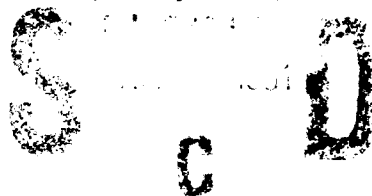


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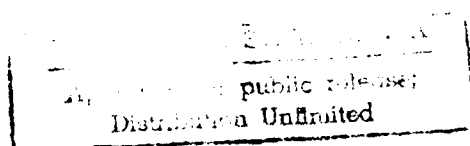
# ORIGINS OF THE STRATEGIC DEFENSE INITIATIVE: BALLISTIC MISSILE DEFENSE, 1944 - 1983



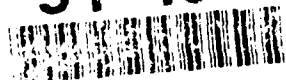
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HISTORIAN

STRATEGIC DEFENSE INITIATIVE ORGANIZATION  
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## DONALD R. BAUCOM BIOSKETCH

Donald R. Baucom is a 1962 graduate of the U.S. Air Force Academy and holds a PhD in the History of Science from the University of Oklahoma. He retired from the Air Force in May 1990 as a lieutenant colonel with twenty-eight years of service. During his Air Force career, he earned the aeronautical rating of navigator, served as a communications-electronics officer in Spain and Thailand, and held various positions in the field of professional military education. High points in his Air Force career include six years in the Air Force Academy History Department where he taught military history and designed and taught the Academy's course on science, technology, and warfare. He was a member of the faculty of the Air War College, Director of Research at the Airpower Research Institute, and the Editor of the Air University Review, the professional journal of the Air Force. During the three years before his retirement he was the Historian of the Strategic Defense Initiative Organization where he witnessed first-hand the national debate on the technical, strategic, and political questions raised by the Strategic Defense Initiative. After retiring, he worked as a contract historian on a study of DOD's interaction with NASA on the Space Station Freedom program and helped write a research guide on military space activities for the National Air and Space Museum. He also worked as an editor on Pergamon-Brassey's International Military and Defense Encyclopedia. In December 1990, Dr. Baucom re-entered federal service as the Historian (GM-15) of the Strategic Defense Initiative Organization.

In any case, the whole ABM question touched off so intense and emotional a debate in this country as to be virtually without precedent on any issue of weaponry . . .

We shall not attempt here the impossible task, impossible especially in a few brief pages, of weighing the case on its merits. Highly knowledgeable and specifically informed people could be found on both sides of the argument. Scientists, engineers, and others disagreed with each other about the reliability or basic workability of the system. The amount of obvious bias on each side was often wondrous to behold.

Bernard and Fawn Brodie, 1973<sup>1</sup>

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<sup>1</sup>Bernard and Fawn Brodie, From Crossbow to H-Bomb, rev. and enl. ed. (Bloomington, IN: Indiana University Press, 1973), pp. 305-06.

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CONCLUSION . . . . .

## PREFACE

The Strategic Defense Initiative (SDI) is but the latest of a series of major technological undertakings that have punctuated the two hundred years of U.S. history. From the Erie Canal which was completed in 1825 to the Apollo project which culminated in man's first landing on the moon in 1969, these vast projects have played an important role in providing new choices, opening new vistas, and helping to shape the American character.

The scale of the SDI program, its impact on research and development in the United States, and the major national debate it has inspired over the past seven years justify the establishment of a historical program to preserve the documents relevant to its history, record the impressions and insights of those involved in this undertaking, and prepare an official history of the project. Two men were especially concerned to see that these tasks were completed: Dr. Richard Kohn, Historian of the Air Force, and Lieutenant General James A. Abrahamson, first Director of the Strategic Defense Initiative Organization (SDIO). Their concern led to my assignment in May 1987 to the Strategic Defense Initiative Organization (SDIO) as the program's historian and my charge to examine the origins of SDI.

I began this study by asking the question: what factors led President Reagan to decide to increase the size and tempo of

the American ABM program? The more I studied the factors involved in his decision, the more apparent it became that one could not view this decision apart from its historical context which included technological developments, the evolution of strategic doctrine, arms control efforts, and the national political milieu. On closer examination, it became apparent that the context of the Reagan decision involved first a set of factors that directly impinged on the president during the crucial years from 1979 to 1983. These factors were themselves the outgrowths of broader historical currents that could be traced back as far as Allied efforts to find a defense against German V-2 rockets which began falling on England in 1944.

Based on this view of events, it is reasonable to divide this study into two parts. The first five chapters explore the broad historical background of anti-ballistic missile (ABM) systems from their conceptual origins in the waning months of World War II, through the development and deployment of SAFEGUARD, to the closing of SAFEGUARD and the transformation of the Army's ABM effort into what was essentially a research only program that included no plans to deploy a system. The second part, the last three chapters, describes the events that led to Reagan's 1983 decision to expand America's ABM program into a major, if controversial, research and development program to see if an effective strategic defense system could be deployed in the foreseeable future.

One will notice a certain "rhythm" to this study as far as debate and public attention to ABM issues are concerned. As long as America's ABM effort was only an R&D program, it received little attention in the general, public media. Debate, such as there may have been, tended to be confined to government circles, professional organizations, and specialized publications. Once the government began serious consideration of an operational deployment, ballistic missile defense became the focus of an intense public debate led by the nation's intelligentsia. There was little public interest in ABM issues prior to Robert McNamara's announcement in September 1967 that the United States would field a thin ABM system to protect against a light ICBM attack. Interest increased and intensified with the announcement of Richard Nixon's decision to deploy the SAFEGUARD system. Only with the consummation of the 1972 ABM Treaty did the debate subside.<sup>1</sup>

With the closing of the SAFEGUARD site in early 1976, the American ABM effort again became a research-only program and discussions of ABM issues largely receded into the background of public interest. While an occasional article on an ABM matter might find its way into a major national newspaper, there was nothing comparable to the national debate on SAFEGUARD that raged

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<sup>1</sup>For a discussion of the first ABM debate, see Benson D. Adams, Ballistic Missile Defense (New York: American Elsevier Publishing Company, Inc., 1971), pp. 240, 246-48.



between 1968 and 1972. This situation was transformed immediately following President Reagan's March 1983 speech which announced the beginning of what became the strategic defense initiative. That speech touched off a great national debate that is still in progress as this study is being completed. The 1980s debate and the issues it raises are outside the bounds of this book and should be the focus of another, separate study.

Like everyone who completes a major research project, I owe a tremendous debt to a number of people. In addition to General Abrahamson and Dr. Kohn whom I have already mentioned, I am indebted to the current SDIO Director, Lieutenant General George L. Monahan, Jr., for his continuing strong support for the SDIO history program. I also deeply appreciate the detailed criticism of the manuscript that was provided by Dr. David MacIsaac of the Center for Aerospace Doctrine, Research, and Education, Maxwell Air Force Base, Alabama, and Dr. David R. Mets of the Armaments Division, Air Force Systems Command, Eglin Air Force Base, Florida.

Other people have also helped me a great deal. This is especially true of Nancy Stenger who not only prepared numerous interview transcripts, but who also assisted me greatly in taking care of the myriad of details associated with running an official history program. Deborah Seidl was very helpful in transcribing interviews during the early period of research.

*I also want to thank*  
^ Bobbie L. Stephens of the Army's Pentagon Library for her help in getting the many books I needed to complete this study.

Finally, I want to thank my wife Peggy. Over the past thirty years she has provided a firm underpinning for our lives together. She continued to provide that essential support while I was completing this book. As usual, she was always an attentive and sympathetic listener whether I was pouring out frustration with some particularly stubborn problem of synthesis or talking excitedly about a special insight I thought I had gained during a day's work.

PART I

BALLISTIC MISSILE DEFENSE

1944 - 1981

## Chapter I

### DAWN OF THE MISSILE AGE

The image of squadrons of bombers lumbering over the Arctic Circle with frightened and fallible young men in their cockpits somehow seemed quaint and manageable compared to the specter of a barrage of inanimate but precisely guided metal cones hurtling through space toward targets in the United States.

Strobe Talbott, 1988<sup>1</sup>

. . . there is a rough rule-of-thumb principle that no enemy vehicle of attack must be permitted to have "a free ride." The enemy should not be relieved of uncertainty with respect to any avenue of attack which it is feasible for him to use. The main value of ballistic missiles over aircraft to the attacker is precisely their high probability of successful penetration per unit, at least under present techniques of defense.

Bernard Brodie, 1959<sup>2</sup>

## INTRODUCTION

On the evening of 8 September 1944, as residents of London sat down to dinner, they were shaken by a terrific explosion that was followed by the sound of a "heavy body rushing through the air." Sixteen seconds later, a similar event

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<sup>1</sup>The Master of the Game: Paul Nitze and the Nuclear Peace (New York: Alfred A. Knopf, 1988), p. 70 (hereinafter cited as Talbott, Master of the Game).

<sup>2</sup>Strategy in the Missile Age (Princeton, NJ: Princeton University Press, 1959), p. 202.

occurred near Epping, England. What had caused these mysterious effects? British scientists had the answer. In July 1944, the Swedes had shipped to them the debris of a large German rocket that had gone astray during a June test and crashed in Sweden. Using the debris, the British had constructed a rather accurate picture of the size and performance of large new German missile which they concluded would probably carry a warhead of about one ton. After examining pieces of wreckage from the sites of the 8 September explosions and listening to descriptions of the attacks, British scientists knew that England had been struck for the first time by German V-2 ballistic missiles travelling so fast that the sound of their approach was not heard until after the sound of their exploding warheads.<sup>3</sup>

Within a month of the first attack, specially adapted radar units were detecting V-2s once they rose above 5,000 feet. Soon, radar data were being used to compute the time and point of impact of attacking missiles. The availability of this information gave rise to a scheme of defense. Using the predicted target and time of arrival, batteries of anti-aircraft artillery would fire a heavy barrage in front of the incoming missile. The exploding artillery shells would create a barrier

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<sup>3</sup>James McGovern, Crossbow and Overcast (New York: William Morrow & Co., Inc., 1964), pp. 66-68, 83; Winston S. Churchill, The Second World War, Vol. 6, Triumph and Tragedy (New York: Bantam Books, 1953), pp. 44-45.

of shrapnel that would destroy the missile. Although this idea was seriously considered, it was abandoned as impractical. A barrage of 320,000 shells would be required to produce a likely kill. Of these shells, about 2% would be duds that would fall undetonated on London causing more damage and casualties than a V-2. In the end, the Allies could not find a means of defeating a V-2 once it was launched; the only effective defensive measures were air attacks against V-2 factories and launching sites or capturing the territory from which the missiles could be launched.<sup>4</sup> The roots of America's anti-ballistic missile (ABM) program may be traced to this effort to stop the German V-2s and to earlier U.S. efforts to build an anti-aircraft rocket.

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<sup>4</sup>The General Board, United States Forces, European Theater, Antiaircraft Artillery Section; "V-2 Rocket Attacks and Defense," Study 42, n.d. [late 1945 or early 1946]; document 502.101-42 in the Air Force Historical Research Center, Maxwell Air Force Base, Alabama; pp. 17-19 (hereinafter cited as General Board, "V-2 Rocket Attacks and Defense"); Ronald W. Clark, War Winners (London: Sidgwick & Jackson, 1979), p. 102; David Irving, The Mare's Nest (Boston: Little, Brown, and Company, 1965), p.280. An excellent summary of the Allied effort against the V-2 is contained in W[illia]m S. Mark, Jr.; Joseph P. D'Arezzo; R. A. Ranson; and G. D. Bagley; "Detection and Plotting of the V-2 (Big Ben) Missile as Developed in ETO;" 4 July 1945; document AFHRC 142.0423-16 Jul-Sep 1945; in the Air Force Historical Research Center at Maxwell Air Force Base, Alabama (hereinafter cited as Mark, "Detection and Plotting of the V-2").

## ROOTS OF THE AMERICAN ABM PROGRAM

In the spring of 1941, long-range guns that could reach the operational altitudes of aircraft were in short supply in the U.S. Army. As a result, the Ordnance Department asked the National Defense Research Committee, a civilian research organization established by President Roosevelt, to explore the development of rockets equipped with timed fuzes for use against high-flying aircraft. Before this project reached fruition, ample numbers of long-range guns became available and the project was abandoned. Interest in anti-aircraft missiles revived in February 1944 when intelligence reports of German V-1 and V-2 missiles prompted the Army Ground Forces (AGF) to ask the Army Service Forces (ASF) to develop an "anti-aircraft guided rocket."<sup>5</sup>

By this time, guided missile development in the U.S. had become embroiled in rivalries between the three major elements of the Army: the AGF, the ASF, and the AAF (Army Air Forces). The AAF was seeking responsibility for all guided missile development

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<sup>5</sup>Constance McLaughlin Green, Harry C. Thomson, and Peter C. Roots, The Ordnance Department: Planning Munitions for War, series on The United States Army in World War II: The Technical Services (Washington, D.C.: Department of the Army, Office of the Chief of Military History, 1955), pp. 411, 413; Max Rosenberg, The Air Force and the National Guided Missile Program, 1944-1950 (Washington, D.C.: Headquarters United States Air Force, USAF Historical Division Liaison Office, June 1964), p. 17 (hereinafter cited as Rosenberg, Guided Missile Program).

and was supported in this matter by General George C. Marshall, the army chief of staff. A decision to divide development responsibilities based on design characteristics failed to settle the dispute and was later overturned. Furthermore, the AGF-ASF effort to develop an anti-aircraft missile threatened the efforts of airmen to gain control of the air defense mission from the AGF. This intra-service rivalry was enlarged, at least temporarily, when the Navy began its own guided missile research program.<sup>6</sup>

As the war ended, the U.S. anti-aircraft program was pursuing two major projects. NIKE was a study carried out by Bell Telephone Laboratories under joint sponsorship by Army Ordnance and the AAF; it proposed the development of a 1,000-pound missile that was 19 feet long with a range of 11 miles and an altitude capability of about 60,000 feet. The second development was the Navy's BUMBLEBEE program which was handled for the Navy by the Applied Physics Laboratory of The Johns Hopkins University. The missile proposed in this study would weigh 2,000 pounds, have a speed of 1,800 miles per hour, and possess a range of 20 miles. These efforts were enhanced

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<sup>6</sup>Rosenberg, Guided Missile Program, pp. 17-54, 96-107, 120-35. For more information on the rivalry between the services with regard to missile development, see: U.S. Congress, House, Committee on Government Operations, Organization and Management of Missile Programs, Report No. 1121, 86th Congress, 1st Session, 1959, House Reports, vol. II, Reports 1026-1125, pp. 118-26; and Adams, Ballistic Missile Defense, passim.



considerably by the assimilation of personnel, equipment, and R&D data from the German rocketry program which was considerably more advanced than that of the U.S.<sup>7</sup>

Following the war, analyses of the German missile program produced some sobering findings. As the war ended, the Germans were developing a large two-stage rocket that might have become the world's first ICBM. The initial stage of this missile was the A-10, a large booster with 200 tons of thrust. It would have accelerated a second missile, the A-9, to a speed of 1,500 miles per hour at which point the A-9 would have fired and accelerated to a velocity of 3,360 miles per hour. This velocity would have given the A-9 a range of 3,500 miles. Had the war continued into 1946, the Germans might well have made good their plans to bombard New York city.<sup>8</sup>

German plans for an ICBM and other developments of the Second World War indicated clearly that the near absolute security Americans had enjoyed during the war was becoming a

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<sup>7</sup>Von Karman, Key to Air Supremacy, p. 75; H. L. Dryden, G. A. Morton, and I. A. Getting, Guidance and Homing of Missiles and Pilotless Aircraft, Part I: Hugh L. Dryden, Selected Guided Missiles Now Developed or Under Development, pp. 25-32, in von Karman, Toward New Horizons; Benson D. Adams, Ballistic Missile Defense (New York: American Elsevier Publishing Company, Inc., 1971), p.17 (hereinafter cited as Adams, Ballistic Missile Defense).

<sup>8</sup>Report 237-45 of the United States Naval Technical Mission on Guided Missiles quoted in General Board, "V-2 Rocket Attacks and Defense," pp. 4, 18

thing of the past. As a result, a number of studies recommended immediate efforts to develop a means of defending America against attacks by aircraft and ballistic missiles. On 4 July 1945, a group of officers sent to Europe to study the Allied efforts to counter the V-2 recommended "that a research and development program be initiated the object of which would be to devise counter measures against V-2 type missiles." Five months later, a report of the AAF's Scientific Advisory Group discussed the use of homing rockets armed with nuclear explosives and some form of energy beam to defend against attacking missiles.<sup>9</sup>

These shocking revelations about the German missile program and the promptings of the AAF Scientific Advisory Group explain why the Army Air Forces was involved in two studies of

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<sup>9</sup>Mark, "Detection and Plotting of the V-2," p. 65; General Board, "V-2 Rocket Attacks and Defense," pp. 18-19; Theodore von Karman, Science the Key to Air Supremacy, a volume in Theodore von Karman report Toward New Horizons, December 1945, pp. 2-3, 13, 47-48, 74-75 (hereinafter cited as von Karman, Key to Air Supremacy and von Karman, Toward New Horizons). Von Karman noted that the future goal for "pilotless bombers" was to develop rocket propelled intercontinental missiles and discussed the possibility of combining atomic bombs with such "pilotless bombers." He also discussed possible means of active defense against such weapons. While some favored attacking these missiles using some form of ray, von Karman observed that "even if twice the total electric power of the United States were placed in a single beam from a reflector 50 feet in diameter, the intensity at one mile would just reach the sparking voltage in air. . . Thus, present scientific knowledge offers no hope for, but on the contrary distinct evidence against, the possibility of detonating bombs at a distance." He did believe that "adapting the target-seeking principle to winged rocket projectiles" offered hope of hitting missiles moving as fast as twice the speed of sound.

the ABM by April 1946. One study, Project WIZARD (MX-794), was being conducted by the University of Michigan. The second, project MX-795 (THUMPER), was assigned to General Electric. Both WIZARD and THUMPER envisioned missiles that were to have a range of 550 miles and a ceiling of 500,000 feet.<sup>10</sup> Project THUMPER concluded that defending against a ballistic missile was beyond the capabilities of the technology of that day. The only way to defeat ballistic missiles was to capture or destroy the bases from which they were being launched.<sup>11</sup> This assessment helps explain why the Air Force changed the status of THUMPER and WIZARD to that of prolonged study following a program review in June 1947 that was prompted by a tightening budget. Although project THUMPER was cancelled in March 1948, WIZARD survived until 1958 when it was merged with the Army's NIKE-ZEUS system which had evolved out of the earlier NIKE program that aimed to develop a missile defense against bombers and airbreathing missiles.<sup>12</sup>

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<sup>10</sup>Rosenberg, Guided Missile Program, pp. 75-79.

<sup>11</sup>Adams, Ballistic Missile Defense, p. 17.

<sup>12</sup>Rosenberg, National Guided Missile Program, pp. 80-83, 114-19; Ruth Currie-McDaniel, The U.S. Army Strategic Defense Command: Its History and Role in the Strategic Defense Initiative (Huntsville, AL.: U.S. Army Strategic Defense Command, January 1987, 2nd ed.), pp. 1-2 (hereinafter cited as Currie-McDaniel, Army Strategic Defense Command); and Adams, Ballistic Missile Defense, p.27. In January 1958, Defense Secretary Neil McElroy directed the Air Force to continue that portion of the WIZARD program that related to things like radar and communications links and to insure that they were compatible with the NIKE-ZEUS system.

The first NIKE missile was the AJAX which was deployed around U.S. cities and air bases in the early 1950s to protect them from attacks by bombers. Before the end of the decade, the Army added the nuclear-tipped NIKE-HERCULES to its air defense arsenal and began serious consideration of what would be needed to defend the country in the next decade.<sup>13</sup>

This consideration took the form of the NIKE II study which was initiated in March 1955 when the Army contracted with Bell Laboratories for an eighteen-month review of air defense requirements in the 1960s. While Bell was directed to concentrate on the air-breathing threat, it was also to consider defending against ballistic missiles. In June, prompted by intelligence reports that the Soviets would soon have an ICBM capability, the Army shifted the emphasis of the Bell study toward anti-missile defense. Douglas Aircraft Corporation worked with Bell Laboratories on this project.<sup>14</sup>

In its first report which was submitted on 2 December 1955, Bell identified many of the basic challenges posed by ballistic missile defense. These included such things as

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<sup>13</sup>Currie-McDaniel, Army Strategic Defense Command, pp. 1-2.

<sup>14</sup>Bell Laboratories, ABM Research and Development at Bell Laboratories: Project History, 1975 (Study completed for the U.S. Army Ballistic Missile Defense Systems Command under contract DAHC60-71-C-0005), p.I-1 (hereinafter cited as Bell Labs, ABM Project History).

determining the optimum point in the ICBMs flight for interception and detailing the demanding role required of an effective ABM command and control system to include the difficult task of distinguishing decoys from warheads. Soon after the submission of this original report, the development of a "long-range, high-data-rate acquisition radar" was recognized as a critical factor that should be undertaken immediately.<sup>15</sup>

Soon after starting the NIKE-II study for the Army, Bell Laboratories also secured an Air Force contract to study ABMs. Since the mission of air defense had been divided between the Army and Air Force by this time, with the Army responsible for terminal defense and the Air Force for area defense, Bell considered these two contracts compatible. While completing these two studies, Bell accomplished one of the first major technical milestones in the effort to develop an anti-missile system. To this point, there was a widespread belief in the scientific community that it was impossible to intercept an ICBM because of its extremely high velocity--24,000 feet per second. This, the scientists believed, was tantamount to hitting a bullet with another bullet. During the course of its work for the Army and Air Force, Bell used analog simulations to run 50,000 intercepts of ballistic missile targets. The results of this effort indicated that it was possible to intercept an ICBM.<sup>16</sup>

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<sup>15</sup>Bell Labs, ABM Project History, pp. I-2 - I-5.

<sup>16</sup>Bell Labs, ABM Project History, Part I, pp. I-5 - I-6, I-11. Whether an ABM system provides terminal or area protection depends on the altitude at which it is capable of intercepting

From the NIKE-II study, a new missile emerged. The NIKE-ZEUS was a three-staged, solid-propellant missile designed to carry a nuclear warhead. In addition to this missile, the ZEUS system included advanced radar equipment and communications links to tie the sub-systems together.<sup>17</sup>

There were several major breakthroughs that supported the idea of a ballistic missile defense at this time. One important development was a drastic reduction of the size and weight of nuclear devices in the decade following World War II. The "Little Boy" bomb of World War II was about ten feet long and weighed approximately five tons. The other bomb model, "Fat Man," was much thicker (five feet compared to "Little Boy's" two and a half feet at the points of maximum diameter), but was only nine feet long. This second bomb weighed a ton more than the "Little Boy."<sup>18</sup> The size of early nuclear devices posed a major barrier to mounting them on missiles. Yet, without nuclear warheads, the poor accuracy of early missiles meant that they

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incoming warheads. In general, an area defense system is one that can intercept outside the atmosphere and therefore has the ability to protect a relatively large area. On the other hand, a system that intercepts warheads as they are re-entering the atmosphere can cover a smaller area and is referred to as a terminal or point defense system.

<sup>17</sup>Currie-MacDaniel, Army Strategic Defense Command, p.2.

<sup>18</sup>Vincent C. Jones, Manhattan: The Army and the Atomic Bomb, United States Army in World War II series, ed. by John W. Elsberg (Washington, D.C.: United States Army Center of Military History, 1985), p. 508. "Little Boy" was originally referred to as "Thin Man" (pp. 522-23).

were likely to be ineffective. An important milestone occurred in 1954 with the completion of a report by the Strategic Missiles Evaluation Committee of the Air Force which was headed by John von Neumann and known as the "Teapot Committee." The committee's report was completed in February and advised the Air Force that smaller, lighter warheads with greater yield were in the offing.<sup>19</sup> By the time ZEUS was being designed nuclear warheads weighing only 400 pounds were feasible.<sup>20</sup>

#### THE RISE OF DETERRENCE STRATEGY

The Bell study was completed at a time when two interrelated concepts dominated U.S. strategy: deterrence and containment. At first, American defense policy was concerned with restraining the massive conventional force the Soviets kept under arms after World War II. In America, there was no support for maintaining the large conventional military force that would have been required to accomplish this goal. As a result, the

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<sup>19</sup>John L. Chapman, Atlas: The Story of a Missile (New York: Harper & Brothers, 1960), pp. 72-74. In addition to von Neumann, this committee included a number of eminent American scientists such as Charles C. Lauritsen, George B. Kistiakowsky, and Jerome B. Wiesner. The name "Teapot" came from a luncheon meeting at which the committee decided it needed a name. A teapot on the table caught the group's eye, and they adopted teapot as the name of their committee.

<sup>20</sup>Bell Labs, ABM Project History, p. I-12.

cornerstone of our defense policy became the deterrence of Soviet aggression by the threat of nuclear air attack against the Soviet homeland, a policy more bellicosely termed "massive retaliation" during the Eisenhower years.<sup>21</sup>

The idea of massive retaliation was a part of the Eisenhower administration's "New Look," a broad policy which would have the U.S. prepare for a long term struggle with the Soviet Union by devising defense plans that would not over-burden the nation's economy. The threat of nuclear retaliation was the U.S. equivalent of the massive Soviet military establishment, and it was cheaper to maintain. Under the "New Look" policy, the United States carried out extensive reductions in its conventional military forces. Army strength was cut by 400,000 men to 1,000,000, and Navy manpower went from 765,000 to 650,000. While these reductions were being taken, the Air Force added 60,000 men to reach a strength of just under a million and acquired the new B-52 intercontinental jet bomber. As the mainspring of deterrence, the Air Force had become the dominant military service.<sup>22</sup>

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<sup>21</sup>Ronald E. Powaski, March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present (New York: Oxford University Press, 1987), pp. 49-50, 52, 61-62 (hereinafter cited as Powaski, Armageddon).

<sup>22</sup>Powaski, Armageddon, pp. 63-64.



The importance of the Air Force was enlarged still further during the 1950s when the Soviet Union became a nuclear power. The Soviets exploded their first atomic bomb in 1949 and had amassed a nuclear arsenal containing three to four hundred weapons by 1955. Furthermore, at the Moscow air show in July 1955, the Soviets displayed their intercontinental bombers for the first time, deceiving western observers into believing they had a massive bomber force by repeatedly flying the same aircraft in "waves" over the city. Now U.S. bombers became the key to deterring possible Soviet nuclear attacks, a responsibility monopolized by the bomber until the MINUTEMAN became operational in 1962.<sup>23</sup>

Since the end of World War II, the Army had not fared well in the division of strategic missions among the services. Now, the "New Look," with its emphasis on nuclear deterrence, relegated the Army to a position of still less consequence. Nevertheless, while the Army complained that the "New Look" policy had seriously weakened its ability to deal with the small wars that U.S. nuclear forces might fail to deter, its discontent did not keep it from energetically pursuing a strategic mission that would insure it a larger piece of the budget pie within the context of the "New Look." Thus, the Army began to push the development of its JUPITER IRBM, which was equivalent to the Air

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<sup>23</sup>Powaski, Armageddon, pp. 53, 63-64, 66.

Force THOR, and worked diligently to develop its ZEUS ABM system.<sup>24</sup> Not surprisingly, this competition for mission and scarce defense dollars intensified the rivalry between the Air Force and the Army. The competition over the IRBM proved to be the issue that would force an important policy decision in DOD.

#### THE ARMY BECOMES THE CHAMPION OF ABM

As the end of 1956 approached, the feud between the Air Force and the Army over the development of the IRBM had begun to upset President Eisenhower who also had serious misgivings about why the Army needed a missile with a range of 1500 miles. Furthermore, the time had arrived for Secretary of Defense Charles Wilson to choose between the THOR and the JUPITER. To this point, the Secretary permitted each service to develop its own missile in the belief that overall missile technology would be advanced by having two projects, even though there would be some overlap in efforts and one project would have to be cancelled at some point. Now, a decision was required to begin

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<sup>24</sup>Powaski, Armageddon, p.65; Ernest J. Yanarella, The Missile Defense Controversy: Strategy, Technology, and Politics, 1955-1972 (Lexington, KY: The University of Kentucky Press, 1977), pp. 28-29 (hereinafter cited as Yanarella, Missile Defense); Morton H. Halperin, "The Decision to Deploy the ABM: Bureaucratic and Domestic Politics in the Johnson Administration," World Politics, October 1972, p. 67 (hereinafter cited as Halperin, "Decision to Deploy").

acquisition of the auxiliary equipment to support missile operations. Since Wilson had no intention of deploying both missiles, he had to decide which missile to acquire so that acquisition of the support equipment could begin.<sup>25</sup>

Wilson's decision on the IRBM and his adjudication of the associated roles and missions dispute that surrounded missile development and acquisition were disappointing for the Army. In a memorandum of 26 November 1956, he gave the Air Force responsibility for land-based IRBMs. Where the air defense mission was concerned, Wilson divided it, giving the Army responsibility for terminal defense and the Air Force control over area defense. Generally, this meant the Army was responsible for developing a missile defense system that could be based near a vital potential target such as a city and be capable of striking an attacking missile or bomber at a horizontal range of 100 nautical miles. Left undecided in the Wilson ruling was which service would have overall responsibility for the operation of the air defense system. This undecided issue gave the Army hope that it might be able to lay claim to a strategic mission by eventually gaining control of the nation's air defenses. A strong push by the Army into this small strategic niche insured that the rivalry between the Army and the Air Force would

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<sup>25</sup>Michael H. Armacost, The Politics of Weapons Innovation: Thor-Jupiter Controversy (New York: Columbia University Press, 1969), pp. 110-19.

continue.<sup>26</sup>

The year after Wilson issued his memorandum, the Army spent between ten and fifteen percent of its budget on air defense and was beginning to talk about the role of defense in strategic deterrence. Such talk was sure to aggravate the Army's conflict with the Air Force, since it threatened the air service's dominance of strategic nuclear deterrence. In November 1957, the Air Force presented general arguments against air defense and specifically criticized the ZEUS system which the Army was developing for the point defense mission. To begin with, the Air Force argued that the key to deterrence was offensive capability. Moreover, the ZEUS system itself was flawed. It could be fooled by decoys and easily overwhelmed if the Soviets simply added to their attack force. Since ZEUS could not be operational until 1961, it would not even help with the missile gap the U.S. supposedly would face over the next few years. Somewhat inconsistently, given its arguments, the Air Force continued to support its own WIZARD BMD (ballistic missile defense) program.<sup>27</sup>

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<sup>26</sup>Adams, Ballistic Missile Defense, p. 22; Yanarella, Missile Defense, pp. 29-31, 131. Adams quotes a definition of the difference between point and area defense which notes that these concepts "cannot be defined with precision." Maxwell W. Hunter, II, a retired aerospace engineer who was involved in the development of defensive systems for decades, advised the author that the maximum horizontal range for a point defense system was 200 miles. For more on Hunter, see note 43 in this chapter and chapter VI.

<sup>27</sup>Yanarella, Missile Defense, pp. 31-32, 35. This inconsistency in the Air Force position was not corrected until 1959, when Richard Horner, Assistant Secretary of the Air Force

The Army's answer to the Air Force charges stressed the value of an ABM system in defending vital U.S. targets and protecting American bombers which were still the backbone of the U.S. deterrent force. Such a defensive system would also support nuclear deterrence by complicating possible Soviet plans for a first strike. Additionally, the Army pointed out that the ZEUS system possessed potential for growth in response to a Soviet threat of increasing size and complexity.<sup>28</sup>

By the beginning of 1958, the bickering between the Air Force and the Army over ballistic missile defense reached the point where the secretary of defense, now Neil McElroy, felt compelled to intercede. Since the Army's ZEUS missile was well along in the development stage and the Air Force had no missile suitable for the ABM mission other than one that was on the drawing board under the WIZARD program, McElroy decided that the Army would have primary responsibility for developing the ABM system. However, when it came to the command and control electronics for the system, McElroy decided that the work the Air Force was doing in conjunction with WIZARD should continue, since the Air Force had gained considerable experience in this area from its work with BMEWS. McElroy ordered the Air Force to see

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for R&D, told Congress that based on a study of WIZARD, defense was not cost effective. Money spent on defense would be better spent by adding to offensive capability.

<sup>28</sup>Adams, Ballistic Missile Defense, p. 34.

that the equipment it developed was compatible with the Army's ZEUS missile.<sup>29</sup>

While McElroy's decision ameliorated the dispute between the Army and the Air Force, it did not end their conflict which surfaced from time to time in the 1960s as the Air Force continued its efforts to protect its dominant role in the nation's strategy of deterrence. What McElroy's decision had done was to confirm the Army in its role as DOD's principal constituency for ballistic missile defense.

Even as McElroy was making his decision on BMD, the Army was seeking funds for production of ZEUS in the FY 1959 budget with an eye toward a 1962 operational date for the missile system. While McElroy had earlier in the month named the Army as the principal service for ABM, in hearings later in January he nevertheless argued that there were still too many uncertainties associated with the interception of ICBM warheads. While he favored continued R&D on a BMD system, he considered it too early to begin production. Congress shared the Secretary's viewpoint and cut the \$507 million the Army had requested for ZEUS production from its FY 1959 budget. The Army's attempt to secure funding for production in FY 1960 and 1961 met with no more success. In addition to the technical problems still associated

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<sup>29</sup>Adams, Ballistic Missile Defense, pp. 26-27; Yanarella, Missile Defense, pp. 40-41.

With stopping an ICBM attack, the nation's political leaders were preparing for a presidential election and did not want to be responsible for the \$15 billion commitment associated with a decision to deploy an ABM system. Congress did allocate \$137 million in production funds for FY 1960, but the Eisenhower administration refused to spend the money. The decision taken by the government to continue research and development but not to commit to deployment adumbrated the fate of the BMD throughout the McNamara years.<sup>30</sup>

#### THE BIRTH OF NIKE-X

Soon after the Democrats won the presidential election in November 1960, the Army began a vigorous campaign for deployment of ZEUS. The new administration refused to be stampeded, but did include ABM in a major review of defense policies undertaken soon after John F. Kennedy took office in January 1961. Two major questions about ZEUS surfaced: was BMD technically feasible and if so, would its capabilities be worth the costs? In April, both questions were answered in the negative when Secretary of Defense Robert S. McNamara refused to recommend funds for production of ZEUS, citing as his reasons the high cost and technical

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<sup>30</sup>Adams, Ballistic Missile Defense, pp. 28-29, 33-34; Yanarella, Missile Defense, p. 60.

inadequacies of the missile. With regard to cost, the limited range of a ZEUS missile meant that it would require \$15 billion to acquire enough batteries to defend a significant portion of the country. ZEUS' technical problems included its vulnerability to decoys and jamming and the fact that the system could be saturated by a heavy attack. While McNamara recognized that an ABM system of even limited capabilities would complicate Soviet planning for a first strike, he believed deployment of an ABM system also would cause the Soviets to expand their ICBM force. In spite of these problems, the Secretary did recommend \$270 million for a vigorous research and development program that would "develop ZEUS as rapidly as money will permit."<sup>31</sup>

Sixteen months later an important milestone in the development of America's ABM occurred. On 19 July 1962, a ZEUS missile fired from Kwajalein Test Site intercepted an ATLAS D ICBM launched from Vandenberg Air Force Base. Although the hydraulic system of the ZEUS failed ten seconds before intercept, its dummy nuclear warhead passed within two kilometers of the ATLAS's re-entry (RV). During a test on 22 December 1962, a ZEUS passed within 200 meters of the target RV. All told, thirteen similar tests were run between June 1962 and November 1963. Only the first test on 26 June 1962 was a complete failure. There

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<sup>31</sup>Adams, Ballistic Missile Defense, pp. 39, 44-45; Yanarella, Missile Defense, pp. 66-68, 72.



were three partial successes and nine successes.<sup>32</sup>

In spite of the accomplishments of the test program, McNamara again decided against deployment of the system in 1963, for he believed that ZEUS would be unable to deal with the projected Soviet threat of the late 1960s and early 1970s. His concern at this time focused on several technical matters. For one thing, the ZEUS system still could not discriminate between decoys and warheads. Furthermore, American scientists and engineers had little knowledge of re-entry phenomenology, nor did they know how the detonation of a ZEUS warhead would affect other components of the ZEUS system. Because of these problems, McNamara decided that the U.S. should re-structure its ABM program by adopting a more advanced concept, NIKE-X. The modified program continued the development of the ZEUS missile while adding a new radar and a short-range, high-acceleration missile (SPRINT). The new operational concept called for ZEUS to attack an approaching swarm of warheads and decoys at an altitude of seventy to one hundred miles; SPRINT would then attack the remaining warheads at an altitude of twenty to thirty miles after the atmosphere had stripped away any decoys that might have

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<sup>32</sup>Bell Labs, ABM Project History, Part I, p. I-26. An example of a partial success is the intercept of 19 July 1962 when a ZEUS missile came within two kilometers of its target (an ATLAS D ICBM). This large miss distance occurred as a result of the ZEUS "losing hydraulic power due to excessive roll during the last 10 seconds before intercept."

survived the ZEUS attack.<sup>33</sup>

The new radar was designed to overcome a severe limitation in ZEUS's radar which used mechanically rotated antennas. The older radar was restricted in the number of targets it could handle by the rate at which its antenna could be slewed. As a result, the target tracking and missile tracking sets associated with ZEUS could handle only one target at a time. Multiple pairs of target and missile tracking sets were necessary to deal with attacks by more than one RV. The new radar used a phased-array antenna, which is a structure with several fixed faces, each of which is covered with an array of radiating elements. One such antenna can generate a number of beams of radio pulses and rapidly aim them electronically, the direction of a beam being determined by the way electromagnetic energy is fed to the radiating elements. Because of the speed and accuracy with which these beams can be pointed, one radar can perform a multitude of functions and service a large number of attacking RVs and defending missiles.<sup>34</sup>

Phased-array radar was based on advances in solid state electronics which also made possible the development of very high capacity computers that were extremely reliable. These computers

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<sup>33</sup>Adams, Ballistic Missile Defense, pp. 63-64; Yanarella, Missile Defense, pp. 79-80.

<sup>34</sup>Yanarella, Missile Defense, pp. 82, 90; Bell Labs, ABM Project History, Part II, pp. 2-1, 2-3.

were needed to process the large amounts of data associated with tracking multiple RV targets and guiding missiles to intercept them.<sup>35</sup>

In addition to the modifications to ZEUS, McNamara also established the requirement for a system of fall-out shelters that had to be constructed with the deployment of any ABM system. These shelters were necessary because the Soviets could defeat missile defenses by exploding nuclear weapons up-wind, away from defended areas, and allowing the wind to carry radio-active debris into the target area, thus killing the inhabitants with fall-out rather than by blast and direct radiation. Additionally, the fall-out shelters would provide protection against the detonations of ABM warheads which were themselves a threat to the inhabitants of defended areas. The better protected were the people in defended areas, the lower in the atmosphere a SPRINT could intercept an attacking warhead, and the lower the interception, the better atmospheric discrimination worked to separate warheads and decoys.<sup>36</sup>

In 1964, McNamara expressed cautious optimism with regard to the nation's ABM efforts. Progress was being made in some important technical areas, but unresolved problems still

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<sup>35</sup>Bell Labs, ABM Project History, p. 2-1.

<sup>36</sup>Yanarella, Missile Defense, pp. 86-87; Adams, Ballistic Missile Defense, pp. 85-86.

remained. These problems, plus a projected cost for an ABM system of \$16 billion, meant that the United States should proceed carefully. In this assessment, McNamara was supported by General William Dick, the Army's chief R&D officer, who believed that a deployment decision could not be taken before 1966.<sup>37</sup>

#### BMD AND DETERRENCE DOCTRINE

Part of McNamara's caution with regard to BMD deployment related to his concern about how ballistic missile defenses would affect deterrence. In 1963, he had directed the Betts Commission, named after the commission's chairman, Army Lieutenant General Austin W. Betts, to investigate how an ABM system would affect nuclear war and relations between the Soviet Union and the United States. The commission's report contained three key conclusions: offensive technology had not hopelessly outstripped defensive technology, but rather the two technologies were roughly equal; a BMD system would limit damage in case of a nuclear attack, with the amount of limitation depending on the scenario; and BMD would not disrupt the balance of mutual deterrence. When the commission's report reached McNamara at the end of 1964, he already was coming under the influence of scientists like Jerome Wiesner and Herbert York who argued that the nuclear arsenals of the U.S. and the U.S.S.R. established a

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<sup>37</sup>Adams, Ballistic Missile Defense, pp. 85-86.

state of mutual deterrence in which the addition of weapons did not enhance the security of either state.<sup>38</sup>

By the following year, McNamara had succeeded in integrating BMD into the intellectual framework of the nation's nuclear doctrine so that any decision on BMD deployment required careful consideration of its impact on deterrence. Within this framework, McNamara emphasized assured destruction over damage limitation, telling the Senate in 1965 that "without question, offensive capability or what I will call the capability for assuring the destruction of the Soviet Union is far and away the most important requirements [sic] we have to meet." This emphasis was reflected in his determination to maintain an offensive force that could absorb a Soviet first strike and still be capable of destroying enough of the Soviet population and industry to insure that the Soviets could not conclude rationally that it was to their advantage to initiate a nuclear exchange. McNamara's emphasis on assured destruction was also indicated in the R&D priorities he established. First priority was assigned to R&D in support of the Vietnam War, next was R&D on penetration aids for U.S. strategic offensive forces, and third was ABM research.<sup>39</sup>

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<sup>38</sup>Yanarella, Missile Defense, pp. 104-06; Currie-McDaniel, Strategic Defense Command, p.5; Adams, Ballistic Missile Defense, pp. 112-113.

<sup>39</sup>Adams, Ballistic Missile Defense, pp. 108-09; 113; Yanarella, Missile Defense, pp. 110-114. The McNamara quotation is from Adams, p.113.

The Army's efforts in 1965 to secure a decision for deployment of its BMD system were doomed when McNamara opposed them. Once again, there had been substantial progress in the ABM program, but McNamara still believed there were too many technical difficulties and problems with the deployment concept to permit a rational decision to deploy. If the nation began fielding a BMD system in FY 1966, changes caused by R&D advances would surely necessitate costly retooling and changes in production processes. His opposition was bolstered further by a comparison of various combinations of offensive and defensive systems to see which one would save the most lives per dollar of cost. He concluded that in 1965 no reasonably priced defense could reduce American casualties in a nuclear war much below eighty million. Therefore, it made no sense to invest in defenses in the mid-sixties because a better return on the dollar could be had by enhancing the ability of offensive forces to penetrate enemy defenses, thereby insuring deterrence through assured destruction. In his cost-effectiveness analysis, McNamara continued to insist that the cost of fielding an ABM system must include the cost of measures such as beefing up the nation's defense against bombers that would be required to insure that the Soviets did not simply flow around the missile defense system by expanding its bomber forces. As a result of McNamara's opposition, deployment of NIKE-X was deferred another year although the program received \$400 million for continued

development.<sup>40</sup>

**THE NTH-COUNTRY THREAT: AN EXPANDED MISSION FOR ABM**

In light of subsequent events, the most important development in 1965 for the history of the ABM was the consideration given to defending the U.S. against a possible ICBM attack from China, the so-called Nth-country threat. As originally conceived, NIKE-X was to defend cities and industrial areas against a heavy Soviet attack in the 1970s. However, after the Chinese exploded a nuclear device in October 1964, defense officials became increasingly concerned about a Chinese missile attack on the United States. This concern led to a series of studies examining how NIKE-X might be modified to cope with a light, unsophisticated attack such as that which China might be able to deliver in the 1970s. As a result of these studies, the concept for NIKE-X was expanded to provide for a general defense of the entire United States against the full spectrum of possible missile threats. McNamara was worried by the prospect of a Chinese missile attack. While he would not agree to deploy a full NIKE-X system oriented against a major Soviet attack in 1965, he would at least consider the deployment of a limited, Chinese-oriented BMD.<sup>41</sup> Two years later, McNamara would decide

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<sup>40</sup>Adams, Ballistic Missile Defense, pp. 108-110; Yanarella, Missile Defense, pp. 110-111.

<sup>41</sup>Bell, ABM Project History, pp. I-41, I-43, 2-10; Adams, Ballistic Missile Defense, p. 111; Yanarella, Missile Defense, pp. 113-114.

to deploy an ABM system to defend against an Nth-country attack.

The possibility that NIKE-X might be required to meet a number of different threats prompted DOD to consider a modular or building block approach to deployment of a missile defense. This would involve fielding a system that could be expanded or modified to meet other threats. Various forms of the modular system were discussed. One was a full configuration that combined a complete NIKE-X system (ZEUS and SPRINT missiles with appropriate radar systems) with a nation-wide fallout shelter program that could protect against a large and sophisticated attack. Another plan envisioned a partial system consisting of ZEUS missiles and a small number of SPRINTS with appropriate radar equipment to deal with a light ICBM attack such as one the Chinese might be able to deliver in the future. A third configuration would have been composed of ZEUS plus phased-array radar to cope with such things as the accidental firing of an ICBM.<sup>42</sup>

In 1966, a number of forces combined to preclude a decision to deploy NIKE-X. These included the high cost of the Vietnam war, which limited the availability of funding; opposition from the scientific community; apathy in Congress with regard to the fall-out shelters McNamara established as a

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<sup>42</sup>Adams, Ballistic Missile Defense, pp. 111-112, 115; Yanarella, Missile Defense, pp. 113-114.



concomitant to the deployment of a full BMD system; detente with the Soviet Union; and McNamara's own opposition. In defending his decision not to begin deployment this year, McNamara cited the high cost of a system (\$25 to \$30 billion), stated his belief that the Soviets could overcome such a system for much less money, indicated that there was uncertainty as to how deployment would affect the Soviets, and noted that no reasonably priced ABM system could reduce American casualties below the 50 million point. Although McNamara believed that the Chinese threat was not sufficiently developed to warrant deployment of an Nth-country system, he did note that such a system could be quite effective. An unopposed Chinese ICBM attack in the 1970s might inflict between six and twelve million casualties. A relatively simple defense deployed around some of America's cities and costing around \$8 billion could reduce the casualties by about 50%. A more extensive system costing around \$11 billion could reduce casualties to between 0 and 2 million.<sup>43</sup>

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<sup>43</sup>Adams, Ballistic Missile Defense, pp. 127, 130; Yanarella, Missile Defense, pp. 114-116. In 1966, Lockheed Missiles and Space Company undertook a review of missile defense prospects which included revisiting BAMBI (ballistic missile boost intercept). In this review, Lockheed engineers considered lifting NIKE-ZEUS type missiles into space using a Lockheed design for a space shuttle-like vehicle called Starclipper. When it appeared that this would require orbiting too much weight, the Lockheed engineers reviewed the possibility of placing lasers in orbit. Maxwell Hunter who was the leader of this review project said the idea of space-based lasers was rejected at this time because "it seemed to me that it would not be credible." However, Hunter went on to say, "now, I had a feeling for laser possibilities." (Maxwell W. Hunter, II, "Great Zeus!", 4 July 1987, personal paper, p. 6. Copy provided by Mr. Hunter.)

In recommending against the deployment of an ABM system in 1966, McNamara was again over-riding the advice of the Joint Chiefs of Staff (JCS). In 1965, the military's top leaders had wanted to start work on items in the NIKE-X program that would require long production lead-times and in 1966 supported the Army's request for \$188 million to begin work on these long lead time components. The opposition of the JCS to McNamara's position on the ABM and a growing feeling that "the Department of Defense did not have a proper sense of urgency in the field of the anti-ballistic missile defense system" led Congress to allocate funds for pre-production work on NIKE-X with the idea that this money could save as much as a year in the deployment process should the President decide to begin deployment later in FY 1967.<sup>44</sup>

Although this funding was approved by substantial majorities in the House and the Senate, the passage of the measure involved a debate prompted by a small but vocal opposition to BMD that had developed in Congress by 1966 and continued to grow stronger over the next few years. Among the arguments advanced by opponents of the pre-production funding measure was the belief that NIKE-X could be overwhelmed by a sophisticated ICBM attack. Furthermore, at a time when domestic spending was being restricted, it was inappropriate to begin a

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<sup>44</sup>Adams, Ballistic Missile Defense, pp. 128-32.

costly new defense program. Opponents also argued that deployment of a U.S. missile defense system would disrupt the strategic balance, provoke the Soviets to expand their forces, and cause an arms race. In the case of the arms race argument, Senator Stephen Young, an Ohio Democrat, argued that it was inconsistent for Congress to vote money for pre-production work on NIKE-X at the very time Adrian Fisher, Deputy Director of the U.S. Arms Control and Disarmament Agency, was proposing to the Eighteen Nation Disarmament Committee in Geneva that the U.S. and U.S.S.R. agree not to build ABM systems.<sup>45</sup>

Supporters of NIKE-X answered these challenges with arguments of their own. They placed little trust in the opposition's argument that the United States should not take measures to defend itself for fear that such actions would antagonize the Soviets. Their major concern was that the U.S. might fall behind the Soviets, and we could not afford to be "second best in defense."<sup>46</sup>

Furthermore, a number of threatening developments in the realm of strategic weaponry combined to strengthen the hand of those who advocated the fielding of an American ABM system. To resist the pressure created by these developments would have been political suicide, and not even McNamara could persuade Lyndon

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<sup>45</sup>Adams, Ballistic Missile Defense, pp. 130-34.

<sup>46</sup>Adams, Ballistic Missile Defense, pp. 132-34.

Johnson to take his own political life over the ABM issue. This forced McNamara to adopt a more subtle, indirect strategy in his efforts to prevent the deployment of an ABM system.

## Chapter II

### **ABM DEPLOYMENT: DECISION AND DEBATE**

I agreed with the conclusion that we should go forward with ABM. The decisive arguments in my view were both military and diplomatic. Soviet leaders and military theorists had never espoused the Western academic notions that vulnerability was desirable or that ABM was threatening and destabilizing. As Premier Kosygin declared at a London news conference in February 1967, an antiballistic missile system "is intended not for killing people but for saving human lives."

Henry Kissinger, White House Years, pp. 208.

[President Johnson became] "very frustrated . . . and said, 'Bob, for God's sake, you tell Kosygin what's wrong with their plan.' So I said, 'If you proceed with the antiballistic missile system deployment our response will not, should not be, to deploy a similar system . . . [O]ur response will be to expand our offensive weapons . . . The way to stop that is for both of us to agree today that we will engage in talks leading to a treaty that will prohibit deployment of antiballistic missile systems' . . . He absolutely exploded. The blood rose into his face, his veins swelled, he pounded the table and he said--he could barely talk he was so emotional--he said, 'Defense is moral, offense is immoral!' And he believed it."

Robert S. McNamara quoted in Newhouse, War and Peace in the Nuclear Age, p. 205.

### **ORIGINS OF THE SOVIET ABM PROGRAM**

By the end of 1966, four key events had occurred that strengthened the hand of those who favored deployment of an ABM system. Three of these events took place in China. In May, the Chinese set off a "nuclear explosion that contained

thermonuclear material'" and then in October 1966 launched a nuclear armed test missile that struck its target. About two months later on 28 December, the Chinese conducted another nuclear test. The fourth event occurred six weeks before the second Chinese nuclear explosion; McNamara reported that the Soviets were in the process of fielding an ABM system.<sup>1</sup>

The Soviets had begun basic research on ballistic missile defense right after World War II, in keeping with their practice of beginning work on countermeasures at the same time they start work on a new weapon. By about 1955, the Russians had initiated "specific BMD development programs." In the early 1960s, the Soviets carried out a series of high altitude nuclear detonations that were probably designed to test the effects of electromagnetic pulses on radar systems and determine the lethal radius of anti-ballistic missile warheads.<sup>2</sup>

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<sup>1</sup>Michael Getler, "Chinese Missile Shot Forcing Nike Choice," Technology Week, 7 November 1966, p. 13; Robert B. Semple, Jr., "McNamara Hints Soviet Deploys Antimissile Net," New York Times, 11 November 1966, pp. 1, 19; "China Announces It Has Exploded a Hydrogen Bomb," New York Times, 18 June 1967, p.1. Getler describes the debate over how long it would take to achieve IOC with the NIKE-X should a deployment decision be taken in 1967. The announcement by the Chinese that they had successfully tested a nuclear-tipped guided missile touched off the debate.

<sup>2</sup>David S. Yost, Soviet Ballistic Missile Defense and the Western Alliance (Cambridge, Mass.: Harvard University Press, 1988), pp. 25-26 (hereinafter cited as Yost, Soviet Ballistic Missile Defense).

The Soviet program was markedly different from that of the United States and caused concern that the Soviet Union might be advancing more rapidly toward an operational ABM system than was the United States. Whereas the United States attempted to infer the conditions of nuclear war from "more basic data," the Soviets actually sought to replicate the conditions of nuclear war and test their systems under these conditions. During one test series, the Soviets exploded nuclear devices at high altitudes on five consecutive days. Another major difference was in the philosophy of system development. The Soviets tended to move to rapid development and deployment of operational systems, knowing that there would be problems with the systems deployed, but expecting to use the knowledge gained from operating an imperfect system to develop a better follow-on system. On the other hand, Americans insist on high performance and effective operational capabilities before deploying a system. The result was that the Soviets were more likely to have at least some operational capability in the BMD area before the U.S. would field a system.<sup>3</sup>

By 1962, the Soviets had deployed about thirty GRIFFON surface-to-air missiles at Leningrad. This system is thought to have had a limited ABM capability against tactical ballistic missiles, but would have been of questionable value in dealing

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<sup>3</sup>Yost, Soviet Ballistic Missile Defense, p. 26.

with an ICBM attack. The system was operational for only a short time and was dismantled around 1964.<sup>4</sup>

The GRIFFON was followed in 1963 by the SA-5 which the Soviets began deploying in the so-called Tallinn Line, named after the capital city of Estonia. Like GRIFFON, the SA-5 had been born at the Soviet ABM development center at Shary Sagan and had at best only a limited capability against ballistic missiles. It is possible that the Tallinn Line was designed to intercept Polaris A-1 missiles, which because of their short range would probably have been launched in the Barents Sea and passed over Estonia enroute to targets in the western Soviet Union.<sup>5</sup>

In 1964, the Soviets displayed for the first time a nuclear-tipped interceptor missile which NATO designated GALOSH. The range of these missiles has been estimated as two hundred miles. Original plans seem to have called for 128 launchers to be installed in a ring about forty miles from the heart of Moscow. Apparently, because of limitations with the radars associated with GALOSH and other restrictions in the system, these plans were scaled back in 1968 to where only 64 launchers were deployed.<sup>6</sup>

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<sup>4</sup>Yost, Soviet Ballistic Missile Defense, p. 27.

<sup>5</sup>Yost, Soviet Ballistic Missile Defense, pp. 27-28. Since these missiles do not appear to have been armed with nuclear warheads, there is a serious question about their effectiveness in the BMD role.

<sup>6</sup>Yost, Soviet Ballistic Missile Defense, pp. 28-29.



## THE POLITICS OF ABM DEPLOYMENT

It was the deployment of the GALOSH that McNamara announced to the American people on 10 November 1966. In announcing the Soviet deployment, McNamara sought to head off pressure from Congress to field an American defense. Had Congressmen discovered the Soviet deployment before McNamara's announcement, they could have gone to the public first with a proposal that the U.S. field an ABM. However, the Defense Secretary's revelation gave him the initiative, and he used it to further his position that the appropriate American response was to improve its offensive missiles to insure they could penetrate the Soviet ABM system.<sup>7</sup>

In spite of McNamara's best effort to prevent the deployment of an American ABM, the political pressure against his position had reached the point in late 1966 where President Johnson was no longer willing simply to rubber stamp the recommendations of his Secretary of Defense. Johnson remained more interested in domestic affairs than in defense, but he also recognized that BMD was an important issue. He knew that it inspired intense feelings in others and was bothered himself by

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<sup>7</sup>William Beecher, "The Antimissile Issue," New York Times, 11 November 1966, p. 19.

the prospect of a possible Chinese missile attack on the U.S. The president also seems to have been influenced on the ABM issue by several former colleagues in the Senate--Henry Jackson, John Stennis, and Richard Russell. Furthermore, Johnson was impressed by the fact that the JCS favored deployment of a defensive missile system. To all of this should be added President Johnson's realization that in the approaching election the Republicans might well make an issue out of defense and that the ABM was becoming a symbol of defense preparedness. Furthermore, at this point, McNamara's efforts to influence Johnson on the ABM issue were complicated by the strained relationship between the two men that resulted from disagreements over policies in Vietnam, especially those governing the bombing of North Vietnam.<sup>8</sup> For McNamara to continue controlling events in the area of missile defense would require tremendous powers of persuasion and a shrewd strategy.

Lyndon Johnson was a very capable politician. When it came to decisions on controversial matters, he sought compromises to limit the political damage that might arise from the decision. To keep from having to deploy an ABM system, McNamara would have to offer the president an acceptable compromise. In November 1966, McNamara and the Chiefs of Staff went to Texas to review

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<sup>8</sup>Halperin, "Decision to Deploy," pp. 74-76; Yanarella, Missile Defense, pp. 123-25, 136-37, 141.

with President Johnson the military budget that Johnson would submit to Congress in January 1967. The Chiefs unanimously agreed that funds for the development and deployment of a BMD system should be included in the FY 1967 budget. McNamara opposed them, but realized that this left Johnson in a difficult position. Therefore, McNamara proposed a compromise: Johnson should invite the Soviets to begin arms control talks while calling for money in the FY 1967 budget that could be used for deployment if the effort to start negotiations with the Soviets failed. This appealed to Johnson's sense of history: he might be recalled as the president who started talks that eventually ended the nuclear arms race. It also meant that the ABM deployment might be delayed indefinitely and perhaps never occur. At the same time, this course of action indicated to supporters of the ABM that the president would begin deployment if the talks failed to materialize. Here was a position that both friend and foe of ABM would have trouble opposing.<sup>9</sup>

The campaign orchestrated by McNamara started in December 1966 when Secretary of State Dean Rusk expressed his hope that the superpowers could agree not to deploy ABM systems and to stop the arms race. The following month, in his State of the Union

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<sup>9</sup>Michael Charlton, The Star Wars History: From Deterrence to Defence: The American Strategic Debate (London: BBC Publications, 1986), p. 4 (hereinafter cited as Charlton, Star Wars History); Halperin, "Decision to Deploy," pp. 76, 83-86, 91; Yanarella, Missile Defense, p. 126.

address, President Johnson indicated that he would pursue an agreement with the Soviets to stop ABM deployments. In his budget message of the same month, he also called for Congress to appropriate \$375 million for the deployment of a missile defense system in case negotiations with the Soviets failed.<sup>10</sup>

To further strengthen his position with the president, on January 23 McNamara convened a meeting at the White House of former and current scientific and technical advisors to the president and current and past directors of research and engineering (DDR&E) in DOD. Also present were the chiefs of the armed services. None of the scientists present seemed to disagree with the position put forward by McNamara that a defense against Soviet missiles would not work and should not be built. Although McNamara later claimed unanimous support for his position, the unanimity was achieved through finesse. McNamara "studiously" avoided asking for the opinion of the current DDR&D, Dr. John S. Foster, Jr., who was present and believed in the feasibility of ABM. Foster's silence was taken as concurrence with the other scientific and technical advisors.<sup>11</sup>

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<sup>10</sup>Halperin, "Decision to Deploy," pp. 64-65; Adams, Ballistic Missile Defense, p. 145; Yanarella, Missile Defense, p. 118.

<sup>11</sup>Halperin, "Decision to Deploy," p. 85; Yanarella, Missile Defense, pp. 124-25, 216 (n.7); John Newhouse, Cold Dawn: The Story of SALT (New York: Holt, Rinehart and Winston, 1973), pp. 67, 89; Herbert York, Race to Oblivion: A Participant's View of the Arms Race (New York: Simon and Schuster, 1970), pp. 194-95. McNamara claimed that this group unanimously agreed that an ABM would not work in his 18 September 1967 San Francisco speech in which he announced the U.S. would deploy a thin ABM system against China (Robert S. McNamara, "Text of McNamara Speech on

In February and March, McNamara made it clear that he still opposed any BMD deployment. With regard to a light system oriented against the Chinese, he pointed out that the technology bases of the two countries was the factor that should control deployment. An austere BMD system costing about \$3.5 billion could be deployed by the United States in a period of time shorter than that required by the Chinese to deploy an ICBM force. By constantly up-dating this light ABM force, the U.S. could protect itself from a Chinese attack well beyond 1985. Since the U.S. could deploy an ABM system faster than the Chinese could field their ICBMs, there was no reason to begin an ABM deployment oriented against the Chinese until they began to deploy their ICBMs.<sup>12</sup>

McNamara's arguments against a Soviet-oriented system were couched in terms of his concept of deterrence. The greatest threat to U.S. security was not a Soviet ABM system, but the

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Anti-China Missile Defense and U.S. Nuclear Strategy," New York Times, 19 September 1967, p. 18 (hereinafter cited as McNamara, "Anti-China Missile Defense"). According to Gregg Herken, Counsels of War, expanded ed. (New York: Oxford University Press, 1987), p. 198, a majority of the science advisers at the January 23 meeting "specifically opposed the idea of a limited ABM system to counter the yet-to-appear missile threat from China." Herken also noted that the political motivation behind the SENTINEL deployment decision led Richard Garwin to charge that SENTINEL was an "anti-Republican" system rather than an "anti-Chinese" one.

<sup>12</sup>Adams, Ballistic Missile Defense, p. 152; Yanarella, Missile Defense, pp. 129-30.

deployment of an extensive and effective Soviet ABM system coupled with the acquisition of a hard-target kill capability by the Soviet ICBM fleet. This combination could undermine the U.S. ability to deter a Soviet nuclear attack, for it would allow the Soviets to threaten the U.S. MINUTEMAN force and raise questions about the ability of U.S. residual forces to penetrate Soviet defenses after a Soviet first strike.<sup>13</sup>

Certainly, in McNamara's view, the answer to this challenge was not an American ABM. Should the U.S. decide to deploy a BMD, the Soviets could overcome it with changes in their offensive forces that would cost roughly one fourth as much as the American defensive system. In the end, the superpowers would wind up with a new set of defensive weapons, more sophisticated offensive weapons, and no improvement in security on either side.<sup>14</sup>

Rather than deploy a costly ABM system that could be cheaply overcome by the Soviets, the U.S. should improve the assured destruction capabilities of its offensive strategic forces. Such measures would off-set the Soviet ABM system at a fraction of its cost to the Soviets. Indeed, McNamara pointed out that his department already had initiated measures the year before to offset possible threatening developments in the Soviet

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<sup>13</sup>Yanarella, Missile Defense Controversy, pp. 126-28.

<sup>14</sup>Yanarella, Missile Defense, pp. 128-29.

strategic force structure. These included accelerating the deployment of the new POSEIDON submarine-launched ballistic missile (SLBM), a decision to expand the percentage of the MINUTEMAN force composed of MINUTEMAN III missiles, and improvements in penetration aids. To prepare further for the expected Soviet threat, McNamara asked Congress for funds in FY 1968 to continue those actions started the previous year. In addition, he also asked for funding to develop a new re-entry vehicle designed specifically to strike targets defended by ABMs.<sup>15</sup>

Regardless of how sound these arguments against an ABM deployment might be, they had little effect on the Soviets, whose attitude toward ABMs was one of the biggest problems McNamara faced in his campaign to keep the U.S. from fielding a missile defense. The Soviets simply were not interested in foregoing a BMD deployment. While in London during February 1967, Premier Aleksei N. Kosygin responded to questions at a press conference. He answered one question with these words:

Which weapons should be regarded as a tension factor-- offensive or defensive weapons? I think that a defensive system, which prevents attack, is not a cause of the arms race but represents a factor preventing the death of people. Some persons reason thus: Which is cheaper, to have offensive weapons that destroy cities and entire states or to have defensive weapons that can prevent this destruction? At present the theory is current in some places that one should develop whichever system is cheaper. Such 'theoreticians'

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<sup>15</sup>Yanarella, Missile Defense, pp. 126-28.

argue also about how much it costs to kill a person--\$500,000 or \$100,000? An antimissile system may cost more than an offensive one, but it is intended not for killing people but for saving human lives.<sup>16</sup>

In June 1967, Kosygin and Johnson met at Glassboro, New Jersey, for top level discussions of nuclear arms issues. As the two lunched, McNamara briefed them on nuclear strategy and emphasized the importance of an agreement on ABM. Premier Kosygin rejected McNamara's views and argued that BMD was "defensive and unobjectionable." Clearly, there would be no superpower talks before Johnson faced the nation with his next budget message.<sup>17</sup>

The Soviets were not the only ones to prove unmanageable. About a week before the Glassboro summit, the Chinese surprised both the U.S. and the U.S.S.R. by announcing they had detonated a hydrogen bomb. This event immediately gave rise to speculation that there would be increased pressure on the Johnson administration to deploy an ABM system against the Chinese.<sup>18</sup> Given the uncooperative nature of the Soviets, the growing concerns about Chinese abilities and intentions, and the

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<sup>16</sup>Quoted in Adams, Ballistic Missile Defense, p. 154.

<sup>17</sup>Halperin, "Decision to Deploy," p. 87; Adams, Ballistic Missile Defense, p.158.

<sup>18</sup>"China Announces It Has Exploded a Hydrogen Bomb," New York Times, 18 June 1967, pp. 1, 3; McCandlish Phillips, "Kosygin Takes a Walk . . .," New York Times, 18 June 1967, p. 1; William Beecher, "Pressure in U.S. for Defense Seen," New York Times, 18 June 1967, p. 2.



commitment Johnson had made in January, the time for a deployment decision was obviously at hand.

Still, Johnson had grounds for seeking a compromise. For one thing, he wanted to maintain good relations with his powerful defense secretary who still opposed an ABM deployment. Furthermore, he did not wish to begin fielding a costly, ineffective ABM system with a national election approaching. Thus, the president accepted a limited deployment against China and agreed to allow McNamara to announce the deployment as he saw fit, provided the announcement could be taken by ABM supporters as an indication that the deployment was a first step in the fielding of a full-fledged system that ultimately would protect the country against a Soviet attack.<sup>19</sup>

For his part, McNamara had concluded several years earlier that he might be forced to deploy a BMD and had "begun laying the groundwork for a fall-back position in the form of a small ABM system directed against China." Now he could use his "China card" to head off a deployment against the Soviet Union which he believed would add nothing to U.S. security while touching off an upward spiral in the nuclear arms race.<sup>20</sup>

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<sup>19</sup>Halperin, "Decision to Deploy," p. 87.

<sup>20</sup>Halperin, "Decision to Deploy," pp. 87-88; Yanarella, Missile Defense, pp. 129, 140.

McNamara's strategy explains the opening of the September 1967 speech in which he announced the Johnson administration's decision to deploy an ABM against China. He began by lecturing the American people and the Soviet Union on the basics of nuclear strategy, pointing out that neither the Soviet Union nor the United States possessed a first strike capability. Furthermore, such a capability was not within the grasp of either superpower, for there were always things a nation could do to insure it had a sufficiently strong second strike capability to assure destruction of a nuclear aggressor's society. Based on worst case analysis, both the U.S. and the Soviet Union had over-built their forces in an effort to insure the survival of a second strike capability. Because of this situation, neither side needed to build a missile defense system; rather, both sides needed to negotiate a treaty that would immediately limit and eventually restrict "offensive and defensive strategic nuclear forces."<sup>21</sup>

McNamara was well over half way through his speech when he turned to the Soviet deployment of an ABM system and spoke to the American people about the need to "react intelligently" to this Soviet action. The American reaction must be based on the understanding that a Soviet ABM deployment changed nothing in the deterrence equation. The United States was already taking

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<sup>21</sup>McNamara, "Anti-China Missile Defense," p. 18.

actions that would offset any gains the Soviets might achieve with an operational ABM. The U.S. second strike force was still secure and would be capable of performing its assured destruction mission. Nor should the U.S. deploy an ABM in the hope of defending the nation, for such a defense simply would not work as a distinguished group of scientists and technical advisors had unanimously agreed. Contrary to what was being said, McNamara continued, it was the ineffectiveness of any ABM system the United States could deploy at this time, not its \$40 billion price tag, that made McNamara oppose it.<sup>22</sup>

As he continued discussing the appropriateness of the offensive response to a deployed ABM system, McNamara seemed now to be speaking to the Soviets, pointing out the futility of their defensive efforts and assuring them that the U.S. response to their ABM would not be an American ABM. In this way McNamara hoped to assure the Soviets that the ABM deployment he was about to announce was not aimed at them and to persuade them that they need not expand their ICBM fleet to compensate for the American BMD. To further assuage the Soviets, McNamara would later insist on a new designation for the nation's anti-ballistic missile system. On 4 November, he announced that the system would be

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<sup>22</sup>McNamara, "Anti-China Missile Defense," p. 18. For information on the "unanimous" agreement of the group of scientists and technical advisors, see discussion of McNamara's 23 January 1967 meeting above.

called SENTINEL, with the designation NIKE-X retained for the research portion of the nation's BMD effort.<sup>23</sup>

By the time McNamara finally began to talk about the Chinese threat and a possible U.S. response, his audience must have been convinced that the United States was not about to deploy an ABM system of any kind. It must have been a considerable surprise when he began to weave the logic for a deployment aimed at a possible Chinese ICBM threat. The situation with regard to China was different than that with the Soviet Union, McNamara said. Clearly, for the foreseeable future the Chinese could develop only a relatively small force of unsophisticated ICBMs. Against such a force, even a thin ABM system would be effective. Furthermore, there were grounds for concern with regard to what the Chinese intended to do with any nuclear force they might develop. They might in fact be able to launch a nuclear attack on the United States in the mid-seventies. Therefore, as McNamara put it: "there are marginal grounds for concluding that a light deployment of U.S. A.B.M.s against this possibility is prudent."<sup>24</sup>

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<sup>23</sup>"U.S. Missile Defense Is Renamed Sentinel," New York Times, 5 November 1967, p. 84; Yanarella, Missile Defense, pp. 140-41; Halperin, "Decision to Deploy," pp. 87-88.

<sup>24</sup>McNamara, "Anti-China Missile Defense," p. 18.

In addition to protecting against a Chinese attack, this light ABM system would provide some secondary benefits. For one thing, it could be used to protect U.S. MINUTEMAN missile fields and in this way would enhance the U.S. ability to deter a nuclear attack by the Soviets. It could also be used to provide protection against a possible accidental launch of an ICBM. Because of these benefits and the protection the thin ABM system would provide against a Chinese attack, McNamara announced that the U.S. would begin deployment of a thin system at the end of 1967.<sup>25</sup>

However, the announcement of this decision was not McNamara's final comment. That was reserved for a warning against allowing the deployment of a thin ABM system to lead to the thought of expanding it against the Soviets and thus further fueling the nuclear arms race.<sup>26</sup>

Clearly, McNamara's heart was not in the decision to field an ABM system. Twenty years after his San Francisco speech, he stated that he would not change a single word in the first eighty percent of the speech which stated why an ABM system aimed at the Soviet threat was unnecessary and constitutes "one of the best statements of the irrationality of anti-ballistic missile deployment that has ever been made." On the other hand,

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<sup>25</sup>McNamara, "Anti-China Missile Defense," pp. 18-19.

<sup>26</sup>McNamara, "Anti-China Missile Defense," p. 19.

he was not pleased with the last part of the speech which called for fielding a BMD system against China. This portion, he said, "I would like to scrap and remove from the records. . . . The only reason that was in there was . . . to recognize the political pressure and the fact that the Congress had authorized such a system, appropriated funds for it, and was pushing unmercifully to deploy not the thin system but a thick system."<sup>27</sup>

McNamara's announcement of the deployment decision did not mean that he had abandoned his opposition to the deployment of a BMD or that the Johnson administration had given up on arms control. In late November 1967, McNamara's departure from the Pentagon was announced. In his last posture statement, he continued his efforts to see that the Soviets understood that SENTINEL was not aimed at them. He stressed the importance of offensive forces as the key to deterrence and indicated that a SENTINEL system operating against a Soviet attack could not reduce American casualties below 100 million unless the U.S. launched a pre-emptive strike. Furthermore, McNamara, as well as Assistant Secretary of Defense Paul Warnke, indicated that the Chinese ICBM program was a year behind what had been expected, thereby making the deployment of SENTINEL seem less urgent. Warnke's testimony, at least, was used to bolster a Congressional measure to halt deployment. This anti-ABM effort continued

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<sup>27</sup>Nova, "Visions of Star Wars," Transcript, p. 13.

throughout the summer and into the fall and was supported by members of the scientific community.<sup>28</sup>

Throughout 1968, members of the administration continued to insist that it was in the interest of both the U.S. and the U.S.S.R. to agree on restrictions on offensive and defensive strategic arms. On 1 July 1968 Johnson signed the Treaty on the Nonproliferation of Nuclear Weapons and announced that the Soviets and Americans had agreed to begin strategic arms limitation talks (SALT). A summit conference was scheduled for 30 September to begin the SALT negotiations, but was cancelled because of the Soviet invasion of Czechoslovakia on 20 August. Nevertheless, the Johnson government continued working on a proposal for the SALT negotiations and in late October announced that the SALT meetings were so important that they would have to take place in spite of the Soviet invasion. Soon after Richard Nixon was elected president in November 1968, the Soviets responded positively to the U.S. request to continue talks. When Nixon indicated that he would not be bound by the agreements of the Johnson administration, the Soviets withdrew their acceptance of the invitation to continue the strategic arms talks.<sup>29</sup>

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<sup>28</sup>Adams, Ballistic Missile Defense, pp. 180-186.

<sup>29</sup>Yanarella, Missile Defense, p. 143; Powaski, March to Armageddon, pp. 123-26.

As the Johnson administration was ending, an important change was occurring with regard to the Army's attitude toward ballistic missile defense. Throughout McNamara's tenure as secretary of defense, the Army had been the major sponsor of the ABM both within the military bureaucracy and on Capitol Hill. However, by the end of the Johnson administration, Army enthusiasm for BMD had waned considerably. For one thing, a considerable amount of the Army's energy was being absorbed by the war in Vietnam. Furthermore, DOD now adhered to a more diverse strategy in which limited and conventional warfare was accorded a higher priority. The change in strategy, combined with the Army's heavy role in Vietnam, meant that the Army no longer needed a role in strategic deterrence to insure that it received its share of the Defense budget. Thus, the Army was disposed to accept McNamara's decision to deploy only a thin ABM system.<sup>30</sup> This decline in Army support came on the eve of a critical national debate on ballistic missile defense and boded ill for the future of America's ABM program.

#### SENTINEL BECOMES SAFEGUARD

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<sup>30</sup>Yanarella, Missile Defense, pp. 131-32.



After Nixon's election, the SENTINEL system entered the national limelight again. This time, the issue concerned Army plans for locating missile units near major metropolitan areas. The prospect of having nuclear tipped missiles near their homes caused considerable concern among residents of the areas involved. This issue had first arisen in September during a Congressional debate when Representative Thomas Pelly (R-Washington) noted that the Army, contrary to its promises, was planning to locate an ABM site within a mile of Seattle. Pelly pointed out that this was unacceptable to the citizens of that city. Toward the end of 1968, the matter of locating defensive missiles near cities surfaced again. This time, Detroit and Chicago were involved. The opposition in Chicago was led by five scientists who formed the West Suburban Concerned Scientists Group. They argued that the deployment near Chicago would make this city a target for Soviet ICBMs. Furthermore, they stated that there was considerable danger that a missile might explode accidentally or that a missile's nuclear warhead might detonate prematurely in case the missiles were fired at attacking enemy warheads. Issues of national priorities (defense versus domestic programs) and the technical feasibility of SENTINEL were also raised in this debate.<sup>31</sup>

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<sup>31</sup>Yanarella, Missile Defense, p. 149; Adams, Ballistic Missile Defense, pp. 185-87. For an excellent discussion of the opposition to SENTINEL and SAFEGUARD, especially the opposition in the Boston area where the first two of seventeen SENTINEL sites were to be built, see Mary D. Anderson, Annual Historical Summary of SAFEGUARD System Command (U) (1 July 1968-30 June 1969) (RCS CSHIS-6 [R2]), Vol. I, Narrative, 31 October 1968, pp.

The controversy continued as Nixon was inaugurated and virtually assured that the new administration would review the SENTINEL decision before proceeding with deployment. The likelihood of such a review occurring was increased by a Soviet offer, made on the day of Nixon's inauguration, to begin serious discussions of strategic arms limitations. On 6 February 1969, Secretary of Defense Melvin Laird halted the SENTINEL deployment pending completion of a review of America's strategic programs.<sup>32</sup>

This review itself was actually initiated on 20 January when Secretary Laird directed Mr. David R. Packard, deputy secretary of defense, to undertake two very broad studies: one looked at the overall Pentagon budget and the other examined the status of the U.S. strategic force structure. It was almost natural that Packard's work would force him into a review of the \$1.8 billion SENTINEL program.<sup>33</sup>

On 20 February, after four weeks of intense study, Packard briefed the president on his findings with regard to ballistic missile defense. He presented four options, but made no recommendations. First, the nation could deploy a "thick"

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244-280.

<sup>32</sup>Adams, Ballistic Missile Defense, pp. 187-91; Yanarella, Missile Defense, p. 144.

<sup>33</sup>Robert B. Semple, Jr., "Nixon Staff Had Central Role in Missile Decision," New York Times, 19 March 1969, p. 22 (hereinafter cited as Semple, "Missile Decision").

system in which a combination of long- and short-range ABM's would be used to protect the twenty-five largest cities in the country. A second option would be to field the "thin" system that would protect only fifteen U.S. cities; this was the SENTINEL system chosen by the Johnson administration. The third option would involve a system known in the Pentagon as I-69 which would be essentially the SENTINEL system deployed to protect ICBM fields as opposed to cities. The final option was not to build an ABM system at all. Nixon directed Packard to study all four options in greater detail.<sup>34</sup>

Soon after his meeting with Packard, Nixon left for an eight-day tour of Europe where he planned to consult with European leaders prior to beginning negotiations with the Soviets. During this trip, the ABM issue was never far from his mind. He was already leaning toward the I-69 plan primarily because he was concerned by the recent buildup of Soviet offensive strategic forces and the extensive ABM system that the Soviets seemed to be deploying. An American missile defense system could help preserve or restore the strategic balance that was being lost. Furthermore, building a missile defense around our ICBMs, Nixon thought, was the option least likely to be construed by the Soviets as provocative.<sup>35</sup>

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<sup>34</sup>Semple, "Missile Decision," p. 22.

<sup>35</sup>Semple, "Missile Decision," p. 22; Richard Nixon, Memoirs of Richard Nixon (New York: Grosset & Dunlap, 1978), p. 370 (hereinafter cited as Nixon, Memoirs).

Nixon returned from Europe on 2 March. Three days later, Packard presented his findings to the president. Strongly favoring the I-69 deployment option, Packard supported his recommendation with arguments similar to views already entertained by the president. These arguments were summarized in a forty-page briefing book prepared for the president by his national security advisor, Henry Kissinger, who also played an important role in the final missile defense decision. Also included in the book were the arguments against the I-69 deployment which had been drawn up at Kissinger's direction by Mr. Laurence Lynn of the NSC staff. On the weekend of 8-9 March, Mr. Nixon took this briefing book with him to Key Biscayne where he read the book and decided to deploy a modified SENTINEL system (the I-69 plan).<sup>36</sup>

Having taken this basic decision, Nixon faced the next issues: the timing and method of deployment. These matters were decided after the president returned to Washington on Monday evening. One option supported by members of the academic community and some in Congress was to delay deployment in favor of more research. Nixon rejected this possibility, for he believed that the nation's missile defense effort had progressed as far as it could in the research and development mode; only through a deployment and the actual operation of ABM facilities

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<sup>36</sup>Semple, "Missile Decision," p. 22.

could the program be further advanced. The option selected by Nixon called for the deployment of missile defenses at twelve sites, including one at Washington, D.C., which would protect the national command authorities (NCA). These defenses were to be established through a phased deployment program that would cost only \$800 to \$900 million the first year. This funding level would permit R&D to continue, while allowing construction to begin at two phase I sites, Malmstrom and Grand Forks Air Force Bases, where the ABMs would protect ICBM fields. The need to construct the ten remaining sites would be reviewed each year by the President's Foreign Intelligence Advisory Board. These additional sites, if and when constructed, were to expand protection for the MINUTEMAN force and provide a defense against a Chinese missile attack or an accidental missile launch. Furthermore, this expanded system could become the basis for a further expansion of the system to one that could provide some protection against Soviet ICBMs. Nixon announced his decision on 14 March 1969. The new system was to be called SAFEGUARD.<sup>37</sup>

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<sup>37</sup> Semple, "Missile Decision," p. 22; Bell Labs, ABM Project History, p. I-46; Adams, Ballistic Missile Defense, p. 200; Henry Kissinger, White House Years (Boston: Little, Brown and Company, 1979), p. 209 (hereinafter cited as Kissinger, White House Years). For an account of the how the SAFEGUARD name was selected, see Yanarella, Missile Defense, pp. 173-74.

Nixon's ABM decision was consistent with his concept of nuclear sufficiency which held that the U.S. should possess a strategic force structure that was sufficient "to deny other countries the ability to impose their will on the United States and its allies under the weight of strategic military superiority." This concept represented a compromise between those who favored nuclear superiority and those who supported mutual assured destruction. Like those who favored strategic superiority, Nixon was unwilling to grant the Soviets a clear, unopposed advantage in any one area of strategic weaponry. Thus, the Soviet deployment of an ABM system was a challenge to be answered by the fielding of an American system. On the other hand, like the advocates of offense nuclear deterrence, Nixon recognized the need to establish a stable balance between the American and Soviet strategic force structures. An ABM system deployed to defend missiles and not cities should not alarm the Soviets, for it would be seen by the Soviets as an effort to protect America's second strike retaliatory force from a Soviet first strike and not as an effort to protect U.S. cities from a weak second strike attack by Soviet rockets that might survive an American first strike.<sup>38</sup>

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<sup>38</sup>Yanarella, Missile Defense, pp. 174-75. The Nixon quotation is found on p. 175.

Additionally, Nixon's SAFEGUARD had two strong political advantages over the SENTINEL. First, by moving the defensive missiles and their nuclear warheads away from populated areas, it eliminated one of the major objections to Johnson's missile system. Moreover, in moving away from a program designed to defend a limited number of U.S. cities, it avoided the impossible political decision of which cities to defend.<sup>39</sup>

#### THE ABM DEBATE OF 1969

In spite of its advantages, Nixon's SAFEGUARD did not silence the opposition which had been working feverishly to turn Laird's temporary halt of the deployment into a permanent one. Not only had there been hostile hearings in Congress, but the academic-scientific community had been mobilizing its resources against deployment. Included in the efforts of this group was a letter writing campaign that grew out of a "national strike" against the misuse of science and technology for military purposes. For the opponents, SAFEGUARD had become the symbol of all that they disliked about U.S. defense policies from Vietnam and cost over-runs to what they perceived as a nuclear arms race. This meant that the fight for deployment would be difficult.<sup>40</sup>

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<sup>39</sup>Adams, Ballistic Missile Defense, p. 157; Yanarella, Missile Defense, p. 145.

<sup>40</sup>Adams, Ballistic Missile Defense, p. 203; Yanarella, Missile Defense, pp. 144-45. For more details of the opposition to SENTINEL, see pp. 149-61.

Although Nixon was later drawn into the battle for deployment of an ABM, during the first months following the announcement of his decision, he left it to Secretary Laird and other Defense officials to win Congressional approval for SAFEGUARD. It soon became apparent that while members of the House had more or less accepted the president's decision, there was strong opposition to the program among liberal Senators and members of the Senate Foreign Relations Committee.<sup>41</sup>

The division in the Senate in 1969 was a mirror of a nation that was confused and divided with regard to the ABM issue. Four years earlier, a survey had revealed that two out of three Americans believed the U.S. already had a missile defense. In April 1969, another poll showed that only 47% favored deployment of an ABM, while 26% opposed it, and 27% were undecided. Another poll released somewhat later showed that 84% of all Americans thought the U.S. should have a missile defense. A Gallup poll in July showed that 58% of the people were uninformed or undecided about the deployment of an ABM and only 23% favored it. Other manifestations of this division were the stances for and against deployment that were taken by established organizations and the substantial number of ad hoc groups formed either to oppose or support SAFEGUARD. Those who opposed the

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<sup>41</sup>Adams, Ballistic Missile Defense, p. 200; Yanarell, Missile Defense, pp. 176-77.



system tended to believe that SAFEGUARD would not work and was not needed, while those who supported it believed that we had to keep up with the Soviets, that the protection was needed, and that the nation should trust the president's judgment.<sup>42</sup>

Among the leading opponents of SAFEGUARD was New York publisher Cass Canfield who raised money for a lobbying effort in Congress. The list of those he recruited in support of his cause "read like a Who's Who of the liberal intelligentsia." Among the leading lights of this group were Jerome Wiesner, president of M.I.T. and erstwhile science advisor to John Kennedy, and Hans Bethe, a Noble laureate in physics.<sup>43</sup>

One of the most important groups supporting SAFEGUARD was the Committee to Maintain a Prudent Defense Policy, established through the initiative of Paul Nitze and Dean Acheson. To Nitze, the scientists who opposed SAFEGUARD were not thinking precisely about the issues involved and were caught up in fashionable, erroneous attitudes toward nuclear weapons. They were making their judgments based upon what they believed should happen rather than what could happen. The spade work of the committee was done by four young analysts: Peter Wilson, Paul Wolfowitz,

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<sup>42</sup>Adams, Ballistic Missile Defense, pp. 208-10, 213, 215, 217-18; Yanarell, Missile Defense, p. 146. The established organizations opposed to BMD were frequently scientific and academic associations.

<sup>43</sup>Talbott, Master of the Game, p. 112.

Richard Perle, and Edward Luttwak. Nitze would later brag that "with these fellows and only fifteen thousand dollars, half of which came out of my own pocket, we ran circles around Cass Canfield, his millions, and all his big-name experts."<sup>44</sup>

Throughout the spring and into the summer, the national discussion of SAFEGUARD intensified. The Defense Department was accused of altering data, keeping information from Congress, and basing its analysis of BMD on worst case scenarios. In early May a Congressional report that was hostile to SAFEGUARD was published by Senator Edward Kennedy (D-Massachusetts) who in February had hired a private committee headed by Jerome Wiesner and Abram Chayes to review the issue of ABM deployment. The report argued that missile defense was neither feasible nor desirable; it was answered promptly by a DOD rebuttal that attacked the report for inadequate methodology, numerous factual errors, and faulty conclusions. There was also a major dispute between Secretary of Defense Laird and the Director of the CIA Richard Helms. Laird held that the Soviets were attempting to achieve a first strike capability, and Helms disagreed. Secret senate hearings, it was later revealed, showed that both men were concerned about the Soviet threat. The difference between DOD

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<sup>44</sup>Talbott, Master of the Game, pp. 112-13. The first three of these young men were known as the "three musketeers" and were proteges of Albert Wohlstetter, a leading defense analyst who had been at RAND during its early days.

and CIA concerned whether the Soviets would continue their strategic buildup into the 1970s and whether they could do the things Laird suggested they would do in modifying their strategic force structure.<sup>45</sup>

On 27 June the Senate Armed Services Committee approved the appropriation bill for the armed services that contained funds for SAFEGUARD. However, the vote of ten to seven reflected disagreement over the bill's \$345.5 million for ABM deployment and was an ominous sign for SAFEGUARD proponents, for the committee normally sent such bills to the floor with unanimous approval. As Senator John Stennis (D-Mississippi) prepared to take the bill into the debate of the full Senate, one of his aides took a quick head-count of senators: fifty favored and fifty opposed SAFEGUARD. No wonder Stennis declared at this moment: "I feel like I'm going off to war."<sup>46</sup>

Stennis' committee had been conducting hearings for months, and as the bill emerged, the committee's report presented the arguments that had been advanced by both sides in the ABM battle. Among the reasons presented in favor of SAFEGUARD was an apparent drive by the Soviets to achieve a first strike capability. Unless the United States acted expeditiously,

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<sup>45</sup>Adams, Ballistic Missile Defense, pp. 192, 208-15.

<sup>46</sup>"The Scale Tips against the ABM," Newsweek, 21 July 1969, p. 25.

developments in the Soviet strategic force structure would threaten all three legs of the American strategic TRIAD by the mid-1970s. Moreover, actions other than SAFEGUARD that the nation might take to off-set enhancements of Soviet nuclear forces could be more destabilizing and lead to an escalation in the arms race. Finally, since President Nixon was about to begin strategic arms talks with the Soviets, a decision to begin deployment of an ABM could strengthen his hand in these negotiations.<sup>47</sup>

On the other hand, the minority view argued in the main that SAFEGUARD could not be effective. In addition to its extreme complexity, which raised questions about whether or not it would work, the radar element of the system was extremely vulnerable to nuclear attack. Furthermore, the Soviets could easily overwhelm the proposed BMD with relatively simple changes in their nuclear force structure such as increasing the number of SS-9 missiles. And finally, the opponents observed that there were just too many demands on U.S. resources to waste money on a system that would not improve U.S. security.<sup>48</sup>

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<sup>47</sup>"Safeguard: Pro and Con," Newsweek, pp. 26-27. Even Senator Aiken, who eventually voted against deployment, recognized that President Nixon needed a strong Senate vote behind him as he began negotiations with the Soviets. ("The ABM: Winners and Losers," Washington Post, 7 August 1969, p. A16.)

<sup>48</sup>"Safeguard: Pro and Con," Newsweek, p. 27.

The critical debate on SAFEGUARD got under way on 9 July when the Defense authorization bill was laid before the Senate. Margaret Chase Smith (R-Maine) began these deliberations by delivering a general introductory statement that was used by other senators as a basis for their own remarks. The first to speak specifically about ABM during this session was Senator Albert Gore (D-Tennessee). Alluding to Smith's earlier comments, Gore stated that the basis of deterrence is offensive power, and ABM did not fit that paradigm. The Soviets, he maintained, would no more fear our ABM than we would theirs.<sup>49</sup>

Somewhat later, Senator Henry Jackson (D-Washington) delivered a longer speech in favor of ABM. After reviewing the make up of the Soviet leadership as part of the Soviet threat, Jackson discussed the Soviet progress in deploying its GALOSH ABM and described new developments in the Soviet ABM system. He then explained what Nixon's ABM system was to do and answered criticism of ABM advanced by the opposition. Against those who proposed offensive answers to the emerging Soviet threat, Jackson argued that a defensive response would be less destabilizing. To opponents who favored a delay in deployment until we had had time to negotiate with the Soviets, he replied that we should both deploy and negotiate, as the deployment would improve our negotiating position. "In my judgment," Jackson told his

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<sup>49</sup>9 July 1969, Congressional Record, 115: 18895.

colleagues, "anyone who wants a successful negotiation with the Soviets to halt the further evolution of dangerous strategic armaments should be a strong proponent of the SAFEGUARD ABM." Then, almost prophetically in view of the 1972 ABM treaty, Jackson said: "I believe the chance is promising that we could come to an agreement with the Soviet Union for a limited ABM defense on both sides--an agreed ceiling on the number of ABMs, for example--provided that we do not foolishly throw that chance away by now scuttling our own program."<sup>50</sup>

Jackson was answered by two of the staunchest opponents of SAFEGUARD, Senators John Stewart Cooper (R-Kentucky) and Philip Hart (D-Michigan). Cooper stated his view that "arms control is the best means of security;" and even if the Soviet threat increased as Jackson predicted (which Cooper doubted), the appropriate American response was an increase in offensive forces, not SAFEGUARD. Hart followed Cooper with information gleaned from a report by scientists at the University of Michigan. Problems with SAFEGUARD radar and computers, along with inadequate testing, meant that the system was not likely to provide a reliable defense. Furthermore, the cost of SAFEGUARD was put by this study at \$28 billion, with the expanded system costing \$40 billion. For only \$5 billion, the U.S. could harden its MINUTEMAN silos to the point that the Soviets would require

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<sup>50</sup>9 July 1969, Congressional Record, 115: 18908.

6,000 missile to destroy them, and Secretary of Defense Laird projected a Soviet threat of only 500 missiles by the mid-1970s.<sup>51</sup>

Later in the proceedings, Senator Cooper introduced for himself and Senator Hart an amendment (S.2546) that would bar the use of any money in the authorization bill for the deployment of SAFEGUARD or any component thereof. Also precluded was the acquisition of any site for a SAFEGUARD facility. DOD would be permitted to spend money for "research, development, testing, evaluation and normal procurement therefor."<sup>52</sup>

Later still, a sharp exchange took place between Gore and both Jackson and Stennis. The Senator from Tennessee accused proponents of SAFEGUARD of shifting their arguments. When President Nixon had announced his decision on TV to the American people, he had justified his decision by saying that a BMD was necessary to "preserve the integrity of our deterrence." Later, Secretary Laird confirmed this position. The day before, Gore said, Senator Stennis had said SAFEGUARD was necessary to improve our bargaining position vis-a-vis the Soviets. "We are back to the canard," Gore continued, "of arming in order to parley." According to Gore, Laird also had retreated from the earlier position.<sup>53</sup>

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<sup>51</sup>9 July 1969, Congressional Record, 115: 18910, 18915.

<sup>52</sup>9 July 1969, Congressional Record, 115: 18922.

<sup>53</sup>9 July 1969, Congressional Record, 115: 18922-23.

Senators Jackson and Stennis immediately challenged Gore's allegations. Stennis said that both improving Nixon's negotiating position and enhancing the U.S. deterrent were valid reasons for supporting SAFEGUARD. Certainly, the Congress should not pull the rug from under the president as he was preparing for the negotiations. Jackson seconded the remarks of Stennis.<sup>54</sup>

As the debate dragged on through July, things were not going well for the pro-ABM forces. One shock came early in July when Senator George Aiken (R-Vermont) cast his lot with those opposing SAFEGUARD. This was an especially serious loss. Aiken was "a white-maned Yankee whose flinty wisdom on foreign affairs command[ed] respect on both sides of the aisle." At seventy-six, he was the dean of Republican senators and was sure to bring with him to the opposition the junior Republican senator from Vermont, Winston Prouty. Some began saying that the loss of these two senators would force the president into a compromise if he was to save SAFEGUARD.<sup>55</sup>

About a week later, on 14 July, Prouty provided one of the most dramatic moments of the debate when he surprised his colleagues by breaking with Aiken. In a seventy-minute speech, Prouty first considered the plight of a president confronted with

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<sup>54</sup>9 July 1969, Congressional Record, 115: 18923.

<sup>55</sup>"The Scale Tips against the ABM," Newsweek, 21 July 1969, p. 25-26.



an on-coming Soviet missile attack and then declared that he wanted to give the president an "extra button":

I envisioned a president faced with the knowledge that enemy missiles were heading toward the United States. I inquired as to what options are now available to him in response to such attack. I discovered that there are now two grim alternatives--do nothing or push the button that unleashes our devastating nuclear fury . . . But if there was another button available, a button to trigger our missiles designed to intercept and destroy these incoming weapons, the president could push it and halt the attack without immense loss of lives at home or the catastrophic consequences of full retaliation . . . . Safeguard provides an additional alternative, an extra button.<sup>56</sup>

Within a week of Prouty's announcement, the anti-SAFEGUARD forces received another shock. The Democratic leadership, particularly Senators Mike Mansfield (D-Montana) and Edward Kennedy, had been working hard to align the Democrats in opposition to the ABM when on 18 July Kennedy was involved in an accident. Mary Jo Kopechne, a passenger in the Senator's car, was drowned when Kennedy drove his car off a bridge from Martha's Vineyard to Chappaquiddick Island. This was a major national news event and seriously impaired the Senator's effectiveness at least for the moment.<sup>57</sup>

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<sup>56</sup>John W. Finney, "ABM Foes Set Back as Prouty Shifts to Support Nixon," New York Times, 15 July 1969, p. 1; "Armaments: Plea for an Extra Button," Newsweek, 28 July 1969, p. 39. Prouty's speech may be found in 14 July 1969, Congressional Record, 115: 19420-23. The quoted material is from p. 19421.

<sup>57</sup>"Woman Passenger Killed, Kennedy Escapes in Crash," New York Times, 20 July 1969, pp. 1, 50; "ABM: Winning Isn't Everything," Newsweek, 18 August 1969, pp. 20-21. president Nixon later wrote of this episode: "And when Teddy Kennedy's car went off a bridge at Chappaquiddick in July, the effectiveness of his leadership against the ABM was significantly reduced." Nixon, Memoirs, pp. 417-18.

By the time the ABM amendments came to a vote, the Senate was evenly split on the issue of SAFEGUARD deployment; one vote could literally carry the issue. The opposition to deployment had coalesced around the leading opposition amendment, the Cooper-Hart bill, which would stop deployment of SAFEGUARD, but provide \$752 million for continued research and development. Senator Margaret Chase Smith (R-Maine) was a staunch foe of SAFEGUARD and had let her feelings be known early by being one of the seven senators on the Armed Services Committee to vote against SAFEGUARD.<sup>58</sup>

Naturally, the opponents of an ABM deployment counted her in their fold. They should have known better, for Mrs. Smith was one of the most colorful members of the Senate with a reputation for doing the unexpected. In her thirtieth year in Congress, the last twenty in the Senate, she held the all-time record for consecutive roll-calls--2,946--a string that had been broken a year earlier due to a combination of a hip operation and a late plane. The most predictable thing about her was that each day she would be wearing a rose when she answered the senate roll call. On the day President John Kennedy was assassinated, she removed her rose and laid it on his old desk in the Senate chamber.<sup>59</sup>

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<sup>58</sup>Richard L. Lyons, "Mrs. Smith Plays Key Role in Vote," Washington Post, 7 August 1969, p. A12 (hereinafter cited as Lyons, "Mrs. Smith"); "The Surprising Lady from Maine," Newsweek, 18 August 1969, p. 21 (hereinafter cited as "Lady from Maine").

<sup>59</sup>Lyons, "Mrs. Smith," p. A12; "Lady from Maine," p. 21.

On 6 August, the Senate was scheduled to vote on the authorization bill containing the provision for SAFEGUARD deployment. True to her character, Senator Smith would help make it a memorable one for all senators. Early in the day she surprised her colleagues by sending them a note suggesting that if they were really against SAFEGUARD they should join her in voting down all funds for SAFEGUARD, including R&D money. Later, another unusual event occurred as the Senate was gavelled into order for its session on SAFEGUARD. A woman dressed in black stood up in the gallery and shouted: "I prophesy against ABM in the name of Jesus Christ!" After she was removed, the Senators began their deliberations on amendments to the appropriation bill that would restrict SAFEGUARD; Senator Smith's amendment was the first of the anti-ABM measures considered. In mid-afternoon, it was defeated by a vote of eighty-nine to eleven.<sup>60</sup>

During a brief recess following this vote, Senators Gore and Smith worked out another anti-ABM amendment. Senators Cooper and Hart agreed to support proposal in the hope that Mrs. Smith would then support their amendment if hers failed. Known as the Smith-Cooper-Hart amendment, this measure would cut off all funds for SAFEGUARD, but would allow the \$759 million in the SAFEGUARD

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<sup>60</sup>"Cry of Opposition Precedes Session," Washington Post, 7 August 1969, p. A12; "Lady from Maine," p. 21; "Nixon Missile Plan Wins in Senate by a 51-50 Vote; House Approval Likely," New York Times, 7 August 1969, p. 22 (hereinafter cited as "Nixon Missile Plan Wins").

bill to be used for R&D on other anti-ballistic missile systems, including components of SAFEGUARD. The vote of fifty for and fifty against this measure marked the high-water point of the opposition to the SAFEGUARD deployment. Although a tie vote defeats an amendment under Senate rules, Vice President Spiro Agnew voted against the amendment so that the final tally was fifty for and fifty-one against.<sup>61</sup>

The opponents of SAFEGUARD next brought up the original Cooper-Hart amendment, but it was defeated by a vote of forty-nine for and fifty-one against. The change in the vote line-up reflected Mrs. Smith's vote against an amendment that would have stopped deployment while still providing money for SAFEGUARD R&D.<sup>62</sup>

Why was the opposition to SAFEGUARD so strong? For one thing, BMD had become a symbol. Those opposing SAFEGUARD saw it as the embodiment of "all the costly military paraphernalia which have so often proved either ineffective or dispensable." Moreover, ABM had become the focus of discontent with American defense policies, to include displeasure with the Vietnam war. The ABM debate, then, was about more than a defensive missile

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<sup>61</sup>"The Nation: Moving Ahead, Nixon Style," Time, 15 August 1969, p. 12; "Nixon Missile Plan Wins," pp. 1, 22; Spencer Rich, "ABM Wins Crucial Senate Test," Washington Post, 7 August 1969, p. A1 (hereinafter cited as Rich, "ABM Wins").

<sup>62</sup>Rich, "ABM Wins," p. A12.

system; it was effort on the part of some Senators to "reassert Congressional control over defense spending" as part of an effort to redirect America's national energies. The issue of whether or not to attempt a defense of the nation against a possible nuclear attack, combined with a symbolic meaning of SAFEGUARD which transcended any single weapon system, made the ABM vote a crisis of conscience for many senators. The battle over SAFEGUARD "became one of those rare Senate debates that, however it turns out, cuts through partisan politics and lays bare a bedrock of conviction on both sides."<sup>63</sup>

Nixon's victory had been by the narrowest of margins. However, he believed that the vote for SAFEGUARD showed that America was "still prepared to maintain its military strength." Now, the president had the position of strength he considered essential if he were to negotiate meaningful arms reductions with

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<sup>63</sup>Chalmers M. Roberts, "The Close ABM Vote: A Victory or Defeat?", Washington Post, 7 August 1969, p. A12; "The Scale Tips against the ABM," Newsweek, 21 July 1969, p.28; "Armaments: Plea for an Extra Button," Newsweek, 28 July 1969, p. 39; "ABM: Winning Isn't Everything," Newsweek, 18 August 1969, p. 22. With regard to SAFEGUARD as a symbol for those opposed to U.S. military policies, Richard Nixon, Memoirs, p. 416, quoted columnist Stewart Alsop who wrote that voting against ABM was "'the liberals' way of getting back at the generals for Vietnam.'" Paul Nitze found the roots of the anti-ABM effort "in the country's disenchantment with the Vietnam War, in the widespread alienation from the government of former supporters of the nuclear defense program, and in the desire of many to wish away the problems of national security." See Paul H. Nitze, with Ann M. Smith and Steven L. Rearden, From Hiroshima to Glasnost: At the Center of Decision (New York: Grove Weidenfeld, 1989), p. 294.

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<sup>64</sup>Nixon, Memoirs, pp. 415-18.

### Chapter III

#### SALT I AND THE ABM BARGAINING CHIP

In July 1970 we watched with some concern the debate in the Senate on the Safeguard ABM program, judging that a congressional setback to Safeguard would take steam out of the ABM negotiation, by reducing any Soviet disposition to make concessions.

Gerard Smith, 1980<sup>1</sup>

#### INTRODUCTION

In his inaugural address of 20 January 1969, President Nixon had noted that the "greatest honor history can bestow is the title of peacemaker" and had indicated an interest in negotiations to reduce "the burden of arms" and "to strengthen the structure of peace." Nevertheless, his new administration proceeded cautiously in devising and implementing its strategic arms policy, for Nixon wanted first to gauge Soviet attitudes and goals in the area of strategic arms and then to develop a coherent policy to guide American efforts in the negotiations. Furthermore, as previously noted, he hoped to improve the

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<sup>1</sup>Doubletalk: The Story of the First Strategic Arms Limitations Talks (Garden City, N.Y.: Doubleday & Company, 1980), p. 148 (hereinafter cited as Smith, Doubletalk).

strategic force structure of the U.S. so that he could negotiate with the Soviets from a position of strength. Hopefully, a part of this improved force structure would be a defensive missile system. Such a system would match the one the Soviets were already deploying and at the same time serve as a bargaining chip that might persuade the Soviets to accept limitations on strategic arms. Without an ABM system, American negotiators might well have to give up some other element of the U.S. force structure to secure meaningful limitations on Soviet systems.<sup>2</sup>

Where the Soviets were concerned, it seemed unlikely that they would begin negotiations on strategic arms as long as there was a prospect that Washington politics might kill the U.S. SAFEGUARD system. To start strategic arms talks before Congress finished its deliberations on SAFEGUARD would spoil the argument of ABM critics that a decision to deploy a missile defense system would be "incompatible with arms control negotiations." Such an attitude on the part of the Soviets would help explain why the Nixon administration's 11 June invitation to begin negotiations was "met by four months of Soviet stonewalling." In the wake of the 6 August vote in the Senate, it was anticipated that the

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<sup>2</sup>Richard M. Nixon, Inaugural Address, 20 January 1969, transcript in New York Times, 21 January 1969, p. 21; Nixon, Memoirs, p. 416; Henry Kissinger, The White House Years (Boston: Little, Brown and Company, 1979), p. 132 (hereinafter cited as Kissinger, White House Years); Powaski, March to Armageddon, p. 128; Yanarella, Missile Defense, p. 181; Adams, Ballistic Missile Defense, pp. 189-90.



Soviets soon would propose a date for beginning the talks, since the vote in the House was not expected to be close. However, the Soviets did not make a concrete proposal for talks until 20 October. By then, SAFEGUARD had cleared the House with a comfortable three-to-one majority. Now, with an end to Soviet hopes that Congress might rule against SAFEGUARD and with Nixon in a stronger position from which to bargain, the conditions were right for negotiations to begin. On 25 October the Nixon administration announced acceptance of a Soviet invitation to begin exploratory strategic arms talks at Helsinki on 17 November.<sup>3</sup>

From the start of negotiations, two major problems relative to SAFEGUARD would continue to plague American negotiators. One of these problems was the lack of a strong political consensus, especially in the Senate, favoring the deployment of an ABM system. For SAFEGUARD to be an effective bargaining chip, the Soviets had to be convinced that the U.S. was committed to deployment. The obvious difficulty the Nixon administration had in sustaining political support for the SAFEGUARD program was constantly undermining its credibility as a

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<sup>3</sup>Kissinger, White House Years, pp. 138, 145; Richard Halloran, "U.S.-Soviet Talks on Missiles Open Nov. 17 in Helsinki," New York Times, 26 October 1969, p.1; William Beecher, "Some See Vote Spurring Arms Talks," New York Times, 8 August 1969, p. 12; Powaski, March to Armageddon, pp. 133-44. The quoted material is from Kissinger, White House Years. Similar sentiments were reported in the Beecher article.

bargaining chip. For example, throughout the SALT I negotiations Nixon would have to keep a steady eye on the Senate to insure SAFEGUARD survived until an arms agreement was reached. As Nixon put it to a group of Republican senators in April 1971:

If SALT is to have a chance, we cannot give away in the Senate things we might want to negotiate with the Soviets. They will say, "Why should we continue to negotiate SALT when the United States is going to take these actions unilaterally?"<sup>4</sup>

A second problem that would vex U.S. negotiators was a gap that opened between the bargaining position of the U.S. in the arms talks and the ABM program Congress had approved and was

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<sup>4</sup>Kissinger, White House Years, pp. 149, 539-40, 804, 806, 798-99, 811-12, 1129; Newhouse, Cold Dawn, pp. 156-57, 168, 173; Smith, Doubletalk, p. 204. It may be possible to speak of a bargaining chip mentality where the attitudes of some involved in these events are concerned. Those affected by this way of thinking would believe that since a BMD system really wouldn't be effective and would merely heat up the arms race, the concessions the Soviets might offer in return for an agreement by the U.S. to restrict or forego SAFEGUARD would be of little significance. The main objective of those guided by this line of thought would be to stop the deployment of ABM systems. This mind set may have affected some U.S. SALT negotiators who seemed at times more interested in limiting ABM systems than in gaining restrictions on Soviet ICBMs. For example, Gerard Smith's attitude toward ABM seems to have been ambivalent at best. An indication of his view of ABM systems might be this statement about the ABM treaty: "It put an end to the expensive and unpopular U.S. ABM program." Smith comes across toward the end of his book as one who could see little or no value in a defensive systems even though the Soviets seemed to have taken the prospective capabilities of an American ABM system quite seriously. For Smith's views on ABM, see Doubletalk, pp. 31, 147, 153, 156, 192, 204, 455-57, and 460. SAFEGUARD was also opposed by elements of the American press, some members of the scientific and academic communities, and advocates of disarmament on the grounds that an American ABM would do nothing but intensify the arms race.

most likely to continue supporting. The first phase of the SAFEGUARD program, it will be recalled, involved the deployment of ABM systems to protect two MINUTEMAN missile fields. Only later would the U.S. deploy a system to protect the national command authorities (NCA) at Washington, D.C. Nevertheless, the Nixon administration maneuvered itself into proposing an agreement under which the U.S. and U.S.S.R. would be allowed to deploy a single ABM system to protect each nation's NCA. This proposal would require a major, costly reorientation of the SAFEGUARD program and might cause a less than enthusiastic Congress to kill the program. While the Soviets were confused by the contradiction between this proposal and the congressionally approved ABM system, they quickly accepted a position which obviously would pose difficulties for U.S. negotiators. In addition to confusing the Soviets, this proposal sowed seeds of disunity among U.S. negotiators.<sup>5</sup>

These two problems haunted the Americans throughout the SALT I negotiations. In all, there would be seven rounds of talks, leading two and a half years later to the Nixon-Brezhnev summit in Moscow and the SALT I agreements signed in Moscow on 26 May 1972. Discussions of ABM systems were of major significance throughout these talks, and the resulting ABM accord was the principal fruit of the negotiations.

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<sup>5</sup>Newhouse, Cold Dawn, p. 185; Kissinger, White House Years, pp. 539-42, 810-11; Smith Doubletalk, pp. 192, 205.

## THE FIRST U.S. POSITION ON ABM

The first round of SALT I got under way at Helsinki on 17 November 1969. In these talks, the negotiating teams worked out the ground rules and definitions to guide the talks; and each team laid out its broad negotiating position. The U.S. indicated its desire to negotiate restrictions on defensive as well as offensive weapons, but insisted on linkage between the two. The U.S. was interested especially in establishing limits on Soviet ICBMs, including a sublimit of 250 on the large SS-9 missiles.<sup>6</sup>

American negotiators were somewhat surprised, given Soviet attitudes expressed at Glassboro, to find that the Russians were "most eager" to talk about ABM systems, but failed even to mention the issue of multiple independently targeted re-entry vehicles (MIRV), a recent development that prompted considerable concern for many in the U.S. who feared that MIRVing, along with ABMs, would heat up the arms race. With regard to BMD, Soviet negotiators presented three options (a heavy deployment, a limited deployment, and a complete ban) and

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<sup>6</sup>Smith, Doubletalk, pp. 75-107, especially pp. 86-87; Newhouse, Cold Dawn, p. 177; Kissinger, White House Years, pp. 149-50; Powaski, March to Armageddon, pp. 132-34; Paul H. Nitze, with Ann M. Smith and Steven L. Rearden, From Hiroshima to Glasnost: At the Center of Decision (New York: Grove Weidenfeld, 1989), pp. 303-07 (hereinafter cited as Nitze, Hiroshima to Glasnost).

indicated a clear preference for something in between a complete ban and a limited deployment. U.S. negotiators interpreted the Soviet preference to mean that the Soviets preferred to keep the GALOSH system they were building around Moscow.<sup>7</sup>

Because of the asymmetry in these initial positions, the American delegation sought to be conciliatory on the ABM issue in the hopes the Soviets would reciprocate in the area of offensive systems. When round two of the talks started in Vienna on 16 April 1970, the American delegation was prepared to make two proposals. The first contained three elements. It called for limits on the number of offensive launch vehicles, a ban on the testing and deployment of MIRVs to be verified by on-site inspections, and either a complete ban on ABMs or a deployment restricted to one location near each nation's capital to defend the national command authorities. If the Soviets rejected this

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<sup>7</sup>Kissinger, White House Years, pp. 149-50; John Newhouse, War and Peace in the Nuclear Age (New York: Alfred A. Knopf, 1989), pp. 221-222 (hereinafter cited as Newhouse, War and Peace); Newhouse, Cold Dawn, pp. 173, 177; Nitze, Hiroshima to Glasnost, p. 307; Smith, Doubletalk, pp. 88-89, 93-96. Discovering the desire of the Soviets to negotiate on ABM systems was enough by itself to make round one of the talks worthwhile in Smith's opinion (p. 96). With regard to MIRVing, Smith pointed out that limitations on this emerging technology were not included as a part of the paper on "Illustrative Elements" that the U.S. delegation tabled on 24 November in an effort to get the first round of talks "down to specifics." Smith commented in 1980 that this omission "must have told the Soviets something about the degree of U.S. interest in that major issue." (pp. 88-89) Newhouse, War and Peace, p. 222, pointed out that the Soviets did not mention MIRV either.

offer, the second U.S. proposal would be advanced. It also called for limits on offensive systems with reductions that would eventually leave each superpower with a combined total of 1,000 ICBMs and SLBMs. While this second proposal contained no restrictions on MIRVing, it advanced the same two options with regard to ABM limitations that were contained in the first proposal. When presenting the U.S. position on ABM, U.S. negotiators were directed to advance first the option that would allow each side to have one NCA-oriented site.<sup>8</sup>

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<sup>8</sup>Newhouse, Cold Dawn, pp. 177, 182-83; Smith, Doubletalk, pp. 477-78; Kissinger, White House Years, pp. 541-42. For a fascinating account of the extremely high qualifications of the Soviet negotiating team; the careful preparations of the Soviets; and the tough, detail-oriented negotiating techniques of the Russians, see Paul Nitze, "The Strategic Balance between Hope and Skepticism," Foreign Policy, Winter 1974-75, pp. 141-44 (hereinafter cited as Nitze, "Between Hope and Skepticism"). Nitze believed that democratic societies are at a disadvantage when negotiating with the Soviets. In all fairness, it must be noted that the U.S. delegation was also composed of clearly outstanding people with broad knowledge of strategic arms issues. Nitze himself makes this point in his memoirs (Hiroshima to Glasnost, pp. 299-300. See also Smith Doubletalk, pp. 38-43). In Hiroshima to Glasnost, Nitze also made an interesting point that gives an insight into the conciliatory position taken by the U.S. delegation. A number of American delegates approached the negotiations as a "non-zero-sum game in which both sides could profit from an agreement." Most Soviet negotiators, including their chief negotiator, Vladimir Semenov, were unfamiliar with American game theories and did not understand the concept of a non-zero-sum outcome. According to Nitze, Semenov "took the position that he was negotiating for the interests of his side alone and that it was up to the United States to protect its own interests." (p. 301)

This position on ABM was a "first-class blunder" according to Henry Kissinger. It arose from a bureaucratic compromise and placed the United States in an impossible negotiating position. That the Nixon administration did not make the original twelve-site SAFEGUARD program the basis of its negotiating position was not all that unwise, since few Senators who voted for SAFEGUARD in August of 1969 continued to support the original concept. However, the lack of wisdom in the NCA-oriented option should have been apparent, for such a system was bound to raise prickly political questions about why Congress might choose to defend only Washington. It should have been equally apparent that the Defense Department would not support a complete ABM ban because having at least one operational ABM site would help sustain development efforts and give the military valuable experience in operating a missile defense system. These considerations notwithstanding, the State Department and ACDA favored a complete ban on ABM. But since DOD would not support this position and the Soviets were already building the GALOSH system to protect their national command authorities, State was willing to support the position allowing one NCA-oriented site as the ABM proposal that was likely to gain acceptance. Thus, the Nixon administration found itself in the difficult position of making an offer to the Soviets that was not consistent with the ABM program that Congress had approved and the U.S. was implementing. Not only that, but the NCA proposal would also

give a considerable advantage to the Soviets in that something like 300 of their ICBMs were close enough to Moscow to be protected by the GALOSH system being installed near the Soviet capital. There were no ICBMs near Washington to be protected even in the unlikely event Congress were to approve construction of an ABM facility there.<sup>9</sup>

The Soviets quickly rejected the first U.S. proposal, perhaps because of its requirement for on-site inspections to confirm compliance with its restrictions on MIRVing. The Russians also refused to accept the second proposal's limitations on offensive systems because they believed the Americans were trying to restrict their land-based ICBMs which the Soviets considered their greatest strategic asset. Yet, "with amazing and totally unprecedented speed," Soviet negotiators accepted the American proposal on ABM that would restrict both sides to one site for defense of their respective national command authorities. In this way, the Soviets closed the box that the

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<sup>9</sup>Kissinger, White House Years, pp. 539-542; Newhouse, Cold Dawn, p.185. Nitze claims to have originated the U.S. negotiating position that would shift America's ABM program from silo defense to defense of the NCA (Hiroshima to Glasnost, p. 307). For a discussion of the different interest groups involved in arms control negotiations, see Talbott, Master of the Game, p. 117. Here he lists eight different sources of influence on negotiations and notes that no agency of the U.S. government "had a clear idea what it wanted out of SALT. Not surprisingly, the infighting over SALT was especailly intense and chaotic." For a description of communications problems between the U.S. SALT team and Washington, see Nitze, "Between Hope and Skepticism," pp. 144-45.



Nixon administration had built for itself with its ABM proposals. To add insult to injury, an American offer on ABM systems that was designed to be conciliatory had failed to win any concessions from the Soviets in the area of offensive systems.<sup>10</sup>

By late May, it was apparent that no progress was being made in the second round of discussions. The talks had become bogged down principally over the issues of forward based systems (FBS)<sup>11</sup> and MIRVing. At this point the U.S. delegation informed the president of the stalemate and proposed on 15 June that the U.S. adopt a new negotiating position that might get the talks rolling again. This "Vienna Option" called for an initial ABM treaty and an agreement on three central offensive strategic systems (heavy bombers, ICBMs, and SLBMs). The sticky issues of medium and intermediate range ballistic missiles and cruise missiles would be deferred in return for a Soviet agreement to defer the matter of FBS. After these first agreements, a more comprehensive treaty would be negotiated, to include limits on other offensive weapons.<sup>12</sup>

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<sup>10</sup>Newhouse, Cold Dawn, pp. 179-85; Kissinger, White House Years, p. 545. The quoted words are Kissinger's.

<sup>11</sup>These were weapon systems like fighter aircraft and aircraft carrier planes that the U.S. considered tactical systems. Because these planes were capable of carrying nuclear weapons and could reach Soviet cities, the Russians wanted them considered in SALT negotiations. The U.S. would not accept this Soviet position because, for one thing, the basing and operation of these aircraft were tied to U.S. relations with its European allies.

<sup>12</sup>Smith, Doubletalk, pp. 146-47.

On 23 June, while this proposal was being considered, Henry Kissinger, Nixon's national security advisor, and Anatoly Dobrynin, Soviet ambassador to the United States, began a series of "back channel" talks in a special effort to break the log jam in Vienna.<sup>13</sup> Kissinger had found it peculiar that although Gerard Smith, the chief U.S. negotiator, was pushing for the talks in Vienna to continue, the chief Soviet negotiator, Vladimir Semenov, had asked for a recess. Kissinger wanted to know what was behind Semenov's move to end the talks. Did the Soviets really want a SALT agreement? Dobrynin assured Kissinger that the Soviets still desired a SALT treaty but believed that the proposals of the two sides were not yet close enough to hold much promise of an agreement. Dobrynin doubted that both offensive and defensive agreements could be arranged during the current session at Vienna. He also indicated that the Soviets preferred negotiating a treaty on defensive systems only.<sup>14</sup>

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<sup>13</sup>The "front channel" refers to the normal lines of communication between a negotiating delegation and its government through which instructions are passed to the delegation and the delegation reports back to its government. In "back channel" communications, an additional link is established between special contacts for each government and only the absolute minimum number of people are involved. Throughout the remainder of the talks, whenever the formal negotiations became deadlocked, the Nixon administration would use the back channel to resolve the disagreement and then leave it to the U.S. delegation to negotiate the details in the formal SALT talks. See Kissinger, White House Years, p. 1216, and Newhouse, Cold Dawn, p. 203.

<sup>14</sup>Kissinger, White House Years, p. 547. For a fascinating view of how communications were carried out in this "back channel", see White House Years, pp. 806-10.

Two days later, Dobrynin advised Kissinger that the Soviets proposed to negotiate two agreements: one on defensive systems and the other to reduce the chance of a nuclear war starting as a result of an accidental or unauthorized action. Kissinger considered this an attempt by the Soviets to stop the only strategic program the United States had in progress while avoiding any limits on their own offensive buildup.<sup>15</sup>

Early in the morning of 5 July in Vienna, Gerard Smith received a call from the local CIA station chief. A message for Smith had arrived from the White House and was being decoded at the SALT offices. The station chief picked up Smith and drove him to his office where he found that the message was from Kissinger. The cable advised Smith of Dobrynin's proposal and asked for his reaction. Smith was deeply troubled; he felt that the entire outcome of the talks could hang on his evaluation of the proposal. He believed that an ABM agreement without a corresponding treaty on offensive weapons was not in the best interest of the United States, but was afraid the Soviets would break off the talks if the U.S. rejected the offer. Nevertheless, he advised Kissinger that the proposal should not be accepted. Kissinger and Nixon agreed with Smith. The goal of the United States was to halt the expansion of Soviet offensive forces; separating negotiations on offensive and defensive

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<sup>15</sup>Kissinger, White House Years, pp. 547-48.

systems would destroy SAFEGUARD's value as a bargaining chip.<sup>16</sup>

The official U.S. response to Dobrynin's approach was a new proposal tabled at Geneva on 4 August. It insisted on the continued linkage between offensive and defensive negotiations. Furthermore, as a "first step toward getting off the uncomfortable NCA position," the new American position called for a total ban on ABM systems, although it did not rule out the NCA-oriented option already put forward. With regard to offensive weapons, the proposal called for an overall ceiling of 1900 missiles and bombers which would have forced the United States to give up some B-52 bombers. As applied to the Soviets, the 1900 included a sublimit of 250 for SS-9 missiles and would have forced the Soviets to cut back on some missile construction.<sup>17</sup>

The Soviets made no effective response to the new American proposal. They did continue to push for the inclusion of FBS in the negotiations while the Americans continued to insist that this was unacceptable. With no progress being made, the second round of talks was adjourned on 14 August.<sup>18</sup>

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<sup>16</sup>Smith, Doubletalk, p. 147; Kissinger, White House Years, pp. 548-49.

<sup>17</sup>Kissinger, White House Years, pp. 548-49; Newhouse, Cold Dawn, pp. 186, 189.

<sup>18</sup>Newhouse, Cold Dawn, pp. 189-90.

**PRESERVING THE BARGAINING CHIP: THE HOME FRONT**

In early 1970, the Nixon administration had announced plans to begin the expansion phase of SAFEGUARD by adding to the two sites that had been authorized by Congress in the fall of 1969. One new site was to be added at Whiteman AFB, Missouri, where its missiles would defend a MINUTEMAN field. Additionally, preliminary work was to start on five other sites. One of these, Francis E. Warren AFB, Wyoming, would protect an ICBM field. The four remaining sites, including one at Washington, D.C., would become the basis for a thin system to protect against an attack from China or an accidental launch of a Soviet missile.<sup>19</sup> The Washington, D.C., site would also protect the national command authorities.

In announcing these plans, officials of the Nixon administration stressed the flexibility offered by the proposed expansion of SAFEGUARD. Not only was it a reasonable response to evolving Chinese and Soviet threats, but it would sustain a strong bargaining position for the U.S. in the SALT negotiations. This latter point had to be handled delicately; and in an apparent effort to see that America's new ABM efforts did not alarm the Soviets and therefore have the wrong effect on SALT

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<sup>19</sup>William Beecher, "Expansion of ABM to 3D Missile Site is Sought by Laird," New York Times, 25 February 1970, pp. 1, 30 (hereinafter cited as Beecher, "Expansion of ABM").

proceedings, government spokesmen soft-pedalled the expansion as being less ambitious than Nixon's original SAFEGUARD plan.<sup>20</sup>

The SAFEGUARD expansion program soon ran into congressional opposition. In mid-June, while the second round of talks was still in progress, as if to underline its differences with the administration, the Senate Armed Services Committee rejected the House-approved plan for expanding SAFEGUARD. The Senate committee announced it would restrict America's ABM to the protection of missile fields. This meant that Congress would support the two sites already under construction near Grand Forks and Malmstrom Air Force Bases, plus the sites planned for Whiteman and Francis E. Warren Air Force Bases. However, the Senate committee voted to cut the funds for preliminary work on the four sites that were to form the basis of an area defense to protect the U.S. from a Chinese ICBM attack. These included, of course, the Washington which could have covered the national command authorities. The death of this part of the SAFEGUARD program sent a clear message to Soviet and American SALT negotiators: an agreement to restrict BMD to one NCA-oriented site was tantamount to killing the American ABM program. Moreover, it relieved Congressmen of the sticky political questions they would have faced from constituents wondering why Congress would vote funds for an ABM site near Washington but not

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<sup>20</sup>Beecher, "Expansion of ABM," pp. 1, 30.

for the remainder of the nation's major cities.<sup>21</sup>

As the authorization bill moved from the Senate Armed Forces Committee toward another crucial vote on the floor of the Senate, there appeared to be some sentiment for cutting funds for the sites at Whiteman and Francis E. Warren. Nixon and his staff now faced a very delicate political situation. A number of key administration officials believed that a strong ABM program was America's most powerful bargaining tool in the SALT negotiations and knew that the value of ABM as a bargaining chip was one of the best arguments for strong Congressional support for SAFEGUARD. At the same time, the use of this argument required great subtlety. Too much emphasis on ABM as a possible bargaining chip could convince the Soviets that they need only wait out the U.S. and SAFEGUARD support would evaporate. Moreover, building ABM just as a bargaining chip could lead to embarrassing political questions on the home front about why the government was spending so much money on a system it was likely to abandon. Furthermore, there was the difficulty one would face with Congressmen who had been convinced in the debate of 1969 that SAFEGUARD was crucial to the defense of the country: how could Nixon consider bargaining away a system that was vital to U.S. security? All of this was further complicated by the U.S.

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<sup>21</sup>Adams, Ballistic Missile Defense, pp. 227-28; Newhouse, Cold Dawn, pp. 185, 187; Kissinger, White Years, p. 547.

negotiating position on ABM. So it should come as no surprise that the Nixon administration moved cautiously to sustain support for SAFEGUARD in the summer of 1970.<sup>22</sup>

To keep the SAFEGUARD program as strong as possible and protect its status as a bargaining chip, Kissinger met with a select group of Senate and House leaders on 23 July. Since Nixon recognized that his administration could not talk publicly about a bargaining chip and have it retain its power to induce a bargain, the meeting was held behind closed doors. It did not go well. To begin with, the session was not as well attended as Kissinger and Nixon had hoped and was interrupted frequently by Congressmen coming and going to participate in roll-call votes. Furthermore, Kissinger's comments generated some hostile reaction. He stressed the value of SAFEGUARD as a bargaining chip for use in persuading the Soviets to limit the size of their SS-9 force. Some Congressmen considered this an effort to pressure them into voting for SAFEGUARD. Senator J. William Fulbright (D-Arkansas) criticized the Nixon administration for briefing NATO allies on the SALT proceedings before he briefed Congress. As if the outcome of the meeting were not bad enough, the day after the meeting both the New York Times and the Washington Post carried articles disclosing information from the

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<sup>22</sup>See Smith, Doubletalk, pp. 204-05, and Adams, Ballistic Missile Defense, pp. 228-31, for discussions of the situation faced by the Nixon administration with regard to the ABM issue.



meeting.<sup>23</sup>

Three weeks after the meeting between the Congressmen and Kissinger, SAFEGUARD faced its second do-or-die vote in the Senate. The test came over an amendment put forward by the same Senators Cooper and Hart who had combined their efforts a year earlier in an attempt to prevent deployment of SAFEGUARD. This measure would cut from the defense procurement bill the \$322 million earmarked for the two new ABM sites at Whiteman and Francis E. Warren Air Force Bases, leaving \$1.027 billion for the two sites being constructed at Malmstrom and Grand Forks. The arguments of those supporting the Cooper-Hart amendment were essentially the same as a year earlier: ballistic missile defense was not technically feasible, deployment would escalate the arms race, and missile defense would take money from social programs. In defending SAFEGUARD, Senator Henry Jackson, leader of the pro-SAFEGUARD forces, argued that the Senate had to send a message to the Soviets that the U.S. was prepared to meet any expansion in Soviet strategic programs. Therefore, the only sensible course of action was for the Soviets to agree to strategic arms limitations.<sup>24</sup>

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<sup>23</sup>Chalmers M. Roberts, "ABM Approval Urged to Curb Soviet Missiles," Washington Post, 24 July 1970, p. A12; "Kissinger Declares ABM Key to Gains at Vienna Parley," New York Times, 24 July 1970, p. 2; Kissinger, White House Years, p. 551; Newhouse, Cold Dawn, pp. 187-88; Nixon, Memoirs, 417.

<sup>24</sup>John W. Finney, "Expansion of ABM Backed by Senate by 52-to-47 Vote," New York Times, 13 August 1970, pp. 1, 12 (hereinafter referred to as Finney, "Expansion of ABM Backed by Senate"); Spencer Rich, "ABM Curb Beaten by Senate, 52 to 47," Washington Post, 13 August 1970, pp. A1, A10. For commentary on

As the time of the vote approached, the White House circulated among uncommitted Senators a communique from Gerard Smith indicating the importance of SAFEGUARD relative to the talks under way in Vienna. Apparently, Smith's message influenced at least two senators who were sitting on the fence, Thomas J. McIntyre (D-New Jersey) and James B. Pearson (R-Kansas). On 12 August, these two senators voted with the majority that defeated the Cooper-Hart bill 52-to-47. The anti-SAFEGUARD forces concluded that the key to Nixon's victory had been effective use of the bargaining chip argument.<sup>25</sup> With the bargaining chip now relatively secure on the homefront, the question became whether or not the Nixon administration could use it to secure meaningful limitations on Soviet offensive systems.

#### PRESERVING THE BARGAINING CHIP: THE SALT TALKS

The third round of SALT negotiations took place in Helsinki in November and December of 1970. It was a short and

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this vote, see: "Chalmers M. Roberts, "ABM Vote is Signal to Moscow," Washington Post, 13 August 1970, p. A11.

<sup>25</sup>Finney, "Expansion of ABM Backed by Senate," p.12. For Gerard Smith's account of his efforts here, see Doubletalk, pp. 148-49. For Kissinger's views, see White House Years, p. 551.

stormy session that marked the "nadir of SALT I." Again, the center of contention was forward based systems, an issue used skillfully by the Soviets in their continuing effort to separate negotiations on defensive systems from those on offensive systems. The U.S. delegation began by standing pat on its proposal of 4 August, insisting that the Soviets must respond to this proposal before the talks could proceed. For their part, the Soviets continued to demand that U.S. forward based systems be included in the count of U.S. strategic systems. When on 1 December Vladimir Semenov formally proposed separation of talks on offensive and defensive systems, he used U.S. intransigence on the FBS issue as the grounds for separate negotiations. Since discussions of offensive weapons were deadlocked over the FBS issue, the two sides should put off an offensive agreement until some indefinite time in the future while pursuing a treaty on ABM systems.<sup>26</sup>

In discussing the ABM issue, the Soviets said they were confused by the American position (one NCA-oriented site or a complete ABM ban) which ran counter to the program approved by Congress (a broad system principally to defend American ICBMs). Nevertheless, the Soviets agreed to the NCA-oriented ABM option. One site would be permitted within a given radius of the center

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<sup>26</sup>Smith, Doubletalk, pp. 179-92; Powaski, March to Armageddon, p. 136.

of each country's national capital. Also, limits on the numbers of launchers, missiles, and radar systems should be specified in the treaty.<sup>27</sup>

Unofficially, the Soviets encouraged the U.S. not to reject their new proposal outright, hinting that details on the proposal would follow. Although the White House reply left the door open for the Soviets to elaborate on their offer, there was little concrete in what the Soviet delegation had to say during the remainder of round three. The Soviets seemed to be at pains to show that their new proposal did not completely separate negotiations on offensive and defensive systems, but they offered no firm timetable for negotiations on offensive weapons and specified no limitations on offensive systems that might then be negotiable.<sup>28</sup>

The third round of talks highlighted the different approaches to negotiation taken by the Soviet and U.S. teams. The Soviets tended to table general proposals devoid of details and to insist on acceptance of the principles in the proposal as the price for getting more details. On the other hand, the U.S. team would offer detailed proposals and expect the Soviets to negotiate on the details. By the time the third round of talks

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<sup>27</sup>Smith, Doubletalk, pp. 192-93.

<sup>28</sup>Smith, Doubletalk, pp. 179, 193-98; Newhouse, Cold Dawn, pp. 193-94.

ended on 18 December, the Americans had tabled a number of detailed proposals to which the Soviets had continued to respond with their usual, general proposals. The American delegation had come to feel that it was negotiating with itself.<sup>29</sup>

With the Soviets now pushing for the NCA-oriented ABM agreement offered by the Americans and attempting to separate talks on defensive and offensive systems, it was apparent that the United States had painted itself into a corner in the SALT negotiations.

#### ANOTHER THREAT TO THE BARGAINING CHIP: A SIGNAL NEVER SENT

In the three months between rounds three and four of the negotiations, SAFEGUARD and Nixon's negotiating position became the center of a maelstrom of domestic pressures as scientists and newspaper editors among others took positions supporting the Soviet effort to separate negotiations on offensive and defensive

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<sup>29</sup>Smith, Doubletalk, pp. 194; Newhouse, Cold Dawn, p. 193. Somewhat later, squabbles over America's negotiating position with regard to ABM brought to light a slightly different aspect of this sense that the Americans were negotiating with themselves. Newhouse quoted one official as saying with bitterness: "We dissipate our energies negotiating between ourselves." (p. 231) Newhouse also reported that the White House had serious reservations about the reliability of the American delegation with regard to the faithful execution of instructions from Washington. Smith (p. 259) also noted that at times negotiating with Washington was more difficult than negotiating with the Soviets.

systems. Nevertheless, Nixon seemed to be holding his ground when his State of the World report was delivered to Congress on 25 February 1971, for here he argued against splitting the SALT talks on the grounds that this approach would do nothing more than channel the arms race in an offensive or defensive direction.<sup>30</sup>

One development that supplied support to opponents of the Nixon administration was a "signal" from the Soviet Union that it would bargain in good faith. About the time round three of the talks was ending, Secretary Laird announced that there was evidence the Soviets had stopped constructing silos for their large SS-9 ICBMs. These missiles were of special concern, for American strategists believed they eventually would give the Soviets a first-strike capability against the U.S. MINUTEMAN force. This "signal" seemed to promise that the Soviets would continue to bargain in earnest, even if a separate ABM treaty stripped the U.S. of its SAFEGUARD bargaining chip.<sup>31</sup>

President Nixon's foes called for reciprocal action on the part of the United States. Senator Hubert Humphrey saw this as an ideal opportunity for the U.S. to halt its part of the arms race, something it could do with impunity by freezing the U.S.

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<sup>30</sup>Kissinger, White House Years, pp. 811-13; Newhouse, Cold Dawn, pp. 197-200.

<sup>31</sup>Newhouse, Cold Dawn, p. 198; Smith, Doubletalk, pp. 206-07; Kissinger, White House Years, pp. 811-812.

programs for MIRV and ABM. Even Gerard Smith, the U.S. chief negotiator, seems to have taken this position, for he suggested to President Nixon that the U.S. halt further ABM deployments as an indication of America's commitment to arms control.<sup>32</sup>

Those who supported the president's hard-line position felt vindicated when the Soviet "signal" turned out to be nothing more than wishful thinking on the part of ABM foes and other administration opponents. On 7 March, Senator Henry Jackson revealed new intelligence data showing that the Soviets had ended their SS-9 moratorium. The stoppage really had not been a signal after all. Rather, it had been a pause in their construction program as the Soviets shifted from building silos for the SS-9 to constructing bigger silos for a new and larger missile, the SS-18. By the end of 1971, there had been "more Soviet missile starts . . . than in all but one year of the previous decade."<sup>33</sup>

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<sup>32</sup>Kissinger, White House Years, pp. 811-12. The relevant passage reads: "On February 1, Senator Hubert Humphrey urged the Senate to freeze American ABM and MIRV programs. 'At no cost to ourselves,' Humphrey declared, 'and with absolute guarantee of our won security--we can stop our part of the nuclear arms race in response to actions already taken by the Soviet Union.'" Smith (Doubletalk, pp. 206-07) admits that the halt in SS-9 deployments "looked like an indication of Soviet intention to curb the arms competition," but he does not mention what, if anything, he might have recommended to Nixon on the basis of the Soviet action.

<sup>33</sup>Kissinger, White House Years, p. 811; Smith, Doubletalk, p. 207.

## THE BACK CHANNEL AGAIN

While these events were unfolding, Nixon and Kissinger were working through the back channel to establish the broad framework for a SALT treaty. Throughout these discussions, the Soviets proved to be tough and wily negotiators, seeking every advantage and giving ground only grudgingly as they sought to separate talks on defensive and offensive systems while Nixon and Kissinger worked to establish linkage as the basic principle of any SALT accord.<sup>34</sup>

By early February 1971, the Soviets had agreed to linkage in principle. If an agreement on defensive systems were reached before an accord on offensive weapons was arranged, the Soviets "would consider a freeze on offensive deployments pending the completion of negotiations." Just as the superpowers seemed on the verge of an agreement, a crisis developed when the Soviets sent a submarine tender to the port of Cienfuegos, thereby

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<sup>34</sup>For an intriguing view of how the negotiations inched along in the back channel, see Kissinger, White House Years, pp. 813-18. All of these negotiations were carried out against a backdrop that included great pressure for the Nixon administration to accept Soviet offers. For example, Gerard Smith reported that during the winter of 1970-71 the Federation of American Scientists, a New York Times editorial, and the Democratic Policy Council supported the Soviet position that would have separated an ABM agreement from an agreement limiting offensive arms. Smith also noted that Hubert Humphrey introduced a resolution in the Senate calling for Nixon to "first agree to ban or limit ABM deployments and then to negotiate offensive limitations." (Doubletalk, pp. 205-06).



indicating that they might again be trying to establish a submarine base in Cuba.<sup>35</sup> Although this issue was resolved rather quickly, it was followed by a period in which Soviet leaders stalled negotiations so that a firm agreement still had not been reached as the first week of March ended.<sup>36</sup>

The SALT talks were scheduled to resume on 15 March in Vienna, and the Nixon administration had hoped to complete the back channel discussions in time to draw up new instructions to guide the American delegation in the next round of talks. When it became apparent that this would not be possible, President Nixon was faced with the requirement to issue interim instructions to Gerard Smith. In doing so, he had to insure that the instructions would not conflict with agreements likely to be arranged in the back channel. Not surprisingly, then, Nixon chose to stick largely to the position the U.S. had tabled in Vienna the previous August. The only significant change pertained to the U.S. position on ABM.<sup>37</sup>

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<sup>35</sup>This port is located on the southern coast of Cuba. In the summer of 1970, the Soviets had attempted to establish a submarine base there. After constructing several facilities, the Soviets dispatched to the port a flotilla of ships including a submarine tender. The crisis ended in the early fall after some intense, behind-the-scenes diplomacy. The Soviets stopped construction of their facilities and withdrew the submarine tender on 10 October. For details, see Kissinger, White House Years, pp. 632-52.

<sup>36</sup>Kissinger, White House Years, pp. 810-15; Nixon, Memoirs, p. 523.

<sup>37</sup>Smith, Doubletalk, p. 211; Newhouse, Cold Dawn, pp. 205-06; Kissinger, White House Years, pp. 813-815.

The domestic debate swirling around SAFEGUARD in the winter of 1971 convinced Nixon that an ABM agreement based on the NCA option would be the death knell of SAFEGUARD. Something had to be done to bring the U.S. negotiating position into line with the reality of domestic politics. The interim instructions offered an opportunity to start this realignment. Accordingly, on 11 March the Nixon administration issued NSDM 102 which directed Ambassador Smith to add a third option to the U.S. negotiating position on ABM. This new option would allow the U.S. to continue its SAFEGUARD program as approved by Congress and permit the Soviets to keep the NCA-oriented system they were building.<sup>38</sup>

On 12 March, about a month after the Soviets had accepted linkage in principle, Dobrynin gave Kissinger a note in which the Soviets reneged on their earlier agreement. The new Soviet position "called for an ABM agreement 'this year' confined to national capitals (NCA); offensive limitations would be discussed only after such an agreement had been reached and only 'in

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<sup>38</sup>Newhouse, Cold Dawn, pp. 205-06; Kissinger, White House Years, p. 813. Smith viewed this change with incredulity. In his account of the SALT negotiations he compared the U.S. negotiations on ABM to a shell game in which the position on ABM favored by the United States was the pea the Soviets had to discover under the shells. Of the 11 March instructions Smith wrote: "But this time we had three shells! 'This can't be serious,' was my reaction as I read that we were directed also to put to the U.S.S.R. delegation a new concept for ABM control having 'equal status' with the alternative proposals already tabled" (Doubletalk, p. 211).

principle'." As soon as Kissinger advised Dobrynin that this position was unacceptable, the Soviet ambassador offered to work with Kissinger to blend the arrangements being advocated by the U.S. and Soviet governments. The two met again on 15 March and exchanged draft agreements. Dobrynin's draft still called for an accord on ABM before offensive limitations were agreed to, but it did drop the Soviet insistence that the only ABM site would be at each nation's capital. Kissinger's draft still insisted on linkage. On 25 March Kissinger again informed Dobrynin of the U.S. insistence on linkage: the ABM treaty and the conditions of the freeze on offensive weapons would have to be negotiated simultaneously and concluded at the same time. Picking up Kissinger's words:

The next day, March 26, Dobrynin brought the Soviet reply to our March 16 [sic] draft, which it neither accepted nor rejected. The principle of a freeze on strategic offensive weapons was accepted, but the details were to be discussed after an agreement on defensive weapons had been reached. . . . [T]his implied a compromise: that the agreements be discussed successively but signed simultaneously. This we could not accept. Once an ABM treaty was known to exist, we would be under irresistible pressure to sign; the minute we had signed, the offensive freeze would evaporate. (Even if we did not sign it, the Congress would never vote funds for the ABM program, so that the ideal outcome from the Soviet point of view would be an unconsummated ABM agreement in which the United States abandoned its program unilaterally.) We were making progress, but at an excruciatingly slow pace.<sup>39</sup>

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<sup>39</sup>Kissinger, White House Years, pp. 810-16. The major quotation is from p. 816. See also Nixon, Memoirs, p. 523.

The pace of progress in the Kissinger-Dobrynin talks was further slowed for some time by what seems like a Soviet effort to use the secrecy of the back channel against the Nixon administration. This was done on 4 and 9 May by Valdimir Semenov who advanced to Gerard Smith a proposal that Kissinger had rejected in the back channel six weeks earlier. In this way, the Soviets apparently hoped to improve their position by playing Smith off against Kissinger. On 11 May, Kissinger ended this ploy by telling Dobrynin bluntly that if the Soviets did not halt this practice promptly, the United States would close the back channel and thenceforth conduct all negotiations with the Soviets in public, including the delicate negotiations in progress with regard to Soviet interests in Berlin,<sup>40</sup> negotiations the Soviets wished to complete as soon as possible. At the same time, Kissinger demanded from the Soviets within forty-eight hours an answer to a U.S. proposal of 26 April which made it clear that the United States would not accept an NCA-only restriction on its ABM system.<sup>41</sup>

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<sup>40</sup>One of the carrots Nixon and Kissinger had used to encourage the Soviets to compromise on key SALT issues was a promise to expedite negotiations aimed at curtailing the activities in Berlin of the Federal Republic of Germany. In return for this, the Soviets made certain commitments with regard to better western access to Berlin with this improved access being guaranteed by the Soviets. There was also talk of expanded trade between the U.S. and the Soviet Union. See Kissinger, White House Years, pp. 408, 802-03, 806-10.

<sup>41</sup>Kissinger, White House Years, pp. 817-19. Smith's account of the overtures from Semenov may be found in Doubletalk, pp. 218-21. Whereas Kissinger gives dates of 2 and 9 May for the pertinent meetings between Smith and Semenov, Smith specifies the date of the first meeting as 4 May (his fifty-seventh birthday)

Dobrynin brought the reply on 12 May. The Soviets agreed to drop their requirement that each country be limited to a NCA-oriented site at its capital, thereby letting the Nixon administration off the hook of its own fashioning. Furthermore, the Soviets agreed to negotiate offensive and defensive agreements simultaneously. These arrangements brought the superpowers "onto negotiable grounds" and a joint announcement was made by the national leaders on 20 May.<sup>42</sup>

The back-channel agreement was far from perfect. It had not resolved sticking points like the Soviet position on FBS and the U.S. insistence on equality in strategic nuclear systems; it simply removed them from the negotiating agenda at this first stage of the talks. The agreement also tolerated a good deal of ambiguity with regard to what each side meant by such terms as freeze and simultaneity. Furthermore, difficult issues relating to offensive systems remained unresolved. On top of all this, there remained a good deal of bargaining to be done right in Washington, where the "truly nasty problem was to find a position on defense--on limiting ABMs--that the various parts of the town could live with and that might be negotiable." These ABM-related

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and the following Sunday which would have been 9 May. Newhouse, Cold Dawn, pp. 214-15, specifies 4 and 9 May for the meetings and mentions a third meeting on 6 May.

<sup>42</sup>Kissinger, White House Years, pp. 819-20; Newhouse, Cold Dawn, pp. 218-19.

issues are the focus of the remainder of this chapter.<sup>43</sup>

#### NARROWING THE DIFFERENCES

While the Soviets had dropped their insistence on the NCA-oriented system in the back channel discussions, in the formal talks of round four they had rejected the new U.S. proposal that was contained in the president's interim instructions to the U.S. delegation. This proposal would have allowed each country to keep the system it was currently deploying. The U.S. would be permitted to field its four-site SAFEGUARD system protecting missile fields, while the Soviets would be allowed to keep their one NCA-oriented site. The Soviets considered this arrangement "'manifestly inequitable.'"<sup>44</sup> They would not find the first U.S. position in the next round of the talks much more to their liking.

The fifth round of talks started at Helsinki on 8 July with the two delegations sparring over the meaning of simultaneity. The U.S. position was that the discussions could

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<sup>43</sup>Newhouse, Cold Dawn, pp. 218-25; Smith, Doubletalk, pp. 250-51. The quotation is from Cold Dawn, p. 225. Smith is rather critical of the aspect of the 20 May agreement dealing with simultaneity, saying essentially that the agreement did not resolve the issue of the sequence of offensive and defensive weapons talks.

<sup>44</sup>Smith, Doubletalk, pp. 205, 214-16.

focus on ABM matters for two to three weeks, but after that negotiations on offensive and defensive systems had to be carried out in parallel. On the other hand, Semenov, speaking for the Soviets, claimed not to understand the concept of parallel talks and argued that after an agreement was reached on ABM, "some measures would be agreed on in the sphere of limiting strategic offensive arms."<sup>45</sup>

To emphasize its requirement for simultaneous negotiations, the United States delegation on 27 July tabled proposals for an ABM accord and an interim agreement on offensive systems. The American position on ABM was the so-called three-to-one proposal, an attempt to blend the SAFEGUARD system with the NCA-only proposal. Each side was to have the option of defending its NCA with 100 ABMs or defending three missile fields with 300 ABMs. If the U.S. chose to defend missile fields, its ABM sites would all have to be west of the Mississippi River; if the Soviets chose this option, their sites would have to be east of the Ural Mountains. The last U.S. proposal on ABM during round five was tabled on 20 August and offered each side the option of building either two sites to protect missile fields or one site to defend its national command authorities.<sup>46</sup>

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<sup>45</sup>Smith, Doubletalk, pp. 250-51.

<sup>46</sup>Smith, Doubletalk, pp. 254-55, 266. Smith felt very strongly that the U.S. made a grave mistake by not pushing for a complete ban on ABM systems. He pushed for and received authority to raise the question of a ban privately with his Soviet counterpart Semenov. In Smith's eyes the Soviets responded positively. However, this initiative was ended when President Nixon wrote Smith on 12 August and explained why he

There were at least two reasons behind the three-to-one proposal advanced by the United States. First, the Soviets were likely to emerge from the SALT negotiations with a superior number of ICBMs. Furthermore, the Soviet GALOSH system at Moscow could defend 300 Soviet ICBMs as already noted. Nevertheless, the Soviets were not likely to accept a three-to-one disparity in ABM facilities. Further undermining this proposal was the fact that the American SALT delegation and part of the Washington bureaucracy opposed it.<sup>47</sup>

Those who opposed the president's position raised again the possibility of achieving a complete ban on ABM systems. Their opposition set off an extensive and rancorous debate which threatened to turn U.S. policy making into the "greatest seminar on arms control in history" without producing a decision. The debate was finally resolved with the issuance of NSDM 127 which reaffirmed the three-to-one proposal while acknowledging a ban on ABM as the ultimate goal of U.S. arms control policy. The document specified that this ultimate goal could be pursued only after limits were negotiated on ABM systems and after an interim agreement limiting offensive weapons was arranged.<sup>48</sup>

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thought the idea of a complete ban was detrimental to negotiations under way. For Smith's thinking on the ABM ban, see Doubletalk, pp. 257, 261. See pp. 485-86 for a copy of the Nixon letter. See also, Newhouse, Cold Dawn, pp. 226-27.

<sup>47</sup>Newhouse, Cold Dawn, pp. 226-27.

<sup>48</sup>Newhouse, Cold Dawn, pp. 227-30. Gerard Smith favored a complete ban on ABM. For his views see Doubletalk, p. 256.



For their part, the Soviets advanced four ABM proposals during the fifth round. The last of these was made in early September. Its provisions resembled those finally incorporated in the ABM treaty. Each side was to be allowed one NCA-oriented site. Additionally, the U.S. could keep one of the sites it already was constructing, and the Soviets were to be allowed to build an additional ABM facility to protect a number of missile silos equal to the number the American site would defend. While this Soviet proposal was very similar to the agreement eventually signed at the summit, the U.S. delegation was not prepared to accept it at this stage of the negotiations, partly because of its vagueness with regard to the second ABM system the U.S.S.R. would gain. The Nixon administration rejected this proposal and re-iterated its position of 20 August. On 24 September round five ended.<sup>49</sup>

Three weeks later, President Nixon announced that a summit meeting had been scheduled for the following May. This added a new sense of urgency to the talks when they resumed at Vienna on 14 November. The focus remained on ABM, with each side still maneuvering for an advantage. The American delegation suggested that the Soviets keep the system they were deploying and allow the U.S. to keep the two SAFEGUARD sites it was currently building.<sup>50</sup>

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<sup>49</sup>Newhouse, Cold Dawn, pp. 232-33; Smith, Doubletalk, pp. 267-68.

<sup>50</sup>Newhouse, Cold Dawn, pp. 235-36.

The credibility of this position may have been undermined by American officials involved in the SALT process who placed little value on the expected capabilities of SAFEGUARD. In the eyes of one U.S. official: "'The Russians have something of value to them--their Galosh, which at least has some anti-China capability--we have two Safeguard sites that protect nothing.'" This low esteem for SAFEGUARD was not shared by Soviet officials, who, according to Gerard Smith, "took [SAFEGUARD] seriously, especially its potential for a nationwide defense which could eventually neutralize the danger to the United States from Soviet retaliatory missile forces." With such a disparity in views regarding the value of missile defense, it is not surprising that the Soviets, still seeking the advantage in BMD, simply inverted the U.S. position. They proposed to keep their NCA-site and construct another facility to protect an ICBM field while restricting the U.S. to one facility at Grand Forks.<sup>51</sup>

Several other important developments took place during the sixth round of the talks. For one thing, the Soviets agreed in principle to a sub-limit on their large SS-9 missiles, thus allowing the United States to achieve one of its most important strategic goals. Additionally, an agreement was reached

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<sup>51</sup>Smith, Doubletalk, pp. 192, 317; Newhouse, Cold Dawn, pp. 236-37. Newhouse also reported that Soviet military men became "steadily more enamored of the American hard-site concept for defending ICBMs."

regarding a ban on futuristic ABM systems. Still unresolved were the issues of what limits, if any, were to be placed on Soviet SLBMs and what was to be the exact configuration of each side's ABM force structure. Nevertheless, the talks were recessed on 4 February 1972, with the Moscow summit only three months away.<sup>52</sup>

During the break in talks, the American arms control bureaucracy was busy grinding out a position for the negotiations that were to resume at the end of March. On 23 March the White House issued NSDM 158 which directed the U.S. delegation to offer the Soviets an agreement allowing two ABM sites for each side. The U.S. sites would be at Grand Forks and Malmstrom Air Force Bases; the Soviets would have their GALOSH system at Moscow, plus one site to defend ICBMs. This offer was contingent upon the Soviets agreeing to limits on SLBMs.<sup>53</sup>

The talks were now entering a crucial stage with only two months remaining before the summit. Nixon and Kissinger were determined to keep a firm grip on the negotiations. Thus, no fallback position from the NSDM 158 formula was authorized in spite of a request from the American delegation for some negotiating room. If the talks did not show progress within three weeks, Smith was to return to Washington for consultations. One reason for this rigid position was to avoid a repetition of

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<sup>52</sup>Newhouse, Cold Dawn, pp. 237-40.

<sup>53</sup>Newhouse, Cold Dawn, p. 241.

the "Beecher leak" in which a New York Times article revealed a secret fallback position of the U.S. delegation during round five. Additionally, the Nixon administration wanted to convince the Soviets that the U.S. would not back down on its requirement for restrictions on SLBMs as a prerequisite for a SALT agreement.<sup>54</sup>

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<sup>54</sup>Newhouse, Cold Dawn, pp. 224-25, 241-42. As a further precautionary measure, only four copies of NSDM 158 supposedly left the White House. These copies went to Richard Helms of the CIA, Secretary of State William Rogers, Secretary of Defense Melvin Laird, and Gerard Smith.

**EXECUTIVE DIPLOMACY: KISSINGER'S MOSCOW MISSION AND THE SUMMIT**

The final round of talks got under way on 28 March and had reached an impasse by 14 April. With talks in the front channel stalled, the focus of negotiations shifted once more to the back channel where Kissinger and Dobrynin had been negotiating since early March. This time, Kissinger's efforts culminated in a special secret meeting that took place in Moscow between 20 and 24 April 1972. Here, Kissinger and General Secretary Leonid Brezhnev worked out the final general framework of the SALT I agreements. A major step in establishing this framework was the Soviet acceptance of limitations on SLBMs. Where BMD was concerned, the Russians suggested that each side be allowed one ABM site to defend ICBMs and one site to defend its national command authorities.<sup>55</sup>

After Kissinger's return to Washington, the Nixon administration quickly worked out instructions to guide America's SALT delegation in the last minute negotiations that were to be completed at Helsinki. These were spelled out in NSDM 164 issued on 1 May. In this document, the U.S. agreed to Soviet numbers for a freeze on SLBMs and accepted the Soviet ABM proposal presented to Kissinger in Moscow. With the issue of NSDM 164,

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<sup>55</sup>Newhouse, Cold Dawn, pp. 242, 244. For details of Kissinger's negotiations with the Soviets in March and April, see Kissinger, White House Years, pp. 1129-31, 1137, 1148-50.

Kissinger's work in the back channel merged with that of Smith in the front channel. The U.S. delegation at Helsinki now began working out the details of the SALT I agreements.<sup>56</sup>

Several key issues pertaining to ABM were not settled until the eleventh hour. On 22 May, the day Nixon arrived in Moscow, two such matters were resolved although one of these was to resurface during the Moscow summit. The first related to the language determining where the ABM sites could be located. The Soviets objected to terminology that would have called for their second site to be located east of the Ural Mountains. For the treaty to specify such details was considered to be injurious to Soviet prestige. Compromise wording stated that the second site installed by a nation had to be 1300 to 1500 kilometers from its NCA facility. This was the distance between Moscow and the back side of the Urals. The Soviet delegation said that it would recommend to Moscow that the lower number be accepted, but the distance was to be finalized at the summit. The second issue concerned restrictions on phased-array radar systems that might be capable of supporting a missile defense system. A compromise was reached on the main sticking point--a technical parameter which would be used to determine if a phased-array radar was ABM-

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<sup>56</sup>Newhouse, Cold Dawn, pp. 245-47. For interesting details on some of the "horse trading" required to gain Navy acceptance of the Soviet numbers on submarines and SLBMs, see pp. 245-46.

capable.<sup>57</sup>

By the time Brezhnev welcomed Nixon to Moscow on 22 May, the ABM Treaty, the interim agreement on offensive weapons, and a series of "agreed interpretations" were all but complete. Nevertheless, there were some tense moments as a few remaining issues were resolved in top level negotiations that were handled principally by Kissinger. The last details were worked out during the late evening and early morning of 25-26 May, and the SALT I agreements were signed at eleven in the evening of 26 May.<sup>58</sup>

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<sup>57</sup>Smith, Doubletalk, pp. 301-18, 387-88; Nitze, Hiroshima to Glasnost, pp. 315-21; Newhouse, Cold Dawn, pp. 248-49. Nitze, apparently, was a leader in the effort to include radar limitations in the ABM Treaty. In the dispute over what constituted an ABM-capable radar, the U.S. wanted to define such a radar as one with a power aperture of  $1 \times 10^6$  watt-meters squared or more and the Soviets favored a level of  $1 \times 10^{10}$ . A compromise level of  $3 \times 10^6$  was accepted by both sides. This limitation was combined with others to provide restrictions on radar that were supposed to prevent a rapid expansion of the ABM system each would be allowed under the ABM Treaty.

<sup>58</sup>Nixon, Memoirs, pp. 609-12, 615-16; Kissinger, White House Years, pp. 1238-42; Newhouse, Cold Dawn, pp. 249-56.

## SALT I AND THE INSTITUTIONALIZATION OF MUTUAL ASSURED DESTRUCTION

In its final form, the ABM accord allowed each superpower to have one ABM facility within a 150 kilometer radius of its capital and one site within a 150 kilometer radius of a missile field. The agreed interpretations further specified that there must be at least 1300 kilometers between the center of the site at the national capital and the center of the site for the protection of an ICBM field. The radar facilities that could be installed at each of the ABM sites were specified in the treaty. Each ABM site could have 100 missiles and 100 launchers with each side authorized up to 15 additional launchers at test ranges. Although each side was allowed to update its ABM systems, the treaty forbade either side "to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based." While the treaty was of indefinite duration, it was to be reviewed every five years and could be abrogated by either side with six month's notice.<sup>59</sup>

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<sup>59</sup>Smith, Doubletalk, pp. 455-56; Powaski, March to Armageddon, pp. 142, 150; "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems," pp. 273-77 in Newhouse, Cold Dawn; ABM treaty "Agreed Interpretations, Common Understandings, and Unilateral Statements," in Smith, Doubletalk, pp. 494-95.



The other major agreement signed in Moscow was an interim accord on offensive systems that was to remain in effect five years. It froze land-based ICBM deployments at the point they would reach as of 1 July 1972. The United States was allowed 1054 ICBMs, a force level that had remained fixed since it was achieved in the mid-1960s. On the other hand, the Soviets, who had been adding to their ICBM force steadily during the thirty months of the SALT talks, were allowed 1,618 ICBMs. With regard to SLBMs and ballistic missile submarines, the Soviets were allowed 62 boats and 950 missiles to 44 U.S. boats with up to 750 missiles. No limitations were prescribed for MIRVing, bombers, forward-based systems, or mobile ICBMs.<sup>60</sup>

From the American perspective, the SALT I agreements effectively institutionalized the doctrine of mutual assured destruction (MAD), for while placing severe and strict limitations on ABM systems, they set no comparable restrictions for offensive systems. John Newhouse put it this way: "The ABM Treaty had at last been signed, with each side renouncing the defense of its society and territory against the other's nuclear

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<sup>60</sup>Jerome H. Kahan, Security in the Nuclear Age: Developing U.S. Strategic Arms Policy (Washington, D.C.: The Brookings Institution, 1975), pp. 97, 187 (hereinafter cited as Kahan, Security in the Nuclear Age); "Interim Agreement between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitations on Strategic Offensive Arms," 26 May 1972, in Smith, Doubletalk, Appendix 7, pp. 503-06. For another discussion of the treaty's provisions, see Powaski, March to Armageddon, p. 143.

weapons. That is the treaty's historic essence." In confirming deterrence through assured destruction as U.S. nuclear doctrine, the SALT I accords effectively killed the American SAFEGUARD system.<sup>61</sup> The demise of SAFEGUARD is detailed in the next chapter.

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<sup>61</sup>Newhouse, Cold Dawn, pp. 2-3, 260; Smith, Doubletalk, p. 455. According to Newhouse, stability was the objective of the SALT negotiations; and MAD was "stability's handmaiden" (p.18). For a similar judgment relative to SALT I, see Thomas W. Wolfe, The SALT Experience (Cambridge, MA.: Ballinger Publishing Company, 1979), pp. 17-18 (hereinafter cited as Wolfe, SALT Experience). See also Yanarella, Missile Defense, pp. 185-86. Strobe Talbott calls arms control "an attempt to codify MAD" (The Master of the Game: Paul Nitze and the Nuclear Peace [New York: Alfred A. Knopf, 1988], p. 108 [hereinafter referred to as Talbott, Master of the Game]).

## Chapter IV

### **SALT AND THE STRATEGIC FRAMEWORK OF THE 1970S**

All SALT issues arise from instabilities, real or potential. Some instabilities are no less real for being rooted in suspicion and fear instead of hard fact. What is stabilizing for one side--something it is doing--may seem wildly destabilizing to the other. Although each side seeks stability, neither is willing to accept a heavier weight of relative insecurity--a sense of strategic inferiority--than the other.

Stability's handmaiden is MAD . . .

John Newhouse, 1973<sup>1</sup>

If we have not reached an agreement well before 1977, then I believe you will see an explosion of technology and an explosion of numbers at the end of which we will be lucky if we have the present stability, in which it will be impossible to describe what strategic superiority means. And one of the questions which we have to ask ourselves as a country is: What in the name of God is strategic superiority? What is the significance of it, politically, militarily, operationally, at these levels of numbers? What do you do with it?

Henry Kissinger, 1974<sup>2</sup>

## **INTRODUCTION**

The seventies was the age of SALT. As the decade dawned, the Soviet Union and the United States were negotiating the

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<sup>1</sup>Cold Dawn, p. 18.

<sup>2</sup>"Kissinger Assesses the Moscow and the Arms Race," 3 July 1974, (hereinafter cited as Kissinger, Press Conference, 3 July 1974), pp. 264-64 in Roger P. Labrie, ed., SALT Hand Book: Key Documents and Issues, 1972-1979 (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1979) (hereinafter cited as Labrie, SALT Hand Book).

agreements that led to the demise of SAFEGUARD in 1976. The decade ended with the Soviet invasion of Afghanistan and President Carter's withdrawal of the SALT II treaty from Senate consideration.

While the SALT I ABM treaty placed severe restrictions on BMD systems and effectively killed the American ABM program, it did little where offensive systems were concerned beyond recognize the offensive force structures the superpowers had established at that time. Furthermore, the projected SALT II treaty would have done nothing specifically to restrict what Americans considered the most dangerous portion of the Soviet missile force, the heavy ICBMs that would give the Soviets a first strike capability against American MINUTEMAN missiles by the early to mid 1980s.

In failing to gain control of the Soviet heavy ICBM fleet, SALT II in a sense promised to undo what SALT I had accomplished. With the growing threat to American ICBMs, U.S. leaders began to search for a means of off-setting this Soviet advantage. Under these circumstances, the idea of defending missile fields again became a viable policy alternative. Once the idea of missile defense was resurrected, advances in technology, especially in the area of directed energy weapons, excited interest in the possibility of a more general defense against ballistic missiles.

The failure of the SALT process and the resultant resurgence of U.S. interest in ballistic missile defense are the focus of this chapter and the one that follows.

#### A CAUTIOUS CONFIRMATION FOR THE SALT I ACCORDS

The SALT I agreements left liberals and conservatives alike dissatisfied. Liberals disliked the fact that improvements in weapons systems were permitted under the agreements and were especially upset that no restrictions were placed on MIRV'ing. On the other hand, conservatives were not pleased that the Interim Agreement gave the Soviets a significant edge in the numbers of missiles (both ICBMs and SLBMs) as well as in the area of missile throw-weight. "In effect, conservatives believed that the SALT agreements reduced America to a second-rate status in the nuclear equation and thereby made her vulnerable to Soviet nuclear blackmail."<sup>3</sup> Thus, the SALT era began under a dark cloud of suspicion rather than a bright sun of hope.

Problems surfaced as soon as the SALT accords were submitted to Congress for approval. Since the interim agreement was not a formal treaty, it required approval only by a simple majority in both the House and the Senate. The ABM treaty, on

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<sup>3</sup>Powaski, March to Armageddon, pp. 144, 156.

the other hand, required approval by two-thirds of the Senate.<sup>4</sup> On 3 August 1972, the latter breezed through the Senate with the support of eighty-eight senators. Only Senators James L. Buckley, a conservative Republican from New York, and James Allen (D-Alabama) opposed the treaty. Buckley stated that he had "strong misgivings as to both the prudence and the ultimate morality of denying ourselves for all time--or denying the Russians for that matter--the right to protect our civilian populations from nuclear disaster."<sup>5</sup>

The situation was altogether different where the interim accord on offensive systems was concerned. It immediately ran into stiff opposition led by conservative democratic Senator Henry M. Jackson. This agreement would allow the Soviets a total of 2,360 missiles to 1,710 for the U.S. with the disparity in numbers designed to compensate the Soviets for the fact that the U.S. had a three-to-one edge in manned bombers and was about to begin MIRV'ing some of its missiles. Jackson said that the U.S. advantage was illusory and temporary. Within five years, the Soviets would be able to overtake and surpass the U.S. in nuclear

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<sup>4</sup>Spencer Rich, "Senate Approves Treaty to Limit ABM Defenses," Washington Post, 4 August 1972, pp. A1, A18 (hereinafter cited as Rich, "Senate Approves Treaty").

<sup>5</sup>Rich, "Senate Approves Treaty," p. A1. Talbott, Master of the Game, p. 135, claims that Senators Jackson and Strom Thurmond also had reservations about the ABM treaty, but did not vote against it.

power by MIRV'ing their missiles. Particularly troublesome was the idea that the Soviets would MIRV their huge SS-9 missiles. If that happened, Jackson warned, the Soviets would have a first strike capability. To preclude this eventuality, Jackson offered an amendment that would allow the U.S. to abrogate the agreement if the Soviets put multiple warheads on their heavy ICBMs. Furthermore, in future agreements, the U.S. should be allowed the same number of launchers as the Soviets. This amendment would apply only to the wording of the Congressional resolution of approval and would neither be binding on the president nor change the wording of the interim agreement itself. Since the Nixon administration believed the Jackson amendment was in consonance with the interim agreement, it supported Jackson's change.<sup>6</sup>

The Jackson amendment prompted a rancorous debate in the Senate that lasted into the middle of September. Led by Senator J. William Fulbright (D-Arkansas), opponents of the Jackson amendment argued that his bill would seem to require the Soviets to freeze their forces in an inferior position and would therefore poison the atmosphere of future negotiations. In spite of strong opposition and a good deal of parliamentary

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<sup>6</sup>Rich, "Senate Approves Treaty," pp. A1, A18; Michael Getler, "SALT Support Seen Threatened in Senate," Washington Post, 7 August 1972, p. A15; Spencer Rich, "A-Pact Change at Showdown," Washington Post, 9 August 1972, p. A4 (hereinafter cited as Rich, "A-Pact Change"); Spencer Rich, "Jackson A-Pact 'Elaborations' Are Shunned by White House," Washington Post, 10 August 1972, p. A2.

maneuvering, Jackson's measure was approved on 14 September with the Senate passing the amended resolution by a vote of 88 to 2. House approval of the Senate resolution came on 25 September with the vote being 306 for and 4 against.<sup>7</sup>

The Soviets approved the SALT I agreements on 29 September. In the discussions that preceded the approval by the Presidium of the Supreme Soviet, Defense Minister A. A. Grechko assured Soviets that the SALT accords "did not put any limits on the carrying out of research and experimental work that is directed toward solving the problems of the defense of the country from nuclear rocket attack." Other Presidium members noted that the United States had recognized the existence of nuclear parity between the two super powers. President Nixon signed the agreements on 1 October.<sup>8</sup>

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<sup>7</sup>For details on the passage of the Senate resolution, see: Rich, "A-Pact Change," p. A4; Spencer Rich, "A-Arms Pact Voted, 23-1, by House Group," Washington Post, 11 August 1972, p. A1; Bob Woodward and Carl Bernstein, "GOP Loses Bid to Delay Bugging Suit," Washington Post, 12 August 1972, pp. A1, A10; Jack Fuller, "SALT Debate Foes Charged with Stalling," Washington Post, 15 August 1972, p. A4; Jack Fuller, "Jackson Claims Russians Lied on Submarines," Washington Post, 16 August 1972, p. A2; Jack Fuller, "SALT Pact Hits New Hill Snag," Washington Post, 17 August 1972, p. A17; Jack Fuller, "5-Year Limit on Arms Wins Vote in House," Washington Post, 19 August 1972, p. A1; Spencer Rich, "Senate Still Bickering on Missile 'Equality'," Washington Post, 8 September 1972, p. A12; Murrey Marder, "Arms Accord Voted with Tough Rider," Washington Post, 15 September 1972, pp. A1, A8; Richard L. Lyons, "Congress Approves SALT Pact," Washington Post, 26 September 1972, pp. A1, A10.

<sup>8</sup>Robert G. Kaiser, "Soviet Union Ratifies Treaty Limiting ABMs," Washington Post, 30 September 1972, p. A24; "Nixon Signs Treaty on Nuclear Weapons," Washington Post, 1 October 1972, p. A5.



## SALT II

The opposition to SALT I of Jackson and other conservatives signalled possible difficulties for future strategic arms agreements as the Nixon administration started the SALT II talks in November 1972. A goal of the American negotiators was an agreement in which the total throw weights of the U.S. and Soviet Union would be roughly equivalent and the throw-weight of MIRV'ed missiles possessed by each country would be the same. The Soviets rejected this negotiating position and insisted that the advantages in throw-weight and launchers they had negotiated in SALT I must become a part of any SALT II agreement. They also raised again the troublesome issue of forward based systems and how they related to the total number of systems to be allowed each side. Finally, the Soviets refused to accept limits on the MIRV'ing of their missiles.<sup>9</sup>

The issue of MIRV'ing was still unresolved when President Nixon and General Secretary Brezhnev held their second Moscow summit at the end of June 1974. While they could not reach an agreement on MIRVs, they did sign a protocol to the ABM treaty reducing to one the number of ABM sites allowed each nation. As

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<sup>9</sup>Talbott, Master of the Game, p. 136; Labrie, SALT Hand Book, pp. 161-62.

the meeting ended, the two leaders issued a joint communique indicating their intention to push for a new eight-year agreement to take effect in 1977 when the 1972 interim agreement was due to expire.<sup>10</sup>

As the summit ended, Kissinger met with the press to discuss its outcome. He explained that the ABM treaty was designed to keep either side from maintaining an effective ballistic missile defense. By allowing each side only one site instead of the two provided in the basic treaty, the 1974 protocol would re-enforce that intention and make it more difficult for either superpower to break out of the 1972 treaty. Under terms of the protocol each country could reverse its decision on the location of its site one time. That is, the U.S. could decide to shift its SAFEGUARD system to defend Washington, but having done so, it could not reverse that decision and return to the defense of an ICBM field. Kissinger emphasized that the absence of a strong ABM system removed a major incentive for deploying MIRV'ed ICBMs. The absence of defenses, Kissinger said, meant that the term "'superiority'" was "devoid of any operational meaning."<sup>11</sup>

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<sup>10</sup>Labrie, SALT Hand Book, pp. 164-65; "New ABM Systems Banned in Soviet-American Protocol," Washington Post, 4 July 1974, p. A7.

<sup>11</sup>Kissinger, Press Conference, 3 July 1974, pp. 255-56.

Later in the news conference, a reporter asked about the prospect for an arms race if a follow-on agreement were not reached by 1977. Kissinger's response contained a hint of frustration as he returned to his earlier point about the meaning of nuclear superiority.

If we have not reached an agreement well before 1977, then I believe you will see an explosion of technology and an explosion of numbers at the end of which we will be lucky if we have the present stability, in which it will be impossible to describe what strategic superiority means. And one of the questions which we have to ask ourselves as a country is: What in the name of God is strategic superiority? What is the significance of it, politically, militarily, operationally, at these levels of numbers? What do you do with it?<sup>12</sup>

At the time of the Moscow summit, the Watergate scandal was on the verge of overtaking President Nixon, and on 9 August he resigned his office and was succeeded by Gerald Ford. While Ford was eager to keep the SALT process going, little progress was made in negotiations during his presidency. In November 1974, following preliminary work by Secretary of State Henry Kissinger, Ford and Brezhnev met in Vladivostok to formalize the framework of a new treaty that would limit offensive weapons until 1987. This framework called for each side to be allowed up to 2,400 delivery vehicles of which only 1,320 could be MIRV'ed. The Soviets abandoned their demand that FBS systems be included in the U.S. totals, and the United States gave up its demand for

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<sup>12</sup>Kissinger, Press Conference, 3 July 1974, pp. 264-65.

limitations on throw weight.<sup>13</sup>

In January 1975, the formal SALT II negotiations got under way again at Geneva and immediately ran into problems. For one thing, the two sides disagreed on three major issues. The United States wanted all missiles that were successfully tested with MIRVs to count against the ceiling of 1,320. U.S. negotiators also wanted cruise missiles excluded from the ceiling set on delivery systems and proposed including the Backfire bomber in the Soviet count of strategic systems. The Soviets opposed all three of these positions. Furthermore, these talks occurred against a background of deteriorating relations between the superpowers as the Soviets deployed their first MIRV'ed missile, "bitterly renounced the trade agreement" they had signed with the United States in 1972, and supported North Vietnam's successful invasion of South Vietnam. It was also about this time that a number of people, including former Secretary of Defense Melvin Laird, charged that the Soviets had been cheating on the SALT I agreements.<sup>14</sup>

Some progress in resolving the disagreements was made in late July and early August when Ford and Brezhnev met at Helsinki. Here the two leaders worked out an agreement whereby

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<sup>13</sup>Labrie, SALT Hand Book, p. 166; Carroll Kilpatrick, "Summit Progress Noted: Kissinger Says Guidelines on SALT Near," Washington Post, 24 November 1974, pp. A1, A8.

<sup>14</sup>Labrie, SALT Hand Book, pp. 166-67.

the Soviets accepted the U.S. position on counting MIRV'ed missiles. Further progress came toward the end of 1975 when a compromise regarding the cruise missile and Backfire bomber issues seemed to be near. However, this compromise was undermined by Soviet and Cuban involvement in a civil war in Angola which resulted in the establishment of a Marxist government in that African nation. The continuation of these tensions in broader superpower relations, Soviet intransigence on the issues of the Backfire bomber and cruise missiles, and Ford's growing pre-occupation with his campaign for election to the office he had assumed from Nixon kept the two sides from reaching an agreement during the last year of Ford's administration.<sup>15</sup>

President Carter came to office promising to move the country toward the ultimate goal of eliminating "all nuclear weapons from this earth." Displeased with the approach to arms control that the U.S. had been following, Carter and his administration followed their own approach to arms control which was based on the idea that agreements on nuclear arms were too important to be hostage to the more or less routine clashes such as the Angolan situation that regularly punctuated the relationship between the two great powers. In February, Carter

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<sup>15</sup>Wolfe, SALT Experience, pp. 211-16; Labrie, SALT Hand Book, pp. 167-68. For a discussion of the domestic political ramifications of the SALT negotiations in the election year of 1976, see Talbott, Master of the Game, p. 143.

announced that he was prepared to push ahead with a treaty that would establish the general limits agreed to at Vladivostok, postponing until SALT III the touchy issues associated with cruise missiles and Backfire bombers.<sup>16</sup>

The effort of the Carter administration to negotiate a second SALT treaty lasted twenty-seven months, beginning in March 1977 when Secretary of State Cyrus Vance visited Moscow. The main objective of the American negotiating effort was to gain an agreement that would halt what Americans considered a Soviet drive to achieve clear strategic superiority which would carry with it the ability to execute a successful first strike against American ICBMs. Thus, an early American proposal would roll back the number of modern heavy ICBMs allowed the Soviets under SALT I from 308 to 150. Furthermore, it would fix a ceiling of 550 on the number of MIRV'ed ICBMs permitted both sides. For their part, the Soviets insisted on keeping the gains they had achieved in SALT I and at Vladivostok and would not agree to curbs on their heavy ICBMs.<sup>17</sup>

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<sup>16</sup>Wolfe, Salt Experience, p. 219; Labrie, SALT Hand Book, pp. 381-82.

<sup>17</sup>Labrie, SALT Hand Book, pp. 384-86. This proposal would have left the American land-based missile fleet intact, while requiring a reduction in portions of the Soviet force structure.

After two more years of negotiating, the superpowers agreed that each side was to be allowed a total of 2,250 launchers, 1,200 of which could be MIRV'ed. These limits were to be achieved on 31 December 1981. The U.S. failed to persuade the Soviets to reduce their fleet of heavy ICBMs by fifty per cent. Thus, the Soviets were permitted to keep the 308 heavy missiles authorized under the SALT I interim accord and the Vladivostok protocol.<sup>18</sup>

Several other key issues also had to be resolved. These involved such things as setting an upper limit for the production rate of Backfire bombers, agreeing on operational and deployment limitations that would keep the Backfire from becoming a major threat to the United States, setting limits on the range of cruise missiles and the number of these missiles a bomber could carry, and establishing rules for the testing of ICBM warhead buses.<sup>19</sup> The last major details of the SALT II agreement were worked out in the spring of 1979, and the superpowers announced on 11 May that they had reached an agreement. On 18 June, Carter and Brezhnev signed the SALT II treaty in Vienna.<sup>20</sup>

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<sup>18</sup>Labrie, SALT Hand Book, pp. 387, 389, 393, 401, 410, 481.

<sup>19</sup>Labrie, SALT Hand Book, pp. 389, 399, 404, 408, 410, 412-13, 416-17.

<sup>20</sup>Labrie, SALT Hand Book, pp. 413, 417.

Nevertheless, the same tensions that had plagued the relationship between the U.S. and the Soviet Union while the treaty was being negotiated persisted after the signing ceremonies in Vienna and played a major role in undermining the treaty in the minds of U.S. Senators. As the treaty was being considered by the Senate, reports of a Soviet combat brigade in Cuba caused a political furor in the United States. This episode, combined with the Soviet invasion of Afghanistan, raised questions in the minds of many about the long-term goals of the Soviets and "shattered the crumbling structure of American-Soviet detente."<sup>21</sup>

In early January 1980, Carter asked the Senate to delay its consideration of the SALT II agreement, since he did not "consider this 'a propitious time' to take up the treaty." The agreement had still not been approved when Carter left office a year later. Although the new Reagan administration refused to push for ratification, the provisions of the SALT I and II agreements would be followed by the U.S. throughout the eight years of the Reagan presidency.<sup>22</sup>

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<sup>21</sup>Talbott, Master of the Game, p. 159; Murrey Marder, "Wrangling over SALT Illustrates U.S.-Soviet Gulf," Washington Post, 2 January 1981, pp. A1, A14.

<sup>22</sup>Bernard Gwertzman, "Carter Seeks Treaty Delay; Recalls Envoy from Soviet [sic] Over Moscow's Afghan Role," New York Times, 3 January 1980, p. A1, A11; Talbott, Master of the Game, Chapter 10. There had long been serious doubts about the ability of the SALT II treaty to win Senate approval. Paul Nitze expressed concern about the outcome of the SALT process in several places in the mid-1970s ("The Vladivostok Accord and SALT II," The Review of Politics, April 1975, pp. 147-60 [passim]; "Assuring Strategic Stability in an Era of Detente,"



## GROWING CONCERN OVER SOVIET MISSILES

Jackson's position in the debate on the SALT I agreements had proved to be prophetic. Arguably, SALT I had done little to restrict Soviet plans to expand their offensive strategic forces. The SALT I negotiations had lasted two and a half years, with the Soviets refusing to accept a definite linkage between restrictions on ABM systems and limits on offensive systems until they reached the desired point in their offensive build-up. SALT II did not improve the situation. It came too late and its provisions were too generous to eliminate the growing Soviet threat to America's ICBM fleet. It did virtually nothing to constrain the primary hard-target kill system in the Soviet

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Foreign Affairs, January 1976, pp. 207-08). A number of other conservative strategic analysts expressed serious concerns also: Colin S. Gray, "SALT: Time to Quit," Strategic Review, Fall 1976, pp. 14-22, and William R. Van Cleave, "SALT on the Eagle's Tail," Strategic Review, Spring 1976, pp. 44-55. Talbott saw in the Senate confirmation votes for Paul Warnke a clear warning to the Carter administration that any agreement with the Soviets would be subject to close scrutiny by the Senate (Master of the Game, pp. 151-54). At the time of Carter's withdrawal of the treaty, the New York Times reported that the treaty would have experienced trouble in the Senate regardless of Soviet actions in other parts of the world. See: Charles Mohr, "Arms Pact Outlook Called Dim Anyway," New York Times, 4 January 1980, p. A6. The Soviets charged that the U.S. was using the Afghanistan "intervention" as a pretext for abandoning a treaty on which the U.S. had long been procrastinating (Craig R. Whitney, "Moscow Portrays Carter as 'Wicked,'" New York Times, 4 January 1980, p. A1).

nuclear arsenal, as the Soviets refused to accept a reduction in their heavy ICBM force of 308 missiles. Moreover, by the time the provisions of the treaty were established, the Soviets had already tested the SS-18 with ten warheads.<sup>23</sup>

Soon after the Congressional acceptance of the SALT I interim accord on offensive systems, a number of people began to sound alarms about developments in the Soviet nuclear force structure. In the Spring of 1974, Secretary of Defense James R. Schlesinger warned about the growing Soviet missile threat, stating that the Russians appeared determined to "exploit" asymmetries in the Soviet and American force structures. The secretary noted that the United States was "troubled by Soviet weapons momentum, and we simply cannot ignore the prospect of a

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<sup>23</sup>Robert L. Bartley, "SALT: A Bankrupt Process," Wall Street Journal, 15 June 1979, p. 16 (hereinafter cited as Bartley, "SALT: A Bankrupt Process"); Labrie, SALT Hand Book, pp. 387, 389, 412-13. Talbott, Master of the Game, p. 158, claims that without the freeze on MIRVs provided by SALT II, the Soviets could have placed as many as forty warheads on the SS-18. Talbott also quotes Paul Nitze as saying that the SALT II freeze on number of warheads is a "much overplayed so-called" asset of SALT II, but he does not give Nitze's rationale. The optimum number of warheads for the SS-18 is from ten to fourteen. It would make no sense for the Soviets to place forty warheads on each missile, since there are not 12,000 hard targets to be attacked in the United States. Moreover, fractionating to forty warheads would significantly reduce the yield of the warheads, increase cross-targeting problems astronomically, and expand the foot-print of the SS-18 to the point where sufficient targets for the warheads could not be found within the footprint. For a positive view of the early SALT process, see: Jan M. Lodal, "Assuring Strategic Stability: An Alternative View," Foreign Affairs, April 1976, pp. 462-81 (hereinafter cited as Lodal, "Assuring Strategic Stability").

growing disparity between the two major nuclear powers."<sup>24</sup>

The U.S. had hoped to control the total throw weight of the Soviet missile force by restricting the largest Soviet missile (the SS-9) and its replacement (the SS-18), the latter having a throw weight that was thirty percent greater than the 12,000 to 15,000 pounds of its predecessor. However, the United States was caught off-guard by the unexpected development of the SS-17 and SS-19 as replacements for the SS-11. The throw weights of these new missiles were three to five times that of the SS-11 which had a payload of 1,500 pounds. Moreover, by late 1974 the SS-17 had been tested with four MIRV'ed warheads and the SS-19 with six. One variant of the SS-17 was tested with a single warhead and in this configuration possessed hard-target kill capability. Overall, Schlesinger projected that the Soviets could have a combined throw weight in their ICBM fleet "in the out years" of ten to twelve million pounds compared to only two million pounds for the U.S. With such a throw weight, the Soviets had the potential to field up to 33,000 RVs equivalent to those carried by the U.S. Poseidon missile.<sup>25</sup>

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<sup>24</sup>"The Report of the Secretary of Defense James R. Schlesinger to the Congress on the FY 1975 Defense Budget and FY 1975-1979 Defense Program, March 4, 1974," quoted in "A Strategic Doctrine for the United States: Secretary Schlesinger's Report," Strategic Review, Spring 1974, p. 4.

<sup>25</sup>U.S. Congress, Senate, 91st Congress, 2nd Session, Committee on Foreign Affairs, Subcommittee on Arms Control, International Law and Organization, Hearings on U.S. and Soviet Strategic Doctrine and Military Policies, 4 March 1974, pp. 5-6; and Mark B. Schneider, "SALT and the Strategic Balance: 1974," Strategic Review, Fall 1974, p. 42 (hereinafter cited as Schneider, "SALT: 1974"). For a discussion of how the Soviets

Less than a year after Schlesinger's warning, the Soviets had started to deploy the SS-18 and tested this giant missile with multiple warheads. These tests and other developments prompted Secretary Schlesinger to state publicly his disappointment in an apparent Soviet drive to achieve "'major counterforce capabilities'." As large Soviet missiles with multiple warheads became operational, the United States would push its own MIRV program which was already well along.<sup>26</sup>

Schlesinger's outspokenness on strategic defense issues and his feud with Henry Kissinger were major causes of a break between him and President Ford that culminated in the so-called Halloween massacre of October and November 1975. Particularly troublesome was Schlesinger's hardline stand on arms negotiations with the Soviets. While Ford and Kissinger seemed to be eager for an additional strategic arms agreement with the Soviets, Schlesinger insisted that such an agreement must include limits on the throw weight of Soviet missiles and restrictions on the

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might take advantage of their tremendous throw-weight advantage, see Paul Nitze, "The Strategic Balance: Between Hope and Skepticism," Foreign Policy, Winter 1974-75, p. 148 (hereinafter cited as Nitze, "Strategic Balance").

<sup>26</sup>Michael Getler, "Soviet SS-18 Believed Single-Warhead Type," Washington Post, 28 January 1975, p. A4; "Soviets Test Huge Missile in Pacific," Washington Post, 5 June 1975, p. A6; "Soviets Test SS-18, Largest MIRV Missile," Washington Post, 10 June 1975, p. A5. Schneider, "SALT: 1974," p.42, indicated that the Soviets had tested the SS-18 with five to eight warheads; Murrey Marder, "Schlesinger Sees Buildup In Soviet Arms," Washington Post, 21 June 1975, pp. A1, A5.

number of MIRV'ed missiles on both sides. During the "massacre," Ford replaced his troublesome secretary of defense with Donald Rumsfeld who like Schlesinger was a hardliner on defense issues, but also more of a team player.<sup>27</sup>

Schlesinger's replacement led Lieutenant General Daniel O. Graham to resign as Director of the Defense Intelligence Agency and retire from the Army. Schlesinger had allowed Graham to circulate in the Pentagon a "a cold warish study of 'Detente in Soviet Strategy'" which charged that Soviets were clearly determined to break up NATO and considered detente advantageous to their cause.<sup>28</sup> Soon after he retired, Graham became a national security advisor on the campaign staff of Ronald Reagan who was running against Ford for the Republican nomination.<sup>29</sup>

Graham's position was indicative of a growing suspicion among some about Soviet intentions toward the West. There was concern that the Russians might use their advantage in offensive forces, combined with their operational ABM system and their civil defense program, to coerce the United States in case of a

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<sup>27</sup>Angus Deming with Bruce van Voorst and Lloyd H. Norman, "Foreign Fallout," Newsweek, 17 November 1975, p. 38; David M. Alpern with Henry W. Hubbard, "The Countdown," Newsweek, 17 November 1975, p. 28 (hereinafter referred to as Alpern and Hubbard, "Countdown"); Peter Goldman with Thomas M. DeFrank, "Ford's Big Shuffle," Newsweek, 17 November 1975, pp. 24-27.

<sup>28</sup>Alpern and Hubbard, "Countdown," pp. 28, 36.

<sup>29</sup>Interview with Daniel O. Graham; High Frontier, Inc.; Washington, D.C.; 7 July 1987; p. 2.

political crisis. In the mid-1970s, concerns such as these "generated an intense and spreading debate about what Soviet military development means, and how the United States should respond."<sup>30</sup>

#### THE DEFENSE DEBATE OF THE 1970S: THE UTILITY OF MILITARY POWER

While not infallible, the resources and methods of modern intelligence make it possible to estimate the number and characteristics of enemy systems with reasonable accuracy. However, when one moves into the realm of strategy and intentions, one leaves the relative certainty and comfort offered by the domain of numbers for the uncertain region of qualities where intuitive judgments based on history and theory prevail. It was in this latter region of uncertainty where the most important issues of the "intense and spreading debate" of the mid-1970s were argued.

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<sup>30</sup>Linda Charlton, "Groups Favoring Strong Defense Making Gains in Public Acceptance," New York Times, 4 April 1977, p. 50. Although Lodal seeks to dismiss the size of Soviet boosters and the number of warheads they could carry as the result of imperatives in the Soviet technology base, he does admit: "Clearly, the rate and scale of the present Soviet deployment of MIRVed land-based missiles are disappointing, if not outright suspicious" (Lodal, "Assuring Strategic Stability," p. 463). For concern about political coercion, see U.S., Congress, Senate, Committee on Armed Services, Fiscal Year 1977 Authorization for Military Procurement, Research and Development, and Active Duty, Selected Reserve and Civilian Personnel Strengths, Hearings on S. 2965, Part 12, Research and Development, 94th Cong., 2d sess., 1976, pp. 6725-26 (hereinafter cited as Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development).

One part of the debate centered on the utility of military power, especially nuclear arms. The post-World War Two portion of this debate stretches back to Bernard Brodie's statement in 1946 that in the nuclear age military power is virtually useless except as a deterrent to the use of other military power.<sup>31</sup> In the 1970s, this fundamental issue was raised again by Kissinger's frustrated questions quoted above: "What in the name of God is strategic superiority? What is the significance of it, politically, militarily, operationally, at these levels of numbers? What do you do with it?"<sup>32</sup>

Similar views were expressed by Paul Warnke who believed that nuclear superiority was meaningless, since both the Soviets and the Americans had enough weapons to annihilate each other. With regard to the superior number of strategic launchers the Soviets possessed in 1977, Warnke said that this kind of superiority is "clearly without any kind of significance, unless

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<sup>31</sup>"Implications of Military Power," in Frederick S. Dunn, et. al., The Absolute Weapon: Atomic Power and World Order, edited by Bernard Brodie (New York: Harcourt, Brace and Co., 1946), p. 76.

<sup>32</sup>Drew Middleton, "World Military Situation Confronting Carter Shows Changes Have Favored Soviet," New York Times, 4 January 1977, p. 8. Kissinger had similar misgivings about the significance of conventional military power. Specifically, he wondered about the value of Soviet and Cuban bases in Africa. American military officers feared these bases might be used to interdict transportation lines that carried oil and other materials between Europe and countries in the Middle and Far East.

by our own rhetoric we give it political significance that it does not deserve."<sup>33</sup> He had little more regard for conventional military forces and weapons. In his view, they had not furthered American interests, but rather had undermined them. Matters such as assuring an adequate supply of raw materials for the United States were "not military problems; they're problems of diplomacy and foreign policy."<sup>34</sup>

Jan Lodal also believed that the significance of nuclear superiority was more a function of how one reacted to it than a matter of its having any intrinsic value. According to Lodal, the only possible benefit of nuclear superiority:

might be to create adverse political perceptions in the rest of the world concerning the relative strengths of the United States and the Soviet Union.

But we must not forget that our own rhetoric largely determines these political perceptions. To the extent that we emphasize measures in which the Soviets have an advantage, such as missile throw-weight, we ensure that others will perceive us to be at a disadvantage. On the other hand, if we pursue sensible programs designed to protect our deterrent capability, and explain carefully why we have decided to forego a 'throw-weight race' or a 'megatonnage race,' I see no reason why we should be the subject of adverse political perceptions.<sup>35</sup>

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<sup>33</sup>"The Real Paul Warnke," New Republic, 26 March 1977, pp. 22-23. Italics are Warnke's.

<sup>34</sup>"The Real Paul Warnke," p. 25; Paul C. Warnke, "Apes on a Treadmill," Foreign Policy, Spring 1975, pp. 12-29 (hereinafter cited as Warnke, "Apes on a Treadmill"). In "Apes on a Treadmill," Warnke comes across as very anti-military. All international problems can be solved by diplomacy. He attacked DOD budgets as excessively large, disapproved of the role the United States had played in the World, criticized the American military force structure, and disparaged the Vietnam War.

<sup>35</sup>Lodal, "Assuring Strategic Stability," p. 478. Lodal discounted the threat of a Soviet first strike because of the survivability of the other legs of the TRIAD. Hindsight suggests



Conservatives like Paul Nitze viewed things differently. He was specifically concerned by Kissinger's questioning of the utility of strategic superiority. Nitze believed the U.S. was in a long-term struggle with the Soviet Union in which the Soviets would do everything possible to achieve an advantage that could be used to gain their ideological goals. Faced with such an inveterate opponent, America must respond to Soviet actions such as the deployment of a new generation of missiles even if it meant acquiring new strategic systems beyond the TRIDENT and B-1 bomber. Otherwise, as the correlation of forces changed more in favor of the Soviets, U.S. leaders could expect the Russians to attempt to take advantage of their superior forces. Among the things the Soviets might achieve was an increased accommodation toward the Soviet viewpoint in the third world. Nitze summed up his point as follows: "if one does not want to see either an increase in the prospects for general Soviet hegemony or an increase in the risk of nuclear war, it is necessary to maintain the quality of deterrence, crisis stability, and rough strategic

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that Lodal may have been a little cavalier when he talked about the invulnerability of U.S. submarines. The spy ring headed by John A. Walker, Jr., was active from 1968 to 1985. During that time, it is estimated that the Soviets were able to read over a million U.S. messages and gain a great deal of information about U.S. sensors, weapons, and naval tactics. (Michael R. Gordon, "Weinberger Says the Walkers Gave Soviets Much Key Data," New York Times, 17 April 1987, p. A9; George C. Wilson, "Soviet Submarines 'Have Closed the Gap': Lehman Says Walkers' Espionage Cut U.S. Technological Lead," Washington Post, 3 April 1987, p. A5.)

parity." Nuclear superiority, in his view, did have real world consequences.<sup>36</sup>

#### THE DEBATE: SOVIET INTENTIONS

What, if anything, the Soviets might do with military superiority was a function of Soviet intentions; and where these were concerned, perhaps the most influential statement was a study produced during the second half of 1976 by CIA Team B, a group of defense analysts invited by CIA Director George Bush to complete an independent evaluation of Soviet forces and strategic intentions that would offer an alternative view to the CIA's own analysis. One reason for the appointment of this committee was the steady criticism of CIA estimates of Soviet strength that came from Generals George Keegan and Daniel Graham (both of whom had held high-level positions in the intelligence community) and Paul Nitze and Professor Richard Pipes (both of whom were outside the intelligence community). Furthermore, the Republican primary elections were being held during the spring of 1976 and Ronald Reagan was making an issue out of national security. As a result, Gerald Ford was sensitive to this criticism and thus was willing to allow Bush to appoint the independent review group.<sup>37</sup>

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<sup>36</sup>Nitze, "Strategic Balance," passim. See especially pp. 136, 152-53.

<sup>37</sup>Jerry W. Sanders, Peddlers of Crisis: The Committee on the Present Danger and the Politics of Containment (Boston, MA: South End Press, 1983), p. 198 (hereinafter cited as Sanders, Peddlers of Crisis). Strobe Talbott, The Master of the Game:

The committee was designated Team B to distinguish it from Team A, the CIA analysts who normally perform this function.<sup>38</sup> The leader of Team B was Richard Pipes, a Harvard professor of Russian history who had been recommended for the position by the President's Foreign Intelligence Advisory Board.<sup>39</sup> All told, there were eleven members of Team B, seven from outside the government and four from within. In addition to Pipes, the outsiders included Paul Nitze, Foy Kohler, William Van Cleave, Daniel Graham, Thomas Wolfe (RAND Corporation), and retired Air Force General John Vogt, Jr. Members from inside the government included Air Force Major General George Keegan (a strong critic of the CIA as already noted), Air Force Brigadier General Jaspar A. Welch, Paul D. Wolfowitz of the Arms Control and Disarmament Agency, and Seymour Weiss of the State Department.<sup>40</sup>

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Paul Nitze and the Nuclear Peace (New York: Alfred A. Knopf, 1988), p. 146, claims that the "impetus" for this committee came from the President's Foreign Intelligence Advisory Board. Talbott's book is hereinafter referred to as Talbott, Master of the Game. For a report of General Keegan's criticism of U.S. intelligence work, see David Binder, "Air Force's Ex-Intelligence Chief Fears Soviet Has Military Edge," New York Times, 3 January 1977, p. 2. Keegan was particularly worried by a major Soviet effort to harden installations and develop an extensive civil defense system which indicated to Keegan that the Soviets were serious about being ready to fight and win a nuclear war.

<sup>38</sup>Robert Scheer, With Enough Shovels: Reagan, Bush and Nuclear War (New York: Vintage Books, 1983), pp. 53-55 (hereinafter cited as Scheer, With Enough Shovels).

<sup>39</sup>Talbott, Master of the Game, p. 146.

<sup>40</sup>Sanders, Peddlers of Crisis, p. 199.

Team B began its work in June 1976. The focus of its efforts was the official intelligence estimates of Soviet military capabilities generated by the CIA. These estimates are an important factor in determining the U.S. military budget and force structure planning. Shortly after Team B finished working, its findings appeared in unclassified form in an article published by Pipes in the July 1977 edition of Commentary magazine.<sup>41</sup>

In this article, Pipes argued that the U.S. and Soviet Union leaders held divergent views of strategic nuclear war. This disparity sprang from the different historical experiences of the two countries. The Soviet experience included sixty million deaths in the twentieth century as a result of two world wars (twenty million in World War II alone), famine, and political upheaval. Moreover, the Soviet nation had suffered tremendous physical devastation in the Second World War--1,710 towns, over 70,000 villages, and 32,000 industrial facilities had been destroyed. As a result, Pipes wrote, Soviet leaders consider "conflict and violence as natural regulators of all human affairs." Furthermore, Communist doctrine holds that wars are inherent in a world order divided between capitalism and communism. Because of this perception, the Soviets naturally followed the teachings of Clausewitz who considered war an

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<sup>41</sup>Sanders, Peddlers of Crisis, pp. 198-99, 285.

extension of politics by other means. Under these conditions, the importance of military force to Soviet leaders is obvious. Beyond its use in war, armed force also plays a key role in maintaining the established order, both in the Soviet Union and in Eastern Europe.<sup>42</sup>

On the other hand, the United States had experienced only 650,000 casualties in all of her wars since 1775 and had never had a famine or a political purge. In the American view, war is "the result of an inability or an unwillingness to apply rational analysis and patient negotiation to disagreements: the use of force is *prima facie* evidence of failure."<sup>43</sup>

After World War II ended with the use of atomic weapons against Japan, Pipes wrote, an important segment of the American strategic community followed the lead of Bernard Brodie and other civilian strategists and concluded that nuclear armed military forces could have no other useful purpose than to deter war which

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<sup>42</sup>Richard Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War," Commentary, July 1977, pp. 26-27, 29, 34 (hereinafter cited as Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War").

<sup>43</sup>Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War," pp. 25, 29, 34. Pipes underestimates the casualties suffered by the United States in its wars. See Donald R. Baucom, "Technological War: Reality and the American Myth," Air University Review, September-October 1981, pp. 58-59 (hereinafter cited as Baucom, "Technological War"). In the Civil War, 623,000 died; in World War I, 126,000 were killed; and in World War II, about 307,000 were killed or died from other causes.

would be an unmitigated disaster for humanity. Thus, Clausewitz's view that war is policy extended had lost it validity.<sup>44</sup>

On the other hand, Soviet strategists had concluded that nuclear weapons, though very powerful, did not make war obsolete. Indeed, Pipes argued, Soviet leaders believed that "thermonuclear war is not suicidal, it can be fought and won, and thus resort to it must not be ruled out." They continued to hold with Clausewitz that war, even nuclear war, could be an extension of politics by other means. Far from being useless, nuclear weapons served as "compellants" in peacetime and in war would be used in the decisive, early phases to disrupt the enemy's home front and prepare the way for later successful operations carried out by other arms of the Soviet military establishment. In other words, modern warfare was combined-arms warfare raised to the strategic level.<sup>45</sup>

The views of Team B and their expression in Pipes' article in Commentary were in wide circulation as the Carter administration took office. Team B's conclusions were reflected

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<sup>44</sup>Pipes, "Why the Soviet Union Thinks It Could Fight and Win a Nuclear War," pp. 21, 24, 34. For Brodie's statement on the utility of nuclear war, see Bernard Brodie, "Implications for Military Policy," in Brodie, ed., The Absolute Weapon: Atomic Power and World Order (New York: Harcourt, Brace and Company, 1946), p. 76.

<sup>45</sup>Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War," passim. See especially pp. 28-30.

in the new National Estimate of Soviet Strategic Capabilities and Objectives that was completed on 21 December 1976.<sup>46</sup>

Furthermore, Donald Rumsfeld, in his parting statement as secretary of defense, supported the Team B analysis noting that while we cannot know the intentions of Soviet leaders with certainty, we can evaluate their military capabilities. These capabilities "indicate a tendency toward war fighting . . . rather than for the more modish Western models of deterrence through mutual vulnerability."<sup>47</sup> George Bush also used his influence to push the Team B report. As a result, the report became the generally accepted national estimate of Soviet military capabilities and was the intelligence estimate of what the U.S. faced when Carter became president.<sup>48</sup>

Additionally, Drew Middleton summarized the Pipes article for the New York Times before the publication date of the July Commentary.<sup>49</sup> Moreover, it was reprinted in the July 1977 edition of Air Force Magazine, an influential journal with a wide circulation in the national security affairs community that

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<sup>46</sup>"Bush Is Silent on Assessment of Soviet Aims," New York Times, 3 January 1977, p. 2.

<sup>47</sup>Sanders, Peddlers of Crisis, p. 203. Sanders is quoting from "Rumsfeld Says Russia Could Become Dominant Power," San Francisco Chronicle, 19 Jan 1977.

<sup>48</sup>Sheer, With Enough Shovels, p. 58.

<sup>49</sup>"Report on Soviet Nuclear Strategy Says Moscow Emphasizes Victory," New York Times, 25 June 1977, p. 7.

includes active duty military and defense industry leaders. It was also widely referred to in later articles on strategic military thought. The manner in which this piece was published marked it as the flagship article for a movement among conservative strategic analysts who aimed to bring about a fundamental reassessment and revision of American strategic thought.

To say that the Team B report was highly influential is not to say that the views it expressed were universally shared. For example, Paul Warnke believed that even if Pipes's analysis were correct, the United States should not respond "to this kind of thinking [which] is on a level of abstraction which is unrealistic." To debate with the Soviets as if nuclear war might be winnable would be to "indulge what I [Warnke] regard as the primitive aspects of Soviet nuclear doctrine." Instead, Americans "ought to be trying to educate them into the real world of strategic nuclear weapons, which is that nobody could possibly win. Nor could anybody calculate what the consequences would be in the event of a strategic nuclear exchange."<sup>50</sup>

Warnke's comment about educating Soviet strategists elicited a scathing response from Richard Pipes.

On what grounds does he, a Washington lawyer, presume to "educate" the Soviet general staff composed of professional soldiers who thirty years ago defeated the Wehrmacht--and, of

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<sup>50</sup>"The Real Paul Warnke," p. 24.



all things, about the "real world of strategic nuclear weapons" of which they happen to possess a considerably larger arsenal than we?<sup>51</sup>

From the perspective of Pipes, people such as Warnke were dangerous. They were like the scientists he described in his Commentary article who were not well-versed in Soviet strategic literature and did not understand the Soviet culture. These Americans reached their own conclusion that nuclear war was unthinkable, and when they did not find these views mirrored in Soviet strategic literature, they simply dismissed the Soviet writings as unsophisticated and wrong. The resultant asymmetrical views of nuclear war are destabilizing, in Pipes' opinion, for "as long as the Soviets persist in adhering to the Clausewitzian maxim on the function of war, mutual deterrence does not really exist." Only by meeting the Soviets on their own ground and denying them the possibility of succeeding in a nuclear war could Americans continue to maintain deterrence.<sup>52</sup>

#### THE DEBATE: THE ETHNOCENTRICITY OF AMERICAN STRATEGISTS

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<sup>51</sup>Pipes, "Why the Soviet Union Thinks It Could Fight and Win a Nuclear War," p. 21.

<sup>52</sup>Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War," pp. 28-29, 34.

Pipes had made a strong argument that Americans had been unable to rise above their own national experience when appraising the Soviet force structure and doctrine. This charge became a fundamental ingredient of several articles criticizing American strategic thought and the way it affected U.S. strategic forces.

Jacquelyn Davis used the arguments of Pipes to underpin her warning about the arrogance of defense officials who seemed to be moving the U.S. away from its traditional dependence on the TRIAD to deter nuclear war. Based upon the assumption that the sea-based leg of the TRIAD would remain invulnerable, these officials would make submarine-launched missiles the mainstay of the U.S. deterrent force. Davis raised questions about the validity of such an assumption given the extensive and long-term Soviet effort to find an effective means of destroying America's SSBN forces.<sup>53</sup>

The tendency of these defense officials to place more emphasis on the sea leg of the TRIAD, Davis held, failed to consider adequately the divergence in U.S. and Soviet strategic doctrines that was described in the Pipes article. In consonance

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<sup>53</sup>Jacquelyn K. Davis, "End of the Strategic Triad," Strategic Review, Winter 1978, pp. 38-40 (hereinafter cited as Davis, "Strategic Triad"). Because of the uncovering of the Walker spy ring, Davis' criticism seems especially relevant in today's strategic context (see note 35 above).

with their warfighting doctrine, Davis maintained, the Soviets were improving their force structure by doing such things as developing a new ABM system and increasing the accuracy of their ICBM warheads. In the meantime, the U.S. continued to follow its doctrine of mutual assured destruction and in the process was letting improvements in Soviet forces drive it away from the TRIAD doctrine and force the U.S. into a posture that was overly dependent on submarine-based missiles. At the same time, a persistent Soviet R&D effort in the area of anti-submarine warfare would further weaken U.S. strategic forces. This increasing weakness of the American posture vis-a-vis that of the Soviet Union invited nuclear war.<sup>54</sup>

Pipe's article was cited again by Professor John Erickson, a leading sovietologist, when he attacked the concept of mutual deterrence as a chimera of western strategists. In the West, nuclear strategy had become an abstract, academic concept based on ideas derived from the discipline of economics. According to this concept, both sides were deterred by the conclusion that nuclear warfare is so horrible as to be unthinkable to rational men. Much of the language and many of the concepts of the western school of strategic nuclear deterrence were literally foreign to the Soviets who considered

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<sup>54</sup>Davis, "Strategic TRIAD," *passim*. See especially, pp. 38-42.

military power, not vulnerability of their society to a nuclear holocaust, as the basis of national security. Furthermore, the idea of mutual deterrence was ideologically abhorrent to a system committed to the idea of class warfare and the struggle against western imperialism. Indeed, Erickson noted, "deterrence as a concept has never held much appeal for the Soviet military." Since the Soviets did not accept the idea that nuclear warfare was impossible, they developed a force structure and doctrine to defend their homeland and carry out a nuclear war if it became necessary.<sup>55</sup>

Two years after the appearance of Erickson's piece, Colin Gray, building on the foundations of Jack Snyder<sup>56</sup> and Ken Booth<sup>57</sup>, published a critique of the American strategic culture in International Security Review. Sounding much like military historian Russell Weigley<sup>58</sup>, Gray argued that throughout American

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<sup>55</sup>John Erickson, "The Chimera of Mutual Deterrence," Strategic Review, Spring 1978, pp. 11-17.

<sup>56</sup>The Soviet Strategic Culture: Implications for Limited Nuclear Operations, R-2154-AF (Santa Monica, CA.: RAND, September 1977).

<sup>57</sup>Strategy and Ethnocentrism (New York: Holmes & Meier Publishers, Inc., 1979).

<sup>58</sup>The American Way of War: A History of United States Military Strategy and Policy (New York: Macmillan Publishing Co., Inc., 1973). Weigley argued that the American approach to strategy was patterned after U.S. Grant's approach to defeating Robert E. Lee. It was simply to find the enemy's center of gravity and then attack it directly with massive force. This was essentially a strategy of attrition. Gray refers specifically to Weigley's work on p. 29 of "National Style in Strategy."

history, the U.S. had substituted "brute force or sheer quantity of military/civilian assets" for strategy.<sup>59</sup>

Gray argued that this neglect of strategy sprang from four concepts and beliefs that characterized America's approach to war. First good always triumphs over evil, and the United States would always be involved in a good cause. Second, Americans had great natural abilities and could accomplish virtually anything to which they set their minds. Third, U.S. success in war up to 1945 led to the growth of an illusion that America is omnipotent. Finally, there was the American reliance on abundant resources to overwhelm an enemy.

Since Americans first scented world power in the 1890s, they tended to have faith in the ability of American technology, pragmatic 'know-how,' and a range of managerial skills, to overwhelm any evil cause. . . . In the twentieth century, the United States, whenever possible, has waged technological war, rather than wars of human (American) attrition.

These beliefs, combined with America's isolation from enemies that could threaten her interests and undermine U.S. industrial dominance, "were erosive of what pressure there might otherwise have been for strategic thought."<sup>60</sup>

With the dawn of the nuclear age, the United States, lacking a strong tradition in strategy, began to develop nuclear strategy that turned out to be overly intellectual and abstract.

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<sup>59</sup>Gray, "National Style in Strategy," p. 26.

<sup>60</sup>Gray, "National Style in Strategy," pp. 26-29. On the subject of technological war, see Baucom, "Technological War."

Gray believed that this led to a disconnect between the force that was supposed to deter nuclear war and what this force might accomplish in an actual nuclear conflict. This meant that the American force structure might well lack the ability to deter, since the Soviets might conclude that the deterrent force structure of the U.S. could not make good on its threat to retaliate in case of a Soviet attack.<sup>61</sup>

Between 1961 and 1981, Gray continued, the nuclear balance of forces had gone from a situation in which the United States had clear superiority to one in which the Soviet Union possessed "marginal strategic superiority." This meant that "with good luck and judgment she would win at modest cost; with less good luck and less good judgment she should still win, though very probably at catastrophic cost."<sup>62</sup>

This change in the balance of power brought with it a fundamental shift in the strategic outlook of the United States. Given the state of technology in both the U.S. and the U.S.S.R., a U.S. effort to regain superiority would simply lead to an arms race. Therefore, American strategists now concluded that strategic superiority had become impossible to achieve and maintain and was not really necessary for the pursuit of national aims.<sup>63</sup>

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<sup>61</sup>Gray, "National Style in Strategy," pp. 33-35.

<sup>62</sup>Gray, "National Style in Strategy," p. 36.

<sup>63</sup>Gray, "National Style in Strategy," p. 37. According to Albert Wohlstetter, arms race theorists considered qualitative improvements in weapons, especially weapons aimed at other

From here, Gray went on to identify seven "uniquely American attitudes" displayed in modern American strategic thought. First, Americans had come to believe that nuclear war was not winnable. Second, defense intellectuals in the United States believe that other cultures share U.S. values. The third attitude was the view that the U.S. could reason with the Soviets and that a patient and cooperative attitude on the part of U.S. strategists would improve Soviet behavior. Next, American defense intellectuals concluded that the U.S. military force structure is as dangerous to U.S. interests as the forces of the Soviet camp. Fifth, American strategists continued to have faith in the superiority of American technology which meant that the Soviets could challenge the U.S. militarily only through the size of their armed forces, not through the quality of their arms. Furthermore, the U.S. was as much as five years ahead of the Soviet Union in its strategic and doctrinal thinking and therefore need not be alarmed when Soviet doctrine appears to diverge from that of the U.S.<sup>64</sup>

In his sixth tenet of American strategic thought, Gray was critical of the U.S. for being more concerned, in the development of its strategic force structure, with the management

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weapons, as being a particularly strong stimulant to the arms race. Albert Wohlstetter, "Rivals; But No 'Race,'" Foreign Policy, pp. 55-56 (hereinafter cited as Wohlstetter, "Rivals").

<sup>64</sup>Gray, "National Style in Strategy," pp. 38-42.

of arms control and military balance than with the development of a structure that would support U.S. national goals. This tenet sprang from the view of some U.S. policy makers that the Soviets are reasonable and would respond rationally to restrictions on the U.S. force structure.<sup>65</sup>

Finally, Gray talked about the persistence of the American approach to defense requirements. Even in the nuclear age, the United States continued to respond to events in fits and starts, mobilizing its strength for a crisis and then quickly demobilizing. Thus, the U.S. modernized its MINUTEMAN III missiles in the early seventies and then spent the decade debating the performance requirements for the next missile. One thing fueling this cycle is the strong belief among many national leaders in the U.S. that military forces are sustained only at high social cost. This creates a situation in which the Defense Department must repeatedly justify virtually every system it acquires. There is nothing comparable to the U.S. justification process in the Soviet Union.<sup>66</sup>

The implication of Gray's conclusion about the ethnocentricity of American strategists was that Americans could no longer look upon Soviet actions as a simple response to their own actions. They must now look into the Soviet national

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<sup>65</sup>Gray, "National Style in Strategy," pp. 42-43.

<sup>66</sup>Gray, "National Style in Strategy," pp. 43-44.



character for the roots of Soviet strategy and nuclear doctrine. Soviet actions that appeared so incongruous to many American strategists had been a clue that the Soviets did not think like Americans, not that the Soviets were unsophisticated and therefore did not understand modern warfare.

One place where the ethnocentricity of American strategists had been especially noticable was in the American view of technology and its role in the so-called arms race. On the one hand, Americans believe that the United States had little to worry about in variations between Soviet and American doctrine, since U.S. technology was as much as five years ahead of Soviet technology. On the other hand, they thought that a U.S. effort to gain nuclear superiority would trigger an arms race. American strategists seemed incapable of believing that Soviet technical development had its own dynamic<sup>67</sup> and that the U.S. was bound to lose its greatest advantage, technical superiority, if it did not aggressively pursue technical developments. This matter of the relationship between American actions and the "arms race" was another element of the strategic debate of the 1970s.

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<sup>67</sup>For an excellent discussion of the dynamics of space-age technology, see Walter A. McDougall, ... the Heavens and the Earth: A Political History of the Space Age (New York: Basic Books, Inc., 1985).

**THE DEBATE: THE ARMS RACE--REALITY OR MYTH?**

By the time of the SALT negotiations, the concept of a strategic arms race was much in vogue among those who believed that the United States should use restraint in developing and deploying strategic systems. They argued that the United States was constantly over-estimating Soviet strategic forces; using these over-estimations to justify its own arms build-up; and, as a result, was stimulating Soviet development by building to meet the exaggerated Soviet threat.<sup>68</sup>

In the mid-1970s, these ideas came under attack from Albert Wohlstetter. One of the early RAND fellows, Wohlstetter was a mathematical logician and master of its spin-off discipline systems analysis. One of the main points for his attack was what

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<sup>68</sup>George W. Rathjens, "The Dynamics of the Arms Race," Scientific American, April 1969, pp. 19-20, 24 (hereinafter cited as Rathjens, "Dynamics of the Arms Race"). Rathjens suggests three ways in which the uncertainty underlying the arms race could be reduced (pp. 20-21). For another succinct statement of the arms race thesis, see Albert Wohlstetter, "Is There a Strategic Arms Race?" Foreign Policy, Summer 1974, p. 4 (hereinafter cited as Wohlstetter, "Is There a Strategic Arms Race?"). An almost identical version of this article is Wohlstetter's, "Legends of the Strategic Arms Race, Part I: The Driving Engine," Strategic Review, Fall 1974, p. 67 (hereinafter cited as Wohlstetter, "Legends, Part I"). For comments on the role of the action-reaction model of the arms race and how it related to the ABM debate of the late 1960s and early 1970s, see Geoffrey Till, "The Safeguard Debate: Image and Reality," RUSI, December 1974, p. 45 (hereinafter cited as Till, "Safeguard Debate"). A major source of this perception is Robert McNamara's speech of 18 September 1967 in which he announced his decision to deploy an ABM system.

he considered the empty rhetoric of those who made use of the arms race concept to fight for restrictions on U.S. strategic systems.<sup>69</sup>

Wohlstetter closely examined a number of the tenets of the arms race thesis and showed how each one was wrong. For example, with regard to the idea that American analysts constantly over-estimate the deployment of Soviet strategic forces, Wohlstetter showed that following the most famous episode of over-estimation, the so-called missile gap of the Kennedy-Nixon campaign of 1960, the United States had, in fact, consistently under-estimated what the Soviet strategic force structure would become. Based on extensive research,<sup>70</sup> Wohlstetter argued that "in 49 out of 51 cases the eventual Soviet deployment exceeded the mid-range of the secretary's estimates. In 42 of the 51, it exceeded the secretary's high." Not only that, but U.S. analysts underestimated the speed with which missile technology would advance. ICBMs and fusion bombs were available to the Soviets sooner than expected. Furthermore, the accuracy of Soviet missiles was virtually always better than

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<sup>69</sup>Talbott, Master of the Game, p. 66; Wohlstetter, "Is There a Strategic Arms Race," p. 4.

<sup>70</sup>The articles Wohlstetter published on this issue in Foreign Policy and Strategic Review were based upon the book Competition or Race: Innovation and the Changing Size of Strategic Forces by Wohlstetter, David McGarvey, Fred Hoffman, and Amoretta Hoeber. His article in the fall 1974 edition of Strategic Review contains ten pages of charts and tables.

predicted.<sup>71</sup>

Based on his analysis, Wohlstetter concluded the arms race thesis "is clearly mistaken in all of its principal tenets." The U.S. had clearly not been racing in the sense that the arms race doctrine maintained.

The gross shape of the U.S. curve of strategic spending, if extended back to 1945, would show a sharp drop after World War II, a surprisingly low level during the late 1940s when 'atomic diplomacy' was supposed to have been in full sway, a rapid raise after Korea to a high plateau in the mid- and late-1950s, then another sharp decline beginning at the start of the 1960s. These gross changes in American and the simultaneous quite different changes in Soviet strategic spending cannot be understood in terms of a closed cycle of tightly coupled interaction between U.S. and Soviet processes of decision to acquire weapons--as is assumed in the usual action-reaction theory.<sup>72</sup>

Wohlstetter's articles in Foreign Policy were the opening round of a rather lengthy debate over the myths and realities of the arms race that was conducted in the pages of this journal.<sup>73</sup> In the spring 1975 edition, Wohlstetter's attack on the arms race doctrine was answered by Paul C. Warnke in what is perhaps the most celebrated pronouncement and defense of the arms race

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<sup>71</sup>Albert Wohlstetter, "Rivals," pp. 48-49, 50-52.

<sup>72</sup>Wohlstetter, "Rivals," pp. 79-81. For a summary of Wohlstetter's conclusions on the three main tenets of the arms race doctrine, see "Is There an Arms Race?" pp. 5-6. For another summary of Wohlstetter's main objections to the arms race thesis, see his article "Optimal Ways to Confuse Ourselves," Foreign Policy, Autumn 1975, pp. 170-71.

<sup>73</sup>Editor's note at the bottom of p. 170 of the Autumn 1975 edition of Foreign Policy.

thesis. Warnke's article carries the title of "Apes on a Treadmill."<sup>74</sup>

Warnke began his response by dismissing Wohlstetter's attack on the arms race concept as irrelevant and an idle "contest in semantics." At the same time, he essentially granted Wohlstetter's point that the U.S. has most consistently underestimated the Soviet deployment of strategic systems.<sup>75</sup>

Nevertheless, Warnke argued that there was indeed something akin to an arms race in progress between the U.S. and the U.S.S.R. Perhaps, race was not the proper metaphor. In fact, it might be more appropriate to see the superpowers as two apes jogging in tandem on a treadmill. Thus, the real dynamic of this process was something akin to the Soviets "aping" the Americans; the "arms race" was really a matter of "'monkey see, monkey do.'" Therefore, ideas like negotiating from strength and developing strategic bargaining chips were invalid, because they only encouraged the Soviets to behave in the same fashion. The proper thing for the U.S. to do was exercise restraint, for the "Soviets are far more apt to emulate than to capitulate." Warnke then called for the United States to halt further MIRVing and to

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<sup>74</sup>Warnke, "Apes on a Treadmill," pp. 12-29.

<sup>75</sup>Warnke, "Apes on a Treadmill," pp. 12-13, 16-18, 24-25. Warnke's remarks about semantics are to some extent justified, since Wohlstetter does raise the issue of semantics in his critique of the concept of an arms race. (See Wohlstetter, "Is There a Strategic Arms Race?", p. 3.)

stop development of the Trident submarine and the B-1 bomber for six months, letting the Soviets know that after the six months the U.S. would review this decision based upon progress in arms negotiations. Since the United States was ahead of the Soviets in strategic systems, this moratorium on new strategic systems would not endanger U.S. security. Warnke concluded with this: "We can be the first off the treadmill. That's the only victory the arms race has to offer."<sup>76</sup>

#### VULNERABILITY OF THE TRIAD

While reasonable people could disagree over intuitive issues like intentions and strategy, hard numbers such as those used by Schlesinger to describe the Soviet strategic buildup of the 1970s left far less room for divergent opinion. By the mid 1970s, these numbers pointed increasingly toward a Soviet first strike capability that threatened the ICBM leg of America's strategic TRIAD.

Furthermore, in early 1975, Paul Nitze had described how the Soviets might use the massive throw weight advantage they were accumulating to break the back of the TRIAD. He projected that the Soviets would eventually have between ten and fifteen million pounds of throw weight. Nitze then described how the

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<sup>76</sup>Warnke, "Apes on a Treadmill," pp. 13, 17, 27-29.

Soviets might use this throw weight to attack the TRIAD, based on the following assumptions about the effects of nuclear weapons: 2,000 pounds of throw weight would be required to achieve a 50 percent probability of killing a fixed, hardened target; 3,500 pounds would allow one to blanket an area of 400 square miles so as to destroy an aircraft flying anywhere in this area; 15,000 pounds of throw weight would produce a nuclear barrage that would disable a submarine known to be somewhere in a 300 square mile area of ocean. Based on these estimates, Nitze concluded that the Soviets could destroy 1,200 hard targets, blanket 400,000 square miles of bomber escape routes, and strike 100 aim points at sea using a total of 6.9 million pounds of throw weight, about half of the total within the Soviet arsenal.<sup>77</sup>

Other disquieting news appeared in statements of defense secretaries during the second half of the 1970s. Both Donald Rumsfeld and Harold Brown regularly warned about the growing threat to the American MINUTEMAN force. For example, in 1977, Harold Brown was reasonably certain the strategic posture of the United States was adequate to deter Soviet leaders. However, as he looked ahead to the 1980s he was worried that some future Soviet leader might be tempted to try a "'cosmic roll of the dice.'" A chart in Brown's statement for FY 1980 showed that by 1988 only about ten percent of America's ICBMs would survive a

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<sup>77</sup>Nitze, "Strategic Balance," p. 148.

Soviet first strike.<sup>78</sup>

Others considered the situation worse than stated by Brown. By early 1979, some were saying that the U.S. had drastically under-estimated the growing Soviet threat to its ICBMs. Prior to 1978, U.S. analyses had estimated that it would be the mid-1980s before the Soviets could place America's ICBM fleet at risk. In early 1978, the Soviets unexpectedly demonstrated a .1 nautical mile CEP for the warheads on their SS-18 missiles, prompting American analysts to advance the time of vulnerability for the U.S. MINUTEMAN force to the early 1980s when the Soviets were expected to have the capability to destroy America's ICBMs using only about a third of their own ICBM warheads.<sup>79</sup>

In the winter of 1978, Jacquelyn Davis sounded a note of warning. Without SALT II restrictions or action on the part of the United States, by 1985 the Soviet Union would be able to destroy ninety percent of the MINUTEMAN III force in a pre-emptive first strike. In addition to the threat to MINUTEMAN

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<sup>78</sup>Daniel Seligman, "Our ICBMs Are in Danger," Fortune, 2 July 1979, pp. 50, 52 (hereinafter cited as Seligman, "Our ICBMs Are in Danger"). The "'cosmic roll of the dice'" comment may be found in Strobe Talbott, Endgame: The Inside Story of SALT II (New York: Harper & Row, Publishers, 1979), p. 52 (hereinafter cited as Talbott, Endgame).

<sup>79</sup>Clarence A. Robinson, Jr., "U.S. to Test ABM System with MX," Aviation Week, 19 March 1978, p. 23 (hereinafter cited as Robinson, "U.S. to Test ABM System with MX").



missiles, Soviet work with depressed trajectory SLBMs indicated that in the future a substantial portion of America's bomber force could be eliminated by a surprise attack from Soviet ballistic missile submarines. Moreover, Soviet efforts in the area of anti-submarine warfare, some of which were quite sophisticated, warned of technical breakthroughs that might jeopardize the sea leg of the TRIAD.<sup>80</sup>

Not surprisingly, by the time Carter signed the SALT II agreements in Vienna, there was a growing feeling that the SALT process had failed. An editorial in the Wall Street Journal noted that the decade of SALT had witnessed "one of history's great arms build-ups." In 1969, the U.S. had 1,054 ICBMs and 656 SLBMs. In 1978, it had the same number of missiles although it had MIRV'ed part of this force. Over the same period, the Soviets had expanded their ICBM force from 1,028 to 1,400 and increased their submarine launched missiles from 196 to 1,015. In the next few years, the Soviets could be expected to have 6,000 MIRV'ed warheads deployed on their ICBMs. Half of these would be on their heaviest missiles and would have CEPs of 600 feet. This meant that the Soviets would soon have confidence that they could cripple the MINUTEMAN force using only a small number of their own ICBMs. As a result of the Soviet strategic arms build-up, the vulnerability of American ICBMs to a Soviet

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<sup>80</sup>Davis, "Strategic Triad," pp. 36-39.

first strike was arguably "the largest strategic problem" facing the United States. Yet, the U. S. had deactivated its only operational ABM facility in 1976 and as of 1979 still had not taken decisive action to deploy the MX missile in a secure basing mode.<sup>81</sup>

Bernard Feld and Kosta Tsipis argued in November 1979 that the vulnerability then being imputed to the MINUTEMAN was greatly exaggerated because of unrealistic assumptions about such things as the ability of silos to withstand attack and the CEP of missile warheads. Moreover, they were skeptical about the prospect of conditions arising that would tempt Soviet leaders to launch a first strike against U.S. ICBMs. However, since the perception that MINUTEMAN was vulnerable might "well generate political problems for the U.S. Government, both domestically and internationally" and since "there is little doubt that in the long run fixed land-based missiles will appear to become increasingly vulnerable to a MIRV attack," it was reasonable "to

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<sup>81</sup>Bartley, "SALT: A Bankrupt Process;" Seligman, "Our ICBMs Are in Danger," pp. 50-51. Seligman explains why the U.S. could not afford to avoid the MINUTEMAN problem and rely on the other two legs of the TRIAD. For an argument against deploying MX, see Lodal, "Assuring Strategic Stability," pp. 474-75. Lodal argued that the vulnerability of the MINUTEMAN was largely "theoretical," that a multiple protective shelter system would be costly and its benefits unproven, and that ways of defending MINUTEMAN other than by ABM have been suggested (see below). Given the likely cost and probable technical problems associated with developing a mobile missile system, Lodal suggested that these systems be banned by a SALT II agreement to close off a new area of the strategic arms competition (p. 476).

explore alternatives that could offer some relief of the perceived MINUTEMAN vulnerability."<sup>82</sup>

Thus, in the second half of the 1970s, the warnings sounded by Jackson and Kissinger earlier began to have the ring of prophecy about them. The growth of Soviet offensive forces which threatened the survivability of American ICBMs and raised questions about the ability of the TRIAD to deter nuclear war created pressures for the U.S. to shore up the TRIAD. One measure advocated was the deployment of ABM systems to protect the MINUTEMAN and its follow-on system, the MX missile. This brings us to the subject of missile defense developments in the 1970s, the focus of the next chapter.

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<sup>82</sup>Bernard T. Feld and Kosta Tsipis, "Land-based Intercontinental Ballistic Missiles," Scientific American, November 1979, pp. 55-56 (hereinafter cited as Feld and Tsipis, "Land-based Missiles").

## Chapter V

### BMD IN THE SALT ERA: THE PROGRESS AND PROMISE OF TECHNOLOGY

. . . ABM would have a difficult time outliving SALT negotiations no matter what their outcome.

Gerard Smith, 1980<sup>1</sup>

This is like looking at the Wright brothers and not realizing you have to learn about bomb shelters.

Maxwell W. Hunter, II, 1987<sup>2</sup>

## INTRODUCTION

Ballistic missile defense in the U.S. had been problematical since its conception in the 1950s amid squabbling between the Army and the Air Force over strategic roles and missions. After the Army gained control of the ABM mission and was prepared to deploy the NIKE-ZEUS, its decision was opposed successfully by Robert McNamara until the political climate of the late sixties forced him to accept the deployment of the SENTINEL, a thin area defense system aimed at the nth country threat and seen by McNamara as a way to kill political pressures

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<sup>1</sup>Doubletalk, p. 204.

<sup>2</sup>Interview with Maxwell W. Hunter, II, retired aerospace engineer, Washington, D.C., 29 October 1987, p. 45 (hereinafter cited as Hunter, Interview).

for a full-blown ABM system to protect the U.S. against Soviet missiles.

After Nixon shifted the SENTINEL to a point defense role and renamed it SAFEGUARD, it survived congressional scrutiny only by the narrowest of margins and then principally on the basis of its being used as a bargaining chip that was to be traded away during the first round of SALT negotiations in return for restrictions on offensive systems. The agreements produced by these negotiations sounded the death knell of SAFEGUARD. Limited to one hundred launchers by the ABM treaty and the July 1974 protocol, SAFEGUARD had no chance of coping with a massive attack of the kind made possible by MIRV'ing and the huge throw weight of Soviet heavy ICBMs, neither of which was restricted by the SALT I agreements. In 1976, Congress ordered DOD to deactivate SAFEGUARD.

Between 1976 and 1983, DOD conducted its ABM program on a research-only basis with no definite plans for the possible development of a deployable system. However, toward the end of this period, a number of technical developments and a changing strategic climate created new pressures for the deployment of a BMD system.

## THE DEMISE OF SAFEGUARD

In spite of the severe limitations imposed by the SALT agreements, the U.S. continued with the deployment of a treaty-compliant ABM system at the Mickelsen SAFEGUARD complex located one hundred miles northwest of Grand Forks, North Dakota. In a number of ways, this facility was a technological marvel. The eighty-foot tall truncated pyramid that housed the antennas for the missile site radar (MSR) dominated the flat landscape around Nekoma, North Dakota. The structure's four-foot thick concrete walls were sloped at a thirty-five degree angle to provide some degree of hardening against the effects of nuclear blast. Each sloping surface of the pyramid was punctured by an antenna aperture which was thirteen feet in diameter. The aperture was filled with a radar antenna containing five thousand phased-array elements and gave the appearance of a gigantic, multi-lensed insect eye. The shape of the building and the eye-like antenna structure that marked each face of the pyramid reminded some people of a religious shrine and invited comparisons with the ancient Pyramid of Cheops and the Stonehenge ruin.<sup>3</sup>

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<sup>3</sup>Ada Louise Huxtable, "A Bizarre Monument to Non-Architecture," New York Times, 14 December 1975, Section II, p. D39; William K. Stevens, "Abandonment of Safeguard ABM System Stuns the Town of Langdon, N.D.," New York Times, 25 November 1975, p. 74 (hereinafter cited as Stevens, "Abandonment of Safeguard"); "Safeguard: What U.S. Got for \$5.4 Billion," U.S. News & World Report, 30 June 1975, pp. 42-43. (hereinafter cited as "Safeguard: What U.S. Got for \$5.4 Billion"); Clarence A. Robinson, Jr., "Army Spurs Missile Defense Technology," Aviation Week, 22 April 1974, pp. 12-13 (hereinafter cited as Robinson, "Missile Defense Technology"); Bell Labs, ABM Project History,

The four faces if the MSR allowed it to search for targets coming from all directions, and it could acquire these targets at a range of 300 miles. The MSR worked in conjunction with a perimeter acquisition radar (PAR) that was located near Cavalier, North Dakota, twenty-five miles northeast of the missile site. This was also a phased-array radar, but it was designed to search in only one direction--toward the north. In the event of a Soviet attack, the PAR would detect incoming missiles at a range of 1,800 hundred miles, about the time the warheads were passing over the pole. Detection at this range would allow but six minutes to plan the battle against the incoming ICBMs. Computers associated with the PAR would

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Chapter 7, pp. 7-4 - 7-5 (for information on the perimeter acquisition radar, see Chapter 8). Robinson points out that the perimeter acquisition radar located twenty-five miles northeast of the missile site radar was actually one hundred and ten feet high. However, the shape of this structure makes it much less striking than that of the missile site radar. Huxtable's article on the architecture of the SAFEGUARD complex noted that "the stark engineering composition of severely abstract forms, grimly silhouetted against open sky and flat land, upstages architecture totally. It is without doubt one of the most peculiarly impressive built [sic] groups of our time. Architects trying consciously for impact and meaning might just as well call it quits in the face of this kind of brute esthetic force." The author sees the SAFEGUARD structures as symbolic of the death of the optimism of the engineer and technician: "All of that engineering elegance and efficiency born of rational, industrialized solutions that was to make a better world--led by the architect--did not bring a new dawn. It brought an era of more gigantic problems in the nature of life and survival than history has ever known." They are also symbolic of how the architect is being pushed out of his field by "engineers and investment builders."

determine the trajectory of incoming missiles and pass the information to the MSR for control of the defensive missiles that would attack the warheads.<sup>4</sup>

Two types of missiles were employed in the SAFEGUARD system which was to provide a layered defense for 150 Air Force MINUTEMAN missiles near Grand Forks. The high altitude SPARTAN missile was built by McDonnell Douglas. It was a three-stage, solid-propellant rocket armed with a nuclear warhead that killed enemy warheads by blast and by X-rays that were lethal to warheads several miles away. SPARTAN was fifty-five feet long. The second missile, SPRINT, was a marvel of aeronautics and space technology. Built by Martin Marietta, it was designed to operate at hypersonic speeds in the earth's atmosphere; and at its top speed, the missile's skin became hotter than the interior of its rocket motor and glowed incandescently. If one somehow could have trained an acetylene torch on the nose of the missile at this speed, the hot gases of the torch would have cooled the nose. The electronic components of SPRINT were designed to withstand accelerations of one hundred times gravity. It was twenty-seven feet long, consisted of two-stages, and used solid fuel. Like SPARTAN, SPRINT carried a nuclear warhead.<sup>5</sup>

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<sup>4</sup>Robinson, "Missile Defense Technology," p. 13.

<sup>5</sup>Bell Labs, ABM Project History, pp. 3-8 - 3-9, 4-4 - 4-5; Robinson, Jr., "Missile Defense Technology," p. 14; "Safeguard: What U.S. Got for \$5.4 Billion," p. 42. In fact, the North Dakota SAFEGUARD site also could offer a limited degree of protection for MINUTEMAN missiles located at Malmstrom AFB in Montana, Minot AFB in North Dakota, Warren AFB in Wyoming, and Ellsworth AFB in South Dakota. It could not defend all sites



Under the concept of a layered defense, the SPARTAN missile would attack the incoming "threat cloud" of warheads, boosters, and decoys while it was still above the atmosphere. The SPRINT missiles would then attack the warheads that survived the attack of the SPARTAN after they had penetrated deeply into the atmosphere where the resistance and friction of the air would have separated the warheads from the threat cloud.

In the end, however, SAFEGUARD's "technical sweetness" was overshadowed by its limitations. With only one hundred missiles, the system could provide only limited protection to the ICBMs near Grand Forks and supply some measure of protection to the central United States against an accidental missile launch or a light ICBM attack.<sup>6</sup> Moreover, SAFEGUARD was not the optimum system for the point defense of hard targets. It started out as the SENTINEL project which was supposed to provide nation-wide protection against a light ICBM attack. When President Nixon shifted the emphasis of the program to defending ICBM fields, the

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simultaneously. For the ability of SAFEGUARD to protect other missile fields, see "Army Widens Ballistic Missile Research," Aviation Week, 8 December 1975, p. 17.

<sup>6</sup>U.S. Senate, Hearings on DOD Appropriations for FY 75, pp. 31-31. In speaking of technological advances, J. Robert Oppenheimer once noted: ". . . it is my judgment in these things that when you see something that is technically sweet you go ahead and do it and you argue about what to do about it only after you have had your technical success." Oppenheimer is quoted by Robert Jungk, Brighter than a Thousand Suns: A Personal History of the Atomic Scientists, trans. by James Cleugh (New York: Harcourt Brace Jovanovich, Inc., 1958), p. 296.

U.S. wound up using an area defense system for a point defense mission. The area defense concept involved the use of the large, powerful long-range radar systems that were hallmarks of the Mickelsen complex. In addition to being subject to black-out caused by the detonation of nuclear warheads, these radar systems themselves could be attacked directly. Once they were destroyed, the SPRINT and SPARTAN missiles were electronically blind and therefore useless. One nuclear war scenario envisioned the SAFEGUARD complex being attacked by relatively light SS-11 warheads which could easily destroy the large radar antennas. These attacks would be followed by a wave of SS-9 warheads which would then destroy the MINUTEMAN missiles. Had the Army started off with the mission of defending only missiles, it would probably have deployed only SPRINT-type missiles to take full advantage of atmospheric discrimination.<sup>7</sup>

The known weaknesses of SAFEGUARD help explain why the Army was developing a follow-on missile defense system even before SAFEGUARD became operational. Called the Site Defense system and developed by McDonnell Douglas, the new system was to include only one kind of missile, a modified SPRINT interceptor (SPRINT II) which featured such things as greater accuracy, a

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<sup>7</sup>Robinson, "Missile Defense Technology," pp. 12, 14; Geoffrey Till, "The Safeguard Debate: Image and Reality," RUSI, December 1974, p. 41 (hereinafter cited as Till, "Safeguard Debate").

much expanded capacity for maneuvering, greater hardening of its silo through the addition of a concrete door that could be opened in a single second, and better maintainability. Site Defense was also to include an improved radar system composed of smaller, less vulnerable radars and a powerful, commercially-proven computer. Only in the case of the system's software did the Army believe it was working with an unproven system component. This new system was considered a hedge against improvements in the Soviet ICBM force and was to be ready for deployment in four to eight years, being designed specifically to deal with advanced Soviet ICBMs such as the SS-18 and SS-19.<sup>8</sup>

To facilitate deployment and provide greater flexibility in protecting missile fields, the Site Defense system was developed around a modular concept. A module was to consist of three radars, each of which controlled a SPRINT battery. Together, the three batteries of a module would contain about 100 missiles. The number of modules deployed in defense of MINUTEMAN

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<sup>8</sup>Robinson, "Missile Defense Technology," pp. 12, 14; Clarence A. Robinson, Jr., "Prototype Site Defense Construction Set," Aviation Week, 29 April 1974, p. 70 (hereinafter cited as Robinson, "Site Defense Construction Set"); Benjamin M. Elson, "Kwajalein Range Plays Unique Role," Aviation Week, 16 June 1980, p. 227 (hereinafter cited as Elson, "Kwajalein Range"); U.S., Congress, Senate, Committee on Appropriations, Hearings before a Subcommittee on Department of Defense Appropriations for Fiscal Year 1975 on HR \_\_\_\_\_ [sic], Part 2--Army, 93rd Cong., 2nd sess, 1974, pp. 506-07, 538, 551, 609-10 (hereinafter cited as Senate, Hearings on DOD Appropriations for FY 75). See p. 609 for a discussion of the modifications that transformed SPRINT I into SPRINT II.

silos would be a function of the severity of the threat to American ICBMs.<sup>9</sup>

The prototype of Site Defense was to be built at the Army's Kwajalein Missile Test Range. In pursuit of this goal, Secretary of Defense James Schlesinger asked for \$160 million for FY 1975. Site Defense, he said, would give the U.S. the option of defending its MINUTEMAN missiles and expanding the nation's ABM system to include the National Command Authorities should that become desirable. The Army planned to begin construction of Site Defense in the fall of 1974 with a completion date in early fiscal year 1977. Upon completion, the facility would be used in tests to resolve the target discrimination and designation problems that would be associated with an attack by Soviet SS-17, -18, and -19 missiles.<sup>10</sup>

In the fall of 1975, the same limitations of SAFEGUARD that caused the Army to initiate the Site Defense program inspired Congress to begin the proceedings that led to the deactivation of the Mickelsen SAFEGUARD complex. On 2 October 1975, one day after SAFEGUARD became operational, the House voted to deactivate the system. Defense Department studies made

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<sup>9</sup>Robinson, "Missile Defense Technology," p. 12; Robinson, "Site Defense Construction Set," p. 71.

<sup>10</sup>Robinson, "Missile Defense Technology," p. 12; Robinson, "Site Defense Construction Set", p. 70; "Army Widens Ballistic Missile Research," Aviation Week, 8 December 1975, p. 18.

available to the House Committee on Appropriations in September had shown that Soviet missiles with multiple warheads would be able to overwhelm the SAFEGUARD system. The vulnerability of SAFEGUARD's radar systems was also a factor in the committee's decision. The Defense Department itself drove the final nail in SAFEGUARD's coffin. During proceedings of the House, it was discovered that DOD had been planning for two years to deactivate the North Dakota site on 1 July 1976.<sup>11</sup>

The House vote against SAFEGUARD prompted Defense Secretary Schlesinger to ask Senator John McClellan (D-Arkansas), Chairman of the Senate Appropriations Committee, to keep SAFEGUARD operational. In the 3 October letter making the request, Schlesinger cited the value of the experience to be gained from actually operating the complex missile defense system and pointed out the fact that SAFEGUARD's perimeter acquisition radar could spot incoming missiles over the Arctic region and thus supplement America's early warning system. Moreover, Schlesinger

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<sup>11</sup>Finlay Lewis, "ABM: Countdown to Oblivion," Washington Post, 5 October 1975, p. A7; Walter Pincus, "Schlesinger Asks Fund for Safeguard Missile," Washington Post, 15 October 1975, p. A2 (hereinafter cited as Pincus, "Schlesinger"); Philip J. Klass, "Ballistic Missile Defense Tests Set," Aviation Week, 16 June 1980, p. 214 (hereinafter cited as Klass, "Missile Defense Tests Set"). Major General Robert Marshall, BMD Program Manager for the Army, would later admit that it would be virtually impossible to deploy a 100% effective missile defense against an attack using a large number of sophisticated warheads (Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, p. 6716).

did not think the U.S. should abandon its BMD system without seeking some concession from the Soviets. McClellan and the Appropriations Committee agreed with Schlesinger. Given the tremendous expenditure of almost \$6 billion on the ballistic missile defense program thus far, the committee concluded that it made good sense to pay the small cost of operating SAFEGUARD for a period of time before placing it in caretaker status.<sup>12</sup>

Despite the support of McClellan and his committee, in November 1975, the Senate voted down continued operation of SAFEGUARD in a series of "relatively close votes."<sup>13</sup> Senator Edward Kennedy had led the anti-SAFEGUARD forces in the 1969 ABM debate, and he again played a pivotal role in opposing the system. On Friday, 14 November, he proposed amending the Senate defense appropriations bill to require closing the ABM site as the House had voted earlier to do. This measure was narrowly

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<sup>12</sup>pincus, "Schlesinger," p. A2. DOD attached considerable importance to the experience that could be gained by operating a system with the complexity of SAFEGUARD. This experience would provide an important data base for personnel training and operation and maintainability. General Robert Marshall in March 1976 told Congress that the failure to allow the Army to operate SAFEGUARD for one year was detrimental to the Army's ABM program. See Senate, Hearings on DOD Appropriations for FY 75, pp. 501-02; Robinson, "Missile Defense Technology," p. 13; Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, p. 6727; U.S., Congress, Senate, Committee on Appropriations, Department of Defense Appropriation Bill, 1976, S. Rpt. 94-446 to accompany H.R. 9861, 94th Cong., 1st sess., 6 November 1975, pp. 33-34.

<sup>13</sup>Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, p. 6681.

defeated. The following Tuesday he offered a compromise bill that would allow operation and testing the site's perimeter acquisition radar, but would close down the remainder of SAFEGUARD. Kennedy's second bill passed by a vote of 52-to-47.<sup>14</sup> Efforts to reverse this decision were undermined by knowledge of DOD's own plans to deactivate SAFEGUARD, and House and Senate conferees agreed to the provisions of Kennedy's amendment. The appropriating law of 9 February 1976 specified that operation and maintenance funds for the Mickelsen facility could be used to operate and maintain only the perimeter acquisition radar and to deactivate all other functions of the facility.<sup>15</sup>

In February 1976, the Army began carrying out the directions of Congress. Specifically, site personnel stopped the radiation of power from the missile site radar and began removing warheads and missiles from their launching cells. Furthermore, the Army started transferring personnel and began to dispose of excess property according to government regulations. The Office

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<sup>14</sup>John W. Finney, "Senate Approves Defense Spending of \$90.7 Billion," New York Times, p. A1; John W. Finney, "Safeguard ABM System to Shut Down; \$5 Billion Spent in 6 Years Since Debate," New York Times, 25 November 1975, p. 74 (hereinafter cited as Finney, "SAFEGUARD to Shut Down").

<sup>15</sup>Finney, "Senate Approves Defense Spending," p. 12; U.S., Congress, Senate and House, An Act Making Appropriations for the Department of Defense for the Fiscal Year Ending June 30, 1976, and the Period Beginning July 1, 1976, and ending September 30, 1976, and for Other Purposes, Pub. L. 94-212, 94th Cong., 1st sess., 1976, H.R. 9861, p. 3.

of Economic Adjustment began working with the local communities in an effort to ameliorate the impact of the site closing. The large structures of the site were to remain intact until the proper dismantling procedures were issued by the Standing Consultative Commission, a joint U.S.-Soviet agency established to oversee the implementation of the ABM treaty.<sup>16</sup>

The New York Times marked the passing of SAFEGUARD with an "I-told-you-so" report of the Congressional decision. According to this story, the House Appropriations Committee stated that the deployment by the Soviets of MIRV'ed ICBMs "essentially nullified" the capabilities of SAFEGUARD; this was the same basic argument used six years earlier by those who tried to stop the development of SAFEGUARD.<sup>17</sup>

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<sup>16</sup>Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, p. 6684; Wolfe, SALT Experience, pp. 34-40. Wolfe claims that the dismantling procedures were established by mid-1974 (p. 35). For human interest stories about the site closing and its impact on the North Dakota communities around it, see William K. Stevens, "Abandonment of Safeguard ABM System Stuns the Town of Langdon, N.D.," New York Times, 25 November 1975, p. 74; Bill Richards, "Town Fears Chaos If ABM Site Shut," Washington Post, 20 October 1975, pp. A1, A2. One third of the people in Landon lost their jobs when the ABM facility closed.

<sup>17</sup>Finney, "Safeguard to Shut Down," pp. 1, 74.



## REORIENTATION : THE ARMY'S BMD PROGRAM

In the wake of the ABM treaty, the emphasis in the Army's BMD program began to shift from developing deployable systems to research and development aimed at maintaining America's technological edge in the area of missile defense and to hedge against a possible Soviet breakthrough. Total funding for the program reflected this change in focus. In FY 1972, the total of funds for all aspects of the program came to \$1.4 billion; DOD requested only \$440 million for FY 1975. The R&D program that resulted from this shift was designed to push BMD technology in six areas: radar, optics, data processing and software development, interceptors, discrimination, and new concepts arising from basic research.<sup>18</sup>

The shift toward research and development was accentuated when Congress instructed the Army to redirect its Site Defense program from prototype development to research and development. These directions were given when Congress ordered the dismantling

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<sup>18</sup>Senate, Hearings on DOD Appropriations for FY 75, pp. 508, 538, 541, 549, 552, 555, 575, 557, 607. Page 607 provides a discussion of what it means to guard against technological surprise and how one does this. The cost of BMD to the Army from FY 1956 through FY 1974 was about \$10 billion; the appropriations for the approved SAFEGUARD program totalled \$5.8 billion through FY 1974 (pp. 575, 608). About \$906 million went for the Mickelsen complex ("SAFEGUARD: What U.S. Got for \$5.4 Billion," p. 42).

of the SAFEGUARD site. The result was a fundamental change of course in the Army BMD program that was described in these words by Major General Robert C. Marshall, the Army's Ballistic Missile Defense Program Manager:

For the past 20 years the major activities of the BMD community have, for the most part, been directed toward the achievement of one primary goal--the development and deployment of a BMD system. Finally designated SAFEGUARD, the system had as its primary purpose the defense of MINUTEMAN. Today our situation is quite different. We do not have a specific system deployment objective as a follow-on to SAFEGUARD. Instead our emphasis now is on R&D as a hedge against the uncertainties of the future. In response to your guidance, we are terminating and deactivating SAFEGUARD, keeping only the Perimeter Acquisition Radar (PAR) operational for missile attack characterization. Last year, also in response to . . . [congressional] guidance, we abandoned our plans for a prototype demonstration of the Site Defense system. This year we have further reoriented our R&D program to emphasize technology relevant to a broader range of R&D possibilities than in the past; we have formulated this program based on a relatively constant, sustaining level of effort for the foreseeable future.<sup>19</sup>

There were two basic parts to the Army's restructured BMD program. First, there was an advanced technology program (ATP) that aimed to produce major advances in missile defense components and functions. The second part of the program was the reoriented Site Defense project which became a broad systems technology program (STP). General Marshall explained succinctly how these two programs were to work together: "from the ATP we want a futuristic, imaginative search for better ways to do the

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<sup>19</sup>Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, p. 6682.

BMD job--while from STP we require an objective evaluation of systems applications of emerging components and concepts." Marhsall stressed the importance of the systems technology program. Advances in technology by themselves were of questionable value until they were tested in a systems environment. "To capitalize on technological improvements in components, it is necessary to integrate the components and validate, through field tests against realistic targets, their capability as an ensemble to accomplish the basic BMD system functions." Within this framework, research and development would concentrate mainly on terminal defense for missile silos as opposed to an area defense concept that could protect cities. As a part of these efforts, in FY 1977 the Army planned to start investigating new BMD system concepts that would be applicable in the exoatmospheric, high endoatmospheric, and low altitude regions.<sup>20</sup>

In spite of the Army's careful efforts to comply with Congressional directions regarding the re-orientation of its BMD program, in the spring of 1976 the Senate reduced funding for the systems technology portion of the its BMD program from \$118

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<sup>20</sup>Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, pp. 6679, 6682-84, 6686-87. This basic structure of the Army's ABM program has been continued even after the formation of the Strategic Defense Initiative Organization in 1984 (see Currie-McDaniel, Army Strategic Defense Command, Chapter 3).

million to \$100 million. This move was vigorously opposed by Secretary of Defense Rumsfeld who believed that the Army had followed the Senate's instructions and was now being penalized for doing so. These sentiments were shared by Senator James B. Allen (D-Alabama) who scored his Senate colleagues for their inconsistency in dealing with the Army ABM program. When the Senate indicated that the Army should develop a systems technology program based upon a sustained level of funding, the Army had complied. Now, a year later, the Senate chastised the Army for developing a program that did not reflect a declining funding level. Allen told the Senate that "our inconsistency and our tendency to micro-manage research and development programs is demonstrably inefficient and detrimental to the cost effectiveness of the programs and products."<sup>21</sup>

Allen's colleagues on the Senate appropriations Committee were unchastened by his remarks and reduced the funding level still further to \$75 million. After an appeal from Deputy Secretary of Defense William P. Clements, Jr., a conference committee restored the funding level to \$100 million. In his letter to Congressman George M. Mahon (D-Texas), chairman of the house appropriations committee, Clements stated that the Senate reduction would "probably create a major asymmetry between the

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<sup>21</sup>Clarence A. Robinson, Jr., "DOD Presses for ABM Fund Restoration," Aviation Week, 7 June 1976, pp. 16-17 (hereinafter cited as Robinson, "ABM Fund Restoration").

U.S. and the U.S.S.R. in BMD system capability.'" The major funding reduction passed by the Senate, combined with the closing of the SAFEGUARD site, could indicate a serious lack of resolve on the part of the United States and might lead the Soviets to lose interest in maintaining the ABM treaty which was to be reviewed by both powers in 1977.<sup>22</sup>

#### BMD AFTER SAFEGUARD: R&D CONTINUES

In the years following the deactivation of SAFEGUARD, the Army was forced to carry out what was essentially a research-only program under strict guidelines imposed by Congress and the ABM agreements. Not only that, but Congress continued to reduce BMD funding. In addition to these obstacles, the Army had to contend with the considerable difficulty that a research-only program poses within the context of the American defense acquisition system. Such a program generates no requirements for the production of hardware. Without the prospect of orders for equipment, it is difficult to keep contractors interested in defense work, for only production requirements are likely to result in appreciable profits. These difficulties contrasted sharply with a Soviet program that was funded at a level

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<sup>22</sup>Clarence A. Robinson, Jr., "U.S. Anti-Missile Work Stresses Optics," Aviation Week, 6 September 1976, p. 31.

estimated to be three times that of the U.S. effort. This meant that the goal of the Army's program, maintaining a technological lead over the Soviets, might prove impossible to achieve.<sup>23</sup>

In spite of these problems, the Army pursued a vigorous program driven by three possible ABM missions: protecting American ICBM fields; securing the national command authorities and the command, control, and communications system that controls U.S. nuclear forces; and providing a limited defense for urban industrial areas.<sup>24</sup> The Army had gained a thorough understanding of the nature and magnitude of the problems associated with ballistic missile defense from its work with SAFEGUARD, and this experience determined to some extent the direction of the R&D effort.<sup>25</sup>

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<sup>23</sup>Kenneth J. Stein, "New Missile Defense Systems Studied," Aviation Week, 11 October 1976, p. 34 (hereinafter cited as Stein, "New Defense Studied"); Robinson, "Soviets Grasping Strategic Lead," pp. 14, 16; Robinson, "Anti-Missile Work Stresses Optics," pp. 30-31; "Strategic Defensive Systems Emphasized," Aviation Week, 20 September 1976, p. 49.

<sup>24</sup>Clarence A. Robinson, Jr., "Missile Defense Radar System Tests Set," Aviation Week, 20 September 1976, p. 43 (hereinafter cited as Robinson, "Radar System Tests Set," ).

<sup>25</sup>Stein, "New Defense Studied," pp. 34-35.

## R&amp;D CONTINUES: COMPUTERS

One major requirement of an effective BMD system is a powerful computer possessing the ability to store and process huge quantities of data with great speed. The data processing requirement associated with controlling an ABM system is illustrated nicely by an example of a battle in which 200 enemy warheads are scanned by a radar system at the rate of twenty pulses per second. This requires a computer to handle twelve million instructions per second (MIPS).<sup>26</sup>

When the SENTINEL/SAFEGUARD system was being developed there were no commercial computers available with sufficient capacity. Therefore, in 1967 a data processing package was designed and developed specifically for the ABM system through a cooperative effort involving Bell Laboratories, Western Electric and Lockheed Electronics. The SAFEGUARD computer was capable of performing ten MIPS.<sup>27</sup>

By the time the Army was working on the Site Defense system, the quality of commercial computers had advanced to the point where a commercial machine could be used. The computer

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<sup>26</sup>"Computer Proves Architecture Concept," Aviation Week, 11 October 1976, p. 35.

<sup>27</sup>Bell Labs, ABM Project History, pp. 3-9, 4-6; Robinson, "Missile Defense Technology," p. 13. Robinson reported that the software program that ran the SAFEGUARD system was the "most complex ever written."

selected was a Control Data Corporation (CDC) 7700 which had twice the capacity of the SAFEGUARD data processing system and was one of the largest and fastest commercial computers in 1976.<sup>28</sup>

The Army was also working with computers more powerful than the CDC 7700. These machines were located in the Army's Advanced Research Center which included a computer complex containing four major computers. The most impressive of these, PEPE (parallel element processing ensemble), was built by Burroughs Corporation to meet the specific demands of ballistic missile defense--keeping a huge, complex data base up-to-date; controlling search radar; tracking objects and distinguishing warheads from decoys; etc. While the other computers might operate as fast as 25 MIPS, PEPE could handle as many as 800 MIPS.<sup>29</sup>

By mid-1978, the Army's R&D program was examining techniques and equipment that would permit the distribution of some of the command and control functions from a centralized control center to individual interceptors in a missile defense system. A special computer for installation on interceptor

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<sup>28</sup>Robinson, "Site Defense Construction," p. 71; Senate, Hearings on FY 77 Authorizations, Part 12, Research and Development, pp. 6686, 6734. This report claims that the SAFEGUARD computer could perform eighteen to twenty million operations per second.

<sup>29</sup>Stein, "New Defense Studied," pp. 34-35.



missiles was being developed to handle these functions. The goal of this effort was to provide an on-board computer that could handle 100 million operations per second. One machine being developed was to be about a foot high and fourteen inches in diameter and weighed about eighty pounds.<sup>30</sup>

Two years later, the Army's Advanced Research Center was evaluating a mini-computer designed by Lockheed. Using "'residue-number arithmetic'," this device could perform the equivalent of 500 million additions per second or 120 million multiplications per second. The speed of this machine was achieved by processing its computations in parallel.<sup>31</sup>

#### R&D CONTINUES: OPTICAL SENSORS AND INTERCEPTOR CONCEPTS

By the end of the 1970s, the Army was beginning to combine the advances being made in computer technology with developments in the area of sensors to set the stage for the development of a new generation of interceptor missiles. It was apparent to the Army that one way to overcome the single-site limitations imposed by the ABM treaty and off-set the advantages

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<sup>30</sup>"Processing of Data Key to Missile Defense," Aviation Week, 28 August 1978, pp. 12, 15; Clarence A. Robinson, Jr., "Missile Defense Gains Support," Aviation Week, 22 October 1979, p. 14 (hereinafter cited as Robinson, "Missile Defense Gains Support").

<sup>31</sup>Klass, "Missile Defense Tests Set," p. 218.

MIRV'ed ICBMs had enjoyed to this point was to extend the range at which an ABM system could attack incoming warheads.

One reason for pursuing research on optical sensors was the operating limitations of radar. Among these limitations is the fact that radar could not distinguish between decoys, boosters, and warheads during the mid-course phase of flight. Moreover, even to pick up the elements of this threat cloud requires radar equipment with great power and large antennas. This latter feature also makes the radar vulnerable to direct attack as in the case of the SAFEGUARD system. Still another problem with radar is encountered when it is used to direct attacks against warheads in the terminal phase of their flight. This difficulty is caused by the break-up of the ICBM booster as it re-enters the atmosphere. After a booster has dispensed its warheads and decoys, its inertia carries it along with the warheads and decoys. As this threat cloud re-enters the atmosphere, two phenomena occur. First, the large booster breaks up and fills the air with debris. Second, the lighter decoys are slowed more rapidly by the atmosphere and fall behind the warheads and chunks of debris. The latter phenomenon helps the defender by discriminating between warheads and decoys. However, some pieces of the booster debris are large enough to present radar returns similar to warheads and therefore tend to confuse the defender.

To overcome these problems, the Army began to develop optical sensors in the infra-red radiation range. In a test conducted in 1979 at Kwajalein, a ground-based infra-red sensor had been able to find and follow a warhead forty percent of the time while it was in the middle of booster debris. During this same period, radar sensors were totally incapable of finding the warhead.<sup>32</sup>

Work also was being done with optical sensors that could be launched into space. Boeing Corporation, working with Hughes Aircraft Company, was developing a designating optical tracker (DOT) for the Army. This recoverable sensor package would be sent aloft and used to study the infra-red signatures of warheads and booster debris from the perspective of space. In September 1980, the Army successfully tested the DOT system. In spite of the deployment of penetration aids by the attacker, the infra-red sensor was able to track the test warhead.<sup>33</sup>

One scheme for taking advantage of the new sensors was called FASS for Forward Acquisition Sensor System. The idea here was to launch the sensor into a ballistic trajectory so that it could pick up the approaching threat cloud and relay trajectory data to ground facilities. These data would then be used in

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<sup>32</sup>Klass, "Missile Defense Tests Set," pp. 214-16.

<sup>33</sup>Klass, "Missile Defense Tests Set," p. 214; "Technology Milestone Met in Missile Defense Testing," Aviation Week, 29 September 1980, p. 25.

launching mother vehicles equipped with their own sensors and carrying a number of non-nuclear kill vehicles which were equipped with homing sensors. The mother ship, in coordination with other mother ships, would designate targets for its kill vehicles and then launch them at approaching warheads. The kill vehicles would then home in on their assigned targets.<sup>34</sup>

The Army's combination of the improved capabilities of infra-red sensing with new, non-nuclear kinetic kill technology produced "the most significant change in approach to ballistic missile defense" since the United States began working on this problem in the 1950s.<sup>35</sup> The core of the Army's new approach was to be demonstrated in its homing overlay experiment (HOE)<sup>36</sup> which was scheduled for flight demonstration in the 1982-1983 timeframe. In this demonstration, a test intercept vehicle would be launched from Kwajalein Missile Range using a modified MINUTEMAN rocket. In addition to the interceptor, the launch vehicle would carry an infra-red sensor package and an on-board computer. In addition to its own computer and infra-red sensor

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<sup>34</sup>Klass, "Missile Defense Tests Set," p. 215.

<sup>35</sup>Klass, "Missile Defense Tests Set," p. 214.

<sup>36</sup>By this time, the Army was talking of a layered defense composed of overlay and underlay systems. The former involved attacking warheads during and even before the mid-course portion of their flight, while the latter system would deal with targets that leaked through the overlay system and penetrated the atmosphere ("Technology Milestone Met in Missile Defense Testing," Aviation Week, 29 September 1980, p. 25).

package for guidance, the interceptor would also be equipped with a kill device that was designed by Lockheed Corporation and resembled the folded skeleton of an umbrella with weights attached to its ribs. Once above the atmosphere, the sensor and computer in the launch vehicle would locate and track a re-entry vehicle that had been launched from Vandenberg AFB by a second MINUTEMAN missile. Then, the on-board computer of the launch rocket would pass tracking data to the computer on the intercept vehicle. At the appropriate time, the interceptor package would be launched and home in on the target using its own infra-red sensor and on-board computer. Once free of the mother ship, the kill vehicle would deploy its umbrella structure thereby increasing the probability that it would hit and destroy the target.<sup>37</sup>

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<sup>37</sup>Klass, "BMD Tests Set," p. 213. After partial successes in two test flights, the homing overlay experiment vehicle achieved a complete success on 10 June 1984 (Currie-McDaniel, Army Strategic Defense Command, pp. 30, 41-42). For a discussion of a different interceptor concept, see Craig Covault, "Antisatellite Weapon Design Advances," Aviation Week, 16 June 1980, pp. 244-45. Covault discusses the Vought antiballistic missile homing intercept weapon which is a technological marvel. Only about a foot long, it is powered fifty-six small rockets and carries on board a cryogenically cooled infra-red sensor that sees through eight telescopic eyes. Its "visual" signals are interpreted by an on-board micro-processor and used in conjunction with signals from the vehicle's laser gyroscope to provide guidance instructions so the vehicle can home in on its target.

## ORIGINS AND DEVELOPMENT OF DIRECTED ENERGY WEAPONS

While the Army's conception of a non-nuclear kill vehicle may have been a significant change in the American approach to ballistic missile defense, it was not as revolutionary as the changes promised by the development of directed energy weapons (DEWs) and their application to the ABM mission. Throughout the 1970s defense organizations supported an impressive array of R&D efforts in the DEW field. By 1980, significant advances in these programs were inspiring confidence that DEWs would soon offer the means of defeating attacks by ICBMs. The roots of these exotic weapons are found in science fiction and the realization before World War II that nature produces radiations that can kill human beings.

Ancient history provides what is probably the first description of a weapon that achieved its destructive effects by directing energy onto a target. In the third century B.C., the great scientist Archimedes reportedly used sunlight to destroy the ships of a Roman fleet that had laid siege to the port of Syracuse. Using concave mirrors he had constructed, Archimedes supposedly set the Roman vessels ablaze by focusing the rays of the sun on their sails.<sup>38</sup>

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<sup>38</sup>George Sarton, A History of Science, Vol. II, Hellenistic Science and Culture in the Last Three Centuries B.C. (New York: W. W. Norton & Company, 1959; The Norton Library), p. 70.

In more recent times a description of a directed energy weapon was presented in H. G. Wells' famous science fiction novel, War of the Worlds. In one passage he described how the Martians used a heat ray to kill people:

It is still a matter of wonder how the Martians are able to slay men so swiftly and so silently. Many think that in some way they are able to generate an intense heat in a chamber of practically absolute non-conductivity. This intense heat they project in a parallel beam against any object they choose, by means of a polished parabolic mirror of unknown composition, much as the parabolic mirror of a lighthouse projects a beam of light.<sup>39</sup>

Perhaps more relevant to the actual development of directed energy weapons are the stories that abound in the New York Times of the 1920s and 1930s concerning doctors and scientists who developed cancer and often died as a result of their work with radiation. So many people perished in this manner that a monument to the "heroes of science" was established

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<sup>39</sup>Jeff Hecht, Beam Weapons: The Next Arms Race (New York: Plenum Press, 1984), Chapter 2 (hereinafter cited as Hecht, Beam Weapons); H. G. Wells, The War of the Worlds (New York: Berkley Books, n.d.), p. 27. In War Stars, pp. 21, 64, H. Bruce Franklin claims that the "lunatics" or men from the moon in Washington Irving's Mr. Knickerbocker's History of New York wielded "directed-energy weapons." However, an examination of this book indicates that Franklin's claim is exaggerated. I found two passages in which Irving wrote of the moon men being armed with "concentrated sunbeams" and talked about how the lunatics "transfix us [earthmen] with concentrated sunbeams." It would seem to require a considerable amount of imagination to find directed energy weapons in "concentrated sunbeams," for Irving gives no hint of how the beams are concentrated. See Washington Irving, A History of New York, ed. by Michael L Black and Nancy B. Black, in The Complete Works of Washington Irving, Richard Dilworth, general editor (Boston: Twayne Publishers, 1984), pp. 48, 50.

at the Roentgen Institute of St. George's Hospital in Hamburg, Germany. In 1935, the names of forty Americans were added to this monument. It was common to refer to the radiation that killed these scientists as a "death ray."<sup>40</sup>

There are also stories about various inventors who claimed to have developed "death rays" that could kill animals and people. One of the most famous was Nikola Tesla. Following his personal tradition of announcing a major invention on each of his birthdays, in 1935 he announced that he had invented a "death ray" that could kill an army of a million men instantly and bring down a fleet of aircraft at a range of 250 miles.<sup>41</sup>

The era of World War II includes several episodes relating to radiation weapons. When Sir Robert Watson-Watt developed the concept for British radar, he was responding to a query as to whether or not it was possible to produce a radiation weapon that could bring down an airplane. Sir Robert calculated

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<sup>40</sup>"40 Americans Honored as Martyrs to Science," New York Times, 5 April 1935, p. 1. For samples of the stories dealing with radiation deaths and "death rays," see the following articles in the New York Times: "Blame Radium for Death," 9 June 1925, p. 14; "Abbe Tauleigne Gives His Life for Science; X-Ray Experiments in War Fatal to Frenchman," 7 June 1926, p. 3; "Warn of Ray Peril in Treating Cancer," 28 March 1929, p. 12; "Martyr to the X-Ray Will Lose Arm Today," 1 October 1930, p. 3.

<sup>41</sup>"Tesla, at 78, Bares New 'Death-Beam'," New York Times, 11 July 1934, p. 18. For other stories about death rays, see "Says He Sold 'Death Ray': H. Grindell Matthews Declares It Goes to Americans," New York Times, 2 March 1925, p. 4; and "'Death Ray' Expert Scoffs at War Use," New York Times, 2 May 1935, p. 22.



the amount of energy that would have to be concentrated against an aircraft to make the blood of crewmembers boil and concluded this scheme was impractical. However, he reported to his superiors that it would be possible to direct enough radio energy onto an aircraft surface to produce a reflection that could be used to detect the presence of the plane.<sup>42</sup>

As the Second World War was beginning in Europe, there is evidence that the U.S. Army was at least aware of the idea of radiation weapons, even if its R&D officers did not have much faith in their potential. Shortly after the German invasion of Poland, the U.S. government established the Uranium Committee to serve as a liaison with physicists who were involved in research that might lead to the development of an atomic bomb. During an October meeting of this committee, Lieutenant Colonel Keith F. Adamson noted that the Army was offering \$10,000 to anyone who could produce a ray that would kill a goat kept tethered on a ten-foot rope at the Aberdeen Proving Ground. The colonel added sarcastically that no one had yet claimed the money.<sup>43</sup>

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<sup>42</sup>Robert Watson-Watt, The Pulse of Radar: The Autobiography of Sir Robert Watson-Watt (New York: The Dial Press, 1959), pp. 43, 51-53; Henry Guerlac, OSRD Long History, Division 14, Section A, Early History of Radar, pp. VI9-VI13.

<sup>43</sup>Edward Teller, Better a Shield than a Sword (New York: The Free Press, 1987), p. 50 (hereinafter cited as Teller, Better a Shield); and Richard Rhodes, The Making of the Atomic Bomb (New York: Simon and Schuster, 1986), p. 315. This story is also recounted in Newhouse, War and Peace, p. 21.

In a movie of 1940, an American agent thwarted an attempt by Communist spies to steal the "inertia projector" which had been invented by American scientists and could throw "electrical waves capable of paralyzing alternating and direct currents at the source.'" The hero of the movie was Brass Bancroft who was played by Ronald Reagan. He used the "inertia projector" to stop the escape of Communist spies by turning the device on their airplane and making it crash.<sup>44</sup>

American bomber commanders directing the Combined Bomber Offensive against the Nazis in 1943 and 1944 were worried that the Germans had developed a device like the "inertia projector" that could stop an internal combustion engine and bring down American bombers. A research project carried out under the Office of Scientific Research and Development concluded that such a device was not feasible because of power limitations.<sup>45</sup>

The actual origins of modern directed energy devices are considerably more mundane than the science fiction of H.G. Wells and "Murder in the Air." One source of these revolutionary

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<sup>44</sup>Philip M. Boffey, Claiming the Heavens: The New York Times Complete Guide to the Star Wars Debate (New York: Times Books, 1988), pp. 3-5.

<sup>45</sup>John G. Trump to L. A. DuBridge, report, 20 January 1945, in folder marked A-1 RADAR--General--E.T.O., box 14, entry 60A, Record Group 18, National Archives. A scheme for using X-rays to kill engines by "quenching the spark of their motors" was announced in January 1933 ("X-Ray May Wreck Planes," New York Times, 30 January 1933, p. 15).

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devices was the work of Charles H. Townes who in 1951 conceived of the idea of using the phenomenon of stimulated emission to produce an improved source of microwave energy. According to the theory of stimulated response first advanced by Albert Einstein in 1916, it should be possible to cause an atom to produce light of a given wavelength by directing light of that same wavelength on the atom. In 1953, this principle was used to build the world's first maser (microwave amplification through stimulated emission of radiation). Within a few years, the application of the principle was expanded to a light amplification device called a laser (light amplification through stimulated emission of radiation) with the first laser being demonstrated in July of 1960.<sup>46</sup>

Soon after the first laser demonstration, DOD began to consider a number of different weapons applications. Among these was the use of powerful lasers to defend against ballistic missiles. In fact, before the end of 1961, the Defense Department's Advanced Research Projects Agency (DARPA) began to

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<sup>46</sup>Robert W. Seidel, "From Glow to Flow: A History of Military Laser Research and Development," Historical Studies in the Physical Sciences, Vol. XVIII, No. 1 (1987), pp. 113-14 (hereinafter cited as Seidel, "From Glow to Flow"); Hecht, Beam Weapons, pp. 22, 25; Teller, Better a Shield, pp. 31-32; Joan Lisa Bromberg, "The Birth of the Laser," Physics Today, October 1988, pp. 26-33. Bromberg (p. 26) wrote that the development of the laser was more of a process than an act of invention. The process began in 1957 when Townes wrote in his notebook his idea for a "'maser at optical frequencies.'"

fund research on lasers for missile defense under Project SEASIDE which was managed by the Navy's Office of Naval Research (ONR). The major challenge of this effort was to increase the power of lasers to the point where they could destroy a missile's warhead.<sup>47</sup>

In the first half of the 1960s, efforts to produce high energy lasers were hampered by a commitment to solid state lasers which earlier had shown considerable promise with regard to scalability. In this early activity, researchers had worked with glass and ruby crystals as the lasing material and believed that increasing the laser's power to the point where it would be effective as a weapon was largely a function of improving ruby and glass crystals. As a result, a major program was launched in 1963 to find the best lasing substances. The project eventually became so extensive that the Naval Research Laboratory established a center to evaluate materials developed under the program. By the mid-sixties, difficulties in the scaling of solid-state lasers had resulted in a shift of focus in the DARPA-ONR program from ABM applications to radar applications. Additionally, more emphasis was placed on efforts to understand fundamental lasing phenomena.<sup>48</sup>

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<sup>47</sup>Seidel, "From Glow to Flow," pp. 111, 113-16, 118-19.

<sup>48</sup>Seidel, "From Glow to Flow," pp. 116, 118, 123-24, 126, 133-34. In all, some 2000 different varieties of lasing glass were examined in this effort. In addition to the problem with the commitment to ruby and glass lasers and the emphasis on finding the best lasing materials, Seidel has argued elsewhere ("How the Military Responded to the Laser," Physics Today, October 1988, pp. 36-43) that the American laser program shifted

Until about 1965, the concentration on solid-state lasing in the DARPA-ONR program had blinded researchers to the potential of the gas laser. This device had been invented in 1960 and at first gave little indication that its power could be increased to the level required of a weapon. However, in 1964, C. N. K. Patel of the Bell Laboratories invented the carbon-dioxide laser which did lend itself to up-scaling. Soon after this, both the Army and Air Force built large carbon dioxide lasers, as did the Raytheon Corporation. These devices were referred to as "sewer pipe" lasers because of their long, slender appearance. One device constructed by the Army was 178 feet long and 2 inches in diameter and produced 2300 watts of power.<sup>49</sup>

The next major advance came in 1967, when a carbon dioxide laser was combined with aerodynamic techniques to produce

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too quickly from "research and exploration to development and scaling-up." One thing that brought about this premature shift was "interservice competition to develop devices suited to the missions of each branch." Other factors included "institutionalization of research programs in military as well as in contractor laboratories" and "adoption of the Manhattan Project and the wartime program to develop radar as models for military laser development."

<sup>49</sup>Seidel, "From Glow to Flow," pp. 132-35. The first gas laser used helium as its lasing substance. Gas lasers had received some attention in programs run by the Army and the Air Force. Jack Ruina, head of ARPA, had opposed these programs because DOD had assigned his office responsibility for laser development and he believed the other programs tended to dilute the overall effort. Hecht, Beam Weapons, p. 25, describes one carbon dioxide laser with a beam path of 750 feet and a power of 8,800 watts.

the carbon-dioxide gas dynamic laser (GDL) which showed great promise for scaling to high energy levels. In this laser the electrons of the gas are excited to the higher energy state required to produce lasing by burning a fuel in oxygen or nitrous oxide and expanding the hot gases through nozzles into a new vacuum state. By the time news of this device reached the public it had achieved powers of 60,000 watts.<sup>50</sup>

In the early 1970s, progress in increasing laser output power led DOD to almost double its budget for laser technology. A decade earlier, the output power of a continuous wave (CW) laser had been measured in tens of watts. By 1972, laser power had been increased more than a thousand times and was approaching a level that would allow it to destroy an aircraft. While the exact power of the strongest laser (a GDL laser) was classified, Aviation Week reported that it was in the realm of 200 kilowatts and noted that power levels might reach the megawatt range by the end of the seventies. At the same time, ARPA and the military services were hard at work on tracking systems with the high precision required to point a laser weapon. These developments indicated that lasers could be a threat to missiles by 1980. Further cause for optimism came in 1973 when the Air Force used a

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<sup>50</sup>Hecht, Beam Weapons, pp. 27, 58, 67-68. For another discussion of the GDL, see Philip J. Klass, "Power Boost Key to Feasibility," Aviation Week, 21 August 1972, pp. 32-35 (hereinafter cited as Klass, "Power Boost").

laser to shoot down a drone aircraft on the Sandia range near Kirtland AFB, New Mexico. Three years later, the Army accomplished similar feats at its Redstone Arsenal in Alabama. And about two years later, the Navy used a laser to destroy a TOW missile fired by Army technicians at San Juan Capistrano in California.<sup>51</sup>

By 1978, then, lasers had demonstrated that they could be integrated with pointing and tracking devices to form effective weapons systems and had given indications that they might be effective against missiles in a matter of a few years. At this time, the Army's DEW program included both particle beams and high-energy lasers that could be either based on the ground or in space. The major ground-based system was a proton particle beam that could be operational by 1990. The major space-based program was a neutral particle beam being developed in the Army's Project SIPAPU, an American Indian word meaning sacred fire. The SIPAPU particle beam would be produced by accelerating a stream of negative hydrogen ions and then neutralizing the beam by passing it through a "charge exchange cell." Once neutralized the beam would be suited for use in space, since it would be unaffected b-

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<sup>51</sup>Philip J. Klass, "Research Nears Application Level," Aviation Week, 14 August 1972, pp. 12, 14, 15; Klass, "Power Boost," p. 40; U.S., Senate, Committee on Commerce, Science, and Transportation, "Laser Research and Applications," Committee Print, 96th Cong., 2nd Sess., November 1980, pp. 20-21 (hereinafter cited as U.S. Senate, "Laser Research and Applications").

the earth's magnetic field. An anti-satellite version of SIPAPU could be orbited in as little as three to five years.<sup>52</sup>

The potential power of the neutral particle beam made it one of the more promising technologies at this time. It would have the ability to destroy a satellite at a range of several thousand kilometers. When its powerful stream of particles, traveling at near the speed of light, struck a target, it tended to "produce near-instantaneous destruction of the target surface" and also penetrated deeply into the object where it did further damage. The destructive power of such a beam made it difficult to counter.<sup>53</sup>

While the Army was pursuing a DEW program with obvious applications in the area of BMD, the Air Force was involved in a more generic laser program with various weapons application in mind. A part of the Air Force effort was an adaptive optics program centered around the development of deformable mirrors to compensate for thermal effects on laser beams and deficiencies in other optical components in the system.<sup>54</sup>

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<sup>52</sup>U.S. Senate, "Laser Research and Applications," pp. 20-21; Clarence A. Robinson, Jr., "Army Pushes New Weapons Effort," Aviation Week, 16 October 1978, pp. 42-43 (hereinafter cited as Robinson, "New Weapons Effort"); "White Horse Concentrates on Neutral Particle Beam," Aviation Week, 4 August 1980, p. 63.

<sup>53</sup>"Neutral Particle Programs Draw Focus," Aviation Week, 25 May 1981, p. 55; Robinson, "New Weapons Effort," p. 43.

<sup>54</sup>Benjamin M. Elson, "USAF Weapons Lab Mission Expanded," Aviation Week, 29 January 1979, p. 213. This article contains information on the AF laser program at the AF Weapons Laboratory where the Air Force was working on a carbon dioxide gas dynamic laser for use the airborne laser laboratory (pp. 212-13).



The year 1980 witnessed several significant changes in the Defense Department's DEW program. Around the middle of the year, Secretary of Defense Harold Brown ordered a shift in DOD priorities. Noting that lasers had the potential to revolutionize warfare, he directed the military services to explore all possible uses of these devices, but to emphasize the development of space-based, high-energy lasers. Part of the reason for this emphasis was the difficulty of operating lasers in the atmosphere where thermal blooming and scattering weaken the beam. With this shift in priorities, the Pentagon's DEW efforts began to focus on a program of technologies that might permit the deployment of "laser battle stations" in space in seven to ten years. These could be used to defend U.S. satellites or to defeat an attack by ICBMs. Furthermore, as the shift was occurring, DARPA began to play a more important role in the DOD directed energy weapon program, becoming the manager of a consolidated particle-beam technology program with responsibility for demonstrating particle-beam feasibility in two major areas: neutral particle-beam propagation and the propagation and target interaction of a charged particle beam.<sup>55</sup>

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<sup>55</sup>"U.S. Effort Redirected to High Energy Lasers," Aviation Week, pp. 50, 55-57. Brown's decision in this case seems to have been surrounded with controversy. A Defense Science Board task force examining high energy lasers had prepared a report recommending emphasis on near-term applications such as ship-board defense. According to some sources, this report was misrepresented to Brown by DSB Chairman Eugene G. Fubini who believed high-energy lasers in space should be emphasized. For additional information on this controversy, see "Laser Applications in Space Emphasized," Aviation Week, 28 July 1980, p. 62 (hereinafter cited as "Laser Applications"). For the

As a part of the consolidation, the Army's SIPAPU program was transferred to DARPA control beginning in FY 1981 and was redesignated WHITE HORSE to avoid antagonizing American Indians for whom SIPAPU is a religious word. Under DARPA, WHITE HORSE shifted from the Army's five-year schedule to a seven-year program designed to demonstrate the feasibility of particle beam devices that could become the basis for a space-based defense against ICBMs. Also transferred to DARPA control was the Army's autoresonant accelerator program. While authority over these programs passed to DARPA, the Army continued to manage the programs and was allowed to continue a very modest high-energy laser program.<sup>56</sup>

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remarks concerning laser battle stations see "Pentagon Studying Laser Battle Stations in Space," Aviation Week, 28 July 1980, p. 57 (hereinafter cited as "Laser Battle Stations in Space"). With regard to the lasers themselves, two of the more promising types of lasers DARPA was pursuing at this time were the excimer and free-electron lasers. These are described in this article (pp. 58-59). Concerning the expression "battle station," aerospace engineer Maxwell W. Hunter, II, was certainly one of the first to use the expression (see his 31 October 1977 paper "Strategic Dynamics and Space-Laser Weaponry"). Hunter's use of this expression was publicized in Clarence Robinson's 16 October 1978 article in Aviation Week, "Army Pushes New Weapons Effort," passim, but especially p. 48. More will be said about Hunter in the next chapter. On DARPA's increasing role, see "Army Beam Programs Moving to DARPA," Aviation Week, 4 August 1980, p. 51.

<sup>56</sup>"Army Beam Programs Moving to DARPA," Aviation Week, 4 August 1980, p. 51; "Technology to Defend ICBMs," pp. 34-35, 40; "White Horse Concentrates on Neutral Particle Beam," Aviation Week, 4 August 1980, pp. 63, 65.

A second major particle-beam program under DARPA control aimed to develop an ability to fire an electron beam through the atmosphere. This project was being pursued at Lawrence Livermore National Laboratory. The most immediate application expected from this undertaking was a device that might be used to protect major naval vessels from attacks by other weapons such as aircraft and cruise missiles. Nevertheless, in the more distant future, there was the prospect of developing ground-based particle beams that could be used as ABM weapons.<sup>57</sup>

In addition to its particle beam projects, DARPA was also pursuing a major effort in the high-energy laser area where the top priority was assigned to space-based defensive systems. The focus of DARPA's undertaking was its space laser TRIAD. The first part of the TRIAD was the ALPHA program which aimed to develop a hydrogen-fluoride laser of 2.7 micron wavelength with a power of five megawatts. The second element was the large optics demonstration experiment (LODE) which involved the "fabrication" of a large mirror four meters in diameter. The third component was TALON GOLD, an undertaking to develop precise pointing capabilities. A TALON GOLD experiment was to be conducted in mid-1985 on a space shuttle flight to demonstrate a pointing accuracy of "at least 0.2 microradians." For the task of fitting

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<sup>57</sup>"White Horse Concentrates on Neutral Particle Beam," Aviation Week, 4 August 1980, p. 63; "High-Intensity Electron Beams Pushed," Aviation Week, 4 August 1980, p. 67.

these three programs together for a system demonstration, DARPA selected Boeing Corporation.<sup>58</sup>

The fabrication of large mirrors was the pacing technology for lasers as the decade of the seventies came to a close. A three meter mirror had already been built and work was under way on the LODE project. There was no scientific or technical reason that a mirror as large as ten meters could not be built. The problem was that mirror fabrication was still a "cottage industry," and there was no production facility available to fabricate the larger mirror.<sup>59</sup>

One proposal to overcome the fabrication problem was advanced by United Technologies Research Center in early 1981. This would involve the use of lightweight composite materials to construct segments that could be combined to form a ten-meter mirror. The device so constructed was to be known as a "graphite fiber-reinforced glass matrix composite optical system," and it would be the end result of a three part program. The three elements of the program would run in parallel and would include the research work to resolve remaining basic technology issues, the production of a smaller 2.4 meter mirror, and finally the construction of the 10 meter mirror itself. This last element

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<sup>58</sup>"Technology to Defend ICBMs," pp. 40-41; "Laser Battle Stations in Space," pp. 57-58, 61; "Laser Applications," p. 62.

<sup>59</sup>Robinson, "Missile Defense Gains Support," pp. 15-16.

would require about 4.5 years to complete because of the delicacy of the fabrication procedures. It was the delicacy of these procedures that made mirror construction the pacing technology of laser weapons. The total cost of this program was estimated to be \$87.2 million.<sup>60</sup>

The pointing and tracking problem was also a difficult challenge. NASA's space telescope was designed to meet a higher level of accuracy, 25 nanoradians which equates to one foot of error at 7,575 miles. However, NASA had the advantage of having a much longer time to focus its telescope. A laser weapon must be swiftly pointed and then changed from one target to another, and this must be done with great precision. Still, according to Senator Malcolm Wallop, a Republican from Wyoming and a member of the Senate Intelligence Committee, by May of 1981, the U.S. had the technology to achieve the necessary accuracy in pointing and tracking. Wallop stated that an accuracy of .2 microdegree was required to destroy an ICBM at 3,000 to 5,000 miles. He further reported that he personally had seen equipment that routinely achieved a higher accuracy than this.<sup>61</sup>

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<sup>60</sup>"Laser Battle Station Mirror Proposed," Aviation Week, 25 May 1981, p. 64. DARPA's LODE program had determined that a "segmented, deformable surface design" was the preferred form for large mirrors such as the United Technologies device. The estimate by United Technologies that it would take 4.5 years to complete the 10 meter mirror was based on its experience in fabricating a 2.5 meter mirror for NASA's space telescope.

<sup>61</sup>"Laser Applications," p. 63; "Senate Directs Air Force to Formulate Laser Plan," Aviation Week, 25 May 1981, p. 53.

## THE PROMISE OF DIRECTED ENERGY WEAPONS

As the decade of the 1980s began, there a number of people who believed that prospects were bright for the development of an effective defense against ballistic missiles. As the discussion of DEW research indicates, directed energy devices seemed to be especially promising. Pessimistic estimates indicated that it would be in the 1990s before DEWs matured to the point where they could serve in an ABM capacity. More optimistic projections fixed this date at sometime in the late 1980s. The development of such weapons and the possibility of deploying them in space promised not only a solution to the problem of ICBM vulnerability, but again raised the possibility of protecting the U.S. population as had been the intention with NIKE-X and SENTINEL in the 1960s. "The implications become awesome," as one official put it.<sup>62</sup>

This and other reports appearing in Aviation Week indicate that optimism was the prevalent mood among those concerned with the nation's DEW and BMD programs. A February 1981 article reported that a DARPA study soon to be released

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<sup>62</sup>"Directed-Energy Effort Shifted," Aviation Week, 4 August 1980, p. 44; "Technology to Defend ICBMs," p. 42; "White Horse Concentrates on Neutral Particle Beam," Aviation Week, 4 August 1980, p. 65.

concluded that an effective space-based laser weapon was near at hand. This was a chemical laser that would develop 2.5 megawatts of power. Using a mirror 4 meters in diameter to focus its energy, it could deliver 1.5 kilojoules per square centimeter at distances up to 2,200 miles. This was sufficient energy to destroy an ICBM in the boost phase since an energy level of only 1.0 kilojoules per square centimeter was considered lethal for missiles. A network of one hundred such lasers with their power increased to 25 megawatts and equipped with 15-meter mirrors would have the ability to blunt significantly a Soviet missile attack on the United States. While the 5 megawatt laser could be tested in 9 years, it would take 20 to 25 years to deploy the 100-laser constellation which would constitute "a full or robust BMD capability." These deployment projections were based upon an aggressively pursued, but not a crash, program. Also assumed were necessary advances in surveillance and C<sup>3</sup> systems and the development of the requisite heavy-lift space vehicles.<sup>63</sup>

Later the same month, Aviation Week reported that nuclear bomb pumped X-ray lasing had been demonstrated by the Livermore Laboratory during a test at an underground site in Nevada. The test was a part of a series collectively known as the DAUPHIN project. If constructed, an X-ray laser would consist of a

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<sup>63</sup>Clarence A. Robinson, Jr., "Laser Technology Demonstration Proposed," Aviation Week, 23 February 1981, pp. 16-18 (hereinafter cited as Robinson, "Laser Technology").

central nuclear explosive device surrounded by a ring of approximately fifty lasing rods between three and eight feet long, each of which could be independently aimed. When pumped by a small nuclear explosion, each rod would produce an extremely powerful series of energy pulses lasting for only ten microseconds. So powerful would these pulses be that they could destroy a target in a single microsecond by evaporating its surface where the beam strikes. Because of this tremendous power, countermeasures that would protect a warhead or missile from conventional lasers would be ineffective against the X-ray laser. Yet, in spite of their great power, these devices were reportedly so small that enough of them could be orbited on a single shuttle flight to stop a Soviet missile attack against the United States. One operational concept called for placing a constellation of these devices into polar orbits.<sup>64</sup>

A few months later, the same magazine reported that Boeing Corporation proposed to construct a space-based laser that would be effective against airborne and spaceborne targets. This device would use a 2.5-meter mirror and develop 2.2 megawatts of power. It would be placed in orbit by the space shuttle and could be demonstrated as early as 1985.<sup>65</sup>

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<sup>64</sup>Clarence A. Robinson, Jr., "Advance Made on High-Energy Laser," Aviation Week, 23 February 1981, pp. 25-27; "High-Intensity Electron Beams Pushed," Aviation Week, 4 August 1980, pp. 67-68. The entire lasing device is itself destroyed within a millisecond by the detonation of the nuclear bomb that provides the pumping energy.

<sup>65</sup>Robinson, "Beam Weapons Technology," p. 41.



A sense that DEWs had reached a critical point in their development was also reflected in congressional (especially senatorial) efforts to increase funding for DEW work. In FY 1980, DARPA had spent \$48.8 million for high-energy lasers. The following fiscal year this figure increased by over forty percent to \$69.1 million. Moreover, some members of Congress wanted to increase the FY 1981 figure by \$20 million more. Also, floor amendments in the Senate that would have increased this total to \$180 million were narrowly defeated. About \$30 million were provided for particle beam research in FY 1981.<sup>66</sup>

Furthermore, in May 1981 Senator Wallop and six colleagues sponsored an amendment that would have added \$250 million to the Military Authorization Bill for FY 1982. Of this money, \$152.5 million was to be earmarked for support of DARPA's space-based, high-energy laser program with the remainder going to support Air Force work on lasers. This was reduced to \$50 million in a House and Senate conference.<sup>67</sup>

Thus, in the time between the closing of SAFEGUARD and the beginning of the eighties, a number of important technical advances had occurred. Of these advances, the promise of directed energy weapons more than any other development excited renewed interest in deploying an ABM system. To visionaries, the

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<sup>66</sup>"Technology to Defend ICBMs," pp. 41-42.

<sup>67</sup>Robinson, "Beam Weapons," p. 42.

revolutionary characteristics of these devices, especially their "muzzle" velocity which in the case of the laser was the speed of light, promised capabilities that would allow the defensive to overcome the advantages the nuclear tipped ICBM had enjoyed for two decades and end the strangle-hold of mutual assured destruction on the thinking of American strategists. One of these visionaries was Maxwell W. Hunter, II, who in the late 1970s was a senior aerospace engineer working for the Lockheed Corporation. His story is part of the next chapter.

PART II

BIRTH OF THE STRATEGIC DEFENSE  
INITIATIVE

1977-1983

## Chapter VI

### THE RE-EMERGENCE OF BALLISTIC MISSILE DEFENSE AS A NATIONAL ISSUE: 1977-1981

**PHENIX:** the Bird of Arabia is called this because of its reddish purple colour (phoeniceus). It is unique: it is unparalleled in the whole world. It lives beyond five hundred years.

When it notices that it is growing old, it builds itself a funeral pyre, after collecting some spice branches, and on this, turning its body toward the rays of the sun and flapping its wings, it sets fire to itself of its own accord until it burns itself up. Then verily, on the ninth day afterward, it rises from its own ashes!

Book of the Beasts  
12th-Century Bestiary<sup>1</sup>

## INTRODUCTION

The 1970s was marked by a steady increase in the size of Soviet strategic offensive forces and a concomitant rise in concern among American strategists that the Soviets would soon have the ability to launch a disarming first strike against the U.S. ICBM fleet and retain sufficient reserves to destroy the United States if she chose to retaliate. In spite of this concern, America terminated SAFEGUARD and abandoned plans to

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<sup>1</sup>The Book of Beasts, ed. and trans. by T. H. White (New York: Dover Publications, Inc., 1984), p. 125.

develop the Site Defense follow-on system. Yet, even as SAFEGUARD was being deactivated, there were discussions of the use of terminal defensive systems to improve the survivability of MINUTEMAN and MX.

Later in the 1970s as the Army was developing new exoatmospheric ABM technologies and concepts, the vision of strategic analysts began to expand as they contemplated the advantages offered by attacking ICBMs in mid-course and perhaps earlier. Their horizons were further broadened as work on DEWs progressed, giving analysts a glimpse of the revolutionary potential of these devices, especially space-based DEWs.

The possibility that technical advances would bring the strategic defense abreast of the strategic offense and the need to respond to the growth in Soviet strategic forces combined to trigger an intra-governmental debate over the appropriate response to the changing strategic environment. Moreover, the prospect that defenses might be broadened to include population centers raised serious questions relative to the dominant U.S. strategic doctrine of assured destruction. By the beginning of President Reagan's first term in office, the debate within Congress, the Department of Defense, and the State Department and between these major elements of the government had reached the point where it was necessary to establish some policy guidelines to give direction to government activities that were becoming increasingly chaotic.

## RENEWED PRESSURE TO DEFEND ICBMS

Long before SAFEGUARD was deployed, a number of cheap, quick-fix approaches to ICBM defense had been advanced as alternatives to using a system such as SAFEGUARD for terminal defense. Among the first to suggest schemes for defending MINUTEMAN fields was Richard Garwin, a research scientist with the IBM Corporation. One of his ideas was the "bed of nails" concept in which steel spikes erected in missile fields would destroy warheads just before they detonated on the ground. Another of Garwin's proposals was to electronically jam the radar fuses of warheads. He also suggested the destruction of warheads by means of a "curtain of steel pellets" that would be thrown into the air over a missile field by the detonation of conventional explosives. Garwin also suggested planting nuclear charges in the missile fields and detonating these as Soviet warheads approached. This would lift a large amount of debris into the air and destroy approaching warheads. Since the debris would stay in the air for some time, the MINUTEMAN missiles would be protected for up to an hour.<sup>2</sup>

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<sup>2</sup>Lodal, "Assuring Strategic Stability," p. 475. For another discussion of defense schemes originated by Garwin, see Bernard T. Feld and Kosta Tsipis, "Land-based Intercontinental Ballistic Missiles," Scientific American, November 1979, p. 56 (hereinafter cited as Feld and Tsipis, "Land-based ICBMs").

As the threat to American ICBMs increased following the deactivation of SAFEGUARD, schemes similar to those advanced by Garwin were again discussed. For example, Bernard Feld and Kosta Tsipis suggested a variant of a Garwin defensive scheme. Two small radar systems would be placed north of each silo and used to control launchers that would fire swarms of small rockets at approaching warheads when they were about a kilometer from the MINUTEMAN silos. While an attacking force could eventually overwhelm such a defensive system, this method of defending U.S. missiles would force an attacker to expend a much larger number of missiles for an effective first strike and would introduce great uncertainty into the work of Soviet planners. Since these "minirockets" would be unguided, they would probably not constitute a violation of the SALT I ABM treaty. However, it might be necessary, the authors thought, to negotiate with the Soviets to be sure this system did not even appear to be a treaty violation.<sup>3</sup>

Schemes similar to these found their way into Army plans for emergency defense of U.S. missile fields. Project "Quick-Shot" involved the development of a small, inexpensive rocket with high velocity for use in terminal defense. Groups of such rockets would be fired in salvos at enemy warheads once they had penetrated to very low altitudes. To improve effectiveness, each

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<sup>3</sup>Feld and Tsipis, "Land-based ICBMs," p. 56.

of the small missiles might be equipped with a simple guidance system.<sup>4</sup> The same shot-gun principle underpinned another plan the Army devised. Here optical sensing probes would be launched into space to meet an on-coming attack. These probes would guide swarms of non-nuclear homing intercept vehicles that would then be rocketed into a volume of space through which the attacking warheads would pass. From this position they would use their own guidance systems to attack the warheads.<sup>5</sup>

While considering these short-term solutions to the problem of terminal defense, the Army continued to explore more permanent ways to defend ICBM fields. In the fall of 1976 an Army contract with McDonnell Douglas called for exploring the feasibility of a low-altitude ABM system (ST-2) to defend the new MX missile that was entering the engineering development stage. This system would intercept incoming missiles below 50,000 feet where the warheads would be distinguishable from most debris and decoys. Consideration of this new system included the recognition that ST-2 would have to be mobile if a mobile basing mode were selected for MX. The prospect of a mobile ABM system raised the specter of treaty violation, for such systems were banned by the 1972 ABM Treaty.<sup>6</sup>

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<sup>4</sup>Klass, "Ballistic Missile Defense Tests Set," p. 218.

<sup>5</sup>Robinson, "Missile Defense Gains Support," p. 15. "U.S. Funds Killer Satellite Effort," Aviation Week, 6 February 1978, p. 18, describes the homing interceptor vehicle.

<sup>6</sup>Robinson, "Anti-missile Work Stresses Optics," p. 32; Clarence A. Robinson, Jr., "Soviets Grasping Strategic Lead," Aviation Week, 30 August 1976, pp. 14, 16-17; Robinson, "Radar



As the decade of the seventies advanced, the idea of defending the MX missile became more appealing as the survivability of U.S. ICBMs became increasingly problematic. Although the number of warheads in the Soviet ICBM fleet tripled in this ten year period, it might still be possible to offset this increase by means of an appropriate basing mode combined with an ABM system incorporating the latest advances in defensive technologies. Such a combination could confer considerable leverage to even a small ABM force of one hundred missiles. For example, take the case of a basing mode in which a small number of ICBMs is shuttled among a relatively large number of protective shelters. Since the defender knows the location of his ICBMs, he need only defend occupied shelters while the attacker must strike all shelters and cannot concentrate to overwhelm the defense. There was also an important advantage in defending missiles as opposed to defending cities--when defending protectively based ICBMs, limited leakage is acceptable.<sup>7</sup>

In 1979, as an "endless procession of Defense Department officials" were telling Congress that by the early eighties the Soviets would be able to destroy American ICBMs using only a

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System Tests Set," pp. 42, 47.

<sup>7</sup>Robinson, "Missile Defense Gains Support," p. 16; Clarence A. Robinson, Jr., "U.S. to Test ABM System with MX," Aviation Week, 19 March 1979, p. 23 (hereinafter cited as Robinson, "ABM System with MX").

third of their own warheads, the Army was planning to defend the MX missile in the two basing modes considered most advantageous by the Air Force--the multiple protective shelter (MPS) and air mobile modes. For defense of the MPS mode, the Army planned a system that would intercept attacking warheads below 50,000 feet. As a result, the system was called low altitude defense system or LoADS. The interceptor was to be a SPRINT type missile fifteen feet in length. Early versions were to be nuclear armed, but as the Army's work with kinetic kill technology advanced the nuclear tipped missiles would be replaced by kinetic kill vehicles (KKV). In one variant of LoADS, a battery of three missiles and a radar system were to be carried on a launch vehicle that would move about in an underground launch tube. One of these batteries could be installed in each of the shelter complexes of the MPS basing mode for MX. Under attack, the radar system and missiles would be pushed up through the surface of the underground launch tube. The missiles would be capable of accelerating to 8,500 feet per second in only 1.5 seconds and would reach an altitude of 4,000 to 5,000 feet in about one second. If the air mobile basing mode were to be selected over MPS, the Army planned to defend it with an ABM system using exoatmospheric interceptors with non-nuclear warheads.<sup>8</sup>

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<sup>8</sup>Robinson, "ABM System with MX," pp. 23-24; "Technology Milestone Met in Missile Defense Testing," Aviation Week, 29 September 1980, p.26. For a discussion of the technical challenges of the LoADS, see: "Demonstration Planned for MX Defense System," Aviation Week, 16 June 1980, pp. 220-21. Among these challenges was achieving sufficient hardening to survive in a hostile nuclear environment that included explosions of

The Army, profiting from its experience with SAFEGUARD, had planned considerable flexibility into its LOAD system. First, it would be able to protect the vulnerable MINUTEMAN missiles. If a land-based mode were selected for the MX missile, LOADS would be adaptable to defending the new missile. Moreover, the Army even envisioned LOADS becoming the lower tier of a broader two-tiered BMD system that was envisioned in long range Army plans.<sup>9</sup>

#### EXPANDING HORIZONS: SPACE-BASED BATTLE STATIONS

The Army's long range thinking about multi-tiered missile defense concepts is indicative of how the pressure of dealing with the issue of ICBM vulnerability under the restrictions imposed by the ABM treaty had combined with advances in technology to expand the conceptual horizons of American defense experts. Indeed, the provisions of the ABM agreements that allowed the U.S. only one ABM facility with one hundred missiles became a veritable fountainhead of innovative energy in the Army's ABM program.

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incoming ICBM warheads and the nuclear warheads of ABMs, being able to sit dormant for long periods and then come on line and operate (its radar cannot be on before an attack, as the radar might indicate to the Soviets the location of the MX missile being defended in the MPS mode), and bulk filtering which the Army believed it had solved to some extent.

<sup>9</sup>Robinson, "ABM System with MX," pp. 23-24;  
"Demonstration Planned for MX Defense System," p. 220.

These limitations opened the Army's thinking to two major innovations: the idea of intercepting warheads in the exoatmospheric realm and the application of directed energy weapons to the problem of missile defense. As Clarence Robinson put the matter in Aviation Week:

Since the U.S. and U.S.S.R. have both agreed to a single ABM site, the U.S. is convinced that exoatmospheric interception of ICBMs is critical to successful defense. The eventual use of space platforms with energy directed ABM weapons and interceptors using non-nuclear warheads is considered vital by ABM planners.

With defensive systems in space, the next logical step would be to use these systems to multiply the power of the defense by attacking the ICBM while it is still in its boost phase when its warheads and decoys still represent a single target.<sup>10</sup>

The first step in this process of expanded thinking was the idea of extending the range at which warheads could be intercepted. Up to this time, the range of the radar that guided the interceptor to its target determined the maximum distance for interception. In an effort to overcome this limitation, Army researchers sought to develop optical sensors that could be carried by interceptor missiles. These sensors, combined with small, powerful, on-board computers, would permit interceptors to attack warheads beyond the range of ground-based radar systems.

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<sup>10</sup>Robinson, "Anti-Missile Work Stresses Optics," p. 30; Clarence A. Robinson, Jr., "ICBM Intercept in Boost Phase Pushed," Aviation Week, 17 July 1978, p. 48.

By mid 1978, research and development had advanced to the point where Army personnel were confident they would "be capable of reaching out into space to attack intercontinental ballistic missiles . . . in midcourse trajectory, or just after launch from enemy silos, to halt nuclear weapons attacks on the U.S."<sup>11</sup>

Where boost-phase interception was concerned, the most promising technological concept at this time was space-based directed energy weapons. In the late 1970s, this concept stimulated considerable interest as can be seen by examining an article that appeared in the 16 October 1978 Aviation Week. The article was by Clarence Robinson who had been covering ABM and DEW developments for several years; the major source for his report was an anonymous official of Lockheed Corporation.<sup>12</sup>

Robinson's article focused on space-based "battle stations" and may be the first appearance of this concept in U.S. defense literature. These stations were to be armed with directed energy weapons such as the Army's SIPAPU particle beam.

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<sup>11</sup>Clarence A. Robinson, Jr., "U.S. Anti-Missile Work Stresses Optics," Aviation Week, 6 September 1976, p. 30; Clarence A. Robinson, Jr., "Missile Defense Radar System Tests Set," Aviation Week, pp. 43, 46-47; Clarence A. Robinson, Jr., "Technology Program Spurs Missile Intercept Advances," Aviation Week, 5 June 1978, pp. 108-111; Clarence A. Robinson, Jr., "ICBM Intercept in Boost Phase Pushed," Aviation Week, 17 July 1978, p. 47.

<sup>12</sup>Robinson, "Missile Defense Gains Support," pp. 14, 16; Clarence A. Robinson, Jr., "Army Pushes New Weapons Effort," 16 October 1978 (Hereinafter cited as Robinson, "New Weapons Effort").

The "muzzle" velocity of such weapons was 50,000 times greater than that of rockets and made them revolutionary in nature. Furthermore, the laser possessed an extraordinary ability to focus energy into a narrow beam. The concentration of energy exceeded that of a nuclear weapon, yet its narrowness precluded it from being used as a weapon of mass destruction. In short, it was a weapon of surgical precision that offered

"the distinct possibility that the rapid delivery of nuclear explosives can be prevented by a weapon system that is itself not capable of mass destruction. Such a system clearly would give the nation that possesses it options in strategic posture and activity that are now denied everyone, including returning to those in charge the time to permit adequate decision making, which was taken away by the unholy synergism of nuclear weaponry and ballistic missiles."

The potential of the laser for killing an ICBM during its boost phase meant that as soon as a sufficient number were deployed in space the era of "mutual assured destruction" would be at an end.<sup>13</sup>

The feasibility of a revolutionary space-based missile defense system would be based upon another revolution that appeared to be at hand--a drastic reduction in transportation costs associated with the debut space shuttle. The dramatic economies made possible by the shuttle justified a re-evaluation

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<sup>13</sup> Robinson, "New Weapons Effort," pp. 43, 48. Robinson quoted his anonymous source as saying: "'This [space-based DEWs] is the only new strategic concept to present itself in a number of decades, and the only one which merits the words . . . potentially decisive. It should be implemented with all due haste.'"

of earlier, more pessimistic studies of space-based systems which relied on conventional rocket capabilities.

"When space transportation attains sizable economies, then space weaponry must be evaluated on the basis of military utility rather than being summarily dismissed because of huge logistics costs. Such weaponry need not be placed in primitive, flimsy satellites. Rather, heavy weights of shielding and hardening materials become feasible in space. The term battle station is more descriptive of these weapons than the images conjured up by the terms satellite or space station."

These battle stations would be assembled in space using multiple trips by the space shuttle to transport the required materials into orbit.<sup>14</sup>

In considering the costs of transportation, Robinson's anonymous source assumed that the cost of orbiting a pound of material during the era of the shuttle would be \$150 which meant that it would cost \$750 million to \$1.5 billion for the space transportation system to field the requisite system of battle stations. The required size of the battle station constellation varied depending on the range of the lasers carried by the battle stations. With a 1,000 km laser, 406 stations would be required. A laser of 5,000 km range would reduce the required number of stations to 21; and if the range of the lasers could be extended to 10,000 km, the number of battle stations was reduced to 9.<sup>15</sup>

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<sup>14</sup>Robinson, "New Weapons Effort," p. 48.

<sup>15</sup>Robinson, "New Weapons Effort," p. 49.

Throughout his story, Robinson carefully avoided naming the source of his information on space-based missile defenses, noting only that he was quoting extensively the words of an "industry official connected with laser weapons work" and "a Lockheed study of lasers." The anonymous official was Maxwell W. Hunter, II, and the industry study is Hunter's "Strategic Dynamics and Space-Laser Weaponry," a paper Hunter completed on 31 October 1977 and referred to as the "Halloween" paper.<sup>16</sup>

#### MAXWELL HUNTER AND THE ORIGINS OF THE CONCEPT OF SPACE BASED DEFENSE

In 1978, Hunter was a senior aerospace engineer with Lockheed Corporation. He had received a bachelor's degree in physics and mathematics from Washington and Jefferson College and

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<sup>16</sup>Maxwell W. Hunter, II, "Strategic Dynamics and Space Laser Weaponry," October 31, 1977, paper circulated by the author (hereinafter cited as Hunter, "Strategic Dynamics"). Hunter's paper is ten pages long and includes a series of appendices that add another seven pages. Mr. Hunter provided the author with a copy during an interview in October 1987. In what is an apparent reference to Hunter's paper, Robinson, p. 43, says that the study was done for the Army. Mr. Hunter left the author with the impression that he had completed the study more or less on his own initiative. When Robinson indicates that the Lockheed official is speaking, this is also a reference to Hunter's paper. To see how extensively Robinson relies on Hunter's paper, compare pp. 48-49 of Robinson, "New Weapons Effort," with pages 4 through 6 and A-7 of Hunter's study. What is perhaps the first use of the expression "battle station" comes on p. 5 of Hunter's paper and on p. 48 of Robinson's story.



a master's degree in aeronautical engineering from Massachusetts Institute of Technology. By the late 1970s when he became involved in an effort to apply lasers to ballistic missile defense, he had been working for over thirty years as an aeronautical and a space systems design engineer. While working for Douglas Aircraft Corporation between 1944 and 1961, he had been responsible for the aerodynamic design of several missiles, included the NIKE-AJAX, NIKE-ZEUS, and HERCULES. He had been a member of the Douglas team that worked with Bell Laboratories on the first major ABM effort, the NIKE II study that the Army had started in March 1955. He had served on the professional staff of National Aeronautics and Space Council between 1961 when he left Douglas and 1965 when he started working for Lockheed Missiles and Space Company where he was employed until retiring in 1987.<sup>17</sup>

In late 1966, Hunter led a Lockheed study group investigating ABM possibilities in anticipation of possible government interest in the development an ABM capability. After concluding that an up-graded BAMBI (ballistic missile boost intercept) system would require too much weight in orbit, the group examined a proposal by Ben Dunn that consideration be given to using CO<sub>2</sub> lasers in orbit as the basis of an ballistic missile

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<sup>17</sup>"Biographical Data: Maxwell W. Hunter, II," supplied to the author by Mr. Hunter; Bell Labs, ABM Project History, p.I-1, points out Hunter's participation in the NIKE II project.

defense system.<sup>18</sup>

Calculations soon showed that such a system could be placed in orbit at a reasonable cost. However, the idea seemed too advanced at the time, and the Lockheed study team decided merely to watch this field for later developments. Hunter was now sensitized to the potential of lasers in the area of strategic defense. About two years later, when he learned more about lasers, specifically gas dynamic and chemical lasers, he concluded that the time had come to push the concept of BMD based on space-based lasers. His efforts won for Lockheed a series of studies sponsored by the military and carried out during the 1970s.<sup>19</sup>

By 1977, Hunter had concluded that lasers in space could produce a revolution in warfare by ending the long-standing dominance of offensive strategic weapons. As he put it:

. . . I suddenly realized that lasers are something we hadn't tried before. It may be decades before we understand the full implications of a speed of light interceptor, but there's one thing you know: the best interceptors are the fastest; and until Einstein is proven wrong, lasers are going to be the fastest interceptors. So if you build up to where they have enough pizzazz to hurt something, you better back off and seriously consider where these weapons will take

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<sup>18</sup>Maxwell W. Hunter, II, "Great Zeus!", personal memoir, 4 July 1987, p. 6 (hereinafter cited as Hunter, "Great Zeus!"). Hunter names Arthur Kantrowitz as the first person to make the connection between space-based lasers and the BMD mission. Hunter provided the author with a copy of this memoir during an interview on 29 October 1987.

<sup>19</sup>Hunter, "Great ZEUS!", p. 6.

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This conclusion led Hunter to pull together his ideas on nuclear deterrence and strategic defense in a manuscript completed on 31 October and bearing the title: "Strategic Dynamics and Space Laser Weaponry." Here, he stated his view that America's strategic doctrine of "mutual assured destruction" was based upon the belief that the nuclear-tipped ICBM is the ultimate weapon against which no defense is possible. As a result, the United States had decided that its technology could no longer solve the problem posed by ICBMs and had "turned to psychology rather than physics, diplomacy rather than engineering, to protect the greatest technological power on the planet." Hunter disagreed with this position and argued that

high energy lasers are proliferating, and space transportation is about to become sufficiently economical that, if it is used to place such lasers in space, an effective defense against even massive ballistic missile exchanges . . . is , indeed, possible.<sup>21</sup>

Hunter could not understand those who wanted to make space a sanctuary from war, calling this a "cruel, genocidal hoax." He wanted to force any possible future nuclear war far out into space by deploying space forces "capable of dominating or at least strongly upsetting the opposing earth-bound strategic

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<sup>20</sup>Interview with Maxwell W. Hunter, II, retired aerospace engineer, Washington, D.C., 29 October 1987, pp. 44-45 (hereinafter cited as Hunter, Interview).

<sup>21</sup>Hunter, "Strategic Dynamics," p.1.

force balance." The means of bringing about this fundamental shift in the strategic situation between the superpowers was the deployment of a constellation of space-based, laser-armed battle stations, each protected by its own armor. The key characteristic of such a station would be the capability of its laser weapon to destroy ICBMs during their boost phase.<sup>22</sup>

Hunter believed that the qualities of a laser made it a revolutionary weapon. As already noted, in his eyes, laser weapons possessed the ultimate "muzzle velocity"--the velocity of light or 50,000 times the speed of a rocket interceptor. Here, Hunter thought, was a counter to the great velocity of the ballistic missile which had thwarted defenses since the first V-2 attack against England. The speed of the laser beam and its narrow concentration of power made possible pinpoint accuracy. The limited power of the laser, plus its accuracy, meant that it could be used with limited risks. A mistake with a nuclear weapon could mean the destruction of an entire city; a mistake with a laser would be the equivalent of a mistake with a conventional rifle or light cannon. Because of this low risk, Hunter concluded that lasers could be used without human intervention.<sup>23</sup>

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<sup>22</sup>Hunter, "Strategic Dynamics," pp. 3-4.

<sup>23</sup>Hunter, "Strategic Dynamics," pp. 5-6; Teller, Better a Shield than a Sword, p. 31, also comments on the revolutionary nature of laser weapons.

A constellation containing a relatively small number of battle stations could defend against an ICBM attack. If the range of the lasers mounted on the stations were limited to 1,000 kilometers, the constellation would have to contain 409 battle stations to achieve the coverage required for an effective defense. If the range of the lasers were increased to 5,000 kilometers, only 21 stations would be necessary.<sup>24</sup>

#### SENATOR MALCOLM WALLOP AND THE "GANG OF FOUR"

Although Hunter's "Halloween" paper was not published, it was circulated among his friends and colleagues and set in motion a chain of events that eventually brought Hunter to the attention of Senator Malcolm Wallop, Republican of Wyoming, who was about to become one of the Senate's staunchest supporters of strategic defense. Wallop's interest in strategic defense dates from the beginning of his first term in the Senate when he discovered that the U.S. was defenseless against ballistic missiles in spite of heavy expenditures each year for "defense."<sup>25</sup>

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<sup>24</sup>Hunter, "Strategic Dynamics," p. 7.

<sup>25</sup>Wallop, Interview, pp. 1-2.

It was also early in his first term when Wallop was appointed to the Senate Intelligence Committee. To assist with his committee duties, he added Dr. Angelo Codevilla to his staff. Working together closely, these two men learned about Soviet strategic defense efforts and also gained knowledge of the advanced technologies (optical, pointing, and tracking) associated with the national technical means of intelligence gathering.<sup>26</sup>

As Wallop increased his knowledge of advanced technology and the strategic situation between the United States and the Soviet Union, he became convinced that the U.S. could and should defend itself against a possible attack by nuclear-tipped ICBMs. He began to look around in government and industry for those who believed as he did. It was at this time that he met Maxwell Hunter.<sup>27</sup>

In the summer of 1978, Hunter was in Washington to attend a symposium on strategic defense. He had been invited to the conference because a copy of his "Halloween" paper had found its way to John Morse who recommended that Hunter be invited to the symposium which was then being organized by Robert Pfaltzgraff and Jacquelyn K. Davis of the Institute for Foreign Policy

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<sup>26</sup>Wallop, Interview, pp. 1, 17; Codevilla, While Others Build, p. 59.

<sup>27</sup>Wallop, Interview, p.2.

Analysis (IFPA). From Hunter's standpoint, the conference itself was unremarkable. However, after the symposium, Hunter was invited to have dinner with Pfaltzgraff and Davis who happened to bring Angelo Codevilla with them. Codevilla discussed missile defense with Hunter, was excited by Hunter's ideas about missile defense, and secured a copy of the "Halloween" paper. Somewhat later, Codevilla introduced Hunter to Wallop.<sup>28</sup>

By the time Wallop and Codevilla met Hunter, the Senator and his staffer were both displeased with America's reliance on offensive strategic systems as the basis of nuclear deterrence and were pre-disposed to look for an alternative. They were aware of the pointing and tracking abilities of U.S. intelligence satellites. They were also aware of the progress the United States had made in detecting Soviet missile launches, distinguishing between the various types of Soviet missiles, and predicting where these missiles would return to earth. Not only did Wallop and Codevilla learn about the state of U.S. space technology, but they also were intimately familiar with the details of the Soviet strategic build-up which was causing concern that U.S. ICBMs were becoming vulnerable to a Soviet first strike. In short, according to Codevilla, "Wallop realized both the importance of the Soviet ICBM force and the opportunity that intelligence technology offered for dealing with it."<sup>29</sup>

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<sup>28</sup>Hunter, Interview, pp. 9-11.

<sup>29</sup>Interview with Malcolm Wallop, U.S. Senate, 16 December 1987, pp. 1-2, 7 (hereinafter cited as Wallop, Interview); Codevilla, While Others Build, pp. 60-63.

However, they were not sure how the technical base displayed in the case of intelligence satellites could be used to develop a missile defense system. That insight was provided by Hunter's concept of laser-armed space battle stations. Another of Hunter's important contributions was that he was able to identify for Wallop and Codevilla the organizations and people who could provide more concrete information on the state of America's efforts to develop a missile defense system.

In November 1978, Wallop visited the Army's missile defense center at Huntsville, Alabama, in an effort to find out what was being done in the area of ballistic missile defense. Before his trip, Wallop was advised by Hunter of the areas he should explore while at Huntsville. Here, Wallop found that the Army had made significant advances in the power of its computers and had been doing experimental work on intercept techniques (the Army was planning its homing overlay experiment at this time) and had been investigating the way a laser might be used to destroy an ICBM in its boost phase. These latter investigations indicated that a laser could destroy a booster without having to remain fixed on the missile long enough to burn through its skin. If this conclusion turned out to be valid, considerably less energy would be required to destroy a booster than had been thought previously. While at Huntsville, Wallop also met Major General Stewart Meyer, the Army's BMD Program Manager. Meyer and others informed Wallop that national policies were restricting



ABM development efforts to insure that the U.S. did not violate the ABM treaty. He was also informed that elements of the Army and the Air Force were opposed to missile defense programs because of vested interests in established concepts and weapon systems.<sup>30</sup>

Armed with this information, Wallop returned to Washington and continued his investigations into the area of BMD. He found that several other agencies, including DARPA, were investigating the possible use of lasers to destroy ICBMs in their boost phase. Wallop also began a vigorous effort to persuade other congressmen and national leaders about what could and should be done in the area of ballistic missile defense.<sup>31</sup>

Wallop succeeded in sparking a limited amount of interest in his fellow Senators. Chief among these were Senators Ernest Hollings (D-South Carolina) and Howell Heflin (D-Alabama). The latter held a series of small hearings in his subcommittee of the Senate Commerce Committee in December 1979. However, Wallop believed this was not enough. He had to widen the number of senators interested in and informed about the issues of ballistic missile defense. Since he had no formal committee position that would allow him to organize hearings, he decided to use a series

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<sup>30</sup>Wallop, Interview, p. 3; Hunter, Interview, p. 12; Codevilla, While Others Build, pp. 63-65.

<sup>31</sup>Codevilla, While Others Build, p. 66.

of informal briefings put together by representatives of industry to gain support for developing and deploying a missile defense system. These briefings would be put together on a voluntary basis and were to be attended by any senators and staffers who were interested in ABM matters.<sup>32</sup>

When Wallop approached the leaders of various aerospace companies, they refused to become involved for fear their participation in any such initiative in Congress might upset officials in other elements of the government. He then asked Hunter if he would develop the briefing. Hunter also was reluctant to do so because his experience in working with the Defense Department led him to believe that DOD officials would see such a briefing by representatives of industry as an effort to bring congressional pressure to bear to secure the initiation of a new missile defense program. As an alternative, Hunter suggested that Codevilla attempt to find a source of briefings within the Defense Department, for there was considerable work being done on missile defense within DOD.<sup>33</sup>

Codevilla, joined by Quentin C. Crommelin, Jr., who was another interested staffer working for Senator Harry F. Byrd, Jr. (I-Virginia), did as Hunter recommended and began to work with

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<sup>32</sup>Codevilla, While Others Build, p. 68.

<sup>33</sup>Codevilla, While Others Build, p. 68; Hunter, Interview, p. 13.

DOD officials like Alan Pike and Douglas Tanimoto. However, they could not secure from these officials a briefing which would indicate specifically what capabilities could be developed within a given time frame. As a result, they began to pressure Hunter to develop the kind of briefing that was needed to gain support on Capitol Hill for a new ballistic missile defense program. Finally, industry leaders grudgingly allowed Hunter to assemble a team of industry experts on a voluntary basis and prepare a briefing that could be used to educate members of Congress on the state of the art in BMD. It was to be made clear that these efforts were the work of private citizens and did not reflect the views of the companies for whom the individuals worked.<sup>34</sup>

Hunter was able to recruit a team of leading experts in the key technical areas that would be involved in developing a missile defense system using space-based directed energy weapons. The team's expert on chemical lasers was Dr. Joseph Miller of TRW. Dr. Nobert Schnog of Perkin-Elmer was the group's expert on optics. The team was rounded out by Dr. Gerald A. Ouellette of the Charles Stark Draper Laboratory, Inc., who provided expertise in the area of pointing and tracking technology. Hunter himself provided the expertise on integrating the components into a missile defense system. Together, Hunter and his colleagues were

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<sup>34</sup>Hunter, Interview, pp. 13, 15; Codevilla, While Others Build, p. 68.

known as the "gang of four."<sup>35</sup>

The briefing put together by Hunter's team focused on using lasers to thwart an attack by SS-18's. It concluded that a constellation of eighteen laser-equipped battle stations, organized into three rings and orbiting at an altitude of 1,087 miles, could defend U.S. MINUTEMAN missiles against the SS-18 threat. Such a defense system would cost about \$10 billion with about a third of this going for research and development.<sup>36</sup>

The battle stations would be assembled in space with their components being transported into orbit using the space shuttle. The core of a station, its laser and battle management systems, could be placed in orbit with a single shuttle mission. The laser itself would be between nineteen and twenty-seven feet long and weigh approximately 37,400 pounds.<sup>37</sup>

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<sup>35</sup>"Defense Dept. Experts Confirm Efficacy of Space-Based Lasers," Aviation Week, 28 July 1980, p. 65 (hereinafter cited as "Experts Confirm Efficacy of Space-Based Lasers"); Codevilla, While Others Build, p. 69.

<sup>36</sup>"Experts Confirm Efficacy of Space-Base Lasers," p. 65. For other details on the "gang of four" briefing, see Codevilla, While Others Build, p. 69.

<sup>37</sup>"Experts Confirm Efficacy of Space-Based Lasers," p. 66. According to Codevilla, While Others Build, p. 69, Dr. Miller briefed on the process of up-scaling a chemical laser to the point where it would develop ten megawatts of power by burning fifty kilograms of hydrogen and fluorine per second. This device would have been three feet in diameter and fifteen feet long.

One or two more shuttle missions would be required to place in orbit the fuel packages for the laser. This amount of fuel would permit the battle station to engage a Soviet attacking force for fifteen to eighteen minutes. Each kill would require from ten to twenty seconds of irradiation time, depending on the flight profile of the missile being attacked.<sup>38</sup>

A DOD evaluation of this scheme concluded that it could be effective against an attack by as many as 1,000 Soviet ballistic missiles. However, this would require a constellation of twenty-five battle stations as opposed to the eighteen proposed by the "gang of four." The DOD system would be able to destroy Soviet ICBMs and SLBMs at the rate of about one per second using a five-megawatt laser in conjunction with a four-meter mirror.<sup>39</sup>

Under the auspices of Wallop, the briefing was given on several occasions to a number of Senators and staffers. The first version of the briefing was presented on 12 October 1979 to a group of eleven congressional staffers including Codevilla, Crommelin, Frank Gaffney (staff of Senator Jackson), Svonn Kramer (staff of Senator John G. Tower, Republican of Texas), and Ronald Lehman, II (staff of the Senate Armed Services Committee). The

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<sup>38</sup>"Experts Confirm Efficacy of Space-Based Lasers," p. 66.

<sup>39</sup>"Experts Confirm Efficacy of Space-Based Lasers," p. 66.

briefing was generally well-received although some suggestions for changes were offered.<sup>40</sup>

On 27 November, a second dry-run of the briefing was given to ten staffers, seven of whom had attended the earlier session. Two days later, it was given again, this time to DARPA officials including Tanimoto and Pike; and on 30 November, the presentation was given to Senators Tower, John W. Warner (R-Virginia), Jake Garn (R-Utah), and Wallop. According to Hunter, the Senators "all seemed intrigued, and may well consider doing something, if they can figure out what." Overall, Hunter thought that interest in "an early deployment of space lasers" was "spreading beyond all expectations. It is obviously driven by a perceived American weakness." If this trend continued, Hunter concluded, "we're headed for a replay of the early days of ballistic missiles, with all the turmoil and opportunities."

Another group of Senators received the briefing on 5 December. Attending this luncheon briefing were eight senators: Jackson, Hollings, Daniel P. Moynihan (D-New York), Wallop, Harrison Schmitt (R-New Mexico), William S. Cohen (R-Maine), Roger W. Jepsen (R-Iowa), and Warner. The briefing lasted an hour and a half, yet only two of the senators left early.<sup>41</sup>

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<sup>40</sup>M[axwell] Hunter to R. Capiaux, Memorandum: "Weekly Activity Report for W[EEK]/E[NDING] 12 Oct 1979," 15 Oct 1979 (copy provided by Maxwell Hunter) and Codevilla, While Others Build, p. 68.

<sup>41</sup>M[axwell] Hunter to R. Capiaux, Memorandum: "Weekly Activity Report/Strategic Weaponry for W[EEK]/E[NDING] 30 Nov 1979," 4 Dec 1979 (copy provided by Maxwell Hunter); M[axwell] Hunter to R. Capiaux, Memorandum: "Weekly Activity

As Hunter had feared, the briefing upset some members of the Department of Defense. In fact, these officials were "so rankled" that they pressured "those companies funded under laser contracts to keep members of the briefing team out of Washington."<sup>42</sup> Nevertheless, the briefing does seem to have been part of the reason some admsenators supported additional funding for space applications of lasers in 1980. Senator Wallop proposed an amendment to the authorization bill that would have added \$160 million to the \$68 million already planned for this area, while Senator Garn proposed adding \$60 million. The Senate had "served notice on the Pentagon in the Fiscal 1981 authorization hearings that it wants the space-based laser weapons development accelerated." Furthermore, by the end of 1980, the idea of buidling a missile defense system was beginning to receive wide attention in the printed medium.<sup>43</sup>

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Report/Strategic Weaponry for W[EEK]/E[NDING] 7 Dec 1979," 10 Dec 1979 (copy provided by Maxwell Hunter) (hereinafter cited as Hunter to Capiiaux, 10 Dec 79).

<sup>42</sup>"Experts Confirm Efficacy of Space-Base Lasers," p. 65.

<sup>43</sup>"Experts Confirm Efficacy of Space-Base Lasers," pp. 65-66; Codevilla, While Others Build, p. 73. Wallop's amendment was defeated by the count of 39 for to 51 against. For further details on efforts to undermine the "gang of four" briefing, see Codevilla, While Others Build, pp. 70-73. Hunter claimed that two staffers had lunch with DARPA representatives Tanimoto and Pike on 3 December and secured from DARPA an agreement to work for an immediate increase in funding request. Also, Codevilla was scheduled to meet with Hans Mark on 18 December to "discuss how the USAF would organize to handle such a [missile defense?] program." (Hunter to Capiiaux, 10 Dec 79).

## THE SENATOR AND THE CANDIDATE

By the summer of 1979, Malcolm Wallop's thinking on strategic defense and his knowledge of the technologies involved had advanced to the point where he felt confident that an ABM system could be built which could overcome what was perhaps the major anti-ABM argument used in the two or three years before the signing of the 1972 ABM treaty. Specifically, Wallop believed that defensive technologies had matured to the point where it was cheaper to deploy an ABM system than to overcome the system by merely adding warheads to an offensive force.<sup>44</sup>

Wallop stated this view in a manuscript intended for publication in Strategic Review, a leading defense journal published by Arthur G. B. Metcalf's conservative United States Strategic Institute. Before the manuscript appeared in the journal, it was sent for comments to several people, including Maxwell Hunter and Ronald Reagan, candidate for the Republican presidential nomination. Both of these men responded, Hunter with suggestions for improvement of the manuscript, Reagan with supportive remarks.<sup>45</sup>

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<sup>44</sup>Wallop, Interview, p. 7.

<sup>45</sup>Hunter, Interview, p.14; Telephone Interview with Dr. Angelo Codevilla, 15 July 1987, p.2; Wallop, Interview, pp. 4-5.



Wallop's article was published in the fall 1979 edition of Strategic Review and constitutes one of the strongest arguments for reviving missile defense. Wallop noted that decisions shaping the U.S. strategic force structure in the 1970s and 1980s were made in the 1960s based on the assumption that the Soviets would be content to achieve numerical parity with the United States and would not seek the qualitative improvements that would give them a first strike capability. According to Wallop, these assumptions had proven wrong so that by the time Wallop wrote this article there was

broad agreement in the U.S. strategic community that a small portion of the Soviet missile force is capable of destroying nearly all American land-based missiles in their silos, thereby blunting the United States' capability to inflict retaliatory destruction upon Soviet society.

Wallop argued that ABM technology had matured to the point where it promised to provide a means of defeating ballistic missiles and ending the so-called balance of terror. It was time to abandon the concept of offensive-based deterrence and "turn our attention to the realistic task of affording maximal protection for our society in the event of conflict." In short, it was time to begin developing a ballistic missile defense system.<sup>46</sup>

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<sup>46</sup>Malcolm Wallop, "Opportunities and Imperatives of Ballistic Missile Defense," Strategic Review, Fall 1979, pp. 13-15 (hereinafter cited as Wallop, "Opportunities and Imperatives").

Wallop believed that the key to deploying an effective an ABM system was the use of laser weapons in space and he described the main elements of a laser-based BMD: the laser itself, a mirror for focusing the laser, sensors to pick up targets, computers to develop target tracks, a mechanism for pointing the laser beam, and a communications system to tie tracking and aiming systems together. Wallop believed that such a system, composed of about twenty-five laser battle stations (an expression he probably picked up from Maxwell Hunter) in orbits 800 miles above the earth, could be effective against a Soviet attack and could be in place by the mid-1980s.<sup>47</sup>

With this capability now within reach, Wallop considered it inexcusable that those charged by the Constitution with providing for national defense would spend \$120 billion for a defense that did not defend. In his view, they should be pushing vigorously for a system that "might minimize the catastrophe of war" and "save millions of lives." Given Soviet strategic superiority, the United States must not lose the opportunity to develop an effective ballistic missile defensive system. "'Assured Protection' would be preferable to 'Assured Destruction.'"<sup>48</sup>

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<sup>47</sup>Wallop, "Opportunities and Imperatives," pp. 18-19.

<sup>48</sup>Wallop, "Opportunities and Imperatives," p. 14, 20-21.

About the time Wallop's article was published, he had an opportunity to present his views in person to Ronald Reagan when Reagan visited Nevada for a campaign trip with Senator Paul Laxalt (R-Nevada). Wallop joined the two in Las Vegas, and the three retired to Laxalt's camp site near Marlette Lake in the Sierra Nevada Mountains. When Wallop presented his ideas about missile defense, Reagan "seemed quite interested." Wallop advised Reagan that technology had advanced to the point where a strategic defense system could be built that could not be overwhelmed easily and cheaply by an enemy who simply added warheads to his nuclear force structure. The Senator from Wyoming went on to explain the advantage that would be gained by basing the new defensive system in space; from this "high ground" the system's lasers would be able to destroy enemy missiles in the boost phase before they had time to dispense their warheads. The ability to kill in the boost phase thereby destroying several warheads with one shot was the feature that promised to make a new ABM system so much more efficient and effective than the earlier ground-based system. The idea of a new strategic system that would be designed to save lives rather than threaten them was appealing to Reagan.<sup>49</sup>

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<sup>49</sup>Wallop, Interview, pp. 6-7; Senator Paul Laxalt to Lt Col Donald R. Baucom, letter, 12 January 1988.

## A PRESIDENT FAVORABLY DISPOSED TOWARD STRATEGIC DEFENSE

Reagan's meeting with Wallop was only one of the factors that made him an advocate of ballistic missile defense. He had been interested in strategic weaponry since November 1967 when as the newly elected governor of California he visited the Lawrence Livermore National Laboratory at the invitation of Edward Teller. During his visit, Reagan was briefed on the activities of the Livermore Laboratory which at that time was involved in preparations for a series of nuclear tests in the Aleutian Islands in conjunction with the SPARTAN missile program. This series was to test the kill effects of a nuclear explosion on missile warheads.<sup>50</sup>

By the time he ran against Gerald Ford in the Republican primary of 1976, Reagan had developed a strong dislike for the concept of offense-based nuclear deterrence which had become the accepted American strategic doctrine while McNamara was Secretary of Defense. Reagan described this doctrine as being like a situation in which each of two men attempts to control the other

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<sup>50</sup>Interview with Edward Teller, Washington, D.C., 6 July 1987, pp. 1-2. For information on the nuclear tests see Lawrence E. Davies, "Underground Nuclear Test Set at Aleutian Site," New York Times, 29 May 1967, p. 51; Gladwin Hill, "Larger A-Blasts Likely in Nevada," New York Times, 5 April 1969, p. 7; Wallace Turner, "Amchitka Girding for Atomic Blasts; Test Plan Attacked," 14 July 1969, pp. 1, 38; and Wallace Turner, "Aleutian H-Bomb Is Fired without Setting off Quake," New York Times, 3 October 1969, pp. 1, 26.

by pointing a cocked and loaded gun at his head. If either flinched, they would both die.<sup>51</sup>

During the summer of 1979 as Reagan was preparing for the 1980 presidential campaign, several experiences deepened his displeasure with America's deterrence doctrine and indicated to him that ballistic missile defense offered a possible alternative to what he considered the insanity of mutual assured destruction. One of these experiences came at the end of July 1979 when Reagan visited the NORAD command post deep under Cheyenne mountain near Colorado Springs. During his visit Reagan witnessed a demonstration of the tracking and display capabilities of the center. Few who watch this demonstration are unmoved as the simulated tracks of missile warheads appear at the top of the display screen and progress rapidly toward theoretical targets in the United States; Reagan was not one of the few. The impact of the demonstration was intensified by discussions with General James E. Hill, NORAD Commander. Wasn't there anything the U.S. could do to stop the progress of these warheads, Reagan and his aide Martin Anderson wanted to know. No, replied General Hill. Furthermore, Hill continued, even the Cheyenne Mountain center

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<sup>51</sup>Interview with Daniel O. Graham, Washington, D.C., 7 July 1987, pp. 2-3. George Keyworth noted that in an August 1981 meeting with Reagan and Meese, the President expressed discomfort with "the 'nakedness' of deterrence without defense, without any control over what had to be done should a nuclear war be initiated." (Interview with George A. Keyworth, The Keyworth Company, Washington, D.C., 28 September 1987, p.1.)

was not likely to survive an attack, for it had been built to withstand a 5-megaton blast, and a Soviet SS-18 missile was capable of delivering a 25-megaton warhead that could "blow away" the NORAD command post. Reagan was sobered by the implications of what he saw and heard. All the way back to California on the plane that evening, he and Anderson talked about the terrible vulnerability of the United States.<sup>52</sup>

Soon after returning to California, Anderson set to work drafting a campaign memorandum that would establish Reagan's position on strategic defense for the up-coming presidential campaign, coordinating his proposal with other key campaign advisors. This memorandum noted that the U.S. was becoming perilously vulnerable to Soviet nuclear forces and that this situation had produced a sense of unease throughout the country. Because of his reputation as a hawk, it would be politically unwise of Reagan to advocate a large expansion of U.S. offensive forces. However, the development of a ballistic missile defense system as a means of overcoming the nation's vulnerability might have widespread appeal since it concentrated "on making sure that

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<sup>52</sup>Interview with Martin Anderson, Stanford, California, 3 August 1987, p. 1 (hereinafter cited as Anderson, Interview); Martin Anderson, Reagan for President Committee, Policy Memorandum Number 3, Foreign Policy and National Security, August 1979, p.6 (hereinafter cited as Anderson, Policy Memorandum 3). For a more accessible account of the visit to Cheyenne Mountain, see Martin Anderson, Revolution (New York: Harcourt Brace Jovanovich, Publishers, 1988), pp. 80-83 (hereinafter cited as Anderson, Revolution).

enemy missiles never strike U.S. soil." The memorandum went on to say that such a defensive system would have the additional advantage of providing protection against an accidental missile attack.<sup>53</sup>

It was also in the summer of 1979 that Reagan added to his campaign staff Daniel O. Graham who had worked with Richard Pipes on the Team B exercise and who was by this time becoming one of the strongest advocates for ballistic missile defense. Graham's ideas on this subject began to coalesce in 1979 while he was writing a book with the help of Angelo Codevilla. Contrary to what its title promises in the context of post-1983 America, Shall America Be Defended<sup>54</sup> contains little information about anti-missile defense. Graham's central thesis was that acceptance of mutual assured destruction by important U.S. officials had resulted in a national security policy that left America essentially defenseless in the event of nuclear war. Under the influence of the strategic doctrine of assured destruction our government had negotiated arms agreements that worked largely to constrain U.S. strategic force development, while leaving the Soviets free to pursue their goal of strategic

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<sup>53</sup>Anderson, Policy Memorandum 3, pp. 2, 6-7; Anderson, Revolution, pp. 85-86.

<sup>54</sup>Daniel O. Graham, Shall America Be Defended? SALT II and Beyond (New Rochelle, N.Y.: Arlington House Publishers, 1979) (hereinafter cited as Graham, Shall America Be Defended).

superiority which was in keeping with their view that nuclear weapons are just one more means of waging war which the Soviets considered an extension of national policy. In this view of nuclear war, you win by disarming your enemy so that you may impose your will on him.<sup>55</sup>

Codevilla, perhaps influenced by his contact with Maxwell Hunter and his work with Senator Wallop, wanted to emphasize the role of lasers and strategic defense, but Graham was still thinking more in terms of defending America with a civil defense system and a strategic nuclear force that could destroy Soviet military targets. In this context, Graham occasionally mentioned strategic defense systems. For example, noting that the SALT I ABM protocol had allowed the Soviets to halt the deployment of a very promising U.S. ABM system and thereby constrain American technical superiority, Graham described how a two-tiered ABM system could be used in conjunction with a deceptive basing mode for the MX to make it virtually impossible for the Soviets to achieve a successful first strike. Strategic stability would be enhanced if the U.S. and Soviet Union deployed strategic defenses and reduced their offensive force structures. In only one place does he mention laser weapons in their strategic defense context.<sup>56</sup>

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<sup>55</sup>Graham, Shall America Be Defended, passim. See especially pp. 6-7, 9, 13-15, 51, 84-85, 106, 151-52, 157, 244-45.

<sup>56</sup>Graham Interview, p. 2; Graham, Shall America Be Defended, pp. 93-95, 105, 122, 124, 128, 131, 134, 146, 240-41, 243, 245.



About the time Shall America Be Defended was published, Graham began the work that led directly to the development of a full-blown concept of a strategic defense system and the establishment of his High Frontier organization. Over a period of time, Graham drew a number of people into an effort to conceptualize a strategic defense system. Included in this group were John Morse, a former Under Secretary of Defense for International Security Affairs; Dr. Peter Glazer of Arthur D. Little Company; Mr. Arnold Kramish, a physicist who had worked on the first atomic bomb; Fred W. Redding, Jr.; and Robert Richardson. Graham's appointment to Reagan's campaign staff stimulated his efforts to refine the concept of strategic defense and by the end of 1979, he had concluded that the technological basis for a strategic defense system was near at hand and that the system would most likely take the form of a space vehicle that would serve as a "garage" for kinetic kill vehicles. An effective strategic defense system could then serve as the basis for an alternative to the policy of deterrence based on offensive nuclear systems. Graham would soon have the opportunity to inform the future President of his conclusions.<sup>57</sup>

In February 1980, the focus of the Republican primary campaign moved to Nashua, New Hampshire, a town of 80,000 people

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<sup>57</sup>Graham, Interview, pp. 3-4, 6; Interview with Arnold Kramish, Washington, D.C., 25 May 1988.

situated on the Merrimack River where the river crosses the New Hampshire-Massachusetts border.<sup>58</sup> On 23 February, this picturesque New England town was the scene of a debate between Republican presidential hopefuls. While Reagan had turned the corner in his New Hampshire campaign with a victory in another debate three days earlier at Manchester, the Nashua debate provided the "wildest and most memorable moments of the 1980 election campaign." George Bush had wanted to turn the debate into a head-to-head meeting between himself and Reagan by excluding other Republican hopefuls from the event. Reagan strongly objected to Bush's plan and was making his position known during the debate when the moderator, Mr. Jon Breen, editor of the Nashua Telegraph which was sponsoring the debate, tried to silence Reagan by cutting off his microphone. Reagan reportedly won the campaign, not to mention the debate, when he angrily responded: "I paid for this microphone, Mr. Green [sic]!"<sup>59</sup>

As dramatic as was the actual debate, the most important event with regard to ballistic missile defense took place the day before in the Nashua motel where the Reagan entourage were resting and preparing for the debate. By this time, Graham was far enough along in his thinking to brief Reagan on his concept

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<sup>58</sup>"Nashua, N.H., Shrugs at a High Compliment," New York Times, 2 August 1987, p. Y13.

<sup>59</sup>Lou Cannon, Reagan (New York: G. P. Putnam's Sons, 1982), pp. 250-53 (hereinafter cited as Cannon, Reagan).

of strategic defense. As the general spoke, Mr. Reagan listened attentively and took notes on some of the things Graham said.<sup>60</sup>

Later, the Republicans shaped a platform that reflected Reagan's strategic views. For one thing, it stated that Republicans "reject the mutual-assured-destruction (MAD) strategy of the Carter Administration which limits the President during crises to a Hobson's choice between mass mutual suicide and surrender." Furthermore, a plank in the platform called for the "vigorous research and development of an effective anti-ballistic missile system, such as is already at hand in the Soviet Union, as well as more modern ABM technologies."<sup>61</sup>

In spite of the platform plank and the attention given ballistic missile defense by Reagan and his campaign staff, missile defense was not a major issue in the presidential campaign of 1980. While key staff members such as Edwin Meese and Richard V. Allen supported a new ABM initiative, other advisors, especially Michael K. Deaver and John Sears, believed it would not be wise to make BMD a major campaign issue. Such a proposal could complicate the campaign by making Reagan

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<sup>60</sup>Graham, Interview, pp. 4-5. Herken, Counsels of War, p. 337, reports that Graham was the first to speak with Reagan on ballistic missile defense, having discussed it with him in 1976 and 1979. I found no evidence of these earlier discussions.

<sup>61</sup>National Committee on Resolutions to the Republican National Convention, Republican Platform: Family, Neighborhood, Work, Peace, Freedom, Detroit, Michigan, 14 July 1980, pp. 55-56.

vulnerable to "demagogic attacks from his Democratic opponent."<sup>62</sup>

Following a successful election campaign, Reagan began his presidency as an optimist not worn down by the years of bureaucratic fighting that are often required in Washington to accomplish even the smallest of goals. When criticized for thinking the answers to problems were simple, he replied: "'They are simple . . . There just aren't easy ones.'"<sup>63</sup> Here was a man who would look at a problem and say it could be solved regardless of what tired bureaucrats might think.

Upon taking office in January 1981, Reagan and his administration "faced a tangle of economic problems almost as difficult as those of the 1930s. . . . [I]nflation, interest rates, and the projected federal deficit stood at nearly record highs, and unemployment was 7.4 percent."<sup>64</sup> As a result, issues like strategic defense were pushed to the back burner as the new administration concentrated on getting its domestic and economic programs under way.<sup>65</sup>

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<sup>62</sup>Anderson, Revolution, p. 86; Codevilla, While Others Build, p. 67. Codevilla also named William van Cleave as a supporter of a new BMD effort.

<sup>63</sup>Talbott, Master of the Game, p. 3.

<sup>64</sup>Robert Dallek, Ronald Reagan: The Politics of Symbolism (Cambridge: Harvard University Press, 1984), p. 63.

<sup>65</sup>Interview with Martin Anderson, The Hoover Institution, Stanford, CA, 3 August 1987, p.4.

However, the issue of ballistic missile defense was far from dead. From outside the government, General Daniel Graham continued to push for the establishment of an ABM program. As we shall see in the next chapter, the efforts of Graham and his allies began to impinge on the Reagan staff in the summer of 1981. Furthermore, a number of Reagan advisors who had supported BMD during the campaign were appointed to top White House positions, and as soon as the administration had its economic program under way, these advisors began their own deliberations on missile defense in the fall of 1981 during morning staff meetings chaired by White House Counsel Edwin Meese who was responsible for the development of policy for the Reagan administration.<sup>66</sup>

The principals at these meetings were Richard V. Allen, Reagan's National Security Advisor; Martin Anderson, White House advisor on economic and domestic matters; and Edwin Harper, an assistant to Reagan who was also deputy director of the Office of Management and Budget. Meese, Anderson, and Allen, at least, had been convinced for some time of the political wisdom of a new ABM program. They had been persuaded by people such as Edward Teller and Daniel Graham that missile defense was technically feasible. These staffers soon acquired their own technical advisor by inviting George Keyworth, Reagan's science advisor, to join their

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<sup>66</sup>Anderson, Revolution, pp. 88-92.

meetings.<sup>67</sup>

#### A POLICY VOID

While the Reagan administration concentrated on economic issues, the intra-governmental debate over U.S. policy regarding missile defense continued unabated. Moreover, the situation where ABM was concerned seems to have become increasingly chaotic, for the collapse of the SALT process at the end of the Carter presidency left behind a policy void that had yet to be filled. Complicating the situation further was the fact that directed energy weapons in space was a controversial issue on which there was a lack of consensus. In fact, this issue polarized both policy makers and technical experts. "No two studies seem to agree on the level of technology or on the requirement for national strategy and policy in developing directed energy weapons."<sup>68</sup> Yet space-based directed energy weapons were the devices upon which many supporters of ballistic missile defense pinned most of their hopes. Before developments could be pushed more rapidly a sound national doctrine was

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<sup>67</sup>Anderson Revolution, pp. 90-92.

<sup>68</sup>Robinson, "Beam Weapons Technology," p. 41. For a discussion of conflicting technical reports, see pp. 42-43. Evidently, after a DARPA report presented a fairly optimistic picture of the future of laser weapons, a DOD study was undertaken to counter the DARPA study.

needed. According to one Pentagon official: "the overriding issue is not technology progress but U.S. space warfare doctrine. We are not at the point where Billy Mitchell was in 1921, but we can't go any faster without political and financial support."<sup>69</sup>

Evidence that the Reagan administration was not yet prepared to fill this policy void was provided in January and February of 1981 by Caspar Weinberger whom Reagan had designated as his Secretary of Defense. Just as Weinberger was about to assume his duties, Hedrick Smith reported in the New York Times that Weinberger did not believe the renewal of the ABM treaty was a foregone conclusion. Weinberger noted that the Reagan administration wanted to consider all the ways it might achieve "the kind of deterrence we need." To protect American ICBMs that were becoming vulnerable to a Soviet first strike the U.S. might want to consider a more extensive deployment of ABMs than was permitted by the 1972 ABM treaty and the 1974 protocol. "We want to give thought to the effectiveness of protecting--and thereby adding--to [sic] the deterrent that we now have," Weinberger said. One option was to develop a BMD system based upon "later technology." Weinberger supplied no details regarding possible plans to rebuild an ABM system.<sup>70</sup>

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<sup>69</sup>Quoted in "Laser Weaponry Technology Advances," Aviation Week, 25 May 1981, p. 65.

<sup>70</sup>Hedrick Smith, "U.S. Might Consider Reviving the ABMs," New York Times, 16 January 1981, p. 11.

Three weeks later, Senator William Proxmire (D-Wisconsin) tried to start a public discussion of the issues raised by LOADS when he ask Senator Tower on the floor of the Senate if LOADS would be required to support the MX basing mode and if so, what were the implications for the ABM treaty. When Tower declined to answer, Proxmire addressed the same questions in writing to Caspar Weinberger during his confirmation hearings for Secretary of Defense. Weinberger answered in writing:

"I think we must look very carefully at ABM technology. An effective ABM system may be needed in the event the Soviets increase substantially the number of their hard target-kill capable warheads. If we were to achieve a significant breakthrough in the ABM area, we might--after extensive study--be able to deploy MX in fixed silos protected by ABM."<sup>71</sup>

Still another indication of the existence of an ABM policy void may be seen in actions being contemplated by the National Security Council in the Spring of 1981. At this time the NSC was reported to be considering a major study of ballistic missile defense that would be conducted under its own auspices. "White House policy decisions on programs, national objectives, and the level of commitment" were expected to flow from this study.<sup>72</sup>

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<sup>71</sup>Weinberger is quoted in "Senate Discussing ABM Need to Guard Multiple Shelter MX," Aviation Week, 9 February 1981, p. 91.

<sup>72</sup>Robinson, "Beam Weapons Technology," p. 40.



By its nature, bureaucracy is possessed of great inertia, and this characteristic is exacerbated in the absence of a guiding policy and consensus. In the BMD policy vacuum of the early 1980s, the government bureaucracy was grinding to a halt or at best moving at glacial speeds with regard to actions on ABM. This was unacceptable to national leaders like Malcolm Wallop who believed the United States was in the midst of a major strategic crisis, and they attempted to jolt the bureaucracy into activity.<sup>73</sup>

Senator Wallop criticized the Defense Department for its recent tendency "to drag out innovation, to be terribly careful, to study problems to death," giving the MX missile program as an example of this tendency. The U.S. had started working on its MX about the same time the Soviets started their SS-18 missile which was fully deployed in 1980. In addition to the normal, cautious tendencies that marked DOD consideration of new weaponry, laser weapons were being resisted because of a commitment to the doctrine of assured destruction, this in spite of what Wallop considered solid evidence the Soviets were preparing to fight, survive, and win a nuclear war. According to the Wyoming Senator,

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<sup>73</sup>For a report of Pentagon opposition to expanding ABM efforts in the four years before Reagan's March 1983 speech, see Codevilla, While Others Build, pp. 70-73, 77-82.

"[Soviet] programs in ABMs and lasers are several times as big as ours. It makes no sense for us to persist in our foolish concentration on spending money to kill Russians while wholly neglecting preparations to save American lives in the event of war."<sup>74</sup>

Wallop drummed on what he thought was the absurdness of mutual assured destruction which prevented the United States from the vigorous pursuit of ballistic missile defense. As he put it:

" . . . we are at a crossroads in this country. We have spent money, dollar after dollar and billions and billions, for weapons whose only consequence is to kill people. Now we have within our capability the possibility of developing weapons whose only real role in the world is to kill the things that kill people."<sup>75</sup>

The efficient cause of Wallop's displeasure was the slow progress being made in the Air Force program for space-based high-energy lasers. In arguing that the Air Force should push the development of these devices more vigorously, Wallop noted that Senators Schmitt and Tower had been advised by President Reagan of his interest in the development of laser weapons. Schmitt, a former astronaut, thoroughly supported Wallop's efforts with the Air Force and stated that President Reagan's interest was stimulated by the possible use of these devices in a BMD role. Schmitt stated further that the President fully

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<sup>74</sup>"Senate Directs Air Force to Formulate Laser Plan," Aviation Week, 25 May 1981, p. 52.

<sup>75</sup>Wallop is quoted here in "Senate Directs Air Force to Formulate Laser Plan," Aviation Week, 25 May 1981, p. 53 (hereinafter cited as "Senate Directs Air Force to Formulate Laser Plan").

understood that a technological revolution was afoot that would make available new strategic options. "In the not-too-distant future," these options would "make weapons of mass destruction obsolete . . . [and] provide a strategic policy option based on the principle of protection of human beings rather than their mass destruction."<sup>76</sup>

Schmitt himself saw space as the key to the future in much the same way as other advocates of space-based defenses. Just as the drama of the Pax Britannia had been played out on the oceans of the world, the future of civilization would be shaped by events in space. As he put it: "the new dramas of our times will be played out in three dimensions in space. While there is great national defense opportunity there, if we ignore the civilized application of space for commercial use we may lose the race after all. We must compete in space on all fronts."<sup>77</sup>

Wallop and Schmitt were joined by Senators Tower and Warner in their efforts to push the Air Force into a more active R&D program for lasers. These Senators succeeded in adding \$30 million to the FY 1982 Air Force budget for the development of space-based, high-energy lasers. According to Wallop, their goal was to create in the Air Force a constituency for these lasers,

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<sup>76</sup>"Senate Directs Air Force to Formulate Laser Plan," p. 52.

<sup>77</sup>Schmitt is quoted in "Senate Directs Air Force to Formulate Laser Plan," Aviation Week, 25 May 1981, p. 53.

which might become the basis of a space-based defense against ICBMs. Specifically, language in their bill required the Air Force to establish a program office for airborne and spaceborne lasers and work toward an early demonstration of high-energy lasers in earth orbit. If the Air Force did not vigorously pursue this laser research, Senator Wallop threatened to have the program shifted to Army control. There was also some support for establishing a new military service to take responsibility for space operations, since none of the established services was showing adequate interest in space matters. One reason no service wished to become the patron of space weaponry was a fear that these expensive systems would consume resources that could be used for matters the services considered more important.<sup>78</sup>

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<sup>78</sup>Clarence A. Robinson, Jr., "Beam Weapons Technology Expanding," Aviation Week, 25 May 1981, pp. 40, 43 (hereinafter cited as Robinson, "Beam Weapons Technology"); "Senate Directs Air Force to Formulate Laser Plan," p. 52. Wallop had wanted to add \$152.5 million to DARPA's budget and \$97.5 million to the Air Force budget, both sums for laser R&D; but, according to Wallop, foot-dragging by high level Pentagon officials had meant that the required backing for these measures was lacking, so he had to settle for a \$50 million addition (the \$30 million mentioned above, plus \$20 million for DOD's Advanced Research Projects Agency). For a discussion of the way conflicting reports, delays, and testimony were used to defeat Wallop's bill, see Robinson, "Beam Weapons Technology," pp. 42-43. For another account of the effort to establish a space-based laser program office in the Air Force, see Codevilla, While Others Build, pp. 77-92. According to Codevilla, Wallop was opposed in this undertaking by Warner and Tower who used various parliamentary maneuvers to delay the passage of the measure that required the Air Force to establish the program office. Furthermore, Codevilla claimed the Air Force emasculated the new office by staffing it with officers who had failed to earn promotions. This would have made the office a professional grave yard that could not attract dynamic, effective officers.

Thus, as the first six months of the Reagan administration were coming to a close, there were signs that a void existed in the area of national strategic policy as it related to ballistic missile defense. While there were isolated efforts to provide direction to governmental activities, no one seemed to have sufficient authority to impose order on the chaos that prevailed. In the spring of 1981, one man put forward a broad concept that bid fair to fill that void. The man was Lieutenant General Daniel O. Graham who had developed a broad national strategy for space that included a ballistic missile defense.

CHAPTER VII  
THE HIGH FRONTIER

. . . bureaucracies are designed to execute, not to conceive.  
Henry Kissinger, 1957.<sup>1</sup>

**DANIEL GRAHAM AND THE ORIGINS OF THE HIGH FRONTIER**

Members of the first Reagan administration had scarcely settled into their new offices when Daniel Graham began banging on their doors. Graham and his informal staff had developed their ideas into a new national strategy, and Graham was now ready to sell it.

Among the first to receive a call was Mr. Edwin Meese, III, now serving as Counsellor to the President. Through Meese, Graham secured a meeting with President Reagan on 17 February 1981. He advised the president that he had developed further the concept of defense about which he had briefed the president at Nashua and wished to present the idea to Secretary of Defense Caspar Weinberger. A meeting with Weinberger was arranged and Graham briefed him on the new strategy. However, as the new defense chief, Weinberger was in the middle of a host of briefings on a wide variety of defense issues and was not

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<sup>1</sup>A World Restored (Gloucester, MA.: Peter Smith, 1957), p. 327.

especially impressed with Graham's ideas. Weinberger simply asked Graham to keep him advised of any progress he might make in refining the concept of strategic defense.<sup>1</sup>

Graham also managed to see the new Secretary of State, Alexander M. Haig, Jr., and brief him on space-based missile defense. Graham's briefing may have been the reason Haig directed the State Department to study the availability of ABM technology (including space-based lasers) and the political and military implications of an ABM system. This investigation was completed in early 1981 by Richard R. Burt, Director of Politico-Military Affairs at the State Department. The study concluded that attacking ICBMs during their boost phase posed daunting political and technical problems, since such an approach to missile defense would require an almost immediate response on the part of the defense and leave little time for the national command authorities to become involved. Such problems made it unlikely that an effective missile defense system could be developed before the end of the twentieth century.<sup>2</sup>

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<sup>1</sup>Graham, Interview, p. 6; John M. Fisher to Daniel O. Graham, letter, 8 September 1981, Karl R. Bendetsen Papers on High Frontier (hereinafter cited as Bendetsen Papers on High Frontier).

<sup>2</sup>"Haig Seeks Space-Based Weapons Report," Aviation Week, 25 May 1981, pp. 42-43; Daniel O. Graham to Joseph Coors, letter, 18 May 1981; Alexander M. Haig, Jr., to Daniel O. Graham, letter, 26 September 1981. Both letters are in the Bendetsen Papers on High Frontier.

The ideas Graham presented in his briefings to government officials were probably similar to those appearing in an article in the spring 1981 edition of Strategic Review. This article drew together a number of the arguments which had been advanced by those favoring a new American missile defense program and laid out a course of action the U.S. might follow to recapture the strategic initiative from the Soviet Union.<sup>3</sup>

Graham began the article by noting that the Peace through Strength Resolution of the House of Representatives (1980) and the expanded defense budget of the first year of the Reagan presidency, although commendable, were not enough to make up for the years the U.S. had inadequately supported its military forces. Because of this neglect, the Soviets were simply too far ahead in many areas and had too large a production base for America to regain a position of security by trying to produce more of the weapons that were common to the arsenals of both countries.<sup>4</sup>

The strategic balance between the superpowers was of special concern to Graham, and he chose to illustrate the difficulties that the U.S. faced by looking at the situation with regard to ICBMs. The Soviets, Graham noted, had far more ICBMs

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<sup>3</sup>Daniel O. Graham, "Toward a New Strategy: Bold Strokes Rather than Increments," Strategic Review, Spring 1981, pp. 9-16 (hereinafter cited as Graham, "New Strategy").

<sup>4</sup>Graham, "New Strategy," pp. 9-12.



than the United States, and Soviet missiles had greater throw-weights. As the Soviets MIRVed their missiles and improved the accuracies of their warheads, they would achieve a first strike capability against U.S. ICBMs. To prevent this, the U.S. could build and deploy more missiles, but that would pose two problems. First, the American people were unlikely to condone such measures. Second, the U.S. would lose such a competition, as the Soviets had five operational ICBM assembly lines and the U.S. had none.<sup>5</sup>

This meant that America could not solve its defense problems by merely pursuing traditional approaches to national security which Graham lumped together under the rubric of the "incremental" or "much-more-of-the-same" approach--adding funds to previously approved, but underfunded programs. Instead, the U.S. should pursue a new strategy that entailed expanding American military forces while at the same time searching for ways of "harnessing innovativeness and American technological assets to the pursuit of the 'high ground' of military capabilities." For two reasons, Graham believed that the heart of this new strategy should be the development of space-based defenses against Soviet ICBMs. First, space operations required extremely sophisticated systems and high technology was America's forte. Second, the competition with the Soviets in the area of

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<sup>5</sup>Graham, "New Strategy," p. 12.

strategic arms was where the high technology approach offered the greatest prospect of payoff.<sup>6</sup>

In support of his position, Graham pointed to the "enormous advantages" gained by nations that were first to move into new media with military power as in the case of those nations that made early use of the airplane to develop a military capability in the air. Graham believed that the time was right for the U.S. to seize the high ground of space, the next domain for human endeavors. Already, a number of important activities such as communications were well along in the move to space. Furthermore, "the most impressive means for projecting military power globally," the ballistic missile, passes through space enroute to its target. The pressure of competition between the U.S. and the Soviet Union would impel America increasingly into a competition with the Soviets for dominance in space.<sup>7</sup>

Additionally, by moving into space with a defensive system, the United States could complicate greatly the calculations of Soviet strategic analysts when it came to deciding if a first strike was feasible. Graham admitted that no defensive system could ever be perfect, but perfection was unnecessary. Once a defensive system was in place, an attacker could never know which of his warheads would be destroyed and

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<sup>6</sup>Graham, "New Strategy," pp. 11-12.

<sup>7</sup>Graham, "New Strategy," p.13.

thus which targets would be left undamaged. This meant that the attacker could never be assured of destroying an enemy's retaliatory force. "Such uncertainty is the essence of deterrence," according to Graham.<sup>8</sup>

A defensive system that could provide this uncertainty would consist of a number of manned space cruisers capable of extensive maneuvering and armed with either lasers or projectile-firing weapons. These cruisers could be orbited by a space shuttle or launch themselves into space after being dropped from a Boeing 747 aircraft flying at a high altitude. The orbits of these vehicles would be designed to cover regions of space through which Soviet ICBMs would most likely have to pass. In time of crisis, the number of space cruisers in orbit could be increased. These space fighters would receive controlling information from satellites in geostationary orbits over the Soviet Union. If the Soviets attacked, space cruisers would be expected to attack Soviet missiles during their boost phase.<sup>9</sup>

To insure broader dissemination of these ideas, Graham published an almost identical version of his Strategic Review article in the May-June edition of Signal Magazine, and an abbreviated edition of his bold new strategy appeared in the

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<sup>8</sup>Graham, "New Strategy," pp. 13, 15.

<sup>9</sup>Graham, "New Strategy," p. 13

November 1981 edition of Officer.<sup>10</sup> Graham also sent a version of his paper to Frank Barnett whose National Strategy Information Center specialized in presenting information on defense topics at national security forums that were offered six or seven times a year. About 300 national leaders representing Congress, industry, the Department of Defense, and the news media normally attended these forums.<sup>11</sup>

Barnett was so impressed with Graham's paper that he invited him to address a forum that took place in May at the Army-Navy Country Club in Arlington. In the audience was Karl R. Bendetsen a former under secretary of the army and member of the board directors of the National Strategy Information Center. After Graham's presentation, Barnett invited both men to join him for dinner. During the course of the evening, Graham and Bendetsen discussed the importance of taking the actions outlined in the High Frontier concept. Before the evening was over, the two had formed an alliance to see that the ideas of High Frontier became national policy.<sup>12</sup>

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<sup>10</sup>Daniel O. Graham, "Bold Strokes for a Strategic Nuclear Balance," Signal, May/June 1981, pp. 57-60, 63-64; Daniel O. Graham, "New Strategy on the High Frontier of Space," The Officer, November 1981, pp. 26-27 (hereinafter cited as Graham, "New Strategy").

<sup>11</sup>Interview with John Barnett, National Strategy Information Center, New York, 1 October 1986. Mr. Barnett was interviewed by Stanley A. Blumberg.

<sup>12</sup>Barnett, Interview; Graham, Interview, pp. 6-7.

There were two facets to the alliance. First, Graham needed money for the detailed, technical study that was necessary to flesh out the High Frontier concept. Such a study would take 120 days to complete and cost \$250,000. Bendetsen agreed to assist in the fund raising efforts, and he and Graham worked energetically to secure the necessary donations. After Graham sent letters describing his plans to several prominent people such as Joseph Coors and William A. Wilson (both friends and long-time supporters of Ronald Reagan) and Richard Scaife of the Scaife Family Charitable Trust, Bendetsen followed up by asking Edwin Meese to call these individuals and recommend they make donations to the High Frontier project. At the end of July 1981, Meese agreed to call five prospective donors. One of the first donations received was \$15,000 from Champion International Corporation (Bendetsen was a retired CEO of this company). However, it was a donation of \$100,000 by Gus A. Buder, Jr., a wealthy St. Louis lawyer, that essentially got the High Frontier project off and running.<sup>13</sup>

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<sup>13</sup>Graham, Interview, p. 7; John M. Fisher to Daniel O. Graham, letter, 29 July 1981; Daniel O. Graham to Richard Scaife, letter, 16 July 1981; Daniel O. Graham to Joseph Coors, letter, 18 May 1981; Karl R. Bendetsen to Edwin Meese, III, letter, 30 July 1981; Memorandum to Flo Randolph, hand-dated 29 July 1981. All documents but the Graham interview were found in the Bendetsen Papers on High Frontier. Flo Randolph is listed on another memorandum in Bendetsen's papers as Mr. Meese's secretary.

As the donors were being lined up, it became apparent that the High Frontier staff would have to have an institutional home in a non-profit organization so that the donors could receive tax benefits from their donations. For some time, Graham had been affiliated with the American Security Council Foundation (ASCF). Through its president, John M. Fisher, Graham worked out an arrangement that would allow the High Frontier project to operate under the aegis of the ASCF's Wedemeyer Strategy Center, a "publicly supported, IRS 501(c)(3) education and research organization" that was part of Fisher's foundation.<sup>14</sup>

#### KARL BENDETSSEN AND THE HIGH FRONTIER PANEL

The second facet of the Bendetsen-Graham alliance was the former's agreement to form a blue ribbon committee, the High Frontier Panel, to oversee the study effort and insure that the completed study received a hearing in the Reagan administration that would lead to the High Frontier strategy becoming official government policy. Recruitment of the panel was essentially complete by the middle of August 1981. Among those Bendetsen had selected for the panel were a number of top Republican supporters, each of whom was known and respected by the president.<sup>15</sup>

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<sup>14</sup>Fisher to Graham, 29 July 1981.

<sup>15</sup>Barnett, Interview; Graham, Interview, pp. 6-8, 14. The Bendetsen Papers on High Frontier contain a series of letters dated 12 August 1981 from Bendetsen to Joseph Coors, Jaquelin

Joseph Coors, president of the Adolph Coors Company with its headquarters in Golden, Colorado, was a long-time political supporter and friend of Ronald Reagan. He also held a masters degree in chemical engineering from Cornell University and took pride in his ability to understand technical problems such as those posed by developing a defense against ballistic missiles. He was happy to accept Bendetsen's invitation to serve on the High Frontier Panel.<sup>16</sup>

Jaquelin Hume, chairman of Ampco Foods, Incorporated, was a successful California businessman and active supporter of the Republican party. He was also a close friend of Ronald Reagan whom he had met in 1965 when Reagan was running for governor of California. Bendetsen met Hume through the Bohemian Club of San Francisco, an all-male club the membership of which included a number of influential national leaders.<sup>17</sup>

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Hume, and William Wilson indicating they had agreed to serve on the Panel.

<sup>16</sup>Interview with Joseph Coors, Adolph Coors Company, Golden, Colorado, 31 July 1987, pp. 1-2, 5-6 (hereinafter cited as Coors, Interview); and Personal Biographical Sketch provided by Mr. Coors' office. Coors stated in his interview that he was introduced to the issue of strategic defense through his service on the Board of Directors of The Heritage Foundation which eventually became the sponsor of Graham's High Frontier organization.

<sup>17</sup>Jaquelin Hume, Interview, Washington, D.C., 28 October 1987, pp. 1-2.

The Bohemian Club was founded in 1870 with headquarters in San Francisco. Soon after its beginning, club members (including novelist Jack London) started holding an annual encampment at Meeker's Grove on the Russian River near Monte Rio, California. The club still owns 2,750 acres of redwood trees at Meeker's Grove and among these trees has 128 camps. Each year, for three weeks at the end of July, club members still participate in an encampment that features entertainment and speeches by national leaders. Speakers at the Grove have included NSC Advisor Henry Kissinger, Senator Barry Goldwater, Secretary of Defense Melvin Laird, Edward Cole (president of General Motors), and astronaut Neil Armstrong. The encampments give these leaders an opportunity to meet, exchange views, and establish connections with each other.<sup>18</sup>

Hume's connection with Edwin Meese, another prominent member of the Bohemian Club, was a major reason Bendetsen wanted Hume on the High Frontier Panel. Through Hume, Bendetsen could meet Meese; through Meese, Reagan's powerful White House counsellor, Bendetsen would be assured of direct access to the president.<sup>19</sup>

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<sup>18</sup>Wallace Turner, "At the Bohemian Club; Men Join, Women Serve," New York Times, 12 January 1981, p. A16.

<sup>19</sup>Hume, Interview, pp. 1-2.



Also serving on the panel was Mr. William A. Wilson who had been a friend of Ronald Reagan since the early sixties when Wilson and his wife had met the Reagans during a dinner party at the home of a mutual friend. The bond of friendship between the Wilsons and Reagans developed through their mutual interest in breeding and riding horses. In 1981, President Reagan appointed Mr. Wilson Special Envoy to the Holy See. When full diplomatic relations were restored with the papacy, Wilson became the first U.S. Ambassador to the Vatican since 1867 when Congress severed relations with the papal state.<sup>20</sup>

Another member of the Bendetsen committee was Dr. Edward Teller, a renowned physicist who had helped with the development of the first atomic bomb and who later played a vital role in the development of America's first hydrogen bomb. Teller also had been a driving force behind the founding of Lawrence Livermore National Laboratory (LLNL) and was active from the beginning in its program. Additionally, he had been involved in various ways with ballistic missile defense since the 1960s. At the time Teller was serving on the panel, one of his proteges, Lowell Wood, was leading Livermore's project on the bomb-pumped X-ray laser; and Teller was following the project closely.<sup>21</sup>

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<sup>20</sup>William A. Wilson, Interview, Washington, D.C., 7 December 1987, pp. 6-7; Who's Who in American Politics, 1987-88, 11th Edition, p. 154; The World Almanac and Book of Facts, 1986 edition, p. 616.

<sup>21</sup>Edward Teller, Better a Shield Than a Sword: Perspectives on Defense and Technology (New York: The Free Press, 1987), pp. 121-23 (hereinafter cited as Teller, Better a Shield) and William J. Broad, Star Warriors (New York: Simon and

The bomb-pumped X-ray laser, code-named EXCALIBUR, was an important technological development from the standpoint of ballistic missile defense. This mechanism consisted of a small nuclear bomb surrounded by a ring holding several long, thin metal rods. When used, each rod would be aimed at a separate target, and then the bomb would be detonated. In an instant, the energy of the bomb would cause X-ray lasing in the rods which would direct their energy onto distant targets in the split second before the explosion destroyed the entire weapon. Although EXCALIBUR operated for only an extremely short time, it produced tremendous energy which would destroy its targets by means of shock rather than by burning through them as in the case of a laser. When this device was demonstrated in principle through experiments conducted by LLNL personnel, it indicated to some people that directed energy technology had advanced to the point where it could shift ascendancy in the strategic nuclear realm from the offense to the defense. This was because EXCALIBUR promised the capability to destroy a large number of ICBMs during the boost phase of their flight. Those which leaked through the first defensive line formed by the X-ray lasers would be cleaned up by less powerful chemical lasers. EXCALIBUR excited Dr. Teller, and he in turn was able to excite others with

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Schuster, 1985), pp. 15, 52-54, (hereinafter cited as Broad, Star Warriors).

the potential of lasers to revolutionize U.S. strategic doctrine.<sup>22</sup>

Although a detailed discussion of X-ray lasers appeared in the 23 February 1981 edition of Aviation Week, the government officially remained silent on the device until January 1983 when Dr. George A. Keyworth, science advisor to President Reagan, stated in a speech that the X-ray laser project was "'one of the most important programs'" where America's future defense posture was concerned. Like Lowell Wood, Keyworth was a Teller protege who had been strongly recommended by Teller for his position of presidential science advisor, an appointment he had received in May 1981. Keyworth also served on the High Frontier Panel where he was listed by Bendetsen as an "observer." There was some difficulty at first when Keyworth was listed on the official stationery for High Frontier as "White House Observer." Keyworth believed this was inappropriate and asked that his name be removed. Nevertheless, he continued to attend meetings of the panel or at least to send a representative.<sup>23</sup>

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<sup>22</sup>Clarence A. Robinson, Jr., "Advance Made on High-Energy Laser," Aviation Week, pp. 25-27; William J. Broad, "X-Ray Laser Weapon Gains Favor," New York Times, 15 November 1983, pp. C1-C2; Broad, Star Warriors, pp. 16, 117, 122; Interview with Admiral James D. Watkins, U.S. Navy Historical Center, Washington Navy Yard, 29 September 1987, p. 16; Coors, Interview, p. 6.

<sup>23</sup>Broad, Star Warriors, pp. 122-23; G[eorge] A. Keyworth to Karl Bendetsen, Letter, 10 November 1981, Bendetsen Papers on High Frontier; Interview with George A. Keyworth, The Keyworth Company, Washington, D.C., 28 September 1987, pp. 8, 11-12. Keyworth stated that Meese assigned him to serve as liaison between the White House and the High Frontier Panel.

In addition to these major figures, several other people served briefly on the Panel or played relatively minor roles in its activities. These included Edwin J. Feulner, Jr.; Frank Barnett; and General Albert C. Wedemeyer, U.S. Army (Ret.).<sup>24</sup>

#### THE PANEL IN ACTION

The High Frontier Panel immediately established a working relationship with the White House. In July, Bendetsen met Edwin Meese several times in California where they discussed the High Frontier project. Then, on 28 July 1981, Bendetsen, Teller, and Graham met with Meese to discuss funding efforts for High Frontier as noted above. During this meeting, Meese wanted to know how the panel was to be funded and organized and asked for a definitive statement of its purpose. Bendetsen provided this information in a letter to Meese two days later. According to Bendetsen, his panel, supported by the High Frontier staff under the direction of General Graham, was to develop "a coherent structure of strategic initiatives which modern technology and fiscal capabilities make feasible." These initiatives would

include measures for exploitation of space; for assuring its continued availability to us. Space-borne ballistic missile defense and other defense systems which will make possible a break-away from the stultifying constraints and brooding

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<sup>24</sup>"High Frontier Panel Members," Roster dated 30 September 1981, in Bendetsen High Frontier Papers.

menace of the Mutual Assured Destruction (MAD) syndrome will be put forward. A strategy of Assured Survival for ourselves and our allies would take its place. . . .

The project would have unofficial status, outside of government. Those who participate will be required to use due care to avoid all publicity. If the ultimate recommendations submitted to you are approved, we believe they will present an historic opportunity for The President to announce a bold, new initiative. Accordingly, premature publicity would be counter-productive.

Bendetsen stated that the High Frontier Panel would have its proposal ready for Meese by 30 November 1981.<sup>25</sup>

Bendetsen's efforts to schedule the panel's first meeting surfaced a dispute that had been festering for about two years between Daniel Graham and John Fisher over Graham's management of the High Frontier project. The problem was that the strong-willed Graham repeatedly took actions and made commitments without first checking with Fisher.<sup>26</sup> As a member of the ASCF board of directors and head of the High Frontier Panel, Bendetsen was drawn into this dispute.

Fisher considered himself an ex-officio member of the High Frontier Panel and learned of its first meeting during an ASCF Board meeting on 26 August when Bendetsen advised the board that the meeting was scheduled for 5 September. On 31 August,

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<sup>25</sup>Karl R. Bendetsen for John M. Fisher, memorandum, 4 March 1982; Karl R. Bendetsen to Edwin Meese, III, letter, 30 July 1981. Both documents found in Bendetsen Papers on High Frontier.

<sup>26</sup>John M. Fisher to Daniel O. Graham, letter, 8 September 1981, in Bendetsen's High Frontier Papers.

Fisher was invited to attend the meeting, but the invitation was withdrawn later that day. In this episode, he saw the hand of Daniel Graham; it was the last straw. He immediately prepared a detailed memorandum spelling out the conditions under which Graham and the High Frontier organization would operate in their association with ASCF.<sup>27</sup>

The conditions detailed in the memorandum were unacceptable to Graham, and he was able to persuade Bendetsen to take his part against Fisher. A major part of the disagreement concerned management of the funds donated for Graham's project. Fisher wanted to add overhead charges to the cost of direct support that would be deducted from donations for High Frontier. There was also a question of management control. Fisher wanted all major financial commitments and key personnel decisions cleared with him in advance. Furthermore, the personnel policies of the ASCF would apply to all people working on the High Frontier Project. Fisher also wanted major activities such as the 28 July meeting with Meese coordinated with him in advance.<sup>28</sup>

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<sup>27</sup>"Agenda [for] 5 September High Frontier Panel Meeting," n.d.; List of meeting attendees dated 5 September [1981]; and Fisher to Graham, letter, 8 September 1981. All documents in Bendetsen's Papers on High Frontier.

<sup>28</sup>John [M.] Fisher to Danny [Daniel O.] Graham, memorandum, 31 August 1981, in Bendetsen's Papers on High Frontier.

Since Graham was working under the High Frontier Panel by the time this disagreement developed, he discussed with Bendetsen the conditions Fisher required for ASCF support. Graham argued that overhead charges were not appropriate in the case of donations or grants made to support a project. Furthermore, the conditions that Fisher specified were a manifestation of his tendency to micromanage activities under his authority. Fisher, Graham wrote,

is constitutionally unable to cope with delegation of authority. I have tried to work around this problem for two years now and find it impossible. John will go to incredible lengths to prevent even the most insignificant of decisions being made without his prior approval.<sup>29</sup>

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<sup>29</sup>Fisher to Graham, memorandum, 29 July 1981; R[obert] C. Richardson to Karl Bendetsen, aide memoire, n.d.; [Daniel O.] Graham to [Karl R.] Bendetsen, memorandum, 4 September 1981. For an example of the detailed management style of Fisher, see: John M. Fisher to Daniel O. Graham, letter, 12 June 1981. All documents in the Bendetsen Papers on High Frontier. The issues dividing the two sides in this dispute are very complex and resulted in long letters between those involved in the disagreement. No effort has been made here to exhaust the details in the conflict which spread beyond the High Frontier area into several conservative defense organizations because of the high level of those involved in the dispute. Other documents in Bendetsen's High Frontier Papers dealing with this dispute include: John M. Fisher to Daniel O. Graham, 8 September 1981 (a four-plus page letter giving Fisher's side of the dispute); John M. Fisher to Karl R. Bendetsen, 30 September 1981 (Fisher resigns from High Frontier Panel and gives "official" and "unofficial" reasons for his resignation); Karl R. Bendetsen to John M. Fisher, letter, 5 October 1981; Daniel O. Graham to John M. Fisher, 28 October 1981; John M. Fisher to Karl [R.] Bendetsen, letter, 13 November 1981 (another four-plus page letter with Fisher's side of the disagreement); and Karl R. Bendetsen to John M. Fisher, letter, 20 November 1981.

As a result of this dispute, Graham and Bendetsen sought another institutional home for the High Frontier project. On 14 September, they initialed a memorandum of understanding with Dr. Edwin J. Feulner, Jr., president of The Heritage Foundation, a Washington-based, public policy research institution. Heritage would establish a cost center for High Frontier and would charge this account only for direct costs associated with its support of the High Frontier study which would be identified as a Heritage Foundation project when completed. Finally, to satisfy legal requirements for project oversight, Feulner was appointed a member of the blue ribbon panel Bendetsen had recruited. Fisher ended his ties with High Frontier by resigning from the panel on 30 September.<sup>30</sup>

As the arrangements were being completed with Heritage Foundation, the panel had continued its work. A second meeting was held on 9 September; and by mid September, the panel had laid out an ambitious work plan with eight major areas of study. Each area was assigned to one of High Frontier's consulting experts. These experts reported to Daniel Graham who acted as director of

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<sup>30</sup>Graham, Interview, pp. 4, 7-8; Daniel O. Graham, High Frontier: A New National Strategy (Washington, D.C.: High Frontier, Inc., 1982), p. ix (hereinafter cited as Graham, High Frontier); Ed[win J.] Feulner, [Jr.], Dan[iel O.] Graham, Karl [R.] Bendetsen, memorandum of understanding, 14 September 1981; and John M. Fisher to Karl [R.] Bendetsen, letter, 30 September 1981. The last two documents are in the Bendetsen Papers on High Frontier.



the study and served as a member of Bendetsen's committee. Progress reports were to be provided at meetings of the panel that were scheduled for 23 September and 7 and 20 October. The first draft of the full report was to be completed 3 November with approval of the final version of the report to come on 17 November. One week later, the panel planned to review the finished report and prepare a briefing based on the report. The briefing was to be presented to Mr. Meese or the president on 1 December.<sup>31</sup>

With the panel's schedule now set, it was time to coordinate the plans with Meese and other White House advisers. On 14 September, Bendetsen, Graham, and Teller met in Meese's office with what was essentially Meese's policy staff composed of Meese, Richard V. Allen, Martin Anderson, and George Keyworth. According to Anderson, this group shared an enthusiasm for ballistic missile defense and was convinced that an effective defense was technically and economically feasible.<sup>32</sup>

With a few minor exceptions, Bendetsen held the panel to the schedule he coordinated with the White House staff. On 12 October, he met again with Meese and some of Meese's policy staff

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<sup>31</sup>"High Frontier Meeting: Attendees," 9 September 1981; "High Frontier: The Program," 14 September 1981; Dan[iel] Graham, "Panel Meetings," Memorandum to Project High Frontier Panel Members, 15 September 1981. All documents contained in Bendetsen's High Frontier Papers.

<sup>32</sup>Anderson, Revolution, pp. 94-95.

to report on the panel's work and indicated that the panel was finding increasing support for the idea of a new missile defense program in the Congress, NASA, the Air Force, the Department of Defense, and the CIA. There was also some discussion at this time of calling the new missile defense system the Global Ballistic Missile Defense.<sup>33</sup>

A day-long meeting on 3 November was preceded by a two-hour classified briefing the evening before. Dr. Keyworth provided the facilities for this evening meeting which was held in the New Executive Office Building. The following morning, Major General Stewart Meyer, U.S.A. (ret.), who had served as the Army's BMD program manager between November 1977 and June 1979, briefed the panel on ABM developments that were likely to occur in the near future. The panel also received briefings and discussed several other issues, including civil defense and the effects of the 1972 ABM Treaty. During the afternoon, there was an executive session chaired by Bendetsen during which panel members reviewed several chapters of of the High Frontier study and examined an outline of the briefing for Meese and the president.<sup>34</sup>

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<sup>33</sup>Anderson, Revolution, p. 95.

<sup>34</sup>"Agenda for High Frontier Panel, November 2 and 3, 1981;" Karl R. Bendetsen to William A. Wilson, letter, 6 November 1981; and Currie-McDaniel, Strategic Defense Command, p. 17. The agenda and letter are in Bendetsen's Papers on High Frontier.

From the afternoon executive session, a consensus on recommendations for the president emerged. Among the major points of agreement was the idea that control of space could lead to control of the earth. Since the Soviets were driving for dominance in space, America must do more in this arena. The top priority should be the fielding of a point defense against ICBMs. These defenses would first be deployed around America's land-based ICBMs and then expanded to protect the nation's fifty largest cities. Next would come a layered defense system with the ability to destroy missiles in their boost phase, a system that would protect U.S. allies as well as the United States.<sup>35</sup>

During these early proceedings Jaquelin Hume was something of a doubting Thomas, raising questions that were answered by Graham and Bendetsen. Among Hume's concerns were how the Soviets would react to U.S. forces in space, the survivability of a space-based defense system if the Soviets already had anti-satellite weapons, the difficulty of fitting untried elements together into a system and having all things work as they should, and the apparently limited operational duration of Graham's space cruisers which carried only one man.<sup>36</sup>

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<sup>35</sup>Karl R. Bendetsen to the High Frontier Panel, Memorandum, "Summary of our Principal Conclusions," 4 November 1981, Bendetsen's High Frontier Papers.

<sup>36</sup>Jaquelin H. Hume to Karl R. Bendetsen, letter, 9 September 1981; Daniel O. Graham to Jaquelin H. Hume, letter, 16 September 1981; Jaquelin H. Hume to Karl R. Bendetsen, letter, 28 September 1981; and Karl R. Bendetsen to Jaquelin H. Hume, letter, 5 October 1981. All letters in Bendetsen's Papers on High Frontier.

In spite of Hume's worries and other matters of disagreement, by the end of November, the panel had agreed on the contents of a memorandum that was to be presented to President Reagan. On 27 November (Friday), Bendetsen and Graham briefed Secretary Weinberger on the status of the High Frontier project. Later the same day, Bendetsen sent Weinberger a copy of the latest version of the panel's paper for the president, asking for an opportunity to discuss the contents of the paper by phone on Saturday or Monday. On Tuesday (1 December), the two discussed the memorandum by phone. During the conversation, Bendetsen indicated his desire to have Weinberger present when the panel met with the president. The secretary indicated that he would like to attend the meeting, but it was not essential that he do so. Weinberger's expressed disagreement only with the memorandum's recommendation that a systems selection task force be established to "select systems and formulate programs to implement the urgently required actions identified" in the memorandum; he did not think this was a good idea. The following day, Bendetsen completed coordination of the memorandum with panel members and called Meese to advise him that the panel had completed its work and was ready to report to the president. In a memorandum of the same day confirming the telephone conversation, Bendetsen advised Meese that Weinberger had received a copy of the memorandum and was fully aware of what the panel was recommending.<sup>37</sup>

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<sup>37</sup>Karl R. Bendetsen to Casper Weinberger, letter, 27

In his effort to see Meese and ultimately the president, Bendetsen stayed in close contact with Mr. Ed Thomas, administrative assistant to Meese. However, the pressures of preparing the FY 1983 budget, the difficulties being encountered by Mr. Richard V. Allen, and a crisis in Poland consumed virtually all the time of the White House staff for the next two weeks. While waiting for his meeting with Meese, Bendetsen continued to review the situation with regard to government programs on directed energy weapons and produced a four-page version of the panel's memorandum for the president. On 18 December, he showed this abbreviated memorandum to Keyworth during a two-hour meeting. Keyworth agreed with the conclusions and recommendations of the longer memorandum. Also, since Bendetsen had learned that any memorandum going to the president could be no longer than a page and half, the two men discussed ways to shorten the four-page memorandum.<sup>38</sup>

Later in the day, Bendetsen made an appointment with Ed Thomas to meet with him the next day (Saturday). Also, with the help of Frank Barnett, Bendetsen completed the page and a half

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November 1981; Karl R. Bendetsen to Ed[win] Meese, memorandum, 2 December 1981; Karl R. Bendetsen to High Frontier Panel members, Memorandum, "Situation Report," 20 December 1981 (hereinafter referred to as Bendetsen, "Situation Report"); Draft of "Proposed Memorandum for the President," 2 December 1981, p. 5. All documents are in Bendetsen's High Frontier Papers.

<sup>38</sup>Bendetsen, "Situation Report."

version of the memorandum for the president and prepared a short, hand-written note for Meese that was attached to the memorandum. In his note, Bendetsen explained that support for some form of strategic defense was growing in both parties in Congress. This support, Bendetsen wrote, "could overtake a presidential initiative which could be enormously popular."<sup>39</sup>

As scheduled, Bendetsen met with Thomas at 10 A.M. on Saturday. An hour and a half later, he met briefly with an extremely busy Meese and gave him a copy of the note and memorandum he had finished the evening before. Meese promised to read it the next day and said he would call Bendetsen during the following week. The next day, Bendetsen prepared a summary of the events of the past two weeks for members of the panel, advising them that they should not expect to see the president before the beginning of the new year. In fact, Bendetsen noted in a somewhat pessimistic tone, he was not sure that the panel would get to present its case to Reagan.<sup>40</sup>

During the first week of January 1982, Ambassador Wilson and Mr. Hume were able to secure a White House agreement for the president to meet with representatives of the High Frontier Panel. On Thursday, 7 January, in the midst of a business meeting in New York City, Bendetsen received a call from Ed

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<sup>39</sup>Bendetsen, "Situation Report."

<sup>40</sup>Bendetsen, "Situation Report."

Thomas advising him that four members of the panel were to meet the president the next afternoon at two o'clock for fifteen minutes.<sup>41</sup>

The meeting began on schedule in the oval office and lasted five to ten minutes longer than planned. Bendetsen was accompanied by Coors and Hume (Wilson was supposed to have attended, but was scheduled to return to Rome later in the afternoon and could not make the meeting). The president was accompanied by Edwin Meese, James Baker, William Clark, Martin Anderson, and George Keyworth. Bendetsen gave a brief presentation based on the short memorandum he had prepared and handed a copy of the memorandum to the president.<sup>42</sup>

The memorandum began by stating that the United States could not hope to match Soviet strategic offensive and conventional forces even if the nation were placed on a war footing. Moreover, there were "strong indications" that the Soviets were about to deploy "powerful directed energy weapons"

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<sup>41</sup>Karl [R. Bendetsen], "Report to the Members of the High Frontier Project Panel," 9 January 1982, in Bendetsen Papers on High Frontier (hereinafter cited as Bendetsen, 9 Jan 82 Report); Hume, Interview, p.3. Mr. Hume stated that he arranged the meeting.

<sup>42</sup>Presidential Schedule for Friday, January 8, 1982 (Revised Update) supplied by Martin Anderson; Bendetsen, 9 Jan 82 Report. Most published accounts of this meeting, place Wilson at the meeting. See for example Herken, Counsels of War, p. 337. Herken also claimed that Bendetsen's group met four times with the president and his top advisers. I found evidence of only one meeting before the president's speech of March 1983.

in space which would allow them to dominate space and the earth. The president was urged to appoint "an Advisory Systems Selection Task Force" to select defensive systems and take other actions to insure the U.S. has a defense against Soviet weapons. Once this step was completed, a special managerial structure similar to the one used in the Manhattan project should be established to implement the recommendations of the task force. This course of action would allow the U.S. to end its reliance on mutual assured destruction and adopt a doctrine of "assured survival." The memorandum also advised the president that the course of action recommended was compatible with the 1972 ABM Treaty which allowed either party to the treaty to withdraw after giving six months notice if it believed its "supreme interests" were endangered.<sup>43</sup>

Bendetsen's presentation was followed by a discussion of the special committee and management procedures the panel was recommending. In this discussion, Bendetsen stressed the need for urgency in proceeding with the program the High Frontier panel was recommending. He also stressed the "indispensability of special management arrangements which would remove from regular channels of the departments and agencies the recommended projects."<sup>44</sup>

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<sup>43</sup>Karl R. Bendetsen, Memorandum for the President, "Conclusions and Recommendations of the High Frontier Panel," 18 December 1981, in Bendetsen Papers on High Frontier.

<sup>44</sup>Bendetsen, 9 Jan 82 Report.



Bendetsen was optimistic about the outcome of the meeting with the president. He specifically mentioned his confidence that "George Keyworth, the President's Science Advisor, thinks well of our proposals."<sup>45</sup> This was not the case.

Three days after the panel met with President Reagan, Meese held a "management meeting" of his staff. Among those attending were Martin Anderson, Ed Thomas, George Keyworth, and Bert [or Bud?] Nance. When it came to a discussion of the High Frontier Panel suggestions, Keyworth and Nance expressed misgivings about the ideas of the High Frontier Panel which they thought involved some "very difficult technical aspects." As a result, Keyworth and Nance thought the White House should proceed slowly in its response to the panel's recommendation. These two men were directed to perform an analysis of actions to be taken and report back to Edwin Meese.<sup>46</sup>

Keyworth's role in these events is something of an enigma. Prior to becoming the president's science advisor, he had worked since 1968 as a physicist at the Los Alamos National

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<sup>45</sup>Bendetsen, 9 Jan 82 Report.

<sup>46</sup>Martin Anderson, Minutes of Management Meeting, 8:30 A.M., 11 January 1982. Anderson provided me with two copies of these minutes, one typed and the other in his own hand. The comments about opposition to the concepts of the High Frontier Panel are from the hand-written version of the minutes. In Revolution, p. 91, Anderson indicates reservations about Keyworth's attitude toward BMD, saying that Keyworth was "generally supportive of missile defense."

Laboratory where he became director of the Physics Division. In his years at the laboratory, he had been involved in the laser fusion program and in nuclear testing in Nevada. Los Alamos personnel had been working on ballistic missile defense projects when Keyworth started work at the laboratory, and they were still at work on BMD problems when he left to join Reagan's staff. Keyworth believed that missile defense posed very difficult problems. An ABM system would be expensive to build and very vulnerable if placed in space. As a result, he was skeptical about the feasibility of BMD when he came to Washington.<sup>47</sup>

Keyworth's skepticism was upsetting to members of Congress who favored a renewed effort to develop a missile defense system. In November 1981, Senator Wallop sent a letter to White House chief of staff James Baker, urging that Keyworth be fired because of his lack of support for ballistic missile defense and for stating that the idea of developing a missile defense using DEWs "'fundamentally frightened'" him.<sup>48</sup>

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<sup>47</sup>Keyworth, Interview, pp. 17-18.

<sup>48</sup>Herken, Counsels of War, p. 336. According to Herken, the evidence for this account of Keyworth's position is a 13 November 1981 letter from Wallop to Baker that was made available to him (note 23, p. 396). For a very unfavorable appraisal of Keyworth's attitudes toward ABM and role in this story, see Codevilla, While Others Build, pp. 83-84. According to Codevilla, Keyworth was a strong opponent of expanded support for ABM lasers. Keyworth supposedly was afraid that BMD would be over-sold and would fail to live up to expectations. As a result the public would become disillusioned with the idea of BMD, and it would lose necessary public support.

Bendetsen had reason to know this, for his files contain a copy of an article showing that as late as September 1981 Keyworth opposed using space-based lasers for missile defense. According to this article, Keyworth had taken note of the strong support for missile defense in Congress and stated: "'It's an area, in my opinion, where there has been a definite lack of expert involvement and, I would say, there have been a lot of unrealistic arguments made for' accelerating the program." To this, Keyworth is supposed to have added:

People don't realize that shooting down a satellite is not too tough, . . . But the really meaningful thing is to shoot down a missile in the boost phase. That is a formidable task and the technology is not in hand today. I would claim that self-pronounced laser experts who claim that it is something that we are a few years away from doing are plain not supported by the scientific and engineering communities. It is nothing better than speculation, and I think it unsound speculation and I have considerable experience in this area.

These statements were made while Keyworth was announcing plans for a Reagan administration review of U.S. space policy which had been originated by Richard V. Allen and would consider military as well as civilian aspects of the space program.<sup>49</sup>

In spite of his obvious reservations about the feasibility of defending against ballistic missiles, Keyworth had served since September 1981 as White House liaison with the High Frontier Panel and somehow had conveyed to Bendetsen that he

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<sup>49</sup>"Laser ABM and Shuttle to Be Reviewed by Administration, Keyworth Says," Aerospace Daily, 8 September 1981, p. 35.

supported the concepts of High Frontier. Moreover, Keyworth would continue to confer with Bendetsen until the president's March 1983 speech although (as we shall see) there are reasons to believe that Keyworth did not support a major strategic defense program until it was apparent that the president himself was committed to such a undertaking.

#### SCHISM

The euphoria among panel members following the meeting with President Reagan was punctured by a schism that had begun to unfold in early December. Although the immediate cause of the split was an announcement by General Graham that he intended to publish the study completed under the auspices of the panel, there had been other points of contention virtually from the beginning of the panel's work.

For one thing, while Graham had planned to exploit some advanced technology in his High Frontier defensive system, he stressed the use of off-shelf technology to allow the swiftest fielding of the least expensive defensive system. Graham's insistence on the earliest possible deployment led some panel members to believe that he was too rigidly committed to "a very specific global ballistic missile defense system." Most members of the panel considered Graham's concept too confining and preferred a more open-ended approach in which the panel would

make only general recommendations to the president, including one that called for Reagan to appoint a special board to determine specific system requirements and R&D tasks to restructure the nation's strategic forces to support a defensive-oriented strategic doctrine.<sup>50</sup>

Furthermore, at least one specific high technology element in Graham's concept caused considerable tension among panel members. This was the solar power satellite (SPS). Graham's thinking centered around the economic development of space. Since he believed that SPS promised to be very profitable, it was a lynch-pin element in his vision for the High Frontier project.<sup>51</sup> Teller did not share Graham's view of SPS. He advised Bendetsen in early September 1981 that Graham was overly optimistic regarding the power production, cost, and time of availability of SPS. In response to Teller's criticism, Graham advised Bendetsen bluntly that Teller would have to accept the SPS as part of the High Frontier concept or leave the panel. At the same time, Graham indicated that he did not believe that Teller would abandon the panel over the SPS issue. From Bendetsen's perspective, the entire matter was a non-issue, for

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<sup>50</sup>Coors, Interview, p. 2; Graham, Interview, p. 10; Keyworth, Interview, pp. 8-9; Karl R. Bendetsen to William A. Wilson, letter, 6 November 1981, in Bendetsen Papers on High Frontier.

<sup>51</sup>Graham, High Frontier, passim. See especially pp. 6, 33-34, 92.

he recognized that the recommendations of the High Frontier Panel would be too general to permit discussion of specific components.<sup>52</sup>

Another point of contention between Graham and Teller concerned the space-lift capacity of the United States. Teller did not believe the U.S. had enough capacity to orbit the equipment that would make up Graham's space-based defense system.<sup>53</sup>

Teller also advocated a greater role for the bomb-pumped X-ray laser in strategic defense than others were willing to support. This technology needed considerably more work before it could be effective and Dr. Teller wanted the Bendetsen group to assist him in gaining the additional funding needed to push its development. Other panel members opposed this idea for at least two reasons. General Graham criticized the system because it would be unable to defend itself. If attacked, a space-based X-ray laser would have to destroy itself or be destroyed; this meant that it was strategically useless. Graham and others on the panel also objected to Teller's system because of its

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<sup>52</sup>[Daniel O. Graham], Untitled Concept Paper, 9 July 1981; Edward Teller to Karl R. Bendetsen, Telegram, 3 September 1981; Dan[iel O. Graham] to Karl [R. Bendetsen], letter 28 October 1981; [Karl R. Bendetsen] to William A. Wilson, letter, 6 November 1981. All documents are in Bendetsen's High Frontier papers.

<sup>53</sup>Wilson, Interview, p. 10.

reliance a nuclear explosion to produce the X-ray lasing. The idea of using nuclear weapons in space was unacceptable from a political standpoint.<sup>54</sup>

All of these were specific issues that could be resolved through compromises among panel members. However, when Graham made clear his intention to publish the High Frontier study, he raised an issue upon which they would not compromise.

As already noted, Graham was a man used to publishing his views. From the outset, he had followed a publicist's approach to High Frontier, putting forward his arguments for a new U.S. strategy in as many public forums as possible. On the other hand, Bendetsen clearly favored a private approach in which the High Frontier concept would be quietly developed and then presented to the president. This policy and the rationale behind it were detailed in a set of rules drafted for Bendetsen by Graham and sent to "all participants in Project High Frontier." According to this document, members of the panel were

interested in a Reagan initiative, not one attributed to us. Secondly, we wish not to tip off potential naysayers in and out of government to make it easier to erect obstacles. Therefore all participants must keep our activities and findings within the circle. Publicity must await a Presidential decision one way or the other on our proposals. There is already a fairly high degree of press interest in defense options, especially space options. While the more prominent members of the team may not be able to avoid comment on space options totally, there must be no mention in the press of the make-up of the team, its views, or its

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<sup>54</sup> Wilson, Interview, p. 11; Graham, Interview, pp. 8-10.

genesis, in particular the interest of high Administration officials.<sup>55</sup>

Not surprisingly then, when Graham announced that he would publish the full High Frontier study, he unleashed a maelstrom of protest from panel members. The trouble started in early December 1981 with a letter from Graham to Bendetsen in which the former first made clear his intention to publish a report on the work of his staff. While Graham had "no serious reservations" about the recommendations the panel would make to the president and his staff, he believed that the two short summaries prepared for this purpose did not adequately cover the complex concepts generated by Graham's staff of thirty consultants. This coverage would require a longer, more detailed report that would have to be published, for Graham had "a legal obligation to some donors (and a moral obligation to all of them) to prepare an end-product, a public document." With Bendetsen's concurrence, the foreword of the published report would "associate the panel with the general thrust of High Frontier concepts," but make no claims that the panel approved the entire published study.<sup>56</sup>

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<sup>55</sup>Karl R. Bendetsen, memorandum for panel members, "Some Ground Rules for Participants," 26 August 1981, in the Bendetsen Papers on High Frontier. Graham's typed name appears at the end of this document.

<sup>56</sup>The sources here are two letters: Daniel O. Graham to Karl R. Bendetsen, 4 December 1981, and Daniel O. Graham to Karl R. Bendetsen, 10 December 1981. Both are in Bendetsen's papers on High Frontier. The two letters say virtually the same thing with regard to why Graham felt compelled to publish a High Frontier study. In the later letter, Graham discusses some details of the eminent separation of High Frontier from the



Graham also advised Bendetsen that in addition to the report, the High Frontier staff was preparing a publicity campaign designed to support a presidential announcement of a strategic program based upon the panel's recommendations. This campaign would include a half-hour TV documentary, press releases, appearances on talk shows, and speeches in all major cities. Graham tipped his hat to the panel's requirement for secrecy by indicating that he and his staff would "hold our fire as requested to avoid stealing thunder." However, he also hinted strongly that the public silence of his staff would last only until the president's State of the Union address scheduled for 21 January. If the president had not responded positively to the panel's suggestions by that time, he probably would not respond at all.<sup>57</sup>

As a part of Graham's effort to prepare the foreword that would credit the High Frontier Panel for its work, he asked panel members for photographs and biographical information. When Jaquelin Hume received the request, he was most upset and immediately contacted Bendetsen and reminded him that a specific

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Heritage Foundation, a separation that seems to have been mutually agreeable to Feulner and Graham and discusses the use of letterhead stationery with the names of George Keyworth and Albert C. Wedemeyer. The first letter has a long line drawn across it and contains a note in the upper left hand corner: "Superceded 12/10/81."

<sup>57</sup>Graham to Bendetsen, letters, 4 and 10 December 1981.

prerequisite for his service was that he would not be identified in any way with the work of the panel. Moreover, the value of the panel to the president would be "substantially reduced" by any publicity. Therefore, if publicity was planned, Hume would immediately resign from the panel.<sup>58</sup>

Bendetsen was also upset with Graham and tried to persuade him not to publish the report. He argued that there was no way to separate the High Frontier Panel from the work of Graham's staff. Therefore, Graham should publish nothing until he had the concurrence of all members of the panel. Bendetsen also chided Graham for even preparing a publicity campaign before the president had time to respond publicly to the recommendations the panel planned to make to him. Such actions risked a leak that could undermine the work of the panel. He specifically disagreed with Graham's view that the president would have time to respond to the panel's recommendations by the time of the State of the Union address.<sup>59</sup>

At Bendetsen's request, Graham responded to the concerns expressed by Hume. His letter was conciliatory, but not submissive. He assured Hume that nothing would be published

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<sup>58</sup>Karl R. Bendetsen to Daniel O. Graham, letter, 11 December 1981, and Jaquelin H. Hume to Karl R. Bendetsen, 11 December 1981. Both letters are in the Bendetsen Papers on High Frontier.

<sup>59</sup>Bendetsen to Graham, letter, 11 December 1981.

before the president had an opportunity to respond to the recommendations of the panel and that no panel member would be mentioned in a publication without the member's approval. Nevertheless, he made it clear that he was going to publish the High Frontier study.

We will publish our Project Report at some juncture. I am legally bound to do so by accepting over a quarter million dollars in . . . tax-free donations. This must by law be used for 'public education.' Thus there can be no question of not publishing at all.<sup>60</sup>

Graham sent copies of this letter to all members of the panel and continued to maintain that he had a legal obligation to publish a report in spite of strong urgings to the contrary from panel members, including legal arguments to the contrary from Bendetsen who had been an attorney before becoming a corporate executive. Bendetsen reiterated that Graham could not publish without the consent of all members of the panel, adding that Graham would also need the permission of the Heritage Foundation. Moreover, during the panel's meeting with the president, Bendetsen had promised him that all members of the panel were committed to secrecy unless and until the president acted at which time panel members would support the presidential decision. If the president rejected the recommendations of the panel, its members were pledged to remain silent. In a similar vein, Edward

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<sup>60</sup>Daniel O. Graham to Jaquelin H. Hume, 28 December 1981, in Bendetsen Papers on High Frontier.

Teller asked Graham to assure him that "no further thought or affirmative steps toward any publication" would be taken before panel members had time to consider the issue, for the appearance of a public document "would have most unfortunate consequences and could well compromise, if not greatly diminish, what might otherwise have been the benefits of a dramatic Presidential initiative." Jaquelin Hume told Graham that he was "strongly opposed to any publicity about the panel, its members, its work, or its conclusions." The "sole purpose" of the panel was "to develop recommendations which might be useful to the President." Finally, William Wilson informed Graham that he agreed with Bendetsen because of the power of Bendetsen's arguments against publishing and because of the "sensitive nature of some of the material."<sup>61</sup>

By March, when the High Frontier study was published, Bendetsen was thoroughly disillusioned with Graham. He now believed that Graham had misled him in the earlier dispute with Fisher over High Frontier's relationship with ASCF. Having witnessed first hand the independent mindedness of General Graham, he concluded that Fisher was perhaps right. In Bendetsen's words:

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<sup>61</sup>Daniel O. Graham to Karl R. Bendetsen, 5 January 1982; Karl R. Bendetsen to Daniel O. Graham, letters, 8 and 9 January 1982; Edward Teller to Daniel O. Graham, letter, 9 January 1982; Jaquelin H. Hume to Daniel O. Graham, letter, 18 January 1982; William A. Wilson to Daniel O. Graham, letter 26 January 1982. All letters in Bendetsen's Papers on High Frontier.

I have traversed an exceedingly painful series of subsequent events in which Dan Graham, in another role which I had not before observed, carried forward with his own unilateral objectives. His actions have shocked a majority of the members of the High Frontier Panel.

Had Bendetsen known in August and September what he knew in March, he probably would have supported Fisher in the dispute.<sup>62</sup>

#### GRAHAM GOES IT ALONE

By the beginning of 1982, Graham was perfectly prepared to pursue his own goals regardless of what panel members thought. He was convinced that if the case for the High Frontier concept were not made to the public, the bureaucracy would strangle the infant idea in its cradle. Furthermore, Graham was quite miffed that he had not been included in the meeting with the president on 8 January. His final answer to the calls for silence was made clear in early February with the announcement in Air Force Magazine that the High Frontier study was about to be made public. The story noted that the project had been "aided by the ready access to the White House of some of its politically prominent members" and presented a general description of the global ballistic missile defense (GBMD) system that was a central feature of the High Frontier program. The article also described criticism of the proposal from the Pentagon and "Congressional

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<sup>62</sup>Bendetsen to Fisher, memorandum, 4 March 1982.

defense experts." After reporting the High Frontier cost estimate for the system (\$5.2987 billion), the article stated:

Defense Department analyses suggest that, not counting ancillary C<sup>3</sup> and other support equipment or operational and life-cycle costs, that figure would be \$300 billion, and that the underlying technology is "one viewgraph deep" and unencumbered by practical engineering considerations or the laws of physics. Congressional defense experts, nevertheless, are concerned that "Project High Frontier" will turn into a successful media event and weaken support for such "mundane" components of the administration's strategic force modernization package as a survivably based MX and the D-5 SLBM.<sup>63</sup>

About the same time, as if to underscore his intentions to publish, Graham sent Bendetsen an advance copy of the High Frontier study he was about to publish.<sup>64</sup>

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<sup>63</sup>"Washington Observations," Air Force Magazine, February 1982, p. 21. Graham had already stolen a march on the panel. By 7 January he had completed the summary of his High Frontier concept that would appear in the published report. Apparently, he had succeeded somehow in getting a copy of this to the White House staff before the panel's 8 January meeting with the president. Bendetsen said he saw the summary at the White House on 8 January (presumably while he and the panel were there to meet with the president) although he did not know what the document was until a later meeting the same day with Graham and Graham's staff during which Bendetsen described the outcome of the meeting with the president. (Karl R. Bendetsen to Daniel O. Graham, letter, 9 January 1982. The comments about the summary are found in this letter's post script.) The quotation from the Air Force article in a sense confirms one of the major concerns of High Frontier supporters. They were afraid that the advocates of established programs (program managers, etc.) would kill the space initiatives of High Frontier to protect their own programs.

<sup>64</sup>Graham, Interview, pp. 11-12; Daniel O. Graham to Karl R. Bendetsen, letter, 8 February 1982.

In fact, Graham's determination to publicize the High Frontier concept should not have surprised Bendetsen and his panel. From the beginning, as already noted, Graham had played the role of outspoken public advocate for High Frontier ideas and had done so more or less continuously and independently of Bendetsen's efforts with the Reagan Administration. His article in the Spring 1981 Strategic Review and his subsequent presentation before a meeting sponsored by Frank Barnett's National Strategy Information Center had brought Graham and High Frontier to Bendetsen's attention. The précis of Graham's concept that appeared in the November 1981 edition of The Officer called on President Reagan to take advantage of a historic opportunity to use America's high technology for a bold move into space that could shift the world away from mutual assured destruction to a world dominated by "assured survival."<sup>65</sup>

Even as he argued with Bendetsen about whether or not to publish the High Frontier study, he was continuing his independent stumping for the project. Shortly after the panel's meeting with the president on 8 January 1982, Washington was gripped by one its worst winter storms in years. The snow started the morning of January 13 and had the city tied in knots by the afternoon. As always, there were numerous automobile wrecks around the metropolitan area. At 4 P.M. an Air Florida

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<sup>65</sup>Graham, "New Strategy," pp. 26-27.

jetliner with over seventy people on board took off from National Airport in the blinding snow storm. Because of improper de-icing, it was unable to climb and struck the northbound span of the Fourteenth Street bridge, killing all but a few people on the plane. National Airport was closed until 8 P.M. Thirty minutes after the aircraft accident, there was a major derailment of a Washington Metro subway train near the Federal Triangle in downtown Washington. Three people were killed, and two of the Metro system's lines were blocked for several hours.<sup>66</sup>

Before the snow storm had started, Harry Goldie, Boeing Corporation's "top aerospace engineer," had arrived in Washington. Unknown to Graham, Boeing had assigned Goldie to head up a team to evaluate his concept of missile defense, and Goldie had come to Washington to brief him on the results of the study. The briefing took place the morning of 13 January and concluded that with minor adjustments Graham's system could destroy up to 95% of the ICBM force the Soviets could launch against the United States. The Boeing study was a breath of fresh air to Graham; the Pentagon's strong opposition to his

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<sup>66</sup>Leon Wynter and Peter Perl, "Cold Eases; Snow in Forecast," Washington Post, 13 January 1982, pp. C1, C4; Lawrence Meyer and Howie Kurtz, "71 Feared Dead as Plane Hits Bridge, Smashes Cars, Plunges into Potomac," Washington Post, 14 January 1982, pp. A1, A6; Stephen J. Lynton and Tom Vesey, "Metro Train Derails; 3 Die," Washington Post, 14 January 1982, pp. A1, A16; and Ron Shaffer and Peter Perl, "Series of Disasters Paralyzes Capital Area at Rush Hour," Washington Post, 14 January 1982, pp. A1, A17.



ideas was beginning to discourage the High Frontier staff. Graham immediately asked if Goldie would be willing to brief Dr. George Keyworth, the President's Science Advisor, and Dr. Richard DeLauer, Under Secretary of Defense for Research and Engineering. Goldie agreed.<sup>67</sup>

As a veteran of the Washington bureaucratic mill, Graham knew the snow storm raging over the city that day would play havoc with the schedules of top government officials. People could neither get into nor out of the city. Many other government leaders would be unable to move about Washington due to hazardous road conditions. The day before the storm, appointment calendars would be filled for a week or even several weeks ahead; the day of the storm was a window of opportunity, and Graham seized it. He quickly secured meetings with Keyworth and DeLauer; and Goldie, accompanied by Graham, briefed both men.<sup>68</sup>

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<sup>67</sup>Graham, Interview, pp. 16-18. He would later comment that the Boeing study was "like the cavalry riding over the hill. . . . [W]e had been getting so much flak out of the Pentagon that even some of my own people were saying: General, we have so many opponents, I don't know how we'll make it."

<sup>68</sup>Graham, Interview, pp. 17-18. Later events indicate that Goldie's briefing convinced neither man of the efficacy of ballistic missile defense. According to Senator Wallop (Interview, pp. 11, 23-24), DeLauer remained a strong opponent of missile defense and in the fall of 1982 directed a study that cast doubts on Graham's concept. When the General complained about the study to the Secretary of Defense, Weinberger reportedly responded that while he and DeLauer agreed that a missile defense would enhance the nation's security, they did not share Graham's optimism regarding the state of the technologies that would be involved. (Don Oberdorfer, "A New Age of Uncertainty Is Born," Washington Post, 4 January 1985, p. A20.) Regarding Keyworth, while he was already involved with the High

Graham met again with Keyworth on 8 February, the same day he sent a pre-publication copy of High Frontier to Bendetsen. James Jenkins of Meese's office was also present. Graham gave Jenkins a copy of the same document and explained his timetable for publication. Neither Keyworth nor Jenkins expressed opposition to Graham's publication plans.<sup>69</sup> This was just after Air Force Magazine had announced the pending publication of the study.

A month later, High Frontier: A New National Strategy was published. It was essentially the same study Graham and his staff had prepared under the supervision of Karl Bendetsen's panel and constituted the full, detailed conceptual underpinning

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Frontier Panel and was participating in meetings with members of the White House staff on the matter of ballistic missile defense, he seems to have been lukewarm at best with regard to the idea of developing a new ABM system. The actual time of his conversion to ABM supporter is difficult to ascertain. According to Arnold Kramish (discussion with the author on 7 June 1988), Goldie briefed Keyworth on 14 January, not 13 January as Graham recalled. Kramish considered this a very important meeting, since he dates Keyworth's conversion to strategic defense from this time. As will be seen later, Mr. McFarlane and Keyworth himself fix the time of Keyworth's conversion as the week before the president's 23 March 1983 speech (Interview with Robert C. McFarlane, Center for Strategic & International Studies, Washington, D.C., 15 September 1987, p. 12; Keyworth, Interview, pp. 17-22). Senator Wallop's memories would seem to support a later conversion of Keyworth. In fact, Wallop thinks that Keyworth's opposition may have continued beyond the president's speech (Interview, pp. 14-15).

<sup>69</sup>Phil Truluck to Ed Feulner, memorandum, 19 February 1982, in Bendetsen papers on High Frontier. Truluck does not fully identify Jenkins. Martin Anderson's Minutes of Management Meeting, 11 January 1982, lists Jim Jenkins as a participant.

for the short briefing papers the panel delivered to the White House. In response to the desires of panel members, Graham did not mention the panel's activities. Moreover, Bendetsen was the only panel member named in the foreword which, however, made no mention of Bendetsen's service as panel chairman.<sup>70</sup>

The central idea of Graham's new national strategy was that America must move boldly and take the lead in the economic development of space. With regard to the international economic situation, Graham believed that the world was on the brink of a great commercial revolution comparable to that which marked the expansion of Europe in the early modern era. Space, in his words, "holds out the promise of a new era of economic expansion." The nation that led the commercialization of space would achieve a hegemony over the world equivalent to that gained by Europeans in the nineteenth century. The Soviets understood this and were pursuing a rational policy that would allow them to control space and through the control of space to dictate the behavior of the West.<sup>71</sup>

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<sup>70</sup>Graham, High Frontier. At Graham's request, Bendetsen provided the vague statement about Bendetsen's role in High Frontier that appears in the published report (cf. statement on p. xi of the report with the statement in Karl R. Bendetsen to Daniel O. Graham, letter, 16 February 1982, Bendetsen Papers on High Frontier).

<sup>71</sup>Graham, High Frontier, pp. 1-3, 6, 92-94. For a recent discussion of the tie between economic and military power, see Paul Kennedy, The Decline and Fall of the Great Powers (New York: Random House, 1987).

As in the earlier period when Europeans used their navies and merchant fleets to control the world's commerce, the commercialization of space would be a joint venture in which government and private enterprise interact synergistically. First, the government would cooperate with industry to develop the infrastructure required for the commercial development of space. Once developed, the infrastructure would be used by private interests to realize the economic potential of space. For its part, the government would use the infrastructure in fulfilling its obligation to protect the expensive private assets involved in the economic development of space. Furthermore, the jobs, wealth, and tax revenues generated by economic activities in space should compensate for the cost of the effort. By the year 2010, space ventures could add as many as 3.8 million jobs to the U.S. economy and generate tax revenues of \$40 billion. Total revenues from "industries in orbit" could represent from four to six percent of the American GNP.<sup>72</sup>

Given the world's insatiable appetite for energy, power production would play a major role in the economic development of space and promised to be one of the most lucrative of the space industries. High Frontier called for power to be produced in space by a space power satellite (SPS) that would be composed of a huge solar array and a transmitter that would beam the power to

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<sup>72</sup>Graham, High Frontier, pp. 3, 6, 31-32, 35, 83, 92-98.

earth via microwaves. The satellite's antenna would be 3,000 feet in diameter and would transmit to an elliptical antenna on earth that was five miles long and four miles wide. Such a system would produce five gigawatts of power and deliver 1.6 trillion kilowatts over a forty-year period. As an example of the demand that such a technology could create, Graham stated that by 2010 India could use seventy-five of these systems.<sup>73</sup>

As a concomitant to developing the means to protect its commercialization efforts, the U.S. would generate military forces that could eventually contribute to a western defense against ballistic missiles. The BMD envisioned by Graham was to be a multi-tiered system that would emerge from the High Frontier program in phases as a result of conscious decisions and the evolution of technology. The first phase would be a terminal defense system in which a number of "swarmjet" launchers protect hardened ICBMs. Each launcher would hold 500 to 1000 small projectiles which it would fire in a shotgun-like blast to destroy an attacking warhead at a range of about 4,000 feet. This phase of the BMD could be in place within two to three years.<sup>74</sup>

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<sup>73</sup>Graham, High Frontier, pp. 32, 34, 92.

<sup>74</sup>Graham, High Frontier, pp. 4, 116. Multi-tiered here refers to the fact that this BMD system would attack approaching ICBMs in more than one phase of its flight trajectory which is divided into four phases: boost, post-boost, mid-course, and terminal.

The second stage of the defense would be a global ballistic missile defense (GBMD) system that could defend the United States and its allies. The GBMD would be large network of over four hundred orbiting space "trucks," each carrying between forty and forty-five kill vehicles that were controlled by their mother vehicle. The orbits of the "trucks" would permit them to attack Soviet ICBMs during their boost, post-boost, and late mid-course phases. Depending on national priorities, this network of "trucks" could be deployed in five to six years at a cost of \$12.6 billion. Later, the GBMD could be improved by adding infrared sensors to give the system the ability to attack ICBMs from boost phase to re-entry. This added capability would cost about \$5 billion and could be deployed in about eight years.<sup>75</sup>

In "several years," High Frontier's BMD system could be improved further with the addition of high performance spaceplanes which would cost less than \$500 million per vehicle. These manned vehicles would perform such tasks as the inspection of objects in space, the defense of satellites and space stations, and retrieval of satellites. Although the study discussed possible improvement of the GBMD by the addition ground-based lasers operating through space-based pointing systems, it was not particularly sanguine where the missile

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<sup>75</sup>Graham, High Frontier, pp. 4, 68, 121-28. For a diagram of Graham's missile defense system, see p. 24.

defense role of directed energy weapons (DEW) was concerned. While DEWs showed promise in the laboratory and possessed the potential to change the world's balance of power, operational weapons of this kind were too far in the future "to meet the urgencies of the High Frontier study." The United States should support a vigorous R&D program to insure against a Soviet breakthrough, but should not stake the future of its own missile defense program on such a breakthrough. All the requirements of High Frontier's multi-tiered defense could be met without a breakthrough in beam weaponry or in any other technical area.<sup>76</sup>

From the standpoint of national security, the wisdom of Graham's "bold new strategy" was that it would allow America to take advantage of her superiority in high technology to turn a strategic flank of the Soviet Union. The United States no longer had the industrial base to out-produce the Soviets where weapons based on conventional technology were concerned. On the other hand, in the arena of space, America's strong base in high technology would give her a decisive edge.

Our best hope is to change our strategy and to move the key competition into a technological arena where we have the advantage.

A bold and rapid entry into space, if announced and initiated now, would end-run the Soviets in the eyes of the world and move the contest into a new arena where we could exploit the technological advantages we hold. This is far preferable to pursuing a numbers contest here on Earth, which

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<sup>76</sup>Graham, High Frontier, Appendix E. See especially, pp. 68, 71, 135-36.

will be difficult if not impossible for us to win.<sup>77</sup>

An effective defense against ballistic missiles would go beyond restoring the strategic balance between the United States and the Soviet Union; it also would provide the basis for a shift away from the doctrine of mutual assured destruction to one of assured survival. Such a shift in doctrine could inspire western peoples to a renewal of their flagging commitment to defense.<sup>78</sup> Overall, then, the High Frontier project was nothing less than an effort to create a new grand strategy for the West. In the eyes of Graham and his colleagues, this strategy promised to revitalize the economies of the West while revolutionizing and rejuvenating its defenses.

The publication of High Frontier produced a number of opportunities for publicity. Just as the study was published, the Washington Post carried a story describing the concept as a "10-year, \$50 billion project" that "could reduce a Soviet attack 'by 95 percent or better.'" The article reported the opinions of Pentagon officials who had read the study and believed it contained some solid information as well as "'Star Wars

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<sup>77</sup>Graham, High Frontier, pp. 1-3, 6, 21-22, 31. Again, one is reminded here of the competitive strategies concept that came to be espoused in DOD while Weinberger was Secretary of Defense. See Englund, "'Competitive Strategies.'"

<sup>78</sup>Graham, High Frontier, pp. 1, 21-22, 81-83, 87-88.



stuff."<sup>79</sup> In the second half of 1982, several journals carried discussions of High Frontier concepts and interviews with Graham. Defense Science 2000<sup>+</sup> printed the entire fifteen page summary that introduces High Frontier.<sup>80</sup> Government Executive published a speech Graham had given in February at Hillsdale College in which he outlined the High Frontier concept.<sup>81</sup> And in October Defense Electronics carried an interview in which Graham discussed the multi-tiered defense system and explained what it meant to turn a strategic flank of the Soviet Union by moving energetically into space.<sup>82</sup>

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<sup>79</sup>Michael Getler, "Major Shift in Strategy Proposed: Use of Weapons on Space Satellites to Kill Incoming Missiles Suggested," Washington Post, 5 March 1982, p. A8. Bendetsen sent copies of this article to High Frontier Panel members by means of a 5 March memorandum which stated: "I had been convinced that I had a clear understanding with Dan Graham that he would not go public in a manner which seized the initiative that The President might otherwise have had on his own for a switch away from the doctrine of Mutual Assured Destruction."

<sup>80</sup>Daniel O. Graham, "The High Frontier: Summary of a New National Strategy," Defense 2000<sup>+</sup>, vol. 1, no. 2 (1982), pp. 20-21, 66-79.

<sup>81</sup>Daniel O. Graham, "Preventing World War III--How to Neutralize the Numbers by Exploiting Defense in the 'High Frontier,'" Government Executive, July 1982, pp. 16, 18-19.

<sup>82</sup>"Selling the High Frontier Defense Strategy," Interview with General Daniel O. Graham, Defense Electronics, October 1982, pp. 169-70, 172, 174-75.

## THE PANEL CONTINUES ITS WORK IN PRIVATE

While Graham was publicly pushing High Frontier, Karl Bendetsen and members of his panel kept silent as they waited for the president to announce the beginning of the program they had recommended to him. In the wake of their meeting with Reagan back in January, members of the panel had believed that he would move swiftly on their recommendations and that the publicity Graham threatened to generate would undermine the resulting presidential initiative. The president himself encouraged this view by advising Bendetsen that he had spoken to Meese, Keyworth, and Weinberger about "following up" on the panel's recommendations. Reagan assured Bendetsen that "we will be moving ahead rapidly with the next phase of this effort."<sup>83</sup> But as several weeks slipped by with no apparent White House action, panel members began to believe that their efforts to win swift government action on the High Frontier program were being undermined by opposition within the Reagan administration. They also had second thoughts about the panel's policy of eschewing publicity.

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<sup>83</sup>Ron[ald Reagan] to Karl [R. Bendetsen], letter, 20 January 1982, Bendetsen Papers on High Frontier.

One of the first hints of trouble came in mid-February of 1982 when Hume attempted to call National Security Advisor William Clark to find out what was being done on the panel's recommendation. He was unable to reach Clark, but spoke instead to Admiral Bert Nance, an assistant to Clark. Although Nance advised him that the White House planned to appoint a "blue ribbon task force" as recommended by the panel, Hume concluded from this conversation that "nothing concrete" had been done since the meeting with the president a month earlier. He recommended that Bendetsen also call the White House in an effort "to keep ABM on the front burner."<sup>84</sup>

Toward the end of February another indication of trouble reached Bendetsen. This was a memorandum reporting the results of Graham's 8 February meeting with James Jenkins and George Keyworth. In addition to indicating that these White House staffers expressed no opposition to Graham's publication plans, it reported that a presidential decision on a strategic defense program was still months away. George Keyworth had been directed to develop a strategic defense program of his own, and his timetable called for completion of this effort near the end of the year (1982).<sup>85</sup>

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<sup>84</sup>Jaquelin H. Hume to Karl R. Bendetsen, letter, 16 February 1982, in Bendetsen Papers on High Frontier.

<sup>85</sup>Truluck to Feulner, 19 February 1982. Keyworth's charge to develop his own program may be a reference to the direction he received from Mr. Meese during the 11 January staff meeting already noted above.

Still, panel members held to their vow of silence and continued their efforts to rein in Graham. Following the publicity generated by the publication of Graham's High Frontier, Ambassador William Wilson chided Graham for pulling the rug from under the panel's efforts and alerting the Soviet Union to what U.S. leaders might be thinking. Graham defended his publicity campaign by stating that the published report had generated a positive response in Congress and the bureaucracy. He also reminded Wilson of the panel's own concerns that prompt action was required on their recommendations to the president. As Graham put it: "I think it is the propitious time for the Administration to cut across the parade ground and get in front of the parade we are creating."<sup>86</sup>

A month later, there was still no indication of any definite White House action on the panel's recommendations and panel members began to look for ways to energize the Reagan administration with regard to their missile defense proposal. At the end of April, Hume sent Bendetsen a copy of the March 1982 Washington Report which contained an article by Congressman Ken Kramer (R-Colorado). In this article, Kramer called for the

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<sup>86</sup>William A. Wilson to Karl R. Bendetsen, letter 15 March 1982; Daniel O. Graham to William A. Wilson, letter, 29 March 1982. Bendetsen asked Wilson to send a copy of his 15 March letter to Graham (Karl [R. Bendetsen] to William A. Wilson, mailgram, 19 March 1982), and he apparently did. All documents are found in the Bendetsen Papers on High Frontier.

establishment of a space command and the deployment of military space systems that could provide a defense of the U.S. homeland. Kramer's phraseology was reminiscent of Graham's High Frontier study. In the letter that accompanied the copy of Kramer's article, Hume said he did not believe the White House was going to act on their recommendations and asked Bendetsen if they should not support Kramer in an effort "to build a fire under the Administration?" In his reponse, Bendetsen said that he shared Hume's "disappointment concerning what appears to be total inaction with respect to our urgent recommendations" of 8 January and indicated that he would be happy to join Hume in "any well considered effort to 'build a fire under the administration.'"<sup>87</sup>

About this time, Bendetsen and Hume received identical letters from George Keyworth which indicated that their phone calls and Graham's publication of the High Frontier might have broken the White House logjam that concerned panel members. "Now that the High Frontier report has been disseminated," Keyworth wrote in early May, "I want to make you aware of some action we are taking that is commensurate with the conclusions of that study." For one thing, a panel of the White House Science Council had been established "to urgently examine the issue of new military technology." The panel was headed by Dr. Edward

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<sup>87</sup>J[acquelin] H. Hume to Karl R. Bendetsen, letter, 21 April 1982; Karl R. Bendetsen to Jaqueline H. Hume, 29 April 1982. Both letters in Bendetsen Papers on High Frontier.

Frieman, Vice President of Science Applications, and included as members Edward Teller, David Packard, Solomon J. Buchsbaum, Harold M. Agnew, Robert Hunter, William A. Wierenberg, Gregory Canavan, and Charles Townes. The first focus of the Frieman committee, Keyworth said, would be "non-conventional weapons, including potential space-based ballistic missile defense systems."<sup>88</sup>

While this committee concluded that technology was not likely to offer President Reagan any major new options in the strategic realm, it did take note of the promise of lasers in the area of ballistic missile defense. For one thing, Teller was able to persuade the group to recommend further study of the bomb-pumped, X-ray laser. Also highlighted by the committee was the development of an "adjustable beam-directing mirror" which could compensate for turbulence in the atmosphere while focusing a laser beam on a target. These mirrors are composed of "compensating actuators" that can be moved rapidly to change the shape of the mirror thereby quickly changing the direction of the beam.<sup>89</sup>

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<sup>88</sup>George A. Keyworth to Karl [R. Bendetsen], letter, 3 May 1982, in Bendetsen Papers on High Frontier. Hume sent Bendetsen a copy of his letter from Keyworth (Jaquelin H. Hume to Karl R. Bendetsen, 10 May 1982, in Bendetsen Papers on High Frontier).

<sup>89</sup>Keyworth, Interview, pp. 16-17; U.S. Department of Defense, Director of the Strategic Defense Initiative Organization, SDI: A Technical Progress Report, April 1987, pp. 28-29 (hereinafter cited as SDI Technical Progress Report). An early experimental version of the adjustable beam-directing mirror was composed of sixty-nine compensating actuators. Programs were under way in 1987 to produce mirrors with between

Keyworth later claimed that the Frieman committee's findings on atmospheric compensation constituted a "turning point" in his thinking about strategic defense. As a former official of the Los Alamos laboratory and a member of the White House staff, he had been wrestling for some time with the problem of strategic force modernization. This entailed a consideration of the role of strategic defense in providing for national security. His major objection to using lasers in a BMD system was that the lasers would have to be placed in space because without the ability to compensate for the effects of the atmosphere, a laser beam would be dispersed by the air and lose its destructive power. Also, space-based lasers would be vulnerable to Soviet anti-satellite weapons. With the new mirror, the heavy and expensive part of a laser could be left on the ground where it could be defended and easily maintained. Now Keyworth began to believe that lasers might be used to develop a defense that could improve the survivability of America's ICBMs thereby reducing the incentive for the Soviets to attempt a first strike to destroy them.<sup>90</sup> Nevertheless, Keyworth still harbored doubts about the feasibility of ballistic missile defense as we shall see in the next chapter.

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10,000 and 100,000 actuators.

<sup>90</sup>Keyworth, Interview, pp. 18-19.

Both Hume and Bendetsen considered Keyworth's science panel a response to their proposal that the president appoint a blue ribbon panel to initiate a national strategic defense program. According to Hume, Keyworth's committee was "exactly what we recommended." Bendetsen was a little more cautious in his appraisal saying only that "this panel was established in a somewhat modified response to the recommendation we submitted to The president for the appointment of a Systems Selection Task Force."<sup>91</sup>

Between May and October, Bendetsen queried White House staff members who had attended the 8 January meeting with the president regarding what action was being taken on the panel's recommendations to the president. During this time, there were indications that the Reagan government was working on a space policy that would include provisions for missile defense. However, these indications and what he learned from the White House staff did not reassure Bendetsen who continued to believe that the Administration had not really responded adequately to the panel's recommendations. As a result, he decided in early October to reconvene the High Frontier Panel to consider a new initiative that might "prod" the government into action.<sup>92</sup>

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<sup>91</sup>Karl R. Bendetsen to Frank Barnett, et. al., memorandum, 7 December 1982; and Jaquelin H. Hume to Karl R. Bendetsen, letter, 10 May 1982. Both documents are in Bendetsen Papers on High Frontier.

<sup>92</sup>Karl R. Bendetsen to Jaquelin H. Hume, letter, 4 October 1982, in Bendetsen's Papers on High Frontier; "Launching a Space Policy," editorial, Washington Times, 4 October 1982. George Keyworth was one White House staffer with whom Bendetsen



Other panel members were agreeable, and the meeting took place on 21 December in the board of directors room of the Northrop Corporation at 1800 Century Park East in Los Angeles. In addition to regular panel members (Bendetsen, Coors, Hume, Wilson, and Teller) two other people attended: George Keyworth and Wesley Glenn Campbell, a director of the Hoover Institution and member of the President's Foreign Intelligence Advisory Board who was invited at the suggestion of Edward Teller.<sup>93</sup>

During the meeting, the panel agreed to provide the White House with draft remarks for inclusion in the president's 1983 State of the Union address. As with the position papers provided the president a year earlier, Bendetsen took the lead in preparing these comments in which the president would announce plans for the U.S. to deploy a missile defense. Bendetsen's

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maintained contact. During the summer, both Bendetsen and Joseph Coors met with Keyworth who apparently discussed with them some of the technical developments uncovered through the work of the Frieman committee. See Joseph Coors to Karl R. Bendetsen, letter, 18 October 1982; Karl R. Bendetsen to Joseph Coors, letter, 25 October 1982; Karl R. Bendetsen to William A. Wilson, letter, 16 November 1982; and Frank R. Barnett to Karl R. Bendetsen, letter, 3 November 1982. These letters are in Bendetsen's Papers on High Frontier. In his 3 November letter which responds to a 4 October letter from Bendetsen, Barnett stated that he favored another meeting of the panel to see if it would be possible to "make another effort to 'prod' the Government into action."

<sup>93</sup>Karl R. Bendetsen to Frank Barnett, et. al., memorandum, 7 December 1982; Geraldine Pugh to Didi Berry, memorandum, 10 December 1982; and Karl R. Bendetsen to George A. Keyworth, letter, 13 December 1982. All documents found in Bendetsen's Papers on High Frontier.

State of the Union insert started with remarks about the tremendous technical advances of recent years, noting that Time magazine had just selected the home computer for its "man-of-the-year" award. It then stated that breakthroughs in classified areas of research and development would soon place at America's disposal the means to defend against nuclear attacks. The insert called for the nation to deploy first an ABM system to defend the MX missiles in whatever basing mode they were deployed. This would be the first step away from the doctrine of "Mutual Assured Deterrence" and would be followed by an expansion and improvement of the missile defense system to protect the nation's cities against nuclear warheads. This expansion of the system would complete the transition from the "anachronistic doctrine of MAD" to a doctrine of "Assured Survival."<sup>94</sup>

Bendetsen sent copies of the proposed insert to those who attended the meeting at Northrop's facilities. He received several suggested changes from Edward Teller who considered the draft too long and did not like Bendetsen's reference to classified areas of research. President Reagan, Teller wrote, "has been criticized for overemphasizing secrecy." Therefore, such a reference in a Reagan State of the Union address could be "counterproductive." Teller rewrote the first part of the

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<sup>94</sup>Karl R. Bendetsen, "Proposal for Inclusion in the President's State of the Union Address," 27 December 1982, in Bendetsen's Papers on High Frontier.

insert, eliminating its references to classified research.<sup>95</sup>

On 27 December, Bendetsen sent copies of the suggested insert to Keyworth and Anthony Dolan (President Reagan's speech writer) in hopes they would see that the panel's comments were inserted in the president's State of the Union address. However, these efforts went for naught, as other members of the White House staff would not allow the insert to be used in the State of the Union address.<sup>96</sup>

Nevertheless, by this time, the stage was set for a major new presidential initiative in the area of national strategy. The president disliked the prevailing U.S. strategic doctrine of assured destruction and had heard from several sources that advances in technology meant that defense against ballistic missiles was now practical. Furthermore, from some of his oldest and most trusted friends he had received strong recommendations for a policy initiative that would not only provide a defense against ballistic missiles, but offer the nation the prospect of shifting away from "mutual assured destruction" to "assured

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<sup>95</sup>Edward Teller to Karl R. Bendetsen, letter, 29 December 1982, in Bendetsen Papers on High Frontier.

<sup>96</sup>Gerry [Geraldine] Pugh to George A. Keyworth, memorandum, 28 December 1982; Gerry [Geraldine] Pugh to Anthony Dolan, memorandum, 28 December 1982. Both memoranda are in Bendetsen's Papers on High Frontier. The memoranda forwarded to each individual a slightly modified version of the panel's proposed insert for the State of the Union Address. Joseph Coors to Karl R. Bendetsen, letter, 24 February 1983. Mr. Coors provided a copy of this letter to the author.

survival." In early 1983, the president's professional military advisors added their voices to the chorus calling for a shift in national strategy.

## Chapter VIII

### **AN IDEA WHOSE TIME HAD COME AGAIN**

An invasion of an army can be resisted, but not an idea whose time has come.

Victor Hugo, Histoire d'un crime, 1852.

On Tuesday, I think, I called Jay Keyworth who was Science Advisor to the President whom I had not yet brought into the picture. I asked him to come over and see me. He did and was a little bowled over with the suddenness of it, but he said he agreed that it was an idea whose time had come.

Robert C. McFarlane, 15 Sept 1987.<sup>1</sup>

## **INTRODUCTION**

The focus of Bendetsen's recommended remarks for the State of the Union speech suggests a connection between the effort to find an acceptable basing mode for the MX missile and the resurgence of ballistic missile defense during the Reagan administration. This indication is strengthened by the fact that the basing mode crisis was the catalyst that induced the JCS and

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<sup>1</sup>Interview with Robert C. McFarlane, Center for Strategic & International Studies, Washington, D.C., 15 September 1987, p. 11.

other important national security advisors to support a renewed effort to develop defenses against ballistic missiles.

According to a number of conservative leaders, the failure of the SALT process to spawn adequate restrictions on Soviet offensive strategic forces had allowed the Soviets to achieve a first strike capability against America's ICBMs by the early 1980s. In spite of the most dire predictions regarding the survivability of its ICBMs, the United States had deactivated its only operational ABM facility and had failed to reach a deployment decision on the MX missile which was to have a basing mode to offset Soviet offensive power.

Indeed, the search for a safe and politically acceptable basing mode for the MX missile had stretched across three presidencies by the time it came to a head at the end of 1982. The MX crisis proved to be a wrenching experience, for it brought key officials in the Reagan administration face to face with the fact that it would be exceedingly difficult to generate the necessary political support for actions that might protect the MX missile from a Soviet first strike.

In a sense, the MX crisis represented what Thomas S. Kuhn described as a paradigm crisis in his classic work The Structure of Scientific Revolutions.<sup>2</sup> The old pattern of thinking about

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<sup>2</sup>Kuhn, The Structure of Scientific Revolutions, International Encyclopedia of Unified Science, Vol. II, Foundations of the Unity of Science, No. 2 (Chicago: University of Chicago Press, 1970), Chapters VI-XI. According to Kuhn, scientists operate within a structural paradigm which is composed of concepts that are embodied in textbooks and procedures. This paradigm governs the way the scientists view their world and

strategic nuclear systems and how to deter nuclear war seemed to be breaking down as the United States failed to reach a national consensus on a response to what some perceived to be a strategic imbalance. This experience opened a number of minds to the idea that it was time to re-examine American strategic policies and re-consider the role strategic defense might play in assuring the continued deterrence of nuclear war. One of those with a sense of this crisis and its implications for American strategic policy was President Reagan.<sup>3</sup>

#### THE MX MISSILE AND BALLISTIC MISSILE DEFENSE

The need for a missile to replace the MINUTEMAN had been recognized in the 1960s. There were three major considerations for the new missile. First, it had to provide a hard-target kill capability that would give the United States more options in case deterrence failed. The second was related to the first. Since the new missile would have a hard-target kill capability, it could threaten the large and powerful SS-17s, SS-18s, and SS-19s

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dictates the research questions they pursue. The pursuit of these research questions is "normal science." At some point an anomaly develops which cannot be explained within the confines of the paradigm, creating a paradigm crisis that leads eventually to the development of a new theory that becomes part of a new paradigm.

<sup>3</sup>Keyworth Interview, p. 3.

of the Soviet ICBM fleet and provide an incentive for the Soviets to abandon these systems which the U.S. considered the gravest threat to its own ICBMs. In theory, the Soviets would then emphasize small mobile systems without the first strike capability of the larger, more accurate, fixed ICBMs. Finally, the basing mode of the new system had to counter what many perceived as a growing vulnerability of silo-based ICBMs, for by the late 1960s it was apparent that such missiles could not survive an attack by large, accurate warheads, even if the silos were superhardened to 4,000 PSI of overpressure.<sup>4</sup>

Finding a secure basing mode for the new missile in the face of improvements in the performance of Soviet warheads proved a daunting task. Indeed, discussions of the appropriate basing mode dominated the national debate over the MX missile in the late seventies and early eighties. The framework for these discussions was established by the STRAT-X study completed by the Defense Department between 1967 and 1969. This study examined the basing modes and missile characteristics that would be required in the face of an improving Soviet strategic force structure. Virtually all the thirty-plus basing modes for the MX that were considered by the Defense Department, independent

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<sup>4</sup>Lauren H. Holland and Robert A. Hoover The MX Decision: A New Direction in U.S. Weapons Procurement Policy? (Boulder, CO: Westview Press, 1985), p. 220 (hereinafter cited as Holland and Hoover, MX Decision).



analysts, and Congressional committees were covered in STRAT-X. These basing modes fell into five categories: hardening, mobile launchers, concealment, deception, and active defense.<sup>5</sup>

The actual operational requirements for what became the MX missile were established in 1971 by the Strategic Air Command. In 1973, Headquarters USAF published the initial program plan for the new missile. So that it could support a variety of options in case deterrence failed, MX was to have the ability to attack a wide range of targets with limited collateral damage.<sup>6</sup>

In its early planning for MX, the Air Force considered several basing modes including an air mobile concept in which the missiles would be moved from location to location using wide-bodied jet aircraft such as the C-5 transport. This scheme was abandoned because mobile missiles lacked the accuracy needed for a hard-target kill capability. By early 1976, the Air Force had come to favor some form of multiple-shelter basing mode with the MX deployed in MINUTEMAN silos until a permanent basing mode could be established.<sup>7</sup>

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<sup>5</sup>Holland and Hoover, MX Decision, pp. 66-67, 81.

<sup>6</sup>U.S. Air Force Ballistic Missile Office, Official History, FY 1980-1981, pp. 25, 37 (hereinafter cited as BMO History, 80-81).

<sup>7</sup>BMO History, 80-81, pp. 25-27, 29-30, 38; Holland and Hoover, MX Decision, pp. 70-73.

With the interim deployment plans of the Air Force in mind, the Ford administration asked for \$245 million in the FY 1976 budget to begin full-scale development of the MX. In addition to the program for basing MX in MINUTEMAN silos, the Ford budget included funds to construct tunnels to test the trench version of the multiple-protective shelter basing mode concept. There was strong opposition in Congress to putting the new missiles in the old silos, and Congress approved only \$69 million for FY 1976 work on MX.<sup>8</sup> The fortunes of MX shifted with the victory of the Democratic party in the 1976 presidential election.

Early assessments of Jimmy Carter's role in strategic nuclear affairs have not been particularly kind. He came to office determined that he would dominate the American side of the continuing strategic arms limitation talks. There would be no Henry Kissinger to undermine his leadership. This would not have been a problem if Carter had come to office with a sound appreciation of past developments in arms control or even a clear idea about the direction U.S. arms control policy should take. He had neither. More than most new presidents, he was innocent where East-West relations were concerned, a shortcoming that was compounded by his disdain for the Washington establishment which was the institutional memory of these relations. These

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<sup>8</sup>BMO History, 80-81, p. 38.

difficulties were not balanced by Carter's top national security advisors, who though intellectually quick lacked "political savvy." In his inaugural address, Carter had presented his vision of the future--it was a world free of nuclear weapons. In consonance with this vision, during his first few months in office, he decided that rather than begin the SALT II negotiations with a position calling for the confirmation of the Vladivostok limits, the U.S. would start off pushing for "deep reductions and constraints on missile modernization." This decision came during a secret meeting of the NSC in March 1977 in which the proposal was presented to Carter by Secretary of Defense Brown just as a master fly fisherman places a "beautifully tied, juicy fly . . . right in front of a hungry trout's nose."<sup>9</sup>

Paul Warnke, Carter's head of ACDA and chief U.S. arms control negotiator, had earlier argued that the dynamic of the arms race was a matter of Soviets and Americans aping each other. Therefore, the U.S. should set an example of restraint and the Soviets could be expected to do the same. This may explain why the Carter administration cancelled the entire Ford proposal for MX and delayed the forecast support date for the missile until at

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<sup>9</sup>Strobe Talbott, Endgame: The Inside Story of SALT II (New York: Harper & Row, Publishers, 1979), pp. 41-43, 58-59 (hereinafter cited as Talbott, Endgame); Newhouse, War and Peace, pp. 292-93.

least FY 1979 as part of its effort to emphasize arms control. While insisting that the MX system was not a bargaining chip, the Carter administration stated that the fate of MX was tied to the progress of the SALT talks. In line with this decision, Secretary of Defense Harold Brown asked Congress to cut \$160 million from the \$295 million requested by the Air Force for work on MX.<sup>10</sup>

A few months later, however, Brown reversed his position. The Soviets were deploying their fourth generation ICBMs (SS-17, SS-18, and SS-19) and were at work on four other new missiles. Furthermore, in the fall of 1977, U.S. intelligence services detected a definite improvement in the accuracy of the SS-19. It was becoming increasingly apparent to some that the Soviet threat to American ICBMs was real; the U.S. had to have a new missile. This may explain why Brown decided the United States should accelerate the deployment of the MX and requested \$250 million to begin full-scale engineering development in FY 1978. President Carter reduced this request to \$160 million, enough money to support the continuation of MX concept studies.<sup>11</sup>

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<sup>10</sup>BMO History, 80-81, p. 38. Holland and Hoover, MX Decision, pp. 139-40, claims that Carter did not like the MX and viewed it principally as a bargaining chip.

<sup>11</sup>BMO History, 80-81, p. 39; Holland and Hoover, MX Decision, p. 142.

In August 1978, Brown convinced Carter that the deployment of MX was dictated by improvements in the accuracy of Soviet MIRVs. This occurred in a meeting of Carter's key advisors that he had convened at Camp David to consider the MX issue. During these deliberations, Brown had advocated the vertical shelter version of the multiple protective shelter system (MPS). However, his proposal was rejected because this basing mode would have made it hard for the Soviets to verify the number of missiles for arms control purposes. Furthermore, it would have been difficult to maintain location uncertainty in this mode, since the location of the missiles would be known for up to twenty-four hours after the silos had been opened to allow verification by Soviet satellites. As a result, the vertical shelter version of MPS was rejected.<sup>12</sup> While Carter decided in August of 1978 to go ahead with the deployment of MX, he did not pick a specific basing mode.

In May 1979, DOD presented the Carter administration five alternatives for dealing with the crisis of ICBM vulnerability: shift more nuclear power to the sea-based leg of the TRIAD by deploying a new, more accurate SLBM (D-5/Trident II) supplemented with a number of B-52s armed with cruise missiles; base MX in multiple horizontal protective shelters; make MX land-mobile by using trucks to move the missiles around on interstate highways;

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<sup>12</sup>Holland and Hoover, MX Decision, pp. 143-44.

deploy an air-mobile system; or do nothing and accept the condition of ICBM vulnerability. The last three were really not acceptable by this time, and a "consensus" developed among Carter's top advisors in favor of the horizontal shelter version of MPS. In June, Carter formally decided to begin deployment of the MX in a mobile deceptive basing mode beginning in 1983 with completion scheduled for 1989, but still did not select a specific basing mode. This meant that the Carter administration had slipped the missile system's IOC by three years.<sup>13</sup>

On 5 September 1979, Carter presided at a meeting of the full NSC and decided to begin full-scale engineering development of the MX in a system of multiple horizontal protective shelters. Two days later he announced this decision. Each of two hundred MX missiles would be based in a complex of twenty-three shelters, with the missile being shuttled between the shelters in such a way that the Soviets could not know in which shelter the missile was located. Each shelter complex would cover about twenty-five square miles and ideally would be placed in a valley so as to be isolated from other complexes. The entire MX force would be deployed in a remote desert area in Nevada and Utah.<sup>14</sup>

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<sup>13</sup>Holland and Hoover, MX Decision, pp. 139, 143-45.

<sup>14</sup>Desmond Ball, "The MX Basing Decision," Survival, March-April 1980, p. 58; BMO History, 80-81, pp. 39, 136, 151-55.

This basing mode sought to insure survivability by presenting the Soviets with more targets (4,600) than was practical for them to destroy. Moreover, in deference to possible arms control agreements, verifiability features were to be built into the system. These included the ability to open all the shelters so that Soviet satellites could verify the total number of missiles deployed. The verifiability feature of the MPS mode was part of President Carter's plan to establish a strong linkage between the new American ICBM system and arms control efforts and thereby set an example the Soviets would hopefully follow. In this way, Carter hoped to show that there was a viable alternative to a nuclear arms race between the superpowers.<sup>15</sup>

Carter's plan quickly generated opposition in the southwest. In February 1980, Senators Orrin Hatch and Jake Garn of Utah and Paul Laxalt and Howard Cannon of Nevada protested against the basing mode in a letter to President Carter. They noted that there was strong opposition to the proposed basing mode in Congress and in the states where the missiles would be located because of the extensive social and environmental effects that were expected to accompany the MX deployment. These Senators called for President Carter to abandon MX and develop a new missile that would be based in some mode other than the MPS.

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<sup>15</sup>BMO History, 80-81, pp. 136-37.

Nevertheless, Carter stood by his decision and stated that the MPS basing mode was was "the best solution to the ICBM vulnerability problem."<sup>16</sup>

Opposition to the MX missile basing plan continued through the summer of 1980 and was reflected in two proposals for anti-MX missile planks in the Democratic National Convention in New York. After a special appeal from President Carter to convention delegates, the two proposals were defeated.<sup>17</sup>

In spite of the opposition to MX and the MPS basing mode, Carter was able to secure passage of a bill providing \$1.5 billion in FY 1981 for the MX system in the MPS mode. This measure also included a provision for the study of a "split basing" mode where only part of the MX missiles would be deployed in the Great Basin. The bill did stipulate that the study of a split basing alternative was not to delay the operational date of the MX. Furthermore, if split basing was found by the Air Force not to be feasible, all the missiles could be placed in the Great Basin. This measure was signed into law on 8 September 1980.<sup>18</sup>

As deployment activities began, the MX missile became a major national issue. It was widely covered in national

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<sup>16</sup>BMO History, 80-81, p. 165.

<sup>17</sup>BMO History, 80-81, p. 166.

<sup>18</sup>BMO History, 80-81, p. 41; Holland and Hoover, MX Decision, pp. 165-68.



newspapers, journals, and on national TV shows such as "The MacNeil-Lehner Report," "60 Minutes," and "Bill Moyers' Journal." A number of small citizens groups opposed to deployment in the Great Basin were formed in the Southwest. These groups were supported by larger national organizations such as SANE, Friends of the Earth, and the Union of Concerned Scientists.<sup>19</sup>

In Utah, the governor and state government strongly opposed the deployment on environmental grounds and because of the effects the project might have on the state's economy. Furthermore, on 5 May 1981, the leadership of the Mormon church announced its opposition to the MX deployment. President Spencer Kimball and two other elders of the church attacked the nuclear arms race and the decision to base the MX in the Southwest. This placed a disproportionate share of the burden for nuclear war on one part of the country. From this point on, the statements of Utah's political leaders consistently indicated opposition to the MPS deployment in the Southwest.<sup>20</sup>

In Nevada, the opposition to the MX deployment was considerably less strong. While Governor Robert List was cooperative with Air Force officials working to get the MX base structure started, he expressed serious concern about the MX

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<sup>19</sup>BMO History, 80-81, pp. 166-68. For a story on the opposition effort see: Joyce Wadler, "Great Basin States Joyously Bubbling," Washington Post, 3 October 1981, pp. A1, A12.

<sup>20</sup>BMO History, 80-81, pp. 168-70.

project in a letter to President Carter. In early November 1980, List advised Secretary of Defense Brown that he and Governor Matheson of Utah were committed to supporting the MX deployment but that they intended to conduct studies to insure social, economic, and environmental damage were minimized.<sup>21</sup>

On 1 December 1980, the Air Force released its draft environmental impact statement (EIS). It was a massive document of 1,900 pages which had cost \$17 million to complete. It was thoroughly scrutinized by the Nevada government in a review program established by Governor List. This involved an examination of the EIS by 31 different state teams which involved the work of 387 people. In the end, the review teams concluded that the Air Force EIS was fundamentally flawed. Of special concern was the inability of the Air Force to specify how much land the MX system would require.<sup>22</sup>

The battle over MX and its basing mode was part of the backdrop of the 1980 election campaign, and it continued into Reagan's first term in office. During the campaign, candidate Ronald Reagan had expressed reservations about the MPS basing mode. These concerns were surely intensified by the fact that the MX issue had polarized the people of Utah and Nevada by the

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<sup>21</sup>BMO History, 80-81, pp. 171-72.

<sup>22</sup>BMO History, 80-81, pp. 172-73. Information on the size and cost of the AF EIS is from p. 173.

time he took office. Moreover, the MX had become a particularly nettlesome issue in Congress where the opposition included a number of conservative senators and representatives whose votes were needed to implement Reagan's budgetary plans. It is not surprising then that President Reagan decided to re-evaluate the issue of MX basing before committing himself to a course of action. Accordingly, in March, he appointed a panel of fifteen distinguished Americans to review the basing mode decision. The committee was chaired by Charles Townes, inventor of the laser and Professor of Physics at the University of California, Berkeley. Other members of the panel included General Bernard Schriever, who had headed America's crash program to develop the first U.S. ICBM, and Lieutenant General Brent Scowcroft, who had served as President Ford's national security advisor.<sup>23</sup>

The commission was scheduled to complete its work by 1 July 1981. However, Townes and his colleagues became divided and deadlocked over whether to recommend deep underground basing (DUB) or a continuous patrol aircraft (CPA) basing mode. As a result of the deadlock, the commission failed to reach a decision and later in the summer recommended basing one hundred of the new missiles in hardened silos until a permanent basing mode could be selected.<sup>24</sup>

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<sup>23</sup>BMO History, 80-81, pp. 174-75; U.S. Air Force Ballistic Missile Office, Official History for Fiscal Years 1982 and 1983, p. 32 (hereinafter cited as BMO History, 82-83); Holland and Hoover, MX Decision, pp. 171-73.

<sup>24</sup>BMO History, 80-81, p. 175; BMO History, 82-83, p. 32.

On 2 October 1981, President Reagan announced his plan for modernizing America's strategic forces. The plan would cost \$180 billion over a six year period and called for resurrecting the B-1 bomber which President Carter had deleted. Also, in line with the recommendations of the Townes Commission, Reagan cancelled the MPS deployment in the Southwest and directed the Defense Department to base a limited number of MX missiles in super-hardened TITAN or MINUTEMAN silos while continuing the search for an acceptable permanent basing mode. This would involve considering both the CPA and DUB modes. While this decision did not completely resolve the problem of ICBM vulnerability, President Reagan wanted to get the nation started with some deployment of the MX to end "the decade-long pattern of postponement, vacillation and delay" that had marked America's effort to modernize her strategic arsenal. Mr. Reagan promised to select a permanent basing mode by early 1984.<sup>25</sup>

At the time of Reagan's announcement, the Washington Post reported that his decision went against the recommendations of the Defense Science Board which had favored the MPS system supported by an anti-ballistic missile system.<sup>26</sup> Nevertheless,

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<sup>25</sup>BMO History, 82-83, pp. 32-33; Richard Halloran, "Reagan Drops Mobile MX Plan, Urges Basing Missiles in Silos; Proposed Building B-1 Bomber," New York Times, 3 October 1981, pp. 1, 13.

<sup>26</sup>Michael Getler, "President Exchanges Political Problems," Washington Post, 3 October 1981, p. A9.

the White House announcement which described the president's strategic program indicated that Reagan would continue to push research and development work on ballistic missile defense, including the development of a space-based defense against ICBM warheads. Missile defense was discussed in two contexts. First, as an adjunct to deploying the MX missile, an ABM system might be used to counter the growing vulnerability of American ICBMs. Second, BMD was mentioned in the context of "strategic defense" which included civil defense and air defenses against attacking air-breathing systems.<sup>27</sup> Furthermore, during the press conference at which Reagan announced the general provisions of his strategic program, Secretary Weinberger mentioned BMD as a possible long-range solution to the problem of missile vulnerability.<sup>28</sup> However, Weinberger indicated that he did not believe ABM technology was yet up to developing an adequate defense.<sup>29</sup>

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<sup>27</sup>"Background Statement from White House on MX Missile and B-1 Bomber," New York Times, 3 October 1981, p. 12.

<sup>28</sup>Lee Lescase and George C. Wilson, "Reagan Asks for 100 MXs, 100 B1 Bombers," Washington Post, 3 October 1981, p. A12; Phil Gailey, "Future Steps for Program," New York Times, 3 October 1981, p. 13. Weinberger's comment was reported by Leslie H. Gelb, "Silos and Vulnerability," New York Times, 3 October 1981, p. 13.

<sup>29</sup>Getler, "President Exchanges Political Problems," p. A9.

Nevertheless, in keeping with the president's intention to have ballistic missile defense R&D a part of his strategic modernization program, at the end of December, Weinberger ordered the Army and Air Force to work together to integrate a BMD system into the consideration being given the permanent basing mode issue, with the Army providing the expertise on BMD and the Air Force providing the knowledge of ICBM basing concepts. With regard to the interim basing mode, the Air Force chose to place the MXs in MINUTEMAN silos because the layout of MINUTEMAN fields was more compatible with the possible deployment of a missile defense system to protect the new missiles.<sup>30</sup>

About this same time, Congress responded to the president's new basing mode policy with an appropriations bill that was essentially a vote of no confidence. It would allow no more than 5% of the MX R&D funds to be spent on super-hardened silo development and required the Reagan administration to make its decision on the permanent basing mode by 1 July 1983, six months earlier than he had proposed for this decision.<sup>31</sup>

As 1981 came to a close, the Reagan administration faced a situation in Congress best described as Byzantine. Liberals could be expected to support various positions on the MX project in hopes that these might delay the program and help them kill it

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<sup>30</sup>BMO History, 82-83, pp. 34, 102.

<sup>31</sup>Hoover and Holland, MX Decision, p. 182.

later. Conservatives would oppose various positions on the MX basing mode because they did not believe it solved the vulnerability problem or because it was what their constituencies demanded. This situation had been further aggravated earlier by disagreement between members of the Defense Department and elements in ACDA and the State Department.<sup>32</sup>

Nor was this all. In fact, the consensus for a defense buildup in the nation at large was imperilled. The MPS proposal had produced strong opposition to a major weapon system in a part of the country that usually supported a strong defense program. Additionally, it was in conjunction with the MX basing decision that the Reagan administration began to run into the opposition of the freeze movement, as many of the supporting elements of this movement such as SANE and Physicians for Social Responsibility actively opposed the MX deployment in the MPS mode. The "broad objectives" of this movement compelled "it to oppose any new weapon in the nuclear arsenal."<sup>33</sup>

Further dissatisfaction with Reagan's decision on MX manifested itself at the end of March 1982 when the Senate Armed Services Committee voted to withhold all funding for MX deployment until the Reagan administration decided on a permanent basing mode, and it encouraged Defense Secretary Weinberger to insure

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<sup>32</sup>Hoover and Holland, MX Decision, pp. 180-184.

<sup>33</sup>Hoover and Holland, MX Decision, p. 188.

the decision was made by 1 December 1982, a date that would reduce by another seven months the decision time already set by Congress. Two months later, a new basing concept surfaced. This was the defensible modular array basing system (dense pack) which was under study in the Office of the Secretary of Defense.<sup>34</sup>

Soon after the new basing mode surfaced, Weinberger directed the Army to develop an ABM design that would contribute to the survivability of MX. The Army's candidate for this mission was LoADS with which the Army had planned to defend the MX since 1979. In 1982, the name of LoADS was changed to SENTRY.<sup>35</sup>

In the meantime, Reagan's interim basing mode proposal was not being well received in Congress. To begin with, the decision had been taken with such speed that Reagan's aides did not have time to win support of key elements within DOD. Furthermore, the Air Force did not have sufficient time to prepare a defense of the Reagan decision before being required to appear before Congress. As a result, DOD testimony in support of the president's position was unconvincing. Things became worse as it was understood that the interim basing mode would not solve the problem of ICBM vulnerability in spite of its considerable

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<sup>34</sup>BMO History, 82-83, p. 103; Currie-McDaniel, Army Strategic Defense Command, p. 21.

<sup>35</sup>Currie-McDaniel, Army Strategic Defense Command, p. 20.



expense. On 19 July 1982, faced with the likelihood of a defeat of his interim silo basing concept in Congress, Reagan abandoned this plan and announced he would make the decision on a permanent basing mode by 1 December 1982 as requested by the Senate Armed Services Committee. By this time, "it was beginning to appear as if no basing mode could ever appeal to the disparate factions in Congress, and that the new weapon project was doomed."<sup>36</sup>

On 22 November, Reagan recommended to Congress that the MX missile, now designated PEACEKEEPER, be based in the dense pack configuration at Francis E. Warren Air Force Base in southeastern Wyoming. Reagan couched the announcement of his decision in broader strategic terms, justifying MX in terms of his peace through strength doctrine. The Soviets were ahead of the U.S.; and it was important for the U.S. to restore balance, for balance was the key to stability which was the key to peace. Furthermore, Reagan wanted deep cuts in nuclear arsenals and believed these cuts could not be achieved unless the United States showed its determination to "rebuild our strength and restore the military balance."<sup>37</sup>

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<sup>36</sup>Holland and Hoover, MX Decision, pp. 216-21.

<sup>37</sup>"Text of Reagan Statement on MX Missile Basing Proposal," New York Times, 23 November 1982, p. A14; "'Peacemaker' Loses Missile Name Game," New York Times, 23 November 1982, p. A14; Holland and Hoover, MX Decision, p. 224.

The new basing mode had two things to recommend it. First, it was much more acceptable from the political standpoint, in that it would affect only ten to fifteen square miles of territory already controlled by the Defense Department. This meant that it would have minimal impact on the local environment. As a result, it was quickly endorsed by Edward Herschler, governor of Wyoming, and other local officials.<sup>38</sup>

Second, it seemed to offer a solution to the problem of ICBM vulnerability. The idea behind the dense pack system was that the missiles would be based in a long, narrow rectangular space so small that the Soviets could not place enough warheads in the area to destroy the missiles before most of the missiles could be fired. The factor limiting the rate at which Soviet warheads could strike the dense pack complex was the phenomenon of fratricide, the fact that a nuclear warhead going off near another warhead may destroy the second warhead. Thus, if the Soviets tried to saturate the area where the MX would be based, the detonations of the early warheads would form a protective barrier for the missile field. Furthermore, any attempt to pin-down the American missiles in their field with a systematic barrage of warheads would deplete the Soviet nuclear missile force.<sup>39</sup>

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<sup>38</sup>Holland and Hoover, Mx Crisis, p. 225.

<sup>39</sup>"Texts of Reagan and Pentagon Statements on MX Missile Basing Proposal," New York Times, 23 November 1982, p. A14.

In spite of its apparent theoretical soundness, the new concept was savaged. Opponents of MX argued that the second strike capability of the U.S. was still sufficient to deter a Soviet attack. Therefore, fielding MX with its hard-target kill capability would be destabilizing since it would give the U.S. a first strike capability. It was also pointed out that the dense pack mode would involve the construction of new silos which was a violation of SALT I and II agreements.<sup>40</sup>

Perhaps the greatest damage to dense pack was done within the government itself. First, Reagan had again suddenly announced a strategic decision. Theoretically, making the announcement just after a congressional election would have precluded hearings on the issue until the new Congress convened, giving the Defense Department time to prepare its defense of the system. However, Congress moved swiftly to conduct hearings on the dense pack decision. As a result "the Pentagon was confronted with the problem of selling an extremely complex and bizarre theoretical concept to an already highly suspicious group of legislators without a reliable data base, and with only a week to do so."<sup>41</sup>

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<sup>40</sup>Holland and Hoover, MX Crisis, p. 225.

<sup>41</sup>Holland and Hoover, MX Crisis, pp. 225-26.

Even more damning was the opposition to the concept that surfaced in the JCS. The Army doubted the fratricide phenomenon could be used to protect the closely spaced missiles. These doubts could not be dispelled without supporting test evidence, and the type of testing required was prohibited by the 1963 Nuclear Test Ban Treaty. The Navy was skeptical of the ability to construct silos that would be sufficiently hardened. When Vessey announced the JCS split on 8 December 1982, support for the new basing mode plummeted; and the House voted to "fence" the funds for MX until April 1983.<sup>42</sup>

As a result of Congressional opposition to dense pack, the Reagan administration appointed another blue ribbon commission to examine the basing mode problem. This was the president's Commission on Strategic Forces, chaired by Lieutenant General Brent Scowcroft. The Commission did not deliver its report until April.<sup>43</sup> By that time, President Reagan would have

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<sup>42</sup>Holland and Hoover, *MX Crisis*, pp. 222, 227. According to Linton Brooks, Admiral James Watkins was one principally responsible for having the chiefs consider the matter of the dense pack basing mode. The Air Force initially held that the details of this basing mode were technical matters with which the JCS need not be concerned. Brooks and others advised Watkins that the JCS had to consider the issues surrounding dense pack, for Congress was sure to ask the chiefs for their opinions. (Brooks to Donald R. Baucom, letter, 24 July 1989.)

<sup>43</sup>BMO History, 82-83, p. 35. The Commission stated that strategic force modernization and arms control negotiations were the cornerstones of strategic stability. According to the recommendations of the Commission, the U.S. should deploy MX in existing MINUTEMAN silos while deploying a small, single-warhead missile that would have greater flexibility in its basing mode. Furthermore, the U.S. should continue arms negotiations with the Soviet Union. (pp. 35, 37)

announced plans to put American deterrence strategy on a fundamentally different footing.

Thus, as 1982 ended, U.S. strategic policy was in disarray. SALT I had "essentially banned the defense of missile silos, while permitting the unlimited qualitative improvement in the counterforce capabilities of the offensive missile forces of both sides." This had effectively ended the "offense-defense competitive cycle" and left the United States in "an offense-offense competition" with the Soviets.<sup>44</sup> Furthermore, the restrictions of the unratified SALT II Treaty, even if adhered to by the superpowers, would scarcely tame this offensive competition.

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<sup>44</sup>Stephen P. Rosen, "Safeguarding Deterrence," Foreign Policy, Summer 1979, pp. 110-11. As of this writing, George Bush's first year as president is drawing to an end, yet the U.S. has still not deployed the MX missile in a secure basing mode. The issue of a follow-on system to the MINUTEMAN surfaced in the 1988 campaign for the Presidency with MIDGETMAN being discussed as an alternative to MX. Furthermore, the 29 January 1989 Dallas Morning News carried an article ("Debate heats up Again over MX Basing Plans") in which eight basing modes were discussed as possible options. This article was reprinted on pp. 12-13 of the 31 January 1989 Current News which is prepared by the American Forces Information Service (AFIS/OASD-PA). During the summer and fall of 1989, the rail-garrison MX and MIDGETMAN missiles became the focus of a chaotic Congressional debate. As of this writing, the Bush administration and the Air Force have announced the selection of seven air force bases, one each in Arkansas, Louisiana, Michigan, North Dakota, Texas, Washington, and Wyoming, to host the twenty-five trains, each of which is to carry two MX missiles. From the seven bases, the trains will have access to 120,000 miles of U.S. rail lines. For details on the railroad basing, see Bernard E. Trainor, "50 MX Missiles to Be Shifted to Trains in 7 States," New York Times, 30 November 1989, pp. A1, B20.

While the MIRVing of SS-18s and improvements in the accuracy of Soviet warheads fed growing concern about the vulnerability of U.S. MINUTEMAN missiles, the executive and legislative branches of the government were finding it impossible to agree on a deployment mode for the MX that might resolve the vulnerability problem. Three previous administrations and now Reagan's had considered over thirty different basing modes for the MX, and still there was no consensus; and, as the U.S. continued to grope for a solution to its ICBM conundrum, frustration welled to the surface in statements of conservatives like Alabama's Republican legislator Jack Edwards who said: "'I am supposed to be one of the hawks on the [House Appropriations C]ommittee, I guess, but I swear the more I sit here and listen to this, the more I wonder what in the world we are up to.'" Even Senator Barry Goldwater was fed up with the MX issue and indicated that he would try to kill the program. "'I'm not one of those freeze-the-nuke nuts,'" Goldwater declared, "'but I think we have enough.'"45

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<sup>45</sup>For an excellent summary of where things stood in mid-December 1982, see: Hedrick Smith, "Defeat on MX Puts Reagan in a Defense Mode: Politically Unprepared, the Administration Now Seeks to Buy More Time," and Leslie Gelb, "Defeat on MX Puts Reagan in a Defense Mode: New Deployment Needed, Maybe New Strategy Too," both articles on p. 1, Section IV, New York Times, 12 December 1982; George C. Wilson, "MX: How a Missile Got a Life of Its Own," Washington Post, 12 December 1982, pp. A1, A9. The Goldwater quotation is from John Newhouse, "Annals of Diplomacy: The Abolitionist--I," The New Yorker, 2 January 1983, p. 52 (hereinafter cited as Newhouse, "Abolitionist--I"). Newhouse's article is the first of a series of two articles. It contains a superb discussion of the chaotic situation that prevailed in the area of nuclear strategy on the eve of President Reagan's March 1983 speech on strategic defense. See especially

## THE NATIONAL SECURITY COUNCIL AND STRATEGIC DEFENSE

The plight of the MX was particularly worrisome for Robert C. McFarlane. When he had served Gerald R. Ford as Special Assistant for National Security Affairs, the U.S. was already developing the MX missile which was to have an initial operational capability (IOC) in 1983. Over five years later in 1982, McFarlane was Ronald Reagan's Deputy Assistant for National Security Affairs and still the United States had not taken decisive action on the MX. The IOC for the MX missile was now projected to be 1986. This situation and the seeming inability of the United States to respond meant to McFarlane that "the United States faced a military crisis; our deterrent force was badly out of balance with the Soviet force, and we needed to compensate for that militarily."<sup>46</sup>

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pp. 47-50. For a comment on the deadlock that seemed to grip the government at the end of 1982, see William S. Cohen, "Presidential Paradoxes," New York Times, 19 December 1982, p. E17. Cohen commented on events of this time which indicated that "conservative Republican Presidents (moderate or liberals need not apply) may be able to open doors to China and secure support for arms control treaties yet be unable to sustain a significant or even stable growth in military spending.

By contrast, liberal or moderate Democratic Presidents may be able to secure support for strategic and conventional modernization (few questioned the need for the MX, Stealth aircraft, Trident submarine, or a Rapid Deployment Force under Jimmy Carter) but will be less able to obtain ratification of arms control treaties."

<sup>46</sup>McFarlane, Interview, pp. 2-3.

The problem here was not one of technology, but rather of political will. In McFarlane's view, "the politics of deploying ICBMs in the United States was becoming too difficult."<sup>47</sup> of particular concern to McFarlane was the nuclear freeze movement which seemed to be gaining strength in the summer and fall of 1982. In the November 1982 election, freeze propositions passed in eight of the nine states voting on this issue and in several cities and counties.<sup>48</sup> McFarlane believed that there were sound arguments against the goals of this movement, but there were just too few people willing and able to present these arguments in the face of the widespread freeze movement. Therefore, McFarlane believed it was important for the Reagan government to "find a way to outflank the freeze movement." Such a move could redound to the advantage of the Reagan administration by offering a means of gaining congressional support for Reagan's defense program.<sup>49</sup>

In addition to these reasons for seeking a new initiative in the strategic realm, McFarlane knew that Reagan wanted to reduce strategic weapons and believed that the United States had to develop something in the strategic realm that the Soviets

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<sup>47</sup>McFarlane, Interview, p. 2.

<sup>48</sup>John Herbers, "Widespread Vote Urges Nuclear Freeze," New York Times, 4 November 1982, p. A22.

<sup>49</sup>McFarlane, Interview, p. 5. For a comment on the impact of the freeze movement and the Bishops letter, see Herken, Counsels of War, p. 340.



would consider valuable enough to bargain for in arms control negotiations. Since the U.S. would not develop the offensive forces to maintain the strategic balance, other options such as strategic defense had to be explored. McFarlane recognized that the SAFEGUARD system had faced technical limitations that made it largely ineffective. However, "by 1982 people who were good scientists and engineers began to say that technology had advanced to where it was time to reconsider missile defense."<sup>50</sup>

The fact that the United States enjoyed an advantage over the Soviet Union in the area of high technology was still another reason for pursuing ballistic missile defense, which is highly dependent on sophisticated equipment, concepts, and software. In opening a competition with the Soviets in the area of ballistic missile defense, the United States would shift the strategic competition into the arena of high technology where the United States might be expected to outstrip the Soviets.<sup>51</sup>

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<sup>50</sup>McFarlane, Interview, pp. 1-4. With regard to Reagan's attitude toward nuclear weapons, John Newhouse refers to Reagan as an abolitionist who "wanted to have the advantage in nuclear weapons or else to rid the world of them." (Newhouse, "Abolitionist--I," p. 39.)

<sup>51</sup>McFarlane, Interview, p. 4. Once again, this is a common thread among those who favored a new BMD program for the United States. High technology was America's forte. It would be sound strategy for the U.S. to push the strategic competition into a realm where the United States has the advantage. This line of thinking is to be found in the writings of Graham especially. It is in consonance with the idea of competitive strategy that became important in the Pentagon under Caspar Weinberger.

For these reasons, McFarlane had concluded by the fall of 1982 that ballistic missile defense might offer the U.S. a way out of its strategic conundrum. While Reagan was on a campaign visit to New York, the issue of the nuclear freeze movement surfaced during a discussion with a local official and concern was expressed that the freeze movement might undermine President Reagan's defense buildup. After this discussion, McFarlane informed Reagan that he was working on a concept that might outflank the freeze movement while also solving the problem of the nuclear imbalance and improving the negotiating position of the United States in strategic arms talks. Furthermore, McFarlane expected to have the concept fully developed by the beginning of 1983. The president encouraged McFarlane to pursue his solution and report on his work in January.<sup>52</sup>

About the time McFarlane informed Reagan of his new concept, he discovered that Admiral John M. Poindexter, military assistant to NSC advisor William Clark, was having similar thoughts regarding the strategic situation of the United States. In the fall of 1982, Poindexter had come "to see the handwriting on the wall in terms of a general feeling in the population of the United States that there wasn't any way that we could compete with the Soviets in building strategic offensive systems." Poindexter concluded that a strategic defense system would be

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<sup>52</sup>McFarlane, Interview, p. 6.

popular with the American people while at the same time providing "a disincentive to the Soviets to produce offensive systems and an incentive for them to initiate a nuclear pact." Based upon his knowledge of the technology involved, Poindexter had doubts about the technical feasibility of a new missile defense system. Nevertheless, given the strategic crisis the U.S. faced, he believed it "completely reasonable" to investigate the possibility of developing an effective system.<sup>53</sup>

Apparently, Poindexter happened to mention his ideas to McFarlane. The two then agreed that the NSC staff should begin studying this matter. As a result, Poindexter tasked Richard Boverie, an Air Force general who headed the defense portion of the NSC staff, to put his staff to work on the concept of missile defense with the idea of later having "a brainstorming session about what the possibilities might be." This session was held in the NSC situation room and was attended by Poindexter, Boverie, Air Force Colonel Robert Linhard, and Al Keel who had been assistant secretary of the air force for research and development. From this meeting, there emerged a consensus that it was time to place more emphasis on strategic defense and that the technology had progressed to the point where it was worth "a concerted effort" to develop missile defenses. Nevertheless,

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<sup>53</sup>Interview with John M. Poindexter, Rockville, Maryland, 28 January 1988, pp. 1-2 (hereinafter referred to as Poindexter, Interview).

Keel was not optimistic about the technology involved and believed that even if feasible an effective missile defense was still far in the future.<sup>54</sup>

While McFarlane and the NSC staff were developing their position on strategic defense, the joint chiefs of staff were involved in their own review of the strategic problems confronting the United States. The leading figure in the JCS effort was the chief of naval operations (CNO), Admiral James D. Watkins. The story of Watkins' role in the JCS review begins in mid-1982.

#### INTO THE "STRATEGIC VALLEY OF DEATH"

When Watkins assumed his duties as CNO on 30 June 1982, DOD and the Reagan administration were in the midst of the MX missile crisis. On 19 July 1982, President Reagan cancelled his decision on the interim basing mode (MX in MINUTEMAN silos) and announced that his administration would have a permanent basing mode selected by 1 December 1982.<sup>55</sup> This crisis signalled Admiral Watkins that the United States was in trouble strategically. In his words:

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<sup>54</sup>Poindexter, Interview, pp. 2-4.

<sup>55</sup>Holland and Hoover, MX Decision, p. 220.

We were reaching a point where we were losing our hat, ass, and overcoat at Geneva. We had no bargaining chip, no strength, with which to negotiate. The Soviets could just sit at Geneva and watch us throw away all of our chips right here in Washington. That's one reason I wanted to influence the joint chiefs of staff, so I worked hard, . . . I felt so strongly that we were heading into a strategic valley of death.<sup>56</sup>

What Admiral Watkins meant by working hard was essentially to take the lead in a JCS review of the strategic issues revolving around the MX missile. This review consisted of over forty executive meetings of the chiefs during which the strategic situation of the United States and the long range prospects for technical developments were thoroughly examined. This effort involved briefings on a number of key issues such as the activities of the Soviet Union, U.S. efforts to develop an anti-satellite capability, the Army's ABM program which included schemes for protecting ICBM silos, and other advanced technology programs. To support him in this undertaking, Watkins called upon the Theater and Strategic Nuclear Warfare Division (OP-65) of the CNO's staff, using members of this agency (especially Captain Linton Brooks) as something of a special staff to prepare briefings and position papers designed to help him think through the problems associated with the quest for a secure basing mode for the MX missile.<sup>57</sup>

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<sup>56</sup>Interview with Admiral James D. Watkins, USN (Ret.), Naval History Office, Washington Naval Yard, 29 September 1987, pp. 1-2, 5 (hereinafter cited as Watkins, Interview).

<sup>57</sup>Discussion with Admiral James D. Watkins, USN (Ret.), Department of Energy, 25 October 1989 (hereinafter cited as Watkins, Discussion, 25 Oct 1989); Watkins, Interview, pp. 1-3; Interview with Captain Linton Brooks, USN, National Security

After several months of working with his staff, Admiral Watkins decided that there was no variation of the MX basing mode which offered the U.S. a way out of the "strategic valley of death." Continuing the quest for a safe basing mode was like flying into a blind canyon. With their superiority in heavy ICBMs, the Soviets could easily defeat any basing mode the U.S. might select. At the same time, each new basing mode would be taking the U.S. deeper and deeper into the gorge. At last, Americans would encounter the end of the canyon when it was too late to select another strategic option. In Watkins's mind, the basing mode exercise was tantamount to competing with the Soviet Union where it was strongest (land-based ICBMs) and the United States weakest. America's forte, Watkins believed, was high technology--an ability to turn concepts into new hardware. Instead of pursuing the same old solutions to the vulnerability crisis, America should turn to her superior technological for a new answer.<sup>58</sup>

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Council Staff, in Room 386, Old Executive Office Building, 21 December 1987, pp. 1-3 (hereinafter cited as Brooks, Interview). Brooks was known as "the smartest man in the Navy" (conversation with Captain John Byron, USN, at the National Defense University on 26 January 1989). I refer to the meeting with Admiral Watkins on 25 October 1989 as a "discussion" because no transcript was made of this meeting; I worked from notes I made as the Admiral spoke.

<sup>58</sup>Watkins, Interview, pp. 1-5; Brooks, Interview, p. 6. Brooks said of Watkins: "he's got tremendous faith in technology--future technology. He's been to sea enough to understand present technology is flawed. But he's got this tremendous faith in future technology." Admiral Watkins elaborated on the meaning of his "strategic valley of death" analogy/metaphor in his discussion with the author on 25 October 1989. He actually visualized the basing mode effort in two ways.

While Watkins was grappling with the technical problems of maintaining America's ability to deter nuclear war, his thinking was also affected by the efforts of America's Catholic bishops to develop a pastoral letter on war and peace. In addition to being the Navy's top professional officer, Watkins was a devout Catholic. As a result, he was acutely aware that any pronouncement by the bishops on the moral issues of war and peace would have profound implications for nation security in a country where over fifty million people profess Roman Catholicism. Depending on its final form, the pastoral letter could pose a serious challenge to the nation's ability to deter nuclear war.<sup>59</sup>

The Challenge of Peace: God's Promise and Our Response, the formal title of the pastoral letter, grew out of a general re-evaluation of American values that started in the 1960s. The

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In addition to the "valley of death" metaphor/analogy described above, he conceptualized the situation posed by the basing mode effort in terms of a grand strategic chess game in which the U.S. would spend billions on each basing mode program only to have each of these "moves" easily checked by Soviet countermoves made possible by their superiority in heavy ICBMs. The outcome of this strategic chess game would be disastrous for the United States. After spending exorbitant sums on a series of ineffective basing modes, America would inevitably face a Soviet checkmate. The U.S. had to break out of the basing mode paradigm and look for effective alternatives such as hardening command and control facilities, developing and deploying the D-5 missile, etc.

<sup>59</sup>Watkins, Discussion, 25 Oct 1989; Brooks, Interview, pp. 6-7; Poindexter Interview, pp. 18-19.

increase in the size of nuclear arsenals, combined with the Vietnam War, assured that issues of war and peace would be central to this re-examination. With the end of the Vietnam War, the focus of Catholic concern came increasingly to fall on issues of nuclear arms and strategic deterrence.<sup>60</sup>

The election of President Reagan who had promised to strengthen U.S. military forces stimulated further interest among Catholics in a review of American policies regarding nuclear weapons. Moreover, by 1981 there had emerged within the hierarchy of the Catholic Church "a very visible and vocal segment" that opposed "the arms race and American nuclear policy." In October of 1981, twenty-nine bishops publicly stated that it was immoral to possess nuclear weapons.<sup>61</sup>

During the November 1980 National Conference of Catholic Bishops (NCCB), the growing concern of some Catholics with war and peace issues resulted in a motion for the Conference to address these issues in a pastoral letter. In response to these sentiments, Archbishop John Roach, president of the NCCB,

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<sup>60</sup>William A. Au, The Cross, the Flag, and the Bomb: American Catholics Debate War and Peace, 1960-1983, Contributions to the Study of Religion, No. 12, ed. by Henry W. Bowden (Westport, Conn.: Greenwood Press, 1985), pp. xiv-xv, 201-02 (hereinafter cited as Au, Catholics Debate War and Peace). A copy of the complete pastoral letter was printed in the 19 May 1983 edition of Origins. The pastoral letter was also printed in book form by the National Conference of Catholic Bishops.

<sup>61</sup>Au, Catholics Debate War and Peace, pp. 202-03.



appointed a committee under Archbishop Joseph Bernardin of Chicago to prepare a draft pastoral letter for consideration by the Conference.<sup>62</sup>

Bernardin's committee began to conduct hearings in July 1981, and presented a draft to the bishops about the time Admiral Watkins assumed his duties as CNO. A second draft was ready in time for consideration by the NCCB at its meeting in November 1982. Amendments were offered and plans made to bring the revised document before a special session of the Conference in May 1983 for final review and approval. The impact of the bishops' deliberations was already being felt, for these proceedings were widely reported in the news media just as the power of the freeze movement was cresting. The bishops' questioning of U.S. defense policy was re-enforcing the freeze movement which itself lent credence to any stand taken by the bishops.<sup>63</sup>

In the late summer of 1982, Admiral Watkins was disturbed to hear from the Navy's chief of chaplains that news of the bishops' work was causing sailors and officers to leave the Navy because they believed that service in the Navy was no longer compatible with a moral life. This situation prompted Watkins to speak out strongly on the morality of nuclear deterrence and

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<sup>62</sup>Au, Catholics Debate War and Peace, pp. 203-04.

<sup>63</sup>Au, Catholics Debate War and Peace, pp. 203-04.

service in the Navy. The commencement ceremony at Marymount University in Arlington, Virginia, provided a public platform for his views.<sup>64</sup>

Watkins' commencement address was intended as much for those serving in the Navy as for the graduates of Marymount. The Admiral made it clear that nuclear weapons and deterrence were both moral from his perspective. Placing the national policy of deterrence squarely in the centuries old Catholic tradition of just war, he told his audience on 22 August that

faced with an obvious and overt threat of military aggression, a nation has the right--and its leaders have the concomitant moral obligation--to maintain its own military strength at the level necessary to deter war. In such circumstances, the possession of military strength per se, provided always that that strength is not itself used for aggressive purposes, is not inherently evil but is, rather, a positive good.<sup>65</sup>

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<sup>64</sup>Watkins, Discussion, 25 October 1989. The importance Watkins attached to the activities of the bishops was apparent during this discussion. Although it had been over five years since he was involved with this issue, he still had an extensive grasp of the contents of the pastoral on war and peace. He ticked down through the different versions of the letter, stating how each version had been changed until the final edition appeared, an edition the Admiral considered a considerable improvement over the first version.

<sup>65</sup>The Admiral's address was reprinted in James D. Watkins, "The Moral Man in the Modern Military," Sea Power, December 1982, pp. 17-18, 20 (hereinafter cited as Watkins, "Moral Man"). This quotation is on p. 17. The date of the Admiral's address is not given in this reprint. However, the Public Affairs Office of Marymount University provided the date of 22 August 1982 for the speech.

Later in the address, Watkins quoted words of the Vatican II Council that obviously were intended to reassure officers and sailors that their service in the U.S. Navy was morally acceptable.

"All those who enter military service in loyalty to their country should look upon themselves as custodians of the security and freedom of their fellow countrymen . . . When they carry out their duty properly, they are contributing to the maintenance of peace."<sup>66</sup>

Toward the end of his remarks, he specifically addressed the issue of nuclear weapons:

[Nuclear] weapons, terrible and terrifying as they might be if used for the wrong purposes, do exist--just as, and because, the threat exists. That is the reality with which I must deal. It is my responsibility to deal with it, in a world in which good and evil also both exist--a world where my options are anything but clear. I may not always be happy about or comfortable with the usually limited options available to me. But I do have the responsibility for choosing between those options, and I must make those choices as a moral man.<sup>67</sup>

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<sup>66</sup>Watkins, "Moral Man," p.20.

<sup>67</sup>Watkins, "Moral Man," p. 20. Two years after this speech, Robert C. Toth of the Los Angeles Times would report on the religious views and activities of U.S. military leaders. His article is antagonistic and contentious in tone. While he quotes Watkins as saying in "speeches" that he "is a moral man," Toth does not specify the speeches nor does he say anything about their context which included the proceedings of the Catholic bishops that raised questions about the morality of military service and caused some to leave the Navy. See Robert C. Toth, "Role of Religious Faith at Pentagon Raises Questions, Doubts," Los Angeles Times, 30 December 1984, p. 4. Admiral Watkins answered Toth's article (Watkins, "Role of Religious Faith at Pentagon," Los Angeles Times, 18 May 1985, Section II, p. 2). Because the Times delayed publication of Watkins' answer for over four months, his letter was seen by Times readers as outside the context established by the contentious tone of the Toth article. On 2 June, the Times printed six responses to the Admiral's letter. Aside from the mere mention of Toth's article in two of these letters, the focus of comment was on the content of the Watkins letter.

While Watkins had no personal qualms about the morality of nuclear deterrence, he was concerned about the effects of the bishops' activities on Navy personnel. Moreover, these events signalled Watkins that national support for offensive strategic deterrence was declining. This situation was being exacerbated by the effort to find a safe basing mode for the MX, an exercise which Watkins had concluded was doomed to failure. Clearly, it was time to consider a new departure. But what should it be?<sup>68</sup>

Soon after the bishops ended their November deliberations, the joint chiefs of staff began preparations for their next quarterly meeting with the president. On 10 January 1983, William Clark, Reagan's national security advisor, notified the chiefs that this meeting would take place on 11 February. At that time, each chief would be expected to present his position on three issues: the TRIAD, the MX, and associated basing modes.<sup>69</sup> The chiefs were now under pressure to draw some conclusions from their six-month long review of strategic issues.

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<sup>68</sup>Watkins, Discussion, 25 October 1989; Watkins, Interview, pp. 3, 5.

<sup>69</sup>[Linton Brooks], "CNO and the Strategic Defense Initiative," n.d., copy supplied by Admiral Watkins, p. 4 (hereinafter cited as Brooks, "CNO and SDI"). Admiral Watkins advised me that Captain Brooks was the author of this summary of the Admiral's activities relating to strategic defense, and Brooks confirmed this point.

The stage was now set in Watkins' mind for some revolutionary thinking. In a few weeks he would have to present his recommendations on the U.S. strategic force structure to the president. His participation in the thorough JCS review of strategic issues had convinced him of the bankruptcy of the search for a secure basing mode for the MX and exposed him to information on DOD's ABM and ASAT programs. Furthermore, he suspected that the American commitment to offensive nuclear deterrence was on the wane. Yet he had no concrete suggestions for revising the force structure nor could he suggest a replacement for the prevailing concept of nuclear deterrence. Then, on 20 January, Watkins had lunch with a group of high level advisers that included Dr. Edward Teller. During the luncheon, Teller talked about the possibilities for missile defense that were offered by new developments in technology. Specifically, he discussed EXCALIBUR and its use in a "pop-up" mode wherein it would be launched into space from a submarine to defend against a Soviet ICBM attack.<sup>70</sup>

Teller's remarks made a deep impression on the Admiral because of Teller's reputation and because of Watkins' faith in

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<sup>70</sup>Watkins, Discussion, 25 October 1989; Brooks, Interview, pp. 4-6; Brooks, "CNO and SDI," p. 4. According to Brooks, for about fifteen years, Teller had been making occasional calls on the CNOs. Brooks stated that in addition to visiting Watkins, Teller had called on Admirals Elmo Zumwalt and Thomas B. Hayward.

the possibilities of future technology. Moreover, what Teller said more or less confirmed what Watkins had been hearing in JCS briefings on strategic technologies and in discussions with his own R&D advisors.<sup>71</sup> During the luncheon, Teller had told Watkins that he was in the same state of frustration he had earlier experienced when trying to convince U.S. leaders that it was necessary to develop the hydrogen bomb. Teller was aware of what the Soviets were doing in their ABM program and was convinced that the United States should be pushing ballistic missile defense aggressively. As Teller spoke, he seemed to shake with excitement, and his vibrations reminded Watkins of an engineering problem he had been required to solve at the Naval Postgraduate School. This problem required students to find the resonant frequency of a reed, knowing that the vibration of the reed is greatest at its resonant frequency. When Teller talked of the possibilities of strategic defense, he seemed to vibrate like a reed responding to its resonant frequency. Watkins realized that placing nuclear weapons in space was politically impossible, but his discussion with Teller "convinced him that strategic defenses offered a way to use the resources of American technology to move

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<sup>71</sup>In a note he penned on a draft of this chapter, Admiral Watkins wrote that he "found his [Teller's] responses to be in reasonable consonance with a number of highly classified briefings on a variety of sensors and other programs being investigated at the leading edge of future technological possibilities."

beyond the sterile debate over MX basing modes in the short term" and, in the long term, to shift toward a form of deterrence that might be more palatable to the American people.<sup>72</sup>

Watkins pressed Teller for more information on ABM technology. Could a power source for a terrestrial laser be made small enough to fit in this room, Watkins asked? Yes, responded Teller; it would perhaps be a bit longer. Then lasers could be installed aboard ballistic missile submarines, Watkins noted, and stationed under the Arctic ice off the coast of the Eurasian landmass. In case of an attack, the submarines could "pop-up" and attack Soviet ICBMs using space-based mirrors to direct the laser beams onto the missiles. Could the national laboratories produce the technologies that would make ballistic missile defense feasible within twenty years, Watkins inquired? Unquestionably, responded Teller. Watkins then asked specifically if the U.S. could accomplish detection, boost-phase intercept, and battle management within that twenty-year period? Yes, Teller replied.<sup>73</sup>

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<sup>72</sup>Watkins, Interview, pp. 13-14, 17; Watkins, Discussion, 25 October 1989; Brooks, "CNO and SDI," p. 4; Brooks, Interview, p. 6. The story of the reed was first told to the author during his interview with Admiral Watkins on 29 September 1987. Unfortunately, this story was part of a chat that preceded the formal interview and was not a part of the tape recording of the interview. As a result, this story is not in the formal interview transcript. However, in his 25 October 1989 discussion with the author, Admiral Watkins confirmed the story and elaborated on this episode.

<sup>73</sup>Watkins, Discussion, 25 October 1989.

Now Watkins knew what he would recommend to the president in February. He directed his staff "to develop, on a close hold basis, a very brief [five minute] presentation which would offer a vision of strategic defense as a way out of the MX debate." There followed a series of meetings in the "sea cabin" (the CNO's Pentagon office) in which Captain Brooks and Admiral W. J. Holland (head of OP-65) presented various "drafts" of the five-minute briefing for Watkins' approval. He repeatedly rejected their proposals without being able to give specific reasons for doing so. When his staff officers sought hints from him as to what he wanted from them in the next draft, he would reply: I'm not quite sure, but I'll know it when I see it. During the week of 24 January, Brooks and Holland finally found the proper balance and wording. Its main points were that the U.S. should quit looking for a complex basing mode for the MX missile, deploy a small number of MXs in MINUTEMAN silos, and start developing a strategic defense that would provide the basis for a shift "to a long term strategy based on strategic defense." Such a change in strategy "is both militarily and morally sound."<sup>74</sup>

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<sup>74</sup>Brooks, "CNO and SDI," pp. 4-5; Brooks, Interview, pp. 7-9. Brooks used the jargon of the Pentagon to describe the iterative process Watkins used to work out his position--this was a "bring-me-another-rock" process. The idea here, of course, is that rocks do not look alike, but you can hardly describe how they are different in a definitive way. This jargon emphasizes the intuitive nature of Watkins' search for an answer to America's strategic conundrum. What this process does essentially is force the staff to devise a number of alternatives and keep presenting them until they hit upon one which the senior officer intuitively believes will work.



As Watkins often did in cases of major policy matters like this, he turned to the CNO's Executive Panel (CEP) for a review of his position. The CEP is an advisory panel constituted under the Federal Advisory Commission Act to provide policy advice to the CNO. It is composed of distinguished citizens, both in and out of government, and is supported by a small, full-time staff of naval officers.<sup>75</sup>

On 2 February, Watkins discussed with selected members of the CEP the position he had worked out with Holland and Brooks. While the CEP supported Watkins' recommendations that the United States use strategic defense as a means to off-set the growing vulnerability of American ICBMs, it advised him to proceed cautiously. CEP members noted that the technical problem of building a strategic defense system was comparable to that of the Apollo program in the 1960s. However, panel members did not believe that the nation was ready for this kind of challenge where missile defense was concerned.<sup>76</sup>

Now, a week remained before the chiefs were scheduled to meet with the president, and still they had no position on the issues they were expected to discuss. Knowing this, Watkins advised Vessey that he had a position he would like presented to the president. Vessey then arranged for a 5 February meeting of

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<sup>75</sup>Brooks, Interview, p. 2; Watkins, Interview, pp. 7-8.

<sup>76</sup>Watkins, Interview, pp. 7-8.

the chiefs at which Watkins presented his views. The meeting, another executive session of the chiefs, took place in Vessey's office. After hearing the CNO's briefing, the chiefs agreed that this should be the position the JCS presented to the president and that General Vessey would present the briefing.<sup>77</sup>

When the chiefs approached Secretary Weinberger with their position, they found that he was opposed to the idea of strategic defense. However, as was his practice in matters such as this, he believed that the president should hear the views of the chiefs and he agreed that General Vessey would present the JCS position to the president that Saturday.<sup>78</sup>

While these events were occurring, Watkins informally discussed with McFarlane and Poindexter what was transpiring, advising McFarlane that he favored some role for missile defense in America's strategic policies. In the interest of supporting his own efforts to make the development of a strategic defense system a national goal, McFarlane encouraged Watkins to develop a consensus among the chiefs with regard to this issue, for he believed a unanimous recommendation from the chiefs would be required if the president were to make the desired decision.<sup>79</sup>

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<sup>77</sup>Watkins, Interview, pp. 8-9.

<sup>78</sup>Watkins, Interview, pp. 10-11, 31. Watkins believed that Weinberger may have taken this position because he knew that Reagan already favored some form of strategic defense program.

<sup>79</sup>The way in which the meeting with the president was scheduled and how the agenda was set is unclear, since Watkins, Poindexter, McFarlane, and Brooks present accounts that are lacking in details and somewhat conflicting. According to McFarlane, Watkins and Poindexter had been talking informally for

some time about the fact that the U.S. was approaching a dead end with offensive deterrence. From Poindexter, McFarlane understood that Watkins was optimistic about directed energy weapons technology and the possibility that missile defense might help solve America's strategic problems. In January, McFarlane met Watkins and Poindexter at a luncheon at Tingy House and encouraged Watkins to work for a JCS consensus supporting a role in U.S. strategy for missile defense, for if the chiefs were "all over the lot on this issue, there's not a chance in the world he [Reagan] would support a missile defense program" (presumably because of the problems caused by the division of the JCS over dense pack). [McFarlane, Interview, pp. 4, 6-7.] Watkins denied that he specifically coordinated his efforts with Poindexter or McFarlane. Nevertheless, Watkins did indicate that he remembered McFarlane from the time of McFarlane's "days on the Hill," presumably a reference to McFarlane's 1979-1981 stint on the staff of the Senate Armed Services Committee. Furthermore, Watkins stated that McFarlane was one of his two principal contacts in the White House, George Keyworth being the other. Watkins also indicated that he felt responsible for assuring that the chiefs presented a unanimous position in support of a new BMD effort at the 11 February meeting with the president. Moreover, Watkins also said that he may have sent some general papers on strategic issues through the NSC staff as a matter of routine coordination and probably kept the NSC staff informally advised of the work he was doing. [Watkins, Interview, pp. 13, 16-17, 21-22, 31-32.] Linton Brooks has the impression that there were discussions between Watkins and McFarlane on strategic defense, but he could not remember exactly when they occurred. With regard to the transmission to the NSC of papers on strategic issues, Brooks could remember no such episodes before Reagan's March speech. After the speech, Brooks recalled, Watkins sent over a white paper on missile defense and perhaps some other papers. Overall, Brooks believes it is more likely that Watkins influenced McFarlane than the other way around. [Brooks, Interview, pp. 12-13, and Brooks to Baucom, 24 July 89.] Admiral John Poindexter claimed that he and McFarlane were working on ideas for strategic defense independently of the JCS. He denied McFarlane's claim that Watkins was coordinating his efforts with Poindexter. According to Poindexter, McFarlane discovered that the chiefs were involved in their own serious reappraisal of America's strategic situation when he met General Paul Gorman, assistant to the Chairman of the JCS, in January to arrange for the JCS's February meeting with the president. Gorman and McFarlane then agreed on an agenda that would surface the issue of strategic defense. [Poindexter, Interview, pp. 2-4.] All of this points toward the likelihood of some form of coordination between Watkins and McFarlane before the 11 February 1983 meeting with the president.

The day of the 11th dawned cold and snowy. By noon when the meeting began, the road conditions were so bad that the chiefs had to use four-wheel drive vehicles to make it to the White House for their meeting with the president. The hour-and-a-half long meeting started with Secretary Weinberger presenting his recommendations on the MX basing mode. He then advised the president that the chiefs had a different view which he believed the President should hear.<sup>80</sup>

General Vessey then delivered a broad thirty-minute briefing which was based on the views presented by Admiral Watkins and included some of the phrases the admiral had used in briefing the joint chiefs. After this, each chief was given an opportunity to speak, and Watkins strongly supported the position Vessey had presented. Since McFarlane had a good idea what the chiefs would recommend, he was prepared to exploit this opportunity to push the president toward a decision to develop a ballistic missile defense capability. When Watkins finished, McFarlane interjected:

Mr. President, this is very, very important. For thirty-seven years we have relied on offensive deterrence based on the threat of nuclear counterattack with surviving forces because there has been no alternative. But now for the first time in history what we are hearing here is that there might be another way which would enable you to defeat an attack by defending against it and over time relying less on nuclear

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<sup>80</sup>Don Oberdorfer, "A New Age of Uncertainty is Born," Washington Post, 4 January 1985, p. A20; Brooks, "CNO and SDI," p. 7; Watkins Interview, p. 10; Poindexter Interview, p. 6.

weapons.<sup>81</sup>

The president indicated that he understood the significance of the JCS position. Furthermore, to be sure the position was unanimous, he asked each chief in turn if he agreed. Each confirmed that he believed it was time to explore the possibilities offered by BMD. The president then informed the chiefs that he was very interested in what they had recommended and asked them to work diligently to develop a missile defense proposal and report the results of their work as soon as possible. Moreover, with his sensitivity to politically effective rhetoric, he took special note of one particular expression used by General Vessey, an expression he had picked up from the briefing Watkins had presented earlier to the chiefs. "Wouldn't it be better to protect the American people rather than avenge them." Reagan liked this phrase very much and remarked: "Don't lose those words."<sup>82</sup>

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<sup>81</sup>McFarlane, Interview, p. 8; Watkins, Interview, pp. 10-11, 30-32; Brooks, "CNO and SDI," p. 7.

<sup>82</sup>Brooks, "CNO and SDIO," p. 7; Watkins, Interview, pp. 10, 28; McFarlane, Interview, pp. 8-9. Don Oberdorfer reported in the Washington Post that "one participant [in the 11 February 1983 meeting of the JCS with the president] told a friend later that, as the discussion proceeded, Reagan asked those around the table, 'Would it not be better to defend lives than to avenge them?' To this observer, familiar with the president's ways, the ring of that rhetoric signified a policy change whose time had come." ("A New Age of Uncertainty Is Born," Washington Post, 4 January 1985, p. A20). Similar language was used by Senator Wallop when arguing for the rapid deployment of space-based laser systems. He talked about these systems as "weapons whose only real role in the world is to kill the things that kill people." (Congressional Record, 13 May 1981, p. 9613. See also Congressional Record, 1 July 1980, p. 18114.) The actual statement, "Wouldn't it be better to protect the American people

As the meeting was breaking up about 1:30 P.M., McFarlane sought to insure that the chiefs understood that they had "really struck a responsive chord" with the president. He told each of them that he expected them to develop a thorough report advising the president of an appropriate approach to take in developing a missile defense capability.<sup>83</sup>

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rather than avenge them," comes from the briefing that Captain Brooks and Admiral Holland prepared with Admiral Watkins prior to his 5 February meeting with the joint chiefs of staff. (Brooks to Baucom, 24 July 89, and Brooks, "CNO and SDI," TAB A, "CNO Presentation to JCS of 5 February 1983," p. 8.)

<sup>83</sup>McFarlane, Interview, p. 9. Martin Anderson, Revolution, p. 97, presents a different view of events. He claimed that William Clark started a practice of having the joint chiefs meet monthly with the President "without the potentially inhibiting presence of the secretary of defense or the secretary of state." According to Anderson, at a meeting in December 1982, Reagan asked the chiefs to consider what might happen if "we began to move away from our total reliance on offense to deter a nuclear attack and moved toward a relatively greater reliance on defense?" After the meeting, the chiefs supposedly asked Clark if they received a charge to scrutinize BMD closely. Clark said yes. Clark also put McFarlane to work on the missile defense issue with the NSC staff. I tend to discount this version of events, since Anderson had already left the White House by the time of these events and because they conflict with the accounts of Admirals Watkins and Poindexter and McFarlane. For another discussion of McFarlane's role in the Reagan government, see Brock Brower, "Bud McFarlane: Semper Fi," New York Times Magazine, 22 January 1989, pp. 26-29, 32, 38. Brower uncritically accepts McFarlane's account of his role in the decision process that led to Reagan's March 1983 speech. For a rebuttal of some of the critical remarks in Brower's article see Leonard Garment, Letter to the Editor, New York Times Magazine, 12 February 1989, p. 8.

**ANNOUNCING A NEW NATIONAL POLICY**

Following the meeting of 11 February, McFarlane charged General Boverie, Colonel Linhard, and Mr. Raymond Pollock with developing a general program for strategic defense that would project a funding level to develop the technologies that would be involved a missile defense system. They were to work quietly with the joint staff and the chiefs and bring no one else in on the project at this stage, not even George Keyworth, the president's science advisor. There was some interface with technically qualified people in industry such as Dr. John Foster and some contact with the national laboratories.<sup>84</sup>

At this time, McFarlane believed the president would not expect a report until after the Scowcroft commission completed its work in April. But a month after his meeting with the chiefs, President Reagan began to prod William Clark and McFarlane to speed up their work.<sup>85</sup>

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<sup>84</sup>McFarlane, Interview, pp. 9-10.

<sup>85</sup>McFarlane, Interview, p. 10.

About the middle of March, the president again indicated his desire to have the strategic defense proposal completed quickly. Congress was about to begin its work on authorizations for the Defense Department, and Reagan was worried about the state of his defense program. He wanted to give a major speech on defense issues in which he could "break something new." Specifically, he wanted to provide the nation with something reassuring that might stem the progress of the freeze movement. McFarlane passed this message to the chiefs and at the same time put Linhard and Pollock to work on the main body of a speech dealing with general defense matters. McFarlane was to personally write the portion of the speech dealing with strategic defense and then coordinate it with Secretary of Defense Caspar Weinberger.<sup>86</sup>

By this time, McFarlane had come to suspect that some other force or influence was pushing the president. He suspected that the president's political advisors (James Baker, Edwin Meese, and Michael Deaver) were encouraging Reagan to take some action to outflank the freeze movement.<sup>87</sup> Perhaps it was

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<sup>86</sup>McFarlane, Interview, pp. 10-11. Herken, Counsels of War, p. 342, says that Reagan supposedly told Clark and McFarlane "that he was reluctant to repeat the same litany of bad news in the 'threat' speech that was scheduled for later in the month without also offering a more positive and compensating vision of the future."

<sup>87</sup>McFarlane, Interview, p. 11.



President Reagan's own sense of the crisis his administration was facing in the area of strategic policy that had led him to push McFarlane on the missile defense concept.<sup>88</sup> Or maybe the president was responding to the importuning of Bendetsen and the High Frontier Panel. Whatever the president's motivation, he was clearly pushing his immediate staff for a policy initiative in the realm of strategic defense.

McFarlane spent the weekend before the president's speech writing the portion that would present Reagan's vision of strategic defense. On Saturday, March 19, he brought George Keyworth into the inner circle that knew of the impending announcement. McFarlane broke the news to Keyworth gradually, first asking him what he would think if the president wished to introduce some new options into the strategic arena. Keyworth placed this question in the context of his own involvement with Reagan's strategic modernization program and thought that McFarlane was probably talking about something like stealth technology or a new basing mode for the MX. Keyworth began discussing some of the possible options that might be considered, including some of the ideas his science council advisory committee had developed. The discussion finally worked around to the matter of missile defense and McFarlane asked Keyworth what he would think if President Reagan announced a major national

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<sup>88</sup>Keyworth, Interview, p. 3.

commitment to develop a missile defense system. At first, Keyworth was "dumbfounded," but then "blurted out" what the science council had revealed regarding atmospheric compensation technology. "If there ever was an exciting time to take a look [at missile defense]" Keyworth said, "now is it."<sup>89</sup>

To this point, Keyworth did not know the scope of the missile defense system the president would propose. McFarlane then handed Keyworth a copy of the insert he had drafted, complete with x'ed over words, for apparently, McFarlane himself had typed the draft. According to Keyworth, as he left McFarlane's office, the latter indicated that the president would not propose the new missile defense program without Keyworth's concurrence.<sup>90</sup>

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<sup>89</sup>Keyworth, Interview, pp. 19-20; McFarlane, Interview, p. 12.

<sup>90</sup>McFarlane, Interview, p. 12; Keyworth, Interview, p. 20. McFarlane and Keyworth agree on few details of the events that occurred during the last few days before the president's speech. For example, Keyworth claims to have been informed of the pending presidential policy statement on Saturday 19 March. McFarlane claims this did not occur until Tuesday 22 March. McFarlane recalls that the speech insert was largely his work. Keyworth recalls that he essentially took over the drafting of the speech after his meeting with McFarlane and even coordinated it with General Vessey, Chairman of the JCS. McFarlane recalls working on the insert for a considerable time on Tuesday (22 March) prior to sending it to the Pentagon for the review of Secretary Weinberger and General Colin Powell who was then Weinberger's military assistant. The service chiefs were also shown a copy. In another account of events, General Vessey and Admiral Watkins approved a draft of the speech insert on 20 March aboard an aircraft at Andrews Air Force Base, right outside of Washington, just prior to departing on official travel (Brooks, "CNO and SDI," p. 7). The account presented here is an attempt to reconcile, to the extent possible, the conflicting remembrances of those involved in the events.

Keyworth was not supposed to show the speech to anyone, but he felt compelled to discuss its implications with two trusted colleagues, Victor H. Reis who worked for Keyworth, and Solomon Buchsbaum, chairman of the science council Keyworth had convened to investigate technologies with implications for strategic military systems. Reis was opposed to missile defense and eventually resigned his position in Keyworth's office because of his conflict with Keyworth over this issue. It may have been because of Reis' opposition that Keyworth began to have "cold feet" regarding the proposed presidential initiative and informed McFarlane of his misgivings. After a thirty-minute pep talk from McFarlane, Keyworth's faith was restored and he never again had "any compunction about strategic defense." Keyworth now began to review McFarlane's draft of the speech insert.<sup>91</sup>

While Keyworth was reviewing the speech insert and making some suggested changes, McFarlane began to inform key government

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<sup>91</sup>Keyworth, Interview, pp. 21-22. According to Codevilla, While Others Build, pp. 69, 76, 83, Reis and Seymour Zeiberg, deputy undersecretary of defense for research and engineering during the Carter administration, had written a report designed to undermine support for the use of space-based lasers against ICBMs. Codevilla claimed that this report was embarrassingly bad. The ambiguous role of Keyworth in these events was noted also in Boffey, Claiming the Heavens, p. 21. Here, Boffey and his co-authors quote a "former White House official" as saying that Keyworth "'clearly went through a conversion, . . . He felt very strongly about the need to support the president on things the president felt strongly about, and he worked hard those few days to ensure the program would be directed toward research.'"

officials about the pending policy announcement and handled the objections raised by at least some of those notified. One of those McFarlane contacted was General Scowcroft, chairman of the commission that was examining the MX basing mode issue. Scowcroft noted that it would be very difficult to develop a missile defense and expressed "real misgivings" about the proposal. McFarlane also contacted John Foster of the TRW Corporation who informed McFarlane that he believed the new departure was sensible and noted that there had been important progress on missile defense technologies. Some of the strongest opposition came from the State Department where the principal concern was how the announcement would affect relations with American allies. Richard Perle of the Defense Department who was in Europe at the time, also opposed the new initiative on the same ground as the State Department.<sup>92</sup>

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<sup>92</sup>McFarlane, Interview, pp. 12-14; Poindexter, Interview, pp. 10-12; Keyworth, Interview, pp. 23, 25. Keyworth refers to McFarlane fielding the "unbelievable opposition that emerged in the next three days." Keyworth claimed that Secretary of State Schultz was very upset by the president's initiative; called Keyworth a "lunatic" in front of the president; and charged that BMD was the "idea of a blooming madman," would not work, and would destroy the NATO alliance. Keyworth also recalled that Richard Perle called from Portugal and "suggested strongly that I fall on my sword. I should tell the president that I would oppose the new idea publicly, do anything to get it stopped." With regard to Keyworth's recollection of Schultz' "lunatic" and "madman" comments, Ambassador Richard Burt and Linton Brooks advised that such remarks are not in keeping with the style followed by Schultz when dealing with the president. (Linton F. Brooks to Donald R. Baucom, 31 July 1989) Poindexter presented a run-down of those who favored and those who opposed the new defense program. Those favoring the announcement, according to Poindexter, were Vice President Bush, Secretary Weinberger, and General Vessey. Opposed were Richard Perle, Richard Burt, and Fred Ikle. Poindexter claimed that Perle "burned up the

In the meantime, McFarlane had continued to work on the insert, advising the other speech writers to write the main body of the speech and a conclusion, leaving a space for a five minute insert. During this time, he probably also received some suggested changes from Keyworth. He then sent a draft of the strategic defense insert by courier to Secretary Weinberger and General Powell. While Weinberger expressed some misgivings because the president's proposal would cause a certain amount of upheaval in the military services and among U.S. allies, he was generally favorably disposed to the proposal.<sup>93</sup>

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telephone line creating friction all over the United States calling everybody he could think of trying to kill the idea." While Poindexter recalls that Shultz opposed the missile defense idea, he stated that Richard Burt was the opponent most heard from in the State Department. Burt claims that he did not learn of President Reagan's pending speech until the morning of 23 March while he was in Canada with the party of Vice President George Bush. Burt claims that his vocal opposition to SDI came after the president's speech. (Linton F. Brooks to Donald R. Baucom, letter, 31 July 1989).

<sup>93</sup>McFarlane, Interview, p. 12. I here accept McFarlane's account of the final preparation of the speech insert in spite of conflicts between his recollections and those of Keyworth. All accounts of events I have encountered agree that McFarlane was the focal point of the staff work leading to the president's decision and announcement of the decision. I find it difficult to believe that McFarlane would abdicate the crucial responsibility for the final draft of the president's comments to anyone else, especially since he was the person fielding objections from key government agencies and officials. Furthermore, at one point in his interview, Keyworth stated that McFarlane selected elements of the opposition he considered valid criticisms, and "we tried to accomodate them in the speech." Keyworth further claims that there were two versions of the speech sent to the president: the "wimp" version and the "real" version. The president picked the "real" version. (Keyworth, Interview, p. 27.)

As the night of the speech approached, last minute preparations had to be completed. For one thing, messages had to be drafted from the president to NATO's heads of state assuring them that the new missile defense initiative did not mean that the U.S. was abandoning its commitments to NATO.<sup>94</sup>

Furthermore, to provide a possible source of favorable comment on the president's announcement, McFarlane and Keyworth planned a dinner for cabinet members, past secretaries of state and defense, and representatives of the scientific community. Those attending included Secretary of State Shultz, Henry Kissinger, James Schlesinger, and Edward Teller. The affair took place in the east room of the White House. Before dinner, McFarlane and Keyworth briefed the guests on what the president would say. After dinner, a large screen TV was turned on and the group watched the president give his speech from the Oval Office.<sup>95</sup>

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<sup>94</sup>McFarlane, Interview, p. 14.

<sup>95</sup>McFarlane, Interview, p. 13; Keyworth, Interview, pp. 29-30. Keyworth recalls being asked to assemble a group of scientists who would provide a consensus of favorable opinion on the president's new program. His reaction was that "you couldn't get a consensus in the scientific community on the benefits of motherhood and certainly not on an issue of national security because of the pacificism of the community." Earlier in his interview Keyworth had traced this strain of pacificism to the reaction of the scientific community to the development and use of the atomic bomb in World War II (p. 21). Keyworth also tells of Secretary Shultz asking Edward Teller if there was any way a defensive system could stop 99% of an attacking force. Keyworth also stated that neither he, McFarlane, nor the president had any such illusions that the effectiveness of a strategic defense system could be that high.

In his speech that evening, President Reagan announced his belief that defensive technologies had advanced to where the U.S. could hope to prevent nuclear aggression by developing a defensive system that would "save lives" rather than "avenge them." He realized that this would be a "formidable technical task;" it could "take years, even decades, of effort on many fronts" to produce a new ABM system. However, it was clearly time to begin, so the president called upon the American "scientific community who gave us nuclear weapons to turn their great talents to the cause of mankind and world peace; to give us the means of rendering these nuclear weapons impotent and obsolete." The effort Reagan envisioned was to be consistent with U.S. obligations under the ABM Treaty and would begin with the establishment of "a comprehensive and intensive effort to define a long-term research and development program" to find a defense against nuclear-tipped ballistic missiles.<sup>96</sup>

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<sup>96</sup>Ronald Reagan, Transcript of 23 March 1983 speech in "President's Speech on Military Spending and a New Defense," New York Times, 24 March 1983, p. A20. Dr. Keyworth provided me with a copy of a 22 March version of the speech with president Reagan's hand-written emendations (Ronald W. Reagan, "A Call for a Bold Defense," 22 March 1983 draft of speech insert.). Two key passages were inserted by Reagan himself: "Would it not be better to save lives than to avenge them?" and "I call upon the scientific community which gave us nuclear weapons to turn their great talents to the cause of mankind and world peace; to give us the means of rendering these weapons impotent and obsolete."

## CONCLUSION

It must be an awfully lonely feeling to be the only human in the country facing possible responsibility for nuclear war.  
Gerard Smith, 1980<sup>1</sup>

Kissinger shared Nixon's distrust of bureaucracy, which, he knew, seeks instinctively to limit the options of leadership.  
John Newhouse, 1989<sup>2</sup>

By March 1983, the United States had been working for over three and a half decades to develop a defense against ballistic missiles. Prior to the mid-1960s, the fate of the ABM had been determined largely by technical and military considerations and internal DOD politics. It seemed reasonable to treat the ballistic missile as an advanced military system for which a countermeasure could be devised.<sup>3</sup> However, as the Army and Air Force competed for strategic missions in the 1950s and as deterrence theory emerged in the United States, the development and deployment of ballistic missile defenses became enmeshed in the broader issues of nuclear deterrence. This process occurred in three stages.

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<sup>1</sup>Doubletalk, p. 209.

<sup>2</sup>War and Peace, p. 211.

<sup>3</sup>For a similar division of the issues surrounding ballistic missile defense, see: Geoffrey Till, "The Safeguard Debate: Image and Reality," RUSI, December 1974, p. 40.



First, in the late 1950s, strategic defense came to be viewed as an alternative to strategic offense. As the Army pushed ballistic missile defense and began to compete with offensive programs for defense dollars, the Air Force attacked defense as a less than optimal expenditure of resources to insure deterrence. The most effective way to insure deterrence, the Air Force argued, was to spend defense dollars on offensive (Air Force) systems.

The Army had gained control of the strategic defense mission by the time McNamara became secretary of defense. However, with McNamara in office, the development and deployment of a strategic defense system became more problematic because of the rise of the assured destruction doctrine under McNamara. In the context of this doctrine, defense was no longer considered intrinsically good and worthy of support on its own merits. Now, development and deployment decisions had to consider how the decisions themselves and the systems that might result from these decisions would affect the stability of the strategic balance between the superpowers. Thus, during the late 1960s McNamara prevented the U.S. from deploying a full BMD system, even though pressure for such a deployment was strong, by shunting the drive for deployment into a limited deployment (SENTINEL) against China. His main reasons for doing so were fear that a major ABM deployment would accelerate the arms race between the U.S. and Soviet Union and thus detract from security rather than add to

it. The integration of BMD considerations into deterrence calculations under McNamara marks the second stage of the process whereby strategic defense became enmeshed in the broader issues of deterrence doctrine.

When SALT I negotiations started, those who favored assured destruction as the basis of deterrence strongly opposed any deployment of an ABM system, for such a system would be costly, trigger a new round in the arms race, and fail to enhance the security of the U.S. The proper role for America's SAFEGUARD system was to serve as a bargaining chip that could be used to purchase restrictions on Soviet offensive systems. The negotiation of the SALT I ABM treaty and the 1974 protocol mark the third and final stage of the integration of ABM into the strategic deterrence doctrine of the United States. The end result of this process was to deny strategic defense a role in efforts to establish a stable state of nuclear deterrence.

Following the acceptance of the SALT I agreements, Congress moved to insure the dominance of policy and strategic doctrine over the technical imperative to field the most advanced BMD system that could be built. This shift in national policy was marked by the deactivation of SAFEGUARD and the re-direction of Site Defense away from the deployment of an operational system to a research and development program that was to be a hedge against a Soviet technical breakthrough.

While SALT I virtually killed the American ABM program, the SALT process failed to produce comparable restrictions on offensive systems. In the absence of qualitative restrictions on offensive strategic systems, the Soviets steadily improved their ICBMs. By 1980, improvements in Soviet missiles were causing a number of national leaders to worry that the Soviets might soon be able to destroy U.S. ICBMs in a single, swift attack.

When Reagan took office in 1981, the U.S. response to the danger posed by Soviet ICBMs had come to focus on the effort to find a secure and politically acceptable basing mode for the MX missile. This effort continued through the first half of Reagan's first term and was complicated by a rising opposition among some political groups to the deployment of more offensive systems.

As 1983 dawned, the inability of the United States to find an acceptable basing mode for the MX had precipitated a strategic crisis that encouraged a search for new solutions to the problem of ICBM vulnerability. In the heat of the crisis, the idea of a new effort to develop a strategic defense emerged as a viable alternative to the continuation of America's efforts to guarantee deterrence through offensive means, efforts that seemed to be taking the United States into a "strategic valley of death." Defensive technologies had advanced considerably in a number of key areas since the U.S. closed its SAFEGUARD site. The extensive debate over the basing mode for the MX had itself

touched upon the possibility of defending the MX as a means of insuring its survivability. Furthermore, for over five years, there had been extensive discussions between Congress and DOD about the possibilities of developing and deploying a new ABM system based upon emerging technologies that included kinetic kill systems and space-based directed energy weapons.

Ronald Reagan had personally been involved in these discussions of ballistic missile defense since 1979. Furthermore, since 1976, he had entertained grave reservations about the idea of maintaining deterrence using only offensive nuclear systems. Now, in 1983 he was the Commander-in-Chief. If a crisis between the United States and the Soviet Union should take the superpowers to the brink of nuclear war, he alone would be responsible for decisions that could end civilization. His top military advisors and a number of old friends whose judgment he trusted strongly recommended a new program in ballistic missile defense which would improve deterrence by protecting America's retaliatory forces and might eventually offer the hope of defending the American people should deterrence fail. From the standpoint of President Reagan, strategic defense was clearly an idea whose time had come again.