modality for the VA/DOD medical treatment facilities located in West Central Louisiana under the auspices of PL 97-174, the Veterans Administration and Department of Defense Health Resources Sharing and Emergency Operations Act.

OBJECTIVES, ASSUMPTIONS, AND LIMITATIONS

Objectives. The objectives of this study are as follows:

1. To determine the potential range of demand for future CT scanning services by facility based on availability of CT equipment on-site at each facility.

2. To derive an estimated average cost per scan and total cost for service demanded by each facility if purchased from a commercial supplier.

3. To derive an estimated average cost per scan and total cost to each facility based on installation of a fixed CT scanner at both VAMC and BJACH.

4. To derive an estimated average cost per scan and total aggregate cost for provision of CT scanning via a mobile unit servicing all three facilities.

5. To identify the most cost-effective alternative based on average cost per scan.

6. To identify and evaluate issues which may be relevant to the feasibility or cost-effectiveness of the mobile CT scanning unit.

7. To determine whether the option of utilizing a mobile CT scan is feasible and cost-effective based on cost comparisons and subjective evaluation of relevant issues not necessarily related to cost.

ASSUMPTIONS. Assumptions necessary for this study include:

1. Quality and accuracy of the output from a mobile CT scanner is equivalent to that obtained from a fixed installation, whether on-site or purchased from an acceptable commercial source.

2. Cost data obtained from civilian sources in regard to operation of a mobile scanner is accurate and reasonably reflects that expected of such a scanner operated by a Federal agency.

3. Cost data obtained pertaining to fixed CT units will accurately reflect similar costs if permanent installation was accomplished at BJACH and VAMC.

4. The formula used to derive potential CT scanning volume is sufficiently accurate for cost analysis of the nature contemplated.

5. Unscheduled maintenance of the mobile CT unit itself will not exceed that predicted by the manufacturer.

6. Historical data documenting case mix by International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) coding can be reasonably expected to reflect that of future years.

LIMITATIONS. Limitations on this study are as follow:

1. Commercial mobile CT scan services may not be willing to share cost data, or may not provide data with sufficient depth to obtain accurate comparisons.
2. Manufacturer's information may reflect cost data which is more optimistic than that reasonably expected for a unit in actual service.
3. Projected reliability of the unit may not accurately reflect that of a unit in actual service in this geographical area, the number of miles traveled, and the number of scans completed.

LITERATURE REVIEW

Efficiency, Safety, and Cost-Saving Considerations. There is a great body of literature establishing the importance of the CT Scanner to diagnostic and therapeutic medicine. Sufficient scanners are available to permit widespread experimentation in clinical efficacy within many specialties, and the results are encouraging. Current issues of professional journals are replete with reports of these efforts, and clearly indicate that CT offers a safer, more effective result than many traditional diagnostic procedures (11, 18, 24, 26, 27, 29, 30, 31, 34, 36, 38, 40, 41, 46). Some initial fears concerning x-ray dosage have given way to complete acceptance of the technology as the most significant advance in radiologic medicine in the last 35 years, for which the developers, Cormack and Hounsfield, received a Nobel prize in Physiology/Medicine in 1979 (5, 16, 22, 42, 44, 48).

While the safety and accuracy of CT is of primary importance to the provider and patient, the potential for cost savings with CT use is considerable, and increasing as more uses are found for CT imaging. For example, it was determined that if head CT had not been available in 1978, the cost of alternate procedures would have been more than $1.1 billion, an amount reduced by an estimated $459 million with use of CT (21). Other studies attempted more definitive results with similar conclusions. A 1980 report indicated that CT scans at one neurological institute produced a net savings of $202 per scan over four conventional testing methods (19). Yet another study asked

physicians to enumerate test procedures which would have been ordered had CT not been available. The savings calculated by adding costs of tests and hospital days required and deducting CT costs averaged $210 per patient in 1980 (37). Most dollar savings result from reducing the number of tests ordered, reducing or eliminating altogether sometimes lengthy hospital stays, and quicker diagnosis pinpointing a problem rather than inviting exploratory surgery or other invasive techniques.

Cost Containment and Optimal Utilization. The benefits of CT have been obviously well-established through continuing research. Debate still exists, however, as to the best allocation of CT scanners, or even whether such regulation is desirable or necessary. Proponents of allocation and regulation seek to slow the diffusion of new technology until it has proven to be of significant benefit (20, 44, 48, 51). Opponents of allocation and regulation argue not only that these steps are unnecessary but that such efforts will negatively affect the quality of care generally available (36). CT came into use at precisely the wrong time, in that health care costs were growing astronomically and the great expense for each installation received undue attention (5,11,14,19,22). With the entry of the Federal Government into the health care delivery system as a third-party payer in 1965 via Medicare/Medicaid came close scrutiny of a system essentially unregulated except for the dictates of its ruling class, the physicians. As a result, Congress in 1974 adopted a philosophy of cost containment through passage of two separate but related pieces of legislation, Section 1122 of the Social Security Act and Title XV of the Public Health Service Act (Public Law 93-641,

entitled National Health Planning and Development) (9). These laws provided for certificate-of-need (CON) procedures administered by the states to contain costs by refusing certification for certain projects, including regulation of major capital expenditures and changes in service of health care facilities. Thus, addition of beds or major items of capital expense, such as a CT scanner, would be subject to approval by the state prior to any action to build or acquire such capacity (9). Most state CON agencies controlled the acquisition of CT scanners based on a criterion developed by the Health Resource Administration in 1978 per its mandate from PL 93-641, stipulating that a scanner should operate at a minimum of 2500 medically necessary procedures per year. A corollary guideline stated that no additional scanners could be approved within an area unless all other scanners in the area were performing more than 2500 procedures annually. This severely restricted further acquisition by hospitals in most health service areas (5,9,14).

Shared Services: A Response to Regulation. This tight control led inevitably to innovative "end runs" to permit access to this highly desirable technology. One such innovation was the advent of shared service arrangements, pooling the need and, incidentally, fragmenting the cost of a CT scanner. However, shared medical services have not readily succeeded in many instances. Three New York City hospitals reported most unfavorable results with efforts to share a fixed CT scanner. Of 1870 patients referred for CT, only 258 received the scans due to scheduling and transportation problems, or due to the severity of the illness or injury preventing transportation to the site (15). In the non-profit hospital industry, shared services tend to arise where both

physicians and hospital ownership or trustee interests can be advanced. Unfortunately, these interests are most frequently tied to administrative or ancillary support other than direct medical care and do not promote consolidation of underutilized patient care services (25). At least one study found considerable potential for savings by consolidation in order to take advantage of economies of scale, but also noted that indirect costs incurred through transportation of patients and possibly increased lengths of stay awaiting service could entirely negate savings in direct costs. The authors therefore concluded that reduced demand for service is the only valid means of reducing cost (47).

A study of CT scanner placement versus transportation requirements in a major metropolitan area pointed out the proper location of a scanner serving a large area is just as important as having an "optimal" number of scanners based on number of scans per year or population. The study concluded that excess capacity in CT scanning might be preferable to excess transportation capacity if the package of interrelated health services were closely examined (28). The transportation limitations were a major factor in the failure of a shared CT scanner in New York City previously cited (15) as well as the major offsetting cost for potential savings generated by shared CT service elsewhere (47). A successful shared CT scanner is typified by an installation in a California city sponsored by three hospitals located within an eight square block area, surrounded by 300 doctor's offices. Transportation problems are minimized, with a concurrent ease of access for patients and physicians alike (32). Unfortunately, such medical complexes contain only a small fraction of the

nation's hospitals, and so transportation and its attendant costs threatens the cost effectiveness of shared, fixed CT scanners.

Mobile CT Scanning: A Viable Alternative. The ultimate answer may lie in making a fixed service mobile, through installation of a CT scanner in a semi-trailer truck, together with all necessary environmental equipment to support the heat sensitive equipment. The first mobile whole body CT scanner was manufactured in 1979 by Ohio Nuclear, Incorporated, and put into service by two New Jersey hospitals some ten miles apart. This shared purchase was expected to produce up to 4000 scans per year within three years of its being put into service, and the entire plan was approved by the Southern New Jersey Health Systems Agency, the state CON agency (45). Early use of Mobile CT has shown that quality of CT scans is virtually identical to fixed installation. Even downtime has proven to be favorably comparable to that of stationary units (43). One hospital consortium of three facilities with interhospital distances of up to 95 miles experienced available service of 91% for the first three months, not counting scheduled downtime for preventive maintenance (50). Such services are available elsewhere, even in England where EMI first developed the CT scanner (49). Certainly, experience of this facility with the services of Shared Medical Resources' Mobile CT have been favorable in regard to quality of work, although scheduling remains as a problem to be resolved. The United States Army has recognized the potential of mobile CT by purchasing a single unit to be used as a interim measure pending permanent installations at a variety of sites (61).

CT Scanning in the Federal Sector. As previously indicated, acquisition of CT scanners within the Federal sector has been much slower than that of the non-Federal sector. At least one author attributes this to the intense cost containment efforts directed at public and government health care facilities at all levels. Dr. David Banta, a member of the Office of Technology Assessment for the U.S. Congress, postulates that goals of cost containment and budget restraint serve to deteriorate the quality of public health care services (12). There is some evidence that government procurement and budgeting policies hamper effective acquisition and use of beneficial technology (53). That the explosion in acquisition previously identified is ongoing can be interpreted as pent-up demand among the various entities responsible for Federal health care programs. This aggregate demand is being unleashed in several directions at once, with virtually no attempts to coordinate the efforts of the various agencies. This is wholly contrary to the efforts of health planners at all levels (5,12,13,53,54).

There is renewed interest in shared medical care services among Federal health care facilities as a result of the VA/DOD Sharing Act. The only ongoing project involving shared CT access calls for a fixed installation at the Navy Hospital, Great Lakes, IL, with half of the cost to be borne by the North Chicago Veterans Administration Medical Center. A cost savings of $210,000 anually is projected for this shared service in lieu of the present practice of purchasing CT services from civilian facilities in the area (See Appendix 4 for full details). The only known involvement with mobile CT scanning capability is on a purchased basis from commercial suppliers or, as indicated

earlier, to supply interim or backup capability to sites within the jurisdiction of Headquarters, Health Services Command (55,61).

CRITERIA

The feasibility of utilizing a single mobile CT scanning unit to replace services currently purchased from sources or to preempt installation of fixed units at VAMC and BJACH depends primarily on cost criteria and secondarily on peripherally related issues. The following specific criteria will be utilized to assess feasibility.

1. The mobile CT unit must be capable of meeting present and projected demand of all three facilities within its expected availability parameters.

2. The cost per scan, to include all identifiable factors, must be equal to or less than either of the two competing alternatives, i.e., purchase from commercial sources or fixed installation at VAMC and BJACH.

3. Overall savings potential for the mobile CT Unit must be equal to or greater than 10% of the fixed installations and attendant operating costs.

4. In the absence of a minimum 10% savings in cost, the evaluation of related issues must confer a clear advantage to the mobile CT scan option for it to be declared feasible.

RESEARCH METHODOLOGY

Basic research will be accomplished through review of all available references and interviews with manufacturer's representatives and owner-operators of both fixed and mobile CT scanning units. The information thus obtained will provide the raw material for the specific research efforts listed below:

1. Data provided by the three facilities involved in the study (BJACH, EAFB, and VAMC) will be utilized to determine the range of demand for CT scanning services. The formula for derivation of potential CT use developed by GE will be applied to summaries of discharge diagnosis by ICD-9-CM code. The range of demand will be considered to be defined at the lower end by the number of actual scans purchased in FY 83 and at the higher end by the maximum potential number of scans yielded by application of the GE formula. Data will be available by facility and by total requirements.

2. Aggregate cost of the scans that would be purchased by the facilities will be calculated at the high, low, and mid-points of the range developed in Step 1. The average cost per scan will be calculated by dividing the aggregate cost at each level by the number of scans. The aggregate cost is considered to equal the average price per scan times the number of scans purchased, plus a corrective factor to cover the cost of transportation of the patient to and from the service site. That factor will reflect proportional attendants' salaries and a cost per mile for vehicular transportation, and will be based on estimated time consumed and distance covered.

3. An average cost per scan will be computed for the alternative of fixed installation of two scanners. Aggregate cost will include acquisition

price, installation (including construction), staffing, supplies, maintenance, and any other identifiable cost contribution over the useful life of the machine. For EAFB, the transportation factor previously calculated will be added to the total in proportion to the number of scans at the low-, high- and mid-point of the range for that facility. Dividing the aggregate cost by the number of scans at the three points within the range will yield an average cost per scan at each level of demand.

4. Aggregate cost and average cost per scan will be computed for the alternative of a mobile CT scanner. Aggregate cost will include acquisition price, the cost of any necessary modifications to buildings or other accommodations for the van, staffing, supplies, maintenance, and any other identifiable cost contribution over the useful life of the mobile CT scanner. Savings generated by use of a CT scanner in lieu of other test procedures will be subtracted from the aggregate cost, to the maximum extent such savings can be specifically identified. Dividing the aggregate cost by the number of scans at the low-high, and mid-point of the range will yield an average price per scan at that volume.

5. Cost per scan will be compared for each alternative at the three levels of demand identified. These comparisons will determine the economic feasibility of a mobile CT unit at the various levels of demand considered.

Even though the feasibility of substituting a mobile CT scanner for fixed installations or purchased services primarily rests on the economic analysis of the three alternatives, other issues impact on the evaluation. These issues include medical readiness in the event of hostilities or natural

disaster relief operations, future funding levels for presently planned equipment acquisitions, and further advances in medical technology. These and other pertinent issues will be examined to determine their potential effect on the feasibility of the mobile option.

FOOTNOTES

[1] Southeastern Hospital Conference, The Hospital Cost Equation (Nashville: Southeastern Hospital Conference, 1983), pg. 21.

[2] Lewis Thomas, The Lives of a Cell (New York: Viking Press, 1974), pg. 33.

[3] Background information concerning the early years in the development of CT and its diffusion was excerpted in large part from Joseph K. T. Lee, Stuart S. Sagel, and Robert J. Stanby, ed., Computed Body Tomography (New York: Raven Press, 1983), Foreword and Chapters 1 and 21.

[4] American Hospital Association, Hospital Technical Series Guidline Report: CT Scanners (Chicago: American Hospital Association, 1978), pg

[5] American Hospital Association, Hospital Statistics 1982 Edition (Chicago: American Hospital Association, 1982), pg. 197.

[6] Ibid.

[7] American Hospital Association, Hospital Statistics 1983 Edition (Chicago: American Hospital Association, 1983), pg. 195.

[8] Interview with Lee Quidley, Veterans Administration Central Office, Radiology Service, Washington, D.C. 17 April 1984.

[9] Ibid.

[10] Interview with Robert H. Myers, Wilford Hall Air Force Medical Center, San Antonio, Texas. 13 April 1984.

[11] Interview with Timothy J. Velker, Headquarters, United Sates Army Health Services Command, San Antonio, Texas. 11 April 1984.

[12] Ibid.

[13] Interview with Al Betts, Shared Medical Resources (MEDIQ), St. Petersburg, Florida. 22 May 1984.

[14] American Hospital Association, AHA Guide 1983 Edition (Chicago: American Hospital Association, 1983). pg. A101-A102.

CHAPTER II

DISCUSSION

ESTIMATE OF DEMAND

The first step in assessing the feasibility of the mobile CT option is estimation of the aggregate demand for CT scans for the three facilities involved. Leading authors agree that there is no satisfactory method available to estimate use and therefore rationally acquire CT scanners. Shapiro and Wyman found estimates for adequate threshold demand ranging from one machine per 375,000 population to one per 750,000.[1] Other authors have suggested that criteria concerning scans performed per week or hospital bed capacity are more relevant, but none have been shown to consistently and accurately estimate CT scan demand. The estimation process followed by most health care facilities and generally accepted by health planning agencies is the Leonard Methodology developed at Massachusetts General Hospital with the cooperation of General Electric, Incorporated, from which its common name, the GE formula, is derived.[2] The basic mechanism used is analysis of the discharge diagnosis as recorded by ICD-9-CM coding for all inpatients for a single year and identification of all whose primary or secondary diagnosis would likely have been treated with the use of CT had the service been

available. A typical worksheet used to identify potential workload is provided as Appendix 5.

There are significant criticisms of this methodology, however. Since it yields a theoretical ideal, some authorities consider that it consistently overestimates actual volume since not every patient with a primary or secondary discharge diagnosis lending itself to CT scanning requires or undergoes such testing. Another criticism centers on the existence of a whole host of external factors which affect actual use of a CT scanner at a given location. These include the availability of other CT scanners and their relative proximity, medical staff composition, changes in case mix, occupancy rate, and technological advances in CT or other fields. Others regard the lack of a means to estimate outpatient demand as a serious flaw.

Variance in the form of overestimation is tolerable when demand can be expressed as a range anchored by a known value. This known value is the minimum number of scans demanded by the three facilities, represented by actual usage during the last fiscal year. For purposes of this analysis the lower limit of the range of demand will be established as the aggregate number of CT scans purchased by the three facilities in FY 83. Since overestimation is the flaw in the GE formula, then the estimate obtained from that process will represent the upper limit of the range. If indeed there is an overestimation when only inpatient data is considered the relatively large number of outpatient tests expected could serve to partially make-up any deficit in actual inpatient test volume. Additionally, as more uses for CT are

identified, usage should increase. These two factors, impossible to estimate from currently available data, could be reasonably be expected to increase overall demand to levels approximating the estimate obtained by use of the GE formula in the VA/DOD setting. For this reason, the use of the GE formula is appropriate for this study, given its proven acceptability among health planners. Table I summarizes the demand range for each facility with the mean demand derived by subtracting the estimate of lowest demand from the maximum demand, dividing that number by two and adding back the minimum demand. The result shows that annual demand for the three facilities should range from a minimum 658 scans to a maximum of 2276 scans.

TABLE I

SUMMARY OF DEMAND RANGE FOR CT SCANS BY FACILITY

Facility	Actual Scans Purchased FY 83	Mean	Maximum Estimated Demand
BJACH	286	480	674
EAFB	104	241	378
VAMC	268	746	1224
TOTALS	658	1467	2276

Patient Transportation Costs

The costs associated with transporting a patient to and from the site where service is obtained can render an otherwise reasonably priced service unaffordable. For example, if BJACH were to purchase service in Alexandria, whether from VAMC or a non-federal supplier, the minimum round trip mileage would be 108 miles. Travel time alone is approximately 2¼ to 2½ hours. A scan takes, on average, 45 minutes to complete, plus 15 minutes for patient preparation and clean-up. Some waiting time is almost always incurred. In May 1984, six patients were transported to Alexandria for CT scans which could not wait for the mobile CT service to arrive. The four round trips involved covered 432 miles and required 27 hours, total cost to BJACH of $513.45, average cost $128.36 per run. The average transportation cost per scan was $85.58. All scans were accomplished at St. Francis Cabrini Hospital at a average cost of $325.00 per scan, bringing the minimum total cost to $410.58 per scan.[3]

Transportation by EAFB or VAMC to either of the hospitals in Alexandria providing service would be less due to the reduced distance to be traveled. Regardless, the additional cost incurred is significant at any level of demand. Table II shows average transportation cost by facility to providers in the area. Full calculations are located at Appendix 6. No provision was

made for waiting time in the transportation cost estimates. The waiting time experienced is so variable that no means of estimating it exists and insufficient records have been maintained in the past to document trends, although all respondents indicated that scheduled testing suffered from emergency cases given priority. However, adding in the appropriate average transportation cost to each cost-per-scan calculated will capture much of this variability, since frequently more than one patient is transported to the testing site at one time.

TABLE II
AVERAGE TRANSPORTATION COSTS FOR COMMON ROUTES

Facility	Destination	Total Mileage[2]	Total Time Used[3]	Minimum Cost[4]
BJACH	VAMC	112	2.5 hr	$80.69
	EAFB	94	2.0 hr	68.66
	SFC/RGH	108	2.25 hr	75.94
EAFB	VAMC	18	.75 hr	30.76
	SFC/RGH	14	.75 hr	29.75
	BJACH	94	2.0 hr	68.66
VAMC	BJACH	112	2.5 hr	80.69
	EAFB	18	.75 hr	30.76
	SFC/RGH	16	.75 hr	30.26

[1] SFC/RGH refers to St. Francis Cabrini or Rapides General Hospitals.
[2] Mileage is measured from standard road maps of Louisiana.
[3] Travel time is estimated average transit time based on actual drive of route to be covered.
[4] Cost is total of cost per mile, at $0.2523 per mile, and time required by attendants at $7.49/hr each. Cost figures provided courtesy of Directorate of Transportation, Ft. Polk, LA and Comptroller's Office, BJACH. Uniform estimate of one hour included for actual scanning time. No time is allowed for waiting.

DISCUSSION OF ALTERNATIVES

Presently each of the three facilities involved in this study purchase CT scanning services from commercial sources, including other hospitals, investor-owned fixed facilities, or mobile CT units operated by a corporation. There are currently three main suppliers, as explained in Chapter 1, providing the required services. For purposes of deriving a cost-per-scan for comparison it will be assumed that EAFB and VAMC purchase all scans either form Rapides General Hospital or St. Francis Cabrini Hospital for an average charge of $400.00 and $300.00 respectively. BJACH is presently utilizing Shared Medical Resources' Mobile CT service exclusively, with an average charge per scan of $300.00 since inception, and will be assumed to continue this practice for purposes of analysis. These prices reflect a mixture of body and head scans, as well as recent increases in charges by some suppliers. TABLE III depicts historical data related to cost and volume for each facility. It should be noted that this historical cost does not include transportation costs but only those costs related to fee-for-service. Addition of average transportation costs for the same period to the results in TABLE III would result in total costs and costs-per-scan as summarized in TABLE IV.

TABLE III
FY 83 CHARGE AND SCAN VOLUME
DATA BY FACILITY

Facility	Scans Purchased	Total Charges	Average Cost Per Scan
BJACH	286	$80,573	$281.72
EAFB	104	38,295	$368.22
VAMC	268	93,800	$350.00
TOTALS	658	$212,668	$323.20

TABLE IV
FY 83 TOTAL COST AND COST PER SCAN
BY FACILITY, TRANSPORTATION INCLUDED

Facility	Scans Purchased	Purchase Charges[1]	Total Transportation Cost[2]	Total Cost	Cost-Per-Scan
BJACH	286	$80,573	$36,608	117,181	$409.72
EAFB	104	38,295	3,904	41,389	397.97
VAMC	268	93,800	8,110	101,910	380.26
TOTALS	658	$212,668	47,812	$260,480	$395.87

[1] Data provided courtesy of BJACH, EAFB, and VMC comptrollers.
[2] Per-scan transportation cost from Table II.

Several alternatives to this status quo exist. One alternative is the installation of a single fixed CT scanner at one of the two sites large enough to accept it, that is, at BJACH or VAMC. All three facilities could contribute to the purchase and installation costs on a pro rata basis according to their respective projected usage. The host facility would then be further reimbursed for the operating costs incurred during scans completed for each of the other two facilities, again on a pro rata basis determined by actual usage This would not be a most satisfactory solution, however, since two of the three facilities would still experience transportation costs. This has been a distinct and generally fatal drawback to such shared service arrangements implemented elsewhere, as explained in Chapter 1. It would provide little apparent incentive to whichever of the two facilities, BJACH or VAMC, that did not have a scanner installed to actually use the service thus provided. For this reason, this alternative is not considered to provide a material advantage and will therefore be considered as nonviable.

A second alternative is the solution presently anticipated, that of installation of two fixed CT scanners, one each at BJACH and VAMC. EAFB would be assumed to utilize only the facilities at VAMC since it would be irrational from both an economic and a practical standpoint to do otherwise. Transportation costs would be minimized, since only EAFB would transport patients. Emergency CT scans would be readily available, and patient care thereby enhanced. The opportunity for cost sharing and overall reduction in cost to the government would be minimal.

The final alternative to be considered in this study is the shared purchase and use of a mobile CT unit to serve each facility on-site. The unit would consist of a CT scanner satisfactory to each of the three cooperating facilities, outfitted in a mobile environment. Several designs are available, with both tractor trailer and self contained modes. Regardless of the mode chosen, each facility to be served would require a level driveway of sufficient size, load capacity and ready access to accommodate the vehicle, plus provision for a power line to go to the CT unit. Some means of protecting patients from adverse weather should be provided, such as an awning or covered walkway. Fulfillment of these requirements would demand some minor construction to be funded by each facility as a part of the overal package. Staffing of the mobile CT unit would require one x-ray technician, either a civilian employee in the grade GS 7 or a military technician in grade E5 or above, and a motor vehicle operator, civilian grade WG 6 or above or military E5 or above. Training of these personnel would require one to two months OJT, then four to six months actual experience before they would be fully competent. Training could be procured from the CT manufacturer, the mobile unit manufacturer, and from fixed CT installations. Radiologists trained in CT are presently available at both BJACH and VAMC, and could provide coverage to EAFB. Some provision for backup personnel would be required, in the event of illness or other unprogrammed absences. A brochure describing products by Ellis and Watts, the leading manufacturer of mobile CT units, is provided as Appendix 7 for further information regarding features f the unit.

COST PER-SCAN ANALYSIS

Cost-per-scan is the most valid standard of comparison for the three alternatives presented, so long as all identifiable cost components are included in the gross cost estimate for each alternative. Also important is the requirement to set comparable parameters for each alternative, otherwise a false conclusion could be reached through failure to consider all aspects of a proposed solution. For purposes of this analysis, the following are key parameters which must be held equal all alternatives to which they apply.

Useful Life of Equipment. For CT scanners, the life of the equipment may be expressed in two ways: expected number of years before the equipment becomes uneconomical to operate and maintain, or technological obsolescence. The first of these, based on physical condition of the equipment, is assumed to be ten years by most users. In fact, there is no standard, since whole body CT apparatus has been in existence only some eight years or less. Technological obsolescence, on the other hand, is expected to occur within five years. For mobile CT, a dual system is necessary if the equipment is trailer-mounted. The CT scanner itself is assigned a ten year lifespan, but the tractor is only assumed to last five years. For a integrated mobile unit resembling a large recreational vehicle, the useful life is calculated at seven years. Again, since mobile CT only began in 1979, no firm standard exists. This analysis will assume a useful life of ten years for the CT scanner itself, whether

fixed or mobile, and a five year life for the tractor of a trailer mounted CT unit.

Staffing for Unit. In order to maintain equality for both fixed and mobile alternatives, appropriate staffing for each will be included as part of the annual cost of operation. Each unit, regardless of whether fixed or mobile, will be considered to require a radiologist, in Grade GS-11, step 5 with equivalency pay of $5,000 added, two GS-7, step 5, CT operator/x-ray technicians, and for the mobile CT alternative only, a WG-6, step 3 motor vehicle operator on a part-time basis. Benefits will equal 11% of direct pay.

Maintenance. Both the fixed and mobile CT alternative will include the price of an annual maintenance contract with the manufacturer in the annual cost data. No warranty except that provided by the contract will be considered to exist.

Transportation. Transportation costs will be added wherever appropriate. Costs used will be those calculated previously and displayed in Table II.

Supply Cost. The average supply cost for a single CT scan has been calculated to fall within a range of $12-15 by the Comptroller's Office, BJACH. For purposes of analysis, the supply cost will be considered to be $15.00 for both fixed and mobile CT scans. Since all facilities buy from government contracts, this average figure is considered

appropriate for all three facilities.

Price Data. Dollar figures quoted for each option are current prices. No attempt is made to project price data beyond 1984. The fact that medical costs rise more quickly than the CPI index is much publicized, but the trend for the recent past has been for the rate of increase for medical costs to decline. The advent of Medicare payments based on DRGs and voluntary cost control measures within the industry will have an unknown effect on the future price structure. Therefore comparisons will be made on current prices, with the full knowledge that the direction of future changes is quite uncertain.

ANALYSIS OF ALTERNATIVES

Continued Purchase of CT Services. This option represents the status quo, wherein no installation or use of an owned CT unit is considered. Calculations are completed on the basis of current purchasing patterns according to the following formulas:

1. Total Cost Formula

Total Scans Purchased by Facility (at levels 1, 2, or 3)
X
Percent Purchased from Supplier (from Table IV)
X
Average Charge Per Scan by Supplier (From page 32)
+
Transportation Cost (Average Transportation Cost X Number of Scans)
+
Supply Cost (Average Supply Cost Per Scan = $15.00)
=
Total Cost

2. Cost Per Scan Formula

Total Cost
÷
Total Scans Purchased by all Facilities
=
Average Cost Per Scan

Full calculations are included as Appendix 8. A summary is provided as Table VI. Interestingly, the average cost per scan increases slightly as the volume increases, the reverse of the normally expected situation under conditions of variable price and increasing volume. This is accounted for by a more rapid increase in demand for scans by VAMC which are purchased at a higher average

price, than for the other facilities, outstripping the balancing effect of lower average prices paid by BJACH.

TABLE V
ESTIMATED PERCENTAGE OF TOTAL SCAN VOLUME PURCHASED, BY SUPPLIER AND FACILITY

Supplier	Facility		
	BJACH	EAFB	VAMC
RGH	-0-	10	10
SFC	5	90	90
SMR	95	-0-	-0-
	100	100	100

TABLE VI
AVERAGE COST PER SCAN AT DEMAND LEVELS 1, 2, AND 3 FOR COMMERCIAL PURCHASE OF SERVICES

Demand Level	Scans Purchased	Average Cost Per Scan
1	658	$356.96
2	1467	$362.38
3	2276	$365.92

Fixed Installation of CT Scanners at BJACH and VAMC. Calculation of estimated costs for this alternative is based on actual 1984 dollar cost figures for current installations provided from HQ, HSC and VACO, for BJACH and VAMC respectively. Acquisition costs, to include facility modification, are amortized over 10 years. Annual operating costs reflect the second and subsequent years of use, after the manufacturer's warranty has lapsed. Costs are summarized in the following pro forma statement:

PRO FORMA STATEMENT
PURCHASE AND INSTALLATION OF CT SCANNERS

	BJACH (GE9800)	VAMC (Siemens DR-3)
Fixed Costs:		
Acquisition	975,000	771,000
Facility Modifications	225,000	440,000
Special Software	-0-	18,000
TOTAL Fixed Costs	1,200,000	1,229,000
ANNUAL ALLOCATION of Fixed Costs (10 yr Base)	120,000	122,900
ANNUAL OPERATING COSTS:		
Maintenance	120,000	120,000
Salaries		
1-GS-11, Step 5	35,200	35,200
2-GS-7, Step 5	40,850	40,850
ANNUAL BASE OPERATING COSTS	$196,050	$196,050
TOTAL ANNUAL COST:	$316,050	$318,950
Combined Annual Cost Base:	635,000	

Variable costs dependent on scan volume have not been included in this pro forma, but are included in the total cost computation provided as Table VII, showing total cost for each level of demand. Table VIII provides an average cost per scan at each demand level. As expected, the average cost per scan decreases dramatically as scan volume increases. The average cost per scan at the lowest (Level 1) demand is 328% of the cost at the upper limit (Level 3.)

TABLE VII
TOTAL COST DATA FOR DEMAND LEVELS 1, 2, AND 3
FOR FIXED INSTALLATION OF TWO CT SCANNERS

Level	Supply Cost		Transportation		Base		Total
1	9870	+	3120	+	635,000	=	635,990
2	22005	+	7230	+	635,000	=	664,235
3	34140	+	11340	+	635,000	=	678,480

TABLE VIII
AVERAGE COST PER SCAN DATA AT DEMAND LEVELS 1, 2, AND 3
FOR FIXED INSTALLATION OF TWO CT SCANNERS

Level	Total Cost		Projected Volume		Average Cost Per Scan
1	$647,990	-	658	=	$984.79
2	664,235	-	1467	=	452.78
3	678,480	-	2276	=	298.10

Joint Purchase and use of Mobile CT Unit. The mobile CT unit used to illustrate this alternative is an Ellis and Watts product housing a GE 9800 scanner. This unit is identical to one recently purchased by Headquarters, Health Services Command, Ft Sam Houston, Texas (HSC) to initially provide CT services at Darnall Army Hospital at Ft. Hood, Texas. The cost used is the actual cost resulting from that purchase as provided by HSC. Since no tractor was included in that purchase, a standard US Army 5 ton tractor capable of transporting the mobile CT unit was added to the acquisition costs to provide mobility. Cost data for that vehicle, to include operating costs, was provided by the Directorate of Transportation, Ft. Polk, LA. Facility modification was estimated at $10,000 per modification, or $30,000 total. The following pro forma statement summarizes acquisition and non-variable operating costs for the mobile CT unit.

PRO FORMA STATEMENT
PURCHASE AND OPERATION OF MOBILE CT UNIT

Fixed Costs:	
Acquisition of Unit	$1,170,000
Acquisition of Tractor	23,364
Facility Modifications	30,000
TOTAL of Fixed Costs	$1,223,364
Allocation of Costs:	
CT Unit and Modifications Over 10 year Life	$120,000
Tractor (Useful Life 5 Years)	4,673
Total Annual Allocation of Fixed Costs	$124,673
Annual Operating Costs:	
Maintenance Contract	$120,000
Salaries	
1 GS-11, Step 5	35,200
2 GS-7, Step 5	40,850
1 part-time WG6, Step 3 at 10.49 per hour	10,910
Vehicle Operation	
150 mi/wk at 1.68/mile	13,104
Total Annual Operating Cost Base	220,064
TOTAL ANNUAL COST BASE	344,737

Vehicle operation is considered to be one round trip weekly at 150 miles total distance covered. The motor vehicle operator is costed at half-time, or 20 hours per week for 52 weeks per year. Addition of variable supply costs to the base cost yields a total cost at each level of demand. No transportation costs are included since it is assumed that the mobile CT will service each facility on-site. Table IX shows the addition of variable supply costs and calculation of the total cost for this alternative. Table X portrays the calculation of average cost per scan for the mobile CT alternative.

TABLE IX
TOTAL COST AT EACH DEMAND LEVEL FOR
THE MOBILE CT ALTERNATIVE

Demand Level	Supply Cost		Base Cost		Total Cost
1	$9870	+	344,737	=	$354,607
2	22005	+	344,737	=	366,742
3	34140	+	344,737	=	378,877

TABLE X
AVERAGE COST PER SCAN FOR
MOBILE CT

Demand Level	Total Cost		Projected Volume		Average Cost Per Scan
1	$354,607	-	658	=	$538.92
2	366,742	-	1467	=	249.99
3	378,877	-	2276	=	166.47

Footnotes Chapter 2

1. Stuart H. Shapiro and Stanley M. Wyman, "CAT Fever", The New England Journal of Medicine 299 (April 22, 1976): 955.

2. American Hospital Association (AHA), Hospital Technical Series Guideline Report: CT Scanners (Chicago: American Hospital Association, 1978), pg. 39.

3. Financial information provided here and throughout the entire text has been provided by the Comptroller's Office at the three facilities involved, except where specifically accredited to another source.

CHAPTER III

SUMMARY AND CONCLUSIONS

The Pros and Cons of Mobile CT

The average cost per scan data derived in the preceeding chapter is summarized in Table XI. The evidence concerning cost-effectiveness is conclusive; a considerable cost advantage occurs to the mobile CT alternative over two fixed installations at every level tested and over commercial purchase at all but the lowest demand tested. Examination of the data reveals that for any total demand in excess of 1000 scans annually, the mobile CT alternative surpasses any other tested alternative for cost-effectiveness and at Level 2 demand, 1467 scans, the savings is approximately 30% over the nearest competitor, a sum of $165,000. That this level of demand is feasible can be demonstrated by the increase in demand experienced at BJACH after only three months of utilization of mobile CT through Shared Medical Resources.

From the FY 83 level of 286 scans for the whole year, the rate of utilization has increased to nearly 15 scans per week, or an annual rate of 750 to 800 scans. Mr. Betts of Shared Medical Resources contends that this is a normal occurance once physicians become accustomed to the availability of the CT service on-site, and his words are certainly borne out by the events at BJACH.

This savings potential far exceeds that stipulated, 10%, to make mobile CT feasible and justifies prima facie acceptance of the alternative as the most cost-effective of those examined.

TABLE XI
SUMMARY OF COSTS PER SCAN
AT LEVELS 1, 2, AND 3

Level	Purchase of Services	Two Fixed Installations	One Mobile CT Unit
1	$356.96	$984.79	$538.92
2	362.38	452.78	249.99
3	365.92	298.10	166.47

Mobile CT presents other advantages to the Federal sector besides cost-effectiveness on a cost per scan basis. Shared services of this nature decrease the capital expenditures required to obtain the latest technology, reduces the cost of health care and thereby maximizes the utility of the tax dollar. It permits delivery of the best possible care to beneficiaries of Federal health programs without contributing to expensive over-capacity. Services can be provided without interruption due to construction, renovation, or natural disaster affecting power supplies. A single staff can serve several health care facilities, reducing demand for scarce skills in the labor market as a whole and preserving valuable manpower spaces at participating institution.

The unique advantage offered the Department of Defense by pursuing a shared mobile CT program is enhanced medical readiness. The upgrade of field

medicine capabilities is an announced goal of the Army Medical Department. Inclusion of some form of mobile CT capability in the equipment of major deployable medical units has been under study by members of the Directorate of Combat Developments in the Academy of Health Sciences, Ft Sam Houston, Texas. Procurement and utilization of mobile CT units in the VA/DOD health care setting could provide immediately available equipment and a pool of trained personnel for deployment to troubled areas.

Even though the potential savings documented in this study are significant, further savings are possible. Civilian staffing could be reduced by use of military technicians, which would also contribute to medical readiness. Prime movers, such as the 5 ton tractor included in the cost analysis, could be drawn from servicing motor pools instead of being purchased and dedicated to the mobile CT unit on a full time basis. A final category of potential savings exists in the likely reduction in use of other testing procedures and hospital lengths of stays. As documented in the Literature Review portion of Chapter 1, studies have documented savings exceeding $200 per scan compared to costs of alternative testing procedures, in addition to providing more safe, comfortable diagnosis to patients.[1,2] The amount of savings cannot be meaingfully estimated with available information, but promises to be substantial if the cited studies are accurate.

As enticing as the arguments are for procurement of mobile CT capability, there are potential drawbacks as well. The most obvious of these is the interruption in service if the scanner unit or its conveyance fails. Although

availability is reputed to be 95% or better, with no backup unit available a prolonged lapse in service is possible.[3] If the unit were to fail, scans would be delayed or purchased on an emergency basis. The same possibility exists even if the mobile CT unit was functioning properly, since some 2% of scans could be expected to be of such urgency to be deemed emergencies. Thus, complete dependence on the mobile CT scan would not be possible.

Mobility itself can be a disadvantage, in that the unit is exposed to potential damage from accidents in transit or the elements. Routes must be picked with care to minimize road hazards and obstacles such as bridges with limited capacity or low clearance overpasses. Although the van is designed with a special suspension to control ride and protect the unit, rough pavement and human error can render these protections useless. Still, such hazards themselves are not so great as to threaten the feasibility of the mobile CT alternative as judged by the proven success of commercial units.

On balance, the drawbacks do not come close to negating advantages derived from use of mobile CT capability. The inescapable conclusion is that it is a viable, cost effective means of providing up-to-date technology to small facilities whose workload cannot alone justify expenditure of the sums necessary to secure installed CT services.

Implementation of Shared Mobile CT in the DA/DOD Setting

Having concluded that use of a mobile CT unit is both feasible and desirable, the question becomes how the shared service aspect is to be implemented. Specific guidance for the implementation of a shared service where procurement of additional capacity is involved is provided in the Memorandum of Understanding between the Veterans' Administration and the Department of Defense, Article III, paragraph 102. In essence, acquisition of the equipment, in this case a mobile CT unit, must be approved through normal budgeting procedures. Procurement requests can be based on pooled projected workload from a sharing agreement, however, the sharing agreement itself cannot be submitted for approval until the permission and/or funding necessary to acquire the new equipment is granted. The full text of the agreement is included at Appendix 9.

One incentive provided by Congress under Public Law 97-174 is the retention of savings or reimbursements earned at the local level under appropriate agreement. A draft VA/DOD Health Care Resources Sharing Guideline indicates that first-year savings could be retained by the two DOD facilities, but retention would be subject to further guidance by DOD in later years. (See Appendix 10, paragraph F(8) for full explanation of conditions.) Since the total savings are estimated at $165,000 or more annually, it is not an inconsequential amount, even when shared among three facilities.

The most advantageous implementation process would call for a lead contracting agency, representing any of the three Federal Facilities to submit all necessary applications for procurement and funding. This lead agency should be selected based on which deals with the most advantageous rules in procurement of expensive medical items.

When approved, a sharing agreement would be concluded, the CT scanner procured and put into use. Procurement, staffing, and operational matters would be handled by the lead contractor for the Federal facilities. Reimbursement would then flow from the other facilities and be credited to that facility. Alternatively, the other facilities would provide a pro rata share of the purchase price and reimburse the lead contractor only for expenses related to staffing and operation on an actual cost per scan basis. BJACH is in this author's opinion, the most advantageous choice as the lead contractor because of the apparent immediacy in availability of MEDCASE funds though Headquarters, Health Services Command and because of the designation of Ft Polk as a participant in the Model Installation Program.

Regardless of the agent chosen to implement this shared service, the net effect will be of benefit to all. The health care facilities will benefit from enhanced treatment capability, and beneficiaries will enjoy safer diagnostic testing without inconvenience. The respective agencies will benefit from lowered requirements for capital investment, and the Federal government will have lowered the cost of health care provided to many of its beneficiaries. More importantly, our tax dollars will have been used to the

maximum utility. This is an idea whose time has come for use in the Federal health care arena.

FOOTNOTES, CHAPTER 3

1. Ronald A. Enlow, et al. "The Effect of the Computed Tomographic Scanner on Utilization and charges for Alternative Diagnostic Procedures," Radiology 136 (August 1980): 416.

2. Ronald G. Evens, "The Economics of Computed Tomography: Comparison with other Health Care Costs." Radiology 136 (August 1980): 510.

3. Interview with Joseph Fazio, MED VAN Corporation, Fort Lee, New Jersey. 17 April 1984.

APPENDIX A

Veterans' Administration and Department of Defense Health Resources Sharing and Emergency Act.

VETERANS' ADMINISTRATION AND DEPARTMENT OF DEFENSE HEALTH RESOURCES SHARING AND EMERGENCY OPERATIONS ACT

89-139 O - 82 (189)

Public Law 97-174
97th Congress

An Act

May 4, 1982
[S. 266]

To amend title 38, United States Code, to promote greater sharing of health-care resources between the Veterans' Administration and the Department of Defense and to direct the Secretary of Defense and the Administrator of Veterans' Affairs to plan for the provision of health care by the Veterans' Administration during periods of war or national emergency to members of the Armed Forces on active duty; and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Veterans' Administration and Department of Defense Health Resources Sharing and Emergency Operations Act".

Veterans' Administration and Department of Defense Health Resources Sharing and Emergency Operations Act.
38 USC 101 note.
38 USC 5011 note.

SEC. 2. (a) The Congress makes the following findings:

(1) There are opportunities for greater sharing of the health-care resources of the Veterans' Administration and the Department of Defense which would, if achieved, be beneficial to both veterans and members of the Armed Forces and could result in reduced costs to the Government by minimizing duplication and underuse of health-care resources.

(2) Present incentives to encourage such sharing of health-care resources are inadequate.

(3) Such sharing of health-care resources can be achieved without a detrimental effect on the primary health-care beneficiaries of the Veterans' Administration and the Department of Defense.

38 USC 5011A note.

(b) The Congress makes the following further findings:

(1) During and immediately after a period of war or national emergency involving the use of the Armed Forces of the United States in armed conflict, the Department of Defense might not have adequate health-care resources to care for military personnel wounded in combat and other active-duty military personnel.

(2) The Veterans' Administration has an extensive, comprehensive health-care system that could be used to assist the Department of Defense in caring for such personnel in such a situation.

SEC. 3. (a) Section 5011 of title 38, United States Code, is amended—

(1) by inserting "(a)" before "The Administrator" the first place it appears;

(2) by striking out "and material" and all that follows through "this title," and inserting in lieu thereof "material, and other resources as may be needed to operate such facilities properly, except that the Administrator may not enter into an agreement that would result (1) in a permanent reduction in the total number of authorized Veterans' Administration hospital beds and nursing home beds to a level below the minimum number of such beds required by section 5010(a)(1) of this title to be authorized, or (2) in a permanent reduction in the total number of such beds operated and maintained to a level

38 USC 5010.

below the minimum number of such beds required by such section to be operated and maintained"; and

(3) by adding at the end the following new subsections:

"(b)(1) In order to promote the sharing of health-care resources between the Veterans' Administration and the Department of Defense (hereinafter in this section referred to as the 'agencies'), there is established an interagency committee to be known as the Veterans' Administration/Department of Defense Health-Care Resources Sharing Committee (hereinafter in this subsection referred to as the 'Committee'). Veterans' Administration/ Department of Defense Health-Care Resources Sharing Committee. Establishment.

"(2) The Committee shall be composed of—

"(A) the Chief Medical Director and such other officers and employees of the Veterans' Administration as the Chief Medical Director may designate; and

"(B) the Assistant Secretary of Defense for Health Affairs (hereinafter in this section referred to as the 'Assistant Secretary') and such other officers and employees of the Department of Defense as the Assistant Secretary may designate,

except that the size of the Committee shall be mutually determined by the Chief Medical Director and the Assistant Secretary. During fiscal years 1982 and 1983, the Chief Medical Director shall be the chairman of the Committee. During fiscal year 1984, the Assistant Secretary shall be the chairman of the Committee. Thereafter, the chairmanship of the Committee shall alternate each fiscal year between the Chief Medical Director and the Assistant Secretary. The agencies shall provide administrative support services for the Committee at a level sufficient for the efficient operation of the Committee and shall share the responsibility for the provision of such services on an equitable basis.

"(3) In order to enable the Committee to make recommendations under paragraph (4) of this subsection, the Committee shall on a continuing basis— Duties.

"(A) review existing policies, procedures, and practices relating to the sharing of health-care resources between the agencies;

"(B) identify and assess further opportunities for the sharing of health-care resources between the agencies that would not, in the judgment of the Committee, adversely affect the range of services, the quality of care, or the established priorities for care provided by either agency;

"(C) identify changes in policies, procedures, and practices that would, in the judgment of the Committee, promote such sharing of health-care resources between the agencies;

"(D) monitor plans of the agencies for the acquisition of additional health-care resources, including the location of new facilities and the acquisition of major equipment, in order to assess the potential impact of such plans on further opportunities for such sharing of health-care resources; and

"(E) monitor the implementation of activities designed to promote the sharing of health-care resources between the agencies.

"(4) Within nine months of the date of the enactment of this subsection and at such times thereafter as the Committee considers appropriate, the Committee shall make recommendations to the Administrator or the Secretary of Defense, or both, with respect to (A) changes in policies, procedures, and practices that the Committee has identified under paragraph (3)(C) of this subsection pertain- Recommendations to VA Administrator or DOD Secretary.

ing to the sharing of health-care resources described in such paragraph, and (B) such other matters as the Committee considers appropriate in order to promote such sharing of health-care resources.

Health-care resources sharing guidelines.

"(c)(1) After considering the recommendations made under subsection (b)(4) of this section, the Administrator and the Secretary of Defense shall jointly establish guidelines to promote the sharing of health-care resources between the agencies. Guidelines established under this subsection shall provide for such sharing consistent with the health-care responsibilities of the Veterans' Administration under this title and with the health-care responsibilities of the Department of Defense under chapter 55 of title 10 and so as not to adversely affect the range of services, the quality of care, or the established priorities for care provided by either agency.

10 USC 1071 *et seq.*

"(2) Guidelines established under paragraph (1) of this subsection shall authorize the heads of individual medical facilities of the agencies to enter into health-care resources sharing agreements in accordance with subsection (d) of this section and shall include guidelines for such agreements.

Sharing agreements.

"(d)(1) The head of each medical facility of either agency is authorized to enter into sharing agreements with the heads of medical facilities of the other agency in accordance with guidelines established under subsection (c) of this section. Under any such agreement, an individual who is a primary beneficiary of one agency may be provided health care at a facility of the other agency that is a party to the sharing agreement.

"(2) Each such agreement shall identify the health-care resources to be shared.

"(3) Each such agreement shall provide, and shall specify procedures designed to ensure, that the availability of direct health care to individuals who are not primary beneficiaries of the providing agency (A) is on a referral basis from the facility of the other agency, and (B) does not (as determined by the head of the facility of the providing agency) adversely affect the range of services, the quality of care, or the established priorities for care provided to the primary beneficiaries of the providing agency.

Reimbursement.

"(4) Each such agreement shall provide that a providing agency shall be reimbursed for the cost of the health-care resources provided under the agreement and that the rate for such reimbursement shall be determined in accordance with the methodology agreed to pursuant to subsection (e) of this section.

Agreement proposals, submittal.

"(5) Each proposal for an agreement under paragraph (1) of this subsection shall be submitted to the Chief Medical Director and the Assistant Secretary and shall be effective as an agreement in accordance with its terms (A) on the forty-sixth day after the receipt of such proposal by both such officials, unless earlier disapproved by either such official, or (B) if earlier approved by both such officials, on the date of such approval.

Reimbursement methodology provisions.

"(e) Reimbursement under any sharing agreement entered into under subsection (d) of this section shall be based upon a methodology that is agreed upon by the Chief Medical Director and the Assistant Secretary and that provides appropriate flexibility to the heads of the facilities concerned to take into account local conditions and needs and the actual costs to the providing agency's facility of the health-care resources provided. Any funds received through such a reimbursement shall be credited to funds that have been allotted to the facility that provided the care or services.

"(f) At the time the President's Budget is transmitted to Congress in any year pursuant to section 201(a) of the Budget and Accounting Act, 1921 (31 U.S.C. 11(a)), the Administrator and the Secretary of Defense shall submit a joint report to Congress on the implementation of this section during the fiscal year that ended during the previous calendar year. Each such report shall include— Report to Congress.

"(1) the guidelines prescribed under subsection (c) of this section (and any revision of such guidelines),

"(2) the assessment of further opportunities identified under clause (B) of subsection (b)(3) of this section for sharing of health-care resources between the agencies;

"(3) any recommendation made under subsection (b)(4) of this section during such fiscal year;

"(4) a review of the sharing agreements entered into under subsection (d) of this section and a summary of activities under such agreements during such fiscal year;

"(5) a summary of other planning and activities involving either agency in connection with promoting the coordination and sharing of Federal health-care resources during the preceding fiscal year; and

"(6) such recommendations for legislation as the Administrator and the Secretary consider appropriate to facilitate the sharing of health-care resources between the agencies.

"(g) For the purposes of this section: Definitions.

"(1) The term 'beneficiary' means a person who is a primary beneficiary of the Veterans' Administration or of the Department of Defense.

"(2) The term 'direct health care' means health care provided to a beneficiary in a medical facility operated by the Veterans' Administration or the Department of Defense.

"(3) The term 'head of a medical facility' (A) with respect to a medical facility of the Veterans' Administration, means the director of the facility, and (B) with respect to a medical facility of the Department of Defense, means the medical or dental officer in charge or the contract surgeon in charge.

"(4) The term 'health-care resource' includes hospital care, medical services, and rehabilitative services, as those terms are defined in paragraphs (5), (6), and (8), respectively, of section 601 of this title, any other health-care service, and any health-care support or administrative resource.

"(5) The term 'primary beneficiary' (A) with respect to the Veterans' Administration means a person who is eligible under this title (other than under section 611(b) or 613 or subsection (d) of this section) or any other provision of law for care or services in Veterans' Administration medical facilities, and (B) with respect to the Department of Defense, means a member or former member of the Armed Forces who is eligible for care under section 1074 of title 10. 38 USC 611, 613.

"(6) The term 'providing agency' means the Veterans' Administration, in the case of care or services furnished by a facility of the Veterans' Administration, and the Department of Defense, in the case of care or services furnished by a facility of the Department of Defense.".

(b)(1) The heading of such section is amended to read as follows: 38 USC 5011.

"§ 5011. Sharing of Veterans' Administration and Department of Defense health-care resources".

(2) The item relating to such section in the table of sections at the beginning of chapter 81 of such title is amended to read as follows:

"5011. Sharing of Veterans' Administration and Department of Defense health-care resources.".

38 USC 5011 note.

(c) The Assistant Secretary of Defense for Health Affairs shall consult regularly with the Surgeons General of the Army, Navy, and Air Force in carrying out the duties and functions assigned to the Assistant Secretary in section 5011 of title 38, United States Code, as amended by subsection (a) of this section.

38 USC 5011 note.

(d) The guidelines required to be established under subsection (c) of section 5011 of title 38, United States Code, as added by subsection (a) of this section, shall initially be established not later than twelve months after the date of the enactment of this Act.

SEC. 4. (a) Chapter 81 of title 38, United States Code, is amended by inserting after section 5011 the following new section:

38 USC 5011A.

"§ 5011A. Furnishing of health-care services to members of the Armed Forces during a war or national emergency

"(a)(1) During and immediately following a period of war, or a period of national emergency declared by the President or the Congress that involves the use of the Armed Forces in armed conflict, the Administrator may furnish hospital care, nursing home care, and medical services to members of the Armed Forces on active duty. The Administrator may give a higher priority to the furnishing of care and services under this section than to the furnishing of care and services to any other group of persons eligible for care and services in medical facilities of the Veterans' Administration with the exception of veterans with service-connected disabilities.

Definitions.

"(2) For the purposes of this section, the terms 'hospital care', 'nursing home care', and 'medical services' have the meanings given such terms by sections 601(5), 101(28), and 601(6) of this title, respectively.

38 USC 601, 101.

Contracts with private facilities.

"(b)(1) During a period in which the Administrator is authorized to furnish care and services to members of the Armed Forces under subsection (a) of this section, the Administrator, to the extent authorized by the President and subject to the availability of appropriations or reimbursements under subsection (c) of this section, may enter into contracts with private facilities for the provision during such period by such facilities of hospital care and medical services described in paragraph (2) of this subsection.

"(2) Hospital care and medical services referred to in paragraph (1) of this subsection are—

"(A) hospital care and medical services authorized under this title for a veteran and necessary for the care or treatment of a condition for which the veteran is receiving medical services at a Veterans' Administration facility under subsection (f) or (g) of section 612 of this title, in a case in which the delay involved in furnishing such care or services at such Veterans' Administration facility or at any other Veterans' Administration facility reasonably accessible to the veteran would, in the judgment of the Chief Medical Director, be likely to result in a deterioration of such condition; and

38 USC 612.

"(B) hospital care for a veteran who—

"(i) is receiving hospital care under section 610 of this title; or

38 USC 610.

"(ii) is eligible for hospital care under such section and requires such care in a medical emergency that poses a serious threat to the life or health of the veteran;

if Veterans' Administration facilities are not capable of furnishing or continuing to furnish the care required because of the furnishing of care and services to members of the Armed Forces under subsection (a) of this section.

Care or service costs, reimbursement.

"(c)(1) The cost of any care or services provided by the Veterans' Administration under subsection (a) of this section shall be reimbursed to the Veterans' Administration by the Department of Defense at such rates as may be agreed upon by the Administrator and the Secretary of Defense based on the cost of the care or services provided.

"(2) Amounts received under this subsection shall be credited to funds allotted to the Veterans' Administration facility that provided the care or services.

Plans implementation.

"(d)(1) Not later than six months after the date of the enactment of this section, the Administrator and the Secretary of Defense shall enter into an agreement to plan and establish procedures and guidelines for the implementation of this section. Not later than one year after the date of the enactment of this section, the Administrator and the Secretary shall complete plans for such implementation and shall submit such plans to the Committees on Veterans' Affairs and on Armed Services of the Senate and House of Representatives.

Submittal to congressional committees.

Review and report.

"(2) The Administrator and the Secretary of Defense shall jointly review such plans not less often than annually thereafter and shall report to such committees any modification in such plans within thirty days after the modification is agreed to.

Regulations.

"(e) The Administrator shall prescribe regulations to govern any exercise of the authority of the Administrator under subsections (a) and (b) of this section and of the Chief Medical Director under subsection (b)(2)(A) of this section.

Reports to congressional committees.

"(f) Within thirty days after a declaration of a period of war or national emergency described in subsection (a) of this section (or as soon after the end of such thirty-day period as is reasonably practicable), the Administrator shall submit to the Committees on Veterans' Affairs of the Senate and House of Representatives a report on the Administrator's allocation of facilities and personnel in order to provide priority hospital care, nursing home care, and medical services under this section to members of the Armed Forces. Thereafter, with respect to any fiscal year in which the authority in subsection (b) of this section to enter into contracts with private facilities has been used, the Administrator shall report within ninety days after the end of such fiscal year to those committees regarding the extent of, and the circumstances under which, such authority was used.".

(b) The table of sections at the beginning of such chapter is amended by inserting after the item relating to section 5011 the following new item:

"5011A. Furnishing of health-care services to members of the Armed Forces during a war or national emergency.".

SEC. 5. (a) Section 1786(a) of title 38, United States Code, is amended by adding at the end the following new paragraph:

"(8) Notwithstanding any other provision of law unless enacted in express limitation of this paragraph, funds in the Veterans' Administration readjustment benefits account shall be available for payments under paragraph (1) of this subsection for pursuit of a program of education exclusively by correspondence in which the veteran or spouse or surviving spouse enrolls after September 30, 1981.".

Effective date. 38 USC 1786 note.

(b) The amendment made by subsection (a) of this section shall take effect as of October 1, 1981.

Richard L. Roudebush Veterans' Administration Medical Center, designation

SEC. 6. The Veterans' Administration medical center located at 1481 West 10th Street, Indianapolis, Indiana, shall after the date of the enactment of this Act be known and designated as the "Richard L. Roudebush Veterans' Administration Medical Center". Any reference to such medical center in any law, regulation, document, map, record, or other paper of the United States shall after such date be deemed to be a reference to the Richard L. Roudebush Veterans' Administration Medical Center.

Approved May 4, 1982.

LEGISLATIVE HISTORY—S. 266 (H.R. 3502):

HOUSE REPORTS: No. 97-72, Pt. I (Comm. on Veterans' Affairs) and Pt. II (Comm. on Armed Services) both accompanying H.R. 3502.
SENATE REPORTS: No. 97-137 (Comm. on Governmental Affairs) and No. 97-196 (Comm. on Veterans' Affairs).
CONGRESSIONAL RECORD:
Vol. 127 (1981): Oct. 27, considered and passed Senate
Nov. 4, considered and passed House, amended, in lieu of H.R. 3502.
Vol. 128 (1982): Apr. 1, Senate agreed to House amendments with amendments.
Apr. 20, House concurred in Senate amendments.

○

APPENDIX B

Health Resources Sharing: A Management Guide

HEALTH RESOURCES SHARING

A Management Guide

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Introduction

During the period 18 October through 22 November 1983, 15 one-day workshops were conducted in various U.S. cities to promote Public Law 97-174, the Veterans Administration and Department of Defense Health Resources Sharing and Emergency Operations Act. Workshop attendees comprised health care personnel from VA, Army, Navy, and Air Force medical treatment facilities (MTFs) and headquarters elements. Faculty for the workshops consisted of staff members from VA Central Office, Office of the Assistant Secretary of Defense for Health Affairs, and Offices of the Army, Navy and Air Force Surgeon General. Each workshop included seminar discussions of case studies in health care resources sharing. During these seminars, attendees provided valuable insight on how best to plan, negotiate, and conduct shared service arrangements. This guide includes many of the comments made by workshop participants. The authors are indebted to these VA and DOD personnel for their contributions.

Definition

In its 1977 publication entitled Guidelines on Shared Services for Hospitals, the American Hospital Association defines shared services as "those administrative and clinical functions that are common to two or more health care institutions that have arranged to provide health care services jointly or cooperatively." The term "shared services" refers to the wide range of different ways in which medical treatment facilities can cooperate in patient care. Almost any hospital or clinic activity can be implemented on a shared basis.

Planning for Sharing

Before a decision is made to pursue the negotiation and implementation of a shared service agreement, some basic information should be obtained. Facts to gather are summarized below.

a. Requirements - Determine what services (clinical and administrative) are required by beneficiaries and medical personnel. Are DOD or VA beneficiaries having to receive health care from civilian sources? What specific needs are not being met by federal medical facilities? Sources of information include:

(1) Consultation with the medical staff

(2) CHAMPUS/CHAMPVA workload and cost data

(3) Aeromedical evacuation movements

(4) Supplemental, contract, or consultant care workload and cost data

b. Capabilities - Find out which services (clinical and administrative) have the potential capacity for sharing. Both current and future capabilities should be considered. Do any services have excess capacity? The following

information should be reviewed:

(1) Inventory of services

(2) Appointment waiting times per clinic

(3) Provider productivity statistics

(4) Department head advice regarding service expansion potential

c. Health care costs - Know what the average cost is in the civilian community for various procedures/services that are required by beneficiaries. Also, have an estimate of in-house costs associated with potential shared services.

d. Existing arrangements - Know what cooperative arrangements already exist. Are they working well? Are they cost-effective? Would terminating them jeopardize good will? Remember that VA/DOD sharing is but one of a number of alternatives available to provide care. If an existing arrangement provides quality service to beneficiaries, there's no mandate to change it.

e. Sharing partner information - Prior to any formal negotiation, a general understanding should exist of the potential partner's:

(1) Services offered (both clinical and administrative)

(2) Accessibility (i.e., location, travel distance and time, parking)

(3) Physical plant layout and attractiveness

(4) Key staff members

f. Transportation factors - How will DOD beneficiaries be transported to the VA facility and vice versa? Must either the DOD or VA MTF develop new transportation capabilities? Will beneficiary travel requirements increase unduly?

g. Attitudes toward sharing - It is important to assess and understand the perceptions that key employees and interest groups have regarding the potential sharing partner and arrangement. For example, are medical staff members in favor of shared service arrangements, or will they resist the change? How do administrative employees view the situation? Union members? How will VA and DOD beneficiaries react to their new medical environment? Veterans groups? Military dependents' clubs? How will local civilian providers (e.g., physicians, hospitals, health maintenance organizations, etc) react to the new federal relationship? Should an existing arrangement be preserved for the sake of good community relations?

h. Impact on referral hospitals - Particularly from a DOD standpoint, larger health care facilities (i.e., regional hospitals and medical centers) depend upon patient referral workload (through the aeromedical evacuation

system) to augment their teaching programs and to maintain sufficient beds for wartime readiness purposes. This factor must be carefully assessed by the referring facility before shutting off this workload via a local sharing arrangement.

As will be shown later, successful sharing arrangements don't just happen. They require a lot of work, faith, and commitment on the part of those personnel involved. Time and effort devoted to the planning phase will vary depending upon the nature of the relationship between the sharing partners. For those VA and DOD hospitals that have successfully shared services for many years, the work required in the planning phase will be far less than that required for newcomers; however, the benefits can be just as great.

Clearly understood and formulated objectives of the sharing arrangement are important in the planning phase. Participants must consider precisely what operating objective they wish to achieve from the agreement. When definite objectives are established before a shared service is initiated, frequently these objectives can be quantified and used to measure the performance of the shared service. It's also important that each hospital have a clear understanding of its own expectations for the shared activity as well as an understanding of the sharing partner's expectations.

Given the stakes involved in undoing a shared service once it's implemented, a thorough job in the planning process is crucial. In addition to the facts cited earlier, VA and DOD managers should have a general understanding of the pros and cons of sharing. Potential opportunities and risks of sharing will be discussed later in this guide.

Perhaps the best way to avoid failure in a sharing arrangement is to ensure from the start that the underlying conditions for success are present. The next two sections contain tips on successful negotiation and implementation of shared services.

Negotiating and Communications

Following preliminary data gathering and planning, earnest discussions between the DOD and VA institutions regarding sharing can begin. Since the success of any key venture is directly linked to top management support and commitment, it's vital that the respective leaders of each facility meet early in the process. An initial meeting between the military hospital commander and administrator, and the VA medical center director and chief of staff is helpful in creating bilateral executive commitment to potential sharing opportunities.

After initial contacts have been made, orientation visits and tours to the respective facilities are encouraged. These visits (which can be made by department heads, staff physicians, nurses, managers, and others) help establish peer rapport, communication channels, and support for the sharing concept. Specific sharing opportunities can be suggested either in these meetings or later, via written proposals.

Unlike with collective bargaining or service contracts, the negotiation phase of sharing agreements is not a formalized, rigid process. Neither party to the sharing agreement can be sued for non-peformance, so legal requirements are minimal. Negotiating sessions usually focus on issues such as reimbursement (rates and process), projected workload (type and frequency), capabilities and limitations of each specific service to be shared, billing (frequency and process), and referral policies. The keys to successful negotiating, as with sharing in general, are commitment, faith and trust, and a positive attitude by all participants.

Implementing a Sharing Arrangment

After the decision is made to pursue a shared service arrangement, constant care and attention by both parties is needed to ensure success. The following suggestions have been made by VA and DOD health care leaders experienced in successful sharing endeavors.

a. Define rights and responsibilities - The staff of participating medical facilities want and need to be involved throughout the planning and implementation of the sharing arrangement. Their input and recommendations are crucial to molding the program. For this reason the rights and responsibilities of participants should be made clear from the start.

b. Establish communication mechanisms for resolving disputes - Since points of disagreement will be inevitable in cooperative arrangements, even with proper advance guidelines, mechanisms for handling disputes and contentious decisions should be established. Since the expectations of each participant are as likely to be frustrated as satisfied during the start-up phase, a realistic attitude on the part of all concerned will be an important factor in the venture's success. Regularly scheduled "how goes it" meetings rotating between the VA and DOD facilities have been found to enhance communications greatly.

c. Start with winners - A frequent comment by administrators regarding initial sharing efforts is to select services where successful sharing is expected; thereafter, to increase the scope of the agreement. When dealing with two or more different health care systems and facilities, it's important "to get a foot in the door" early, then proceed slowly with bigger and better arrangements.

d. Secure commitment of important publics - Earlier, the need to understand and assess the attitudes and perceptions of key personnel towards sharing was mentioned. These interest groups, or publics, must be made aware of the sharing arrangement and support it if the agreement is to succeed. The DOD medical facility commander must gain the support and approval of the installation (e.g., base, post, camp, or station) commander since the hospital or clinic is located on that installation. The VA director must ensure that local veteran interest groups understand and appreciate the need for sharing services with a DOD facility and/or DOD beneficiaries. Employees of both VA and DOD medical facilities, and each beneficiary population served must be educated about the general advantages of sharing and the specific benefits to

them. For example, DOD beneficiaries should understand that receiving services at the neighboring VA medical center can reduce their out-of-pocket expenses for CHAMPUS. Likewise, VA beneficiaries should know that being cared for in a DOD hospital can possibly reduce their time and expense when traveling to a VA medical center in another city. In summary, resistance to the changes brought about by shared service arrangements can be minimized through effective communicaton, education, and public relations efforts.

e. Monitor results - Successful shared services are those that are closely monitored by the participants. Feedback from patients and staff should be obtained on a regular basis to ensure that the objectives of the arrangement are being met.

f. Keep the faith - It takes a great deal of faith and commitment on the part of those involved to engage in any cooperative venture. Unless each institution is willing to participate fully and completely, the ultimate success of the undertaking may be endangered. Employees must have confidence that sharing has a reasonable chance of providing quality services. Mutual trust and respect of the participants must exist.

Potential Opportunities and Risks of Sharing

Shared service arrangements should be viewed from the standpoint of both the opportunities that can be expected fom such programs as well as the potential risks that may need to be faced and resolved. Some of the more common examples of sharing pros and cons are listed below:

a. Opportunities

(1) Greater operational cost containment and economies of scale

(2) Improved accessibility and availability of services to beneficiaries

(3) Higher quality of services

(4) Greater scope of services

(5) Reduced out-of-pocket expenditures by beneficiaries on health care

(6) Less federal duplication of facilities and services through improved coordination and planning

(7) Employee access to new technologies, information systems, and the like

(8) Improved communications and information sharing

(9) Direct reimbursement at local level provides financial incentive

b. Risks

(1) Loss of authority and control

(2) Failure to understand the different system, e.g., terminology, procedures, technologies

(3) Employee perception that the arrangement threatens his or her job

(4) Existing relationships with civilian health care facilities may be jeopardized

(5) Service responsiveness and turnaround time may be reduced

(6) Referral facilities, especially DOD regional hospitals and medical centers, may be negatively impacted by the reduction of teaching cases and subspecialty referrals

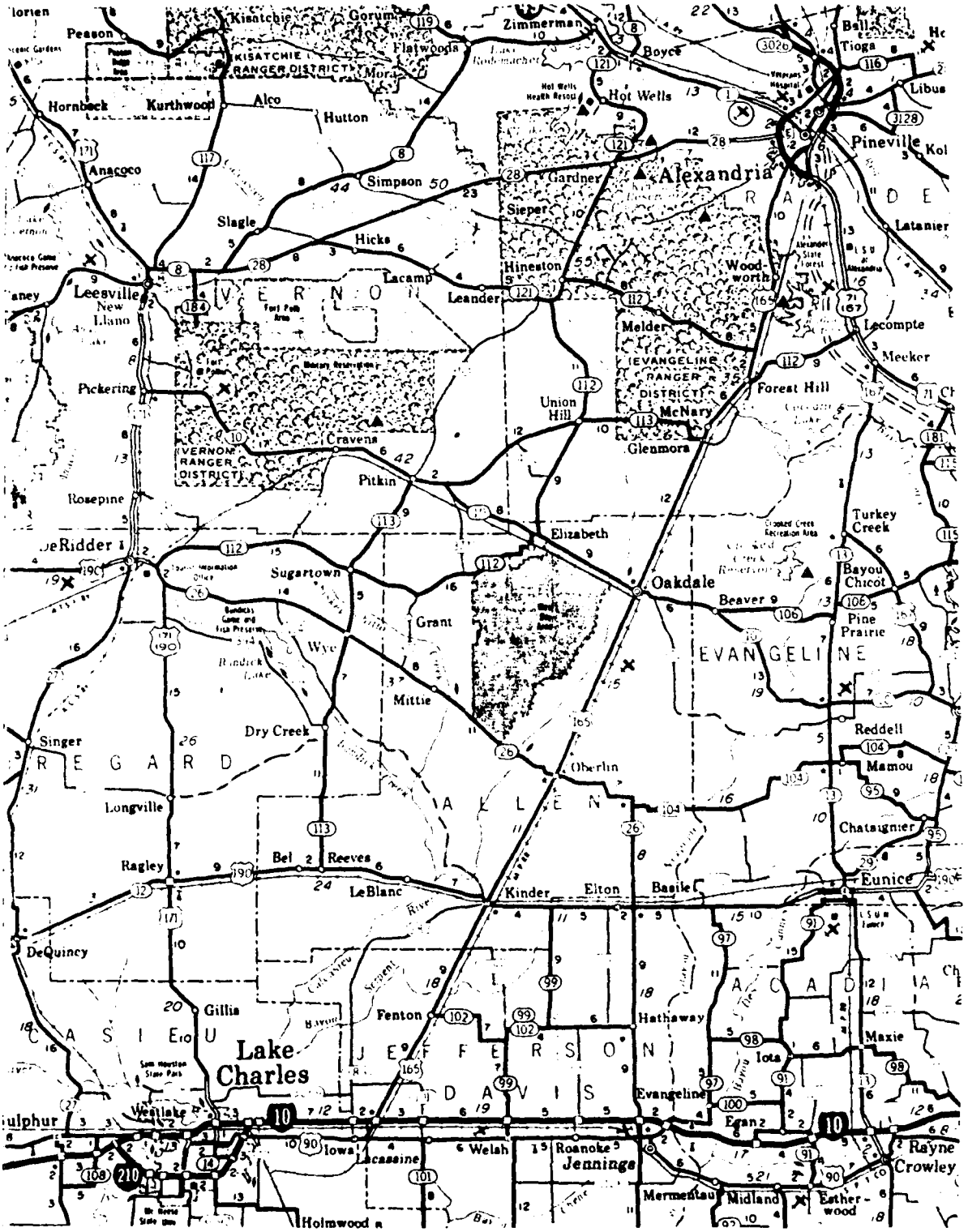
Conclusion

Public Law 97-174 encourages the sharing of health care resources between Veterans Administration and Department of Defense medical treatment facilities. Greater sharing of resources will result in enhanced health benefits for veterans and members of the armed services, and will result in reduced costs to the government by minimizing duplicaion and underuse of health care resources.

The planning, negotiation, and implementation of shared service arrangements between VA and DOD medical facilities require care and commitment. Despite the risks involved in sharing activities, the advantages of such programs usually far outweigh any difficulties that may be encountered. Good luck!

APPENDIX C

Map of West Central Louisiana


Peason
Kisatchie
Gorum
Zimmerman
Flatwoods
Boyce
Bell City
Tioga
Libuse
KISATCHIE RANGER DISTRICT
Hornbeck
Kurthwood
Alco
Hutton
Hot Wells
Pineville
Anacoco
Simpson
Gardner
Alexandria
Sieper
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Lacamp
Hineston
Leander
Woodworth
Latanier
Leesville
New Llano
Melder
Lecompte
Meeker
Pickering
Forest Hill
Union Hill
McNary
Glenmora
Cravens
Pitkin
Rosepine
Elizabeth
Turkey Creek
DeRidder
Sugartown
Oakdale
Beaver
Bayou Chicot
Pine Prairie
Grant
Wye
Mittie
Dry Creek
Singer
Reddell
Oberlin
Mamou
Longville
Chataignier
Ragley
Bel
Reeves
LeBlanc
Kinder
Elton
Basile
Eunice
DeQuincy
Gillia
Fenton
Hathaway
Maxie
Iota
Lake Charles
Westlake
Evangeline
Egan
Sulphur
Iowa
Lacassine
Welsh
Roanoke
Jennings
Crowley
Rayne
Holmwood
Mermentau
Midland
Estherwood
VERNON
EVANGELINE
ALLEN
JEFFERSON DAVIS
CALCASIEU
ACADIA

APPENDIX D

VA/DOD Sharing Newsletter, Number 1, March 1984

VA/DOD SHARING

Number 1 March, 1984

This newsletter is the first in a series to report on VA/DoD sharing agreements negotiated.

In this report . . . .

- Ft. Campbell, Nashville "Mega-Agreement"
- Major Multi-Services Agreements Signed
- CT Scanner Breakthrough at North Chicago
- First Research Agreement Signed
- Other Agreements Cover Broad Spectrum

FT. CAMPBELL, NASHVILLE VAMC SIGN "MEGA" AGREEMENT, USE DRGS

A "mega" agreement designed to complement each other's strengths has been signed by Nashville, Tenn. VAMC and Ft. Campbell, Ky.

"This agreement is in the best interest of both sets of beneficiaries, as well as taxpayers," said Larry E. Deters, director, Nashville VAMC. "In every case, the cost to the referring agency would be less than the price currently paid for such services," Deters added.

The agreeement runs from Fiscal Year 1984 to Fiscal Year 1989. It covers a range of services available at the Nashville VA facility and Blanchfield Army Hospital (Ft. Campbell).

The VAMC plans to provide to the Army 800 days of inpatient care a year (144 medical days, 536 surgical, eight psychiatric, and 112 neurological). Twenty-five outpatient visits a year are estimated. The VAMC would provide an estimated 775 diagnostic procedures a year (500 computerized axial tomographies, 15 cardiac catheterizations, 60 electromyograms, and 200 nuclear medicine scans). Sixty colonoscopies are also planned to be provided to the Army annually.

The Nashville VAMC used diagnosis-related groups, (DRGs) to calculate reimbursement. The total cost of inpatient care was divided by the total weighted work unit for the station (excluding hemodialysis). Relative values were then assigned.

The Army would provide inpatient care and outpatient dental visits. Military rates are to be based on the Uniform Chart of Accounts System.

Additional services are expected to be shared in the near future. Ft. Campbell is about 70 miles from the Nashville VA facility (POC: [illegible] John Yox, AV: 635-8175, Commercial 502 796-8075).

CT BREAKTHROUGH AT N. CHICAGO: SENATOR PERCY LAUDS NAVY AND VA

Navy Hospital, Great Lakes, Ill., will purchase a CT Scanner with the scanner to be shared on a 50/50 basis between the Navy Hospital and North Chicago VAMC. In return the VA would pay for the scanner's maintenance contract after the one-year warranty expires, and would provide three CT scan technicians, consumable supplies and cross-train Navy technicians to operate the scanner.

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Currently, neither the VAMC nor the Navy has a CT scanner and so must pay high prices for their patients to take the test elsewhere. About $210,000 will be saved annually by both parties in this one agreement. The agreement is an ongoing one with usage and projected expenses to be reviewed in Fiscal Year 1987.

In sharing two hospitals, North Chicago VAMC provides a radiation oncologist, gastroenterology services, renal biopsies, nephrology consultations, radioimmunoassays, and clinical laboratory services. Great Lakes provides the VAMC with radiation equipment and blood and blood products.

In a press release, Senator Charles Percy commended North Chicago VAMC and Great Lakes Navy hospitals "for being two of the first in the nation to join operations that will save tax money and improve health care." Percy was the Senate sponsor of the "VA/DoD Health Resources Sharing Act of 1982."

Total estimated savings for the North Chicago - Great Lakes agreements negotiated so far is over $427,000 annually. More agreements are planned in such areas as blood flow studies, laundry, social work and gynecological services (POC: CDR Legg AV: 792-3900, Commercial 312 688-3900).

THREE OTHER BIG MULTI-SERVICE
AGREEMENTS ARE NEGOTIATED

Three major multi-service agreements have been negotiated, bringing to five (including the Nashville - Ft. Campbell, N. Chicago - Great Lakes agreements reported above). the number of such agreements negotiated since the start of FY 1984. The three are:

USAF Hospital, Mountain Home AFB, Idaho - Boise, Idaho, VAMC; USAF Hospital, Chanute AFB, Ill. - Danville, Ill., VAMC; and Ft. Monmouth, N.J. - East Orange, N. J., VAMC have signed large multi-service agreements. Details of these agreements are:

USAF Hospital, Mountain, AFB, Idaho - Boise, Idaho, VAMC - The agreement covers services to be provided by Boise VAMC. It covers over 400 outpatient procedures a year and some 162 consultations a year. Inpatient (regular medicine and surgery services) Intensive Care Unit/Coronary Care Unit, maxillofacial surgery, psychiatric, EEG, EMG, CT Scans and Holter monitor services are also to be provided to the Air Force. The Air Force will also use the VAMC's laundry facilities (POC: MAJ. Jan Cox, AV: 857-2505, Commercial 208 828-2505).

USAF Hospital Chanute AFB, Ill. - Danville, Ill., VAMC - The Air Force will provide gynecological (inpatient and outpatient) services to the VAMC. The VAMC will provide laboratory tests, nuclear medicine, diagnostic ultrasound, and audiology services. Chanute laboratory students will train at Danville (POC: LT. COL. Tony Turk, AV: 862-3510, Commercial 217 495-2906).

Ft. Monmouth (N.J.) - East Orange- N.J., VAMC - The two hospitals have agreed to exchange services in 13 areas. Among the areas covered are general inpatient and outpatient services, CT scans, nuclear medicine, and surgical services (POC: MAJ. Stephen Clouse, AV: 992-2798, Commercial 201 532-2798).

FT. RUCKER, ALA. - EAST ORANGE, N.J.
SIGN FIRST RESEARCH AGREEMENT

The East Orange, N.J. VAMC is to develop an algorithm for anlayzing the relationship between human heart rates and the central nervous system, using Army data. The Army will pay the VAMC for developing the algorithm.

The U.S. Army Aeromedical Research Laboratory, Ft. Rucker, Ala. is conducting the research. The algorithm would allow investigators to take time-series ECGs and respirator patterns, eliminate artifact and conduct spectral analysis. The method would be applicable to studies on physical fitness, fatigue, hypoxia, and influence of drugs on performance (POC: COL. Dudley Price, AV 558-2316, Commercial 205-255-2316).

BROAD SPECTRUM OF SERVICES
COVERED IN OTHER AGREEMENTS

Six other VAMCs and seven military hospitals are involved in new sharing agreements. These agreements are:

. U.S.A.F. Detachment, La Junta Colo., - Ft. Lyon, Colo., VAMC - Ft. Lyon VAMC provides inpatient medical, inpatient psychiatry and outpatient services. Audiology, physicial therapy, podiatry, optometry, psychiatric consultations and surgical consultations are also provided to the Air Force (POC: CAPT. Carleton Murphy, AV: 692-1983 Commercial 303-591-7890).

. USAF Regional Hospital - Hampton, Va., VAMC - Hampton VAMC permits utilization of its Argon Laser Photocoagulation Systems 900 by the Air Force (POC: CAPT. Jerry Anderson, AV: 432-6805, Commercial 804-764-6805.

. 3344th U.S. Army Hospital, Tampa, Fla., - Tampa, Fla., VAMC - Tampa VAMC provides chest x-rays, urinalysis and electrocardiograms (CPT. Edgar McAvoy, Commercial 813 879-5478).

. Navy Hospital, Orlando, Fla., - Tampa, Fla., VAMC - The Naval hospital provides acute abdominal surgery (except vascular surgical), trauma surgery, gynecological outpatient examinations, alcohol rehabilitation services, lab services and inpatient social work services. The Orlando VA outpatient clinic provides orthopedic consultation and minor treatment, echocardiograph tests, Holter monitor recordings, and stress tests (POC: CDR Windholz, AV 942-4995, Commercial 904-772-4995).

. Military Entrance Processing Station, Beckley, W.Va - Beckley W.Va., VAMC - The VAMC is to provide chest x-rays, radiology consultations, and consultations not requiring complete diagnostic history and examinations.

. Fort Leavenworth, Kans. - Ft. Leavenworth, Kans., VAMC - The VAMC is to provide 25 different diagnostic tests. In addition, Munson Army Hospital (Ft. Leavenworth) plans to use the VAMC's surgical facilities for a year while Munson's facilities are being renovated (Ms. S. Morrison, AV: 552-3380, Commercial 913-684-3380).

. USAF Hospital, Fairchild AFB, Wash., - Spokane, Wash., VAMC- Fairchild is using Spokane VAMC's emergency room, including x-ray facilities, and dental x-ray facilities. Fairchild will also utilize Spokane's nuclear medicine services (POC: LT. Large AV: 352-5111, Commercial 509 247-5111).

FOR FURTHER INFORMATION . . . .

LTC. James Moa	LCDR James Ford	MAJ Nick Nicholson
Health Services CMD	OP-933D3	HQS., USAF/HA/1
Attn: HSOP-FF	Director, Naval Med.	Bolling AFB
Ft. Sam Houston, TX	Washington, DC	Washington, DC
AV: 471-3666/3669	AV: 223-1737	AV: 297-5066
Com. (512) 221-3666	Com. (202) 653-1737	Com. 202-767-5066

APPENDIX E

Worksheet for Computation of Projected CT Scan Demand Based on Leonard Methodology, as Used by Shared Medical Resources, Inc.

SHARED MEDICAL RESOURCES

Indicators for Computed Tomography
Instructions

As a means of predicting potential usage of CT scanning services, SMR requires the completion of the attached forms with the number of in-patient discharges for both primary and secondary diagnosis by ICD-9-CM Code Categories.

* Information should be abstracted from HUP or PAS semi-annual diagnosis indices and totaled for one complete year. Please indicate the period on the forms.

* The specific ICD-9-CM codes, for which information must be abstracted, are listed in the third column of the attached forms. The first column provides a general code reference to the diagnosis description.

* For the column identified as PRIMARY -

  Enter the total number of in-patient discharges listed as primary diagnosis for <u>all</u> ICD-9-CM Codes shown in the adjacent column.

* For the column identified as SECONDARY -

  Enter the total number of in-patient discharges listed as secondary diagnosis for <u>all</u> ICD-9-CM Codes shown.

* Each section, A - D, must be subtotaled.

SHARED MEDICAL RESOURCES

Indicators for Computed Tomography
Instructions

As a means of predicting potential usage of CT scanning services, SMR requires the completion of the attached forms with the number of in-patient discharges for both primary and secondary diagnosis by ICD-9-CM Code Categories.

* Information should be abstracted from HUP or PAS semi-annual diagnosis indices and totaled for one complete year. Please indicate the period on the forms.

* The specific ICD-9-CM codes, for which information must be abstracted, are listed in the third column of the attached forms. The first column provides a general code reference to the diagnosis description.

* For the column identified as PRIMARY -

  Enter the total number of in-patient discharges listed as primary diagnosis for <u>all</u> ICD-9-CM Codes shown in the adjacent column.

* For the column identified as SECONDARY -

  Enter the total number of in-patient discharges listed as secondary diagnosis for <u>all</u> ICD-9-CM Codes shown.

* Each section, A - D, must be subtotaled.

SHARED MEDICAL RESOURCES

CT Services Questionnaire

Your assistance in completing this brief questionnaire as well as the accompanying ICD-9-CM Code Form, will enable Shared Medical Resources to most accurately evaluate your facility's potential usage of CT scanning services.

Hospital: _____

Address: _____

_____

Name of Respondent: _____

Date: _____

1. What is the hospital's licensed bed capacity? _____

2. What was the hospital's overall occupancy rate in FY 1982? _____

3. What is the traveling time from the hospital to other facilities with operational CT scanners?

   _____ within 5 minutes
   _____ within 10 minutes
   _____ within 20 minutes
   _____ within 30 minutes
   _____ between 30 and 60 minutes

4. How many facilities in the surrounding area have CT scanners? _____

5. How many hospitals in the surrounding area do not have CT scanners? _____

6. Please complete the following subtotals:

   a) the subtotals of section A1 on page 2 _____
   b) the subtotals of section B1 on page 5 _____
   c) the subtotals of section C1 on page 9 _____
   d) the subtotals of section D1 on page 12 _____
   e) the total of subtotals A2 + B2 + C2 + D2 on pages 2, 5, 9 & 12 _____

SECTION A

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
147	Malignant neoplasm of nasopharynx	147.0 to 147.9 incl.		
148	Malignant neoplasm of hypopharynx	148.0 to 148.9 incl.		
149	Malignant neoplasm of ill-defined & other sites	149.0 to 149.9 incl.		
160	Malignant neoplasm of respiratory organs	160.1, 160.2, 160.3, 160.4 160.5, 160.8, 160.9		
170.0	Malignant neoplasm of bones of skull, except mandible	170.0		
171.1 & 171.9	Malignant neoplasm of connective and other soft tissue of the head, face, neck site unspecified.	171.1 & 171.9		
190	Malignant neoplasm of eye	190.0 to 190.9 incl.		
191	Malignant neoplasm of brain	191.0 to 191.9 incl.		
192.0	Malignant neoplasm of other and unspecified parts of nervous system	192.0, 192.1, 192.8, 192.9		
194	Malignant neoplasm of endocrine glands	194.3 & 194.4		
196.0	Malignant neoplasm of lymph nodes of head, face, neck	196.0		
198.3	Secondary malignant neoplasm of brain	198.3		
198.4	Secondary malignant neoplasm of other parts of nervous system	198.4		
210.2	Benign neoplasm of major salivary glands	210.2		
210.7	Benign neoplasm of nasopharynx	210.7		
212	Benign neoplasm of nasal cavities, middle ear and accessory sinuses	212.0		
213.0	Benign neoplasm of bones of skull and face	213.0		
215.0	Benign neoplasm of connective and other soft tissue - head, face and neck	215.0		

SECTION A

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY A_1	SECONDARY A_2
224.0	Benign neoplasm of eye	224.0 to 224.9 incl.		
225	Benign neoplasm of brain	225.0, 225.1, 225.2 225.8, 225.9		
239	Neoplasms of unspecified nature	239.6 & 239.7		
		SUB-TOTALS/SECTION A		

SECTION B

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
006.5	Amebic brain abscess	006.5		
013.0	Tuberculous meningitis	013.0		
013.1	Tuberculoma of meninges	013.1		
013.2	Tuberculoma of brain	013.2		
013.3	Tuberculous abscess of brain	013.3		
090.4	Juvenile neurosyphilis including 090.4, 090.41, 090.42, 090.49	090.40, 090.41 090.42, 090.49		
094.1	Neurosyphilis - general paresis	094.1		
094.2	Syphilitic meningitis	094.2		
094.3	Asymptomatic neurosyphilis	094.3		
094.8	Other specified neurosyphilis	094.81 to 094.89 incl.		
094.9	Neurosyphilis, unspecified of central nervous system NOS	094.9		
122.9	Echinococcosis (brain cyst or tumor) - other and unspecified	122.9		
130	Toxoplasmosis including only 130.0, 130.1 & 130.2	130.0, 130.1 & 130.2		
290	Senile and presenile organic psychotic conditions	290.0 to 290.9 incl.		
293	Transient organic psychotic conditions	293.0 to 293.9 incl.		
294	Other organic psychotic conditions (chronic)	294.0 to 294.9 incl.		
310	Specific nonpsychotic mental disorders due to organic brain damage	310.0, 310.1, 310.2 310.8, 310.9		
324.0	Intracranial abscess	324.0		

SECTION B

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
324.9	Of unspecified site - extradural or subdural NOS	324.9		
330 to 333	Hereditary and degenerative diseases of the central nervous system	Includes all codes from 330.0 to 333.99		
342	Hemiplegia	342.0, 342.1, 342.9		
343	Infantile cerebral palsy	343.0 to 343.9 Incl.		
344	Other paralytic syndromes	344.0 to 344.9 Incl.		
345	Epilepsy	345.0 to 345.9 Incl.		
347	Cataplexy and narcolepsy	347		
348	Other conditions of brain	348.0 to 348.9 Incl.		
376	Disorders of the orbit	376.0, 376.1, 376.4, 376.5 376.6, 376.8, 376.9		
377	Disorders of the optic nerve and visual pathways	377.1, 377.2, 377.32 377.4, 377.5, 377.6, 377.		
378.9	Unspecified discorder of eye movements - Opthalmoplegia NOS Strabismus NOS	378.9		
385.3	Cholesteatoma of middle ear and mastoid	385.30 to 385.35 Incl.		
385.8	Other disorders of middle ear and mastoid	385.82 to 385.89 Incl.		
385.9	Unspecified disorder of middle ear and mastoid	385.9		
430	Subarachnoid hemorrhage	430		
431	Intracerebral hemorrhage	431		
432	Other and unspecified intracranial hemorrhage	432.0 to 432.9 Incl.		

SECTION B

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY B_1	SECONDARY B_2
433	Occlusion and stenosis of precerebral arteries	433.0 to 433.9 incl.		
434	Occlusion of cerebral arteries	434.0 to 434.9 incl.		
435	Transient cerebral ischemia	435.0 to 435.9 incl.		
436	Acute, but ill-defined, cerebrovascular disease	436		
437	Other and ill-defined cerebrovascular disease	437.0 to 437.9 incl.		
740	Anencephalus and similar anomalies	740.0 to 740.2 incl.		
742	Other congenital anomalies of nervous system	742.0 to 742.9 incl. Excluding 742.5		
744	Congenital anomalies of ear causing impairment of hearing	744.03, 744.04, 744.05		
747.81	Congenital anomalies of cerebrovascular system	747.81		
780 & 781	Ill-defined signs and symptoms involving the nervous system indicating encephalopathy	780.3 & 781.0 to 781.9 incl.		
797	Senility without mention of psychosis	797		
800 to 804	Fracture of skull	800, 801, 803 & 804 including all subcodes		
850	Concussion	850.0 to 850.9 incl.		
852	Subarachnoid, subdural and extradural hemorrhage, following injury	852.0 to 852.5 incl.		
853	Other and unspecified intracranial hemorrhage, following injury	853.0 & 853.1		
854	Intracranial injury of other and unspecified nature	854.0 & 854.1		
921.3 & 921.9	Contusion of eye	921.3 & 921.9 only		
		SUB-TOTALS/SECTION B		

SECTION C

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
150	Malignant neoplasm of esophagus	150.0 to 150.9 Incl.		
152	Malignant neoplasm of small intestine, including duodenum	152.0 to 152.9 Incl.		
153	Malignant neoplasm of colon	153.0 to 153.9 Incl.		
154	Malignant neoplasm of rectum, rectosigmoid junction & anus	154.0 to 154.9 Incl.		
155	Malignant neoplasm of liver and interhepatic bile ducts	155.0 to 155.9 Incl.		
156	Malignant neoplasm of gallbladder and extrahepatic bile ducts	156.0 to 156.9 Incl.		
157	Malignant neoplasm of pancreas	157.0 to 157.9 Incl.		
158	Malignant neoplasm of retroperitoneum and peritoneum	158.0 to 158.9 Incl.		
159	Malignant neoplasm of other and ill-defined sites	159.0 to 159.9 Incl.		
162	Malignant neoplasm of trachea, bronchus and lung	162.0 to 162.9 Incl.		
163	Malignant neoplasm of pleura	163.0 to 163.9 Incl.		
164	Malignant neoplasm of thymus, heart and mediastinum	164.0 to 164.9 Incl.		
165	Malignant neoplasm of other and ill-defined sites	165.0 to 165.9 Incl.		
170 & 171	Malignant neoplasm of bone and connective tissue	170.2 to 170.9 Incl., and 171.2 to 171.9 Incl.		
179	Malignant neoplasm of uterus, part unspecified	179		
182	Malignant neoplasm of body of uterus	182.0 to 182.9 Incl.		
183	Malignant neoplasm of ovary and other uterine adnexa	183.0 to 183.9 Incl.		
185	Malignant neoplasm of prostate	185		

SECTION C

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
188	Malignant neoplasm of bladder	188 to 188.9 Incl.		
189	Malignant neoplasm of kidney	189 to 189.9 Incl.		
192.2	Malignant neoplasm of spinal cord	192.2		
192.3	Malignant neoplasm of spinal meninges	192.3		
193	Malignant neoplasm of thyroid gland	193		
194	Malignant neoplasm of adrenal gland	194		
194.1	Malignant neoplasm of parathyroid gland	194.1		
195	Malignant neoplasm of other and ill-defined sites	195.1 to 195.8 Incl.		
196	Secondary and unspecified malignant neoplasm of lymph nodes	196.1 to 196.9 Incl.		
197.0	Secondary malignant neoplasm of lung	197.0		
197.1	Secondary mal gnant neoplasm of mediastinum	197.1		
197.2	Secondary malignant neoplasm of pleura	197.2		
197.3	Secondary malignant neoplasm of other respiratory organs	197.3		
197.4	Secondary malignant neoplasm of small intestine including duodenum	197.4		
197.5	Secondary malignant neoplasm of large intestine & rectum	197.5		
197.6	Secondary malignant neoplasm of retroperitoneum & peritoneum	197.6		
197.7	Secondary malignant neoplasm of liver	197.7		

SECTION C

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
197.8	Secondary malignant neoplasm of other digestive organs and spleen	197.8		
198.0	Secondary malignant neoplasm of kidney	198.0		
198.1	Secondary malignant neoplasm of other urinary organs	198.1		
198.5	Secondary malignant neoplasm of bone and marrow	198.5		
198.6	Secondary malignant neoplasm of ovary	198.6		
198.7	Secondary malignant neoplasm of adrenal gland	198.7		
199	Malignant neoplasm without specification of site	199		
200	Lymphosarcoma and reticulosarcoma	200.0 to 200.8 incl.		
201	Hodgkins disease	201.0 to 201.9 incl.		
202	Nodular lymphoma	202		
210.8	Benign neoplasm of hypopharynx	210.8		
210.9	Benign neoplasm of pharynx-throat NOS	210.9		
211	Benign neoplasm of other parts of digestive system	211.0, 211.2 to 211.9 Incl.		
212	Benign neoplasm of respiratory and intrathoracic organs	212.1 to 212.9 incl.		
213	Benign neoplasm of bone and articular cartilage	213.2 to 213.9 incl.		
215	Benign neoplasm of connective and other soft tissue	215.2 to 215.9 incl.		
218	Benign neoplasm of uterine leiomyoma	218.0 to 218.9 incl.		
219	Benign neoplasm of uterus - other	219.0 to 219.9 incl.		

SECTION C

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY C_1	SECONDARY C_2
220	Benign neoplasm of ovary	220		
221	Benign neoplasm of fallopian tube and uterine ligaments	221		
223	Benign neoplasm of kidney and other urinary organs	223.0 to 223.9 incl.		
226	Benign neoplasm of thyroid glands	226		
227.0	Benign neoplasm of adrenal gland	227.0		
227.1	Benign neoplasm of parathyroid gland	227.1		
228	Hemangioma and Lymphangioma	228.0 & 228.1 (All subcodes)		
229	Benign neoplasm of other and unspecified sites	229.0 to 229.9 incl.		
235	Neoplasm of uncertain behavior of digestive and respiratory systems	235.0 and 235.2 to 235.9 incl.		
236	Neoplasm of uncertain behavior of genitourinary organs	236.0 to 236.3 and 236.5 to 236.9 incl.		
237	Neoplasm of uncertain behavior of endocrine glands	237.2, 237.4, 237.5, 237.6, 237.7		
238	Neoplasm of uncertain behavior of other and unspecified sites and tissues	238.0 and 238.1		
239	Neoplasm of unspecified nature	239.0,239.1,239.2,239.4, 239.5,239.7,239.8,239.9		
240	Simple and unspecified goiter	240.0 and 240.9		
241	Nontoxic nodular goiter	241.0 to 241.9 incl.		
242	Thyrotoxicosis with or without goiter	242.0 to 242.9 incl.		
246	Other disorders of thyroid	246.0 to 246.9 incl.		
		SUB-TOTALS/SECTION C		

SECTION D

INDICATORS FOR COMPUTED TOMOGRAPHY

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
095	Other forms of late syphilis with symptoms	095.0 to 095.9 incl.		
122	Echinococcosis	122.0 to 122.9 incl.		
441	Aortic Aneurysm	441.0 to 441.9 incl.		
442	Other Aneurysm	442.0 to 442.8 incl.		
510	Empyema	510.0 and 510.9		
511.1	Pleurisy	511.1, 511.8 and 511.9		
513	Abscess of lung and mediastinum	513.0 and 513.1		
560	Intestinal obstruction without mention of hernia	560.0 to 560.9 incl.		
567	Peritonitis	567.0 to 567.9 incl.		
568	Other disorders of peritoneum	568.0 to 568.9 incl.		
569.5	Abscess of intestine	569.5		
569.8	Other specified disorders of intestine	569.81 to 569.89 incl.		
569.9	Unspecified disorder of intestine	569.9		
570	Acute and subacute necrosis of liver	570		
572	Liver abscess and sequelae of chronic liver disease	572.0 to 572.8 incl.		
574	Cholelithiasis	574.0 to 574.5 incl.		
575	Other disorders of gallbladder	575.0 to 575.9 incl.		

SECTION D

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY	SECONDARY
576	Other disorders of biliary tract	576.0 to 576.9 incl.		
577	Diseases of pancreas	577.0 to 577.9 incl.		
578.9	Hemorrhage of gastrointestinal tract	578.9		
580	Acute glomerulonephritis	580.0 to 580.9 incl.		
581	Nephrotic syndrome	581.0 to 581.9 incl.		
583	Nephritis and nephropathy	583.0 to 583.9 incl.		
584	Acute renal failure	584.5 to 584.9 incl.		
590.2	Renal and perinephric abscess	590.2		
591	Hydronephrosis	591		
593	Other disorders of kidney and ureter	593.0 to 593.9 incl.		
600	Hyperplasia of prostate	600		
614	Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue and peritoneum	614.0 to 614.9 incl.		
013.4	Tuberculoma of spinal cord	013.4		
013.5	Tuberculous abscess of spinal cord	013.5		
013.6	Tuberculous encephalitis or myelitis	013.6		
013.8	Other specified tuberculosis of central nervous system	013.8		
013.9	Unspecified tuberculosis of central nervous system [05]	013.9		

SECTION D

INDICATORS FOR COMPUTED TOMOGRAPHY

Period

ICD-9-CM CODE CATEGORIES	DIAGNOSIS	ICD-9-CM CODES	PRIMARY D_1	SECONDARY D_2
334	Spinocerebellar disease	334.0 to 334.9 Incl.		
335	Anterior horn cell disease	335.0 to 335.9 Incl.		
336	Other diseases of spinal cord	336.0 to 336.9 Incl.		
722	Intervertebral disc disorders	722.0 to 722.9 including all subcodes		
723	Other disorders of cervical region	723.0 to 723.9 Incl.		
724	Other and unspecified disorders of back	724.0 to 724.9 Incl.		
733	Other disorders of bone and cartilage	733.0 to 733.9 Incl.		
741	Spina bifida	741.0 to 741.9 Incl.		
742.5	Other specified anomalies of spinal cord	742.51 to 742.59 Incl.		
805	Fracture of vertebral column without mention of spinal cord injury	805.0 to 805.9 Incl. (All subcodes)		
806	Fracture of vertebral column with spinal cord injury	806.0 to 806.9 Incl. (All subcodes)		
808	Fracture of pelvis	808.0 to 808.9 Incl.		
809	Ill-defined fractures of bones of trunk	809.0 & 809.1		
860 to 869	Internal injury of chest, abdomen and pelvis	860 to 869 Incl. (All subcodes)		
		SUB-TOTALS/SECTION D		

Source: General Electric Medical Systems Division

Signature Date

Institution

APPENDIX F

Calculation of Average Transportation Costs by

Originating Facility and Destination.

APPENDIX 6
CALCULATION OF AVERAGE TRANSPORTATION COSTS BY ORIGINATING FACILITY AND DESTINATION

1. BJACH to RGH/SFC.

Travel Time	2¼ hours round trip			
Scan Time	1 hour			
TOTAL TIME	3¼ hrs	X 7.49/hr	X 2	= 48.69
Mileage 54 miles one way		X 2	X $0.2523	= 27.25
	TOTAL TRANSPORTATION COST			$75.94

2. BJACH to VAMC (Also VAMC to BJACH)

Travel Time	2½ hours round trip			
Scan Time	1 hour			
TOTAL TIME	3½ hrs	X 7.49	X 2	= 52.43
Mileage 56 miles one way		X 2	X $0.2523	= 28.26
	TOTAL TRANSPORTATION COST			$80.69

3. BJACH to EAFB (Also EAFB to BJACH)

Travel Time	2 hours round trip			
Scan Time	1 hour			
TOTAL TIME	3 hours	X 7.49	X 2	= 44.94
Mileage 47 miles one way		X 2	X $0.2523	= 23.72
	TOTAL TRANSPORTATION COST			$68.66

4. EAFB to RGH/SFC

Travel Time	3/4 hour round trip		
Scan Time	1 hour		
TOTAL TIME	1.75 hours X 7.49	X 2	= 26.22
Mileage 7 miles one way	X 2	X $0.2523	= 3.53
	TOTAL TRANSPORTATION COST		$29.75

5. EAFB to VAMC (VAMC to EAFB)

Travel Time	3/4 hour round trip		
Scan Time	1 hour		
TOTAL TIME	1.75 hours X 7.49	X 2	= 26.22
Mileage 9 miles one way	X 2	X $0.2523	= 4.54
	TOTAL TRANSPORTATION COST		$30.76

6. VAMC to RGH/SFC

Travel Time	3/4 hour round trip		
Scan Time	1 Hour		
TOTAL TIME	1.75 hours X 7.49	X 2	= 26.22
Mileage 8 miles one way	X 2	X $0.2523	= 4.04
	TOTAL TRANSPORTATION COST		$30.26

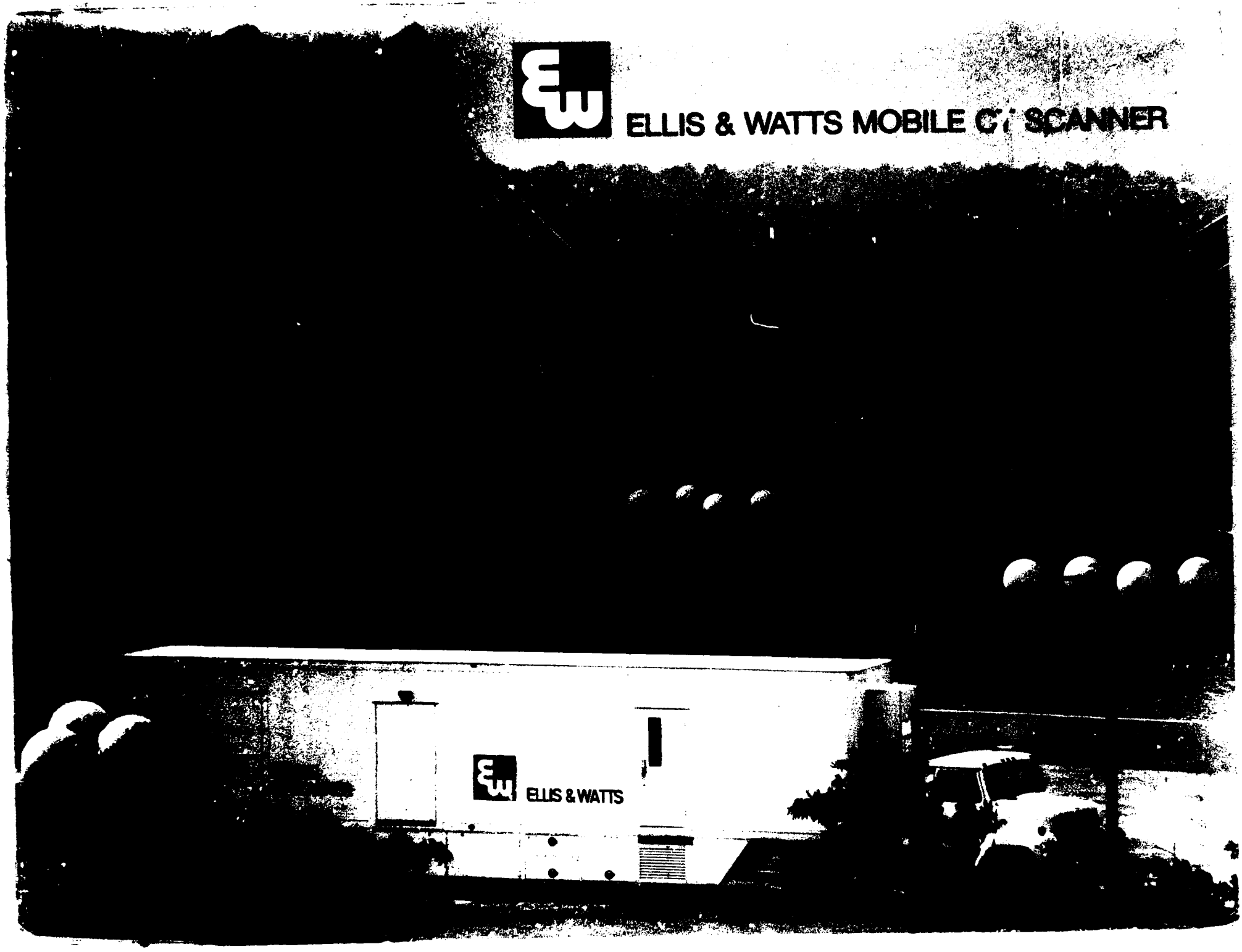
APPENDIX G

Product Brochure, Ellis & Watts, Inc.

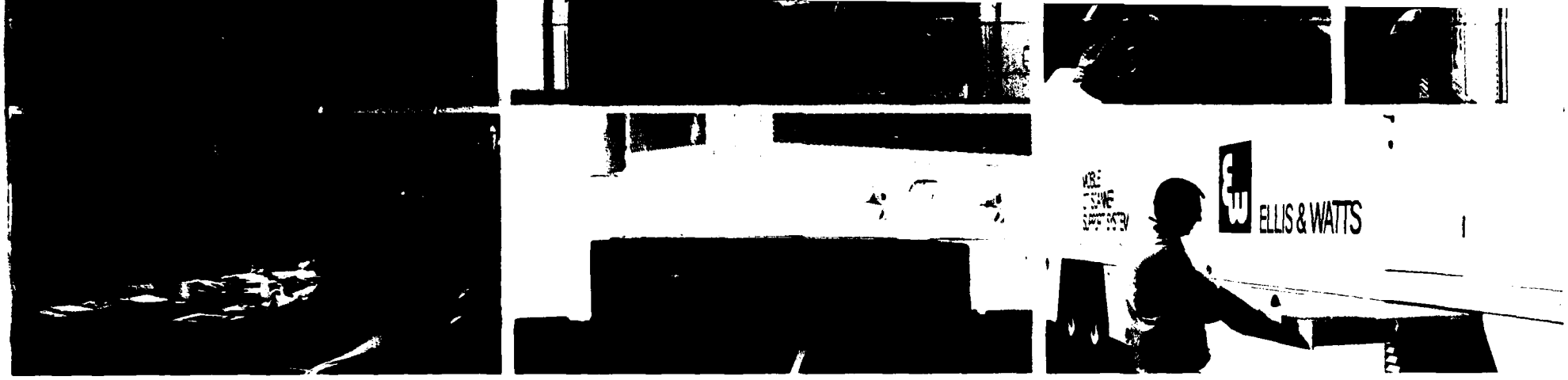
ELLIS & WATTS

DIVISION OF DYNAMICS CORPORATION OF AMERICA

P.O. BOX 44010 | CINCINNATI, OHIO 45244 | 513/ 252-9000


ELLIS & WATTS MOBILE CT SCANNER
ELLIS & WATTS


MOBILE
CT SCANNER
ELLIS & WATTS



Ellis & Watts Mobile CT Scanners offer full range diagnostic capability without compromising the reliability, serviceability, safety, convenience, patient comfort and high through-put found in fixed site systems.

Since 1952 Ellis & Watts has been the leading force in providing controlled mobile environments for high technology equipment. Our years of experience within the Aerospace and Defense Industry have given Ellis & Watts a unique blend of innovative engineering and manufacturing talent. Whether the need be a support vehicle for America's Space Shuttle Program or a sophisticated Mobile CT Scanner, we offer the utmost in product research, development, manufacturing, engineering and service support.

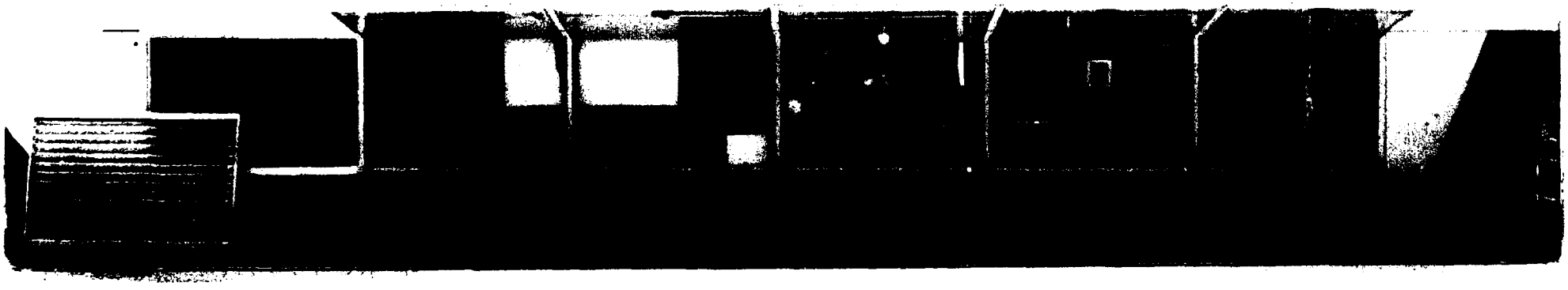
Our experience and resources in this highly technical area has produced a superior Mobile CT Scanner unit with the following outstanding features:

1. Isolated Computer Room
2. Dual Environmental Control Units
3. Total Air Ride Suspension System
4. Full Size Onboard Generator
5. Hydraulic Patient Lift
6. Sliding Door for Patient Entry
7. Hydraulic Leveling System
8. Onboard Water System
9. Gantry Access Doors
10. Rear Access Service Doors
11. Internal and External Storage Areas
12. Steel Reinforced Aluminum Body
13. High Density Urethane Foam Insulation
14. Heavy Duty Construction
15. Single or Tandem Axle Tractor Capability
16. Slide Out Entry Platform

Performance tested at White Sands Proving Grounds, New Mexico, Ellis & Watts Mobile CT Scanners are fully qualified to operate under *the most rigorous environmental conditions.*

Our comprehensive one year warranty utilizing national service centers, site inspection, financial consultation, training schools and on location technical start up assistance are only some of the many services included with the purchase of an Ellis & Watts Mobile CT Scanner unit.

For additional description see the insert marked "Features".



General Electric

ELLIS & WATTS

Mobile CT Scanner

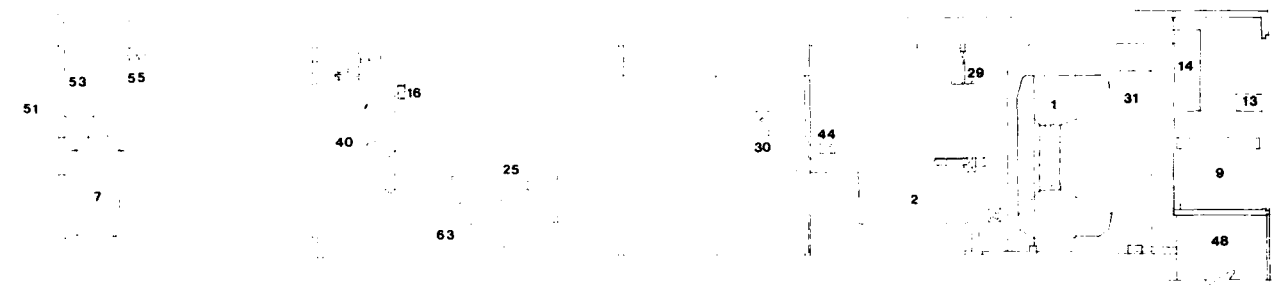
Model TL 458 9800

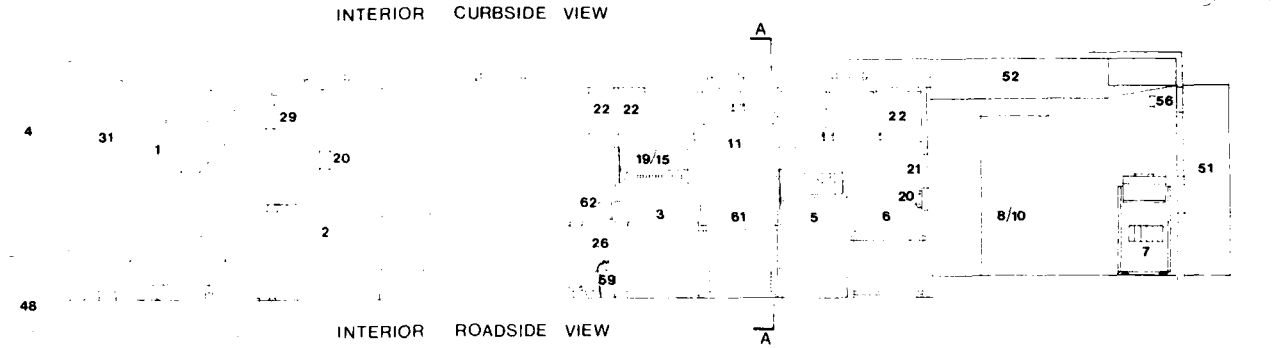
GENERAL ELECTRIC

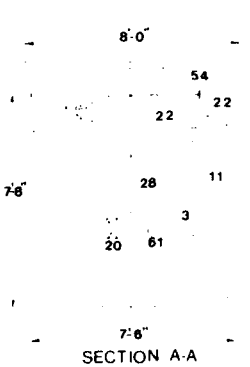
CT 9800 Scanner

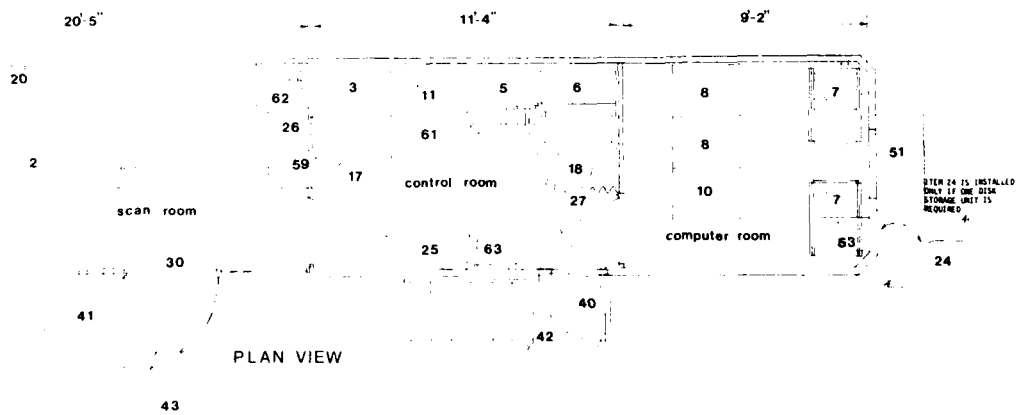
1. GANTRY
2. PATIENT TABLE
3. OPERATOR CONSOLE
4. RF3 POWER UNIT
5. MULTIFORMAT CAMERA ("DUAL" AND "ROTATE" CAMERAS AVAILABLE
6. DEDICATED CONSOLE
7. DISC STORAGE UNIT
8. MAIN COMPUTER
9. 440H VOLTAGE TRANSFORMER
10. AUXILLIARY COMPUTER
11. POWER DISTRIBUTION PANEL
12.
13. 410H VOLTAGE BLEEDER TANK
14. HYDRAULIC LINE CONTROLLER (A)
15. CONTROL PANEL INCLUDING AM/FM CASSETTE, RADIO, CLOCK & INTERCOM
16. EMERGENCY STOP SWITCH
17. STOOL (OPERATOR CONSOLE)
18. CHAIR (DEDICATED CONSOLE)
19. BOOKSHELF
20. TELEPHONE (3)
21. FILM BIDDER (2)
22. STORAGE CABINETS
23. SHELF
24. DISC STORAGE CABINET
25. DROP SHELF
26. 48HH SURFACE AND CABINET UNIT WITH PANNATOM STORAGE
27. SLIDING PRIVACY CURTAIN
28. LEAD GLASS VIEWING WINDOW
29. I - H TRACK
30. PATIENT ENTRY SLIDING DOOR
31. GANTRY SERVICE DOOR PLATFORM with WEATHERSHIELD (ROADSIDE & CURBSIDE)
32. EXTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
33. INTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
34. ACCESS DOOR, GENERATOR
35. ACCESS DOOR, GENERATOR POWER PANEL
36. ACCESS DOOR, BATTERIES AND CHARGER
37. ACCESS DOOR, SYSTEM POWER DISTRIBUTION PANEL
38. ACCESS DOOR, HYDRAULIC JACK LEVELING SYSTEM
39. ACCESS DOOR, WATER SUPPLY TANK AND PUMP
40. PERSONNEL DOOR
41. TRANSIT DOOR
42. SELF-SUPPORTING SLIDE-OUT PLATFORM
43. SWIVEL-OUT PATIENT LIFT
44. PATIENT LIFT CONTROLS
45. HYDRAULIC LEVELING & STABILIZING JACK (4)
46. AIR RIDE TRAILER SUSPENSION
47. AIR RIDE STR WHEEL
48. 75 KW DIESEL GENERATOR
49. GENERATOR FUEL TANK
50. SHORE POWER RECEPTACLE, 480 VOLT, 3 PHASE
51. AIR CONDITIONING UNIT, COMPUTER ROOM 42,000 BTU/HR
52. AIR CONDITIONING UNIT, OPERATOR-SCAN ROOM, 63,000 BTU/HR
53. STEAM HUMIDIFIER
54. AIR DUCT
55. TEMPERATURE AND HUMIDITY RECORDERS
56. COMPUTER OVERTEMPERATURE THERMOSTAT
57. STORAGE AREA (FULL WIDTH OF TRAILER)
58. OUTDOOR FLOOD LIGHT
59. FIRE EXTINGUISHER 5# HALON (2)
60.
61. REMOVABLE WORK SURFACE
62. SINK
63. WORK SURFACE WITH PATIENT SEAT & STORAGE (OPTIONAL)

*NOTE ITEMS 1 THROUGH 13 & 13 THROUGH 14 ARE SUPPLIED BY GENERAL ELECTRIC COMPANY









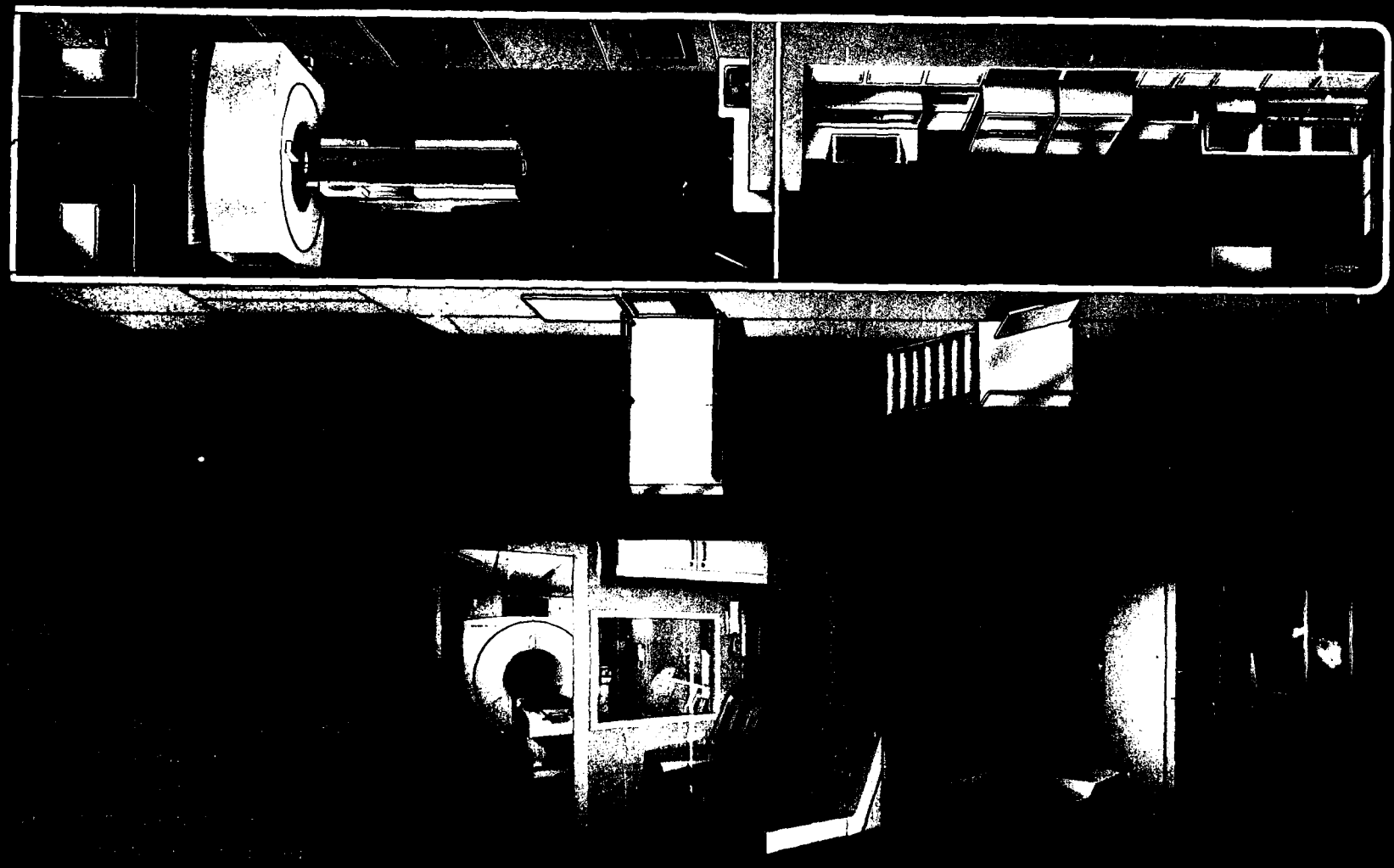
Toshiba

ELLIS & WATTS

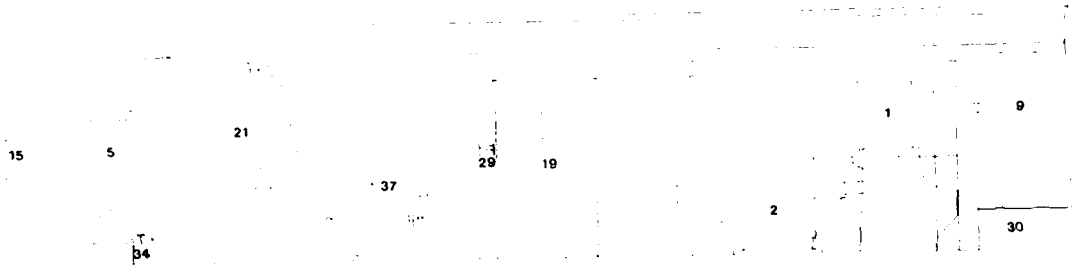
Mobile CT Scanner
Model TL-4015-80A

TOSHIBA

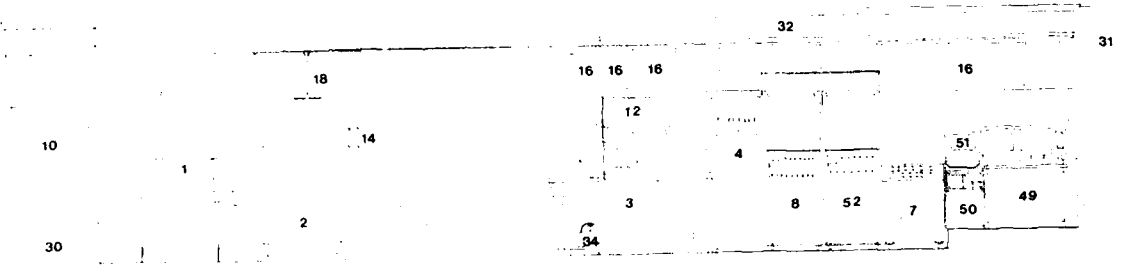
TCT-80A Scanner
With Physician's Console



1. GANTRY
2. TABLE
3. CONSOLE
4. X-RAY CONTROL
5. CAMERA
6. STOOL
7. SYSTEM FRAME/PLATFORM
8. COMPUTER
9. MECHANICAL CONTROL
10. HIGH VOLTAGE GENERATOR
11. CHAIR
12. CONTROL CONSOLE INCLUDING AM/FM CASETTE, RADIO, CLOCK & INTERCOM
13. CANOPY SERVICE PLATFORM W/WEATHER SHIELD
14. TELEPHONE
15. FILM VIEWER
16. STORAGE CABINET
17. LEAD GLASS VIEWING WINDOW
18. C.R. TUBE
19. PATIENT ENTRY SLIDING DOOR
20. TRANSIT DOOR
21. PERSONNEL DOOR
22. ACCESS-GANTRY
23. ACCESS-GENERATOR
24. SERVICE DOOR - GENERATOR
25. SERVICE DOOR - ELECTRICAL EQUIPMENT
26. SELF SUPPORTING SLIDE OUT PLATFORM
27. STAIRS
28. SWING OUT PATIENT LIFT
29. PATIENT LIFT CONTROLS
30. 45 KW DIESEL GENERATOR
31. AIR CONDITIONING UNIT
32. SUPPLY AIR DUCT
33. TEMPERATURE AND ALARM SYSTEM (OPTIONAL)
34. FIRE EXTINGUISHER - 5# HALON
35. SINK (OPTIONAL)
36. TEMPERATURE AND HUMIDITY RECORDER (OPTIONAL
37. WORK SURFACE
38. AIR RIDE 5TH WHEEL
39. ACCESS DOOR-BATTERY & CHARGER
40. ACCESS DOOR - SYSTEM POWER DIST. PANEL
41. ACCESS DOOR - HYDRAULIC JACK LEVELING SYSTEM
42. ACCESS DOOR
43. HYDRAULIC LEVELING AND STABILIZING JACK
44. AIR RIDE TANDEM SUSPENSION
45. GENERATOR FUEL TANK
46. SHORE POWER RECEPTACLE - 480v. 3 PH
47. STORAGE AREA
48. OUTDOOR FLOOD LIGHT
49. SDC CONSOLE
50. FLOPPY DISC UNIT
51. SDC DISPLAY MONITOR
52. SDC COMPUTER

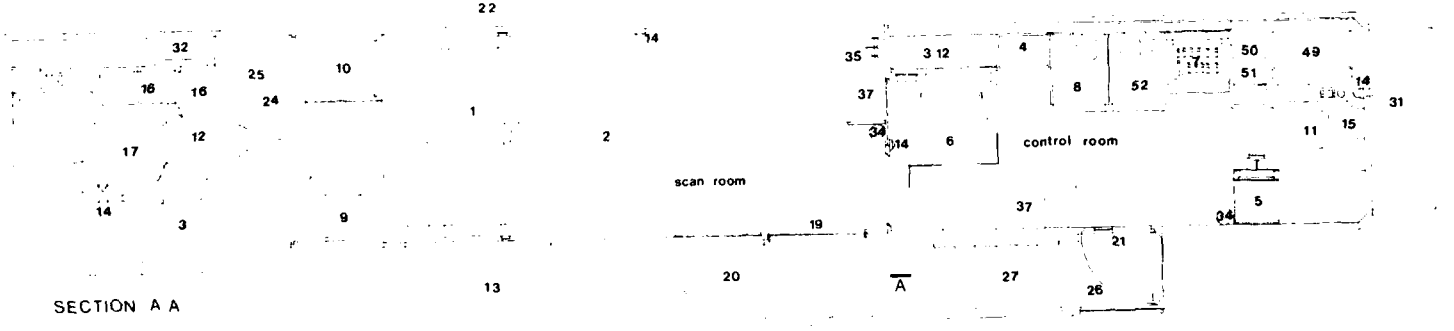


INTERIOR CURBSIDE VIEW



INTERIOR ROADSIDE VIEW

A



SECTION A A

PLAN VIEW

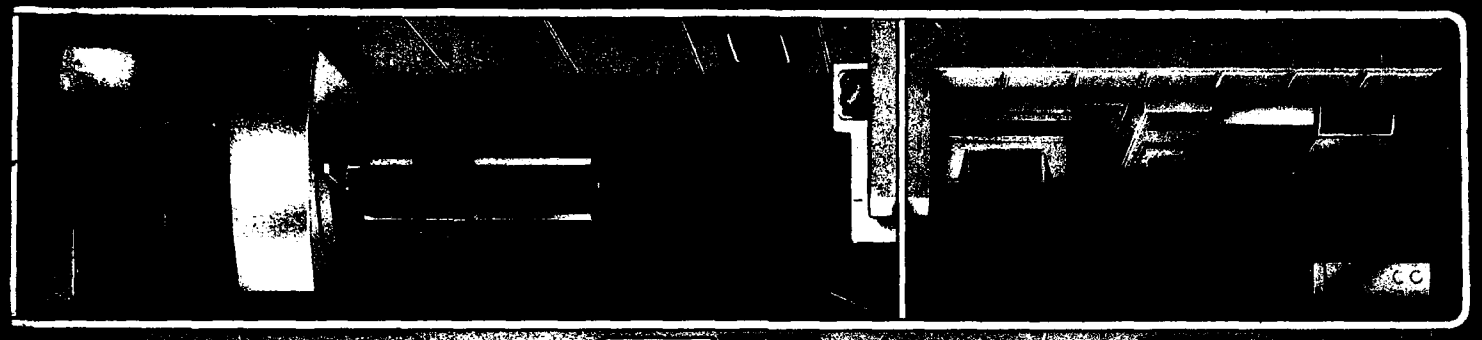
Toshiba

ELLIS & WATTS

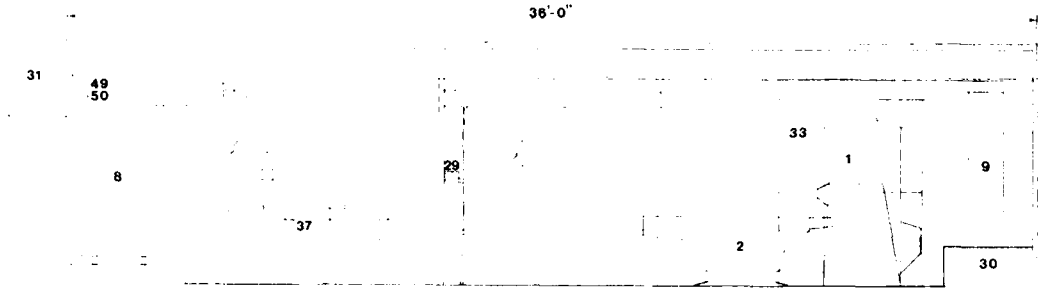
Mobile CT Scanner
Model TCT-80A

TOSHIBA

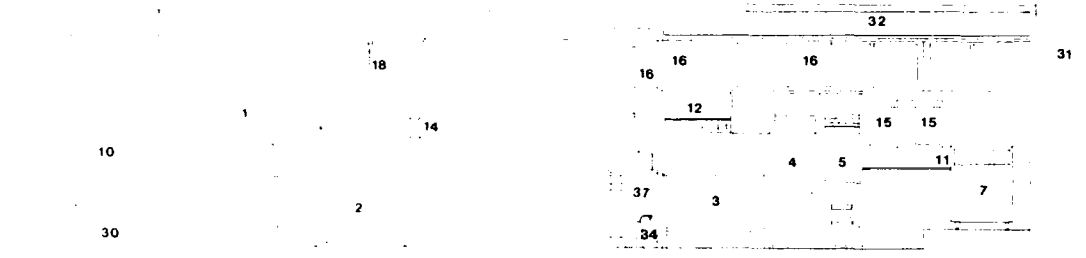
TCT-80A Scanner
Without Physician's Console



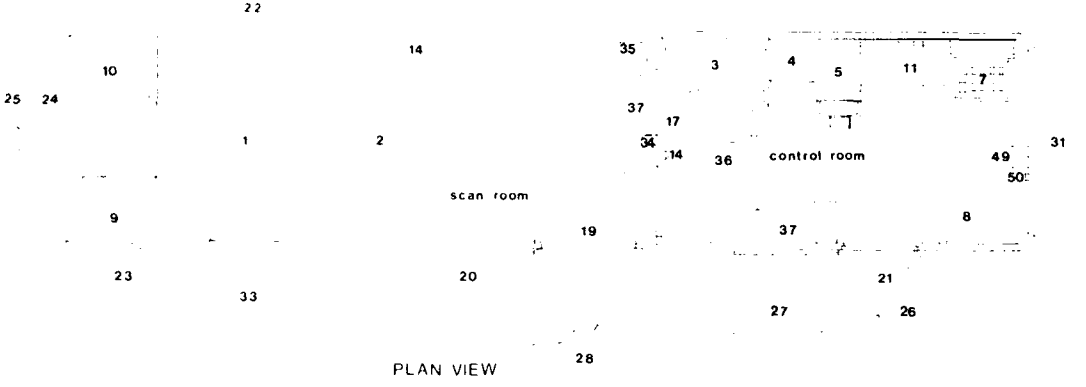
1 GANTRY
2 TABLE
3 CONSOLE
4 X-RAY CONTROL
5 CAMERA
6
7 SYSTEM TRANSFORMER
8 COMPUTER
9 MECHANICAL CONTROL
10 HIGH VOLTAGE GENERATOR
11 SHELF
12 CONTROL CONSOLE INCLUDING AM/FM CASSETTE, RADIO, CLOCK & INTERCOM
13
14 TELEPHONE (2)
15 FILM VIEWER (2)
16 STORAGE CABINET
17 LEAD GLASS VIEWING WINDOW
18 I.V. RACK
19 PATIENT ENTRY SLIDING DOOR
20 TRANSIT DOOR
21 PERSONNEL DOOR
22 ACCESS - GANTRY
23 ACCESS - GENERATOR
24 SERVICE DOOR - GENERATOR
25 SERVICE DOOR - ELECTRICAL EQUIPMENT
26 REMOVABLE PLATFORM
27 STAIRS
28 SWING OUT PATIENT LIFT
29 PATIENT LIFT CONTROLS
30 40 KW DIESEL GENERATOR
31 AIR CONDITIONING UNIT
32 SUPPLY AIR DUCT
33 GANTRY SERVICE DOOR AND PLATFORM W/WEATHER VALLEY
34 FIRE EXTINGUISHER - 5# HALON
35 SINK (OPTIONAL)
36 STOOL
37 VCT OR SURFACE
38 4 x 4 RIDE STR WHEEL
39 ACCESS DOOR - BATTERY & CHARGER
40 ACCESS DOOR - SYSTEM DIST. PANEL
41 ACCESS DOOR - HYDRAULIC JACK LEVELING SYSTEM
42 ACCESS DOOR SINK/WATER (OPTIONAL)
43 HYDRAULIC LEVELING & STABILIZING JACK
44 4 x 4 RIDE TRAGER SUSPERSION
45 GENERATOR FUEL TANK
46 SHORE POWER RECEPTACLE - 480V, 3 PH
47 STORAGE AREA
48 24'-0" FLOOD LIGHT
49 TEMPERATURE AND HUMIDITY RECORDERS (OPTIONAL)
50 COMP. THERMOMETER THERMOSTAT (OPTIONAL)



INTERIOR CURBSIDE VIEW



INTERIOR ROADSIDE VIEW



PLAN VIEW

Philips

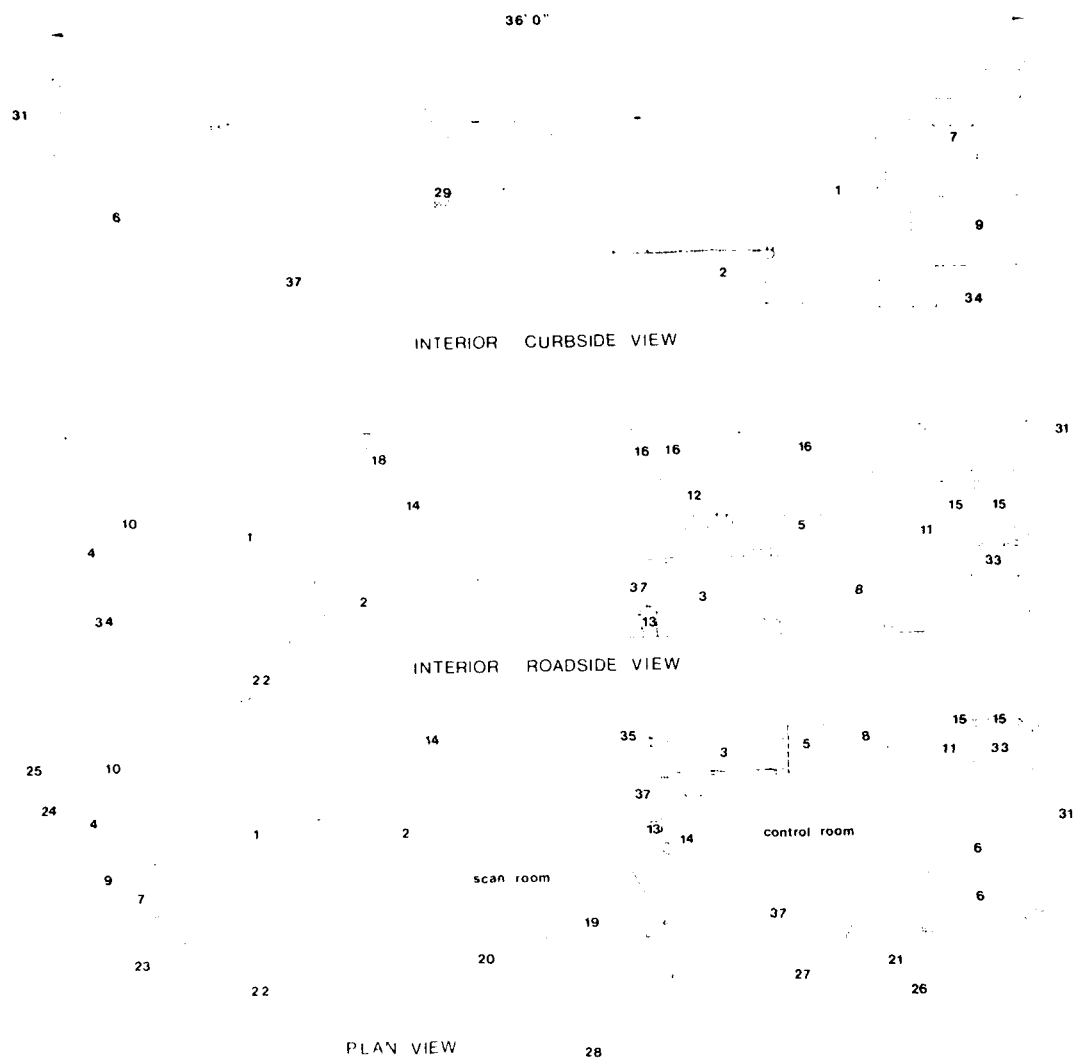
ELLIS & WATTS

Mobile CT Scanner
Model II 3602 T60

PHILIPS

Tomoscan 60 Scanner

1. GANTRY
2. TABLE
3. CONSOLE
4. X-RAY CONTROLLER
5. CAMERA
6. IMAGE PROCESSING UNIT
7. HEATER UNITS
8. 45. MOTOR CONTROL
9. 45. SWITCH UNIT
10. 45-TENSION GENERATOR
11. SHELF
12. CONTROL CONSOLE
13. FIRE EXTINGUISHER - 50 HALON
14. TELEPHONE
15. FILM VIEWER
16. STORAGE CABINET
17. LEAD GLASS VIEWING WINDOW
18. I.V. TRACK
19. PATIENT ENTRY SLIDING DOOR
20. TRANSIT DOOR
21. PERSONNEL DOOR
22. GANTRY SERVICE DOOR PLATFORM W/BREATHER SHELL
23. ACCESS - GENERATOR
24. SERVICE DOOR - GENERATOR
25. SERVICE DOOR - ELECTRICAL EQUIPMENT
26. REMOVABLE PLATFORM
27. STAIRS
28. SWIVEL-OUT PATIENT LIFT
29. PATIENT LIFT CONTROLS
30. GASOLINE GENERATOR
31. AIR CONDITIONER UNIT
32. SUPPLY AIR DUCT
33. 410M TENSION SWITCH CONTROL UNIT
34. 45 KW DIESEL GENERATOR
35. SIMM (OPTIONAL)
36.
37. WORK SURFACES
38. AIR RIDE 5TH WHEEL
39. ACCESS DOOR - BATTERY AND CHARGER
40. ACCESS DOOR - SYSTEM POWER DIST PANEL
41. ACCESS DOOR - HYDRAULIC JACK LEVELING SYSTEM
42. ACCESS DOOR
43. HYDRAULIC LEVELING & STABILIZING JACKS
44. AIR RIDE TANDEM SUSPENSION
45. GENERATOR FUEL TANK
46. SHORE POWER RECEPTACLE - 480V, 3 PH
47. STORAGE AREA
48. OUTDOOR FLOODLIGHT
49. TEMPERATURE AND HUMIDITY RECORDER (OPTIONAL)



Philips

ELLIS & WATTS

Mobile CT Scanner
Model TL 4513 310

PHILIPS

Tomoscan 310 Scanner


control room
computer room
A
A

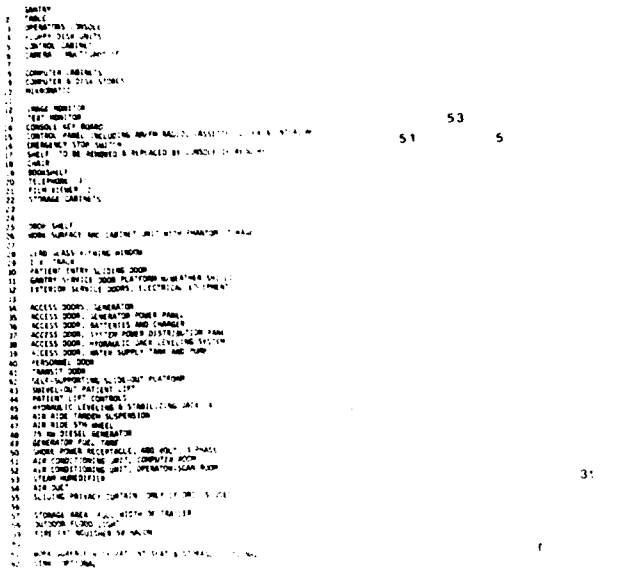
Siemens

ELLIS & WATTS

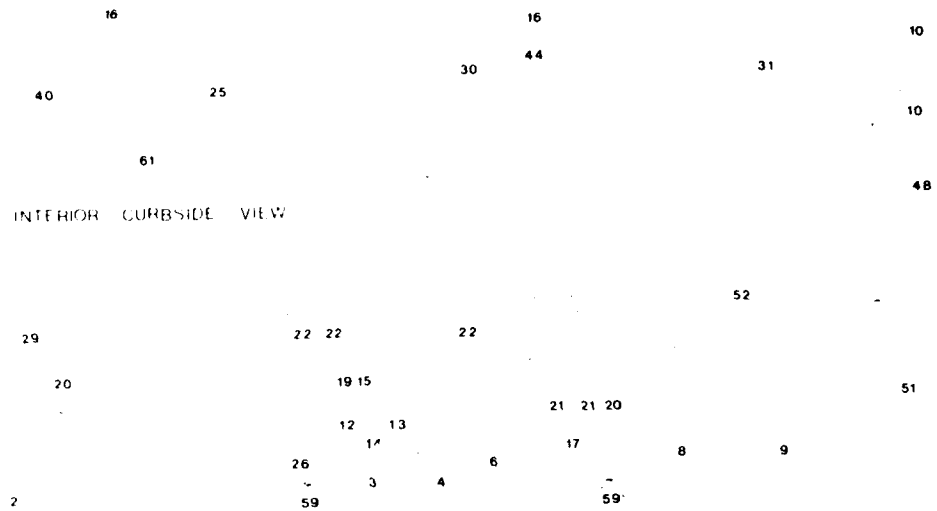
Mobile CT Scanner
Model TL 4514 DR1

SIEMENS

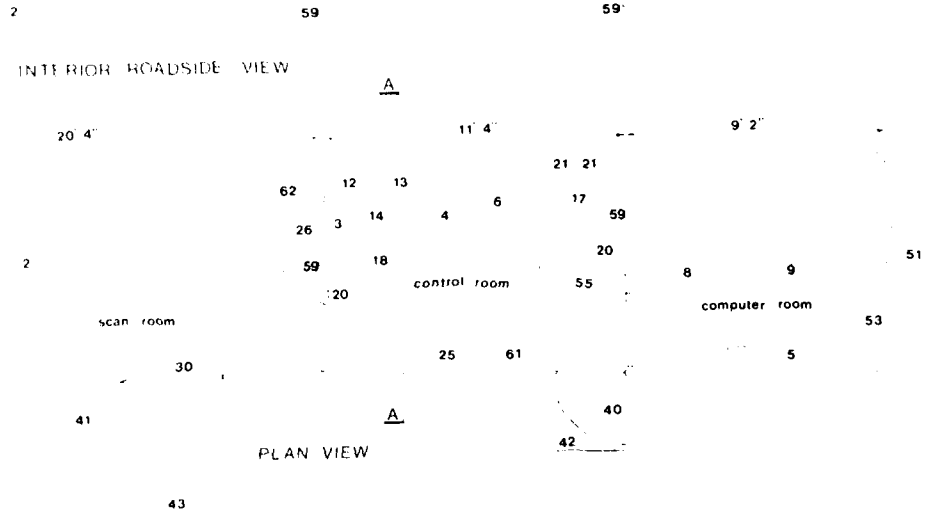
DR1 Scanner



SECTION A A



INTERIOR CURBSIDE VIEW



INTERIOR ROADSIDE VIEW

PLAN VIEW

Siemens

ELLIS & WATTS

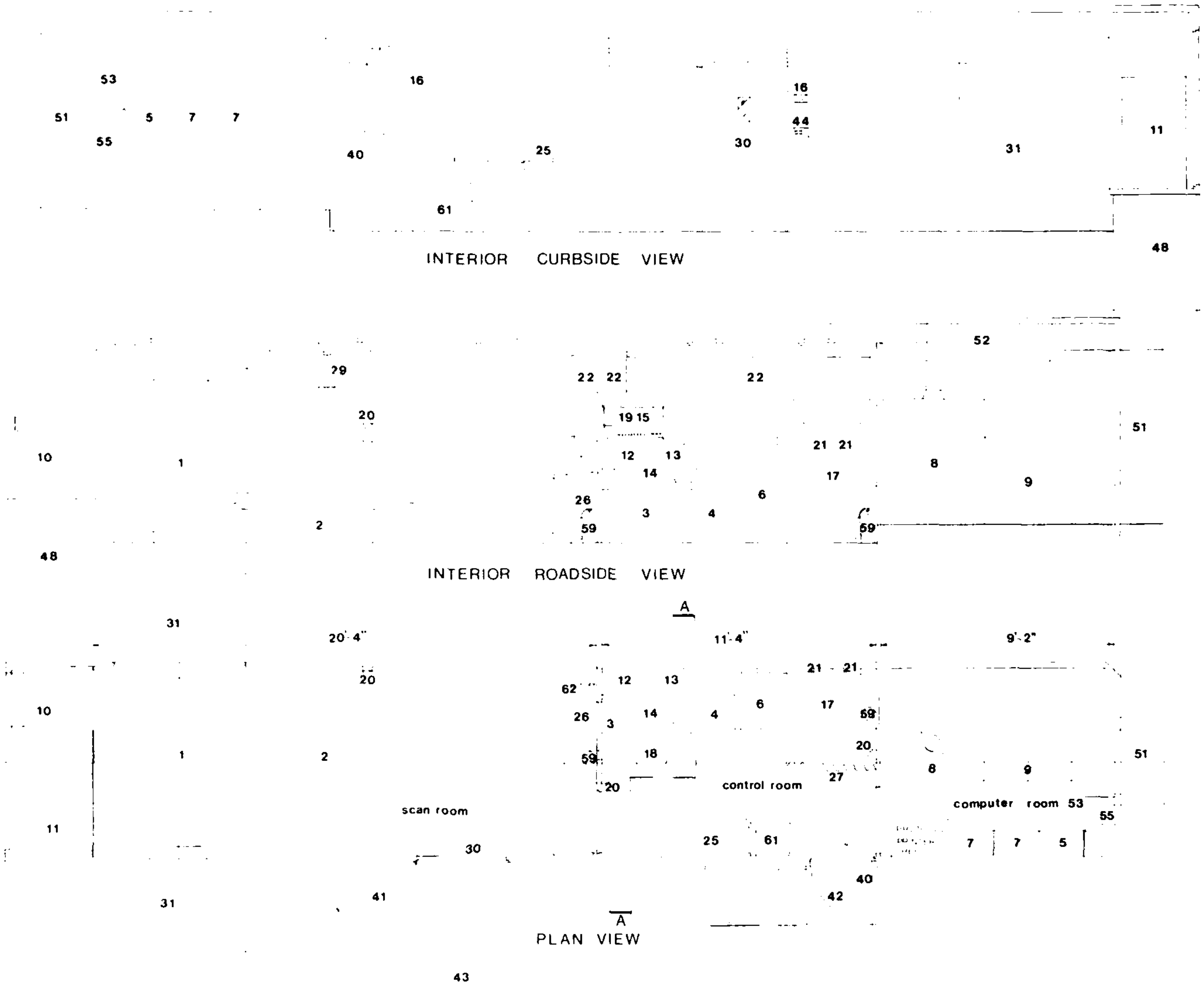
Mobile CT Scanner

Model EL-4514 DR2 or DR3

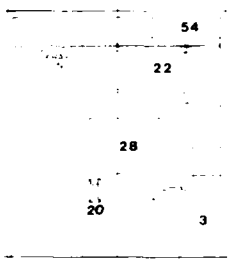
SIEMENS

DR2 and DR3 Scanners

1. GANTRY
2. TABLE
3. OPERATIONS CONSOLE
4. FLOPPY DISK UNIT
5. GANTRY CONTROL CABINET
6. CAMERA - MULTISPOT IF
7. PROCESSING CABINETS
8. COMPUTER CABINETS
9. COMPUTER & DISK STORES
10. TRIDO TANK (H2)
11. HI VOLTAGE XFMR (X1)
12. IMAGE MONITOR
13. TEXT MONITOR
14. CONSOLE KEY BOARD
15. CONTROL PANEL INCLUDING AM/FM RADIO, CASSETTE, CLOCK AND INTERCOM
16. EMERGENCY STOP SWITCH
17. SHELF (TO BE REMOVED & REPLACED BY CONSOLE IF REQUIRED)
18. CHAIR
19. BOOKSHELF
20. TELEPHONE (3)
21. FILM VIEWER (2)
22. STORAGE CABINETS
23.
24.
25. DROP SHELF
26. WORK SURFACE AND CABINET UNIT WITH PHANTOM STORAGE
27. SLIDING PRIVACY CURTAIN (ONLY IF ONE IS USED)
28. LEAD GLASS VIEWING WINDOW
29. I V TRACK
30. PATIENT ENTRY SLIDING DOOR
31. GANTRY SERVICE DOOR PLATFORM W/WEATHER SHIELD
32. EXTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
33. GANTRY WEATHER SHIELDS (OPTIONAL)
34. ACCESS DOORS, GENERATOR
35. ACCESS DOOR, GENERATOR POWER PANEL
36. ACCESS DOOR, BATTERIES AND CHARGER
37. ACCESS DOOR, SYSTEM POWER DISTRIBUTION PANEL
38. ACCESS DOOR, HYDRAULIC JACK LEVELING SYSTEM
39. ACCESS DOOR, WATER SUPPLY TANK AND PUMP
40. PERSONNEL DOOR
41. TRANSIT DOOR
42. SELF-SUPPORTING SLIDE-OUT PLATFORM
43. SWIVEL-OUT PATIENT LIFT
44. PATIENT LIFT CONTROLS
45. HYDRAULIC LEVELING & STABILIZING JACK (4)
46. AIR RIDE TANDEM SUSPENSION
47. AIR RIDE 5TH WHEEL
48. 75 KW DIESEL GENERATOR
49. GENERATOR FUEL TANK
50. SHORE POWER RECEPTACLE, 480 VOLT, 3 PHASE
51. AIR CONDITIONING UNIT, COMPUTER ROOM
52. AIR CONDITIONING UNIT, OPERATOR-SCAN ROOM
53. STEAM HUMIDIFIER
54. AIR DUCT
55. TEMPERATURE AND HUMIDITY RECORDER (OPTIONAL)
56.
57. STORAGE AREA (FULL WIDTH OF TRAILER)
58. OUTDOOR FLOOD LIGHT
59. FIRE EXTINGUISHER 5# HALON
60.
61. WORK SURFACE WITH PATIENT SEAT & STORAGE (OPTIONAL)
62. SINK (OPTIONAL)



PLAN VIEW


SECTION A A

Technicare

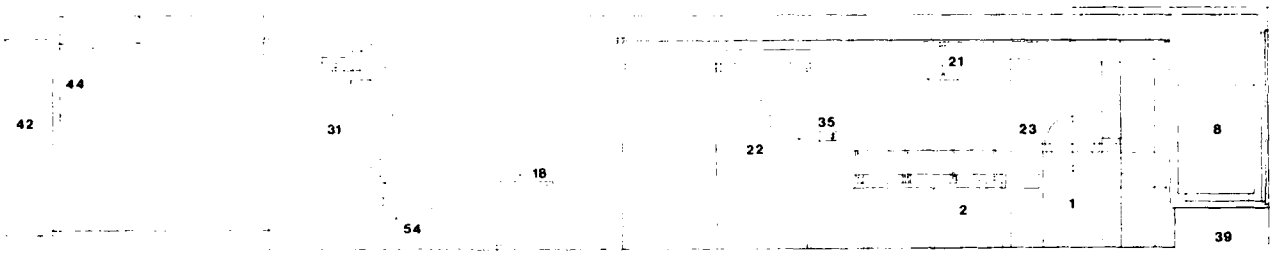
ELLIS & WATTS

Mobile CT Scanner
Model TL 4515 2060

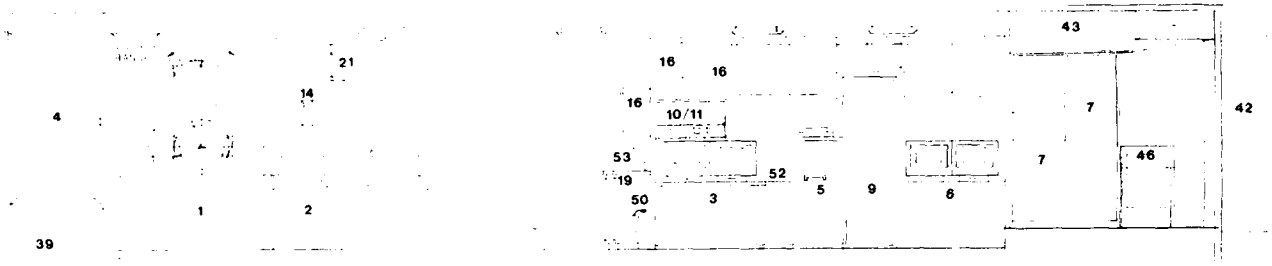
TECHNICARE

Deltascan 2060

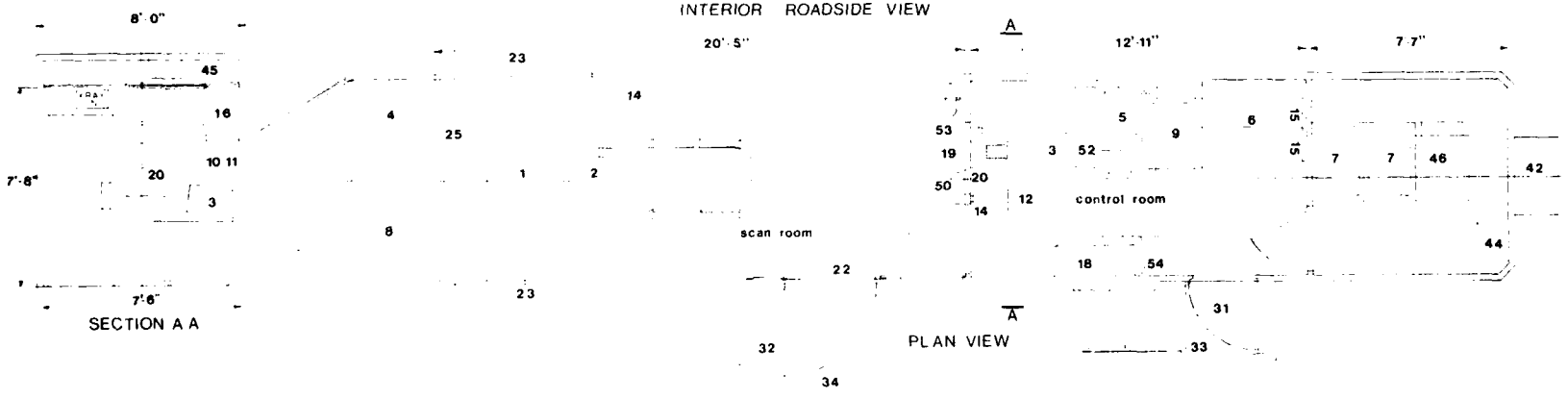
1. GANTRY
2. PATIENT TABLE
3. OPERATOR DISPLAY CONSOLE
4. SCAN POWER MODULE
5. R.I. 7 CAMERA
6. SHELF (TO BE REMOVED & REPLACED BY CONSOLE IF REQUIRED.
7. IMAGE PROCESSOR
8. 3-AXIS POWER SUPPLY
9. 3-AXIS CONTROL
10. GRID CASE
11. CONTROL PANEL INCLUDING AM/FM CASSETTE, RADIO, CLOCK & INTERCOM
12. STOOL (OPERATOR DISPLAY CONSOLE)
13.
14. TELEPHONE
15. FILM VIEWER
16. STORAGE CABINETS
17.
18. DROP SHELF
19. WORK SURFACE & CABINET UNIT WITH PHANTOM STORAGE
20. LEAD GLASS VIEWING WINDOW
21. I.V. TRACK
22. PATIENT ENTRY SLIDING DOOR
23. GANTRY SERVICE DOOR PLATFORM W/WEATHER SHIELD
24. EXTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
25. INTERIOR REMOVABLE PANELS, ELECTRICAL EQUIPMENT
26. ACCESS DOORS, GENERATOR
27. ACCESS DOOR, GENERATOR POWER PANEL
28. ACCESS DOOR, BATTERIES & CHARGER
29. ACCESS DOOR, HYDRAULIC JACK LEVELING SYSTEM
30. ACCESS DOOR, WATER SUPPLY TANK & PUMP
31. PERSONNEL DOOR
32. TROUBLE DOOR
33. SELF-SUPPORTING SLIDE-OUT PLATFORM
34. SWING-OUT PATIENT LIFT
35. PATIENT LIFT CONTROLS
36. HYDRAULIC LEVELING & STABILIZING JACKS (4)
37. AIR RIDE TANDEM SUSPENSION
38. AIR RIDE 5TH WHEEL
39. 60 KW DIESEL GENERATOR
40. GENERATOR FUEL TANK
41. SHORE POWER RECEPTACLE, 208 VOLT, 3 PHASE
42. AIR CONDITIONING UNIT, COMPUTER ROOM, 42,000 Btu/HR
43. AIR CONDITIONING UNIT, OPERATOR-SCAN ROOM, 63,000 BTU/HR
44. STEAM HUMIDIFIER
45. AIR DUCT
46. SERIAL PRINTER
47.
48. STORAGE AREA (FULL WIDTH OF TRAILER)
49. OUTDOOR FLOOD LIGHT
50. FIRE EXTINGUISHER
51.
52. REMOVABLE SHELF
53. SINK (OPTIONAL
54. WORK SURFACE WITH PATIENT SEAT & STORAGE (OPTIONAL"
55.
56. ACCESS DOOR, SYSTEM POWER DISTRIBUTION PANEL.



INTERIOR CURBSIDE VIEW



INTERIOR ROADSIDE VIEW



10. Rear Access Service Doors

Two pairs of full width rear doors allow complete access to generator and heavy electrical equipment. Components can be serviced, overhauled or completely removed without modification to van or components. Generator is accessible behind a second set of doors allowing it to be serviced or removed without interrupting scanning operations.

11. Internal and External Storage Areas

A total of 235 cubic feet of internal and external storage space includes custom "phantom" and disc storage areas. External storage compartments feature easy open, gas spring operated plymetal doors that are completely weather sealed. Each storage compartment can be locked and have individual battery operated lights for night operation.

12. Steel Reinforced Aluminum Body

Combines strength of steel with the light weight and corrosion resistance of aluminum. Metals are protected by two coats of primer sealer followed by two coats of aircraft marine type acrylic enamel for durability. A one piece seamless roof and stretcher leveled aluminum panels provide a smooth skin exterior which accepts graphics without interferences from corrugated ribs.

13. High Density Urethane Foam Insulation

Foam insulation which also has strong adhesive qualities completely fills and seals all voids, cavities and seams providing an air tight trailer with significantly greater insulating affect. With a reduced overall heat transfer coefficient the system requires less air conditioning and heating capacity, resulting in less weight and energy consumption. Insulation is non-toxic, non-settling, vermin and fungus proof, will not absorb moisture, has a low flame spread of 20 and is in accordance with Section 1 ASTM 84 of the Life Safety Code covering hospitals and other health care facilities.

14. Heavy Duty Construction

Trailer walls are constructed of aluminum sheet, riveted to structural "U" channels, further reinforced with 4 inch wide steel bridging. Strips of tempered masonite are applied to the channels creating a "thermal break" necessary with metal wall construction to prevent condensation from forming on the interior surfaces. Marine plywood, (lead lined for the gantry room) is mechanically fastened to the framing members adding additional beam strength. Interior walls are finished with bump and scratch resistant plastic laminate in the gantry room, and heavy duty hospital grade vinyl in the operator's area for a softer more pleasing environment.

A solid vertical grain 1⅜ inch thick oak floor with tempered masonite overlay insures greater torsional rigidity, load carrying capability and additional insulating affect. The entire trailer is undercoated. Heavy duty vinyl floor covering is utilized in the gantry room while antistatic carpeting is furnished in the operator's room to create a quiet comfortable working area for the technicians.

15. Single or Tandem Axle Tractor Capability

Front end design allows the use of a tandem axle tractor for increased traction and braking in northern climates. Single or tandem axle tractors are interchangeable without compromising the optimum king pin location so important for safe weight distribution.

16. Slide Out Entry Platform

Personnel platform slides out on nylon guides for fast deployment and stowaway. Attaching steps are extra wide for convenience and safety, and have adjustable legs to match the terrain.

Additional Features

AM / FM / Cassette stereo
Two way intercom
Master status control panel
Operator's viewing window
Physician's console privacy curtain**
Telephone system
Radiation test report for each trailer
Customer exterior graphics
Smoke alarms
Fire extinguishers
Halon fire suppression system**
Interior lighting with adjustable intensity
Emergency lighting
Exterior flood light
Universal power plug
Phase detector
Central power panel
Power line protector
Battery charger
Generator fault light visible to driver
External coaxial cable connector**
Double film viewer
I.V. track
Built in oxygen-suction system**
Patient viewing T.V. camera behind gantry**
Lavatory**
Combination patient settee and desk**
Intrusion alarm
Emergency fuel transfer system**
Temperature and humidity recorders**

** optional on certain models

Specifications subject to change without notice

1. Isolated Computer Room*

A full size 8 ft. x 9½ ft. walk in computer room isolates high frequency noise from the operator's area and provides an ideally clean environment for sensitive equipment. Our design layout allows permanent front and rear access to all computer components for efficient servicing without having to slide or move heavy cabinets.

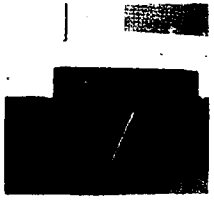
2. Dual Environmental Control Units*

Air conditioners are designed to military specifications for operation when external temperatures range between -30°F to 125°F. A dedicated computer unit maintains precise control in the 65°F to 70°F temperature range for optimum electronic equipment performance while a separate unit insures 70°F to 75°F temperatures for patient comfort and operator efficiency.

Both air conditioners feature a constant dewpoint electric reheat system which guarantees control of temperatures and humidity even in cool weather when "heat reclaim" becomes unstable. A bypass system and solid state controls are incorporated to prevent the possibility of scanner artifacts and protect the computer from excessive temperature.

An adjustable air diffuser system distributes the optimum quantity of conditioned air to specific high load areas. A simple manual adjustment allows all zones of the van to share capacity from one of the units while the second unit is being serviced. This feature permits complete environmental control during transit or stand-by operation using one air conditioner, thereby conserving energy. Scanning can be performed in this mode under certain conditions. Both units are completely serviceable without moving or sliding, and each unit is equipped with permanent gauges for quick check out and diagnosis.

Complete tests, including those conducted at chambers in White Sands Proving Grounds, have verified performance in temperatures ranging from -20°F to 120°F; 15% to 100% relative humidity, and elevations from sea level to 4400 feet.



3. Air Ride Suspension System

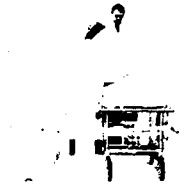
A rear air ride suspension and a unique air ride fifth wheel shock mounts the entire van, including the substructure, floor, van body and interior equipment. This eliminates the need to modify or otherwise shock isolate each individual component, keeping the equipment in it's original configuration should it ever need to be removed and installed at a fixed site. Proven through a comprehensive road test and hundreds of military electronics applications, our system provides the softest ride in the industry.

4. Onboard Generator

An oversized onboard generator supplies power for both scanning and all support systems as well as continuous recharging of all batteries. Location and mounting provides easy access for service or replacement of generator without interrupting operation of scanner when using base power.

5. Hydraulic Patient Lift

Entire assembly swivels out to provide easy deployment and stowaway without the aid of a hand pump. The lift's 4½ ft. width and 1500 lb. capacity allows more than ample room for a gurney, attendant, and all medical accessories. An integrated holding valve which prevents free fall, and interior-exterior hydraulic controls insure safe entry and exit from the van. Lift design includes permanently attached fold up hand rails which reduces set up time and provides additional storage space.



6. Sliding Door for Patient Entry

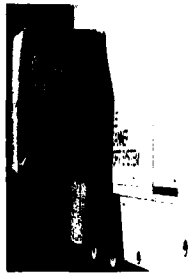
A large 3½ ft. wide sliding door with viewing window allows easy entry from the patient lift while minimizing exposure of the scanning room to exterior environment. An outer door with positive latch and weather seal provides additional protection during transit.

7. Hydraulic Leveling System

The system utilizes four battery operated 39,000 lb. capacity heavy duty stabilizing jacks capable of handling slopes of up to 18 inches per trailer length. Finger tip leveling is quick and efficient from a single control panel with built in level indicators, oil sight glass and pressure gauges. Jacks which feature aircraft type "O" ring oil seals and a positive anti leak down design can be removed without disassembling van structure.

8. Onboard Water System

Two 30 gallon polyethylene tanks located in a fully insulated, weather sealed and heated compartment provide sufficient fresh water and waste capacity for lavatory and humidifying needs. System is fillable using hose or container. Fittings and pressure regulating valves are included for continuous city water hook-up.



9. Gantry Access Doors

Large 5½ ft. wide doors, located both roadside and curbside, are positioned to allow technicians to walk around the gantry for quick efficient servicing. Doors are counter-balanced, can be operated by one person from the inside, and form a 1,000 lb. capacity work platform when opened. Weatherproof canopies are supplied for service during inclement weather.

*45 ft configurations

See other side for additional information

General Electric

ELLIS & WATTS

Mobile CT Scanner

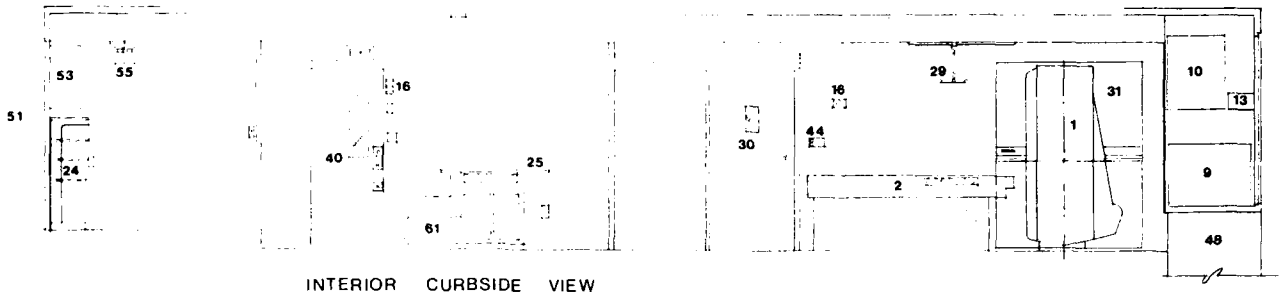
Model TL 458 8800

GENERAL ELECTRIC

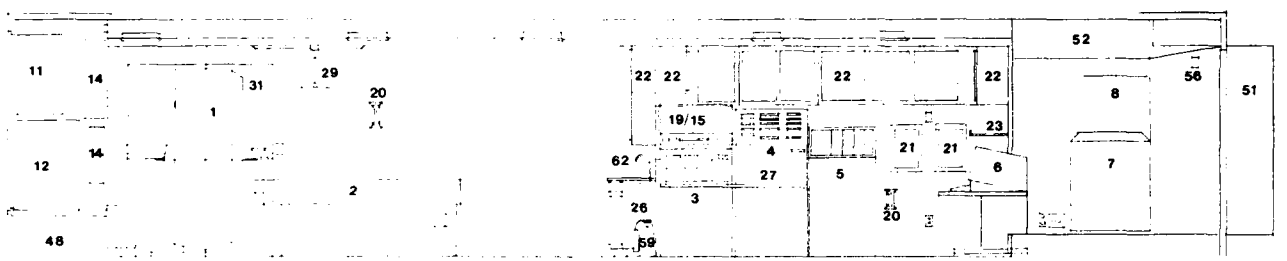
CT 8800 Scanner

1. GANTRY
2. PATIENT TABLE
3. OPERATOR DISPLAY CONSOLE
4. X-RAY CONTROL
5. G.E. MULTIFORMAT CAMERA ("DUMB" AND "MATRIX" CAMERAS AVAILABLE)
6. SYSTEM DISPLAY CONSOLE
7. DISC STORAGE UNIT
8. MAIN COMPUTER
9. HIGH VOLTAGE TRANSFORMER
10. PULSE BIAS TANK
11. MOTION CONTROLLER
12. X-RAY POWER UNIT
13. HIGH VOLTAGE BLEEDER TANK
14. MAGNETIC LINE CONTROLLERS (A1 & A2)
15. CONTROL PANEL (INCLUDING AM/FM CASSETTE, RADIO, CLOCK & INTERCOM
16. EMERGENCY STOP SWITCH (2)
17. STOOL (OPERATOR DISPLAY CONSOLE)
18. CHAIR (SYSTEM DISPLAY CONSOLE)
19. BOOKSHELF
20. TELEPHONE (3)
21. FILM BOOKER (2)
22. STORAGE CABINETS
23. SHELF
24. DISC STORAGE CABINET
25. BOOK SHELF
26. WORK SURFACE AND CABINET UNIT WITH MONITOR STORAGE
27. REFRIGERATOR WORK SURFACE
28. LEAD GLASS VIEWING WINDOW
29. I.V. TRACK
30. PATIENT ENTRY SLIDING DOOR
31. GANTRY SERVICE DOOR PLATFORM WITH WEATHERSHIELD
32. EXTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
33. INTERIOR SERVICE DOORS, ELECTRICAL EQUIPMENT
34. ACCESS DOORS, GENERATOR
35. ACCESS DOOR, GENERATOR POWER PANEL
36. ACCESS DOOR, BATTERIES AND CHARGER
37. ACCESS DOOR, SYSTEM POWER DISTRIBUTION PANEL
38. ACCESS DOOR, HYDRAULIC JACK LEVELING SYSTEM
39. ACCESS DOOR, WATER SUPPLY TANK AND PUMP
40. PERSONNEL DOOR
41. TROUGH DOOR
42. SELF-SUPPORTING SLIDE-OUT PLATFORM
43. SWIVEL-OUT PATIENT LIFT
44. PATIENT LIFT CONTROLS
45. HYDRAULIC LEVELING & STABILIZING JACK (4)
46. AIR RIDE TANDEM SUSPENSION
47. AIR RIDE DUAL WHEEL
48. 60 kw DIESEL GENERATOR
49. GENERATOR FUEL TANK
50. SHORE POWER RECEPTACLE, 480 VOLT, 3 PHASE
51. AIR CONDITIONING UNIT, COMPUTER ROOM, 42,000 BTU/HR
52. AIR CONDITIONING UNIT, OPERATOR-SCAN ROOM 63,000 BTU/HR
53. STEAM HUMIDIFIER
54. AIR INLET
55. TEMPERATURE AND HUMIDITY RECORDERS
56. COMPUTER OVERTEMPERATURE THERMOSTAT
57. STORAGE AREA (FULL WIDTH OF TRAILER)
58. OVERHEAD FLOOD LIGHT
59. FIRE EXTINGUISHER 5# HALON (2)
60. COAT HOOKS
61. WORK SURFACE WITH PATIENT SEAT & STORAGE (OPTIONAL
62. SINK

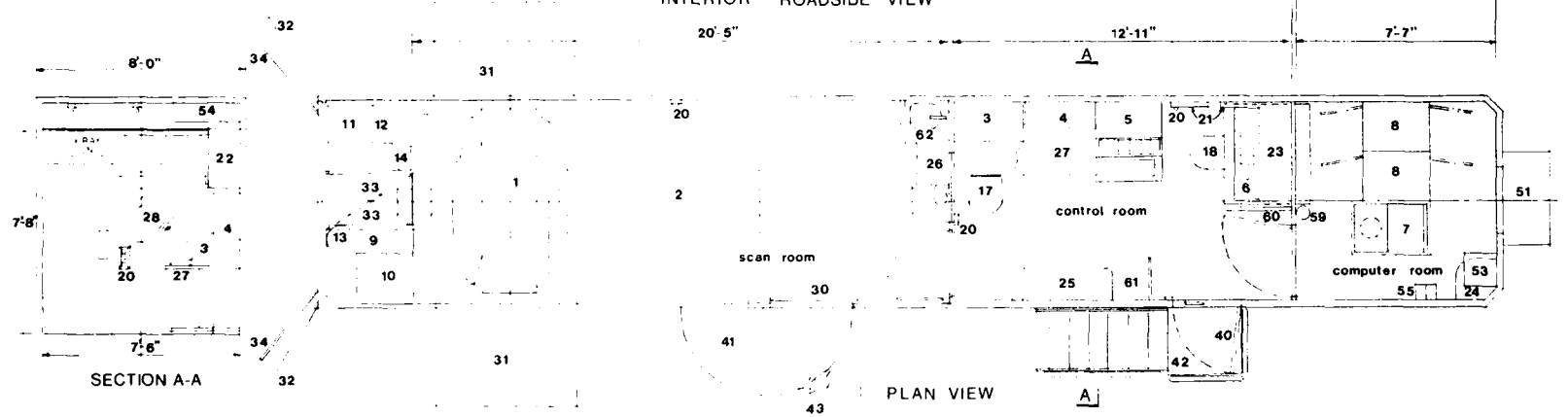
NOTE: ITEMS 1 THRU 13 ARE SUPPLIED BY GENERAL ELECTRIC



INTERIOR CURBSIDE VIEW



INTERIOR ROADSIDE VIEW



SECTION A-A

PLAN VIEW

APPENDIX H

Calculation of Total Cost and Average Cost Per Scan

For Commercial Purchase of CT Services

AVERAGE COST PER SCAN AT LEVEL 1 DEMAND

Volume Analysis		Charge		Transportation Cost		Supply Cost		Total Cost
BJACH- 286								
.95(286)= 272	X	300.00	+	-0-	+	4,080	=	85590
.05(286)= 14	X	350.00	+	106400	+	-0-	=	6069
EAFB -104								
.90(104) = 94	X	350.00	+	2820	+	-0-	=	35580
.10(104) = 10	X	400.00	+	300	+	-0-	=	4460
VAMC-268								
.90(268)= 241	X	350.00	+	7230	+	-0-	=	91650
.10(268)= 27	X	400.00	+	810	+	-0-	=	11530
658 Total Scans						Total Cost		$2,34879

Total Costs - Total Scans = Average Cost Per Scan

$234,879 - 658 = $356.96

AVERAGE COST PER SCAN AT LEVEL 2 DEMAND

Volume Analysis		Charge		Transportation Cost		Supply Cost		Total Cost
BJACH = 480								
.95(480)= 456	X	300	+	-0-	+	6840	=	143640
.05(480)= 24	X	350	+	1824	+	-0-	=	10244
EAFB = 241								
.90(241) = 217	X	350	+	6510	+	-0-	=	82425
.10(241) = 24	X	400	+	720	+	-0-	=	10360
VAMC= 746								
.90(746)= 671	X	350	+	20130	+	-0-	=	255120
.10(746)= 75	X	400	+	2250	+	-0-	=	29840
1467 Total Scans						Total Cost		531609

Total Costs - Total Scans = Average Cost Per Scan

$531,609 - 1467 = $362.38

AVERAGE COST PER SCAN AT LEVEL 3 DEMAND

Volume Analysis		Charge		Transportation Cost		Supply Cost		Total Cost
BJACH= 674								
.95(674)= 640	X	300	+	-0-	+	9600	=	201,690
.05(674)= 34	X	350	+	2584	+	-0-	=	14,379
EAFB= 378								
.90(378)= 340	X	350	+	10200	+	-0-	=	129,270
.10(378)= 38	X	400	+	1140	+	-0-	=	16,260
VAMC= 1224								
.90(1224)= 1101	X	350	+	33060	+	-0-	=	418,620
.10(1224)= 122	X	400	+	3660	+	-0-	=	52,620
2276 Total Scans						Total Cost		$832,839

Total Cost - Total Scans = Average Cost Per Scan

$832,839 - 2276 = $365.92

APPENDIX I

Memorandum of Understanding Between The Veterans' Administration and the Department of Defense

MEMORANDUM OF UNDERSTANDING BETWEEN THE VETERANS ADMINISTRATION AND THE DEPARTMENT OF DEFENSE

VA/DoD HEALTH CARE RESOURCES SHARING GUIDELINES

ARTICLE I

INTRODUCTION

1-101 Purpose. This agreement establishes guidelines to promote greater sharing of health care resources between the Veterans Administration (VA) and the Department of Defense (DoD). Maximization of sharing opportunities is strongly encouraged. Greater sharing of health care resources will result in enhanced health benefits for veterans and members of the armed services and will result in reduced costs to the government by minimizing duplication and underuse of health care resources. Such sharing shall not adversely affect the range of services, the quality of care, or the established priorities for care provided by either agency. In addition, these guidelines are not intended to interfere with existing sharing arrangements.

1-102 Authority. These guidelines are established by the Administrator of Veterans Affairs and the Secretary of Defense pursuant to "The Veterans Administration and Department of Defense Health Resources Sharing and Emergency Operations Act," Public Law 97-174, §3, 96 Stat. 70, 70 - 73 (1982) (codified at 38 U.S.C. §5011).

ARTICLE II

DEFINITIONS

2-101 "Actual Cost" means the cost incurred in order to provide the health care resources specified in a sharing agreement.

2-102 "Reimbursement Rate" means the negotiated price cited in the sharing agreement for a specific health care resource. This rate will take into account local conditions and needs and the actual costs to the providing facility or organization for the specific health care resource provided. For example, actual cost includes the cost of communications, utilities, services, supplies, salaries,

depreciation, and related expenses connected with providing health care resources. Excluded from the reimbursement rate are building depreciation, interest on net capital investment and overhead expenses incurred at management levels above the medical facility or other organization providing the health care resources (e.g., Pentagon and Central Office overhead). Equipment depreciation is a component of actual cost to be considered in establishing a reimbursement rate, but facilities are strongly encouraged to exclude it. This rate will be used for billing purposes by the providing medical facility or organization.

2-103 "Beneficiary" means a person who is a primary beneficiary of the VA or DoD.

2-104 "Primary Beneficiary" (1) with respect to the VA, means a person eligible under title 38, United States Code (other than under sections 611(b), 613, or 5011 (d)) or any other provision of law for care or services in VA medical facilities; and (2) with respect to DoD, means a member or former member of the Armed Forces who is eligible for care under section 1074 of title 10.

2-105 "Direct Health Care" means health care provided to a beneficiary in a medical facility operated by the VA or DoD.

2-106 "Head of a Medical Facility" (1) with respect to a VA medical facility, means the director of the facility, and (2) with respect to a medical facility of DoD, means the commanding officer, hospital or clinic commander, officer in charge, or the contract surgeon in charge.

2-107 "Health Care Resource" includes hospital care, medical services, and rehabilitative services, as those terms are defined in title 38 U.S.C. §601 (5), (6), (8); any other health care service, including such health care education, training, and research as the providing agency has authority to conduct; and any health care support or administrative resource or service.

2-108 "Medical Facility" (1) with respect to the VA, means facilities over which the Chief Medical Director has direct jurisdiction; and (2) with respect to DoD, means medical and dental treatment facilities over which DOD, or its organizational elements, or the component Services, have direct jurisdiction.

2-109 "Providing Agency" means (1) the VA, in the case of care or services furnished by a facility, or organizational elements, of the VA; or (2) DoD, in the case of care or services furnished by a facility, or organizational elements of DoD, or its component Military Services.

2-110 "Sharing Agreement" means a cooperative agreement authorized by Public Law 97-174, §3, 96 Stat. 70, 70-73 (1982) (codified at 38 U.S.C. §5011 (d)) for the use or exchange of use of one or more health care resources.

ARTICLE III

SHARING AGREEMENTS

3-101 Approval Process. Before a sharing agreement may be executed and implemented, the heads of the medical facilities involved shall submit the proposed agreement to: (1) the Chief Medical Director, through the appropriate Department of Medicine and Surgery channel, in the case of the VA; (2) the Assistant Secretary of Defense (Health Affairs), or his or her designees, through the appropriate chain of command, in the case of DoD. The agreement shall be effective in accordance with its terms (A) on the 46th calendar day after receipt of the proposed agreement by the designated Department of Medicine and Surgery office on behalf of the Chief Medical Director for the VA, and the next higher organizational element within the chain of command for DoD, unless earlier disapproved by either agency; or (B) if earlier approved by both agencies on the day of such approval. An office that disapproves a sharing agreement shall send a copy of the agreement and a written statement of its reasons for disapproval to the VA/DoD Health Care Resources Sharing Committee.

3-102 Acquiring or Increasing Resources. A head of a medical facility may request permission to acquire or increase health care resources that exceed the needs of the facility's primary beneficiaries but that would effectively serve the combined needs of both agencies. Justification for acquiring or increasing resources may be based on the projected workload from a sharing agreement. Such requests will be considered in the usual planning and budgeting processes. Consideration of such requests will necessarily take into account many factors governing resource allocation. Agreements will not be submitted until permission to increase existing resources or to acquire new resources has been obtained.

3-103 Eligibility. Agreements may permit the delivery of health care resources to primary beneficiaries of one agency at facilities of the other agency. Direct health care to primary beneficiaries of the agency requesting services should be on a referral basis. Delivery of health care resources will not (as determined by the head of the facility of the providing agency) adversely affect the range of services, the quality of care, or the established priorities for care provided to beneficiaries

of the providing agency.

3-104 Reimbursement and Rate Setting. Reimbursement for the cost of health care resources provided shall be credited to funds that have been allotted to the facility or organization that provided the care or services. The medical facility or organization providing the resources shall bill the recipient facility or organization directly. Billing frequency shall be established in the agreement. Reimbursement shall be forwarded to the providing medical facility in a timely manner. Heads of medical facilities and other organizations may negotiate a reimbursement rate that is less than actual cost to the providing facility or organization to account for local conditions and needs. (See definitions of "actual costs" and "reimbursement rate" in section 2-101 and 2-102.) The reimbursement rate may not be more than the actual cost to the providing facility or organization of the resources provided.

3-105 Scope of Agreements. The head of a medical facility or organization of either agency may agree to enter into a proposed sharing agreement with the head of a medical facility or organization of the other agency in accordance with these guidelines. Sharing agreements involving more than one medical facility of each agency may be developed. The Chief Medical Director and the Assistant Secretary of Defense for Health Affairs may agree to enter into regional or national sharing agreements. Sharing agreements shall identify the health-care resources to be shared. Exchange of resources without billing is permitted if costs are specified in the agreement.

3-106 Education, Training, and Research Sharing Agreements.

1. Education and Training - Situation-specific sharing is encouraged at the local, regional, and national levels. Continuing education, formal technical training, and professional education, are areas to be emphasized.

To facilitate educational sharing the Office of Academic Affairs, Department of Medicine and Surgery, VA; and the Office of the Assistant Secretary of Defense for Health Affairs will:

a. Initiate an educational "clearing house" process to exchange information on potential sharing opportunities. This process will encourage the development of timely and effective sharing of educational and training resources.

b. Encourage an ongoing dialogue between those responsible for education and training at all levels - local, regional, and national.

2. Biomedical Research - To encourage more collaboration, an information exchange will be established. The Assistant Secretary of Defense for Health Affairs and the Chief Medical Director will designate representatives to establish such an exchange.

In joint projects or protocols involving human subjects, each agency's procedures for approval of "human studies" protocols will be followed. However, at a minimum, the Department of Health and Human Services Guidelines will be complied with. Sharing agreements involving "human studies" protocols will not be considered without approval of the protocol by both agencies.

3-107 Modification, Termination, Renewal. Each agreement shall include a statement on how the agreement may be modified and terminated. Proposed changes in the quality and quantity of resources delivered, in actual costs, and in the performance in delivering the resources are grounds for modification or termination. Sharing agreements shall provide for modification or termination in the event of war or national emergency. Agreements may exceed one year, provided necessary cost adjustment amendments are included and a statement is included in the agreement to the effect that if the contract period extends beyond the current fiscal year, the sharing agreement is subject to the availability of appropriations for the period after the first September 30 during which the agreement is in effect. Each party to the sharing agreement shall annually review the agreement to make certain that the resources being provided are in accordance with the agreement. Sharing agreements may be renewed in accordance with procedures to be established by each agency.

3-108 Reporting Requirements. The VA/DoD Health Resources Sharing Committee will retain copies of agreements for an annual report to Congress, which is required by the law. A copy of each agreement entered into or renewed will be sent by the medical facilities or organizations entering into the agreements to the VA/DoD Health Care Resources Sharing Committee. It is the VA/DoD Sharing Committee's responsibility to prepare the annual report to Congress which the Secretary of Defense and the Administrator will submit.

ARTICLE IV

AGENCY PROCEDURES

4-101 Agency Guidance. Each agency will issue implementing and operating guidance to their organizational elements and medical facilities.

4-102 Review. Both agencies agree to refer existing policies, procedures, and practices relating to sharing of health-care resources between the agencies to the VA/DoD Health Care Resources Sharing Committee for its review, which is as required by 38 U.S.C. §5011 (b)(3)A.

4-103 Quality Assurance. Agency medical facilities shall maintain utilization review and quality assurance programs to ensure the necessity, appropriateness, and quality of health care services provided under this agreement. The content and operation of these programs shall, at a minimum, meet the requirements and guidelines set forth in the most recent editions of the Joint Commission on Accreditation of Hospitals accreditation manuals.

ARTICLE V

EFFECTIVE DATE, MODIFICATION, AND TERMINATION OF GUIDELINES

5-101 Duration. This memorandum becomes effective on the date of the last signature. Either party may propose amending these guidelines, but both must agree for amendments to take effect. Either party may terminate these guidelines upon 30 days written notice to the other party.

(Signature)

JUL 1 - 1983

(Signature)

29 JUL 1983

APPENDIX J

Draft Copy of VA/DOD Health Care Resources Sharing Guidelines

DRAFT

NUMBER

Department of Defense Directive

SUBJECT: VA/DoD Health Care Resources Sharing Guidelines

References: (a) ASD(HA) as of 7 February 1983
(b) Public Law 97-174, Veterans Administration and Department of Defense "Health Resources Sharing and Emergency Operations Act," of May 4, 1982, (Encl 1)
(c) Memorandum of Understanding between the Veterans Administration and the Department of Defense of 29 July 1983, (Encl 2)

A. PURPOSE

In compliance with reference (a), this memorandum provides guidance for implementation of references (b) and (c) and establishes procedures to promote greater sharing of health care resources between the Veterans Administration (VA) and the Department of Defense (DoD).

B. APPLICABILITY

This memorandum applies to the Office of the Secretary of Defense (OSD) and the Military Departments. The term "Military Services§' refers to Army, Navy, Air Force, Marine Corps, and the Coast Guard (by agreement with the Department of Transportation).

C. DEFINITIONS

The terms used in this memorandum are defined in enclosure (3).

D. POLICY

It is DoD policy to pursue sharing agreements with VA medical facilities that result in increased quality of care, improved services to patients, and enhanced cost effectiveness.

E. RESPONSIBILITIES

1. The Secretaries of the Military Departments shall:

a. Be responsible for and have the authority to establish approval mechanisms for health care resource sharing agreements between the Veterans Administration and Organizations within their Departments consistent with the provisions of references (b) and (c) above.

DRAFT

b. A report shall be forwarded by 1 November of each year to the Assistant Secretary of Defense (Health Affairs) summarizing sharing agreements entered into during the preceding fiscal year. This report shall include workload accomplished and actual reimbursement data for each agreement.

2. The Commanders of Military Medical Treatment Facilities shall:

a. Enter into agreement with heads of Veterans Administration Medical facilities consistent with the approval process established by the particular services.

F. PROCEDURES

1. All DoD Agencies that are participating in sharing agreements with Veterans Administration Medical facilities shall follow the guidelines in the Memorandum of Understanding between the Veterans Administration and the Department of Defense (reference (c)) and enclosure 2.

2. Authority. The Secretaries of the Military Departments have the authority to publish implementing instructions.

3. Reimbursement and Rate Setting

a. All Military Treatment Facility (MTF) rates changed for services furnished to the VA under local health resources sharing agreements will be locally determined, facility-specific, actual cost and per procedure (i.e., UCA performance factor) rates.

b. The MTF's most recent fourth quarter cumulative report under the Uniform Chart of Accounts (UCA) cost accounting and performance reporting system (DoD Directive 6010.10) will be the primary source of data from which these per procedure rates will be derived.

c. Raw MTF costs will include the direct funded expenses, as cited in the UCA accounts and subaccounts related to the services furnished, by the work centers concerned, less depreciation.

d. To determine the MTF's current actual cost of the services to be provided, adjustment of the above UCA data (raw costs) may be necessary. These adjustments will be based on the best available local management information and include considerations such as inflation factors, cost trends, pay increases, workload changes, planned management actions, etc.

*Example: For pathology services, the maximum rate to be charged will be determined by reviewing the most recent fourth quarter cumulative "Detail Unit Cost Report" developed by the Expense Assignment System (EAS) during quarterly UCA report computation. It will show the total expenses assigned and the weighted workload procedures accomplished for each major pathology service function. Make the necessary management adjustments to the expense data. Then divide as follows:

Total Adjusted Expense Assigned = Cost per Weighted
Total Weighted Procedures Procedure

The number of weighted units will be determined by reviewing the weighted units for a particular test or procedure as reflected by the College of American Pathology. Then multiply this by the cost factor developed above. The result is the maximum charge which may be levied for that particular test or procedure.

Note: During the computation process, facilities should recognize proposed workload increases and their impact on per procedure rates.

e. Under no circumstances will the rates charged exceed the actual cost of providing the services to the VA. Nothing precludes local commanders from negotiating agreements which utilize less than actual cost rates. However, all local health resource sharing agreements will clearly reflect per procedure rates. Such agreements will specifically provide for the periodic review and updating of MTF/VA rates and other provisions of the agreements.

f. Pursuant to billing and reimbursement requirements, the MTF will specifically identify that portion of the actual cost which is attributable to non-accelerated direct military personnel costs based on current composite rate tables. Since the UCA does not identify costs by appropriation or element of expense, the MTF will have to use Service unique financial reports to determine the pro-rate share of military personnel expense.

g. Procedures for the internal and command review of facility-specific rates or proposed agreements will be established by the individual Services. As a minimum, such procedures will include a headquarters review to insure:

(1) The efficacy of proposed rates and agreements.

(2) That neither the range of services, quality of care, nor established priorities for MTF care are adversely affected. To facilitate review, proposed agreements will be accompanied by supporting documentation which includes rate computation formulae and data, and an economic impact analysis consistent with the level of detail cited in DoD 4000.19M, Defense Retail Interservice Support (DRIS).

4. Billing Procedures

a. MTF/VA billings will be submitted in a timely fashion. The specific frequency will be locally determined and stipulated in the agreement. All MTF/VA billings will be forwarded on Standard Form 1080 (Voucher for Transfers Between Appropriations and/or Funds) (sample furnished at Appendix B) with appropriate supporting documentation. The specific nature of such documentation will be locally determined and stipulated in the agreement. However, as a minimum the bill and/or supporting documents will cite:

(1) The specific MTF/VA facility agreement concerned and the time period it covers.

(2) The name and social security number of the military or VA beneficiary receiving the services.

(3) The date the services were furnished.

(4) The specific types of services rendered and the quantity of each such service.

(5) The MTF/VA per procedure rate for the service and the total costs.

(6) The specific appropriation reimbursement accounts to be credited (e.g., local O&M and MP appropriations) and the dollar amounts to be credited to each.

(7) The MTF/VA points of contact and telephone numbers of the offices responsible for SF 1080 preparation and related inquiries.

(8) Additional instructions related to billing procedures may be established in Service specific regulations.

b. The necessary appropriations and element of expense (EOE), to be placed on SF 1080, will be separately provided by each of the military Services prior to the onset of the fiscal year.

c. In order to verify billings, the MTF will establish suitable internal control mechanisms to validate services furnished or received.

5. Reimbursement for Additional Care or Services Beyond the Scope of the MTF/VA Agreement.

a. In certain instances, beneficiaries of the requesting facility, who are undergoing agreement-related servics at the providing facility, may unexpectedly require additional care or services beyond the scope of the agreement. Such care or services may even exceed the capabilities of the providing facility. In either event, the providing facility will immediately notify the requesting facility. The requesting facility will fund the additional care or services as follows:

(1) When the additional care or services are furnished by the providing facility, the requesting facility will be billed at the current inpatient or outpatient interagency per diem rate (established by OSD(C) or approved for the VA by the Office of Management and Budget) or the agreement's per procedure rate, which ever more closely approximates the actual cost of the services rendered.

(2) When the additional care or services are furnished by another Federal medical treatment facility, the requesting facility will be billed by that agency at its current inpatient or outpatient interagency rate.

(3) When the care must be furnished by a non-Federal health care source, the requesting facility will be billed for actual expenses by the non-Federal source.

b. In a (1) and (2) above, duplicate billing safeguards will be necessary (see paragraph 6 below). In a (2) or (3) above, the requesting facility will also be billed for the initial procedures furnished under the MTF/VA health resources sharing agreement.

6. Procedures for Handling Collections. All reimbursement will be forwarded via SF 1080 by the facility receiving the services to the facility furnishing the services. The manner and frequency of such reimbursements will be stipulated in the applicable sharing agreement. The appropriate military pay (MP) appropriation will be credited with that portion of reimbursements properly attributable to it. All remaining amounts will be credited to the MTF's operating funds.

7. Separation of Interagency and Facility-Specific Billings/Reimbursements. In addition to services exchanged locally under health resources sharing agreements, at facility-specific rates, the VA and military medical departments routinely, exchanged services on an interagency basis at per diem rates. These per diem rates are annually determined by OSD(C) or are approved for the VA by the Office of Management and Budget. The provision of both interagency and agreement-related services can occur at the MTF/VA facility level. Interagency services may or may not be the same type of services as those exchanged under local agreements. Interagency billings/reimbursements are

based on MTF/VA facility input. However, they may be centrally managed, thereby creating the potential for duplicate billings or reimbursements. Accordingly, all local agreements will contain specific provisions which require MTF/VA facilities, engaged in local sharing agreements, to establish a system of internal controls which precludes double billings/reimbursements at both the facility and interagency levels.

8. Incentives and Reapplication of Savings.

a. Before any agreement is negotiated, it must be demonstrated to be economically beneficial (i.e., reduce alternative care costs or use the facility's excess capacity). To maximize cost savings, MTF commanders will be afforded the greatest flexibility in accomodating local conditions and needs when developing their MTF/VA health resource sharing agreements.

b. In addition to retaining funds received through reimbursements in accordance with paragraph 5 above, savings realized in an activity's local funding may be reapplied at the installation level in the year of implementation to satisfy valid, unfunded requirements when:

(1) Such savings constitute a decrease in current year funding expenditures for a funded MTF program, project, or personnel end strengths, and

(2) Such savings are directly attributable to newly established or expanded sharing agreements developed in the current fiscal year.

c. Disposition and/or allocation of economies, achieved through continuation of MTF/VA health resources sharing agreements subsequent to the year of implementation, will be subject to guidance by the military department concerned.

9. Reporting Requirements. Consistent with DoD Reports Control Symbol requirements, each military department will gather, maintain, and report the following agreement data by 1 November of each year:

a. The number of new agreements established during the fiscal year.

b. The number of agreements renewed during the year.

c. The number of agreements expanded during the year.

d. The quantity and type of services involved in a through c above.

e. The total amounts billed and received under a through c above.

f. The total amounts of cost savings achieved under a through c above during the year.

g. The total amount of earnings (under a through c above) credited to the military pay appropriation and the amount credited to local operating funds.

Note: This information will be transmitted to the Service headquarters in accordance with guidance isued in forthcoming Service specific implementing instructions.

10. Liability. The provision of direct health care to beneficiaries under this agreement is within the scope of duties or employment of employees of the providing agency. Claims for injury arising from such health care will be processed by the providing agency in accordance with its existing administrative claims regulations.

G. INFORMATION REQUIREMENTS

The reporting requirements in Section F.(9) have been assigned Report Control Symbol _____.

H. EFFECTIVE DATE AND IMPLEMENTATION

This Memorandum is effective immediately.

Enclosure - 3

1. Reference
2. Reference
3. Definitions

DEFINITIONS

1. "Actual Cost" are those funded costs directly associated with delivering the service. Salaries, communications, utilities, services, supplies, and related expenses are included.

2. "Beneficiary" means a person who is a primary beneficiary of the Veterans Administration or the Department of Defense.

3. "Direct Health Care" means health care provided to a beneficiary in a medical facility operated by the Veterans Administration or the Department of Defense.

4. "Heads of a Medical Facility"

a. With respect to a Veterans Administration medical facility, means the director of the facility.

b. With respect to a medical facility of the Department of Defense, means the commanding officer, officer in charge, or the contract surgeons in charge.

5. "Health Care Resource" includes hospital care, medical services, ambulatory services and rehabilitative services, as those terms are defined in Title 38 United States Code, Section 601 (5), (6), (8), any other health care services, and health care training, research, or other support, or administrative programs.

6. "Medical Facility"

a. With respect to the Veterans Administration, means facilities over which the Chief Medical Director has direct jurisdiction.

b. With respect to the Department of Defense, means medical and dental treatment facilities over which the Department of Defense or its organizational elements, the component Services, have direct jurisdiction.

7. "Providing Agency"

a. The Veterans Administration, in the case of care or services furnished by a facility or organizational element of the Veterans Administration.

b. The Department of Deense in the case of care or services furnished by a facility or organizational element of the Department of Defense or its component military services.

8. "Primary Beneficiary"

a. With respect to the Veterans Administration, means a person eligible under Title 38, United States Code (other than Section 611 (b), 613, or 5011 (d)) or any other provision of law for care or services in Veterans Administration medical facilities.

6. "Medical Facility"

a. With respect to the Veterans Administration, means facilities over which the Chief Medical Director has direct jurisdiction.

b. With respect to the Department of Defense, means medical and dental treatment facilities over which the Department of Defense or its organizational elements, the component Services, have direct jurisdiction.

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a. The Veterans Administration, in the case of care or services furnished by a facility or organizational element of the Veterans Administration.

b. The Department of Deense in the case of care or services furnished by a facility or organizational element of the Department of Defense or its component military services.

8. "Primary Beneficiary"

a. With respect to the Veterans Administration, means a person eligible under Title 38, United States Code (other than Section 611 (b), 613, or 5011 (d)) or any other provision of law for care or services in Veterans Administration medical facilities.

b. With respect to the Department of Defense, means a member or former member of the Armed Forces who is eligible for care under Section 1074 of Title 10.

9. "Savings"

a. Costing Savings - A decrease in current year funding expenditures due to a new or expanded support agreement (current year) in a funded program, project, or personnel end strength supported by a cost analysis and eligible to be reapplied at base level.

b. Other Savings - Savings that do not result in a decrease in current year funding expenditures as a result of a new or expanded support agreement (cost avoidance, also supported by cost analysis).

10. "Sharing Agreement/Agreement" means a cooperative agreement (authorized by P.L. 97-174, Section 3, Stat. 70, 70-73 (1982)) to share one or more health care resources. Such an agreement may involve buying, selling, or an exchange of services and/or resources between facilities or organizational elements.

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