MISSILE DEFENSE
ROLES AND RESPONSIBILITIES

PROPRIETARY INFORMATION OF
MISSILE DEFENSE ADVOCACY ALLIANCE

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Executive Summary

Missile defense remains an extraordinarily challenging military mission, and its importance has only grown as adversaries continue to develop new and dynamic capabilities intended to threaten the U.S. and to decouple us from our allies and partners. The advent of Russian and Chinese hypersonic missile threats, in addition to both countries growing arsenals of increasingly complex ballistic and cruise missile capabilities, clearly demonstrates the importance our adversaries place on long-range strike capabilities. In response to these advances, the U.S. must ensure that the missile defense enterprise is properly organized, resourced, and managed for success in this new and demanding threat environment.

Stated more directly, our adversaries – sensing the strategic advantage it gives them – are heavily investing in hypersonic capabilities to hold that which is most precious to us at risk. Our adversaries are also investing in large numbers of missiles for which the United States and our allies have not invested in sufficient numbers of missile defense assets to counter, as demonstrated by the heavy Russian use of missiles in its invasion of Ukraine and the heavy use of missiles by the Iranian-backed Houthis

during attacks on the UAE and Saudi Arabia. The U.S. must now invest to ensure that we can defend what is most precious and remove any perceived strategic advantage from our adversary's calculus.

Unfortunately, as the missile threat has evolved, the roles and missions for missile defense have not. In fact, these roles and missions – rapidly created in the past to address what are now legacy threats – are often unclear and overlap multiple stakeholders. Combatant Commands (both geographic and functional), the Joint Staff, the Services, the Missile Defense Agency (MDA) and other Office of Secretary of Defense (OSD) components all have intersecting equities in missile defense. The addition of the U.S. Space Force (USSF), U.S. Space Command (USSPACECOM), and Space Development Agency (SDA) has only further complicated this issue by introducing additional potential seams and redundancies and placing mission success at risk.

As one can imagine, this is not the first time the U.S. military has encountered this type of situation. In fact, the introduction of the Space Force has created issues similar to the debate and friction on roles and missions that occurred after the founding of the Air Force in 1947. In the late 1940s, the Army and Navy were reluctant to part with long-standing forces and capabilities (and roles and responsibilities) that they had developed during World War II. As a result, a series of successive compromises were reached to accommodate the Army and Navy, which unfortunately increased costs and slowed progress in the development of the Air Force.

History also demonstrates how to achieve success in dealing with challenging military missions by providing an integrating organization with lead responsibility and the authorities to push the boundaries of innovation rapidly. In our history, the periods of greatest technical progress have come when authorities were given to stand-alone, focused organizations like Naval Reactors, the Advanced Research Projects Agency (ARPA), the Strategic Defense Initiative Office (SDIO), and the initial instantiation of the MDA. Because of these organizations, the U.S. has been able to develop – with greater consistency and over longer periods – much more capable systems, and more rapidly deploy those systems to the warfighter. In the absence of such "integrator" organizations, the Services tend to focus on more parochial and near-term solutions, resulting in much slower technical innovation for the game-changing capabilities the warfighter also needs.

Thankfully, the introduction of USSF, USSPACECOM, and the SDA provides an opportunity for a review of missile defense roles and missions by the Joint Requirement Oversight Council (JROC) in the Joint Capabilities Integration and Development System (JCIDS) process, and by the Joint Staff in the next Unified Command Plan (UCP) revision. Hopefully, we can learn from our history and avoid repeating the parochial mistakes made in the 1940s and 1950s.

Overall, any missile defense roles and responsibility review should inform, and be informed by, the Department's parallel efforts to update the National Defense Strategy and the Missile Defense Review, the development of a new Joint Warfighting Concept, and any update to existing operational plans. A critical fault would be to conduct strategic planning in stovepipes, causing inefficiencies in both unity of effort and application of limited resources. As such, the Secretary of Defense (SECDEF), with support from the Under Secretary of Defense for Policy (USD-P), the Assistant Secretary of Defense for Strategy, Plans and Capabilities (SPC), the Director of Cost Assessment and Program Evaluation (CAPE), the Chairman of the Joint Chiefs of Staff (CJCS), the Combatant Commanders, and the Service chiefs, should make fully informed decisions on missile defense (MD) roles and missions, and ensure each Service and the MDA are resourced appropriately. With that in mind there are several key missile defense roles and responsibilities changes that this review should address and establish (recommended new or adjusted guidance is in *italics*):

1. OSD should utilize MDA and key tools such as the JROC and the JCIDS process, to ensure that the joint force can address existing gaps in ground based cruise missile defense and develop solutions for the emerging hypersonic missile threat.

- *This will require increased requests for missile defense funding. Given the rapid pace of the growth in the missile threat and the increasingly large role that such capabilities are playing in the military plans and combat operations of our adversaries, the missile defense mission is under-resourced.*
- *SECDEF should direct the Services to treat missile defense capabilities as a core mission area and budget accordingly, to reflect the changed security environment we now face where missiles are a primary method of warfare being employed by our adversaries.*
- *SECDEF should disestablish the Missile Defense Executive Board (MDEB). The MDEB is highly bureaucratic with numerous subgroups and committees. The MDEB replicates the complex and cumbersome DoD acquisition and*

requirements process that the original DoD Directive establishing MDA intended to replace with a rapid and empowered central organization to lead MD development, initial production and fielding

2. MDA should be made as efficient and agile as possible to ensure it develops, acquires, and fields the system architecture required to prepare for existing and emerging hypersonic threats. MDA is the lead system architect for MD across all domains and should be fully resourced and authorized to rapidly and efficiently develop and acquire MD systems to defend against ballistic missiles, hypersonic glide missiles, and complex hypersonic and long-range land-attack cruise missiles.

- *SECDEF should return the original rapid acquisition authorities to MDA that existed at its founding in 2002, to allow for more efficient and rapid deployment of capabilities, including the ability to set detailed performance requirements without approval by the JROC and relief from strict adherence to the DoD 5000 series acquisition regulations.*
    - *This includes restoring the MDA Director's authorities to function as a Component Acquisition Executive.*
- MDA should focus its resources on MD RDT&E and S&T for defense against ballistic missiles, hypersonic glide missiles, and complex hypersonic and long-range land-attack cruise missiles.
    - *MDA should develop MD systems through Low-Rate Initial Production (LRIP) and then transfer the systems to the Services for full rate production as originally envisioned at its founding. The Services should be required to budget for production, fielding, employment, and sustainment of these systems. The MDA budget, which resourced only the capability development of the system, will not be transferred to the Services.*
        - *As MDA transfers a missile defense system that has completed RDT&E to a Service, the MDA resources previously associated with that system should shift to the next highest priority MD capability development.*
        - *MDA should remain responsible for development of capability upgrades to existing fielded systems in coordination with the Services. Once RDT&E is complete for the capability upgrade,*

sustainment remains the responsibility of the Service employing the system.

- *MDA should be directed to develop a program to supplement and leverage the directed energy (DE) work of the Services. MDA should develop systems that can leverage the cost and advantages of speed of light weapons to deal with the hypersonic, ballistic, and cruise missile threats.*
  - *DoD's DE efforts have been underfunded and the new challenge of large numbers of sophisticated missiles operating at unprecedented speed in large numbers is well suited to DE solutions such as lasers and high-powered micro-waves.*

3. DOD must clarify each of the Services' specific responsibilities for air and missile defense and require the Services to fully resource the deployment, sustainment, and operation of their MD forces.

- The Army has played a central role in the MD enterprise. The Army has also consistently under-resourced the MD mission area by placing other mission requirements at a higher priority. Especially in light of the current and projected threat environment in the Indo-Pacific and Europe, this practice by the Army must cease immediately. *In the absence of a significant, near-term effort by the Army to comprehensively resource MD priorities, the Secretary of Defense should direct realignment of internal Army resources to MD and initiate a study to assess transition of Army MD forces to the Air Force in order to ensure optimum MD capability and capacity for the Joint Force.*
- Within this understanding, the Army should continue with overall responsibility for providing theater and fixed-site MD capabilities in support of Combatant Command MD plans, to include the defense of forward operating locations such as: key communications sites; command and control nodes; and air, ground and maritime staging and logistics locations.
  - *The Army must prioritize delivery of the Indirect Fire Protection Capability (Increment 2) - a cost effective cruise missile defense system, that is long overdue.*
- The Army and Navy should retain responsibility for MD of their maneuver forces and ships. Both Services should remain responsible for development of MD capabilities for which MDA is not designated as lead.
- *The Air Force should be given similar authority to procure and field MD systems to protect its maneuver forces which will not otherwise be defended by*

available Army or Navy capabilities. A prime example for use of this authority would be to defend forward expeditionary dispersed operating locations executing Agile Combat Employment.

- The Services will be responsible for full rate production and sustainment (man, train, equip) of all MD forces in accordance with these clarified MD requirements, *to include* lifecycle support, employment, sustainment, and logistics of assigned MD systems.
- The Services will continue to develop, acquire and sustain (man, train, equip) multi-domain offensive strike capabilities to degrade and reduce opponent missile capabilities in order to produce a more effective and efficient overall defense.
- The Space Force will be responsible for the overall sensor architecture in the space domain, to include sensors contributing to the MD mission. In design of that architecture, the Space Force must coordinate with all affected agencies. In particular, MDA, as the missile defense system architect, will play a critical role in ensuring sensor architecture supports MD requirements.
- The National Guard will man, train, and operate U.S. homeland defense MD sites for sensors, interceptors, and command and control, in accordance with OSD's posture and deployment guidance, *to include fixed systems defending Guam and Hawaii as additional capabilities are fielded.*

4. OSD must clarify each of the Combatant Command's specific responsibilities in the MD enterprise and support the deployment and operation of their MD forces.

- OSD will solicit, validate, and prioritize Combatant Command (CCMD) MD requirements, and then direct deployment of Service MD forces to CCMDs.
- *USSPACECOM should have lead responsibility for synchronizing the operational MD efforts of the geographic and functional CCMDs, to include adjudicating issues related to operational cooperation between the CCMDs on MD.*
    - USSPACECOM would replace USSTRATCOM in this role. These authorities should be reflected in the next UCP revision.
- *USSPACECOM should be responsible for the MD early-warning and battlespace awareness mission.*
- *USSPACECOM should replace USSTRATCOM in command of the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD).*

Introduction:

The United States must maintain our long-term capacity to meet our strategic challenges, including those posed by Russia and China. Commensurate with this long-term outlook is a need for clearly defined roles for each Service and a coherent set of authorities for an organization to lead and integrate disparate efforts to ensure that budget-motivated fights over roles and missions do not jeopardize warfighting capabilities as they did to the air and missile defense mission in the Cold War period. We all have a vested interest in a robust, operationally capable missile defense enterprise.

This is a particularly relevant historical comparison due to multiple similarities between the early Cold War period and present day; the emergence of great-power competition and the buildup of the Space Force will bring new challenges and new opportunities.

This document provides a detailed historical review of missile defense roles and missions – where the Department of Defense has both succeeded and fallen short– and recommendations for a way forward.

Historical Overview:

Origins of Missile Defense and the Start of the Roles and Missions Debate

In the late 1940s, the United States Military, including the newly independent Air Force, faced a strategic and technological crossroads. World War II (WWII) ushered in a new era, where air power proved decisive and overturned decades of military thinking. In addition, WWII saw the invention and combat use of the world's first cruise and ballistic missiles, the German V-1 and V-2, respectively. These missiles devastated European cities during the war and threatened U.S. and Allied forces

across the continent. During the war, over 1,000 V-2's struck Great Britain and were also used against targets in Belgium, France, Luxembourg, and the Netherlands.[1]

Nazi Germany's missile program and ambitions were the start of thinking about how to defend against these new weapons. According to the Missile Defense Agency historian:

> When the war in Europe ended, Germany's most ambitious plan to surpass the V-2 involved an intercontinental-range missile still on the drawing board. It was a two-stage 3,350-mile range missile called the A-9/A-10… Some Germans believed that had the war lasted another six months, they would have been able to produce the A-9/A-10 and strike targets in the United States, such as New York City. Some also believed that if the war had lasted another two years, they could have developed a 15,000-mile range intercontinental ballistic missile (ICBM).[2]

Studies were undertaken by the U.S. and British armies, yet by the end of World War II, the technology didn't exist to effectively defend against ballistic missiles.

World War II also brought to the forefront a debate on the roles and missions of the Armed Forces that continues today. Prior to that conflict, roles and missions were not a problem, with the Army fighting on land, the Navy fighting at sea, and the two efforts rarely overlapping. In World War II that changed dramatically with Army and Navy forces (including the Marine Corps) regularly operating under joint theater commands in campaigns. Distinctions blurred as the conflict progressed. For example, while the Marine Corps enjoyed storied success in amphibious landings and battles throughout the Pacific, the largest amphibious operation and landing of the war on D-Day was conducted by the Army. Yet perhaps the greatest dynamic that blurred roles and missions was the emergence of military aviation over both land and sea.

Following World War II, Congress passed the 1947 National Security Act, which combined the Army and Navy under a unified military organization called the National Military Establishment, which was renamed the Department of Defense in 1949, headed by the new Secretary of Defense position. The Act also established the

[1] Missile Defense: The First 70 Years, publication of Missile Defense Agency historian, 8 August 2013.
[2] Ibid

Air Force as a third Service and created the position of Chairman of the Joint Chiefs of Staff.

For the next several decades, the Secretary of Defense, Joint Chiefs, President, and Congress would struggle to map out clearly defined roles and missions for the Services in major areas. These interservice rivalries played out against the backdrop of a new great-power competition with the Soviet Union, and to a lesser degree, China. Service rivalries in the early post-war years were perhaps most intense over the air domain. The Air Force sought to assume full responsibility for the domain, and the Navy hoped to preserve its role in military aviation that had become central to naval operations as the aircraft carrier replaced the battleship as the principal ship in the fleet.

These Service rivalries also played out in the arena of air and missile defense. Unfortunately, these disputes, the lack of an organization with clearly defined responsibilities and authorities to lead and integrate development and deployment, and weakly enforced Secretary of Defense Directives all combined to limit the military's ability to respond effectively to Soviet missile technology advancements, jeopardizing the security of the United States and its allies.

Several key historical events or decisions stand out as "turning points" that affected the Military's current division of labor for the air and missile defense mission. Among these are multiple Secretary of Defense Memoranda, which had a significant impact, either by including definitive assignment of responsibilities, by the notable omission thereof, or by accommodating solutions born of a stubborn, parochial desire of the Services to buck Secretary of Defense decisions that would have produced more optimal results at a national level, but that would have resulted in the loss of funding or a mission for an individual Service.

These turning points are: the 1948 Key West Agreement, the 1950 Guided Missile Memorandum, the 1956 Memorandum from Secretary of Defense Charles Wilson detailing missile defense responsibilities for each Service, the 1958 SecDef Memorandum assigning anti-ballistic missile responsibilities to the Army, the failure of SAFEGUARD and signing of the 1972 Anti-Ballistic Missile (ABM) Treaty, the Strategic Defense Initiative, and the establishment of the Missile Defense Agency in 2001.

In particular, the 1958 SecDef Memorandum occurred after a decade of jostling between the Services and endorsed a compromise between the programs of the Services that was thought to be temporary, but resulted in the loss of organizational effectiveness and the cancellation of more promising solutions. The effects of this decision would culminate some two decades later with the failure and cancellation of the SAFEGUARD system and signature of the 1972 ABM Treaty that prohibited U.S. national missile defense for 30 years until U.S. withdrawal from this agreement.

This decision contradicted several previous orders establishing the Air Force as the primary CONUS air defense authority and capped Army efforts, begun at the birth of the Air Force in 1947, to prevent the newly established Service from taking the lead role on air defense and instead preserve a leading role for the Army. The 1958 Memorandum was issued in the midst of a fierce interservice debate shortly after Russia's Sputnik launch and appears in hindsight to have been a short-sighted attempt to resolve an interservice conflict.

Key West Agreement:

In an attempt to resolve the contentious issue of roles and missions, the first Secretary of Defense James Forrestal gathered the Service Chiefs in Key West from March 11-14, 1948. It is perhaps ironic that Forrestal had convened the group, as he had recently served as Secretary of the Navy, which had opposed the National Security Act and creation of the Air Force, fearing it would result in the loss of carrier aviation.

At its formation in 1947, the U.S. Air Force assumed the missions of strategic bombing, ground operations support, air transport, and air defense. The destruction wrought by German missiles in WWII underscored the importance of effective air defense not only for protecting civilians and military assets, but for defending maneuvering land-, sea-, and air-based assets and forces. During the war, Army Ground Forces and the Army Air Force (AAF) jointly executed air defense responsibilities, divided between ground-based anti-aircraft artillery (AAA) and airborne fighter interceptors. In Operation Antwerp X, with the AAF providing early-warning radar support to ground-based anti-aircraft fires, U.S. and British AAA units were able to achieve a 70% kill-rate on engaged German V-1 cruise missiles, enabling the Allies to defend Antwerp and maintain its strategic port role for the remainder of the war.

At Key West, key agreements were reached on Service responsibilities. President Truman revoked a previously issued Executive Order that defined Service responsibilities, and in its place, Secretary Forrestal issued the "functions paper" that defined roles and missions.

In the dispute over the air domain, the Air Force was given primary responsibility for the domain, after a compromise in which the Navy was permitted to retain carrier aviation after agreeing not to pursue its own strategic air force. An agreement was reached to rebuff an Army and Air Force attempt to severely limit the Marine Corps, by establishing the principle that the Army should furnish land forces for any amphibious or airborne operation larger than a division. Eventually, all agreed to the compromise that the Marine Corps would not become "a second land army."

In the area of air defense, the Air Force received the majority of functions, including primary responsibility for defense of the United States against air attack as well as "land-based air defense" in coordination with the other Services. A compromise was reached, however, under which the Army would retain the responsibility to "organize, train, and equip Army anti-aircraft artillery units", after the Army argued this was required to provide defense of point locations and maneuver forces like in WWII. Similarly, the Navy received the tasking to "provide sea-based air defense."

With the Soviet Union's successful 1949 nuclear test, the U.S. Air Force's strategic mission as a nuclear deterrent continued to grow. This led to a diminished strategic role for the Army's traditional functions, prompting them to pursue more responsibility for the nuclear deterrence and air defense mission. Facilitating this pursuit was the USAF's low prioritization of their Air Defense Command; this marginalization rendered the command without sufficient funding or manpower to adequately defend against hostile air attack as revealed in multiple exercises.

1950 Guided Missile Memorandum:

The agreements reached at Key West in 1948 quickly came under strain from the Services' continued jostling over roles and missions and lack of clarity about the authority of the newly established role of Secretary of Defense. For example, despite agreeing not to pursue its own strategic air force, the Navy steamed ahead with development of a supercarrier to carry nuclear bombers able to challenge the Air

Force B-36 for the strategic bombing mission. This situation was improved by Congress in 1949, which clarified in law that the Secretaries of the Army and Navy were subordinate to the Secretary of Defense.

By 1950, the emerging technology of guided missiles was also complicating efforts to implement the compromises on air defense roles and missions reached at Key West. All three Services were developing guided missiles. In the Army and Navy, surface-to-air missiles were seen as providing an addition or replacement to AAA, while the Air Force had been given the responsibility for "land-based air defense" at Key West.

In March 1950, in an effort to rationalize missile and air defense development programs and avoid duplication, Secretary of Defense Louis A. Johnson issued the Guided Missile Memorandum, which stated that guided missiles would be employed by each Service according to assigned functions. Most notably, the Army and Navy received responsibility for surface-to-air missiles (SAMs) that "supplement, extend the capability of, or replace anti-aircraft artillery (AAA)." Simultaneously, the Air Force received the portfolio for guided missiles that "supplement, extend the capabilities of, or replace Air Force aircraft." The memo required each Service to "invite" other Services to participate in missile development projects: "A Service charged with primary responsibility for development of a weapon shall invite the participation of any other Service having an operational interest in the weapon". However, this made no requirement for real collaboration and did not reduce conflict.

Notably, SecDef Johnson authorized the continuation of two specific surface-to-air missile programs: NIKE and WIZARD. Since the late 1940s, the Air Force had been intermittently researching and developing their WIZARD system, which eventually became the long-range SAM, BOMARC. Simultaneously, the Army had begun to slowly study the feasibility of progressing their NIKE anti-aircraft system to develop a ballistic missile interceptor.

These programs would be the subject of national controversy and multiple SecDef memoranda throughout the 1950s. Interservice rivalries during this period led to redundancies in offensive missile systems as well, such as the Jupiter-Thor episode. As the Army Ballistic Missile Agency, led by former German rocket scientist Wernher von Braun, progressed in its development of the Jupiter intermediate range ballistic missile (IRBM), the Air Force began development of the nearly identical

Thor, fearing an expanded Army strategic role that would encroach on the Air Force's mission.

Friction between Air Force and Army air defense efforts continued with periodic refinements to attempt to demarcate the respective roles and missions of the Services. Under an agreement worked out by the JCS in 1954, the Army received responsibility for "point" defense of cities and installations against hostile aircraft, using surface-to-air missiles with a range of 50 miles or less; the Air Force for "area" defense, using missiles with longer ranges.

By 1955, a combination of factors led to new interest in the U.S. Ballistic Missile Defense (BMD) program. In 1953, The Soviet demonstration of a thermo-nuclear device led to the prioritization of the U.S.'s own ICBM capability. Furthermore, the *New York Times* circulated details of the Soviet "ultimate weapon," alluding to the development of Soviet ICBMs in 1954. These developments moved ICBM defense capabilities from a fringe concern to a main focus of CONUS – the 48 contiguous states and the District of Columbia – defense. To integrate and coordinate homeland air and missile defense, the Joint Chiefs of Staff created the joint Continental Air Defense Command (CONAD) in 1954, to be placed under the executive agency of the Air Force. However, the interservice rivalry continued unabated, with the Army's NIKE a particular point of tension; the Air Force felt that the system transcended a purely AAA role and constituted an encroachment on their air defense mandate.

1956 SecDef Wilson Memorandum:

The following discussion of the events in 1956-57 is drawn from the official history of the Secretary of Defense, "Into the Missile Age", written by Robert J. Watson.

In March 1956, Assistant Secretary for Research and Development Clifford Furnas, at Secretary of Defense Charles Wilson's direction, established a committee, headed by Hector R. Skifter, to study the feasibility of an anti-ICBM. The committee concluded that a system to detect approaching missiles was feasible and could provide 8-25 minutes' warning time. An active defense to intercept the missiles presented much greater difficulty and the committee recommended that it be studied carefully in the light of probable costs.

The report went to a higher-level committee, which was chaired by the Special Assistant for Guided Missiles, Eger V. Murphree and included Army and Air Force representatives. The members recommended proceeding on a research basis, with the Air Force to develop the early warning system, and the Army to develop the weapon with associated equipment. This division would accord the ultimate operational roles of the two Services. Wilson approved these recommendations and directed the two Services to proceed with the research program, to be monitored by the Office of the Secretary of Defense (OSD).

An Army study completed in October 1956 showed that NIKE ZEUS, already in development as an improvement on AJAX and HERCULES, could be adapted for missile defense. The Army at once began developing "hardware." By that time the Air Force had begun studies of "forward acquisition" radars which would form the outermost defensive ring.

Facing a fierce Army-Air Force dispute in a period of defense spending cuts, Secretary Wilson attempted to clearly demarcate air and missile defense responsibilities across the Military Services. In a Memorandum issued by Wilson on 26 November 1956, he assigned to the Air Force responsibility for air defense of areas, defined as "the concept of locating defense units to intercept enemy attacks remote from and without reference to individual vital installations, industrial complexes or population centers." The Army received “developmental, procurement, and manning” responsibilities for point defense systems, defined as “the defense of specified geographical areas, cities and vital installations."

SecDef Wilson acknowledged that distinguishing between point and area defense required an “arbitrary range limitation” for anti-aircraft missiles, which he set at a horizontal range of 100 miles, relaxing the previous limitation of 50 miles. This appears to have been based on a recommendation from Air Force Secretary Donald Quarles to Wilson that the Air Force should be given full responsibility for all anti-aircraft missiles, or at the minimum, those with a range of over 100 miles. The Navy remained responsible, in cooperation with the other Services, for developing ship-based air defense weapons.

While this Memorandum was aimed at remedying the growing interservice rivalries around air and missile defense, little changed in practice. The Army simply labeled the NIKE project as “point defense”, while the Air Force described WIZARD, later

renamed BOMARC, as “long-range area defense” and both continued development efforts. Therefore, the dispute between the Army and Air Force continued with little interruption and periodically burst into public view, such as when the Air Force went so far as to call the Army “unfit to guard the nation” on the front page of the *New York Times.*

Of the operational military commands, the "joint" Continental Air Defense Command (CONAD), established in 1954, had responsibility for air defense of the entire North American continent except for Alaska and Northeastern North America, which were assigned respectively to Alaska Command(ALCOM) and the U.S. Northeast Command. The Secretary of the Air Force served as executive agent for all three of these commands. Later, on 21 June 1956, acting on unanimous Joint Chiefs of Staff (JCS) recommendations, Wilson abolished the U.S. Northeast Command and assigned its responsibilities to CONAD, which would also take over air defense of Alaska (leaving ALCOM with sharply reduced responsibilities). CONAD was also responsible for stating requirements for air defense weapons.

The Commander in Chief, CONAD (CINCONAD) was also Commander of the Air Defense Command (ADC), CONAD’s Air Force component command. The staff of ADC served as the CONAD staff, augmented by representation from all of the Services. The other components were the Army's Anti-Aircraft Artillery Command (ARAACOM) and a Navy command designated NAVFORCONAD.

The authorities and role of CONAD also became the subject of intense Service rivalry, with the Army seeking to preserve the autonomy of its AAA field commanders as separate from CONAD. In May 1956, CINCONAD General Earle E. Partridge, took the initiative to clarify the authority of CONAD leading the JCS to address the question.

The JCS agreed that CINCONAD should exercise operational control over all continental defense forces, but they disagreed as to the extent of this control. Four of the five members believed that it should include responsibility for determining methods for conducting the tactical air battle and authority to centralize operational control of all assigned forces, including the assignment of individual anti-aircraft batteries to designated targets. Army Chief of Staff General Taylor strongly dissented.

The disagreement was based on different operational concepts of anti-aircraft defense. The Air Force favored close centralized control of the air defense battle, which was the purpose of the Air Force's Semi-Automatic Ground Environment (SAGE)

computer network. The Army believed that the initiative must rest with individual battery commanders, under the coordination of the local anti-aircraft defense commander, subject only to procedures prescribed by CINCONAD.

The Army was developing its own electronic device, known as Missile Master, for controlling and directing SAM launches. After a study in June 1956, the integration of SAGE and Missile Master was found to be technically feasible, and SecDef Wilson ruled in favor of the JCS majority. At Wilson's direction, CINCONAD drew up a plan to integrate Missile Master with the Air Force manual control system and ultimately with SAGE that was approved by the Deputy Secretary of Defense.

Before 1957, cooperation with Canada in air defense was confined to planning, constructing, and operating the various early warning and control facilities. The next step, operational integration of active defense forces followed naturally after all U.S. forces, including those in Alaska and the Northeast, came under the control of CONAD.

The JCS took the initiative to create joint operational control of the two nations' defenses. In December 1955, they approved it in principle and approached the Canadian Chiefs of Staff, who agreed. The JCS recommended creation of such a command to Secretary Wilson on 7 February 1957. After clearing the matter with President Eisenhower, Wilson gave his approval on 16 March 1957.

Subsequent negotiations between the U.S. and Canada proceeded rapidly, and on 1 August 1957, the two governments announced the formation of an integrated headquarters in Colorado Springs, Colorado, to control the defense forces of the two nations in the Continental United States, Canada, and Alaska, called the North American Air Defense Command (NORAD). On 19 August 1958, President Eisenhower formally confirmed the appointment of Air Force General Earle E. Partridge as CINCNORAD and of Air Marshal C. Roy Siemon, RCAF, as his deputy.

The reorganization of DoD in 1958 altered the status of CONAD and with it, NORAD. CONAD lost its anomalous status as a "joint" command and became one of the unified commands, which had legislatively received legal recognition in 1958 and the authority to exercise "full operational command" over assigned forces. Armed with this authority, CINCNORAD established its own structure of subordinate commands. Four NORAD regions were established in the United States and one in Canada, the latter coterminous with the RCAF Air Defense Command, which became a component command under NORAD.

Throughout 1956 and 1957, the DoD had three land-based air defense missiles under development. The most important of these in terms of their future were NIKE HERCULES and BOMARC B. The third was TALOS, started by the Navy for shipboard use but being developed by the Army in a ground-based version. Compared to NIKE HERCULES, TALOS had a slightly longer horizontal range (100 miles vs. 80 miles). NIKE HERCULES did, however, have a higher altitude range (100,000 feet compared to 80,000); it carried a heavier payload and was further advanced than TALOS. In early 1958, the TALOS program was rejected as a possible interim anti-missile defense system for Strategic Air Command bases, and OSD canceled the program.

Following SecDef Wilson's 1956 Memorandum, the Army's development effort for the NIKE point defense system progressed to its second generation, NIKE ZEUS. The Air Force lobbied aggressively against NIKE ZEUS, criticizing its novel technology and rising costs, and campaigned for a more offensive-focused approach. Despite the Air Force's criticism of the general missile defense mission, the branch continued to develop WIZARD, later renamed BOMARC, which was itself a missile defense program.

Murphree's anti-ICBM committee recommended, on 21 March 1957, a further delineation of responsibilities. Wilson approved its recommendations that the Air Force, besides developing the forward acquisition radars, should be responsible for transmission of information to the active defense system, that the Army should develop the radars for local acquisition and target tracking, and that a joint Army-Air Force committee should be established to coordinate the effort.

The Soviet Union's successful test flight of an ICBM in August 1957, and launch of Sputnik, the world's first artificial satellite on October 4, 1957, demonstrated the Soviets' technological prowess, provoking U.S. fears about American homeland defense capabilities. In December 1957, President Dwight Eisenhower received the Security Resources Panel Report, the "Gaither Report", which highlighted the inadequacy of "active defense" programs against the Soviet threat. Several Congressional Committees in the late 1950s blamed developmental delays in U.S. defense capabilities on interservice rivalries, leading to yet another SecDef intervention.

1958 SecDef McElroy Memorandum:

The following discussion of the events in 1958 is drawn from the official history of the Secretary of Defense, “Into the Missile Age”, written by Robert J. Watson.

As the missile-age and technology advanced, the difficulty of continuing the compromise reached at the founding of the Air Force in 1947, in which the Air Force was given responsibility for air defense, including land-based air defense, and the Army retained the responsibility to “organize, train, and equip Army anti-aircraft artillery units”, had become more pronounced. In his 1956 Directive, SecDef Wilson sought to continue a distinction based on area vs. point defense. Yet by 1958, this distinction was becoming harder to define. For example, during hearings before the House Committee on Armed Services in January 1958, SecDef Neil H. McElroy asked rhetorically: "Who says where a point is and who says where an area is, and who particularly says where [an] area is when something is coming along at the speed of an ICBM?"

The difficulty of distinguishing between point and area defense was enhanced by the growing destructiveness of warheads. In September 1958, test flights of NIKE HERCULES reportedly demonstrated that an entire formation of jet aircraft could be destroyed with six nuclear-armed missiles. Therefore, a weapon intended for "point" defense could also defend a large "area.”

Congress and President Eisenhower placed pressure on DoD and Secretary McElroy to curb the growing rivalry between Army and Air Force systems, which eventually spilled into the public. Congress also acted to reduce the funding requested for the Army’s NIKE HERCULES and the Air Force BOMARC, sparking an even more intense Service rivalry.

As the official history of the Secretary of Defense states:

> Army and Air Force partisans defended their own system while denigrating that of the other. In the argument, the Air Force seemed to have the better of it: BOMARC B was expected to have a horizontal range of 400 miles (NIKE HERCULES being bound to the 100-mile limit established by Wilson); it would have a low-level capability lacking in NIKE HERCULES (the Army had designed a separate missile, Hawk, for this purpose); and a BOMARC squadron required only 80 acres of ground, compared with 200 for a NIKE

battalion. NIKE HERCULES had the principal advantage of being already operational.

NORAD's concept of operations envisioned a layered defense for ground-based defenses and fighter aircraft interceptors to defend against the large Soviet long-range bomber threat. Fighter interceptors would strike first at incoming aircraft, then land on northern bases (rather than returning to their initial bases) in order to clear the way for missiles. BOMARC, with its longer range, was expected to come into action first. NIKE HERCULES would then follow, with another system called Hawk which would fill in as needed against low-flying aircraft. The SAGE command and control system would integrate these efforts.

Secretary of Defense McElroy would ultimately approve the Fiscal Year (FY) 1960 budget request to Congress, implementing NORAD's concept of operations. In Congressional testimony in 1959, in response to skeptical questioning, McElroy explained NORAD's concept of operations and said earlier duplication in siting between NIKE HERCULES and BOMARC had been eliminated. In response to a question from Senator John Stennis about how DoD had looked at duplication of these systems, Secretary McElroy gave a somewhat rambling response, in which he welcomed Congress holding DoD's "feet to the fire" on this. This remark caught the attention of President Eisenhower, who remarked at a press conference nine days later that he viewed this decision as an Executive Branch responsibility.

While the planning for a layered, air defense system to address the "bomber gap" with the Soviet Union was maturing, the nature of the threat was changing. In 1957 it seemed increasingly clear that the massive Soviet fleet of 700 heavy bombers by mid-1959, predicted by U.S. intelligence in August 1956, was not materializing. CIA Director Allen Dulles told the National Security Council on 10 October 1957 that the number of Soviet heavy bombers observed by U.S. intelligence was smaller than expected, and that he thought the Soviets might be de-emphasizing the role of the heavy bomber. In the ensuing months, this judgment was vindicated. The first intelligence estimate following Sputnik credited the Soviets with 90-150 heavy bombers as of mid-1957; the August 1956 estimate had forecast 220 by that date.

ADVANCED RESEARCH PROJECTS AGENCY

President Eisenhower believed strongly in the need for greater unity in defense organization. He had previously served as Chief of Staff of the Army, and based on his extensive military experience, was deeply familiar with interservice rivalries, which he believed led to duplication and waste in defense spending. As President, he felt it was critical to keep defense spending in check, as he saw a strong economy as vital to national security. In the development of new technologies like missiles, he saw an example of a function requiring centralized control.

Missiles already far along the road to development might continue under individual Services, but newer and more esoteric projects cutting across Service lines seemed to call for new organizational arrangements. On 11 October 1957, in one of his first conferences with his new Secretary of Defense, the President suggested the possibility of a "fourth Service" to handle the "whole missiles activity." McElroy suggested a Manhattan-type project for the anti-missile program. In the end, however, the Manhattan model was rejected, probably as too sweeping. Instead, Eisenhower and McElroy opted for the "single manager" approach.

McElroy intended that a new agency would have jurisdiction over new weapons that were "not anything like as far down the road as the missile program", such as the anti-missile weapon and "perhaps some other very upstream types of weapons projects." It would develop new weapons to the point of operational capability when they would then be turned over to one of the Services.

Some Service spokesmen opposed the new agency. The most prominent, Air Force Secretary James H. Douglas, considered it unnecessary and intrusive and believed that weapons systems, from their inception, should remain under the user Service. Secretary McElroy ignored these objections and moved to establish the new organization, eventually named the Advanced Research Projects Agency (ARPA) and today known as the Defense Advanced Research Projects Agency (DARPA). From the beginning, it had been understood that ARPA would take over responsibility for the development of missile defense and military satellite projects.

On 10 January 1958, Assistant to the Secretary of Defense for Guided Missiles, William Holaday, informed Secretary of Defense McElroy that the Air Force had diverted some FY 1958 money to a full-fledged anti-missile project (BOMARC), which overlapped the Army's work. Holaday recommended immediate action, without awaiting the organization of ARPA, to reaffirm the division of responsibilities

prescribed earlier: The Air Force would limit its effort to long-range detection, the Army would develop the actual weapon. SecDef McElroy agreed. On 16 January, he informed both Service secretaries that the direction of the anti-ICBM program would eventually be assigned to ARPA, but in the meantime, the two Services were to continue their current lines of development.

McElroy assigned the Army primary operational responsibility for ABM, as their NIKE ZEUS interceptor (a more-capable successor to the NIKE HERCULES) had progressed further in development than the Air Force's BOMARC. NIKE ZEUS was almost starting initial testing and indeed would successfully intercept an ICBM in 1962. However, while BOMARC was canceled, the Air Force maintained responsibility for the development of "early-warning radars, tracking and acquisition radars, and communications links" for integration with NIKE ZEUS. Days later, the National Security Council assigned NIKE ZEUS a rating of "S-Priority", the highest national priority rating.

McElroy's intervention on this dispute confirmed the Army's role as principal custodian of national ballistic missile defense operations and effectively terminated the Air Force's role in BMD interceptor development, stating that "the Air Force program will be limited at this time to the work in the above areas." Notably, in a situation that has implications for present day roles and missions, the Air Force used its position as the supplier of NIKE ZEUS's command and control electronics to claim a primary warning role; the Ballistic Missile Early Warning System (BMEWS), originally designed for BOMARC and adapted to NIKE ZEUS after SecDef McElroy's order, became the first operational early-warning missile radar.

During 1958, intelligence estimates of Soviet heavy bombers dropped further to 100-125 aircraft as of mid-1958, and the number was not expected to rise above 200 until mid-1960. The actual number believed to exist as of the latter date, according to 1960 estimates, was 135. This was a far cry from the 1956 forecast, though it should be noted that strength in medium bombers was believed to be higher than expected, at approximately 1,000.

The "bomber gap" had disappeared, but a "missile gap" now loomed, at least in the minds of many. The estimated initial operating capability (IOC) for Soviet ICBMs (assuming a force of 10 prototype models) was first scheduled for 1959, then moved back to 1 January 1960. As of February 1960, some in the intelligence community believed that the Soviets might have 140-200 ICBMs on launchers by mid-1961, and

350-450 by 1963. Though the Intelligence Advisory Committee debated vigorously over the accuracy of these estimates, even the lower figures signified an ability to mount a dangerous attack against the United States and perhaps a "crippling" blow.

To officials in the OSD and elsewhere in the Administration, these two trends in Soviet military preparation - the de-emphasis of manned bombers and the increase in long-range missiles - pointed to an obvious conclusion. Defense against conventional aircraft assumed less importance; thus BOMARC, which had not yet been deployed, could be cut back. The money saved could be used to accelerate early warning against missiles and enlarge the U.S. strategic deterrent force. These conclusions underlie the revisions in the FY 1961 budget that the Administration submitted to Congress in early 1960.

The FY 1962 budget provided money to continue the expansion of SAGE, Missile Master, and the gap-filler radar system, and to complete the NIKE HERCULES program. It included no money for BOMARC or additional fighter interceptors. In sending the budget to Congress, President Eisenhower devoted most of his message to defense against ballistic missiles, stating: "The advent of nuclear-armed intercontinental ballistic missiles in the hands of a potential adversary has confronted this Nation with a problem entirely new to its experience," noting that work on the ground-based radar missile warning system "has been greatly accelerated and is proceeding as fast as practicable." Development of the NIKE ZEUS missile for active defense against the ICBM "is proceeding under the highest national priority", he said.

Eisenhower's message to Congress with the FY 1962 budget emphasized the need for missile defense of the Continental United States, but the need and potential for missile defense had been recognized by the Services since World War II. The Army and the Air Force undertook serious research in the field. As the official history of the Secretary of Defense states: "Apparently by coincidence, they pursued complementary lines of research. The Army focused on developing a missile (one of the NIKE "family"), while the Air Force concentrated on long-range radar detection of hostile missiles".

The following discussion of events from 1961-65 is drawn from the official history of the Secretary of Defense, "The McNamara Ascendancy", written by Lawrence Kaplan, Ronald Landa, and Edward Drea and other sources as noted.

As President John F. Kennedy was preparing to take office in January 1961, the Army wasted no time in advocating for its ABM system, sending a memo to the incoming Deputy Secretary of Defense-designate Roswell Gilpatric on 17 January 1961, arguing that NIKE ZEUS would provide early warning and an active defense in urban areas against Soviet submarine-launched ballistic missiles. Moreover, the Army argued that the very existence of an ABM weapon would establish "a stable and creditable deterrence." The Army recommended a limited production and deployment using $73.3 million in FY 1961 funds and an additional $313.5 million for FY 1962. The Army would go on to complete installation of the full NIKE ZEUS system (4 launch cells, 7 radars and battery control equipment and target intercept computer) on Kwajalein Atoll in June 1961.[3]

In the early months of 1961, however, the JCS was divided on the NIKE ZEUS issue. Terming ABM "an indispensable element in deterrence," the Chairman of the Joint Chiefs, Army General Lyman Lemnitzer, won support for limited production from Chief of Naval Operations Admiral Arleigh A. Burke and Army Chief of Staff General George H. Decker. With the decision by SecDef McElroy to give the Army the lead on ABM defenses and cancellation of the Air Force BOMARC air and missile defense system, Air Force Chief of Staff General Thomas White, argued in favor of building ICBMs operated by the Air Force instead of ABM development.

SecDef Robert McNamara did not recommend to the President the full amount the Army requested, instead proposing an additional $82.8 million in FY 1962 funds for NIKE ZEUS to provide the capability to begin production of long-Iead items. This would allow completion of the first NIKE ZEUS installations about October 1965. The Bureau of Budget opposed this funding and ultimately President Kennedy decided to defer a decision on beginning NIKE ZEUS production and did not fund it in his initial budget for FY 1962. This was a significant policy change from President Eisenhower’s last statements on the urgency of missile defenses to deal with the growing Soviet missile threat.

In a decision that bears on the discussion of Military Service roles and missions, in his first weeks after taking office, Secretary McNamara directed his initial attention to the interservice rivalry as it related to space and made a clear decision in less than two months. On 6 March 1961 he issued DoD Directive 5160.32, declaring that "research,

[3] U.S. Army Space and Missile Defense Command Historical Office, First ABM Site in the Free World

development, test, and engineering of Department of Defense space development programs or projects, which are approved hereafter, will be the responsibility of the Department of the Air Force."

In the initial wake of the SecDef decision to give the Air Force the lead on space, USAF leaders sought to be gracious and sensitive to the needs of the other Services. For example, in Congressional testimony on 18 March, Air Force Chief of Staff General Thomas D. White said, "I might say I pontificated, again, to my commanders ... the Air Force would bend over backward to meet the requirements of the Army and the Navy as prescribed by the directive."

The Army and Navy had opposed consolidation of responsibility for space within the Air Force even though President-elect Kennedy had appointed a special task force to address this question and had come to much the same conclusion. Under the chairmanship of Jerome B. Wiesner, his chief science adviser, the Ad Hoc Committee on Space on 12 January 1961 recommended that Kennedy centralize control of all military space development. Given that the Air Force already had responsibility for over 90% of the total defense effort in space development activities, that seemed like a natural decision. The Air Force also argued it had responsibility for the aerospace domain.

In mid-February, before McNamara had issued his Directive, the point man for the Army's opposition to the Air Force, Lt. Gen. Arthur G. Trudeau, chief of Army research and development, had testified to Congress that "the military use of space is too vital to be entrusted to any one Service." VADM John T. Hayward, the Navy's top research director, joined General Trudeau in opposition to giving responsibility for space to the Air Force.

Army opposition was particularly significant. Even after SecDef McNamara issued his Directive, Army Secretary Elvis J. Stahr pushed back against the order as well as the downgrading of the civilian secretaries to be clearly subordinate to the Secretary of Defense. Eventually, 15 months later, for other reasons as well, he resigned at the end of June 1962.

In explaining the reasons for the Army’s opposition to the Air Force leading space efforts, the authors of the official DoD history of the Secretary of Defense, Lawrence S. Kaplan, Ronald D. Landa, and Edward J. Drea stated: “Desirous of expanding its air defense mission beyond its point defense role, the Army particularly suffered distress because it believed itself on the verge of a breakthrough with the NIKE ZEUS

anti-missile missile that would convert it into an anti-satellite weapon with a much broader mission than originally anticipated. If space connected to air, it also connected to Earth."

In fact, despite the Secretary of Defense Directive in 1961 giving the Air Force responsibility for space research, development, test, and engineering, the Army continued to advocate that the NIKE ZEUS system could perform the anti-satellite mission in addition to its ABM role. In April 1962, Secretary of Defense McNamara approved adding the satellite interception mission to the NIKE ZEUS program.[4] Army anti-satellite weapon development work with the NIKE ZEUS system continued and the system successfully intercepted an Agena-D satellite in May 1963.[5] This followed the first successful intercept of an ICBM warhead by the NIKE ZEUS system six months earlier in December 1962.[6] The Army went on to deploy the anti-satellite system, which it called Mudflap, on Kwajalein Atoll in August 1963.[7] The Army also successfully argued for transfer of responsibility of the Kwajalein Test Site, later renamed the Kwajalein Missile Range, from the Navy in July 1964.[8] (The Army's initial use of the Kwajalein site had been governed by an MOU with the Navy signed in September 1959).[9]

In addition to the work performed by the Army and Air Force in the fields of space and missile defense, the Advanced Research Projects Agency (ARPA) had been hard at work in these fields since its establishment in the Eisenhower Administration to drive cutting-edge research and development (R&D) for later transition to the Military Services. In the area of missile defense, ARPA conducted a program called Project DEFENDER. This research contributed to improvements in both the U.S. Air Force ICBM programs, as well as the missile defense tracking and defense efforts of the Air Force and Army. It was clear from the beginning of Project DEFENDER that field measurements of ICBM re-entry vehicles would play a major role for decisions about

[4] U.S. Army Space and Missile Defense Command Historical Office, First ABM Site in the Free World
[5] Ibid
[6] Ibid
[7] Ibid
[8] Ibid
[9] Ibid

enhancement to preserve the continued credibility of the U.S. deterrent against Soviet ABM efforts, and about the development of U.S. missile defenses.[10]

In 1958-59, due to advantages of polar orbits for satellite launches, the Air Force constructed its main ICBM launch complex at Cooke Air Force Base (AFB), later named Vandenberg AFB.[11] In the same time period, the Army had selected Kwajalein Atoll as a test site for the NIKE ZEUS system.[12]

The Air Force planned to test launch ICBMs from its new complex, towards Kwajalein. interservice rivalry however continued. The Army preferred an "organic" operation under its control instead of observing re-entry vehicles launched by Air Force ICBMs.[13]

To provide RVs for test of NIKE ZEUS, the Army proposed to launch its JUPITER Intermediate Range Ballistic Missiles (IRBMs) from Johnson Island, with rockets to augment downward reentry velocity to simulate ICBM reentry.[14] When he became aware of this plan, Dr. Herbert York, the first Director of Defense Research and Engineering (DDR&E) in the Office of the Secretary of Defense decided in early 1960 that only real ICBM RVs would be shot into the Kwajalein area.[15] ARPA would play the role of honest broker providing information on RV observations to both the Air Force and Army.[16]

In response, ARPA began a companion effort to Project DEFENDER in the early 1960s called Project PRESS (Pacific Range Electromagnetic Signature Studies) to develop instrumentation and characterize the flight tests of newly-developed long-range missiles and missile defense

[10] ARPA Technical Accomplishments Volume II, An Historical Review of Selected DARPA Projects, April 1991

[11] Ibid
[12] Ibid
[13] Ibid
[14] Ibid
[15] Ibid
[16] Ibid

systems.[17] ARPA selected MIT Lincoln Laboratory to serve as the Chief Technical Director of the project.[18] The Laboratory selected the island of Roi-Namur on the Kwajalein Atoll as an ideal location to build this instrumentation because its remoteness from land and populated areas enabled a safe testing environment.[19] The first radar developed under Project PRESS was the Target Resolution and Discrimination Experiment (TRADEX) system which became operational in 1962.[20]

Figure: TRADEX

An upgrade to the radar in 1995 enabled TRADEX to assess the space debris population at low latitudes. This mode was used to collect space-debris data for NASA. In 1998, TRADEX became a contributing sensor to the U.S. Space Surveillance Network, with a primary focus on tracking foreign launches, deep-space satellites, and low-Earth-orbit satellites.[21]

Figure: ALTAIR

The second system developed and deployed at Kwajalein under Project PRESS was called the ARPA Long-Range Tracking and Instrumentation Radar (ALTAIR) and became operational in 1969.[22]

ALTAIR was designed to give a view of how ICBMs appear to missile defense radars.[23] ALTAIR joined the Space Surveillance Network in 1982.[24] Like TRADEX, ALTAIR is responsible for tracking foreign launches, and near-Earth-orbit and deep-space satellites.[25]

[17] Massachusetts Institute of Technology (MIT) Lincoln Laboratory history
[18] Ibid
[19] Ibid
[20] Ibid
[21] Ibid
[22] Ibid
[23] Ibid
[24] Ibid
[25] Ibid

In March 1968, Dr. John S. Foster, Director of Defense Research and Engineering (DDR&E) in the OSD, transferred ARPA's missile defense program Project DEFENDER, and the Project PRESS complex, to the U.S. Army, including transfer of the budget for Project DEFENDER beginning with the fiscal year 1969 budget.[26] After the transfer of most of Project DEFENDER, ARPA formed its Strategic Technology Office (STO), which continued to support optical and IR research until the early 1970s. This research provided much of the basis for sensor developments later undertaken in the Reagan Administration by the Strategic Defense Initiative (SDI).[27]

MCNAMARA INITIATES ARGUMENTS AGAINST MISSILE DEFENSE THAT PERSIST TODAY

Throughout his tenure as Secretary of Defense, Robert McNamara put forward many of the arguments against missile defense that persist today. For example, he argued repeatedly that the threat from Soviet and Chinese missile programs did not warrant such defenses and would only drive major advances in missile and nuclear technology by both countries. McNamara argued that missile defenses would prompt an arms race and argued in favor of restraint in U.S. strategic offensive forces. Both steps, he felt, would restrain the Soviet Union from increasing its offensive and defense strategic forces. Yet, despite later forgoing deployment of ABM defenses and limiting plans for strategic offensive forces to lower levels, the Soviets pursued large scale deployments of thousands of nuclear-tipped ICBMs and deployment of ABM defenses. They also rejected McNamara's arguments about "assured destruction."

According to the official history of the Secretary of Defense, McNamara argued in favor of a definition of "assured destruction" that was far less than Eisenhower's doctrine of massive retaliation for a nuclear strike on the United States. McNamara pursued numerical formulas and systems analysis aimed at quantifying the needs for such "assured destruction." For example, the original criteria for assured destruction consisted of a capability to retaliate after a Soviet first strike and to destroy 30% of the USSR's population, 50% of its industrial capacity, and 150 of its cities. McNamara

[26] U.S. Army Space and Missile Defense Command Historical Office, First ABM Site in the Free World, Department of the Army Historical Summary: Fiscal Year 1969, and ARPA Technical Accomplishments Volume II, An Historical Review of Selected DARPA Projects, April 1991

[27] ARPA Technical Accomplishments Volume II, An Historical Review of Selected DARPA Projects, April 1991

argued that damage beyond these levels was simply gratuitous and not cost-effective. McNamara had similar approaches to conventional warfare, including the more cost-effective involvement early in counter-insurgency efforts to avoid larger scale conflicts later that led to U.S. involvement in Vietnam.

As the official DoD history of the Secretary of Defense points out, McNamara engaged in "mirror imaging" to explain how the Soviets would think about the issues the same way he did despite their statements to the contrary, adding that, "The illogic of asking the Soviets to accept permanent strategic second place, to swallow OSD's chosen strategy of assured destruction, and to bank on the good intentions of the United States not to exploit its nuclear superiority also seemed to escape him."

McNamara also pioneered arguments against the value of more limited defenses of the U.S. population coupled with offensive deterrence, arguing against initial aims put forward by the Eisenhower Administration and the JCS towards protecting a majority of the U.S. population. For example, McNamara argued against pursuit of a defense for 75% of the U.S. population, estimated to cost $35 billion, calling into question its value. To attain McNamara's objective of defending 90% of the U.S. population was estimated at over $60 billion, thus being cost prohibitive. He also argued that the Soviets could offset the U.S. defensive improvements at increasingly less relative cost, because ICBMs were easier and cheaper to build than ABM systems.

By late 1964, the controversy over lack of funding for an ABM system joined the list of major JCS-OSD disagreements. In Congressional testimony in early 1965, McNamara denied the need to deploy an ABM system by downplaying the possibility of the Soviets increasing offensive strategic forces as fast as previously anticipated, pointing to a thaw in U.S.-Soviet relations, and questioning indications of the Soviets deploying an ABM system.

Yet, McNamara's efforts to downplay the growing missile threat reflected his belief in assured destruction. As the official DoD history of the Secretary of Defense points out:

> The November 1964 National Intelligence Estimate (NIE) had forecast 400 to 700 Soviet ICBMs deployed by mid-1970 against 1,000 U.S. ICBMs; the actual count of Russian missiles in 1970 was 1,292. The 1966 forecast estimated between 800 and 1,120 for mid-1972; the count was 1,527. Also unpredicted, there appeared in 1967 the first Soviet Y-class nuclear submarine,

a vessel capable of launching nuclear missiles from underwater; 21 were operational by 1971, more than double the 1966 U.S. estimate of 10.

In 1965, an Army study recommended a combination area and point defense against a Chinese ICBM attack, that would be capable of growth to meet larger threats from any quarter. The study proposed to field, by 1970, a "light" ABM system capable of offering area anti-ballistic missile coverage of the Continental United States and Hawaii plus point or terminal protection for 25 American cities. Phases I and II had an estimated cost of $9.4 billion and completion date of June 1975. Expansion in Phases III and IV would provide point defense for another 26 cities and improved defenses at all 51 cities. To meet the Phase I schedule, the Army requested initial pre-production funding of $188 million for FY 1967 as well as authorization of the NIKE X deployment. Following a briefing by Army leaders on 8 October 1965, McNamara directed continued NIKE X development, but did not authorize moves to deploy the system. McNamara continued to argue his belief that ABM defenses could lead to an arms race with the Soviet Union.

In late 1965, an operationally effective ABM system was still in question. Although the Army was making advances with exoatmospheric interceptions (above an altitude of 300,000 feet) as well as interceptions at lower altitudes, many unanswered questions persisted about design and performance of the system, and warhead testing was still ongoing. In March 1966, McNamara testified to a joint Congressional Committee that the initially planned NIKE X would not protect the nation from a large-scale Soviet attack that could saturate or confuse it, but it might successfully fend off a "non-sophisticated" attack of perhaps 100 Chinese ICBMs.

In 1966, the Soviet offensive and defensive strategic arsenal expanded rapidly. Moscow continued building hardened ICBM silos at a faster than expected rate, to shelter the SS-11, a new, smaller, and more accurate missile. The Soviets deployed far more ICBM launchers during 1966 than U.S. intelligence had estimated the previous year. Analysts also believed the Soviets were developing multiple independently targetable reentry vehicles (MIRVs) for their SS-9 missiles.

As for defensive weapons, by early 1966, the Soviets' construction of six confirmed ABM complexes employing the advanced Galosh missile caused panic within the Pentagon.

As the official DoD history of the Secretary of Defense states:

Meantime another pillar of McNamara's opposition to NIKE X was giving way. He conceded during House hearings in early 1966 that technological improvements in warhead design had reached a stage where there was a possibility that an ABM system could prevent substantial damage to the United States from a Chinese attack. The breakthrough had occurred with the planned addition of long range, exoatmospheric anti-missile missiles to the system. Attacking large numbers of objects at altitudes well above the atmosphere with improved nuclear warheads could increase the ABM's radii of destruction from a few thousand feet to as much as 10 miles for hardened incoming reentry vehicles and 10 to 100 miles for unhardened ones.

The dramatic enlargement of NIKE X's kill-zone seemed to make possible a feasible and cost-effective ABM area defense. Whereas the initial ABM network would have required dozens of sites and thousands of short-range missiles for point defense, later computer-aided studies showed that a system of 4 long-range acquisition radars, 16 missile site radars, and 400 interceptor missiles at a relatively cheap price tag of $3 billion could theoretically offer a thin defense over the entire United States against a Chinese nuclear attack.

As if to reinforce the need to protect against large-scale attack, in May 1966, China exploded a device containing thermonuclear material, further diminishing the force of McNamara's argument that China presented no immediate threat. By October 1966, the Chinese had tested a nuclear-tipped intermediate-range ballistic missile (IRBM). The Soviets simultaneously appeared intent on constructing a Galosh-equipped ABM ring around Moscow and perhaps elsewhere. How, proponents wondered, could Washington not field an ABM defense when the Soviets were now building one as well as numerous ICBM missile launchers? The JCS proposal for ABM preproduction funding found growing support in Congress as NIKE X became a hot political issue that isolated McNamara and left President Johnson with the unhappy prospect of campaigning for reelection in 1968 open to charges of an "ABM Gap".

Yet, McNamara was unmoved, circulating a memo 17 November 1966 citing his "fixed belief" that the United States and the Soviet Union both shared the "fundamental objective" of assured destruction. He faced opposition to his views on missile defense from senior DoD officials. As the official DoD history of his tenure states:

> On 30 September 1966, DDR&E John Foster voiced his concern that the Soviets could destroy the Minuteman force if they modified their SS-9 and SS-11 missile forces, using basic technology they already possessed. To counter this possibility, Foster suggested deployment of ABMs to protect Minuteman sites. Critical of Foster's "imbalanced analysis" and lack of hard evidence for his contentions, McNamara relied on the more benign assessment of Systems Analysis that no recent evidence confirmed any Soviet attempt either to improve missile accuracy or develop MIRVs.

On 6 December, McNamara and the JCS met with President Lyndon Johnson in Austin, Texas, to finalize the FY 1968 DoD budget request. The Joint Chiefs reaffirmed their previous position supporting their damage-limiting argument and challenging OSD's assumptions that a Soviet reaction to NIKE X deployment would be "equal, opposite, feasible and possible." Even the Air Force Chief of Staff now favored deployment to protect Minuteman sites.

Surprised by the united front from the JCS, McNamara argued vigorously against deploying a NIKE X on a scale capable of defending 25 major American cities. He believed the Soviet nuclear defense policy had been wrongheaded for a decade, allowing spending of vast sums on defenses "not worth a damn" as it exceeded the needs of "assured destruction."

Saying he recognized the "terrible dilemma" the President faced, McNamara suggested a fallback position, in which he would ask for initial NIKE X deployment money in the January budget submission, announcing at the same time that DoD would not use the money if the Soviets indicated willingness to consider talks on ABM limitations.

McNamara worked with the State Department and President Johnson intently sought a summit meeting with the Soviet Premier Alexei Kosygin. After six months of U.S. effort to overcome Soviet reluctance, President Johnson and Premier Kosygin met in Glassboro, New Jersey in June 1967.

Prior to the Glassboro summit, the Soviet leader had made clear his disagreement with McNamara's concept of assured destruction, claims of missile defenses as destabilizing, and desire for arms control negotiations to limit missile defenses.

As the official DoD history of McNamara's tenure states:

> Kosygin, however, appeared preoccupied with the ABM issue, believing as he did that ABM systems were designed to save lives, 'and no negotiations were needed to prove it.' During his early February meeting with British leaders in London, for example, the Soviet premier, seeking to appropriate the higher moral ground, castigated the American position as one that preferred cheaper offensive weapons to more expensive defensive ones. Which was more conducive to peace, he asked rhetorically, a country that based itself on offensive or defensive systems?

According to Soviet Ambassador Dobrynin's version of events, at President Johnson's direction, McNamara provided Kosygin an impromptu discourse on his theory of assured destruction and need to prevent a costly arms race through arms control limits on offensive forces and ABM. Aware of McNamara's numerous public statements on cost-effectiveness of weapon systems, an emotional Kosygin declared this "commercial approach" immoral. As the weekend summit progressed, the Soviet positions only hardened. During subsequent private meetings with Johnson, Kosygin repeatedly implied that the Americans were only interested in limiting defensive weapons like ABMs.

The President and his Defense Secretary left Glassboro disappointed and Soviet participants later recalled their grave disappointment with McNamara's ABM presentation, describing it as little more than a rehash of the Secretary's previous public statements. Within 10 days of the summit, McNamara decided to recommend deployment of a thin ABM system, instructing his staff to prepare estimates for its initial components, lead times, and costs. McNamara would announce deployment of the SENTINEL system on 18 September 1967.

While McNamara could reject many JCS demands for more strategic weapons, he felt compelled to deploy a light ABM system, although he thought it unnecessary and too costly. The initial aims of the system were to defend against China's ICBM force. McNamara's concept of assured destruction and arms control altered the debate over strategic nuclear weapons. Yet as the official DoD history of his tenure points out: "His single-minded certitude that assured destruction was the only nuclear strategy that made sense alienated the Soviet leaders, whom he could not convince of its validity."

McNamara's successor as Secretary of Defense, Clark Clifford, opposed the NIKE X, doubting that it could protect cities against large-scale Soviet ICBM attacks. Unlike his predecessor, however, Clifford proved a hardline advocate of SENTINEL deployment. SENTINEL had evolved from the NIKE X program and used many of the components developed for that system.[28] Clifford believed SENTINEL was necessary to protect the United States against a Chinese or an accidental Soviet ballistic missile attack, defend Minuteman silos, improve the bargaining leverage in arms talks with the Soviets, and gain valuable experience from the construction itself.

The Chief of Staff of the Army directed the formation of a major command known as U.S. Army SENTINEL System Command (SENSCOM) to produce and field the SENTINEL system.[29]

A history of the system by Greg Bowen[30] describes the operation of the system to provide a layered defense:

> Threat re-entry vehicles (RVs) were detected by satellites, then picked up and tracked by the Perimeter Acquisition Radar (PAR), a phased-array system with multi-megawatt output. The PAR characterized the threat attack and provided track information for the intercept solution. This information was relayed to the Ballistic Missile Defense Center in Cheyenne Mountain, Colorado. Once the threat RV's came within range, the tracks were "handed off" to another phased-array radar, the Missile Site Radar (MSR), which provided the final fire control solutions for the system and guided the interceptors toward their targets.
>
> The system provided a layered defense, using the Spartan missiles for long range exoatmospheric intercepts and the Sprint missiles for close-in, endoatmospheric intercepts. Spartans were fired first at long range, with the goal of detonating their large warhead close to, and destroying a number of, RV's while they were still above the atmosphere. Surviving RV's would continue on their ballistic path. Once they began to reenter the atmosphere, the atmospheric drag would quickly separate the decoys and debris from the RV, making the actual targets easier to track. They would then be engaged at short

[28] SAFEGUARD: North Dakota's Front Line in the Cold War by Greg Bowen, 2004
[29] Ibid
[30] SAFEGUARD: North Dakota's Front Line in the Cold War by Greg Bowen, 2004

range with the Sprint, which would intercept them within about 25 miles of the launch site. Both missiles were nuclear-armed, using nuclear weapons effects such as blast, heat, radiation, and electromagnetic pulse (EMP) to destroy their targets. Command and control of the system was exercised at the MSR Complex and from the Ballistic Missile Defense Center (BMDC) located within the Cheyenne Mountain Complex in Colorado.

The planned initial SENTINEL deployment consisted of 6 Perimeter Acquisition Radars (PARs), 17 Missile Site Radars (MSR), 480 Spartan interceptor missiles, and 192 Sprint interceptor missiles at 17 sites in the Continental U.S. An additional MSR and 28 Sprint interceptor missiles were planned for Hawaii.

SENTINEL deployment did not proceed smoothly, however. The Army vacillated over site selection, anticipating the program funding would be cut due to the President's mandated reductions in defense spending. In early September 1968, Clifford insisted deployment adhere "as closely as possible" to the approved milestones; later he resisted White House attempts to slip the system schedule by several months to save $250 million. Of the 17 sites planned for SENTINEL, construction at only one—Boston, Massachusetts—was under way by early December 1968.

There were also objections to scheduled underground nuclear tests deemed necessary for SENTINEL warhead design. Residents in California, Nevada, and other Western states voiced concern that such tests might possibly trigger earthquakes. In early December, Clifford argued strongly and successfully against any testing delays, claiming that they would only increase costs, retard ABM deployment, and potentially lead some Congressional opponents of the program to again attempt to kill the program. A one-megaton test went off at the Nevada test site on 19 December 1968 in what turned out to be a major milestone in the short-lived SENTINEL project.

By 1969, the conflict in Vietnam had led to a major change in public opinion of the military and growing anti-nuclear sentiments. The U.S. Army Corps of Engineers conducted a series of public relations meetings to inform the local population about the SENTINEL construction and to address concerns, including about the potential for nuclear interceptions high over major cities.[31] One such meeting was held in Reading,

[31] SAFEGUARD: North Dakota's Front Line in the Cold War by Greg Bowen, 2004

Massachusetts on January 29, 1969 to discuss plans for construction in the Boston area. Unlike previous meetings, the Reading meeting deteriorated from a civil discourse into a series of shout-downs, prolonged applause, and cat calls.[32] Immediately after the meeting, former Kennedy presidential advisors George Rathjens, who attended the meeting, along with Jerome Wiesner and Richard Goodwin contacted the former President's brother, Senator Edward Kennedy, and urged him to join the opposition movement.[33]

Edward Kennedy did, and the next day sent a strongly worded letter to the new Secretary of Defense Melvin Laird who had taken office only a week earlier. In the letter, Senator Kennedy described the SENTINEL system as "technically deficient, dangerously sited, unduly costly, and deleterious to domestic priorities as well as to prospects for an arms agreement with the Soviet Union." The Kennedy letter touched off extensive Congressional debate, culminating in the House Armed Services Committee threatening to cut off funding for SENTINEL unless the Nixon Administration conducted a review of the entire program.[34]

SAFEGUARD:

In response to public and Congressional pressure, Secretary of Defense Melvin Laird initiated a review of the SENTINEL program, and how it could deal with Soviet and Chinese missile capabilities. Greatly concerned about the magnitude of the Soviet effort, he placed Deputy Secretary David Packard in charge of a review panel. With his science and engineering background, Packard was well suited to lead the review. The Soviets had outspent the U.S. on anti-missile defenses by a ratio of almost 4 to 1 during the past two years and had also increased the pace of offensive missile deployments.

After the review identified options, SecDef Laird, Deputy Secretary Packard, and the JCS endorsed a modified version of SENTINEL that protected Minuteman ICBM installations, Strategic Air Command bomber bases, and the national capital area from a Soviet strike. It would also defend some heavily populated areas from the emerging Chinese missile threat and provide defense against accidental launches.

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[32] Ibid
[33] Ibid
[34] Ibid

The modified system, built in stages, would reorient President Johnson's SENTINEL program from defending U.S. cities, to protection of military forces. The first phase would see construction of two sites, one at Malmstrom AFB in Montana and the other at Grand Forks AFB in North Dakota, with possible expansion in later phases to 12 sites.

On 14 March 1969, President Richard Nixon announced his decision to proceed with a modified ABM system, renaming it SAFEGUARD to emphasize its role in protecting the United States, stating the system was:

> A safeguard against any attack by the Chinese Communists that we can foresee over the next 10 years. It is a safeguard of our deterrent system, which is increasingly vulnerable due to the advances that have been made by the Soviet Union since the year 1967 when the SENTINEL program was first laid out. It is a safeguard also against any irrational or accidental attack that might occur of less than massive magnitude which might be launched from the Soviet Union.[35]

In short, SAFEGUARD was not intended to completely stop an all-out Soviet missile attack or defend cities, but it could help ensure the United States could mount a credible retaliatory strike. Above all, Nixon was convinced that an ABM system was a necessary bargaining chip in nuclear arms control negotiations with the Soviets.

Over the next three years the Nixon Administration would pursue arms control negotiations with the Soviets. These talks would culminate on 26 May 1972, with President Nixon and the Soviet leader Leonid Brezhnev signing the 1972 ABM Treaty and the SALT I interim agreement limiting strategic offensive arms. In the ABM Treaty, the parties agreed to limit ABM systems to two sites for defense of the national capital and one ICBM site.

Each of the two sites was allowed a maximum of 100 launchers and 100 missiles. The Treaty also prohibited either side from establishing a nationwide defense. In 1974, the U.S. and Soviet Union signed a protocol to the Treaty, limiting each country to just one site and reducing the total number of interceptors allowed from 200 to 100. The

[35] James H. Kitchens, III. A History of the Huntsville Division, U.S. Army Corps of Engineers 1967-1976 (Huntsville: U.S. Army Corps of Engineers, 1978) p 33.

Soviets chose to keep their ABM site around Moscow and the U.S. kept the nearly completed Safeguard site in North Dakota near an ICBM field.

On the day the ABM treaty was signed in 1972, SecDef Laird directed Army Secretary Robert F. Froehlke to suspend construction of SAFEGUARD at Malmstrom AFB, halt future work at the remaining SAFEGUARD sites, and kill all R&D programs prohibited by the treaty. At the same time, Laird wanted the planning for the national capital site to proceed as quickly as possible, and the deployment of the Grand Forks site to continue.

When the ABM Treaty was signed in 1972, the Grand Forks site was 85% complete, while the Malmstrom site was only 10% complete. Since the treaty only allowed one ICBM field to be protected, construction of the Malmstrom site was halted.[36] Work on the Grand Forks site proceeded rapidly, and the site reached initial operational capability (IOC) with the deployment of 28 Sprint and 8 Spartan missiles on April 1, 1975. The site reached full operational capability on September 28, 1975.[37]

The Grand Forks site complex consisted of three major elements: The Perimeter Acquisition Radar (PAR) located near Concrete, ND; the Missile Site Radar (MSR) complex located 12 miles south of Langdon, ND; and the four Remote Sprint Launch (RSL) sites clustered within 20 miles of the MSR. The Ballistic Missile Defense Center (BMDC) in Cheyenne Mountain, Colorado integrated SAFEGUARD within NORAD and allowed the Continental Air Defense Command (CONAD) to exercise operational command and nuclear release authority for the SAFEGUARD system. The Grand Forks site had 30 Spartan and 70 Sprint missiles when completed.[38]

The Ballistic Missile Defense Program Manager (BMDPM) was the senior Army officer who exercised command, less "operational command", over the SAFEGUARD system. Operational command of the system resided with the CINCONAD, who also commanded NORAD from the Cheyenne Mountain Operations Center in Colorado Springs, Colorado. [39]

[36] SAFEGUARD: North Dakota's Front Line in the Cold War by Greg Bowen, 2004
[37] Ibid
[38] Ibid
[39] Ibid

The BMDPM was responsible for discipline, internal organization, administration, logistics, and unit training for Army BMD Forces. He also served an advisor to CINCONAD on BMD matters, and as the Army Component Commander to Continental Aerospace Defense Command, he was an intermediary between CINCONAD and SAFEGUARD Command (SAFCMD), the operational Army unit that manned and operated the Grand Forks site. The authority to fire a Sprint or Spartan missile resided with the President, since both types of the missiles were nuclear-armed.[40]

In 1974, the Army's Ballistic Missile Defense Organization (BMDO) was formed to develop, deploy, and operate the SAFEGUARD system, as well as conduct advanced ballistic missile defense technology development. In 1975, a field operating agency in the Army called the Ballistic Missile Defense Advanced Technology Center was created to formulate and execute approved ballistic missile defense programs of exploratory and advanced development in ballistic missile defense technology within the guidance and direction of the Ballistic Missile Defense Program Manager.[41]

Despite spending billions of dollars to deploy the SAFEGUARD program at Grand Forks, the Army believed that a single site would be overwhelmed in a large-scale attack. However, it decided anyway to maintain the Grand Forks site for a year, to gain operational experience for potential future missile defense systems. When the Army's plan to cease operations after a year reached Congress, it moved quickly to cut appropriations. On October 2, 1975, the House voted to deactivate the system, due to the high operating costs and its limited effectiveness. On February 10, 1976, the Joint Chiefs of Staff ordered the termination of the mission. With that, the only U.S. ABM system was shut down after less than five months of operation.[42]

The cancellation of SAFEGUARD ended the Army's NIKE lineage that had begun in the late 1940s. Components of SAFEGUARD were deactivated or transferred to other mission areas; the Sprint and Spartan missiles were canceled, and PAR shifted to a warning role under the Air Force. The 1972 ABM Treaty solidified the theory of Mutually Assured Destruction (MAD) as the primary strategic deterrent for both sides.

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[40] Ibid

[41] Institute for Defense Analysis (IDA) Study on the Mission, Roles, and Structure of the Missile Defense Agency, 2008.

[42] SAFEGUARD: North Dakota's Front Line in the Cold War by Greg Bowen, 2004

In the early 1970s, even while it was deploying the SAFEGUARD system, the Army began working on concepts and components for new systems to defend the Minuteman ICBM bases and counter a larger and more sophisticated Soviet force than SAFEGUARD could address. This program, called HARDSITE, would supplement or replace SAFEGUARD with a larger number of defense modules, each defending a small portion of the Minuteman force. The radars of this system would be smaller, simpler, and cheaper than the SAFEGUARD radars, and the system would be less costly than the proliferation of SAFEGUARD components.[43]

Over the next 10 years, the Army studied and experimented with a wide range of missile defense technologies. Some of the technologies stemmed from the SAFEGUARD program, while others were completely new in areas like radar systems, missile development, optical systems, data processing, discrimination technology, re-entry physics, and nuclear effects.[44] For example, according to the U.S. Army Center for Military History, during the Carter Administration:

> The Systems Technology Program in fiscal year 1978 centered on reducing system cost, improving effectiveness, and reducing lead time in the face of a growing and increasingly sophisticated threat. Analysis progressed of the layered defense system and the Low-Altitude Defense (LoAD) System. A contract was let for the homing overlay experiment interceptor; and the systems technology testing program went forward at the Kwajalein Missile Range.
>
> Layered defense is a defense system with two layers operating cooperatively and selectively. It is a cost-effective source of exoatmospheric and endoatmospheric protection against Soviet reentry vehicles and sophisticated multiple target reentry vehicles (MIRVs). The system began early in fiscal year 1978, following an analysis in fiscal year 1977. The analysis showed that layered defense would be more robust and cost-effective than any of the other options available to counter the advancing Soviet threat to U.S. inter-continental ballistic missile (ICBM) forces.[45]

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[43] Department of the Army Historical Summary, FY 1970, Washington, D.C.: U.S. Army Center of Military History, 1973, pp. 126-127.)
[44] Department of the Army Historical Summary, FY 1969 (Washington, D.C.: U.S. Army Center of Military History, 1973, pp.31-33, 89-90.)
[45] U.S. Army Center of Military History, 1978, pp. 25-28, 126, 140.)

During the Carter Administration, in 1977, the Army began development of the Homing Overlay Experiment (HOE), and in 1984, HOE became the first system to successfully conduct a hit-to-kill interception outside the Earth's atmosphere. The Army would then use guidance system technology from HOE in its Exoatmospheric Reentry-vehicle Interceptor Subsystem (ERIS). Eventually tested in 1991, the ERIS system's effectiveness far surpassed HOE with a significantly improved accuracy in distinguishing ICBMs from decoy targets.

Strategic Defense Initiative:

After taking office on January 20, 1981, newly elected President Ronald Reagan was searching for a way to move away from Mutually Assured Destruction (MAD) with the Soviet Union. He began seeking advice on creating a workable ballistic missile defense. Acting on the advice of Dr. Edward Teller, the father of the American H-Bomb, and others, in March 1983 President Reagan gave an address to the nation stating his intent to "create a nationwide defense shield against ballistic missiles that would make nuclear weapons impotent and obsolete."

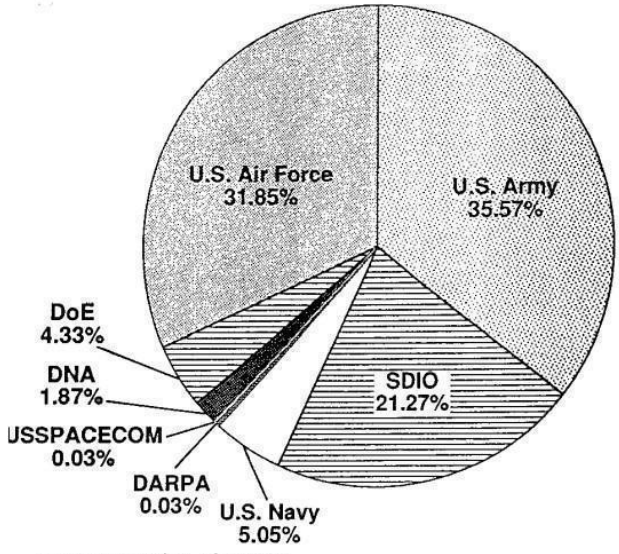
Reagan called his new concept the Strategic Defense Initiative (SDI), which Senator Edward Kennedy promptly dubbed "Star Wars", a name that would also be adopted by the media. To direct the program, Secretary of Defense Caspar Weinberger created the Strategic Defense Initiative Organization (SDIO): a joint Service, independent development organization that reported directly to him, headed by U.S. Air Force Lieutenant General James Abrahamson.

Although SDI was established as a research and technology development program in January 1984, the SDIO was not chartered to manage the Department of Defense's efforts in ballistic missile defense until three months later. The SDI program, designed to take advantage of expertise in the Armed Forces, private industry, universities, and the national laboratories, was created to explore advanced non-nuclear technologies associated with strategic defenses.[46] The ultimate deployment of the technologies undergoing research and development under SDI would have required withdrawal from the ABM Treaty.

[46] Guide to International Participation in the Strategic Defense Initiative, May 9, 1991

SDIO was chartered as a Defense Agency within OSD but served as an integrator and overall manager of efforts that were largely executed by the Military Services. As an SDI publication from 1990 stated:

> While SDIO is the focal point for policy and program formulation, the operational aspects of SDI work are performed through the SDI Executive Agents and their research facilities, Service commands, and other installations at various locations throughout the United States.
>
> Money appropriated by Congress for SDI flows through DoD to SDIO. The Director, SDIO, determines the overall program budget and allocates the money to his program managers within SDIO. These program managers provide money to the Military Services and other agencies who actually execute most of the programs. The majority of research and related work is pursued through contracts awarded on a competitive basis by the SDI Agents to private industry, universities, and other research organizations.
>
> In FY 1990, SDIO retained about one-fifth of the annual budget for SDI. Approximately one-third went to the Army, one-third to the Air Force, and the remainder to the Navy, the Department of Energy, and other defense agencies.[47]



FY90 allocation of money

[48]

[47] Ibid
[48] Ibid

The Army's missile defense expertise formed the backbone of the SDIO, and in July 1985, the new U.S. Army Strategic Defense Command (USADC) replaced the Army's BMDO. Working together, researchers from the SDIO, the Army, Air Force, national labs, and allies developed new approaches.

By 1990, USASDC's principal focus areas were: Advanced research and development in the fields of interceptors, active and passive sensors, discrimination, and signal/data processing. Some major elements of the Army's efforts as an SDI Executive Agent in 1990 were: Theater Missile Defense (TMD) Directed Energy Weapons (DEW), Kinetic Energy Weapons (KEW), Exoatmospheric Reentry-Vehicle Interceptor Subsystem (ERIS) which later was renamed as Patriot Advanced Capability-3 (PAC-3), Ground Based Interceptor (GBI), and High Endoatmospheric Defense Interceptor (HEDI) Sensors.[49]

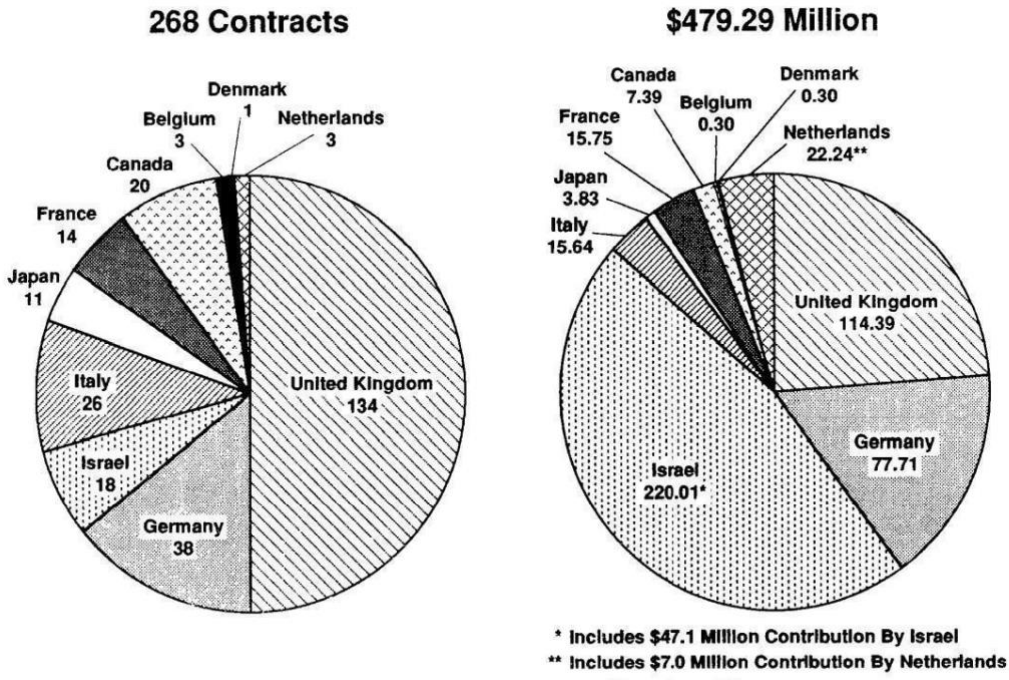
In its role as an SDI Executive Agent, the Air Force conducted work through its respective commands like the Air Force Systems Command and its respective Space and Electronic Systems Divisions, the Air Force Space Technology Center and Weapons Laboratory at Kirtland Air Force Base, and the Air Force Office of Scientific Research. Major SDI Program Elements executed by the Air Force were the Space-Based Surveillance & Tracking System (Brilliant Eyes), Space-Based Interceptor (SBI), and Advanced Launch System (ALS).[50]

Some of the new technologies the SDIO planned to use included space- and ground-based lasers, space-based interceptors, and a neutral particle beam weapon. The technology was immature, expensive, and the program became a major partisan political issue. The Soviet Union, as well as some of the United States' European allies, were harshly critical of SDI, claiming it would upset the balance of power. President Reagan, however, was unmoved by controversy and remained an ardent proponent of missile defense. With Reagan's support, SD1 funding grew rapidly, increasing from $1.4 billion in fiscal year 1985 to $4.5 billion in 1989.

SDI also included work with allies. In March 1985, Secretary of Defense Weinberger formally invited the NATO Allies and other friendly nations to directly participate in strategic defense research. Several countries signed Memoranda of Understanding (MOUs) or Memoranda of Agreements including the United Kingdom, Germany,

[49] Ibid
[50] Ibid

Israel, Italy, Japan, France, and the Netherlands. SDIO's first contracts with non-U.S. firms were awarded in late 1985. By November 1990, 268 contracts worth more than $479 million had been awarded to foreign partners, including to Israel for the Arrow missile defense program.



Cumulative contracts and dollar values awarded to foreign participants as of November 1990

In July 1983, the United States announced that it had detected a Soviet early-warning radar near the town of Krasnoyarsk, the location of which constituted a violation of the ABM Treaty. During the beginning stages of the SDI, a substantial debate took place regarding the proper interpretation of the ABM Treaty. Supporters of the "broad" interpretation believed that the testing and development of space- and mobile-based components that utilize "other physical principles" (e.g., lasers) was permitted, while those of the "narrow" view believed that development and testing of these components should be limited to fixed, land-based systems.

SDIO focused on large-scale defense against massive Soviet strikes. By 1986, SDIO had determined that this was feasible and created the concept of the Strategic Defense System. According to the Missile Defense Agency historian:

> By the autumn of 1987, SDIO had developed a national missile defense concept called the Strategic Defense System (SDS) Phase I Architecture, composed of a space-based interceptor; a ground-based interceptor; a ground-based sensor; two space-based sensors; and a battle management system. Using hit-to-kill interceptors, the architecture's goal was to destroy a given percentage of warheads in a massive Soviet missile attack against the United States, while improvements in its later phases would increase the system's operational effectiveness. From the outset, however, the architecture fueled controversy since its adoption would require withdrawing from the ABM Treaty, and because its space-based component had two major shortcomings: its expense, and vulnerability to Soviet anti-satellite weapons.
>
> In 1990, a new hit-to-kill interceptor concept called Brilliant Pebbles offered potential solutions to the space-based interceptor's cost and survivability issues. Brilliant Pebbles was based on many small, autonomous, space-based interceptors and replaced the original space-based interceptor concept in the SDS Phase I architecture.[51]

During the 1980's, SDIO also developed a concept for a constellation of many satellites in Low Earth Orbit (LEO), called Brilliant Eyes.[52] While the United States operated satellites capable of detecting the launch of ballistic missiles using infrared sensors, like the Defense Satellite Program (DSP) system first launched in 1970, SDIO identified the challenge of tracking the missile after its booster burns out and the missile ejects its warhead, decoys, and penetration aids onto a ballistic flight path through space. Brilliant Eyes was intended to address this capability gap by determining the location of the warhead and its destination to enable ground-based interceptors to successfully destroy the incoming warhead. Tracking would begin below the horizon and with hand-offs from DSP sensors and to ground-based sensors, would enable birth-to-death tracking of attacking missies and their warheads.[53]

With the disintegration of the Warsaw Pact in the late 1980s, the threat of a massive Soviet ICBM attack decreased. As noted by the Missile Defense Agency historian:

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[51] Missile Defense: The First 70 Years, publication of Missile Defense Agency historian, 8 August 2013.
[52] Congressional Research Service report to Congress, "Military Space Programs: Issues Concerning DOD's SBIRS and STSS Programs", Jan. 30, 2006, by Marcia S. Smith.
[53] Ibid and Air Force Magazine, "Space Watch, High and Low," by Richard Newman, July 2001.

Following the opening of the Berlin Wall in November 1989, which signaled the ending of the Cold War, President George H.W. Bush ordered a review of the SDI program. The review, completed in March 1990, recommended reorienting the program to develop strategic defenses against limited attacks on the United States and theater defense against attacks by short-range ballistic missiles on overseas forces.

The President formally announced this new system, Global Protection Against Limited Strikes (GPALS), in his January 1991 State of the Union Address. Its principal goal was to defend America against limited missile attacks and protect deployed United States forces and America's friends and allies against shorter-range ballistic missiles. GPALS was an integrated architecture with three components: a global, space-based system of Brilliant Pebbles interceptors; a force of ground- and sea-based theater missile defenses; and a limited, ground-based national missile defense element.

GPALS was managed under the purview of SDIO, and also contained the objective of defeating an accidental launch from the Soviet Union. The threshold requirement for GPALS was to protect against ballistic missile threats of up to a few tens of warheads.

The 1991 Missile Defense Act, driven by the use of Scud missiles by Iraq against the United States and its allies in the first Gulf War, called for "an anti-ballistic missile system… capable of providing a highly effective defense of the United States against limited attacks of ballistic missiles." The Act also required "highly effective theater missile defenses" for the protection of allies and deployed assets.

The United States held a series of discussions with the Russians regarding post-Soviet defense doctrines. In January 1992 at the UN, Russian President Boris Yeltsin proposed that SDI be reoriented to integrate Russian technology and that the United States and Russia build a Joint Global Defense to protect the world community, stating: "I think the time has come to consider creating a global system for protection of the world community. It could be based on a reorientation of the U.S. Strategic Defense Initiative (SDI) to make use of high technologies developed in Russia's defense complex."[54]

[54] Stubborn Things, A Decade of Facts About Missile Defense, A Report by Senator Thad Cochran, September 2000.

President George H.W. Bush and Russian President Yeltsin would discuss cooperation on GPALS at Camp David and agree at the Washington Summit on June 17, 1992 on a “Joint Statement on a Global Protection System", to pursue ballistic missile defense cooperation on a priority basis. The agreement to cooperate in the development of ballistic missile defense capabilities and technologies was also incorporated into another summit document – a “Charter for American-Russian Partnership and Friendship.”[55]

Upon taking office in January 1993, President Bill Clinton sharply curtailed and reoriented U.S. missile defense efforts to emphasize compliance with the ABM Treaty, which his administration called the “cornerstone of strategic stability”, utilizing the arguments first made by Robert McNamara that viewed missile defenses as destabilizing. Arms control was referred to as the first line of defense during the Clinton Administration.

The Clinton Administration terminated the Strategic Defense Initiative. The SDIO was renamed the Ballistic Missile Defense Organization (BMDO), with a new charter listing as its first priority development of TMD systems.

The Director of BMDO reported to the Under Secretary of Defense for Acquisition and Technology (A&T) as opposed to reporting directly to the Secretary of Defense as the Director of SDIO had done. BMDO was chartered with managing the integrated ballistic missile defense program (BMDP).

BMDO interfaced with the Services and other DoD organizations through the BMD Acquisition Review Council (BMDARC), with representatives from the Service Acquisition Executives (SAEs), Vice Chiefs of Staff of the Services, Vice Chairman of the JCS, and the Combatant Commands. The BMDARC was charged with determining specific program direction and resolving programmatic and technical issues.[56]

In his announcement of the new BMDO organization, Secretary of Defense Les Aspin stated, “we are here to observe... the end of the Star Wars era” and “these changes

[55] Ibid

[56] Department of Defense Directive 5134.9 establishing BMDO signed by Deputy Secretary John Deutch, June 14, 1994

represent a shift away from a crash program for deployment of space-based weapons designed to meet a threat that has receded to the vanishing point."

The Clinton Administration broke up the GPALS architecture into separate components and cancelled the Brilliant Pebbles program. In the first year of the Clinton Administration, the budget for national missile defense was reduced by 60% and overall missile defense funding slashed by 41%.[57]

In one of the first acts of the Clinton Administration, Secretary of Defense Les Aspin returned unopened bids that had been submitted by contractors to develop ground-based interceptors for national missile defense of the U.S. Secretary Aspin commented that he had taken this step to "take the stars out of Star Wars."[58]

Instead, emphasis was given to TMD programs. These included improvements in the Army's PATRIOT missile, known as PATRIOT Advanced Capability-3 (PAC-3); a new Army missile the Theater High Altitude Area Defense (THAAD); the Air Force's Airborne Laser program; and the lower-tier Navy Area Defense and upper-tier Navy Theater Wide programs, both of which were based upon significant modifications to the shipborne Aegis air defense system and Standard Missile (SM) interceptor.

The Clinton Administration also ended the GPALS cooperation with Russia. Notably, President Clinton and Russian President Yeltsin met in Vancouver in early 1993. Yeltsin wanted to continue the cooperative efforts, but his request was rejected by Clinton, who sought to emphasize arms control and the ABM Treaty.[59]

The Clinton Administration justified this focus on tactical BMD in part by a controversial 1995 National Intelligence Estimate which stated that, for at least the next 15 years, no U.S. adversary except Russia and China would be capable of developing missiles that could reach the Continental United States.

Congressional partisan bickering over the validity of this report lasted until 1998, when the Commission to Assess the Ballistic Missile Threat to the United States, known also as the Rumsfeld Commission, convened. The Rumsfeld Commission issued a report warning that Iran, Iraq, and North Korea could all relatively quickly

[57] Stubborn Things, A Decade of Facts About Missile Defense, A Report by Senator Thad Cochran, September 2000.
[58] Ibid
[59] Ibid

develop missiles capable of hitting the United States, and that the U.S. may have little warning of foreign missile development. The Rumsfeld Commission report was validated weeks later when North Korea tested a new ballistic missile, which overflew Japan before landing in the Pacific Ocean.

This was one of several factors that prompted the 1999 National Missile Defense Act, signed into law by President Clinton, that stated the United States' intent to "deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate) ...."

In another decision on roles and responsibilities for missile defense, following a 1994 DOD study on how best to meet the nation's early warning needs, Brilliant Eyes was transferred to the Air Force, which was given responsibility to build an integrated Space-Based InfraRed System (SBIRS) with satellites in several orbits. Brilliant Eyes was renamed the Space and Missile Tracking System and became the low Earth orbit component of SBIRS. Later it was renamed SBIRS-Low.[60] SBIRS would consist of two sets of satellites. The so-called SBIRS High constellation, consisting of four satellites in geosynchronous Earth orbits and two sensors in elliptical high Earth orbits, would primarily provide early warning of missile launches and track rockets until their heat-generating boosters burn out. SBIRS-High would be a replacement for DSP satellites providing early-warning of missile launches with much improved detection of the source of such launches and impact point prediction.

SBIRS Low, would consist of about two dozen satellites in low Earth orbit, which would then track the warheads from their point of separation from a booster until they neared re-entry. Combined with powerful ground-based radars, SBIRS-High and Low were intended to provide "birth-to-death tracking" of ballistic missiles.[61] The Air Force struggled with development of both the SBIRS-High and Low systems. SBIRS-High would go through repeated delays in development and major cost growth before eventually placing its first satellite in Geostationary orbit in 2011, about 15 years after the program began.
The SBIRS-Low system would go through many redefinitions and changes in acquisition approach. The original 1995 schedule for the system called for (1) a launch of a two-satellite flight demonstration in fiscal year 1999; (2) a deployment

[60] Congressional Research Service report to Congress, "Military Space Programs: Issues Concerning DOD's SBIRS and STSS Programs", Jan. 30, 2006, by Marcia S. Smith.
[61] Ibid and Air Force Magazine, "Space Watch, High and Low," by Richard Newman, July 2001.

decision in fiscal year 2000 after key technologies and operating concepts were validated by the demonstration satellites; and (3) launches of SBIRS-low satellites, with three satellites per launch vehicle, beginning in fiscal year 2006.[62]

Creation of the Missile Defense Agency:

President George W. Bush took office in 2001, naming Donald Rumsfeld as his Secretary of Defense. President Bush came to office strongly supportive of missile defenses to deal with growing missile threat from rogue states like North Korea. His first major national security address, in May 2001, was devoted to the need for missile defenses to counter this growing threat, his desire to move beyond the 1972 ABM Treaty, and to create a new framework for U.S relations with Russia that were no longer based on mutually assured destruction.

On December 13, 2001, President Bush announced that the United States had decided to withdraw from the 1972 ABM Treaty and had given the formal 6-month notice required under the Treaty to Russia. Withdrawal from the Treaty would take effect on June 13, 2002.

On January 2, 2002, Secretary of Defense Rumsfeld renamed BMDO to its present-day name, Missile Defense Agency (MDA). In his Directive establishing MDA, Secretary Rumsfeld invested the Agency with special authorities for rapid acquisition and instructed the Services on their responsibilities for assuming responsibility for budgeting for missile defense systems developed by MDA once they entered production and sustainment.

Similar to BMDO, the Director of MDA reported to the Under Secretary for Acquisition, Technology, and Logistics (USD/AT&L).

The Secretary of Defense Directive stated:

> The special nature of missile defense development, operations, and support calls for non-standard approaches to both acquisition and requirements generation. As a development activity, the Missile Defense Agency will require some expanded responsibility and authority. I therefore direct the following:

[62] Global Security Organization, https://www.globalsecurity.org/space/systems/sbirs-low.htm

To rapidly carry out my direction, streamlined executive oversight and reporting will be Implemented. The Senior Executive Council (SEC), chaired by the Deputy Secretary of Defense, will, in addition to other responsibilities, provide policy, planning and programming guidance; oversee the Department's missile defense activities; and approve BMDS fielding recommendations. The USD (AT&L) will establish a Missile Defense Support Group (MDSG) of appointed department officials to advise the Director, MDA, and support SEC decision-making. The chairman of the MDSG will report to USD (AT&L).

Management of the BMDS elements will consist of three phases: development, transition, and procurement and operations. The recommendation by Director, MDA, for a BMDS element to move to the transition phase; and by the Defense Acquisition Board (DAB) to enter the procurement phase will be approved by the SEC along with budget and force structure levels.

To encourage flexible acquisition practices, I delegate to the Director, MDA, authority to use transactions other than contracts, grants, and cooperative agreements to carry out basic, applied, and advanced research.

The Secretary, with input from the SEC, will decide whether to use Research Development Test and Evaluation (RDT&E) assets for emergency or contingency deployment, based on assessment of military utility, progress in development and recommendation by the Director, MDA and Military Services.

The Director, MDA, will manage the BMDS through the development and transition phases, and baseline the capability and configuration of its capability blocks and BMDS elements. The Departments of the Army, Navy, and Air Force will procure the BMDS elements and provide, with the Defense Agencies, for their operation and support.

Production quantities and operational force levels will be settled early enough in the development for an effective transition of responsibility. BMDS elements will enter the formal DoD acquisition cycle at Milestone C, concurrent with Service procurement responsibility transfer. USD (AT&L) will oversee all Service missile defense procurement phase activity.

Budgeting for RDT&E is the responsibility of MDA; budgeting for procurement is the responsibility of the Services.

To reinforce the single-system focus, and to implement a successful transition to capability-based management, the BMDS program will not be subject to the traditional requirements generation process of CJCSI 3170. The current Service missile defense Operational Requirements Documents are not consistent with the proposed BMDS development program objectives and are hereby cancelled. However, the Director, MDA will establish a process that sets initial capability standards, engages the participation of future users early and throughout development, and permits capability trades across all BMDS elements.

MDA will manage through System Technical Objectives and Goals and during the transition phase will baseline capabilities and configurations. During transition, the Services will develop a capability-based Operational Requirements Document (ORD) that will become operative upon transfer of capabilities to the Services.

Throughout development, the Military Departments and the Joint Staff will provide guidance and advice on desired capabilities, operational approaches, and suitability and supportability features.

The Military Departments will provide forces, as needed, to support the fielding of early and/or contingency capability and will budget the resources to procure and operate the planned force structure.

The Director, MDA will retain management responsibility for defining the overall BMDS and the interoperability standards for programs that transfer to the Services.[63]

After continued program struggles, redefinitions, and starts of more limited demonstration programs as part of the SBIRS-Low effort, in 2001, SBIRS-Low was shifted back to the Ballistic Missile Defense Organization (BMDO), which was

[63] Memorandum from Secretary of Defense Donald Rumsfeld, Missile Defense Program Direction, January 2, 2002

SDIO's successor and preceded the Missile Defense Agency.[64] In 2002, MDA scaled back the SBIRS-Low program to a two satellite demonstration called Space Tracking and Surveillance System (STSS). The two STSS satellites were launched in 2009 and provided valuable experience and refinement of techniques for distinguishing missile boosters and warheads from the plume from a rocket's exhaust. The two STSS satellites completed tracking operations in September 2021.[65]

On December 16, 2002, President Bush signed a Directive (NSPD-23) which reaffirmed that it was U.S. policy to develop and deploy, at the earliest possible date, ballistic missile defenses drawing on the best technologies available.

The Presidential Directive instructed DoD to deploy an initial set of missile defenses to protect the United States, its forces, friends, and allies beginning in 2004 utilizing the rapid acquisition authorities provided to MDA. The President called for these initial capabilities to be improved and expanded upon in an evolutionary approach that would keep pace with the threat.

Because of the expanded authorities provided by President Bush and the Secretary of Defense, in less than two years following President Bush's Directive, the initial deployment of the first operational hit-to-kill Ground-based Interceptors (GBIs) at Fort Greely, AK and Vandenberg Air Force Base, CA began along with the necessary sensors such as the Sea-Based X-Band Radar, and command and control provided by the Battle Management, Command and Control system operated by the National Guard.

Over the course of the next four years, MDA would rapidly field other capabilities such as initial deployments of Patriot PAC-3, SM-3 Block 1A interceptors on Aegis ships, and the THAAD system, as well as additional ground-based interceptors and sensors.

Despite rapid progress developing and fielding capabilities, the Services resisted budgeting for procurement and sustainment of missile defense capabilities despite being instructed to do so by the Secretary of Defense in 2002. As an Institute for Defense Analysis (IDA) study in 2008 led by General (retired) Larry Welch

[64] Congressional Research Service report to Congress, "Military Space Programs: Issues Concerning DOD's SBIRS and STSS Programs", Jan. 30, 2006, by Marcia S. Smith.
[65] "Missile Defense Agency Retires Two Missile Tracking Satellites," March 16, 2022, https://news.satnews.com/2022/03/16/missile-defense-agency-retires-two-missile-tracking-satellites/

concluded, "The Military Departments were charged with budgeting for and executing procurement and sustainment. In most cases, however, the MDA has procured and sustained elements of the BMDS, and the Military Departments have not adequately planned or prepared for procurement or sustainment."

In 2007, the Missile Defense Support Group was replaced by the Missile Defense Executive Board (MDEB). The principal function of the MDEB is to review and make appropriate recommendations to the Deputy Secretary of Defense regarding the implementation of strategic policies and plans, program priorities, and investment options. It was initially chaired by the USD(AT&L) and encompasses relevant senior officials from OSD (Director of Defense Research and Engineering, Policy, Intelligence, DOT&E, and Program Analysis and Evaluation) and representation from the Services, Joint Staff, USSTRATCOM, Department of State, and the Director, MDA. The MDEB began to establish Standing Committees.[66] Over the next 14 years, the MDEB has grown more bureaucratic and established more processes that have undermined the rapid acquisition authorities originally provided to MDA.

Upon taking office in January 2009, President Obama and his administration were less supportive of missile defense than the Bush Administration. In particular, like the Clinton Administration, the Obama Administration sought to return the focus of missile defense efforts to theater defenses and to curtail or cap all national missile defense efforts.

The Obama Administration cancelled planned production of additional ground-based interceptors for planned deployment in Ft. Greely, Alaska and Vandenberg AFB, California, initially capping the number to be deployed at the sites at 40 and 4 respectively. (The Obama Administration later requested supplemental emergency funding in its last year in office to increase the number of ground-based interceptors to 64 following North Korea's test launch of a more advanced ICBM, but those interceptors were not deployed due to technical issues encountered with development of a new kill vehicle used on the interceptor).

The Obama Administration announced the cancellation of the Bush Administration's plan, negotiated with Poland, to deploy a site of GBIs in that country and to place a large X-band radar in the Czech Republic. This plan was intended to improve defense of the U.S. and allies from long-range missiles. The Obama Administration cancelled

[66] Institute for Defense Analysis (IDA) Study on the Mission, Roles, and Structure of the Missile Defense Agency, 2008.

the Kinetic Energy Interceptor NMD program and substantially reduced total funding for missile defense.

In place of a National Missile Defense system in Poland and the Czech Republic, the Obama Administration negotiated the European Phased Adaptive Approach (EPAA) to defend Europe from the Iranian ballistic missiles. The EPAA included Aegis Ashore sites in Poland and Romania and deployment of Aegis destroyers to Rota, Spain. The EPAA allowed the Navy to play a wider role in European BMD, as it relies heavily on the Aegis platform at sea and on land and the SM-3 Interceptor.

Throughout the remainder of the Obama Administration and during the Trump Administration, the basic roles and missions of the Services and MDA did not change. The main changes that occurred were a series of steps culminating in a Directive signed by Deputy Secretary of Defense Norquist in March 2020 that largely returned MDA to the same requirements and acquisition processes used on other DoD programs as opposed to the rapid acquisition authorities used successfully by MDA to rapidly develop and field missile defense systems.

Transition of missile defense systems to the Services remains an issue despite periodic efforts to establish transition rules and begin budgeting for procurement and sustainment by the Services. Despite several Directives from the Secretary of Defense and other senior officials, MDA continues to procure and sustain missile defense systems operated by the Army, Navy, Air Force, Space Force, and National Guard.

Recommendations:

Missile defense remains extraordinarily challenging and complex and is becoming more so with the advent of hypersonic missile threats, being developed and fielded by Russia and China. There are parallels between the advent of hypersonic missiles to the use of the world's first cruise and ballistic missiles, the V-1 and V-2 by Nazi Germany in World War II that presented unprecedented challenges to U.S. and Allied forces that took decades to address.

While the threat is becoming more challenging, today, the roles and missions for missile defense are often unclear, and overlap multiple stakeholders: Combatant Commands (both geographic and functional), the Joint Staff, the Services, the Missile Defense Agency and other OSD Components. With the addition of the U.S. Space Force and USSPACECOM, the roles and responsibilities have become even more

confusing, introducing more seams and redundancies, and placing mission success at risk. Here too, our experience with the Space Force is similar to the debate and friction on roles and missions that occurred after the founding of the Air Force in 1947. In the late 1940s, the Army and Navy were reluctant to part with long-standing forces and capabilities that they had developed during World War II in order to take advantage of, and deal with new threats, borne of the advent of air power as a decisive element on the battlefield.

History is instructive, and as with the introduction of the U.S. Air Force in 1947, the additions of U.S. Space Force and USSPACECOM provides an opportunity for a review of missile defense roles and missions for delineation in the next Unified Command Plan (UCP) revision, and more importantly, rapid implementation. In the years following 1947, successive compromises were reached to accommodate Service frictions that ended up costing more money and stunted the progress that would have otherwise occurred. These compromises were made to accommodate Service rivalries, and we should avoid repeating such mistakes in the wake of creation of the Space Force.

History also demonstrates the benefit of providing an integrating organization with lead responsibility and the authorities to push the boundaries of innovation rapidly. In our history, the periods of greatest technical progress on longer-term, more capable systems have come when authorities and focus were given to stand-alone, focused organizations like ARPA, the SDIO, and the initial instance of the MDA before its rapid acquisition authorities and uniqueness were rolled back. In the absence of such an "integrator," the Services tend to focus on more parochial and near-term solutions and technical innovation is not as rapid.

Additionally, a flattening defense budget resulting from COVID-19 response measures increases the urgency to complete and implement a comprehensive review of missile defense roles and missions to ensure fiscal efficiency.

This review must inform and be informed by the Department's parallel efforts to update the National Defense Strategy, Missile Defense Review and at a more practical level, develop a new Joint Warfighting Concept and update current contingency plans. The worst outcome is to conduct strategic planning in stovepipes, which the Department is prone to do, causing gross inefficiencies in both unity of effort and application of limited resources. The Office of the Secretary of Defense, in particular

the Under Secretary of Defense for Policy supported by the Assistant Secretary of Defense for Strategy, Plans and Capabilities (SPC), with full consideration of military advice from the Chairman of the JCS and the Service chiefs, are key to ensure proper civilian oversight is applied, allowing the Secretary of Defense to make fully informed final decisions on Missile Defense roles and missions, and ensure each are resourced appropriately.

Specific Missile Defense Roles and Missions:

Overall, any missile defense roles and responsibility review should inform, and be informed by, the Department's parallel efforts to update the National Defense Strategy and the Missile Defense Review, the development of a new Joint Warfighting Concept, and any update to existing operational plans. A critical fault would be to conduct strategic planning in stovepipes, causing inefficiencies in both unity of effort and application of limited resources. As such, the Secretary of Defense (SECDEF), with support from the Under Secretary of Defense for Policy (USD-P), the Assistant Secretary of Defense for Strategy, Plans and Capabilities (SPC), the Director of Cost Assessment and Program Evaluation (CAPE), the Chairman of the Joint Chiefs of Staff (CJCS), the Combatant Commanders, and the Service chiefs, should make fully informed decisions on missile defense roles and missions, and ensure each Service and MDA are resourced appropriately. With that in mind there are several key missile defense (MD) roles and responsibilities changes that this review should address and establish (recommended new or adjusted guidance is in *italics*):

1. OSD should utilize MDA and key tools such as the JROC and the JCIDS process, to ensure that the joint force can address existing gaps in ground based cruise missile defense and develop solutions for the emerging hypersonic missile threat.

- *This will require increased requests for missile defense funding. Given the rapid pace of the growth in adversary missile threat and the increasingly large role that missile defense capabilities are playing in the military plans and combat operations of our adversaries, the missile defense mission is under-resourced.*
- *SECDEF should direct the Services to treat missile defense capabilities as a core mission area and budget accordingly to reflect the changed security environment we now face where missiles are a primary method of warfare being employed by our adversaries.*

- *SECDEF should disestablish the Missile Defense Executive Board (MDEB). The MDEB is highly bureaucratic with numerous subgroups and committees. The MDEB replicates the complex and cumbersome DoD acquisition and requirements process that the original DoD Directive establishing MDA intended to replace with a rapid and empowered central organization to lead MD development, initial production and fielding*

2. MDA should be made as efficient and agile as possible to ensure it develops, acquires, and fields the system architecture required to prepare for existing and emerging hypersonic threats. MDA is the lead system architect for MD across all domains and should be fully resourced and authorized to rapidly and efficiently develop and acquire MD systems to defend against ballistic missiles, hypersonic glide missiles, and complex hypersonic and long-range land-attack cruise missiles.

- *SECDEF should return the original rapid acquisition authorities to MDA that existed at its founding in 2002, to allow for more efficient and rapid deployment of capabilities, including the ability to set detailed performance requirements without approval by the JROC and relief from strict adherence to the DoD 5000 series acquisition regulations.*
    - *This includes restoring the MDA Director's authorities to function as a Component Acquisition Executive.*
- MDA should focus its resources on MD RDT&E and S&T for defense against ballistic missiles, hypersonic glide missiles, and complex hypersonic and long-range land-attack cruise missiles.
    - *MDA should develop MD systems through Low-Rate Initial Production (LRIP) and then transfer the systems to the Services for full rate production as originally envisioned at its founding. The Services should be required to budget for production, fielding, employment, and sustainment of these systems. The MDA budget, which resourced only the capability development of the system, will not be transferred to the Services.*
        - *As MDA transfers a missile defense system that has completed RDT&E to a Service, the MDA resources previously associated with that system should shift to the next highest priority MD capability development.*

        - *MDA should remain responsible for development of capability upgrades to existing fielded systems in coordination with the Services. Once RDT&E is complete for the capability upgrade, sustainment remains the responsibility of the Service employing the system.*
    - *MDA should be directed to develop a program to supplement and leverage the directed energy (DE) work of the Services. MDA should develop systems that can leverage the cost and advantages of speed of light weapons to deal with the hypersonic, ballistic, and cruise missile threats.*
        - *DoD's DE efforts have been underfunded and the new challenge of large numbers of sophisticated missiles operating at unprecedented speed in large numbers is well suited to DE solutions such as lasers and high-powered micro-waves.*

3. DOD must clarify each of the Services' specific responsibilities for air and missile defense and require the Services to fully resource the deployment, sustainment, and operation of their MD forces.

- The Army has played a central role in the MD enterprise. The Army has also consistently under-resourced the MD mission area by placing other mission requirements at a higher priority. Especially in light of the current and projected threat environment in the Indo-Pacific and Europe, this practice by the Army must cease immediately. *In the absence of a significant, near-term effort by the Army to comprehensively resource MD priorities, the Secretary of Defense should direct realignment of internal Army resources to MD and initiate a study to assess transition Army MD forces to the Air Force in order to ensure optimum MD capability and capacity for the Joint Force.*
    - *At the founding of the U.S. Air Force in 1947, the President and Secretary of Defense had made the Air Force responsible for air and missile defense, but through a series of compromises and Service rivalry, the Army played a greater and greater role and eventually took responsibility for the ground-based air and missile defense mission.*
    - *Most countries have given lead responsibility for air defense to their Air Forces given the synergies that are available for utilizing a combination of airborne, elevated, and ground-based radars and interception system to combine for effective defense against air, cruise, and ballistic missile threats. An important consideration that this study, once directed to be*

initiated, should examine is the inherent limitations and difficulty in detecting and intercepting low flying cruise missiles using ground-based radars and interceptors by the Army as opposed to the advantages of airborne sensing and defense from unmanned and manned aircraft and lofted sensors.

- Within this understanding, the Army should continue with overall responsibility for providing theater and fixed-site MD capabilities in support of Combatant Command MD plans, to include the defense of forward operating locations such as: key communications sites; command and control nodes; and air, ground and maritime staging and logistics locations.
    - *The Army must prioritize delivery of the Indirect Fire Protection Capability (Increment 2) - a cost effective cruise missile defense system, that is long overdue.*
- The Army and Navy should retain responsibility for MD of their maneuver forces and ships. Both Services should remain responsible for development of MD capabilities for which MDA is not designated as lead.
- *The Air Force should be given similar authority to procure and field MD systems to protect its maneuver forces which will not otherwise be defended by available Army or navy capabilities.* A prime example for use of this authority would be to defend forward expeditionary dispersed operating locations executing Agile Combat Employment.

∉ Services will be responsible for full rate production and sustainment (man, train, equip) of all MD forces in accordance with these clarified MD requirements, *to include* lifecycle support, employment, sustainment, and logistics of assigned MD systems.

∉ Services will continue to develop, acquire and sustain (man, train, equip) multi-domain offensive strike capabilities to degrade and reduce opponent missile capabilities in order to produce a more effective and efficient overall defense.

∉ The Space Force will be responsible for the overall sensor architecture in the space domain, to include sensors contributing to the MD mission. In design of that architecture, the Space Force must coordinate with all affected agencies. In particular, MDA, as the missile defense system architect,https://missiledefenseadvocacy.org/roles-and-responsibilities/ will play a critical role in ensuring sensor architecture supports MD requirements.

∉ The National Guard will man, train, and operate U.S. homeland defense MD sites for sensors, interceptors, and command and control. in accordance with

OSD's posture and deployment guidance, *to include fixed systems defending Guam and Hawaii as additional capabilities are fielded.*

4. DOD must clarify each of the Combatant Command's specific responsibilities in the MD enterprise and support the deployment and operation of their MD forces.

- OSD will solicit, validate, and prioritize Combatant Command (CCMD) MD requirements, and then direct deployment of Service MD forces to CCMDs.
- *USSPACECOM should have lead responsibility for synchronizing the operational MD efforts of the geographic and functional CCMDs, to include adjudicating issues related to operational cooperation between the CCMDs on MD.*
    - USSPACECOM would replace USSTRATCOM in this role. These authorities should be reflected in the next UCP revision.
- *USSPACECOM should be responsible for the MD early-warning and battlespace awareness mission.*
- *USSPACECOM should replace USSTRATCOM in command of the Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD).*

Historical Chronology:

1944: Generals Patton and Bradley rely heavily on air and missile defense to create defended "corridors" for troop movement.

April 1946: The Army and subordinate Army Air Force begin research and development for NIKE and THUMPER. The NIKE systems would stay under the Army's control, while THUMPER would be merged into the Air Force's WIZARD.

September 1947: The National Security Act of 1947 reorganizes the U.S. military; among other actions, the Act created the Department of Defense and established the U.S. Air Force as an independent branch.

April 1948: The Services sign the Key West Agreement, an attempt to create a detailed codification of air defense responsibilities across the military branches.

August 1949: The Soviet Union successfully explodes its first nuclear weapon.

March 1950: SecDef Louis Johnson issues the Guided Missile Memorandum, attempting to allocate responsibilities for offensive and defensive guided missile development. This memo specifically authorizes continued development of both the Army's NIKE and the Air Force's WIZARD.

August 1950: The Army and Air Force sign the Vandenberg-Collins Agreement, formalizing air defense responsibilities for the U.S. homeland.

October 1950: The Truman Administration appoints Kauffman Keller as the first Director of Guided Weapons to speed up NIKE development. Keller favors the NIKE AJAX, a short-range anti-aircraft missile. This system was later deployed across the U.S. and Europe, serving until 1960.

August 1953: The Soviet Union successfully detonates a thermonuclear device. This marks the beginning of a greater emphasis on U.S. BMD; previously, defense against air breathing threats was considered far more pressing and BMD was not a particularly strong policy or research focus.

September 1954: The Joint Chiefs of Staff establish Continental Air Defense Command (CONAD), establishing a joint, unified command for U.S. air defense under the executive agency of the Air Force. This effort establishes unity of command and unity of effort between the Services in support of operational control of air defense assets but does little to settle the long-standing conflict between the Services as to roles and missions for development of new systems.

February 1956: The Army Ballistic Missile Agency (ABMA) is formed at Redstone Arsenal, AL, with former WWII German rocket scientist Wehrner von Braun as technical director. The ABMA begins work on the Jupiter IRBM, while the Air Force initiates the Thor, a nearly identical missile.

November 1956: SecDef Charles Wilson issues a Memorandum, dividing air defense by point and area defense systems.

March 1957: Army Anti-Aircraft Command is re-designated as Army Air Defense Command, reflecting its transition from anti-aircraft artillery to missile batteries.

October 1957: The Soviets launch Sputnik I, the first artificial satellite, displaying Soviet scientific prowess and provoking fears of technological inferiority and military weakness in the U.S.

December 1957: President Dwight Eisenhower receives the Security Resources Panel Report, commonly called Gaither Report, highlighting the inadequacy of "active defense" programs against the Soviet threat.

January 1958: SecDef Neil McElroy intervenes in the Army-Air Force BMD dispute, conclusively giving the primary BMD role to the Army.

January 1958: The National Security Council assigns the maximum priority to NIKE ZEUS.

May 1958: The U.S. and Canada formalize the creation of North American Aerospace Defense Command (NORAD).

August 1959: NIKE ZEUS is first tested.

September 1959: SecDef Neil McElroy assigns nearly all military space functions to the Air Force.

December 1962: NIKE ZEUS successfully intercepts an ICBM for the first time.

February 1964: NIKE X Project Office replaces the NIKE ZEUS Project Office

October 1964: The People's Republic of China explodes a nuclear device.

November 1965: First guided Sprint flight test took place at White Sands Missile Range, NM.

27 October 1966: The People's Republic of China announces a successful test flight of a guided missile with a nuclear warhead.

November 1966: Secretary of Defense Robert McNamara announces that the Soviet Union had deployed an ABM system, consisting of 64 launchers deployed around Moscow.

September 1967: Secretary of Defense McNamara announces the decision to deploy the SENTINEL ABM system, to provide protection for urban areas against possible ICBM attacks by the People's Republic of China. It would also serve as a defense against accidental launch with an option to defend the Air Force's MINUTEMAN missile sites.

January 1969: President Richard Nixon assumes office and initiates a DoD review of strategic offensive and defensive priorities.

March 1969: President Richard Nixon redirects the BMD program. Components remained unchanged but deployment concepts were redrawn. Nixon specifies three defense objectives: "Protection of our land-based retaliatory forces against a direct attack by the Soviet Union"; "Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade"; and "Protection against the possibility of accidental attacks from any source."

March 1969: The SENTINEL System is re-designated as SAFEGUARD. The primary new focus for the program is the defense of twelve U.S. land-based ICBM sites. Authorization was subsequently given for only two MINUTEMAN bases, Grand Forks AFB, ND, and Malmstrom AFB, MT.

January 1970: President Nixon announces his decision to extend the deployment of SAFEGUARD, beyond the initial two-site Phase I program. The recommendation included a third site (Whiteman AFB, MO) and advance preparation for five additional sites (in the NE, NW, Washington, D.C., Warren

AFB, WY, and in the Michigan-Ohio area). There was no deployment commitment for the latter sites.

August 1970: A Spartan missile successfully intercepts an ICBM for the first time.

December 1970: The Sprint missile system intercepts its first ICBM.

December 1971: Construction begins on the BMD Center located in NORAD's Cheyenne Mountain Complex, to be the command-and-control element of SAFEGUARD.

May 1972: President Richard Nixon and General Secretary Leonid Brezhnev of the Soviet Union sign the ABM Treaty. Both nations agree to a limit of two ABM sites each. In addition, the treaty regulates the type of radars for the ABM site. Finally, the treaty prevented each country from defending its entire territory, thereby negating the deterrent effect. An interim accord, signed at the same time, sets maximum limits for each country's ICBM and sea-launched ballistic missiles (SLBMs) for five years. The treaty is ratified by the Senate on 3 August 1972 and signed in Washington by President Nixon on 3 October.

August 1973: The Secretary of Defense signs an Amended Program Decision, placing funding and operational constraints on the SAFEGUARD program.

October 1973: The nearly disastrous 1973 Arab-Israeli War between American-aligned Israel and Soviet-aligned Syria and Egypt showcases potential U.S. military shortcomings, prompting a period of unprecedented cooperation between the Army and Air Force.

July 1974: President Nixon and First Secretary Brezhnev meet at Yalta and agree to expand the 1972 ABM Treaty. The protocol further limits each country to one ABM site and is signed by President Nixon and General Secretary Brezhnev at the second Moscow summit.

September 1975: The House Appropriations Committee recommends deactivation of the SAFEGUARD site by the end of the fiscal year.

October 1975: The Army formally transfers PAR to the U.S. Air Force as the PAR Attack Characterization System.

February 1976: The Joint Chiefs of Staff direct the deactivation of SAFEGUARD, as per the Congressional decision (Public Law 94-212, dated 9 February 1976). Radiation for the MSR and the missile launch capability were terminated and the warhead withdrawal commenced.

May 1976: The PAR begins tracking operations against known satellites. The PAR is capable of deep space tracking.

August 1976: The U.S. Army SAFEGUARD Command is inactivated.

January 1978: At the request of the Deputy Undersecretary of Defense Research and Engineering (Strategic and Space Systems), the BMD Program initiates a Minuteman Defense (MDS) II study "to define and rate the most feasible systems (or concepts) for defending the Minuteman."

June 1978: The Deputy Undersecretary of Defense Research & Engineering (Strategic and Space Systems) directs that "emphasis in the program be placed on near-term defense concepts and technologies applicable to defense of our land-based missile forces in the 1980s."

March 1983: President Ronald Reagan announces the Strategic Defense Initiative (SDI), wishing to render nuclear weapons obsolete.

April 1984: The Strategic Defense Initiative Organization is created, under the direction of Air Force Lt. Gen. James Alan Abrahamson.

May 1984: After a long cooperative period, the Army and Air Force Chiefs of Staff release the "31 Initiatives", a joint Memorandum regarding both Services' roles in several areas. Among others, the initiatives include expanding the role of the Air Force in air defense, including greater involvement in the requirement and development phases for SAMs as well as assuming control over the Patriot missile systems. To resolve this question, a study is issued to determine the feasibility and benefits of such a transfer. The study conclusively

determines that while the transfer is feasible, the organizational overhaul is enough to outweigh any potential benefits.

1986: Project Excalibur, a space-based laser BMD system that forms the cornerstone of the SDI, fails numerous tests. It is replaced by Smart Rocks.

March 1988: Brilliant Pebbles, the successor to Smart Rocks, becomes the main project of the SDI.

January-February 1991: U.S. tactical BMD systems, including Patriot, are used in Gulf War operations to protect Saudi Arabia and Israel. The exact quality of Patriot's performance is controversial, but among other achievements, the protection of American ABM systems kept Israel from entering the war.

March 1991: The Missile Defense Act of 1991 calls for the DoD to "immediately undertake the development and testing of systems and components designed to defend the United States and its Armed Forces, wherever deployed, from strategic and tactical ballistic missiles."

December 1991: The Soviet Union collapses, signifying the end of the Cold War.

January 1992: Russian President Boris Yeltsin, while speaking at the United Nations, suggests a global SDI, to protect all nations from missile attack.

February 1993: Newly inaugurated President Bill Clinton downgrades Brilliant Pebbles, reducing its budget allocation.

May 1993: The Strategic Defense Initiative Organization is renamed the Ballistic Missile Defense Organization (BMDO), reflecting the new de-emphasizing of strategic missile defense in favor of localized tactical BMD. This marks the *de facto* end of the SDI.

November 1995: A National Intelligence Estimate (NIE) states that no adversary, except Russia or China, could feasibly develop the capability to hit the Continental United States with a ballistic missile in the next 15 years.

July 1998: The Rumsfeld Report is released, refuting the findings of the 1995 NIE. Rumsfeld's commission finds that Iran, Iraq, North Korea, or Libya could all develop offensive capabilities relatively quickly.

August 1998: North Korea test-fires a ballistic missile that overflies Japan.

July 1999: President Bill Clinton signs the National Missile Defense Act, clarifying the United States intent to deploy, as soon as feasible, a national BMD system.

Jan 2002: The George W. Bush Administration renames the BMDO to the Missile Defense Agency, promoting it to "agency" level.

June 2002: The United States withdrawal from the 1972 ABM Treaty announced in December 2001 becomes effective.

2004: The Missile Defense Agency successfully completes initial deployment of Ground-based Interceptors (GBIs) at Ft. Greely, AK and activation of the U.S. Missile Defense System for the first time, just two years after being ordered to rapidly deploy such a system by President Bush.

September 2009: The Obama Administration cancels the previous Administration's plans for Europe-based GBIs, favoring the European Phased Adaptive Approach (EPAA), with both land- and sea-based interceptors, including the Navy's Aegis system. This is an approach focused on defending Europe from Iranian ballistic missile threats.

January 2019: The Trump Administration publishes the 2019 Missile Defense Review (MDR), in which it advocates for a layered BMD system against missile attack from any nation to include Russia and China.

APPENDIX: SUPPORTING DOCUMENTS

Key West Memorandum

THE SECRETARY OF DEFENSE

21 April 1948

MEMORANDUM FOR:
The Secretary of The Army
The Secretary of the Navy
The Secretary of The Air Force
Joint Chiefs of Staff

Attached is a signed copy of the paper defining the functions of the Armed Forces and the Joint Chiefs of Staff

Attached also is a photostatic copy of President Truman's letter, approving this paper.

The only change in the paper, as executed, occurs in the third line from the bottom of page 1 where the words "by direction of the President" have been added.

/s/ James Forrestal

THE WHITE HOUSE

April 21, 1948

Honorable James Forrestal
Secretary of Defense
Washington, D.C.
My dear Mr. Secretary:

In reply to your letter of March 27, 1948, I have today issued an Executive Order revoking Executive Order 9877, of July 26, 1947. In its stead, I wish you to issue the statement of functions of the Armed Forces and the Joint Chiefs of Staff which has been drawn up by you and the Joint Chiefs of Staff.

Very sincerely yours,
/s/ Harry S. Truman

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21 April 1948

Functions of the Armed Forces and the Joint Chiefs of Staff

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Introduction

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Section IV--Functions of the United States Army
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Section VI--Functions of the United States Air Force
Section VII--Glossary of Terms and Definitions

Introduction

Congress, in the National Security Act of 1947, has described the basic policy embodied in the Act in the following terms:

"In enacting this,legislation, it is the intent of Congress to provide a comprehensive program for the future security of the United States; to provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the government relating to the national security; to pro-

vide three military departments for the operation and administration of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force, with their assigned combat and service components; to provide for their authoritative coordination and unified direction under civilian control but not to merge them; to provide for the effective strategic direction of the armed forces and for their operation under unified control and for their integration into an efficient team of land, naval and air forces."

In accordance with the policy declared by Congress, and in accordance with the provisions of the National Security Act of 1947, and to provide guidance for the departments and the joint agencies of the National Military Establishment, the Secretary of Defense, by direction of the President, hereby promulgates the following statement of the functions of the Armed Forces and the Joint Chi fs of Staff.

Section !--Principles

1. There shall be the maximum practicable integration of thepolicies and procedures of the departments and agencies of the National Military Establishment. This does not imply a merging ofArmed Forces, but does demand a consonance and correlation of policies and procedures throughout the National Military Establishment in order to produce an effective, economical, har- monious and businesslike organization which will insure the mili-tary security of the United States.

2. The functions stated herein shall be carried out in sucha manner as to achieve the following:

a. Effective strategic direction of the Armed Forces.

b. Operation of Armed Forces under unified command, whereversuch unified command is in the best interest of national security.

c. Integration of the Armed Forces into an efficient team ofland, naval, and air forces.

d. Prevention of unnecessary duplication or overlapping among the Services, by utilization of the personnel, intelligence,facilities, equipment, supplies and services of any or all Services in all cases where military effectiveness and economy ofresources will thereby be increased.

e. Coordination of Armed Forces operations to promote effi-ciency and economy and to prevent gaps in responsibility.

3. It is essential that there be full utilization and exploitation of the weapons, techniques, and intrinsic capabili- ties of each of the Services in any military situation where this will contribute effectively to the attainment of over-all militaryobjectives. In effecting this, collateral as well as primary

functions will be assigned. It is recognized that assignment ofcollateral functions may establish further justification for stated force requirements, but such assignment shall not be usedas the basis for establishing additional force requirements.

4. Doctrines, procedures, and plans covering joint opera- tions and joint exercises shall be jointly prepared. Primary responsibility for development of certain doctrines and proceduresis hereinafter assigned.

5. Technological developments, variations in the availabi-lity of manpower and natural resources, changing economic con- ditions, and changes in the world politico-military situation maydictate the desirability of changes in the present assignment ofspecific functions and responsibilities to the individual Services. This determination and the initiation of implementing action are the responsibility of the Secretary of Defense.

Section II--Common Functions of the Armed Forces

A. General

As prescribed by higher authority and under the general direc-tion of the Joint Chiefs of Staff, the armed forces shall conduct operations wherever and whenever necessary for the following purposes:

1. To support and defend the Constitution of the UnitedStates against all enemies, foreign or domestic.

2. To maintain, by timely and effective military action, the security of the United States, its possessions and areas vital to its interest.

3. To uphold and advance the national policies and interests of the United States.

B. Specific

1. In accordance with guidance from the Joint Chiefs of Staff, to prepare forces and to establish reserves of equipment and supplies for the effective prosecution of war and to plan forthe expansion of peacetime components to meet the needs of war.

2. To maintain in readiness mobile reserve forces, properlyorganized, trained, and equipped for employment in emergency.

3. To provide adequate, timely, and reliable intelligence foruse within the National Military Establishment.

4. To organize, train, and equip forces for joint operations.

5. To conduct research, to develop tactics, techniques and organization, and to qevelop and procure weapons, equipment, andsupplies essential to the fulfillment of the functions hereinafterassigned, each Service coordinating with the others in all mattersof joint concern.

6. To develop, garrison, supply, equip, and maintain bases

and other installations, to include lines of communication, and toprovide administrative and logistical support of all forces and bases.

7. To provide, as directed by proper authority, such forces,military missions, and detachments for service in foreign countries as may be required to support the national interests ofthe United States.

8. As directed by proper authority, to assist in training andequipping the military forces of foreign nations.

9. Each Service to assist the others in the accomplishment oftheir functions, including the provision of personnel, intelli- gence, training, facilities, equipment supplies, and services as may be determined by proper authority.

10. Each Service to support operations of the others.

11. Each Service to coordinate operations (including admi-nistrative, logistical, training, and combat) with those of theother Services as necessary in the best interests of the UnitedStates.

12. Each Service to determine and provide the means of com-munications by which command within the Service is to be exer-cised.

13. To refer all matters of strategic significance to theJoint Chiefs of Staff.

Section III--Functions of the Joint Chiefs of Staff

A. General

The Joint Chiefs of Staff, consisting of the Chief of Staff, U.S. Army; the Chief of Naval Operations; the Chief of Staff, U.S.Air Force; and the Chief of Staff to the Commander-in-Chief, if there be one, are the principal military advisers to the Presidentand to the Secretary of Defense.

B. Specific

Subject to the authority and direction of the President and the Secretary of Defense, it shall be the duty of the Joint Chiefsof Staff:

1. To prepare strategic plans and to provide for the strate-gic direction of the Armed Forces, to include the general direc- tion of all combat operations.

2. To prepare joint logistic plans and to assign to the mili-tary Services logistic responsibilities in accordance with such plans.

3. To prepare integrated joint plans for military mobiliza-tion, and to review major material requirements and personnel qualifications and requirements of the Armed Forces in the lightof strategic and logistic plans.

4. To promulgate to the individual departments of the National Military Establishment general policies and doctrines inorder to provide guidance in the preparation of their respective detailed plans.

5. As directed by proper authority, to participate in the preparation of combined plans for military action in conjunction with the armed forces of other nations.

6. To establish unified commands in strategic areas when such unified commands are in the interest of national security,and to authorize commanders thereof to establish such subordinateunified commands as may be necessary.

7. To designate, as necessary, one of their members as theirexecutive agent for:

a. A unified command;

b. Certain operations, and specified commands;

c. The development of special tactics, technique, and equip-ment, except as otherwise provided herein; and

d. The conduct of joint training, except as otherwise pro-vided herein.

8. To determine what means are required for the exercise ofunified command, and to assign to individual members the respon- sibility of providing such means.

9. To approve policies and doctrines for:

a. Joint operations, including joint amphibious and airborneoperations, and for joint training.

b. Coordinating the education of members of the ArmedForces.

10. To recommend to the Secretary of Defense the assignmentof primary responsibility for any function of the Armed Forces requiring such determination.

11. To prepare and submit to the Secretary of Defense, for his information and consideration in furnishing guidance to the Departments for preparation of their annual budgetary estimates and in coordinating these budgets, a statement of military requirements which is based upon agreed strategic considerations,joint outline war plans, and current national security commit- ments. This statement of requirements shall include: tasks, priority of tasks, force requirements, and general strategic guidance concerning development of military installations and bases, equipping and maintaining the military forces, and research and development and industrial mobilization programs.

12. To provide United States representation on the MilitaryStaff Committee•of the United Nations, in accordance with the pro-visions of the Charter of the United Nations and representation on other properly authorized military staffs, boards, councils, and missions.

Section IV--Functions of the United States Army

The United States Army includes land combat and service for-ces and such aviation and water transport as may be organic therein. It is organized, trained, and equipped primarily for prompt and sustained combat operations on land. Of the three major Services, the Army has primary interest in all operations onland, except in those operations otherwise assigned herein.

A. Primary Functions

1. To organize, train, and equip Army forces for the conductof prompt and sustained combat operations on land. Specifically:

a. To defeat enemy land forces.

b. To seize, occupy, and defend land areas.

2. To organize, train, and equip Army antiaircraft artilleryunits.

3. To organize and equip, in coordination with the other Services, and to provide Army forces for joint amphibious and airborne operations, and to provide for the training of such for-ces in accordance with policies and doctrines of the Joint Chiefsof Staff.

4. To develop, in coordination with the other Services, tac-tics, technique, and equipment of interest to the Army for amphi- bious operations and not provided for in Section V, paragraph A 4 and paragraph A 11 c.

5. To provide an organization capable of furnishing ade-quate, timely, and reliable intelligence for the Army.

6. To provide Army forces as required for the defense of the United States against air attack, in accordance with joint doctri- nes and procedures approved by the Joint Chiefs of Staff.

7. To provide forces, as directed by proper authority, for occupation of territories abroad, to include initial establishmentof military government pending transfer of this responsibility tootherauthority.

8. To develop, in coordination with the Navy, the Air Force,and the Marine Corps, the doctrines, procedures, and equipment employed by Army and Marine forces in airborne operations. The Army shall have primary interest in the development of these air-borne doctrines, procedures and equipment which are of common interest to the Army and the Marine Corps.

9. To formulate doctrines and procedures for the organiza- tion, equipping, training, and employment of forces operating on land, at division level and above, including division corps, army,and general reserve troops, except that the formulation of doctri-nes and procedures for the organization, equipping, training, andemployment of Marine Corps units for amphibious operations shallbe a function of the Department of the Navy, coordinating as

required by paragraph A 11 c, Section V.

10. To provide support, as directed by higher authority, forthe following activities.

a. The administration and operation of the Panama Canal.

b. River and harbor projects in the United States, itsterritories, and possessions.

c. Certain other civil activities prescribed by law.

B. Collateral Functions. The forces developed and trained to perform the primary functions set forth above shall be employed tosupport and supplement the other Services in carrying out their primary functions, where and whenever such participation will result in increased effectiveness and will contribute to the accomplishment of the over-all military objectives. The Joint Chiefs of Staff member of the Service having primary respon- sibility for a function shall be the agent of the Joint Chiefs of Staff to present to that body the requirements for and plans for the employment of all forces to carry out the function. He shall also be responsible for presenting to the Joint Chiefs of Staff for final decision any disagreement within the field of his pri- mary responsibility which has not been resolved. This shall notbe construed to prevent any member of the Joint Chiefs of Staff from presenting unilaterally any issue of disagreement with another Service. Certain specific collateral functions of the Army are listed below:

1. To interdict enemy sea and air power and communications through operations on or from land.

2. To provide forces and eq ipment for and to conductcontrolled mine field operations.

Section V--Functions of the United States Navy and Marine Corps

Within the Department of the Navy, assigned forces include the entire operating forces of the United States Navy, including naval aviation, and the United States Marine Corps. These forces are organized, trained, and equipped primarily for prompt and sustained combat operations at sea, and for air and land opera- tions incident thereto. Of the three major Services, the Navy has primary interest in all operations at sea, except in those opera- tions otherwise assigned herein.

A. Primary Functions

1. To organize, train, and equip Navy and Marine Forces forthe conduct of Rrompt and sustained combat operations at sea, including operations of sea-based aircraft and their land-based

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!This collateral function was transferred from the Army to the Navy by the direction of the Secretary of Defense on 24 May 1949.

naval air components. Specifically:

a. To seek out and destroy enemy naval forces and tosuppress enemy sea commerce.

b. To ain and maintain general sea supremacy.

c. To control vital sea areas and to protect vital sea linesof communication.

d. To establish and maintain local superiority (includingair) in an area of naval operations.

e. To seize and defend advanced naval bases and to conduct such land operations as may be essential to the prosecution of a naval campaign.

2. To conduct air operations as necessary for theaccomplishment of objectives in a naval campaign.

3. To organize and equip, in coordination with the other Services, and to provide Naval forces, including Naval close air support forces, for the conduct of joint amphibious operations, and to be responsible for the amphibious training of all forces asassigned for joint amphibious operations in accordance with thepolicies and doctrines of the Joint Chiefs of Staff.

4. To develop, in coordination with the other Services, thedoctrines, procedures, and equipment of naval forces for amphi-bious operations, and the doctrines and procedures for joint amphibious operations.

5. To furnish adequate, timely, and reliable intelligencefor the Navy and Marine Corps.

6. To be responsible for naval reconnaissance, antisubmarinewarfare, the protection of shippin , and for mine laying, including the air aspects thereof.

7. To provide air transport essential for naval operations.

8. To provide sea-based air defense and the sea-based meansfor coordinating control for defense against air attack, coor- dinating with the other Services in matters of joint concern.

9. To provide naval (including naval air) forces as requiredfor the defense of the United States against air attac , in accor-dance with joint doctrines and procedures approved by the Joint Chiefs of Staff.

10. To furnish aerial photography as necessary for naval andMarine Corps operations.

11. To maintain the United States Marine Corps, which shall include land combat and service forces and such aviation as may beorganic therein. Its specific functions are:

a. To provide F leet Marine Forces of combined arms, together

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2The words "and controlled mine field operations" were added to this paragraph by direction of the Secretary of Defense on 24 May **1949.**

with supporting air components, for service with the FJeet in the seizure or defense of advanced naval bases and for the·conduct of such land operations as may be essential to the prosecution of a naval campaign. These functions do not contemplate the creation of a second land army.

b. To provide detachments and organizations for service on armed vessels of the Navy, and security detachments for the pro- tection of naval property at naval stations and bases.

c. To develop, in coordination with the Army, the Navy, andthe Air Force, the tactics, technique, and equipment employed by landing forces in amphibious operations. The Marine Corps shall have primary interest in the development of those landing force tactics, technique, and equipment which are of common interest tothe Army and the Marine Corps.

d. To train and equip, as required, Marine Forces for air- borne operations, in coordination with the Army, the Navy, and theAir Force in accordance with policies and doctrines of the Joint Chiefs of Staff.

e. To develop, in coordination with the Army, the Navy, and the Air Force, doctrines, procedures, and equipment of interest tothe Marine Corps for airborne operations and not provided for in Section IV, paragraph A 8.

12. To provide forces, as directed by proper authority for the establishment of military government, pending transfer of thisresponsibility to other authority.

B. Collateral Functions. The forces developed and trained to perform the primary functions set forth above shall be employed tosupport and supplement the other Services in carrying out their primary functions, where and whenever such participation will result in increased effectiveness and will contribute to the accomplishment of the over-all military objectives. The Joint Chiefs of Staff member of the service having primary respon- sibility for a function shall be the agent of the Joint Chiefs of Staff to present to that body the requirements for and plans for the employment of all forces to carry out the function. He shall also be responsible for presenting to the Joint Chiefs of Stafffor final decision any disagreement within the field of his pri- mary responsibility which has not been resolved. This shall not be construed to prevent any member of the Joint Chiefs of Staff from presenting unilaterally any issue of disagreement with another Service. Certain specific collateral functions of the Navy and Marine Corps are listed below:

1. To interdict enemy land and air power and communicationsthrough operation at sea.
2. To conduct close air support for land operations.
3. To furnish aerial photography for cartographic purposes.

4. To be prepared to participate in the over-all air effortas directed by the Joint Chiefs of staff.

Section Vl--Functions of the United States Air Force

The United States Air Force includes air combat and service forces. It is organized, trained, and equipped primarily for prompt and sustained combat operations in the air. Of the three major Services, the Air Force has primary interest in all operations in the air, except in those operations otherwise assigned herein.

A. Primary Functions

1. To organize, train and equip Air Force forces for theconduct of prompt and sustained combat operations in the air. Specifically:

a. To be responsible for defense of the United States against air attack in accordance with the policies and proceduresof the Joint Chiefs of Staff.

b. To gain and maintain general air supremacy.

c. To defeat enemy air forces.

d. To control vital air areas.

e. To establish local air superiority except as otherwiseassigned herein.

2. To formulate joint doctrines and procedures, in coor-dination with the other Services, for the defense of the UnitedStates against air attack, and to provide the Air Force units, facilities, and equipment required therefor.

3. To be responsible for strategic air warfare.

4. To organize and equip Air Force forces for joint amphi-bious and airborne operations, in coordination with the other Services, and to provide for their training in accordance with policies and doctrines of the Joint Chiefs of Staff.

5. To furnish close combat and logistical air support to theArmy, to include air lift, support, and resupply of airborne operations, aerial photography, tactical reconnaissance, and interdiction of enemy land power and communications.

6. To provide air transport for the Armed Forces except asotherwise assigned.

7. To provide Air Force forces for land-based air defense, coordinating with the other Services in matters of joint concern.

8. To develop, in coordination with the other Services,doctrines, procedures, and equipment for air defense from land areas, including the ontinental United States.

9. To provide an organization capable of furnishing ade-quate, timely, and reliable intelligence for the Air Force.

10. To furnish aerial photography for cartographic purposes.

11. To develop, in coordination with the other Services, tac-tics, technique, and equipment of interest to the Air Force for amphibious operations and not provided for in Section V, paragraphA 4 and paragraph A 11 c.

12. To develop, in coordination with the other Services, doctrines, procedures, and equipment employed by Air Force forcesin airborne operations.

B. Collateral Functions. The forces developed and trained to perform the primary functions set forth above shall be employed tosupport and supplement the other Services in carrying out their primary functions, where and whenever such participation will result in increased effectiveness and will contribute to the accomplishment of the over-all military objectives. The Joint Chiefs of Staff member of the Service having primary respon- sibility for a function shall be the agent of the Joint Chiefs ofStaff to present to that body the requirements for and plans for the employment of all forces to carry out the function. He shall also be responsible for presenting to the Joint Chiefs of Stafffor final decision any disagreement within the field of his pri- mary responsibility which has not been resolved. This shall not be construed to prevent any member of the Joint Chiefs of Staff from presenting unilaterally any issue of disagreement with another Service. Certain specific collateral functions of the AirForce are listed below:

1. To interdict enemy sea power through air operations.
2. To conduct antisubmarine warfare and to protect shipping.
3. To conduct aerial minelaying operations.

Section VII--Glossary of Terms and Definitions

The usual and accepted definitions and interpretations of theEnglish language, as contained in Webster's New International Dictionary (Unabridged), are applicable to this document, except that for purposes of clarity and to ensure a common understanding of its intent, certain words and phrases are defined specifically as follows:

Air Defense--All measures designed to nullify or reduce the effectiveness of the attack of hostile aircraft or guided missilesafter they are airborne.

Air Superiority--That degree of capability (preponderance inmorale and material) of one air force over another which permits the conduct of ir operations by the former at a given time andplace without prohibitive interference by the opposing air force.

Air Supremacy--That degree of air superiority wherein theopposing air force is incapable of effective interference.

Amphibious Operation--An attack launched from the sea by

naval and landing forces embarked in ships or craft involving a landing on a hostile shore. An amphibious operation includes final preparation of the objective area for the landing and operations of naval, air and ground elements in over water movements, assault, and mutual support. An amphibious operation may precede a large-scale land operation in which case it becomes the amphibious phase of a joint amphibious operation. After the troops are landed and firmly established ashore the operation becomes a land operation.

Antisubmarine Operations-Operations contributing to the conduct of antisubmarine warfare.

Antisubmarine Warfare--Operations conducted against submarines, their supporting forces, and operating bases.

Base--A locality from which operations are projected or supported. May be preceded by a descriptive word such as "air" or "submarine," which indicates primary purpose.

Close Air Support--The attack by aircraft of hostile ground or naval targets which are so close to friendly forces as to require detailed integration of each air mission with the fire and movement of those forces.

Functions--Responsibilities, missions and tasks.

In coordination with--In consultation with. This expression means that agencies "coordinated with" shall participate actively; their concurrence shall be sought; and that if concurrence is not obtained, the disputed matter shall be referred to the next higher authority in which all participants have a voice.

Joint--As used in this paper, and generally among the Armed Forces, connotes activities, operations organizations, etc., in which elements of more than one Service of the National Military Establishment participate.

Military--A term used in its broadest sense meaning of or pertaining to war or the affairs of war, whether Army, Navy or Air Force.

Naval Campaign--An operation or a connected series of operations conducted essentially by naval forces including all surface,subsurface, air, amphibious, and Marines, for the purpose of gaining, extending, or maintaining control of the sea.

Operation--A military action, or the carrying out of a military mission, strategic, tactical, service, training, or administrative; the process of carrying on combat on land, on sea, or in the air, including movement, supply, attack, defense, and maneuvers needed to ain the objectives of any battle or campaign.

Strategic Air Operations--Air operations contributing to the conduct of strategic air warfare.

Strategic Air Warfare--Air combat and supporting operations designed to effect, through the systematic application of force to

a selected series of vital targets, the progressive destruction and disintegration of the enemy's war-making capacity to a point where he no longer retains the ability or the will to wage war. Vital targets may include key manufacturing systems, sources of raw material, critical material, stock piles, power systems, transportation systems, communications facilities, concentrations of uncommitted elements of enemy armed forces, key agricultural areas, and other such target systems.

/s/ James Forrestal

Guided Missile Memorandum

J.C.S. 1620/12
7 November 1949
Pages 136-139, incl.

NOTE BY THE SECRETARIES

to the

JOINT CHIEFS OF STAFF

on

ASSIGNMENT OF RESPONSIBILITY FOR GUIDED MISSILES

Reference: J.C.S. 1620 Series

On 17 November 1949 the Joint Chiefs of Staff agreed to forward the memorandum in the Enclosure hereto to the Secretary of Defense.

W. G. Lalor,

J. H. Ives,

Joint Secretariat

ENCLOSURE

MEMORANDUM FOR THE SECRETARY OF DEFENSE

Subject: Assignment of Responsibility for Guided Missiles.

Reference: Your memorandum of 25 May 1949, same subject

1. The Joint Chiefs of Staff, after having studied for the past several months the problem outlined in the reference memoran-dum, have reached the conclusion that it is impracticable at this time to assign to the several Services, in accordance with their assigned functions, responsibilities for the entire guided missilefield.

2. As a general rule, guided missiles will be employed by the Services in the manner and to the extent required to accomplish their assigned functions. Undesirable duplications in research and development should be avoided by careful screening of projectsand assignment of research responsibility by the Research and Development Board where appropriate.

3. Development of guided missiles of certain categories has progressed to a point where the fields of their normal employment may be recognized. Subject to a periodic review, responsibilitiesare assigned as follows:

.!· Surface-to-air.

(1) Guided missiles which supplement, extend the capabi-lities of, or replace antiaircraft artillery will be a responsibility of the U.S. Army and the U.S. Navy as required by their assigned functions.

(2) Guided missiles which supplement or replace fighter interceptors will be a responsibility of the U.S. Air Forceand the U.S. Navy as required by their assigned functions.

b. Surface-to-Surface.

(1) Surface launched guided missiles which supplement orextend the capabilities of, or replace the fire of artilleryor naval guns will be the responsibility of the U.S. Army and U.S. Navy as required by their functions.

(2) Surface-launched guided missiles which supplement orextend the capabilities of, or replace, support aircraft will be the responsibility of the U.S. Air Force and U.S. Army, as required by their functions.

(3) Ship-launched guided missiles which supplement, extend the capabilities of, or replace naval aircraft willbe a responsibility of the U.S. Navy, as required by its functions.

(4) Surface-launched guided missiles which supplement, extend the capabilities of, or replace Air Force aircraft (other than support aircraft) will be a responsibility of the U.S. Air Force, as required by its functions.

(5) Unnecessary duplication will be avoided by the periodic review to be accomplished by the Joint Chiefs ofStaff.

c. Air-to-Air.

Guided missiles which are used for air-to-air combat willbe a responsibility of the U.S. Air Force and the U.S. Navy as required by their functions.

E.· Air-to-surface.

Guided missiles which are used by aircraft against sur- face objectives will be a responsibility of the U.S. Air Force andthe U.S. Navy as required by their functions.

e. In connection with the requirements of the various Services for guided missiles, the needs of the Marine Corps willbe met from the Service having appropriate responsibility.

4. In order to establish a firm basis for the development and employment of new weapons or improved existing weapons, the JointChiefs of Staff recommend that you approve and issue the following statement of policy to the Department of Defense:

"Employment of new or improved weapons, and related equip-ment, resulting from research and development will not be restricted by reason of the interest or responsibility of a particular Service in the development of a weapon. On the contrary, new weapons developed by the programs of the severalServices will be considered available for employment by any

Service which requires them in the discharge of its assigned functions as determined by the Joint Chiefs of Staff within the structure of the approved •functions of the Armed Forces and the JCS[1]. The initial determination of such requirement shall be made by individual Services, subject to final appro- val by the Joint Chiefs of Staff on the basis of its contri- bution to the over-all war effort in any case where conflicts of functions or economy may arise. A Service charged with primary responsibility for development of a weapon shall invite the participation of any other Service having an opera-tional interest in the weapon. This policy in no way alters the existing responsibilities of the Research and Development Board for the allocation of research and development respon- sibility to the various Services."

DOCUMENT

THE SECRETARY OF DEFENSE

Washington

21 March 1950

MEMORANDUM FOR THE JOINT CHIEFS OF STAFF

SUBJECT: Department of Defense Guided Missiles Program

I approve the recommendations of the Joint Chiefs of Staff as presented to me orally on 20 March 1950, with one proviso: namely, that the Interdepartmental Operational Requirements Group, which is to be established pursuant to the recommendations, will advise the Joint Chiefs of Staff every ninety days as to requirements for the guided missiles program.

I understand that the recommendations referred to above are identical with those set forth in a memorandum to me from the Chairman, Joint Chiefs of Staff, subject, "Department of Defense Guided Missiles Program", dated 15 March 1950. [Enclosure to JCS 1620/11](added)

signed

Louis A. Johnson

ENCLOSURE

MEMORANDUM FOR THE SECRETARY OF DEFENSE

15 March 1950

1. The Joint Chiefs of Staff have reviewed the report of the Special Interdepartmental Guided Missiles Board, dated 3 February 1950* and have also reviev,ed the Joint Chiefs of Staff rec2mmen- dations made to you in a memorandum dated 17 November 1949 * on the assignment of responsibility for guided missiles. With respect to the projects or guided missiles which are at present being pursued by the three Departments, the recommendations of the Joint Chiefs of Staff are listed below:

Project	Responsibility	Recommendation
	Air-to-Air Missiles	
(1) FALCON	Air Force	Continue
(2) SPARROW	Navy	Continue
(3) METEOR	Navy	Continue
	Air-to-Surface Missiles	
(4) DOVE	Navy	Continue
(5) PETREL	Navy	Continue
(6) RASCAL	Air Force	Continue Systems Study
	Land-to-Air Missiles	
(7) NIKE	Army	Continue
(8) WIZARD	Air Force	Continue
	Ship-to-Air Missiles	
(9) TERRIER-TALOS	Navy	Continue
(10) ZEUS	Navy	Discontinue

* Appendix "D" to JCS 1620/13

** Enclosure to JCS 1620/12

Project	Responsibility	DOCUMENT Recommendation
	Land-to-Surface Missiles	
(11) HERMES (A-1)	Army	Discontinue as a weapon
(12) HERMES (A-3, C-1)	Army	Continue
(13) HERMES (B-1)	Army	Discantinue as a weapon
(14) HERMES (B-2)	Army	Discontinue
(15) HERMES (A-2)	Army	Continue
(16) HERMES II	Army	Discantinue as a weapon. Continue as a ce11 ul ar ram jet development.
(17) CORPORAL E	Army	Discontinue
(18) $NARK	Air Force	Discontinue as a weapon. Continue the project as development of missile guidance system only and test vehicle therefor.
(19) *NAVAHO (A-2)(	Air Force	Continue
20) LACROSSE	Navy	Transfer responsibility to Army and continue. Marine Corps continue close liaison in connection with amphibious applications.
	Ship-to-Surface Missiles	
(21) REGULUS	Navy	Continue
(22) RIGEL	Navy	Continue

*Design study and development of components of NAVAHO (A-6) to continue. NAVAHO may be land- or air-launched

(23) GREBE	Navy	Limit development to 3-mile range version for the present, but continue design studies for longer range adaptation.
(24) TRITON	Navy	Continue as a research and design project, insuring integration of results from NAVAHO

2. With reference to the recommendations by the Special Interdepartmental Guided Missiles Board with respect to operationand utilization of flight test facilities, General Bradley informed you by memorandum dated 24 February 1950* that the JointChiefs of Staff agree that there is a requirement for three ranges, and further agree that the assignment of responsibility for these ranges should be

White Sands/Holloman - Department of the Army
Point Mugu - Department of the Navy
Banana River - Department of the Air Force.

The Joint Chiefs of Staff further recommend that, with the one amendment to recommendation a of the Special Interdepartmental Guided Missiles Board as indTcated herein, you approve the recommendations of that board as outlined in Enclosure 3 of its report. These recommendations, with the one amendment referred to above, are that:

"!. The present White Sands Proving Ground and Holloman Air Force Base be consolidated into a single facility under the command and management of the Department of the Army,.!. -p-rovided the Wheny lI011sing Bill commitme11ts can be wo.·ked -e11t to the satisfaction of all conce, ned. (This amendment recommended since the Air Force has cancelled the Wherry Bill housing at Holloman Air Force Base.

"b. Subject to approval of the foregoing, the three guided missile proving grounds be assigned to Departments as indicated below, the indicated Department to have

* Enclosure to JCS 1620/14

command, management, operational and budgetary responsi-bility.

White Sands/Holloman	–	Department of the Army
Point Mugu	–	Department of the Navy
Banana River	–	Department of the Air Force.

"c. The Joint Chiefs of Staff revoke its recommendationfor a 'Joint Long-Range Proving Ground Command.' (This refers to the Banana River Range which the Joint Chiefs of Staff previously recommended be a joint command.)"d. Each of these proving grounds be available to all three Services for appropriate flight testing; thecost of any special instrumentation required to be borneby the Department cognizant of the missile project undertest.

"e. An Interdepartmental Operational Requirements Group for Guided Missiles ••. be charged with formulation andinitiation of such common policies as may be necessary, for issuance by the respective Departments, to insure the integrated and efficient operation of all guided mis- sile proving grounds and ranges in such a manner as to serve all three Departments. Such policies shall not conflict with the policies of the Research and DevelopmentBoard."

3. The Joint Chiefs of Staff agree with the proposal of the Special Interdepartmental Guided Missiles Board contained in Enclosure 4of its report to the effect that an Interdepartmental Operational Requirements Group be established for the purpose of advising on the coordinating and integrating of the operational features of the three Services guided missiles program, with the proviso that the Group will be responsible for advising the Joint Chiefs of Staff as well as the Military Departments. As one of its first tasks the Group would formulate and recommend to the Joint Chiefs of Staff a requirements program for guided missiles research and development, and for production of operational guidedmissiles, for their first annual review of the program in September. The Joint Chiefs of Staff will provide the necessary guidance as to priorities.

4. With reference to the Joint Chiefs of Staff memorandum of17 November 1949 on the subject of assignment of responsibilityfor guided missiles, the Joint Chiefs of Staff recommend that paragraph 3 b of that memorandum be deleted and that the following be substituted therefor:

"b. Surface-to-Surface

"(1} Surface-launched guided missiles which supplement or extend the capabilities of, or replace the fire of artillery or naval guns will be the responsibility of the U.S. Army and U.S. Navy as required by their functions.

"(2) Surface-launched guided missiles which supplement or extend the capabilities of, or replace, support aircraft will be the responsibility of the U.S. Air Force and U.S. Army, as required by their functions.

"(3} Ship-launched guided missiles which supplement, extend the capabilities of, or replace naval aircraft will be a responsibility of the U.S. Navy, as required by its functions.

"**(4}** Surface-launched guided missiles which supplement, extend the capabilities of, or replace Air Force aircraft (other than support aircraft) will be a responsibility of the U.S. Air Force, as required by its functions.

"(5} Unnecessary duplication will be avoided by the periodic review to be accomplished by the Joint Chiefs of Staff."

5. Subject to your approval of the recommendations contained inparagraphs 1, 2, 3, and 4 above, it is the intention of the Joint Chiefs of Staff to review annually from the military point of viewthe entire guided missiles program. The first annual review will be initiated about 1 September 1950

SECDEF Wilson Memorandum

THE SECRETARY OF DEFENSE
Washington

November 26, 1956

MEMORANDUM FOR: Members of the Armed Forces Policy Council

SUBJECT: Clarification of Roles and Missions to Improve the Effectiveness of Operation of the Department of Defense.

Important changes in organization and in roles and missions are not easily decided upon or effected. It is not as though we were starting fresh with a clean sheet of paper, so to speak, or could set up a theoretically perfect organization and division of responsibilities between the Military Departments. Assignment of responsibilities must continue to recognize the pre-

cedents of the past and the availability of men and facilities for carrying out assigned missions. Problems of this nature would be easier to solve if there were always complete unanimity of opinion among all responsible executives of the Defense Department, both military and civilian. The very nature of the problems, however, and the varying background and experience of the individuals serving in responsible positions make some differences of opinion normal and to be expected.

In spite of the differences of opinion which may exist, there are times when conditions require that changes should be made in administrative responsibilities and at such times decisions are mandatory. That is the situation now.

The National Security Act of 1947 states:

"Declaration of Policy

"Sec. 2. In enacting this legislation, it is the intent of Congress to provide a comprehensive program for the future security of the United States; to provide for the establishment of integrated policies and procedures for the departments, agencies, and functions of the Government relating to the national security; to provide three military departments, separately administered, for the operation and administration of the Army, the Navy (including naval aviation and the United States Marine Corps), and the Air Force, with their assigned combat and service components; to provide for

their authoritative coordination and unified direction under civilian control of the Secretary of Defense but not to merge them; to provide for the effective strategic direction of the armed forces and for their operation under unified control and for their integration into an efficient team of land, naval and air forces but not to establish a single Chief of Staff over the armed forces nor an armed forces general staff (but this is not to be interpreted as applying to the Joint Chiefs of Staff or Joint Staff)."

Nine years of experience operating under the National Security Act of 1947, as amended, have proved the soundness of this comprehensive program for national security.

The statement of roles and missions recommended by the Joint Chiefs of Staff at Key West and Newport and approved by Secretary of Defense James Forrestal, and as codified in 1953, have also proved to be sound and effectively to implement the intent of Congress as expressed in the National Security Act.

No basic changes in the present roles and missions of the armed services are necessary but the development of new weapons and of new strategic concepts, together with the nine years operating experience by the Department of Defense have pointed up the need for some clarification and clearer interpretation of the roles and missions of the armed services. We have recognized the need for a review of these matters and from time to time certain steps have been taken and we are now taking others to improve the effectiveness of our overall military establishment, to avoid unnecessary duplication of activities and functions, and to utilize most effectively the funds made available by the people through Congress.

I would like to point out that clarification and interpretation of roles and missions does not in itself predetermine the weapons to be used by each of the armed services and their numbers, nor the numbers of men to be trained in various fields. It should be clearly understood that the approval of roles and missions of the armed services for guidance in peacetime does not predetermine the weapons or forces which a commander in the field would be permitted to use in the event of war. Also, the development of a weapon by a particular military department **does** not in itself predetermine its use. Such determinations rest with the Secretary of Defense after considering the recommendations of the Joint Chiefs of Staff and the Secretaries of the Military Departments.

The recent clarification of command responsibilities for commanders should be most helpful in determining weapons and forces to be employed in various missions and should assist the Joint Chiefs of Staff in making recommendations in this regard to the Secretary of Defense in order to determine approved requirements for each of the armed services.

We have recently reviewed five important problem areas which need to be cleared up. ·· The recommendations of the Joint Chiefs of Staff in regard to these matters have been carefully considered and their differences of opinion carefully weighed. In addition, I have given consideration to the opinions in these areas of responsible officials, both military and civilian, in the Office of the Secretary of Defense. These matters are being resolved as follows:

1. Use of Aircraft by U.S. Army.

In matters affecting the use of aircraft by the U.S. Army, the combat zone is defined as extending not more than 100 miles forward of the general line of contact between U.S. and enemy ground forces. Its extension to the rear of the general line of contact will be designated by the appropriate field commander, and normally extends back of the frontlines about 100 miles.

The Army Aviation Program will consist of those types of aircraft required to carry out the following Army functions envisaged within the combat zone:

a. Command, liaison, and communications.

b. Observation, visual and photographic reconnaissance, fire adjustment, and topographical survey.

c. Airlift of Army personnel and materiel.

d. Aeromedical evacuation.

The Army Aircraft Program to carry out these functions will be subject to the following limitations:

a. Fixed wing aircraft, convertiplanes, and vertical/shorttake-off and landing aircraft will have an empty weight not to exceed 5,000 pounds. Rotary wing aircraft will have an empty weight not to exceed 20,000 pounds. Specific exceptions to weight

limitations for specific aircraft for specific purposes may be granted by the Secretary of Defense after consideration of Army requirements and appropriate Air Force functions and capabilities. (For example, the Secretary of Defense has just approved the purchase by the Army of five DeHavilland DHC-4 airplanes, "Twin Otter", for test and evaluation and is giving consideration to another project involving a plane in the development stage.)

b. The provision of a limited airlift capability within theArmy Aviation Program shall not serve as a basis for increasing ordecreasing Air Force forces necessary to support or protect the Army airlift forces. Provision of this limited airlift capability will apply only to small combat units and limited quantities of materiel to improve local mobility, and not to the provision of anairlift capability sufficient for the large-scale movement of sizeable Army combat units which would infringe on the mission of the Air Force.

c. As limited Army Aviation airlift capability becomes available to active Army forces, provision should be made for com-pensating reductions in other forms of Army transportation designed to operate within the combat zone.

d. The Army Aviation Program will not provide for aircraftto perform the following functions:

(1) Strategic and tactical airlift.

(a) Airlift of Army supplies, equipment, personnel andunits from exterior points to points within Army combat zone.

(b) Airlift for evacuation of personnel and materielfrom Army combat zone.

(c) Airlift for air movement of troops, supplies and equipment in the initial and subsequent phases of airborne opera-tions.

(d) Aeromedical evacuation from Air Force operating locations within the combat zone through Air Force casualty staging units to hospital facilities outside combat zone, and aeromedical evacuation from an airhead or an airborne objective **area** where airborne operation includes air landed logistic supportby Air Force.

(2) Tactical reconnaissance.

(3) Interdiction of the battlefield.

(4) Close combat air support.

e. The Army will not maintain unilateral aviation researchfacilities but will confine itself to development and deter- mination of specific requirements peculiar to Army needs, to **eva-**luation of proposals, and to user testing of equipment. The Army will make maximum use of Air Force and Navy aircraft research and development facilities. The Air Force and the Navy will be responsive to Army needs in such research activities on a reimbur-sable basis.

f. The Army will use existing types of Navy, Air Force or civilian aircraft when they are suitable, or may be suitably modified, to meet Army requirements, rather than attempt to deve-lop and procure new types.

With regard to the 4 November 1952 Pace-Finletter Memorandum of Understanding, I am directing my staff to prepare an appropriate technical and detailed directive for coordination and issuance. Until this directive is approved, the Memorandum of. Understanding will remain applicable except as specifically amended herein or by subsequent Secretary of Defense direction.

2. Adequacy of Airlift.

There has been a great deal of discussion and consideration given to the requirements for the airlift of tactical units and supplies examined, and it appears that it presently provides adequate airborne lift in the light of currently approved strategic concepts.

3. Air Defense

Consideration has been given to distinguishing between Air Force and Army responsibility for surface-to-air guided missile systems for defense of the Continental United States on the basis of area defense and point defense, as well as the criterion of an arbitrary range limitation.

Area and point defense systems cannot be defined with precision. Area defense involves the concept of locating defense units to intercept enemy attacks remote from and without reference to individual vital installations, industrial complexes or population centers. For such a defense system to be effective, exten-

sive information gathering networks such as the Semi-Automatic Ground Environment (SAGE) system are required to trace con- tinuously the enemy attack and transmit and present the data in usable form for guiding the defense weapons to counter the attack.As applied to surface-to-air missiles, this means that area defense missiles, because of their more widespread sitings, will normally receive their guidance information from the network system rather than from acquisition and tracking radars located inthe vicinity of the missile launching site.

Point defense has as its purpose the defense of spe-cified geographical areas, cities and vital installations. Onedistinguishing feature of point defense missiles is that theirguidance information is received from radar located near the launching sites.

The present state of the art justifies development ofpoint defense surface-to-air missile systems for use against airtargets at expected altitudes out to a horizontal range of the order of 100 nautical miles.

It must be clearly understood that the Commander-in- Chief, Continental Air Defense Command, who has been given the responsibility for the Air Defense of the Continental United States, Alaska, and the United States area of responsibility in the North East, also has the authority and duty for stating his operational need for new or improved weapon systems and for recom-mending to the Joint Chiefs of Staff all new installations of any type. Therefore, no Service shall unilaterally plan for additional missile installations of either category (point or area defense)in support of CINCONAD [1]s responsibilities until and unless they have been recommended by CINCONAD to the Joint Chiefs of Staff, and approved by that body.

In conformance with the above:

a. The Army is assigned responsibility for the development, procurement and manning of land-based surface-to-air missile systems for point defense. Currently, missile systems in the pointdefense category are the NIKE I, NIKE B, and land-based TALOS.

b. The Air Force is assigned responsibility for the develop-ment, procurement and manning of land-based surface-to-air missilesystems for area defense. Currently, the missile system in the area defense category is the BOMARC.

c. The Navy, in close coordination with the Army and Air Force, is assigned responsibility for the development, procurementand employment of ship-based air defense weapon systems for the accomplishment of its assigned functions.

d. The Marine Corps is authorized to adapt to its organic use, such surface-to-air weapons systems developed by the other Services as may be required for the accomplishment of its assignedfunctions.

e. In overseas areas, the U.S. theater commander should normally assign responsibility for air defense to an air componentcommander, with appropriate participation by other components. Under this arrangement, Army units in the combat zone should continue to be responsible for their own local defense, employing organic means. Other Army air defense units should carry out point defense missions under the air component commander. Air Force units should carry out the area defense missions. Special emphasis should be given to simplicity, flexibility and mobilityof weapon systems employed in air defense in overseas areas. Navyforces should continue to be responsible for their own air defenseat sea, employing organic means. As approved by the theater com- mander, the air component commander should establish such proce- dures for coordinating Army, Navy, and Air Force air defense forces as may be required to carry out his responsibilities, and, in addition, should establish such detailed procedures as are necessary for proper coordination with national air defense com- manders of allied countries.

4. Air Force Tactical Support of the Army.

The Army will continue its development of surface-to-surface missiles for close support of Army field operations with the following limitations:

a. That such missiles be designed and programmed for use against tactical targets within the zone of operations, defined asextending not more than 100 miles beyond the front lines. As suchmissiles would presumably be deployed behind the combat zone normally extending back of the front lines about 100 miles, this pla-ces a range limitation of about 200 miles on the design criteria for such weapons.

b. That the tactical air support functions beyond those thatcan be provided by Army surface-to-surface missiles as above defined remain the responsibility of the Air Force.

It is evident that the tactical air forces programmed for Army support should be reconsidered and the Joint Chiefs of Staff have been requested to furnish me with their recommendations for specific adjustments as to the number and types of planned Army guided missile and unguided rocket units and with the number of Air Force tactical wings which may be eliminated as a result of these decisions.

In preparing these recommendations, the development of balanced and interrelated Army and Air Force tactical support forces for the accomplishment of overall U.S. national security objectives must be considered, rather than the development of completely independent Army and Air Force forces to accomplish tactical support tasks. In developing force recommendations in this area, as well as for other U.S. military forces, it should be recognized that all operations in which our forces will be employed will be conducted under the command of the designated commanders who will have the necessary forces assigned to them for the conduct of their missions by higher authority.

5. Intermediate Range Ballistic Missile (IRBM)

In regard to the Intermediate Range Ballistic Missiles:

a. Operational employment of the land-based Intermediate Range Ballistic Missile system will be the sole responsibility of the U.S. Air Force.

b. Operational employment of the ship-based Intermediate Range Ballistic Missile system will be the sole responsibility of the U.S. Navy.

c. The U.S. Army will not plan at this time for the opera-tional employment of the Intermediate Range Ballistic Missile or for any other missiles with ranges beyond 200 miles. This does not, however, prohibit the Army from making limited feasibility studies in this area.

(The Intercontinental Ballistic Missile has previously been assigned for operational employment to the U.S. Air Force.)

There are a number of other matters relating to research and development of particular weapons that will affect the choice of weapons to be used for various missions in the armed services. These choices can only be made after a careful technical review of the capabilities of the various weapons under

development. I refer particularly to weapons systems such as the NIKE and TALOS and the multiple approach (JUPITER-THOR) to developments such as the Intermediate Range Ballistic Missile. This memorandum does not attempt to answer those questions which can only be decided after studies now in progress are completed, and should not be so interpreted.

In the meantime, these competing weapons systems will be continued with support from Fiscal Year '57 funds until the completion of the technical evaluation referred to above. Budget support in Fiscal Year '58 for the land-based TALOS, as required, will be provided by the U.S. Army. Budget support in Fiscal Year '58 for the land-based Intermediate Range Ballistic Missile Program, as required, will be provided by the U.S. Air Force.

In view of the great interest in these matters in the Congress, copies of this memorandum are being sent to the appropriate Congressional Committees. In addition, in order that there can be full understanding of these decisions within the Military Departments and by the public, copies of this memorandum are being made available to the press.

(signed)
C. E. Wilson

Distribution:
Members of the Armed Forces Policy Council:
Secretary of Defense
Deputy Secretary of Defense
Secretary of the Army
Secretary of the Navy
Secretary of the Air Force
Chairman, Joint Chiefs of Staff
Chief of Staff, U.S. Army
Chief of Naval Operations
Chief of Staff, U.S. Air Force
Commandant, Marine Corps
Assistant Secretaries of Defense
General Counsel

SECDEDF McElroy Memorandum

351. Memorandum From the Secretary of Defense (McElroy) to the Secretary of the Navy (Gates)1 Washington, October 29, 1957.

SUBJECT

Vanguard Program

REFERENCE

(a) Sec/Navy Memo to Sec/Def, dtd 22 Oct 1957, subj: Earth Satellite Program2
Your memorandum of 22 October expressed concern that the Presidential statement of 9 October on the U.S. satellite program has committed the Navy to meet the December 1957 launching of a test vehicle and a March 1958 launching of an instrumented satellite.

Subsequent to the above, I have received a confirmation from the President that he expects the Department of Defense to meet these commitments.

At the time the U.S. satellite program responsibility was assigned to the Navy, the atmosphere of a completely scientific effort in the framework of the International Geophysical Year prevailed. The Soviet's success with their satellite has changed the situation. We now have the added burden of not only launching a successful satellite but doing it as per our current schedule. The psychological factors in this matter have obviously received a new emphasis. If necessary, a back-up program to insure success will be initiated.

We must, therefore, go forward with deliberate speed in this program and meet the above dates if at all possible.

Requests for assistance to maintain this schedule should be called to the attention of the Assistant for Guided Missiles. We are attempting to obtain an additional launching stand for you.

Neil McElroy

Strategic Defense Initiative Organization Charter

Found in: "Chapter 7: SDI Program Management *"Strategic Defense Initiative, 1989. Report to the Congress*. United States: N. p., 1989. Web.

Chapter 7

SDI Program Management

The SD/O management team *discusses program strategy.*

Chapter 7

SDI Program Management

When the SDI Program formally entered the defense acquisition process in June 1987, it was required to meet all of the major DOD acquisition milestones, including continuous extensive review by the Defense Acquisition Executive (DAE) and his review mechanism, the Defense Acquisition Board (DAB). To meet attendant technical and management challenges, SDIO has taken steps to improve the management structure and develop new management tools to guide and direct the Program. These management tools are designed particularly to promote coordination and cooperation within the SDIO and with external organizations. The overall emphasis is to do the bestjob possible with the resources available and to hold individuals accountable in the pursuit of the Program goals.

Management Approach

The current charter of the SDIO (as specified in DODD 5141.5, Strategic Defense Initiative Organization, dated 4 June 1987) states:

> SDIO shall manage and direct the conduct of a vigorous research program, including advanced technologies, that will provide the basis for an informed decision regarding the feasibility of eliminating the threat posed by nuclear ballistic missiles of all ranges, and of increasing the contribution of defensive systems to
> U.S. and allied security. The program shall protect options for near-term deployment of limited ballistic missile defenses. The program shall be carried out in full consultation and, where appropriate, with participation of our allies. The program shall be conducted in compliance with all existing treaty obligations and will emphasize non-nuclear technologies.

Key to success of the Program is strong central directive authority vested in the Director, SDIO. The Director has been given the authority and responsibility, and is accountable to the Secretary of Defense, for the successful execution of a robust research program balanced with the system development activities. The Director has also been designated the SDI Acquisition Executive (SDIAE). While the Program is centrally managed by SDIO, execution of the individual element technology and development

efforts are delegated to and executed by the Services and other participating agencies. Therefore, effective communications and teamwork among all Program participants-SDIO, the Services, the JCS, the user, and other agencies-areessential. The Director's centralized oversight of all SDI work and resources, and his direct interaction with the Acquisition Executive of each Service, ensure that the Program is properly focused and successfully integrated at all levels.

To ensure that SOJO establishes and maintains the capability to manage ef ectively the full scope of the Program, the following set of management guidelines and activities has been implemented:

- SDI Program authority and the programmatic decision process will flow from the Defense Acquisition Executive (OSD, Under Secretary of Defense for Acquisition) to the SDIAE to the Service Acquisition Executives (SAEs).
  - All Program activity is under the broad direction and control of the Director, who will direct the use, as appropriate, of existing management and technical expertise of the SOJO, the Services, and other participating agencies.
  - The acquisition strategy for the strategic defense system (SOS) will follow a phased development approach (Phase I has entered the Dem/Val stage of the defense acquisition process).
  - Internal SOJO offices have been established to manage effectively the acquisition, the definition of follow-on phases, and the continuing research necessary for future planning of Phase I. As part of the SOS Phase I effort, an SOS Program Executive Officer (PEO) (the Deputy for Systems) and an SOS Phase I Program Manager **(PM)** have been designated.
  - External to SOJO, Service and agency responsibilities have been identified in coordination with the appropriate DOD officials. These responsibilities will continue to evolve as the Program matures and progresses through the acquisition process. The Services have designated PEOs and PMs for the individual element programs they are assigned to execute for SDIO. The Service element PMs plan and execute their designated element program in consonance with SDIO-approved plans and guidance from the SOS Phase I PM.
  - Technical and program direction and funding cover both systems development and continuing research necessary to carry out Service-managed element programs and other agencies' SDI activities to the element PMs in accordance with agreements between the Director and the SAEs and appropriate agency directors.
  - A systems engineering and integration (SE&I) contractor has been selected to support the SOS Phase I PM and the Services in accomplishing the Phase I activities.

○ Organizational Structure

The SDI program management structure provides for balanced emphasis on system development and technology research, effective SOJO control and coordination

of Service and other agency-managed programs, and accountability of all PMs for project execution. Also, it provides the Director the means to direct and integrate all SDI Program activities.

The SDIO completed an internal realignment on 1 October 1988 (see Figure 7-1). Principal factors that led to the realignment were the Director's desire to create a better management structure for Phase I, plus a **general** desire to support internal common needs better and provide SDIO the focus it needs to successfully develop the strategic defense system. In explaining the organizational realignment, the Director stated

> ... a major objective of the realignment is to concentrate the concept definition, system trade-offs, and integration and management of the six Phase I elements into the Phase I Program Office of the Systems Deputate. Threat projections, architectural effectiveness, and launch concepts will be centralized in the new Architectures and Analysis Directorate, also in the Systems Deputate. The technology base that supports both Phase I and follow-on system concepts will now be concentrated according to technology discipline in the Technology Deputate. In addition, resource management functions will be combined to obtain maximum utilization of limited manpower spaces and to reduce the span of control over staff offices.

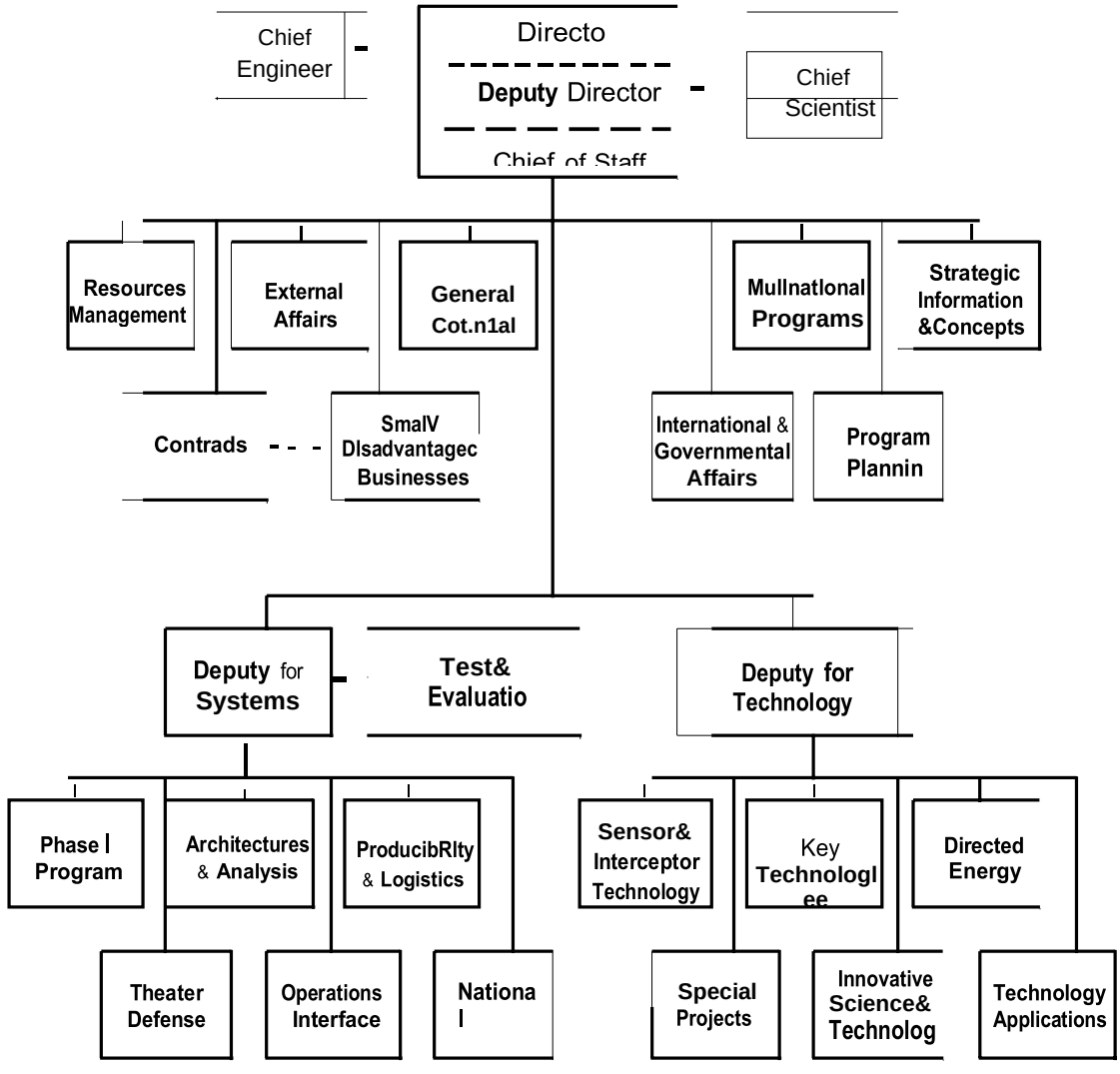
The realignment moved some of SDIO's technical functions and programs away from the previous matrix structure and into a more streamlined organization. This move will enable increased accountability for program performance within SDIO and among its many executing agents. Also, the realigned SDIO **management** structureeffectively parallels the Services' own program management.

The realignment did not suggest a change to either the immediate or long-term objectives of SDI nor did it change total budget submissions or total staffing requirements. What this reorganization did was to streamline management of a balanced technology evolution and greatly improve responsiveness to the Secretary of Defense.

A Chief of Staff position has been added to better coordinate traditional staff functions with line management in the System and Technology Deputates. A Chief Engineer position also has been added to provide top-level oversight of, and visibility to, the variety of engineering tasks and analyses to be accomplished.

An important feature of the SDI management network is the special role that the Command Center (CC) element and System Operation and Integration Functions (SOIF) play in the overall system development program. Because CC/SOIF is expected to link all the SOS elements into a cohesive ballistic missile defense, SOJO intends to maintain direct control over related technology research, system development, and system integration activities. However, within CC/SOIF specific projects are delegated to the Services and other key agencies to accomplish program objectives. The management network for accomplishing future CC/SOIF projects is still evolving.

Figure 7-1
Strategic Defense Initiative
Organization



7. 3 Programmatic and Financial Management

This section discusses work package directives (WPDs), information resources management, the Financial Management Board (FMB), and the Defense Acquisition Review Team (DART).

Work Package Directives

To achieve centralized planning, programming, budgeting, and execution of theSDI Program, WPDs are used to provide formal guidance and directions

to the Servicesand other agencies. WPDs support program planning, budget submissions, and

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monitoring of program execution by providing information on approved research efforts. Development of WPDs is a coordinated effort between the SDIO WPD manager and the Service or agency program manager. Once a WPD has been defined,staffed, and determined to be within SDI Program resource constraints, it is signed by a senior executing agent official and the Director, SDIO. The approved WPD becomes an agreement for program execution. The WPDs have been and continue to be evaluated. They are evaluated when the respective programs are audited by either the General Accounting Office (GAO), DOD, the Inspector General (IG), the Military Service audit teams (e.g., Army Audit Agency), or the Military Service IG and internalreview teams. In addition, SDIO holds semiannual budget execution reviews where selected WPDs are reviewed to evaluate execution.

Information Resources Management

The SDIO is establishing a full information resources management (IRM) program. Work associated with this program include the development of a 5-year automated information systems plan, the development of a management information system, the establishment of SDI-wide IRM policy and procedures, and the review andcoordination of SDI-wide efforts associated with the development of computer and telecommunication systems. The results of this activity will significantly enhance the ability of the SDIO and its executing agents to effectively manage the many projects associated with the SDI Program.

Financial Management Board

The FMB reviews proposed program and budget guidance, SDI programming and budgeting actions, and fiscal performance during the year, and makes recommendations to the Director on issues related to these activities. The FMB ischaired by the Deputy Director, SDIO. Primary members include the Deputies for Technology and Systems; the Director, Resource Management; and the Director, Program Planning. Other SDIO offices may provide representatives to act in an advisory capacity. The Services and other agencies may send representatives to FMB meetings at the request of the chairman.

Defense Acquisition Review Team

The DART was established in September 1987 to guide and oversee planning and preparation for the first annual Defense Acquisition Board (DAB) review. On 29 February 1988, the Director established the DART as a permanent SDIO activity underthe direction of the Deputy for Programs and Systems (now Deputy for Systems). At the same time, the DART's role was expanded to provide a central mechanism to integrate all SDIO Directorates in accomplishing short-notice tasks, special projects, and information dissemination related to strategic defense system efforts. The DART continues to guide and oversee planning and preparation for the annual DAB reviews, which require the participation and cooperation of the OJCS, DOD staff, the Services, and the Space Command.

4 Internal Management Controls

A directive system has been established to provide for effective communication among all SDI Program participants funded by SDIO. Management directives on SDI standards, guidance, and implementing procedures have been created for a wide range of topics. SDIO management directives are closely tied to and are consistent with work identified in the WPDs approved by the Director.

Using the tools described above, the SDIO has this past year significantly strengthened its internal management control (IMC) program. The focus has been in three key areas: senior management involvement and direction, the performance of internal control evaluations, and the tracking of all corrective actions identified through the internal control evaluation process. During FY 1988, the SDIO successfully completed all of the steps of the IMC process as outlined in DOD Directive 5010.38. Some of the FY 1988 initiatives included the following:

- An increase in the number of Management and Oversight Division personnel from two to four (this staff is dedicated to developing internal control processes, ensuring organizational accountability, and coordinating immediate audit resolution and audit follow-up).
- Development of an SDIO Internal Management Control Review (IMCR) Manual for conducting necessary reviews.
- Completion of IMCR evaluations for scheduled internal control revie s, including agency briefings to all SDIO Directors.
- Development of many new agency policy directives outlining streamlined procedures and internal controls to improve managementeffectiveness. New directives include the small business innovative research program, contracted advisory and assistance services, employment of experts and consultants by personnel appointment, committee management program, and contracting requirement process.
- Completion of management oversight visits of the IMC program implementation by the SDIO executing agents (i.e., Army, Navy, AirForce, DARPA, DNA, and DOE).
- Development of an audit follow-up tracking system to schedule corrective milestones for agency deficiencies discovered through anyreview process (i.e., GAO/IO audits and surveys; DOD Reorganization Act surveys; risk assessments or internal management control reviews; Congressional hearings; and agency management reviews).
- Development of the FY 1989 Management Control Plan for scheduling management reviews over a 5-year period.

As a result of these efforts, the DOD Inspector General conducted an evaluation of the SDI Program in August 1988 and concluded that the framework is in place to ensure compliance with the Federal Manager's Financial Integrity Act.

Organizational Charter: Ballistic Missile Defense Organization

DEPARTMENT OF DEFENSE
32 CFR Part 388

[DoD Directive 5134.9]

Organizational Charter; Ballistic Missile Defense Organization (BMDO)

AGENCY: Office of the Secretary, DoD.

ACTION: Final rule.

SUMMARY: In accordance with the authority granted to the Secretary of Defense under title 10, United States Code, this DoD organization change has been issued to establish the Ballistic Missile Defense Organization and reflect its responsibilities, functions, and organization. The BMDO replaces the Strategic Defense Initiative Organization (SDIO).

EFFECTIVE DATE: June 14, 1994.

FOR FURTHER INFORMATION CONTACT:
Mr. R. Kennedy, Organizational and Management Planning, 703-697-1142.

List of Subjects in 32 CFR Part 388

Organization and functions (government agencies).

Accordingly, 32 CFR part 388 is revised to read as follows:

PART 388--BALLISTIC MISSILE DEFENSE ORGANIZATION (BMDO)

Sec.
388.1 Purpose.
388.2 Applicability.
388.3 Mission.
388.4 Organization and management.
388.5 Functions and responsibilities.
388.6 Relationships.
388.7 Authorities.
388.8 Administration.

Appendix A to part 388--Delegations of Authority.

Authority: 10 U.S.C. 113.

Sec. 388.1 Purpose.

Under the authority vested in the Secretary of Defense by 10 U.S.C. 113, this part establishes the BMDO as an agency of the Department of Defense with the responsibilities, functions, relationships, and authorities as prescribed herein.

Sec. 388.2 Applicability.

This part applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff, the Unified Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, and the DoD Field Activities (hereafter referred to collectively as ``the DoD Components'').

Sec. 388.3 Mission.

(a) BMDO shall manage, direct, and execute the Ballistic Missile Defense Program (BMDP) to achieve the following objectives:

(1) Enable deployment of an effective and rapidly relocatable advanced theater missile defense capability to protect forward-deployed and expeditionary elements of the Armed Forces of the United States as well as friends and allies of the United States;

(2) Develop options for, and deploy when directed, an antiballistic missile (ABM) system that is capable of providing effective defense of the U.S. homeland against limited attacks of ballistic missiles, including accidental, unauthorized launches or deliberate attacks;

(3) Demonstrate advanced technologies--as options for enhancing initial BMD systems--such as space-based defenses and their associated sensors that could provide an overlay to ground-based interceptors; and

(4) Continue programs of basic and applied research to develop follow-on technologies for both near-term and future technology insertion options and new system options to sustain a highly effective missile defense capability.

(b) The BMDP shall provide the basis for informed decisions regarding development, production, and deployment milestones, and shall be carried out in full consultation and, where appropriate, with participation of our allies. The program shall be conducted in compliance with all existing international agreements and treaty obligations and shall utilize nonnuclear weapon technologies to achieve the deployments in paragraphs (a)(1) and (a)(2) of this section. The BMDP shall focus on the development, acquisition, and integration of theater missile defenses and strategic defenses against ballistic missile threats to the United States.

Sec. 388.4 Organization and management.

(a) BMDO shall consist of a Director and such subordinate organizational elements as are established by the Director within resources authorized by the Secretary of Defense. The Director, BMDO, shall serve also as the BMD Acquisition Executive (BMDAE) for BMDO-funded programs and/or projects.

(b) The Under Secretary of Defense for Acquisition and Technology (USD(A&T)), as the Defense Acquisition Executive (DAE), shall provide

DoD oversight and guidance for the BMD acquisition program, and shall conduct formal reviews, including Defense Acquisition Board milestone reviews, for BMDPs. All such reviews shall emphasize streamlined acquisition strategies. The USD(A&T) shall provide oversight for the BMD technology base activities contained in the BMDP.

(c) A BMD Acquisition Review Council (BMDARC) may be established by the BMDAE to assist the BMDAE to:

(1) Review BMDP progress in preparation for acquisition milestone decisions;

(2) Resolve critical programmatic and technical issues; and

(3) Determine specific program directions.

(4) The Service Acquisition Executives (SAEs) and Vice Chiefs of Staff of the Services shall provide representatives to the BMDARC. Membership shall also include representatives of the Vice Chairman of the Joint Chiefs of Staff and Commanders of the Unified Combatant Commands, as necessary.

Sec. 388.5 Functions and responsibilities.

The Director, BMDO, is responsible for BMD programmatic policy, requirements, priorities, systems, resources, and programs, and is responsible and accountable for the research, development, and transition of BMD systems to the Military Departments and operations by the Combatant Commands. The Director shall:

(a) Organize, direct, and manage BMDO and all assigned resources and activities; provide for the procurement and fielding of assigned systems; and administer and supervise all programs, services, and items under the BMDP to include but not be limited to:

(1) Theater missile defense systems;

(2) The U.S. ballistic missile defense systems; and

(3) Other antiballistic missile systems or upgrades as may be assigned by the USD(A&T).

(b) Develop programmatic policies and issue program guidance and direction to the DoD Components consistent with U.S. national security policy.

(c) Establish the BMD management network including BMDO, the Services, and other Agencies to execute all program activities; and delegate appropriate authority to key individuals to ensure successful program execution and integration.

(d) Establish the systems and procedures necessary to coordinate integration into the overall BMDP of the major BMD acquisition programs and other acquisition programs that directly relate to the BMDP's objectives for development and deployment.

(e) Develop systems' standards and procedures for the administration and management of approved BMD plans and programs; establish program goals and objectives; set priorities; and evaluate BMDP activities of DoD Components and, as appropriate, those of other Federal Agencies.

(f) Prepare the BMDP objectives memoranda and budget submissions in coordination with appropriate DoD Components; make determinations regarding priorities and resources; provide recommendations on program budget decisions to the USD(A&T), Comptroller of the Department of Defense, and Director, Program Analysis and Evaluation, for incorporation into the planning, programming, and budgeting system process; and initiate and implement congressional reprogramming actions.

(g) Make such determinations regarding priorities and resources in coordination with appropriate DoD Components to include the Joint Requirements Oversight Council, as may be required to achieve approved program objectives and to enable the incremental development and deployment of BMD systems for U.S. Forces, the United States, and allies.

(h) In coordination with the USD(A&T) and appropriate DoD officials, identify Military Department, Defense Agency, and BMDO responsibilities for program execution, and in such cases where source-selection is not delegated to the Military Departments and Defense Agencies, retain that authority within BMDO.

(i) Develop mechanisms for coordinating BMDPs with other DoD research, development, test, and evaluation efforts.

(j) Oversee, in coordination with appropriate DoD Components, the participation of U.S. allies and friends in the BMD technical cooperation programs.

(k) Provide periodic program reviews and milestone decision information to the DAE, as well as to the BMDARC.

(l) Serve as principal DoD official responsible for presenting the BMDP budget to the Congress.

(m) Ensure that jointly funded programs have been reviewed by appropriate SAEs prior to initiating programmatic discussions with the USD(A&T).

(n) Serve as principal public spokesperson for the BMDP.

(o) Promote coordination, cooperation, and mutual understanding within the Department of Defense and between the Department of Defense and other Federal Agencies, and the civilian community with respect to BMD matters.

(p) Serve on boards, committees, and other groups pertaining to BMD activities, functions, and responsibilities.

(q) Establish internal procedures for compliance with the ABM Treaty and other Arms Control Agreements, pursuant to DoD Directive 2060.1.

(r) Perform such other duties as the USD(A&T) may prescribe.

Sec. 388.6 Relationships.

(a) In the performance of assigned functions, the Director, BMDO, shall:

(1) Serve under the authority, direction, and control of them USD(A&T).

(2) Serve as a member of the Defense Planning and Resources Board, when BMD matters are under consideration, and Chairman of the BMDARC.

(3) Consult with the Secretaries of the Military Departments, Chairman of the Joint Chiefs of Staff, and Under Secretary of Defense for Policy when addressing issues under their respective purview, to include the strategy and policy implications of defensive capabilities.

(4) Operate within the DoD Acquisition System, as defined in DoD Directive 5000.1\1\ and DoD Instruction 500.2,\2\ taking direction from the USD(A&T); and work directly with appropriate OSD committees and offices.

\1\Copies may be obtained, at cost, from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

\2\See footnote 1 to Sec. 388.6(a)(4).

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(5) Establish, in consultation with the USD(A&T), mechanisms for coordination of BMDPs with other DoD technical efforts; and coordinate and exchange information with other DoD officials having collateral or related functions.

(6) Establish procedures for streamlined communication with each Military Department and Defense Agency involved in the BMDP.

(7) Maintain active liaison for the exchange of information and advice in the field of assigned responsibility with all the DoD Components, other U.S. Government activities, and non-DoD research institutions (including private business entities and educational

institutions).

(8) Through the USD(A&T), keep the Secretary of Defense, the Deputy Secretary of Defense, the DoD Components, and non-DoD U.S. Government Agencies informed, as appropriate, on schedules, status, and significant new developments, breakthroughs, and technological advances within assigned projects.

(9) Use existing facilities and services of the Department of Defense and other Federal Agencies, whenever practicable, to avoid duplication and to achieve maximum efficiency and economy.

(b) The Heads of the DoD Components shall:

(1) Provide support within their respective fields of responsibilities, to the Director, BMDO, as required, to carry out the responsibilities and functions assigned to BMDO.

(2) Provide information, as necessary, to the Director, BMDO, on all programs and activities that include, or are related to, BMD research, technology, and the BMDP.

(c) The Secretaries of the Military Departments and Directors of Defense Agencies shall:

(1) Execute BMD element programs and BMD technology development efforts as recommended by the Director, BMDO, and approved by the Secretary of Defense.

(2) Provide the personnel (to include a BMD Program Executive Officer and Element Program Managers) and the infrastructure necessary to support all Service BMD activities.

(3) Provide program recommendations and advice to the Director, BMDO on budgeting, resources, and program execution.

(4) Provide advice on BMD activities, including readiness for advancing through the acquisition process, technical and programmatic issues, and general program guidance.

(5) Submit program documentation and reports required by the Director, BMDO, in support of DAE reviews and milestone decisions.

Sec. 388.7 Authorities.

The Director, BMDO, is hereby delegated authority to:

(a) Communicate directly and enter into agreements with heads of DoD Components, as necessary, in carrying out assigned responsibilities. Communications with the Commanders of the Unified Combatant Commands shall be communicated through the Chairman of the Joint Chiefs of Staff.

(b) Recommend to the USD(A&T) revisions or exceptions to Military Department and/or Defense Agency regulations, directives, procedures, or instructions for, or related to, system acquisition for individual or a class of BMD requirements as determined necessary to accomplish the BMD objectives.

(c) Enter into and administer contracts, directly or through a Military Department, as appropriate, for supplies, equipment, and services required to accomplish the mission of the BMDO.

(d) Serve as the head of an Agency and Contracting Activity, and act as the Senior Procurement Executive, within the meaning of and subject to the limitations of 48 CFR 202.101 and 48 CFR 2.1, for the BMDO.

(e) Authorize the allocation and/or sub-allocation of funds made available to BMDO for assigned research, development, test, and acquisition projects.

(f) Acquire or construct, through a Military Department or other Government Agency, such research, development, and test facilities and equipment required to carry out assignments that may be approved by the Secretary of Defense or Deputy Secretary of Defense as recommended by the USD(A&T), in accordance with applicable statutes.

(g) Negotiate agreements, as necessary, with other U.S. Agencies and organizations to ensure proper coordination and execution of the

BMDP.

(h) Negotiate agreements, as necessary, with foreign governments to execute allied participation in the BMDP. These agreements shall be subject to approval by duly appointed DoD authorities, in accordance with DoD Directive 5530.3.\3\

\3\See footnote 1 to Sec. 388.6(a)(4).

(i) Establish, in coordination with appropriate DoD Components, special security procedures for sensitive BMDPs.

(j) Exercise original classification authority over BMDO funded technology development and acquisition programs. In general, where another DoD Component has been designated for program execution, original classification authority will be delegated to that Component as part of a program management agreement with BMDO. All original classification decisions must be made in coordination with the BMDO, Military Departments, and other appropriate DoD organizations.

(k) Exercise foreign disclosure authority over BMDO funded technology development and acquisition programs. In general, where another DoD Component has been designated for program execution, foreign disclosure authority will be delegated to that Component as part of a program management agreement with BMDO. All foreign disclosure decisions must be made in accordance with National Disclosure Policy and applicable DoD procedures, and be coordinated with the BMDO, Military Departments, and other appropriate DoD organizations.

(l) Carry out the functions and exercise the responsibilities of the Theater Missile Defense Initiative Office, as established by Section 231 of the National Defense Authorization Act for Fiscal Year 1993.

(m) Exercise the administrative authorities contained in Appendix A to this part.

Sec. 388.8 Administration.

(a) The Director, BMDO, shall be appointed by the Secretary of Defense, upon recommendation from the USD(A&T).

(b) The Military Departments shall assign personnel to BMDO, in accordance with approved authorizations and procedures for joint duty assignment and the Defense Acquisition Workforce Improvement Act.

(c) Administrative support required for BMDO shall be provided by the other DoD Components, as appropriate.

(d) The Director, BMDO, shall consult on all key military and civilian personnel assignments within the BMD management network.

Appendix A to Part 388--Delegations of Authority

Pursuant to the authority vested in the Secretary of Defense, and in accordance with DoD policies, Directives, and Instructions, the Director, BMDO, or, in the absence of the Director, the person acting for the Director, is hereby delegated authority, in the administration and operation of the BMDO, to:

1. Perform the following functions in accordance with the provisions of 5 U.S.C. 7532; Executive Order 10450, 3 CFR, 1949-1953 Comp., p. 936 and 32 CFR part 154.

a. Designate and position in the BMDO as a ``sensitive'' position.

b. Authorize, in case of an emergency, the appointment of a person to a sensitive position in the BMDO, for a limited period of time, for whom a full field investigation or other appropriate

investigation, including the National Agency Check, has not been completed.

c. Authorize the suspension, but not the termination, of the services of a BMDO employee in the interest of national security.

2. Authorize and approve:

a. Travel for BMDO civilian employees, in accordance with Joint Travel Regulations,\1\ Volume II.

\1\Copies may be obtained, at cost, from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.

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b. Temporary duty travel only for military personnel assigned or detailed to BMDO, in accordance with Joint Travel Regulations, Volume I.

c. Invitational travel to persons serving without compensation whose consultative, advisory, or other specialized technical services are required in a capacity directly related to, or in connection with, BMDO activities.

3. Approve the expenditure of funds available for travel by military personnel assigned or detailed to BMDO for expenses incident to attendance at meetings of technical, scientific, professional, or other similar organizations in such instances where the approval of the Secretary of Defense or designee is required by law (37 U.S.C. 412).

4. Develop, establish, and maintain an active and continuing Records Management Program under DoD Directive 5015.2;\2\ DoD Directive 5400.7;\3\ and DoD Directive 5400.11.\4\

\2\Copies may be obtained, at cost, from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161.

\3\See footnote 2 to section 4. of this Appendix.

\4\See footnote 2 to section 4. of this Appendix.

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5. Establish and use imprest funds for making small purchases of material and services, other than personal, for the BMDO when it is determined more advantageous and consistent with the best interests of the Government, in accordance with DoD Directive 7360.10\5\ and Volume 5, DoD 7000.14-R,\6\ and the Joint Regulation of the General Services Administration-Treasury.\7\

\5\See footnote 2 to section 4. of this Appendix.

\6\See footnote 2 to section 4. of this Appendix.

\7\See footnote 1 to section 2.a. of this Appendix.

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6. Authorize and approve overtime work for civilian personnel in BMDO, in accordance with provisions of the Federal Personnel Manual Supplement\8\ 990-1, section 550.11.

\8\See footnote 1 to section 2.a. of this Appendix.

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7. Establish and maintain appropriate property accounts for BMDO and appoint boards of survey, approve reports of survey, relieve personal liability, and drop accountability for BMDO property contained in the authorized property accounts that have been lost, damaged, stolen, destroyed, or otherwise rendered unserviceable, in

accordance with applicable laws and regulations.

8. Establish and maintain for the functions assigned an appropriate publications system for the promulgation of regulations, Instructions, and reference documents, and changes thereto, pursuant to the policies and procedures prescribed in DoD 5025.1-M.\9\

DOCUMENT

\9\See footnote 2 to section 4. of this Appendix.

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9. Issue the necessary security regulations for protection of property and places under the jurisdiction of the BMDO, under DoD Directive 5200.8.\10\

\10\See footnote 2 to section 4. of this Appendix.

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10. Exercise original TOP SECRET classification authority.

11. Establish security classification guidance and review policy.

12. Enter into inter-service support agreements with the Military Departments, other DoD Components, or other Government Agencies, as required, for the effective performance of responsibilities and functions assigned to the BMDO.

13. Establish advisory committees pursuant to the provisions of the Federal Advisory Committee Act of 1972 (Pub. L. 92-463) and DoD Directive 5105.18.\11\

\11\See footnote 2 to section 4. of this Appendix.

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14. Authorize the publication of advertisements, notices, or proposals in newspapers, magazines, or other public periodicals as required for the effective administration and operation of BMDO (44 U.S.C. 3702).

15. Request specific Military Departments and Defense Agencies to serve as contracting activities for the BMDO, as necessary.

Dated: August 18, 1994.

SECDEF Rumsfeld Missile Defense Program Direction Documents

SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

JAN 2 ID02

MEMORANDUM FOR DEPUTY SECRETARY OF DEFENSE
SECRETARIES OF THE MILITARY DEPARTMENTS CHAIRMAN OF THE JOINT CHIEFS OF STAFF UNDER SECRETARIES OF DEFENSE
ASSISTANT SECRETARIES OF DEFENSE

GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE
DIRECTOR OPERATIONAL TEST AND EVALUATION
COMMANDERS OF THE COMBATANT COMMANDS
ASSISTANTS TO THE SECRETARY OF DEFENSE DIRECTOR, ADMINISTRATION & MANAGEMENT DIRECTORS OF THE DEFENSE AGENCIES

DOCUMENT

573.24

SUBJECT: Missile Defense Program Direction

The Department last year conducted extensive and rigorous missile defense reviews to determine how best to fulfill the Nation's need to defend the U.S., deployed forces, allies and friends. The findings underscore the importance of layered defenses as well as the need for new approaches to acquire and deploy missile defenses.

The attached provides my key priorities and specific direction to execute the Missile Defense Program. My objectives are:

a. Establish a single program to develop an integrated system under a newlytitled Missile Defense Agency (MDA).

b. Assign the best and brightest people to this work.

c. Apply a capability-based requirements process for missile defense.

d. Direct the MDA to develop the missile defense system and baseline thecapability and configuration of its elements and the Military Departments to procure and provide for operation and support.

2 Jan 02

The full and cooperative efforts of the Services, Joint Staff, and defense agencies are essential to this goal. I ask that you give your full support to this national priority. I will look to the Senior Executive Council for oversight and recommendations for decision-making in this area.

Point of contact for this matter is Lieutenant General Ronald Kadish, Director, Missile Defense Agency, ([redacted]

Attachment:
As stated

DOCUMENT

DOCUMENT

Missile Defense Program Direction

This document provides the Secretary of Defense's priorities and guidance for the Department's Missile Defense Program. The following are the top four missile defense priorities for the Department of Defense:

a. First, to defend the U.S., deployed forces, allies, and friends.

b. Second, to employ a Ballistic Missile Defense System (BMDS) thatlayers defenses to intercept missiles in all phases of their flight (i.e., boost, midcourse, and terminal) against all ranges of threats.

c. Third, to enable the Services to field elements of the overall BMDS assoon as practicable. To that end, we have started to deploy the Patriot AdvancedCapability-3 system this year, after successful testing, as the first line of defenseagainst short-range missiles.

d. Fourth, to develop and test technologies, use prototype and test assets toprovide early capability, if necessary, and improve the effectiveness of deployed capability by inserting new technologies as they become available or when the threat warrants an accelerated capability.

To enhance elevated national priority and mission emphasis, the Ballistic Missile Defense Organization (BMDO) is hereby redesignated the Missile Defense Agency (MDA). The Director, MDA will report directly to the Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD (AT&L)).

To improve the leadership, management, and organization of missile defense activities, I direct the USD (AT&L) to take the following actions:

a. Establish a single development program for all work needed to design,develop, and test the elements of an integrated BMDS.

b. Develop for deployment, when directed, a useful military capability todetect, track, intercept, and defeat ballistic missiles in all

phases of flight againstall ranges of threats. Improve the BMD system through incremental improvements and block upgrades to BMDS elements over time.

c. Plan and execute work such that efforts in particular areas of the BMDSmay be truncated or stopped if the results are unsatisfactory or where the development effort should be shifted to another integrated BMDS element to permit its acceleration.

d. Execute the program such that demonstrated capabilities can be fielded in limited numbers when available. Base production decisions on the initial performance of the BMDS as demonstrated through credible testing, availability of system alternatives, and consideration of threat evolution.

e. Adopt a flexible approach to the overall BMDS such that each BMDS element complements the others, supports deployment in differing combinations over time, and is open for international participation.

The special nature of missile defense development, operations, and support calls for non-standard approaches to both acquisition and requirements generation. As a development activity, the Missile Defense Agency will require some expanded responsibility and authority. I therefore direct the following:

a. To rapidly carry out my direction, streamlined executive oversight and reporting will be implemented. The Senior Executive Council (SEC), chaired by the Deputy Secretary of Defense, will, in addition to other responsibilities, provide policy, planning and programming guidance; oversee the Department's missile defense activities; and approve BMDS fielding recommendations. The USD (AT&L) will establish a Missile Defense Support Group (MDSG) of appointed department officials to advise the Director, MDA and support SEC decision- making. The chairman of the MDSG will report to USD (AT&L).

b. Management of the BMDS elements will consist of three phases: development, transition, and procurement and operations. The recommendation by Director, MDA for a BMDS element to move to the transition phase; and by the Defense Acquisition Board (DAB) to enter the procurement phase will be approved by the SEC along with budget and force structure levels.

c. To encourage flexible acquisition practices, I delegate to the Director, MDA, authority to use transactions other than contracts, grants, and cooperative agreements to carry out basic, applied, and advanced research.

d. The Secretary, with input from the SEC, will decide whether to use Research Development Test and Evaluation (RDT&E) assets for emergency or contingency deployment, based on assessment of military utility, progress in development and recommendation by the Director, MDA and Military Services.

e. The Director, MDA will manage the BMDS through the development and transition phases, and baseline the capability and configuration of its capability blocks and BMDS elements. The Departments of the Army, Navy, and Air Force will procure the BMDS elements and provide, with the Defense

; , r.a‹\\¼, gencies, for their operation and support.

f. The Djrector, MDA will work closely with the Commanders-In-Chiefand Services throughout the development of the BMDS. Production quantitiesand operational force levels will be settled early enough in the development foran effective transition of responsibility. BMDS elements will enter the formal DoD acquisition cycle at Milestone C, concurrent with Service procurement responsibility transfer. USD (AT&L) will oversee all Service missile defense procurement phase activity.

g. Budgetjng for RDT&E is the responsibility of MDA; budgeting forprocurement is the responsibility of the Services.

h. The Under Secretary of Defense (Policy), as a member of the MissileDefense Support Group, will ensure international participation remains a key, long-term component of the missile defense program.

i. The Under Secretary of Defense (Comptroller)/Chief Financial Officer will develop within 120 days for the Deputy Secretary's approval, in coordinationwith the USD (AT&L) and the Director, MDA, a description of how the Department's Planning, Programming and Budget System process will be tailoredfor the missile defense program. The process will clarify the lines of authority, specific responsibilities and coordination requirements consistent with the intent of the authorities and responsibilities in this memorandum.

j. To reinforce the single-system focus, and to implement a successful transition to capability-based management, the BMDS program will not be subject to the traditional requirements generation process of CJCSI 3170. The current Service missile defense Operational Requirements Documents are not consistent with the proposed BMDS development program objectives and are hereby cancelled. However, the Director, MDA will establish a process that sets initial capability standards, engages the participation of future users early and throughout development, and permits capability trades across all BMDS elements. MDA willmanage through System Technical Objectives and Goals and during the transition phase will baseline capabilities and configurations. During transition, the Serviceswill develop a capability-based Operational Requirements Document (ORD) that will become operative upon transfer of capabilities to the Services. Throughout development, the military departments and the Joint Staff will provide guidance and advice on desired capabilities, operational approaches, and suitability and supportability features.

k. The Military Departments will provide forces, as needed, to support thefielding of early and/or contingency capability and will budget the resources to procure and operate the planned force structure. The

MDA will continue to fund

and manage RDT&E activities for new missile defense capabilities and modifications to fielded systems.

1. The MDA is responsible for Developmental Testing and Evaluation (DT&E) of the BMDS and its elements. When a decision is made to transition a block configuration of an element to a Service for procurement and operation, an Operational Test Agent will be designated and an Operational Test and Evaluation (OT&E) will be conducted at the end of the transition phase to characterize the operational effectiveness and suitability of that block configuration of that element.

m. A DoD Force/Activity Designator (FAD) -1 priority is assigned for the BMDS and its elements.

n. The MDA will be staffed with our most-talented people through competitive nominations, selective personnel transfers, and recruitment. The Service Secretaries will assist in this effort. The Department will staff the MDAand program offices, both direct and matrix, at 100 percent of authorized levels.The Director, MDA will be the final authority for all personnel actions.

o. The Director, MDA will retain management responsibility for defining the overall BMDS and the interoperability standards for programs that transfer to the Services (e.g., Patriot Advanced Capability 3, Navy Area Theater Ballistic Missile Defense, and Medium Extended Air Defense System). The Services will ensure such systems remain interoperable, as defined by the Director, MDA, in theBMDS.

p. The Director, MDA will have all management authority and fundingresponsibility for the Space Based Laser, Airborne Laser and Space-Based Infrared System (Low) programs.

q. The Director, MDA will work with the designated Air Force DoD Executive Agent for Space to develop a seamless process that ensures close management, integration, and interoperability with existing and planned spacesystems.

Additionally, to affirm my commitment to rapidly capitalize on promising concepts and promptly adjust program priorities, I request the

Deputy Secretary of Defense to ensure that decision-making cycle times are as rapid as possible for proposed executive decisions on missile defense. I will support additional or revised statutory authority as identified by the Director, MDA, to reduce development time and enhance program success.

All BMDS development and testing activities will be planned without regard for compliance with the ABM Treaty but no action will be taken that would violate that treaty as required by paragraph. 3.1, DoD Directive 2060.1, dated January 10, 2001.

DoD Directive 5134.9, the "Ballistic Missile Defense Program," will be revised within 90 days to implement this memorandum. Regulations and Instructions of the military departments and other departmental components will be revised as needed within 120 days.

DOCUMENT

THE UNDER SECRETARY OF DEFENS E ..,001 l'f1',' ,....–1 11 1 n: S?

3010 DEFENSE PENTAGON
WASHINGTON, DC 2030 1-30 10

ACTION MEMO

ACQUISITION, TECHNOLOGY AND LOGISTICS

9 November 2001

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FOR: SECRETARY OF DEFENSE

Dep Sec Action

FROM: Mr. E.C. "Pete" Aldridge,

_o)Yefewl'Acisition,

Technology & Logistic C **10** 2001
NOV

SUBJECT: Authorities and Responsibilities for Missile Defen ·

- Sign the memorandum at TAB A which provides direction for the Department toexpeditiously implement the findings of your missile defense review, including:
  - Establishment of a single development program to design, develop, and test anintegrated missile defense system under a newly titled Missile Defense Agency **(MDA).**
  - Streamlined oversight/executive decision-making by Senior Executive Council.
  - Applying a capability-based requirements process for missile defense development. Ta@ .foint Staff ?F d \21115 stwP.f rlOfl: cottearr@d with 1?xe:1aptigg mi.i;i;ile defen e from th@ teffflul military 1eqttiremcttts pfocess. Rather ttian cJ;umge owr p1=oii1cb, I will ensure close Joint Staff and Service participation through a Missile Defense Support Group, which will advise the SEC.

    The Joint Staff now concurs. AH
  - Assigning to the MDA the responsibility to develop the missile defense system and baseline the capability and configuration of its elements and to the MilitaryDepartments the responsibility to procure and provide for operation and support.
- With your signature at TAB A, I will provide further implementing guidance,

inaccordance with my authority (TABB).

DOCUMENT

RECOMMENDATION: SecDef sign at TAB A and approve memorandum for USD (A T&L) to sign at TABB.

COORDINATION: SECNAVY, SECAF, SECARMY, CJCS, USD(P), GC (TAB C).

ATTACHMENTS: As stated

Prepared by Lt Gen Kadish, BMD [redacted] 0462-2001 AT

APPROVED: ___ DISAPPROVED: ___ OTHER:_____

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November 10, 2001

Mr. Secretary:

There is one remaining critical issue that needs your decision before signing this implementing document. It is the question on whether the Ballistic Missile Defense System (BMDS) should follow the traditional military requirements process. What thismeans is that the Military Departments and Joint Staff will establish firm requirements for the performance of the BMDS against a specified threat and have those requirementsapproved by the Joint Requirements Oversight Council (JROC). This would be the performance required before the BMDS deployment would be authorized. I would observe that this process works for a specific syste like an F-22, a space communication system or an armored vehicle, but is less appropriate for a system of systems like BMDS.

What we have proposed for the BMDS, and reflected in the implementation memo, is a

••capabilities based" approach. As the technologies mature and individual missile defense systems become integrated, BMDO will tell us what capability they can provide against avariety of threats. We will then decide whether this capability is worthy of deployment. The Senior Executive Council will provide that advice to you and the President for a deployment decision.

Only **tJw brm,-nntl** the Joint Staff are opposed to this approach.

If you ar approve the "capabilities based" process, lementing memo as is.

Tom White has agreed with the new approach.

E. C. Aldridge, Jr.

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The full and cooperative efforts of the Services, Joint Staff, and defense agencies are essential to this goal. I ask that you give your full support to this " for national priority. I will look to the Senior Executive Council for oversight and ,i\ecowv11••e...,J'.>Jrot1_.J decision-making in this area.

Point of contact for this matter is Lieutenant General Ronald Kadish, Director, Missile Defense Agency, [redacted]

Attachment:
As stated

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THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION,
TECHNOLOGY
AND LOGISTICS

MEMORANDUM FOR DIRECTOR, MISSILE DEFENSE AGENCY
SECRETARIES OF THE MILITARY
DEPARTMENTS ATTN: SERVICE
ACQUISITION EXECUTIVES

SUBJECT: Ballistic Missile Defense Program

Implementation Guidance This memorandum

provides my guidance to implement the

direction
Secretary Rumsfeld provided in his memorandum of November 1, 2001, subject:
"Missile Defense Program Direction." Secretary Rumsfeld restated the Nation's need for establishing effective, layered defenses against ballistic missiles and established the Department's missile defense program as a top priority. He assigned responsibility for the program to the Director, Missile Defense Agency (MDA) and tasked all Departmental components with helping to ensure the program's success.

To implement the Secretary's direction:

a. I direct the Director, MDA to set up and carry out a single program of research and development work to develop the Ballistic Missile Defense System (BMDS). The BMDS program shall use a system-level management structure thatintegrates work and enables capability trades among BMDS elements and decisiveaction in response to program events.

b. I hereby assign responsibility and delegate full authority to the Director,MDA as follows:

(1) Responsibility to plan and execute an evolutionary, capability-

basedacquisition approach focused on developing and deploying missile defense capability as soon as practical.

(2) Responsibility to assure the operational suitability and supportability offielded capability, baseline the system capability and configuration, conduct developmental testing and evaluation, conduct initial capability-based operationaltesting and evaluation, and provide a sound basis for production decisions.

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(3) Responsibility to conduct technology development activity and decideon missile defense applications, obtain the guidance and advice of the warfighter community on desired operational features and approaches to system deployment,and provide tools to enable further development of operational approaches.

(4) Authority for program direction and execution at the operating management level. This shall include authority to tailor the application of DoD 5000 provisions, decide acquisition strategy, make program commitments and terminations, conduct source selections and award contracts, analyze performanceand make affordability tradeoffs, and document the BMDS program of work and report progress. The traditional Defense Acquisition Board (DAB) and IntegratedProduct Team processes will not apply to the BMDS program during the development phase. Upon a recommendation from the Director, MDA and approval from the Senior Executive Council (SEC) for a BMDS element to enter the transition phase, USD (AT&L) will establish necessary product teams to support a subsequent Milestone C decision by the DAB.

(5) Authority to set up and carry out special access program activities to protect sensitive information, applying adequate procedures to maintain security.

c. Given the early stage of BMDS overall development and element integration, I have determined that the BMDS elements are in a non- Major Defense Acquisition Program (MDAP) status. I direct the preparation of termination Selected Acquisition Reports (SARs) for these BMDS elements untilsuch time as they reach MDAP status.

d. To assist the Director, MDA in managing the BMDS program and theSEC in executive decision making on missile defense, I will form a Missile Defense Support Group (MDSG) of designated senior experts from selected Department staffs. I will provide further guidance on the responsibilities of thisgroup in separate correspondence.

e. The Director, MDA, working with the Services, shall develop a transition plan (to include resources, contracting, personnel, facilities, etc.) for theBMDS elements transferring into, or out of, MDA responsibility.

f. The National DX priority is assigned for all BMDS industrialacquisition activities including those activities executed by the Services.

Because of the special nature and priority of the BMDS program, it is important to implement a disciplined acquisition approach. The Director, MDA shall submit for my review a draft program implementation plan within 60 days to address the following:

a. program structure with funding allocations;

b. technical and program management structure (to include organizationalchanges and program transfer realignments);

c. planned program documentation and reporting;

d. personnel ceiling adjustments including adjustments of Federally Funded Research and Development Centers (FFRDC) staff-year ceilings orreallocation to the MDA of sufficient FFRDC staff-years of technical effortrequired for the **BMDS** program;

e. selective staffing procedures and service support;

f. Service interfaces;

g. OSD and Joint Staff interfaces;

h. approach to test and evaluation; and

i. transition plan for each program transferring into, or out of, MDAresponsibility.

The MDSG will review this implementation plan and provide their advice to the Director, MDA and USD (AT&L) before SEC final approval.

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COORDINATION SUMMARY

Secretary of the Navy	Mr. England	October 2, 2001 Concur
Secretary of the Air Force	Mr. Roche	October 12, 2001 Concur - with comments

- Endorses the streamlined ac;quisition of a missile defense capability.
- Agrees that capability-based acquisition demands flexibility to be effective but believes the acquisition flexibility can still be achieved by working from JROC-validated requirements.
- Supports the establishment of the Missile Defense Support Group.
- Recommends the Director, MDA work with the Air Force DoD Executive Agent todevelop a process to ensure close management, integration and interoperability withexisting and planned space systems. The following bullet was added to the memorandum:

> The Director, MDA shall work with the designated Air Force DoD Executive Agent for Space to develop a seamless process that ensures close management, integration, and interoperability with existing and planned space systems.

Secretary of the Army	Mr. McDonald Dep. Under Secy	October 22, 2001 Comments

- Supports call for non-standard approaches to both acquisition and requirements generation but believes that the requirements development process defined in CJCSI3170 should remain in effect for missile defense capabilities.
- Recommends USD (AT&L) retain the milestone decision authority for MDAprograms.
- States perception that there is no Service involvement in personnel management.
- Raises the issue that systems returned to the Services must be full funded andexecutable.
- Recommends that a working group comprised of Service and Defense Agencyrepresentatives convene to address implementation details.

The issues addressed notably modify the flexibility sought under the proposed BMDS approach. Therefore, no changes to the SECDEF memorandum are recommended as a result of these comments.

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Chairman of the Joint Chiefs of Staff LTG Abizaid Acting Dir, Joint Staff	October 13, 2001 Non Concur

- Contests exemption from traditional military requirements (CJCSI 3170) and insiststhe MDA will work through the JROC process.
- Nonconcurs with portions of the plan they perceive as conflicting with the DefensePlanning Guidance that directs JTAMDO to construct the operational concept and operational architecture for the Department's missile defense program. States that JTAMDO, as the interface on missile defense matters for the Joint Staff, has the responsibility to:
  - Assess potential military utility during development and characterize operationaleffectiveness and suitability during the transition phase.
  - Define the overall architecture and interoperability standards for the missiledefense system elements.
  - Lead the collaborative process with the combatant commands and Services to produce a unified view of ballistic missile defense operational requirements andpriorities.
  - Serve as the single voice to MDA for missile defense requirements and operational priorities and as the single proponent for BMD elements and systemperformance objectives during research, development, test and evaluation.

The position taken would depart from the capability-based approach to BMDS development and significantly alter the flexibility sought. Therefore, no changes to the SECDEF memorandum are recommended as a result of these comments.

Under Secretary of Defense for Policy	Mr. Feith October 10, 2001 Concur - with comments

- Recommends adding language to the Secretary's fourth priority directing that therebe sufficient test assets and plans for an emergency capability
- Recommends coordination with USD (P) to ensure international participationremains a key, long-term component of the missile defense system.
- Recommends language to clarify timing of the various phases of the missile defenseprogram for baseline capability and configuration, production quantities and operational force levels and initial capability standards.

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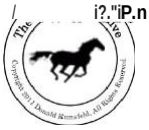
We added language and a bullet to the SECDEF memorandum modifying the fourth priority accordingly and highlighting their participation in the Missile Defense Support Group to focus on international concerns. Wording was revised to clarify activities during the various program phases.

General Counsel of the Department	Mr. Haynes	October, 2001 Concur - with comments



- Recommends clarification to consistently describe an RDT&E program to develop asingle BMDS with integral system elements that are no longer stand-alone MDAP programs.
- Raises legal concerns regarding non-MDAP status of the BMDS elements.
- Recommends clarification to provide that operational testing for BMDS elementswill occur in accordance with statutory and regulatory requirements.
- Suggests wording preferences to alleviate these concerns.

Suggestions have been incorporated and are not believed to alter the planned approach.