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DEFENSES IN DISPUTE: THE BUREAUCRATIC AND DOMESTIC POLITICS OF THE
FIRST ANTI-BALLISTIC MISSILE DEBATE
SAM LAIR

A DEPARTMENT HONORS THESIS SUBMITTED TO THE
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List of Abbreviations

ABM	Anti-Ballistic Missile
ACDA	Arms Control and Disarmament Agency
AFB	Air Force Base
ARPA	Advanced Research Projects Agency
ASAT	Anti-Satellite Weapon
BAMBI	Ballistic Missile Boost Intercept
BMD	Ballistic Missile Defense
BTL	Bell Telephone Laboratories
CIA	Central Intelligence Agency
CONUS	Continental United States
DOD	Department of Defense
ERW	Enhanced Radiation Warhead
FOBS	Fractional Orbital Bombardment System
FY	Fiscal Year
ICBM	Inter-Continental Ballistic Missile
IOC	Initial Operational Capability
IRBM	Intermediate Range Ballistic Missile
JCS	Joint Chiefs of Staff
LTBT	Limited Test Ban Treaty
MAR	Multifunction Array Radar
MIRV	Multiple Independently Targetable Re-Entry Vehicle
MRBM	Medium Range Ballistic Missile
MRV	Multiple Re-Entry Vehicle
MSR	Missile Site Radar
NCA	National Command Authority
NIE	National Intelligence Estimate
NORAD	North American Aerospace Defense Command

NSC	National Security Council
PAR	Perimeter Acquisition Radar
PSAC	President's Science Advisory Committee
RAND	Research and Development
RV	Re-Entry Vehicle
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SDI	Strategic Defense Initiative
SLBM	Submarine Launched Ballistic Missile
SNIE	Special National Intelligence Estimate
SSBN	Nuclear-Powered Ballistic Missile Submarine

Defenses in Dispute: The Bureaucratic and Domestic Politics of the First Anti-Ballistic Missile Debate

Sam Lair

Introduction

On October 1st, 1975, the Stanley R. Mickelson Safeguard Complex became fully operational. Located near Grand Forks, North Dakota, the complex was easily identifiable by a large topless pyramid structure that housed a radar and dominated the surrounding area.¹ This radar, in conjunction with 100 anti-ballistic missile (ABM) interceptors, had a specific mission: defend the 150 Minuteman III Intercontinental Ballistic Missiles (ICBMs) housed in underground silos at Grand Forks Air Force Base from ballistic missile attack by the Soviet Union. On October 2nd, 1975, the day after the Mickelson Safeguard Complex became fully operational, the United States House of Representatives voted to shut it down. The Senate echoed that measure, with slight modification, that November. By February of 1976—not even six months after coming fully online—the Army had turned off the distinctive pyramidal radar and started removing the interceptors and nuclear warheads from their cells. The radar structure still stands today, a monument in stained concrete to the futility of the arms race.

The Safeguard Complex in North Dakota had a fleeting lifespan, but the ideas, debates, and technologies it represented did not. This installation was the culmination of nearly twenty years of intense effort, deliberation, and controversy over defending against the threat of ballistic missiles. Beginning after World War II, efforts to respond to this novel danger accelerated under

¹ See Figure 1 in Appendix.

the Eisenhower administration prior to the Soviet launch of the Sputnik satellite in 1957. The system produced by this effort was called Nike-Zeus.

This anti-ballistic missile system was never deployed. It faced skepticism from the Eisenhower administration, and first deferral and then dismissal from the Kennedy administration. During the Johnson administration new technology and ideas yielded Nike-X, the next generation of ABM system. Johnson's cabinet and various agencies fought another pitched battle over the question of whether and how to deploy Nike-X. This produced Sentinel in September 1967, a system to defend the entire country from missile attack by the recently nuclearized People's Republic of China. Sentinel perished with the arrival of the Nixon administration, which adopted a slightly modified version of the system that emphasized defending the missile silos and bomber bases that comprised part of the United States' strategic nuclear deterrent. The Nixon administration rechristened this program Safeguard. These changes did not save Safeguard from becoming the locus of debate in the halls of Congress and negotiation with the Soviet Union at the Strategic Arms Limitation Talks (SALT). In 1972, the Nixon administration delivered the SALT I Treaty and the Anti-Ballistic Missile Treaty, which introduced significant limitations on missile defenses. In 1974, an additional protocol to that treaty tightened those restrictions further, and the ABM Treaty became the bedrock of arms control between the United States and Soviet Union for the next 30 years. In 1975, the Mickelson Safeguard Complex, the only such installation allowed under the modified treaty, was decommissioned.

The investment of so much money, energy, and thought into anti-ballistic missiles raise the question of why the Mickelson complex was shut down so unceremoniously. Why, after such a significant effort, did this happen and why was the process to reach that point such a shambles?

Many scholars present the story of the ABM debate as the logical and inexorable consequence of the acceptance of deterrence theory and mutual vulnerability by the U.S. and the Soviet Union, the ABM treaty suggesting that “consensus had been reached between Moscow and Washington about the meaning of the nuclear age.”² This view is prevalent among many political scientists and strategic studies scholars, who predominantly understand this outcome as symbolizing “the internment of BMD and the enshrinement of the strategy of the nuclear deterrence” and the product of American and Soviet efforts “to control their arms race in nuclear weapons.”³ Other scholars, such as James Cameron and Janne Nolan, acknowledge the significance of technological developments and deterrence theory, but highlight the influence of domestic and bureaucratic politics in explaining these outcomes. Cameron’s works exploring the impact of domestic protests and the “perpetual presidential struggle” to “reconcile public pronouncements regarding nuclear weapons with private doubts and competing domestic priorities, both political and budgetary” are of particular importance and have significantly shaped this work.⁴

This project builds upon those efforts to complicate the arms race and deterrence theory-focused narrative of early American ABM efforts. I argue that the combination of intense interagency and intercabinet debates on ABM, synthesized with the peculiar domestic politics of the arms race, led to the Mickelson Safeguard Complex’s ignoble fate in 1975. Examining

² Lawrence Freedman and Jeffrey Michaels, *The Evolution of Nuclear Strategy: New, Updated and Completely Revised* (London: Palgrave Macmillan, 2019), 438. See also Richard Smoke, *National Security and the Nuclear Dilemma: An Introduction to the American Experience of the Cold War* (New York: McGraw Hill, 1993); Christopher A. Ford, “Anything but Simple: Arms Control and Strategic Stability,” in *Strategic Stability: Contending Interpretations*, eds. Elbridge A. Colby and Michael S. Gerson (Carlisle: Strategic Studies Institute, US Army War College, 2013); Thomas Karako, Ian Williams, and Wes Rumbaugh, *Missile Defense 2020: Next Steps for Defending the Homeland* (New York: Center for Strategic and International Studies, 2017).

³ Ernest J. Yanarella. *The Missile Defense Controversy: Technology in Search of a Mission*. (Lexington: University Press of Kentucky, 2002), 185; “The Anti-Ballistic Missile (ABM) Treaty at a Glance.” Daryl Kimball and Kingston Reif, Arms Control Association, accessed March 12, 2022, <https://www.armscontrol.org/factsheets/abmtreaty>.

⁴James Cameron. *The Double Game: The Demise of America’s First Missile Defense System and the Rise of Strategic Arms Limitation* (Oxford University Press: New York, 2018), 10.

disputes within the executive branch in the context of foreign policy and domestic politics can help shed light on this process and how this resolution came about, making extensive use of publicly available and declassified documents. Additionally, the efficacy or availability of technology played a large role in deliberations over missile defense policy, even if this story does not have a technological determinist lens. Different actors used existing or potential technology to pursue and achieve different goals relating to missile defenses, and those systems are explained in detail to add texture and richness to the debates over ABM.

There is a duality or tension to the domestic politics of this issue. On one hand, the way Congress and public opinion interpreted the strategic arms competition, often reducing it to its most vulgarly simplistic form of “keeping up with the Joneses,” manufactured pressures on the Johnson administration for an ABM. On the other hand, implementation of that policy, the product of those domestic pressures, met with fierce resistance and protests. The problems with this fusion of intra-executive branch fights and domestic politics became more pronounced as administrations changed, epitomized in the Nixon administration’s pivot from Sentinel to Safeguard. Even if there was general agreement on the continued prosecution of the arms race between administrations, the long-term nature of a project like an ABM system made it more susceptible to changes which severely circumscribed its effectiveness and coherence.

Nuclear deterrence theory during the Cold War relied on the threat of nuclear destruction to maintain the status quo, making the cost of an attack by either the United States or the Soviet Union on the other far outweigh any potential benefits. The credibility of these threats hinged on being able to deliver nuclear weapons to targets, and the vulnerability of each side. As the superpowers developed new means of delivery, particularly ballistic missiles, for increasingly sophisticated atomic weapons, an offensive arms race emerged. ABMs had a peculiar effect

within nuclear deterrence and the arms race. While they could defend the United States against ballistic missiles, they also reduced the credibility of the Soviet Union's ability to deliver its nuclear force to its targets. Moreover, if used in conjunction with a first strike, ABMs could absorb the adversary's "ragged retaliation" with the forces that survived the first strike, making them an offensive as well as a defensive tool. This situation could provoke a massive buildup, quantitative and qualitative, by the Soviets to rectify the imbalance, and outwit or oversaturate an ABM. Secretary of Defense McNamara would term this the action/reaction phenomenon. Therefore, anti-ballistic missiles added layers to the arms race, as it could no longer just be a competition between offenses but had to be one between offenses and defenses as well. The paradoxical nature of anti-ballistic missiles in nuclear deterrence permeates the debates described here.

This granular, bureaucratic history of anti-ballistic missile systems and their surrounding controversies during the early Cold War can help provide insight, not only into one of the most important and formative nuclear weapons projects of the United States, but into contemporary issues as well. Since the abrogation of the ABM treaty by the George W. Bush administration in 2002, missile defenses have once again risen to be one of the most prominent and problematic issues in nuclear weapons and arms control, with policymakers dealing with their potential to undermine deterrence. Clarifying and understanding the Cold War experience on this issue may help policymakers navigate those challenges facing us today.

Missile Defenses and the Nike Family: 1940s-1957

The first serious attempt by the U.S. government at defending against ballistic missile attacks was known as Nike-Zeus. Bell Telephone Laboratories developed Nike, a series of mythically named missiles used for various defensive purposes, such as air defense, cruise

missile defense, and, eventually, ballistic missile defense. The Nike program evolved from Project Wizard; a study begun by the Army Air Force in 1946 at the University of Michigan which investigated the possibility of using an interceptor traveling at 4,000 miles per hour to intercept targets at altitudes of 60,000 to 500,000 feet.⁵ This basic concept, using an anti-missile missile to destroy an adversary's re-entry vehicle, was the bedrock for all future serious missile defense efforts.

This is not to say the Nike family of missiles were the only efforts towards anti-ballistic missile systems during this period. However, many of these other projects were closer to science fiction than reality. Shortly after the Soviet Union launched Sputnik in 1957, the Advanced Research Projects Agency at the Department of Defense started Project BAMBI. The name derived from the central idea, *ballistic missile boost intercept*.⁶ There are broadly three phases of flight for a ballistic missile. The boost phase, where the rocket engines are still burning as the missile escapes the atmosphere, is followed by the midcourse phase, which takes place outside the atmosphere and is the longest phase. After midcourse is the terminal phase, where the missile re-entry vehicle re-enters the atmosphere at incredibly high speeds. The Minuteman I re-entry vehicle, for example, reached speeds of around 17,000 miles per hour during the terminal phase. For this reason, terminal defense against ICBMs is remarkably difficult. Re-entry vehicles house the warhead of a ballistic missile, conventional or nuclear. Project BAMBI investigated intercepting ballistic missiles while their engines were still burning in the boost phase. That

⁵ Donald R. Baucom, *The Origins of SDI, 1944-1983*. (Lawrence: University Press of Kansas, 1992), 6.

⁶ Donald R. Baucom, "Eisenhower and Ballistic Missile Defense: The Formative Years, 1944-1961," *Air Power History* 51, no. 4 (Winter 2004): 11, <https://www.jstor.org/stable/10.2307/26274602>.

would have required nuclear armed “high performance space-based platforms and interceptors” to catch the missile before it transitioned from the boost phase to the midcourse phase.⁷

The project was appealing to those interested in nuclear warfighting capabilities. Air Force Lt General J. H. Atkinson remarked that the “(BAMBI) concept, is the most pressing requirement for an effective win-the-war strategy” and Air Force Chief of Staff General Thomas D. White stated, “the BAMBI concept may very well provide the technological breakthrough which will help us retain a credible counter force capability during this decade.”⁸ However, there were many issues with the program. One report from 1962 identified “investigations to date have not established feasibility or firm values for design and operational parameters,” and that “considerable additional research is required in a variety of areas before the technical, operational, and economic feasibility of the BAMBI concept can be verified.”⁹ Although the Kennedy Administration cancelled Project BABMI in 1963, this idea of space-based boost phase defenses returned many times, in the guise of the Strategic Defense Initiative, also known as Star Wars, and later Brilliant Pebbles, among others. While conceptually exciting, BAMBI and other less feasible ideas made much less progress than the Nike program.

After World War Two, the military faced the problem of how to deal with the newly emerging era of jet-powered fighters and bombers, which posed significant problems to

⁷ Baucom, *The Origins of SDI, 1944-1983*, 16; United States Executive Office of the President, “United States Aeronautics and Space Activities, 1961,” Classification Unknown, Report, January 31, 1962, Digital National Security Archive (hereafter DNSA). <https://www.proquest.com/government-official-publications/united-states-aeronautics-space-activities-1961/docview/1679141278/se-2?accountid=7103> (accessed December 13th, 2021), 35.

⁸ United States Air Force, Air Defense Command, “Aerospace Defense; Includes Letter from Thomas White to Joseph Atkinson,” Secret, Letter, December 21, 1960, DNSA, Doc ID: 1679150111. <https://www.proquest.com/government-official-publications/aerospace-defense-includes-letter-thomas-white/docview/1679150111/se-2?accountid=7103> (accessed December 13, 2021).

⁹ United States Executive Office of the President, “United States Aeronautics and Space Activities, 1961,” 35.

traditional anti-aircraft artillery systems. This conundrum resulted in the beginning of the Nike family of missiles in 1945.¹⁰ There were many different iterations of Nike from the 1950s through the 1970s. The first was Nike-Ajax, followed by -Hercules, -Zeus, and ultimately Nike-X. Each version refined and changed the system to adapt to evolving threats. Enemy bombers at increasingly higher speeds, altitudes, and larger quantities, and eventually ballistic missiles with escalating degrees of sophistication, provoked the dramatic evolutionary arc of the Nike family.

In 1947 there was a major reorganization of the armed services, the National Security Act of 1947, which saw the Air Force become an independent branch, separate from the Army. The act also established the National Security Council and Central Intelligence Agency. Importantly, the Army led the Nike-Ajax program, their first foray into surface-to-air missiles. At the same time, the Army Air Forces, later the Air Force after 1947, pursued a similar system. The Air Force program was initially known as the Ground-to-Air Pilotless Aircraft (GAPA), but ultimately became the Bomarc.¹¹ As Nike and Bomarc were both systems which could perform largely the same role, continental air defense, they were competitors.

Post-war interservice rivalry and their similar role heavily influenced the contest between Nike-Ajax and Bomarc. Both the Air Force and the Army sought total control over the role but were plagued by the lack of clear division in responsibilities.¹² After World War II, the Truman Administration initiated a significant draw down in military forces, resulting in a concomitant reduction in funding.¹³ Even though budgets rose as the Cold War developed, they were largely

¹⁰ Clayton K. Chun, "Winged interceptor: Politics and strategy in the development of the bomarc missile," *Air Power History* 45, no. 4(Winter 1998): 47. <https://www.proquest.com/magazines/winged-interceptor-politics-strategy-development/docview/219763573/se-2?accountid=7103>.

¹¹ Ibid.

¹² Morton Halperin, "The Decision to Deploy the ABM: Bureaucratic and Domestic Politics in the Johnson Administration," *World Politics* 25, no. 1(1972): 69. <https://www.jstor.org/stable/2010431>.

¹³ Chun, "Winged interceptor," 46.

directed to nuclear weapons, particularly with the Eisenhower administration's emphasis on the strategy of massive retaliation. Thus, much of the available funding was going to the Air Force since the bombers of Strategic Air Command (SAC) were critical to the delivery of strategic nuclear weapons. The Navy also managed to carve out a strategic role for itself by leveraging carrier-based aircraft and later the Polaris ballistic missile submarine program.¹⁴ However, the Army struggled in the post-war years to find a similar strategic nuclear role and had to fight to find one throughout the 1950s.¹⁵ Therefore, the Army wanted a larger slice of the continental air defense role to maintain its funding and relevancy, putting it at odds with the Air Force.

In this context, Nike-Ajax reflected the Army's desire to get into the continental air defense game and beat the Air Force's competitor missile to do so. Convincing Congress and the Defense Department of the superiority of Ajax over the Air Force's Bomarc would be a big step towards achieving that and securing a role for the Air Force. Ultimately, this effort was partially successful, as more Nike than Bomarc batteries were procured for a number of reasons. The simple design of the Nike and the use of solid fuel rocket motors for both the Ajax and the Hercules made for a smoother research and development process.¹⁶ Particularly compared to the Bomarc, which used a peculiar, winged design and changed from liquid to solid fuel between its A and B iterations.¹⁷ Changing fuel types, a "huge technological leap," and other problems caused reliability issues, delays, and spiraling costs for Bomarc.¹⁸ Nevertheless, as the "bomber

¹⁴ Halperin, "The Decision to Deploy the ABM," 68

¹⁵ Ibid, 67.

¹⁶ Chun, "Winged interceptor," 50.

¹⁷ Liquid fuel can provide more energy or power, but is notoriously difficult to store, often requiring very cold temperatures. Moreover, some types of liquid fuel can damage the fuel tanks if stored in the missile for long periods of time, requiring the missiles to be fueled prior to launch. Solid fuel, on the other hand, often provides less energy or power, but is cast into the fuel tanks, removing the fueling requirement as the missile will always be fueled. This makes solid fueled missiles more responsive.

¹⁸ Ibid, 50, 58.

gap” scare heated up in the mid-1950s, both systems would be deployed to defend against the allegedly-vast Soviet bomber fleet.¹⁹ These circumstances helped establish the Army in the continental air defense role, which it would later parley into the missile defense role.

Deployed beginning in 1953, the Nike-Ajax was supposed serve as point defense to protect cities and military bases from bomber or cruise missile attacks.²⁰ Those are largely similar roles, as a cruise missile is essentially a plane with no pilot and some type of payload; conventional explosive, nuclear, or otherwise.²¹ Ajax had a range of 25-30 miles and could reach speeds of Mach 2.3, or 1,679 mph with its solid fuel rocket engine.²² To destroy incoming cruise missiles or bombers before they reached their targets, the Nike-Ajax used a conventional warhead, detonating in close proximity to its target.²³

The warhead was one of the major changes made with the second Nike iteration, the Hercules. Nike-Hercules was part of the second generation of U.S. surface-to-air missiles, using most of the supporting components of the Ajax, adding more high-powered radars and three more boosters and engines to the missile.²⁴ The most significant change from Ajax to Hercules was adding the capability to use either a conventional or nuclear warhead to intercept targets. The nuclear warhead could increase the number of targets destroyed by an interceptor and reduce the level of accuracy required for the radars and missiles. However, the nuclear warhead also caused issues for the Eisenhower administration which resisted deployment. This was partially

¹⁹ Ibid, 51-52.

²⁰ U.S. Army Center of Military History, *History of Strategic Air and Ballistic Missile Defense Volume 1: 1945-1955*, 29.

²¹ Baucom, *The Origins of SDI, 1944-1983*, 7.

²² “Nike Ajax (SAM-A-7) (MIM-3, 3A),” Federation of American Scientists, accessed December 10, 2021, <https://nuke.fas.org/guide/usa/airdef/nike-ajax.htm>.

²³ Baucom, *The Origins of SDI, 1944-1983*, 7.

²⁴ “Nike Hercules (SAM-N-25) (MIM-14/14A/14B),” Federation of American Scientists, accessed December 10, 2021, <https://nuke.fas.org/guide/usa/airdef/nike-hercules.htm>.

out of concern for civilians, who might have been jeopardized by interceptions using nuclear weapons at altitudes as low as 30,000 feet.²⁵ At such a low altitude, the heat, blast, shock, and radiation effects of the nuclear detonation might harm civilians in the cities the system was supposed to protect. The additional boosters and engines, which increased the range of the Hercules to 75 miles and its speed to Mach 3.65 or 2,707 mph, were insufficient to resolve criticism of the small area defended and questionable effectiveness.²⁶ Nonetheless, by the end of the 1950s Nike-Hercules batteries with their nuclear warheads were replacing Ajax batteries across the United States, including in cities like Chicago, Boston, and Seattle, with “much fanfare from local press and officials, but little protest from locals.”²⁷

As the Hercules rollout began, however, doubt was cast on the premise of the “bomber gap.” Suspicions about double counting or misreporting the number of bombers the Soviets had and could produce were vindicated by a new Central Intelligence Agency program. The new U-2 spy plane was used to conduct secret flights over Soviet territory at incredibly high altitudes and speeds to collect photographs of Soviet installations. With intelligence gleaned from the photographs taken by the U-2s, the CIA was able to assess that the genuine number of Soviet bombers was dramatically lower than had been reported. No sooner had the “bomber gap” been debunked, and Congress began to question the necessity of newly deployed and expensive air defense systems like Nike-Hercules, did a new threat arise.²⁸

²⁵ Cameron, *The Double Game*, 21.

²⁶ “Nike Hercules (SAM-N-25) (MIM-14/14A/14B),” Federation of American Scientists, accessed December 10, 2021, <https://nuke.fas.org/guide/usa/airdef/nike-hercules.htm>.

²⁷ James Cameron, “From the Grass Roots to the Summit: The Impact of US Suburban Protest on US Missile-Defence Policy, 1968-1972,” *The International History Review* 36, (March 2014): 345-346, <https://doi.org/10.1080/07075332.2013.864693>.

²⁸ Chun, “Winged interceptor,” 53-54.

The launch of Sputnik in October 1957 by the Soviet Union, and the implied ability to use ballistic missiles to strike intercontinental targets with nuclear weapons, stoked feelings of fear and vulnerability among Americans.²⁹ There had already been a sense of international anxiety from the Cold War and the First Taiwan Straits Crisis from 1954-55. However, 1957 and 1958 compounded this perception with Soviet Premier Nikita Khrushchev squeezing Berlin and the Second Taiwan Straits Crisis.³⁰ The late 1950s was a period when the United States felt increasingly under pressure, exacerbated in the nuclear and technological realm by Sputnik. Khrushchev did not help matters, with *Pravda* reporting he claimed the Soviet Union was “turning out missiles like sausages.”³¹ Concerns of inferiority in the arms race in this moment eventually translated into dramatic overcompensation in the nuclear force structure of the United States.

New concerns about Soviet technological superiority in ICBMs combined with the relaxed public response from the Republican Eisenhower Administration posed an opportunity for Democrats. The narrative of the “missile gap” emerged, which held the Soviet Union had a commanding qualitative and quantitative lead, particularly in ICBMs, over the United States, and the Eisenhower administration had done little to prevent or redress the situation. This argument was tested against the Republicans during the 1958 midterm elections to great success, contributing to significant gains by Democrats that year.³² The Democrats saw a potential winning coalition based in part on a military build up to eliminate the alleged “missile gap” and

²⁹Freedman and Michaels, *The Evolution of Nuclear Strategy*, 172.

³⁰ Campbell Craig and Fredrik Logevall, *America's Cold War: The Politics of Insecurity* (Cambridge: Harvard University Press, 2009),183-185.

³¹ Richard Ned Lebow, “Was Khrushchev bluffing in Cuba?,” *Bulletin of the Atomic Scientists* 44, no. 3(1988): 41-42, <http://www.tandfonline.com/action/showCitFormats?doi=10.1080/00963402.1988.11456136>.

³² Craig and Logevall, *America's Cold War*, 177.

thus energize the economy, which crystallized in the successful 1960 presidential election of John F. Kennedy. This shift occurred despite the persistent assertions of the Eisenhower Administration that the U.S. still maintained a significant lead in the arms race.³³

The “missile gap” and Sputnik, however, were far from the first-time concerns had been raised about ICBMs in the U.S. and the Eisenhower Administration. *Deterrence and Survival in the Nuclear Age*, more commonly known as the Gaither Report, demonstrates this. While it was published in November of 1957, shortly after Sputnik, the panel was established in April of that year. The Gaither Report underscored that the Soviets had “probably surpassed us in ICBM development.”³⁴ It was more concerned that “active defense programs now in being and programmed for the future will not give adequate assurance of protection to the civil population” and that current passive defenses would “afford no significant protection to the civil population.”³⁵ The distinction between active and passive defenses is important and pervasive to the discussion of missile defense. Passive defenses include fallout shelters, hardening missile silos or air bases, and defense through mobility, such as the Minuteman on rails concept or the various MX basing modes studied in the 1970s. These are different from active defenses which actively interdict the incoming threat, either shooting down bombers and cruise missiles, or intercepting missile re-entry vehicles. In addition to enhanced early warning, hardening of bases, and dramatic expansion of ICBM, Submarine Launched Ballistic Missiles (SLBM), and Intermediate Range Ballistic Missile (IRBM) programs, the Gaither Report recommended using

³³ Ibid.

³⁴ U.S. Office of Defense Mobilization, Science Advisory Committee, Security Resources Panel, “Deterrence and Survival in the Nuclear Age, [Gaither Report],” 4, November 7, 1975, National Security Council Files 5724 (2), Policy Papers Sub-Series, box 22, National Security Council Series, Special Assistant to the President for National Security Affairs, Dwight D. Eisenhower Library.

³⁵ Ibid, 5.

Nike-Zeus batteries to defend SAC bases and initiating “a program to develop and install an area defense against ICBMs at the earliest possible date.”³⁶ The report further predicted that ABM would be the next phase of the arms race, arguing that in the first half of the 1970s “missiles in turn will be made more sophisticated to avoid destruction; and there will be a continuing race between the offense and the defense. Neither side can afford to lag or fail to match the other’s moves.”³⁷ The concern about the competition between offenses and defenses, with each side reacting to the other, and the consequences of this new front in the arms race, were enduring.

The Eisenhower Administration attempted to keep the Gaither Report and its conclusions a secret. Eisenhower considered many of the recommendations unwarranted and unreasonably costly, largely based on intelligence the Gaither Committee did not have access to.³⁸ This privileged information helps explain his restrained response to Sputnik and the “missile gap.” Restraint, however, was lacking in other quarters after Sputnik. The conclusions of the Gaither report were leaked to the press and mobilized by the armed forces and those who wanted more defense spending to pressure for new programs.³⁹ In particular, Senator Henry “Scoop” Jackson from Washington pounced on the opportunity, calling for more bomber and missile production.⁴⁰ Washington was home to many defense industries, and Jackson went on to become one of the most ardent proponents of missile defense in Congress.

³⁶ Ibid, 6-7, 8

³⁷ Ibid, 17.

³⁸ Ronald E. Powaski, *March to Armageddon: The United States and the Nuclear Arms Race* (New York: Oxford University Press, 1987), 69.

³⁹ Ibid, 71.

⁴⁰ Ibid.

On the technical side, in 1955, Bell Laboratories began the Nike II study, commissioned by Army Ordinance.⁴¹ Bell was to investigate a possible “common anti-aircraft defense system to cover all future high-altitude threats,” with the Army later shifting the study’s emphasis to defending against ballistic missiles.⁴² The report, finished in 1956, reached remarkably durable conclusions about ballistic missile defense. It disregarded mid-course intercept due to economic and feasibility concerns since it would require very early acquisition of the enemy missile and “necessitate a defensive missile as formidable as the offensive weapon.”⁴³ Moreover, it identified the difficulty of discriminating the re-entry vehicles from decoys and chaff, and the importance of atmospheric drag for filtering those out.⁴⁴ The report recommended using multiple types of interceptors, and multiple different radars as well, qualities which would eventually be incorporated into Nike-X.⁴⁵ Interestingly, much of the work done for the report was also shared with the Air Force, who had also commissioned an anti-ICBM study from Bell, but with much less funding.⁴⁶

The Nike II study culminated in a February 1957 decision by the Army to begin development of what would become Nike-Zeus at Bell Labs.⁴⁷ While Nike-Zeus could still defend against air threats, it was the first anti-ballistic missile system developed by the U.S. It

⁴¹ Bell Laboratories, *ABM Research and Development at Bell Laboratories: Project History* (Bell Laboratories: Whippany, 1975), I-1.

⁴² *Ibid.*

⁴³ *Ibid.*, I-3.

⁴⁴ *Ibid.*, I-5.

⁴⁵ *Ibid.*, I-14.

⁴⁶ *Ibid.*, I-15.

⁴⁷ *Ibid.*, I-15-I-16.

had three stages, each with a solid fuel rocket engine, and a range of about 75-100 miles.^{48 49} Zeus was designed to use the W-5 nuclear warhead with a high-yield of 400 kilotons to destroy incoming enemy warheads above the atmosphere.⁵⁰ Despite Nike-Zeus's myriad deficiencies, some of which will be outlined below, it is important to remember it was the state of the art. Its susceptibility to larger or more sophisticated attacks as well as simple penetration aids reflects the difficulty of the anti-ballistic missile mission as much as the failings of the system. Ultimately, Nike-Zeus was the main potential answer to Soviet ICBMs because it was building on the established foundation of the Ajax and Hercules and was the most advanced project available when Sputnik and the "missile gap" threw those concerns into the limelight.

Defense systems like the Nike family and other programs rely on many diverse types of radars to operate successfully. Acquisition radars surveil a defended airspace and identify incoming threats like bombers, cruise missiles, and ballistic missile re-entry vehicles (RVs).⁵¹ Once a target is identified, more advanced systems like Nike-Zeus or Nike-X would use discrimination radars to focus on individual objects in the threat cloud and attempt to filter out decoys or non-threatening objects.⁵² Acquisition radars would use lower frequencies which would travel further, with some even extending over the horizon, whereas discrimination radars would use higher frequencies which provide better resolution and detail but cannot propagate as

⁴⁸ Graham Spinardi, "The rise and fall of Safeguard: anti-ballistic missile technology and the Nixon Administration," *History and Technology* 26, no. 4 (2014): 315. <https://doi.org/10.1080/07341512.2010.523174>.

⁴⁹ United States Department of Defense, Office of the Director of Defense Research and Engineering, "Assessment of Ballistic Missile Defense Program," Secret Report, April 17, 1961, DNSA, Doc ID: 1679150838. <https://www.proquest.com/government-official-publications/assessment-ballistic-missile-defense-program/docview/1679150838/se-2?accountid=7103> (accessed November 4, 2021): Appendix II

⁵⁰ John E. Pike, Bruce G. Blair, and Steven I. Schwartz, "Defending against the Bomb," in *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons Since 1940* (Washington, D.C.: Brookings Institution Press, 1998), 284-285.

⁵¹ Bell Laboratories, *ABM Research and Development at Bell Laboratories*, I-5.

⁵² *Ibid*, 1-9.

far. Specific radars such as the PAR, MAR, and MSR, pertinent to Nike-X and its permutations, will be discussed later.

The acquisition radars for Nike-Ajax, -Hercules, and -Zeus used a mechanically steered radar array. This involved the “familiar rotating antenna fan” which had to be physically turned using a mechanical assembly to identify and track contacts.⁵³ Mechanically steering a radar is inefficient and time consuming, meaning the radar can only track a very limited number of targets.⁵⁴ Therefore, the early Nike radars could very easily be oversaturated by an attacker, sending more bombers, missiles, re-entry vehicles, or decoys than the radar could handle, ensuring it would miss some and they would get through. There were also issues with the ability of the Ajax radars to discriminate between bombers or other targets in groups, setting the stage for future efforts to improve the volume of targets radars could manage as well as their resolution.⁵⁵

During the Nike-Zeus research and development program, some of the first phased-array radar studies were conducted by Bell and other supporting laboratories, culminating in tests which “verified on a full-scale basis the satisfactory performance of a multifunction array radar in a real target environment.”⁵⁶ These projects were incredibly demanding work, as one researcher who led the Lincoln Laboratory Special Radars Group at the Massachusetts Institute of Technology noted. He remarked that “as the demands continue to grow, the radar designer is

⁵³ Leonard S. Rodberg, “ABM Reliability,” in *ABM: An Evaluation of the Decision to Deploy an Antiballistic Missile System*, ed. Abram Chayes and Jerome B. Wiesner (Harper and Row: New York, 1969), 112.

⁵⁴ Abram Chayes, Jerome B. Wiesner, George W. Rathjens and Steven Weinberg, “An Overview,” in *ABM: An Evaluation of the Decision to Deploy an Antiballistic Missile System*, ed. Abram Chayes and Jerome B. Wiesner (Harper and Row: New York, 1969), 4; Spinardi, “The rise and fall of Safeguard: anti-ballistic missile technology and the Nixon Administration,” 315.

⁵⁵ “Nike Ajax (SAM-A-7) (MIM-3, 3A),” Federation of American Scientists, accessed December 10, 2021, <https://nuke.fas.org/guide/usa/airdef/nike-ajax.htm>.

⁵⁶ Bell Laboratories, *ABM Research and Development at Bell Laboratories*, I-36.

forced into ever conflicting requirements, such as the simultaneous need for larger, more precise antennas, and for faster scanning until he is led to consider approaches so radical as to have been considered impractical in the light of previous demands.”⁵⁷ Nonetheless, the development of electronically phased array radars and other discrimination efforts in Project Defender would help resolve many of these issues and would play a role in the defeat of Nike-Zeus in favor of Nike-X by Secretary McNamara in the Kennedy administration.⁵⁸

In addition to being unable to manage a large number of targets and distinguish between genuine re-entry vehicles and decoys, these systems were rather soft or vulnerable. This was especially true of the radars. They were delicate, and could not withstand much punishment, especially in a conflict where nuclear weapons were used. A report by the Presidential Science Advisory Committee (PSAC) estimated that the Nike-Zeus radar could only withstand 2 psi of overpressure, making it susceptible to near-miss nuclear detonations concluding that at the time there was “no known way to obtain a really hard antenna system.”⁵⁹ For comparison, the “Little Boy” bomb which destroyed Hiroshima with a yield of 15 kilotons produced 2 psi to a radius of almost 3 kilometers, so it would not take much of a near miss to destroy one of these radars using contemporary weapons which had much higher yields.⁶⁰ The PSAC report’s recommendation was to continue research and development with the goal of deployment, emphasizing higher

⁵⁷ J. L. Allen, “Array Radars: A Survey of Their Potential and Their Limitations,” *Microwave Journal* (May, 1962), 67. <https://www.microwavejournal.com/ext/resources/pdf-downloads/ARCHIVE-ARTICLE-MAY-1962.pdf>.

⁵⁸ Spinardi, “The rise and fall of Safeguard,” 315.

⁵⁹ President's Science Advisory Committee (hereby PSAC), “Warning and Defense in the Missile Age [Includes Cover Memorandum for Record by Andrew Goodpaster,” June 3, 1959, DNSA, Doc ID: 1679156972. <https://www.proquest.com/government-official-publications/warning-defense-missile-age-includes-cover/docview/1679156972/se-2?accountid=7103> (accessed November 4, 2021): 11.

⁶⁰ “Nukemap,” Nuclear Secrecy, Alex Wellerstein, accessed December 10, 2021, https://nuclearsecrecy.com/nukemap/?&kt=15&lat=29.42412&lng=-98.49363&hob_opt=2&hob_psi=5&hob_ft=1968&psi=20,5,1,2&zm=13.

frequency radars, radar hardening, and investigation of the effects of very-high-altitude detonations of high-yield weapons.⁶¹

Another persistent conundrum for both Nike-Zeus and other ABM systems that used nuclear weapons to kill their targets was blackouts. This refers to the deleterious effect nuclear explosions in space or in the atmosphere have on radar performance. The explosions could produce fireballs and “a sheet of ionized air,” both of which “cause reflection or absorption of radar waves for a ten-minute period.”⁶² Even after the ten-minute period, lingering nuclear effects would bend radar beams, changing where objects were assessed to be, similar to how light refracts in water.⁶³ Therefore, a clever attacker would detonate some of their warheads in space or in the atmosphere to generate these effects and blind the defenses, making interception enormously difficult. However, since the defensive interceptors also used nuclear warheads, the explosions they generated to try and kill enemy RVs would also generate the same effects. This was noted in the PSAC report, which concluded “the problems of attenuation and refraction which may result from high altitude nuclear detonations, including those of the Nike-Zeus warhead itself, was considered a serious problem.”⁶⁴ The problem of blackouts, both fratricidal and from the enemy, plagued missile defense efforts and remained one of the most common technical criticisms of nuclear based ABM systems through the Cold War and beyond.

Intriguingly, Nike-Zeus also filled a role beyond ABM and defense against high-altitude threats. A 1960 report for the NSC Planning Board argued that “we must anticipate a marked increase in the exploitation of space for military purposes,” including bombing systems,

⁶¹ PSAC, “Warning and Defense in the Missile Age,” 16.

⁶² Chayes, Wiesner, Rathjens and Weinberg, “An Overview,” 20.

⁶³ Ibid.

⁶⁴ PSAC, “Warning and Defense in the Missile Age,” 10.

“reconnaissance, navigation, early warning and communication.”⁶⁵ Therefore, the “capability to destroy orbiting satellites and space vehicles” would be crucial to accomplishing that mission.⁶⁶ Beginning in early 1962, the Army asked Bell Labs to prepare for testing Nike-Zeus against satellite targets, with tests against points in space occurring that December.⁶⁷ A full scale interception of an actual satellite was performed on May 23, 1963, at Kwajalein, with the interceptor getting close enough to have destroyed the target with a genuine warhead.⁶⁸ The Bell Laboratories history of its ABM program noted that, from May 1963 until 1964, “satellite-intercept missiles were maintained at Kwajalein with one always checked out and in a state of readiness.”⁶⁹ However, the tests continued with eight Nike-Zeus missiles fired as part of the test program, until it was canceled in 1967 in preference for the Thor based anti-satellite weapon.⁷⁰

Zeus’ role as an ASAT is significant, as it began the tradition of missile defense systems also fulfilling a dual-use role as anti-satellite weapons, whether explicitly stated or not. This was also true for Safeguard. When discussing potential roles for Safeguard, a 1970 Verification Panel report noted the system could be used to “provide a means to track and destroy most space vehicles such as post-attack reconnaissance satellites.”⁷¹ The implicit capability of the United States to conduct attacks on satellites, which are often used for early warning of attack or command and control, adds immense complexity and risk to confrontations with other nuclear

⁶⁵ James S. Lay, Jr., Executive Office of the President, National Security Council, Planning Board, “U.S. Policy on Continental Defense,” Top Secret, Memorandum, July 14, 1960, National Security Archive (hereafter NSA), <https://nsarchive.gwu.edu/document/19333-national-security-archive-doc-04-u-s-national> (accessed December 16, 2021), 24.

⁶⁶ Ibid.

⁶⁷ Bell Laboratories, *ABM Research and Development at Bell Laboratories*, I-31

⁶⁸ Ibid.

⁶⁹ Ibid, I-32.

⁷⁰ Pike, Blair, and Schwartz, “Defending against the Bomb,” 300.

⁷¹ National Security Council Verification Panel, “Evaluation of Possible Strategic Arms Agreements Between the United States and the Soviet Union,” Top Secret [excerpt], March 21, 1970, NSA, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB36/docs/doc03.pdf>, (accessed December 11, 2021).

armed powers, then and now. Moreover, the implicit, rather than explicit, nature of this capability encourages suspicion, distrust, and fear of this kind of program in other states. This trend of ABM systems also being ASAT systems has been true for every U.S. ABM which intercepts its target outside of the atmosphere, including the modern Ground-Based Midcourse Defense and the Aegis-based Standard Missile-3 systems.

Ike's Interceptors: 1958-1960

Upon taking office, Eisenhower moved away from the massive expenditures of containment based on documents such as NSC-68 by making new alliances and relying more on nuclear weapons to maintain superior military force, while also cutting the conventional forces and costs which he feared would undermine the long-term viability of the U.S. from within.⁷² This strategy, called the New Look, also included avoiding large land wars like Korea while also undertaking a moral offensive against the Soviets.⁷³ In the context of the New Look, the Eisenhower administration's decision on Nike Zeus aligned with their goals of reducing spending, emphasizing offensive nuclear weapons through massive retaliation, and cutting inefficiencies.

In 1958, however, the deficiencies of Nike-Zeus outlined in the previous section were still being teased out, and the government was grappling with genuine concerns over the vulnerability of U.S. cities and forces. As early as February of that year, five months after Sputnik, the Eisenhower administration was discussing ABM and Nike-Zeus. More specifically, they were considering various options for defending Strategic Air Command (SAC) bases in the United States from ICBM attack. While Nike-Zeus was still far from an initial operational

⁷² George C. Herring. *From Colony to Superpower: U.S. Foreign Relations Since 1776* (New York: Oxford University Press, 2008), 659.

⁷³ Craig and Logevall, *America's Cold War*, 141.

capability, there were conversations about “whether to utilize modified existing anti-aircraft missiles (Talos) as interim defense against ICBM attack at SAC bases, pending the development of an initial operational capability of the more effective Nike–Zeus anti-missile missiles.”⁷⁴

The Eisenhower administration’s concern and shifting defense priorities were reflected in the budget as well. In June of 1959 while deciding the budget for Fiscal Year 1960, the President decided to accelerate Nike-Zeus by providing “an additional \$150 million under consideration” for the program.⁷⁵ True to Eisenhower’s penchant for fiscal conservatism and balancing the budget, bolstering the anti-ballistic missile budget was accompanied by a cut to continental anti-aircraft defenses. This pivot was explicit, highlighting that the changes were made because “the threat from Soviet bombers has changed with the reduced estimates of numbers of bombers, and because Soviet long-range missiles are becoming the dominant threat.”⁷⁶

As money shifted within the continental defense mission, interagency rivalry again reared its head. The Army established control over anti-aircraft missiles for defense during the early and mid-1950s, such that “air defense is now split, and the Army is in fact initiating many activities with missiles to do a job formerly done only by tactical air.”⁷⁷ Yet, there was consternation among the other services over the funding which would now go to the Army for anti-missile

⁷⁴ *Foreign Relations of the United States, 1958-1960, Volume III, National Security Policy; Arms Control and Disarmament*, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office, 1996), Document 9, <https://history.state.gov/historicaldocuments/frus1958-60v03/d9>, (accessed January 13, 2022).

⁷⁵ *Foreign Relations of the United States, 1958-1960, Volume III, National Security Policy; Arms Control and Disarmament*, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office, 1996), Document 59, <https://history.state.gov/historicaldocuments/frus1958-60v03/d59>, (accessed January 13, 2022).

⁷⁶ *Ibid.*

⁷⁷ *Foreign Relations of the United States, 1958-1960, Volume III, National Security Policy; Arms Control and Disarmament*, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office, 1996), Document 65, <https://history.state.gov/historicaldocuments/frus1958-60v03/d65>, (accessed January 13, 2022).

defense. There was some contention between the Army and Air Force over this division of labor, showcased by Eisenhower's suggestion that the Chiefs of the Army and Air Force consider "trading some responsibilities—for example, giving the whole air defense mission to Air Force units, and tactical air operations to Army units."⁷⁸ Complaints from the Navy reflected their emerging minimum deterrence philosophy that relatively few invulnerable nuclear weapons were sufficient to deter an adversary. Admirals expressed "concern" over Nike-Zeus, since it "will be extremely advanced, complicated and expensive and will require wide dispersion."⁷⁹ Admiral Radford argued "the money should be used in other places, for example in modernizing certain equipment of the Army and the Navy."⁸⁰ This lack of unity at the Joint Chiefs of Staff increased the flexibility of the civilian government regarding defense procurement and decision making since they could play the Chiefs off against each other and were not faced with an undivided military opinion. While the Chiefs would eventually band together to present a unified front during Robert McNamara's tenure as Secretary of Defense, it was not before their discord aided in the mothballing of Nike-Zeus.

By the end of 1959, administration opinion on the "more effective Nike-Zeus" was shifting. Establishing a pattern, Secretary of Defense Neil McElroy, with the advice of physicists and science advisors Dr. Herbert York and Dr. George Kistiakowsky, announced at a National Security Council meeting that "there were too many uncertainties to proceed to the manufacture of Nike-Zeus" even though it "was the only "near time" active defense possibility against missiles."⁸¹ Instead, research and development for Zeus would continue, with \$237 million

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Ibid.

⁸¹ *Foreign Relations of the United States, 1958-1960, Volume III, National Security Policy; Arms Control and Disarmament*, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office,

allocated for FY 1961. This decision was based on some of those deficiencies discussed above, namely decoys, with Secretary McElroy remarking “there was nothing to prevent an incoming missile from emitting twenty decoys in such a way as to make it impossible for the Nike–Zeus to discriminate.”⁸² He concluded that for Nike-Zeus “to be successful against a decoy system, would require an enormous number of missiles.”⁸³ A DOD study the following year supported this assessment and outlined how “The ZEUS system is designed to launch 3 missiles against each threatening target to achieve high probability of kill.”⁸⁴ A discussion between Dr. Kistiakowsky and Eisenhower in January of 1960 reinforced these conclusions. They discussed recent PSAC reports which argued that “even if it performs according to expectations, is not a worthwhile investment,” and it would be ten times cheaper to add more missile sites than defend existing sites with Zeus.⁸⁵ Moreover, if Zeus was used to defend the population, enemy warheads could be detonated upwind outside of their range, killing cities with radioactive fallout rather than an explosion.⁸⁶ Therefore, an extensive fallout shelter program would have to be jointly undertaken with Zeus deployments for population defense.

Yet, even if Zeus was not very effective, it still had staunch advocates. The January 1960 meeting also highlighted that “in the Army there seems to be a sharp split on the issue of our

1996), Document 79, <https://history.state.gov/historicaldocuments/frus1958-60v03/d79>, (accessed January 13, 2022).

⁸² Ibid.

⁸³ Ibid.

⁸⁴ United States Department of Defense, Office of the Secretary, “Department of Defense Report to National Security Council on Status of United States Military Programs as of 30 June 1960,” December 10, 1960, DNSA, <https://www.proquest.com/government-official-publications/department-defense-report-national-security/docview/1679163795/se-2?accountid=7103> (accessed November 4, 2021), 72.

⁸⁵ *Foreign Relations of the United States, 1958-1960*, Volume III, National Security Policy; Arms Control and Disarmament, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office, 1996), Document 83, <https://history.state.gov/historicaldocuments/frus1958-60v03/d83>, (accessed January 13, 2022).

⁸⁶ Ibid.

[PSAC's] recommendations; people lower in the echelons, who have had an opportunity to look into the technical factors involved, agree with our recommendations, but top echelons are most unhappy about them."⁸⁷ These Army higher-ups who supported deploying Nike-Zeus were buttressed by others such as Undersecretary of State Douglas Dillon. These ABM advocates saw the program as providing the only available defense against an expanding threat and generally enhancing U.S. nuclear posture relative to the Soviet Union.⁸⁸

In a September 1960 meeting, in which Eisenhower remarked "that for the last twenty minutes he had been making up his mind to go into training as an Indian and live on deer in the Rocky Mountains," Dillon made an argument which would come to be incredibly familiar across administrations.⁸⁹ Dillon referenced the Soviet anti-ICBM effort, contending "if the Soviets demonstrated the ability to destroy an incoming missile and we could not demonstrate a similar ability, the psychological power and prestige of the Soviets would be greatly increased," thus, the United States should develop the capability to perform such a demonstration.⁹⁰ Eisenhower approved of a study on the issue, adding that if a demonstration were to occur, it should include the press and potentially foreign officials, but that improving passive defenses and offensive nuclear forces took precedence.⁹¹ Nonetheless, the decision referenced the "great psychological effect which would result from a demonstration by either the U.S. or the USSR."⁹² The psychological impact of only one side in the Cold War having an ABM or the effect of a test

⁸⁷ Ibid.

⁸⁸ Ibid; United States Department of Defense, Office of the Secretary, "Department of Defense Report to National Security Council on Status of United States Military Programs as of 30 June 1960," 72.

⁸⁹ *Foreign Relations of the United States, 1958-1960, Volume III, National Security Policy; Arms Control and Disarmament*, eds. Edward C. Keefer and David W. Mabon (Washington: United States Government Printing Office, 1996), Document 120, <https://history.state.gov/historicaldocuments/frus1958-60v03/d120>, (accessed January 13, 2022).

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² Ibid.

would become common arguments deployed by ABM advocates during the Kennedy and Johnson administrations, and reflected the competitive and sometimes highly illogical aspects of the arms race. Regardless of the defenses of Nike-Zeus by its proponents, its deployment was deferred in favor of more research and development, leaving it up to the next administration to determine what to do with the program.

The intercabinet and interagency debates of the Eisenhower administration produced a reasonable outcome, and Zeus' opponents used sound arguments about cost and effectiveness to cut through the pressure for deployment. However, this was done despite the public outcry over narratives like the "missile gap" and the domestic politics of the arms race, which did have consequences for Republicans in elections. Each of the later administrations examined here were much more attentive to how the public saw the arms race, make the Eisenhower administration unique in their decision-making on ABM. Insulating the administration's decision-making from largely manufactured public fears as well as the as well as the relative weakness of ABM advocates, particularly the Joint Chiefs, helped produced a thoughtful decision not to deploy Zeus in the Eisenhower administration.

Rationality or a Lack Thereof?: 1961

The Kennedy administration's New Frontier sought a return to pragmatism and idealism while embracing the basic principles of containment.⁹³ This was coupled with a broad offensive against the foreign policy conduct of the Cold War on every front during the election, of which the "missile gap" was but a part.⁹⁴ The new administration sought to rebuild conventional forces and enhance nuclear options to provide a "flexible response," as opposed to the decision-making

⁹³ Herring. *From Colony to Superpower*, 703-704.

⁹⁴ Craig and Logevall, *America's Cold War*, 191.

straitjacket they perceived massive retaliation to be.⁹⁵ As part of this, they incorporated much youthful enthusiasm into government, particularly in the defense and nuclear weapons sectors with the famed “whiz kids” or “wizards” from Research and Development (RAND), the Air Force’s independent think tank, and elsewhere. One of the most consequential changes was Robert McNamara, the new Secretary of Defense. When Kennedy was initially looking for candidates for the position, Boeingcrat Senator Henry Jackson suggested Paul Nitze who had been director of policy planning at the State Department under Truman and had worked on the Strategic Bombing Survey after World War Two.⁹⁶ While at State, Nitze had been instrumental in formulating NSC-68, a policy paper outlining various strategies to deal with the Soviet Union.⁹⁷ The incredibly hawkish perspective, arguing that the Soviet Union was bent on world domination, and vast military buildup prescribed to combat global communism in NCS-68 likely reflected Nitze’s enduring beliefs about the Cold War and military policy.⁹⁸ Nitze was a controversial figure with some eccentric ideas, including the development of a “love gas” that, when sprayed over the Soviet Union and the Kremlin, would induce more peaceful and loving attitudes in those exposed.⁹⁹ While Nitze would not get the role, as Kennedy favored McNamara who had fewer links to the contemporary defense establishment, he was a recurring figure, characterized by his staunch anti-communism and interest in the role nuclear weapons played in the Cold War.

On the other hand, McNamara’s military experience came from helping manage the logistics of the allied strategic bombing campaign in Europe during World War II. Afterwards,

⁹⁵ Herring, *From Colony to Superpower*, 705.

⁹⁶ Cameron, *The Double Game*, 15.

⁹⁷ Craig and Logevall, *America’s Cold War*, 108-109.

⁹⁸ *Ibid*, 110-112.

⁹⁹ Kaplan, *Wizards of Armageddon*, 136-137.

he took a position at Ford Motor Company, and rapidly moved up the ranks, becoming president of the company before being tapped to head the Department of Defense. McNamara was known for being an experienced bureaucrat and cool technocrat who would viciously fight for power from his position. McNamara wanted to bring the efficient and rationalizing approach to management he had used at Ford to the Defense Department. This included the inauguration of a new budgeting system and an emphasis on systems analysis to evaluate the value of proposed programs.¹⁰⁰ McGeorge Bundy, the President's Special Assistant for National Security Affairs, complained about the system the administration faced upon arrival, in which "the total figures of any one of half a dozen of the weapons systems which are cheerfully proposed" by the Joint Chiefs of Staff, which needed to be cut down.¹⁰¹ That attitude was compounded, in Bundy's opinion, by "the present tendency of each service to think as if it were responsible for the whole of the national defense," further exacerbating budgetary problems.¹⁰² McNamara moved away from this old system where the services set their own requirements for forces and weapons, as he did not trust them to do this rationally, requiring justifications based on thorough predictions running years into the future.¹⁰³ Many, including David Bell, the Director of the Bureau of the Budget who played a decisive role in the outcome of the 1961 debate about Nike-Zeus, praised this new attitude.¹⁰⁴ This approach established an unprecedented level of civilian involvement in military planning and procurement during McNamara's tenure.¹⁰⁵

¹⁰⁰ Ibid, 17.

¹⁰¹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 21, <https://history.state.gov/historicaldocuments/frus1961-63v08/d21>, (accessed January 19, 2022).

¹⁰² Ibid.

¹⁰³ Janne E Nolan. 1989. *Guardians of the Arsenal: The Politics of Nuclear Strategy* (New York: Basic Books), 62-63, 71-72.

¹⁰⁴ Cameron, *The Double Game*, 20.

¹⁰⁵ Ibid, 62-63.

The new emphasis on rationalization and prediction faced an early challenge from Nike-Zeus during the crafting of the Fiscal Year 1963 budget in 1961. This budget was significant for the Kennedy administration and McNamara as it was the first they had complete control over to implement their approach to military programming, setting priorities for 1963-67.¹⁰⁶ Many thought the dilemma over the production and deployment of Nike-Zeus was one of the central questions which had to be answered in this budget.¹⁰⁷ There had been little change in the effectiveness or reliability of the system since the Eisenhower administration decided not to deploy due to its price tag, and the evidence presented to the new administration seemed to lie in favor of continuing this policy emphasis on research and development for missile defense. It would not have been surprising to see such an ineffective program on the chopping block under the new regime of rationality.

Early in the fall of 1961, McNamara, with JCS support, favored funds for “Nike-Zeus production support” to make a “limited deployment in the near future” possible.¹⁰⁸ He noted, however, “a purely technical appraisal would not lead to a recommendation for deployment of a weapon system with so limited an operational effectiveness.”¹⁰⁹ This technical assessment was echoed by Defense Research and Engineering studies that spring which concluded that despite at least \$2 billion spent thus far, prospects for a defense against Soviet ICBMs were “bleak.”¹¹⁰ The

¹⁰⁶ Cameron, *The Double Game*, 19.

¹⁰⁷ *Foreign Relations of the United States, 1961-1963, Volumes VII, VIII, IX, Arms Control; National Security Policy; Foreign Economic Policy, Microfiche Supplement*, eds. Evans Gerakas, David W. Mabon, David S. Patterson, William F. Sanford, Jr., and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 247, <https://history.state.gov/historicaldocuments/frus1961-63v07-09mSupp/d247>, (accessed January 13, 2022).

¹⁰⁸ *Foreign Relations of the United States, 1961-1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 48, <https://history.state.gov/historicaldocuments/frus1961-63v08/d48>, (accessed January 13, 2022).

¹⁰⁹ Ibid.

¹¹⁰ United States Department of Defense, Office of the Director of Defense Research and Engineering, “Assessment of Ballistic Missile Defense Program,” Secret, Report, April 17, 1961, DNSA

report elaborated on the issues with Zeus discussed above, such as decoys and their significant effect on the systems range, the soft radars vulnerable to a single warhead, blackouts, and susceptibility to saturation attacks.¹¹¹ General Maxwell Taylor, then the President's Military Representative and later Chairman of the Joint Chiefs of Staff, reached the "The inescapable conclusion" that "for the foreseeable future, attacking ICBM missiles will have inherent technological and economic advantages and tactical flexibility," making ABM "at best a tremendously expensive venture of dubious effectiveness."¹¹² The continued technical problems Zeus faced were accompanied by intelligence developments which threw the system's necessity into question as well.

During this period, the character of the Soviet threat came into focus for the new administration. New National Intelligence Estimates (NIE) produced that September drastically reevaluated the Soviet ICBM threat. One NIE included a "sharp downward revision in our estimate of present Soviet ICBM strength" to only 10-25 launchers, with potentially 75-125 in mid-1963.¹¹³ This was a dramatic decline from previous predictions and makes some military requests from this period, such as the Air Force's desired 10,000 Minuteman ICBMs, seem gratuitous. Nonetheless, the NIE concluded that "while the present ICBM force poses a grave threat to a number of US urban areas, it represents only a limited threat to US-based nuclear

<https://www.proquest.com/government-official-publications/assessment-ballistic-missile-defense-program/docview/1679150838/se-2?accountid=7103> (accessed November 4, 2021), 1.

¹¹¹ Ibid.

¹¹² *Foreign Relations of the United States, 1961-1963*, Volumes VII, VIII, IX, Arms Control; National Security Policy; Foreign Economic Policy, Microfiche Supplement, eds. Evans Gerakas, David W. Mabon, David S. Patterson, William F. Sanford, Jr., and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 247, <https://history.state.gov/historicaldocuments/frus1961-63v07-09mSupp/d247>, (accessed January 13, 2022).

¹¹³ Central Intelligence Agency, "STRENGTH AND DEPLOYMENT OF SOVIET LONG RANGE BALLISTIC MISSILE FORCES," 21 September 1961, Top Secret, National Intelligence Estimate 11-8/1-61, released by the Freedom of Information Act (FOIA), document no. 0000267770, <https://www.cia.gov/readingroom/document/0000267770>, (accessed January 9, 2022), 1.

striking forces.”¹¹⁴ The continuing and varied problems with Nike-Zeus, combined with a reduced threat from the Soviet ICBM force should have been sufficient to preclude a decision to produce or deploy Nike-Zeus in the first year of McNamara’s rationality regime.

But it was not. McNamara, ultimately recommended for the FY 1963 budget not only continued research and development for Nike-Zeus, but a limited deployment of 12 Nike-Zeus batteries to defend 6 cities with a total of 1,200 interceptors as well.¹¹⁵ The classic arguments favoring ABM deployment, such as defending the population, stopping accidental attacks or those from a “secondary power,” were all made, but did not appear to weather the technical and cost criticisms.¹¹⁶ McNamara explicitly recognized that the lack of technical merit in the system argued against deployment, indicating the real reasoning lay elsewhere.¹¹⁷ Rather, this decision came about through a combination of factors from both inside and outside the administration. These included the possibility of an equivalent Soviet system, pressure from Secretary of State Dean Rusk, the hawkish tone of the presidential campaign, and the state of the Joint Chiefs of Staff. This dynamic produced the half-hearted endorsement of Zeus within the administration during 1961.

A large factor in this outcome, and future U.S. decisions on missile defense, was the possibility that the U.S.S.R. would develop and deploy a ballistic missile defense system before the United States could or would. The military and psychological components of the arms race made this a significant issue. This concern was justified based on National Intelligence Estimates

¹¹⁴ Ibid, 3.

¹¹⁵ *Foreign Relations of the United States, 1961-1963, Volumes VII, VIII, IX, Arms Control; National Security Policy; Foreign Economic Policy, Microfiche Supplement*, eds. Evans Gerakas, David W. Mabon, David S. Patterson, William F. Sanford, Jr., and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 247, <https://history.state.gov/historicaldocuments/frus1961-63v07-09mSupp/d247>, (accessed January 13, 2022).

¹¹⁶ *Foreign Relations of the United States, 1961-1963, Volume VIII, Document 48.*

¹¹⁷ Ibid.

(NIE) which assessed “the Soviets will continue to put a great deal of research effort into antimissile defense.”¹¹⁸ Even though the CIA was “unable to predict what success [the Soviets] may have,” the report concluded that “sometime between 1963 and 1966 an antiballistic missile system, employing surface-to-air missiles, could become operational for use in fixed defenses.”¹¹⁹ The NIE emphasized the military aspect of a lead in missile defenses, noting a “tremendous strategic advantage would accrue to the side which achieved such a defense before its adversaries.”¹²⁰ However, the military advantages of such a situation were not the only inducement, especially in all-encompassing superpower competition of the Cold War, even if it would accelerate the arms race.

As demonstrated by Undersecretary Dillon’s position during the Eisenhower administration’s debates over the issue of ABM, many policymakers firmly believed in the psychological elements of the arms race, and the influence it could have on the outcome of superpower competition. In the Kennedy administration, the strongest proponent of what I will call the “psychology argument” was Secretary of State Dean Rusk. A former president of the Rockefeller Foundation, he was “the quintessential representative of U.S. liberalism in foreign and domestic affairs.”¹²¹ Rusk was “an idealistic neo-Wilsonian who “gave priority to considerations of power and security to combat Communist aggressors, hoping that once the United States successfully prosecuted the Cold War, international law and justice would rule the

¹¹⁸ Central Intelligence Agency, “TRENDS IN SOVIET MILITARY CAPABILITIES IN THE PERIOD 1965-1970 (NIE 11-60),” 2 March 1960, Secret, National Intelligence Estimate 11-60, released by the Freedom of Information Act (FOIA), document no. 0000278403, <https://www.cia.gov/readingroom/document/0000278403>, (accessed January 11, 2022), 2.

¹¹⁹ Ibid, 2, 8.

¹²⁰ Ibid, 2.

¹²¹ Thomas W. Zeilner. *Dean Rusk: Defending the American Mission Abroad*. (Wilmington: Scholarly Resources Inc., 2000), xii.

world.”¹²² Rusk argued that if the Soviets got a functional ABM in the period forecasted by available intelligence, “it would afford them an opportunity for exerting immense pressures on the Western Alliance,” exerting a “psychological impact on allies and even conceivably on the U.S. public.”¹²³ It could even be “sufficient to encourage [the Soviet Union] into launching increasingly aggressive policies,” Rusk postulated.¹²⁴ He railed against the more tentative proposal which ultimately made it into the budget, remarking “the limited, time-lagging effort cannot help but be viewed as a clear indication of U.S. impotence in this field.”¹²⁵ According to Rusk, the U.S. must retain an advantage over the Soviets in this field as falling behind risked demoralizing allies, the government, and the population, to the detriment of the general effort.

The relative potency of ABM systems aside, the concern for the psychological facet of the arms race was shared, to an extent, by General Taylor. He was satisfied with a limited deployment, suggesting it would do “something to offset any psychological gains the Soviets might achieve from their announcement of an anti-ICBM.”¹²⁶ However, Taylor also injected some much-needed nuance to the psychological argument. He warned there were “past expressions of pessimism to offset if we are to get a solid psychological return” from deployment and production of the deficient Zeus, requiring an outpouring of optimism from the administration if they did decide to proceed.¹²⁷ Moreover, there was “a danger that public opinion would occasion a runaway on the part of the program,” creating undue faith in the

¹²² Ibid, xiv.

¹²³ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 53, <https://history.state.gov/historicaldocuments/frus1961-63v08/d53>, (accessed January 19, 2022).

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 58, <https://history.state.gov/historicaldocuments/frus1961-63v08/d58>, (accessed January 15, 2022).

¹²⁷ Ibid.

efficacy of the program. These fears were shared by McNamara, who warned that the Executive and Congressional branches, as well as the general populace, “may develop an unwarranted faith in its capability to deter a Soviet attack or to mitigate its consequences if full-scale nuclear warfare is initiated.”¹²⁸ McNamara and Taylor recognized the “psychology argument” could cut both ways, buoying morale yet encouraging reckless policy based on the incorrect assumption that ABM would insulate leaders from negative consequences.

The concern about the relative strength of nuclear arsenals and the potential blowback associated with falling behind expressed in the “psychology argument” rhymed with the rhetoric deployed by the Democrats and Kennedy during the 1960 presidential and 1958 midterm campaigns. The hawkish platform, even if divorced from the reality of strategic force composition, may have forced the administration’s hand somewhat. It would have been difficult to sell the public and portions of Congress on a more restrained approach to the arms race considering the previous statements of the incoming administration. Even by March of 1961, many in the administration had recognized this. McGeorge Bundy acknowledged the inaccuracy of the “missile gap,” but emphasized the need to distinguish their new military policy from that of the Eisenhower administration.¹²⁹ To shed the general malaise described by Kennedy on the campaign trail, of which the “missile gap” was but one component, large injections of funding and new crash programs for nuclear weapons were necessary.¹³⁰ This attitude might have influenced the decision to recommend the partial deployment of Nike-Zeus.

¹²⁸*Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 48, <https://history.state.gov/historicaldocuments/frus1961-63v08/d48>, (accessed January 13, 2022).

¹²⁹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, Document 21.

¹³⁰ Cameron, *The Double Game*, 14.

A further complicating factor in this process was the division at the Joint Chiefs of Staff. Each service considering themselves as the sole protector of the nation, as Bundy noted, meant there was no unified constituency for Zeus at the highest levels of the military. Even though NORAD, and likely the Army, supported a more expansive 70 battery program, the Joint Chiefs ultimately concurred with McNamara's more tepid proposal of limited deployment.¹³¹ The fragmented state of the JCS on this issue would be highlighted in more detail during the continued debates on the issue in 1962.

The integration of the pressure to live up to campaign promises, concerns about the psychology of deterrence from Rusk, as well as a lack of pressure from the JCS, contributed to McNamara recommending the middle ground of limited deployment, rather than full scale or no deployment. At this point, however, the Chekov's Gun of David Bell and the Bureau of the Budget fired. The Bureau struck down the funding for deployment, citing Zeus's "manifest inadequacy" and the need to present Congress with a balanced budget.¹³² Further suggesting the halfhearted and possibly reticent character of McNamara's recommendation, the funding request for the 6 city 12 battery option was dropped during a meeting December 9th, leaving the issue to be taken up again the following year.¹³³

The messiness of 1961's decision points towards the difficulties which will pervade ABM debates going forward. Different parties involved in decision-making on ABM had different agendas and goals, which made reaching consensus difficult, as more confounding factors were added to the process. The domestic politics of the arms race, especially after

¹³¹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, Document 58; Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, Document 48.*

¹³² Cameron, *The Double Game*, 23-24.

¹³³ *Ibid.*

Kennedy's "missile gap" campaign position, and the administration's general interest in nuclear warfighting at the time, helped move a deployment proposal forward. However, when put in conflict with other priorities, such as technical efficacy or the budget, the proposal was first circumscribed and then run aground. The less decisive, more confused conclusion of the debate over Zeus that year reflected the administration's own lack of consensus on the issue, and ultimately deferred definitive answers to the issue.

Things Fall Apart: Nike-Zeus and 1962

Nike-Zeus remained one of the most significant defense questions to be resolved by policymakers in 1962. Even though the Budget Bureau had defeated a deployment decision in the eleventh hour the year before, many of the same factors played into policymaker's deliberations about Nike-Zeus for the next budget cycle. Increasing coordination among the Joint Chiefs, continued pressure from Rusk and the adherents of the "psychology argument," and new intelligence about Soviet ABM efforts inflated the impulses towards deployment. However, McNamara and others capitalized on the continued inadequacy of Nike-Zeus, new technological developments and concepts, and the administration's experience of the Cuban Missile Crisis to finally end discussions about deploying Zeus.

The Cuban Missile Crisis looms large over discussions of the evolving thinking about nuclear weapons in the Kennedy administration, during and after 1962. Lawrence Freedman and Jeffrey Michaels, for example, argue in their history of nuclear strategy that the crisis was a "turning point," triggering "a change in the political and intellectual climate," and that the counter-force strategy "had proved to be irrelevant."¹³⁴ Janne Nolan and James Cameron have

¹³⁴Freedman and Michaels, *The Evolution of Nuclear Strategy*, 314.

reached similar conclusions, with Cameron noting that “outside the seminar room, the cool attitude exhibited by nuclear strategists toward the manipulation of the risk of an intercontinental exchange melted” reflecting the “all-consuming fear of nuclear confrontation that characterized the Kennedy administration’s approach to nuclear weapons.”¹³⁵ This produced intense skepticism about the utility of nuclear superiority in a crisis among those Americans involved, especially McNamara who began to see Soviet advances in the arms race as the reciprocal negative consequence of certain U.S. force deployments.¹³⁶ McNamara later articulated these concerns about Soviet insecurity as the “action/reaction” phenomenon, one of the most significant concepts in the debates over ABM and force structure in the Johnson and Nixon administrations. The Soviets largely drew the opposite conclusion from the events of that October, feeling U.S. nuclear superiority had limited their actions and forced them to the bargaining table.¹³⁷ This interpretation fueled the large Soviet ICBM buildup after the crisis, which would play a major role in the Nixon administration’s initial decisions on ABM at the end of the 1960s.¹³⁸

The Cuban Missile Crisis had a clearly monumental impact on the way the administration thought about nuclear deterrence and approached the risks of nuclear war, encouraging restraint and the pursuit of treaties like the Limited Test Ban Treaty.¹³⁹ However, in the context of the debate over an ABM, other accounts, such as that by Ernest Yanarella, emphasize the technical factors involved, almost entirely excluding the influence of the Cuban Missile Crisis.¹⁴⁰

¹³⁵ Nolan. *Guardians of the Arsenal*. 78; Cameron, *The Double Game*, 33, 37.

¹³⁶ Cameron, *The Double Game*, 33.

¹³⁷ Freedman and Michaels, *The Evolution of Nuclear Strategy*, 289.

¹³⁸ Ibid.

¹³⁹ Cameron, *The Double Game*, 38.

¹⁴⁰ Ernest J. Yanarella. *The Missile Defense Controversy: Technology in Search of a Mission*. (Lexington: University Press of Kentucky, 2002).

Ultimately, documentary evidence suggests the actors involved in the demise of Nike-Zeus established their positions months before the crisis, but had their attitudes reinforced by their experience that October, McNamara in particular.

In January during a meeting between the President and the Joint Chiefs, General Decker expressed “the Army’s position as favoring the earliest possible go-ahead on Nike-Zeus production.”¹⁴¹ While the Army wanted production and deployment, Carl Kaysen, the President’s Deputy Special Assistant for National Security, reiterated concerns about the system’s effectiveness. During discussions that January of a test ban treaty and the potential to get helpful data through ABM testing, Kayson remarked “the new knowledge will show us chiefly how much less good these systems are likely to be.”¹⁴² These opening positions of Army support for production and skepticism in the administration over technical details showcase the continuity from the debates the previous year, and some pre-crisis views of the actors.

Additional details about the attitudes of McNamara and others before that October can be discerned from other documents. In particular, a July 29 memo by the Deputy Under Secretary of State for Political Affairs Ural Johnson to Rusk provides insight and outlines the course of the debate over Zeus for the rest of the year.¹⁴³ Johnson identified that new intelligence suggested Soviet progress on their own ABM system had been “more rapid” “than we had previously

¹⁴¹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 66, <https://history.state.gov/historicaldocuments/frus1961-63v08/d66>, (accessed January 15, 2022).

¹⁴² *Foreign Relations of the United States, 1961–1963, Volumes VII, VIII, IX, Arms Control; National Security Policy; Foreign Economic Policy, Microfiche Supplement*, eds. Evans Gerakas, David W. Mabon, David S. Patterson, William F. Sanford, Jr., and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 74, <https://history.state.gov/historicaldocuments/frus1961-63v07-09mSupp/d74>, (accessed January 13, 2022).

¹⁴³ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 101, <https://history.state.gov/historicaldocuments/frus1961-63v08/d101>, (accessed January 15, 2022).

anticipated.”¹⁴⁴ Thus, there should be “a fresh look at our decisions on deployment of an anti-missile system.”¹⁴⁵ Johnson, in true Rusk State Department form, was worried about the “powerful political and propaganda repercussions of who is first in deploying anti-missile defenses” and advocated for rapid limited deployment of Zeus.¹⁴⁶ Further, Johnson told Rusk there was “controversy within the Pentagon over whether the degree of military utility of the presently developed anti-missile systems, in particular the Nike Zeus, is sufficient to justify at this time a decision on grounds of the military capabilities of that system. Secretary McNamara has concluded that it is not.”¹⁴⁷ The memo also identified Paul Nitze as supporting McNamara on the issue, even in the face of new intelligence about Soviet developments, while the views of the Joint Chiefs and General Taylor were “not known.”¹⁴⁸ The clear positions of McNamara and Nitze against the ABM, even to a Pentagon outsider like Johnson, suggests these were not fleeting stances, and McNamara would ultimately reach a decision against deploying Zeus on the grounds identified by Johnson. Moreover, the uncertain views of Taylor and the Chiefs comports with their past and future record of indecision and disunity on the issue. Apart from the clarification of the various positions of the Chiefs and Taylor, only the introduction of Nike-X significantly changes the dynamic described to Rusk by Johnson here.

The experience of coming to the brink of Armageddon in October of 1962 had a dramatic influence on how many policymakers in the Kennedy administration approached nuclear weapons. Confident discussions about the virtues of a counterforce strategy to fight limited nuclear wars was replaced with “an all-consuming fear of nuclear confrontation that

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

¹⁴⁷ Ibid.

¹⁴⁸ Ibid.

characterized the Kennedy administration's approach to nuclear weapons."¹⁴⁹ Many scholars argue this extended to the pivot from the limited deployment recommendation of 1961 to the final decision not to deploy Nike-Zeus. James Cameron, for example, argues "the major change was [McNamara's] shift towards a more studied ambiguity regarding Soviet strategy, underpinned by a greater sense of the unintended consequences of nuclear confrontation."¹⁵⁰ However, this position is complicated by considering McNamara's conclusion that a deployment decision would be inappropriate based on its military utility and capability, as referenced in the July 29 memo. That position, predating the Cuban Missile Crisis by about two and a half months, points towards the enduring importance of technical evaluations in McNamara's decision-making. This is not to say the experience of the crisis did not play a significant role in the decision not to pursue Zeus or for future ABM debates, but rather to emphasize that technical problems meant the system was likely already being sidelined.

Technological developments during 1961 and 1962 also provided more options and room to maneuver for the administration in 1962 as well. Regarding production and deployment, one report noted that "there are no options."¹⁵¹ It elaborated that "if there is a decision to begin production, "good old" Zeus has to be the product."¹⁵² But there had been some improvements made to "good old Zeus" which enabled flexibility beyond production or deployment. McNamara outlined in his November 20 draft memorandum on ballistic missile defense to Kennedy that a set of advances had been made in the field. They included using the Zeus

¹⁴⁹ Cameron, *The Double Game*, 37.

¹⁵⁰ *Ibid.*, 34.

¹⁵¹ Office of the Special Assistant to the President for Science and Technology, "Comments on some AICBM [Anti-Intercontinental Ballistic Missile] Issues of the Day," October 4, 1962, DNSA, Doc ID: 1679157134, <https://www.proquest.com/government-official-publications/comments-on-some-aicbm-anti-intercontinental/docview/1679157134/se-2?accountid=7103> (accessed February 11, 2022).

¹⁵² *Ibid.*

discrimination radar as a high-volume but low-accuracy threat tracker, reducing the minimum intercept altitude for Zeus to allow for additional time to discriminate decoys and make decisions, as well as progress in the development of the Sprint interceptor and phased array radars.¹⁵³ The latter two were the most significant, as Sprint enabled rapid interception of re-entry vehicles in the atmosphere and phased array radars allowed tracking and discrimination against a larger volume of threats, and were ultimately fused into the basis of Nike-X. Sprint and the rest of Nike-X will be discussed in more detail in the following section. McNamara discussed other combinations of improvements, but identified that the Army wanted Zeus deployed as soon as possible, and augmented with Nike-X components as they became available.¹⁵⁴ This “Improved/Augmented” system was dismissed since it would only have “marginal effectiveness” in its early stages until the Nike-X components were integrated. Therefore, McNamara recommended research and development for Nike-X and reducing Nike-Zeus funding “below the currently approved level,” limiting it “to the study of re-entry phenomena and defense techniques, including anti-satellite defense.” Focusing on the new interceptor and radar meant a decision about deployment could be deferred until 1964.¹⁵⁵

The continued disunity of the Joint Chiefs of Staff made the acceptance and enactment of this position possible. They had still not joined forces to present a united front against McNamara and others who challenged their proposals. The dispute is outlined in the draft memorandum McNamara sent to Kennedy mentioned above. McNamara articulates that the Secretary of the Army’s plan, to deploy 16 Zeus batteries to 12 cities, and later 10 Nike-X

¹⁵³ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 111, <https://history.state.gov/historicaldocuments/frus1961-63v08/d111>, (accessed January 15, 2022).

¹⁵⁴ *Ibid.*

¹⁵⁵ *Ibid.*

batteries to urban areas, has the support of not only the Chiefs of the Army and Navy, but General Maxwell Taylor as well.¹⁵⁶ Taylor had only recently begun his tenure as the Chairman of the JCS in October of 1962, a position he would keep until July 1964. While Taylor had opposed Zeus as the Special Military Assistant to the President the year before and had worked with McNamara on defeating the Skybolt air launched ballistic missile earlier in his tenure as Chair, he now supported the Army and Navy Chiefs.¹⁵⁷ According to L.J. Legere in a memo to McGeorge Bundy, Taylor “feels about as strongly on this subject as any matter that has come within his purview since taking over the new job,” since it is “the most glaring deficiency in US military posture” and there is “growing evidence of a substantial Soviet effort in the same field.”¹⁵⁸ The reasoning behind Taylor’s dramatic reversal on the ABM issue is not readily available in the examined documents, but may have been a result of the environment at the JCS or his desire to cooperate with the Army and Navy on the issue.

There were additional arguments made by the Chiefs of the Army and Navy beyond those mentioned above. They included concerns about American prestige if the Soviets produced an ABM first, worries that a minor power like Cuba could cause significant damage, the exposure to “accidental, irrational, and unauthorized attacks,” as well as providing a defense earlier than solely working on Nike-X.¹⁵⁹ An additional point came from a superstar panel organized by the Institute for Defense Analysis, which included Thomas Schelling and Hermann Khan, and

¹⁵⁶ Ibid.

¹⁵⁷ United States, Office of the Special Military Representative of the President, “Secretary McNamara's Memorandum for the President Entitled "Ballistic Missile Defense," Dated 20 November 1962,” November 26, 1962, DNSA, Doc ID: 1679150773, <https://www.proquest.com/government-official-publications/secretary-mcnamaras-memorandum-president-entitled/docview/1679150773/se-2?accountid=7103> (accessed November 4, 2021).

¹⁵⁸ Ibid.

¹⁵⁹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, Document 111.*

argued an improved Zeus could be used to absorb “ragged retaliation” after an American first strike.¹⁶⁰ Many of these arguments were rebutted by the Air Force, who identified that deployment “constitutes acceptance before any measure of the defense system effectiveness has been established,” and that no forecasted system would provide the type of urban protection the Army was talking about.¹⁶¹ Instead, the Chief of the Air Force largely aligned with McNamara but was interested in getting additional testing for Nike-Zeus.¹⁶²

The Air Force did not split with the Army and Navy purely out of spite. There were genuine goals for them in this instance of interservice rivalry. A report that December from a Strategic Concepts Committee within the Air Force concluded that “the Air Force should play a central role in seeing that a sensible program of anti-missile defense gets underway.”¹⁶³ The report argued that by using Sprint and phased array radars, a terminal defense of ICBMs was becoming possible.¹⁶⁴ Having active defenses would allow the Air Force to take a mixed approach to protecting their strategic forces, combining hardening silos, ABM, dispersal, and mobility to increase their survivability.¹⁶⁵ Of course, since these defenses would be protecting Air Force assets, there would be a convincing case to be made for them to fall under Air Force, rather than Army, jurisdiction. Additionally, since these active defenses would be protecting missiles rather than cities, there was more acceptable room for error in the capability of the ABM

¹⁶⁰ Institute for Defense Analyses Research and Engineering, Support Division, “Report of 23-24 August IDA [Institute for Defense Analysis] Panel on “Why BMD?””, August 1962, DNSA, Doc ID: 1679150809, <https://www.proquest.com/government-official-publications/report-23-24-august-ida-institute-defense/docview/1679150809/se-2?accountid=7103> (accessed November 4, 2021).

¹⁶¹ *Foreign Relations of the United States, 1961–1963*, Volume VIII, National Security Policy, Document 111.

¹⁶² *Ibid*

¹⁶³ United States Air Force, Scientific Advisory Board, “Report of the Scientific Advisory Board Ad Hoc Committee on Strategic Concepts,” Secret, Report, December 1962, DNSA, Doc ID: 1679163542, <https://www.proquest.com/government-official-publications/report-scientific-advisory-board-ad-hoc-committee/docview/1679163542/se-2?accountid=7103> (accessed November 4, 2021), 18.

¹⁶⁴ *Ibid*, 3.

¹⁶⁵ *Ibid*, 18-19.

system. However, the report still acknowledged that area defenses like an improved version of Zeus would complement the more localized, hardpoint defenses, creating defense in depth.¹⁶⁶ This report helps bring the Air Force's position of supporting Nike-X and additional Zeus testing into focus, as it aligns with its overarching goals for the ICBM force. Moreover, the concept of area defenses complementing point defenses to create a more effective defense in depth became the foundation for most of the ABM plans going forward.

A final point made by the Air Force in their dissension from the Army and Navy concerned civil defenses. As mentioned above, civil defenses include fallout shelters and other measures to protect civilians from the effects of nuclear weapons. Civil defenses were also immensely unpopular. When the Kennedy administration discussed a civil defense initiative and requested funding in the 1961 budget, it provoked significant public outcry and widespread panic, and was severely curtailed by Congress.¹⁶⁷ By the spring of 1962, the idea of "an effective, practical and implicitly popular civil-defense program" had taken "a terrible and sobering beating."¹⁶⁸ Typically tone-deaf, it was in this context that the Air Force proposed that "a decision to deploy active ballistic missile defense should depend, in part, on the required complementary civil defense program."¹⁶⁹

Tying together active and passive defenses was sound warfighting logic, and this was neither the first nor last time they would be tethered. The Gaither Report had endorsed civil defenses and other passive measures in the late 1950s. The connection had also made a brief appearance in the 1961 debate. McNamara had remarked that "deployment of any active city

¹⁶⁶ Ibid, 19-20.

¹⁶⁷ Nolan. *Guardians of the Arsenal*. 76-77.

¹⁶⁸ Kaplan. *The Wizards of Armageddon*, 314.

¹⁶⁹ *Foreign Relations of the United States, 1961-1963, Volume VIII, National Security Policy, Document 111.*

defense (including Nike Zeus) presupposes a system of civilian fall-out shelters.”¹⁷⁰ Nearly identical words were used by Dean Rusk in his comments to McNamara on the budget.¹⁷¹ While not playing a large role in this round, discussions about the civil defense connection then were laying the groundwork for future controversies, when McNamara would shackle ABM to civil defense, functionally the third rail of U.S. domestic nuclear politics, to try and stop missile defense programs.

Dean Rusk made one last appeal to McNamara in favor of Nike-Zeus, hammering away at the “psychology argument.”¹⁷² He warned about the declining “ability of the US to mobilize public will, both within the US and among our Allies, to accept the risks inherent in living in a world of such sharply competing ideologies.”¹⁷³ Without a comparable system to the one the Soviets were building, referencing construction around Leningrad, Rusk still thought it would jeopardize the will to fight. This indicates Rusk thought nuclear superiority and having a technical edge over the Soviets would enable effective brinkmanship, drawing on a particular interpretation of the Cuban Missile Crisis. Pushing back against McNamara’s calculations, he remarked “that to the people living under the threat of a massive nuclear missile attack, the fact that it may be sounder economics to buy more offensive missiles than defensive ones, will be vitiated if not entirely lost when it is recognized that only defensive missiles offer the possibility of saving lives.”¹⁷⁴ Rusk’s complaint was an emotive argument against McNamara’s emphasis

¹⁷⁰ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, Document 48.*

¹⁷¹ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 53, <https://history.state.gov/historicaldocuments/frus1961-63v08/d53>, (accessed January 19, 2022).*

¹⁷² *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 114, <https://history.state.gov/historicaldocuments/frus1961-63v08/d114>, (accessed January 15, 2022).*

¹⁷³ *Ibid.*

¹⁷⁴ *Ibid.*

on rationality. General Curtis LeMay, notorious former commander of SAC and now Chief of Staff of the Air Force, echoed this critique in a less profound manner, and told the president that “‘war is not efficient,’ and consequently, its needs and its plans couldn’t be run by computer efficiency measurements.”¹⁷⁵ Nevertheless, at the same meeting LeMay griped about computations, Kennedy backed McNamara in killing Zeus and shifting focus to Nike-X.

As intercabinet and interagency disputes over Zeus intensified over the course of 1962, many of those involved activated new bureaucratic strategies. McNamara used civil defenses and the new technology of Nike-X to push back against the still relatively weak and fractured supporters of Nike-Zeus. However, even though pivoting to support developing technology removed the pressure for deployment in 1962, it ensured the question had to be revisited, and that fighting over the issue would continue and aggravate. Crafting this brief consensus fueled the tensions between the civilian and military personnel at the Department of Defense which would characterize much of McNamara’s tenure as secretary. The Cuban Missile Crisis had caused many decision-makers to reevaluate the utility of nuclear superiority, but not the public, meaning external pressure could still build for an ABM. By the end of the year, there were increasingly divergent positions on ABM within the government, even though technical issues had sealed the fate of Nike-Zeus.

Nike’s X Factor

Nike-Zeus was a single concept system, a reflection of its roots as an iteration of an air defense program. The singular nature of Zeus was demonstrated in the debates surrounding how it would be deployed. They concentrated on the number of batteries, each of which had a set

¹⁷⁵ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy*, ed. David W. Mabon, (Washington: United States Government Printing Office, 1996), Document 121, <https://history.state.gov/historicaldocuments/frus1961-63v08/d121>, (accessed January 15, 2022).

configuration of radars and launchers for interceptors. On the other hand, “Nike-X was not a single ABM system concept. Rather, it should be thought of as a collective term to cover a number of studies and exploratory developments aimed at leading from the then outmoded Nike-Zeus to the next generation of ABM system.”¹⁷⁶ The developments in Nike-X were produced in part as a reaction to conservatives estimates of Soviet ICBM capabilities throughout the 1970s, designed to address penetration aides including chaff, decoys, and electronic countermeasures.¹⁷⁷ These advances included a set of new phased-array radars, the innovative Sprint interceptor, and the iterative Spartan interceptor.

One of the most critical breakthroughs under Nike-X was in harnessing advancements in solid state computing for creating electronically steered phased-array radars.¹⁷⁸ The significance of phased-array radars was mentioned briefly earlier but was emphasized by Secretary McNamara in 1966. He noted that “instead of scanning the skies with an electronic beam by mechanically rotating the entire radar structure, the structure is covered with thousands of sensors and is kept stationary while the electronic beam does the rotating.”¹⁷⁹ This electronic steering allows the beam to rotate “a million times faster than a mechanical structure,” significantly enhancing tracking and search abilities.¹⁸⁰ There were three different phased-array radars developed for Nike-X which will be discussed here, MAR, MSR, and PAR, which reflected the shifting objectives assigned to the ABM over time.

¹⁷⁶ Bell Laboratories, *ABM Research and Development at Bell Laboratories*, 2-1.

¹⁷⁷ *Ibid.*

¹⁷⁸ Bell Laboratories, *ABM Research and Development at Bell Laboratories*, 2-1.

¹⁷⁹ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 160, <https://history.state.gov/historicaldocuments/frus1964-68v10/d160>, (accessed January 17, 2022).

¹⁸⁰ *Ibid.*

The first was the Multifunction Array Radar, or MAR. MAR could perform all the defense functions for dealing with a large, sophisticated attack including battle management and control, long range search and acquisition, discrimination, and control of interceptors.¹⁸¹ MAR's ability to perform all necessary functions to defend against a large attack using penetration aids and other tactics meant it was the centerpiece of city defense plans.¹⁸² Similar to the MAR was the Missile Site Radar, or MSR. It was cheaper and had worse coverage than MAR, but could also perform search, track, designation, and interceptor track and guidance functions. While designed to complement a MAR, the MSR could also serve "as a cost-effective duplication, on a lesser scale, of the MAR."¹⁸³ An MSR operating independently of an MAR was conceived of to defend smaller cities or targets, as the Nixon administration deemphasized urban defense in its ABM planning. Additionally, an MSR was part of the final product of the ABM debate, the Mickelson Safeguard Complex near Grand Forks, North Dakota. The third type of phased-array radar produced under the aegis of Nike-X was the Perimeter Acquisition Radar, or PAR. As discussion moved towards area defense as a part of the eventual ABM system, and shifted away from urban or city defense, the need for a sensor which "could detect, track, and designate targets above the atmosphere at very long ranges" emerged.¹⁸⁴ PAR fulfilled that role, and several PARs were also connected to the Mickelson Complex to complement the MSR in using the Spartan interceptors effectively.

¹⁸¹ Harlan Cleveland, United States Department of State, "Statement by Ambassador Cleveland at Special Meeting of the [North Atlantic] Council," NATO Secret, March 7, 1967, NSA, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB36/docs/doc02.pdf>, (accessed December 11, 2021), Appendix.

¹⁸² Bell Laboratories, *ABM Research and Development at Bell Laboratories*, 2-3.

¹⁸³ *Ibid.*

¹⁸⁴ *Ibid.*

The Sprint missile was quite remarkable and distinct from previous attempts at an ABM interceptor. Sprint was a two-stage solid propellant missile for short range intercepts inside the atmosphere.¹⁸⁵ This endo-atmospheric intercept was critical to Sprint's mission and solving the problem of decoys. Decoy re-entry vehicles were designed to be very light, with a quintessential example being a mylar balloon shaped like a conical re-entry vehicle. Ballistic missiles have a certain quantity of "throw weight," a maximum weight they can deliver to the target. Decoys and other penetration aids trade off with more or heavier warheads as they consume some of the throw weight. In space, the weight of the decoy does not matter since it is moving at the same speed as the re-entry vehicle after being deployed from the final stage of the missile. However, once the decoy and re-entry vehicle hit the atmosphere, the decoy slows down much faster since it has less weight and thus less inertia. Therefore, decoys could be distinguished from real warheads through atmospheric filtering since they move more rapidly through the atmosphere.

The problem with atmospheric filtering is, by this point, the re-entry vehicle is moving astonishingly fast, and there is not much time before it hits its target. The solution was to make Sprint also astonishingly fast. After being ejected from its silo using a gas-powered piston, "a typical intercept would occur at an altitude of 40,000 feet, at a ground range of 10 nautical miles, after about 10 seconds of flight time."¹⁸⁶ As it accelerated towards its top speed of over Mach 10, or 7,672 miles per hour, the body of the interceptor would become visibly shining and incandescent from the heat.¹⁸⁷ During this very fast and very brief flight period, Sprint was guided by radio command from one of the control radars discussed above.¹⁸⁸

¹⁸⁵ Ibid, 2-8.

¹⁸⁶ Ibid, 2-9.

¹⁸⁷ I would highly recommend watching this video which demonstrates the speed of Sprint!

https://www.youtube.com/watch?v=QiyldgYKy_U

¹⁸⁸ Ibid, 2-8.

The Spartan missile, unlike Sprint, was iterative. It built upon the Nike-Zeus interceptor, with some differences. It was a “three-stage, solid-propellant missile” which could “intercept ballistic missiles at extremely high altitude and long range.”¹⁸⁹ Also distinct from Sprint, Spartan intercepted its targets outside the atmosphere. Exo-atmospheric interception had issues since it faced the decoy and chaff problem but had advantages in terms of the amount of the area it could defend. Attacking the re-entry vehicle in space before the terminal phase began allowed Spartan to defend a vastly larger area. The real innovation with the Spartan interceptor and the area defense component of the ABM system was its warhead, which will be discussed later.

There were improvements to the Spartan interceptor’s ability to deal with advanced penetration aids during debates over the character of ABM, resulting in what was called Improved Spartan.¹⁹⁰ The main upgrade in Improved Spartan was the ability to have the interceptor loiter. Amusingly, the best description of loitering is provided by the CIA when discussing the potential for the Soviet ABM to have a loiter capability. The CIA states that loitering is “a mode in which the interceptor is launched toward the general vicinity of the incoming objects, flies at reduced thrust until the target can be identified as it enters the atmosphere, and is then directed to the target at accelerated thrust. The loiter thus utilizes atmospheric sorting of RVs but does not require a very high acceleration interceptor missile.”¹⁹¹ Loiter-mode provided the capability to get the area defense interceptor close enough, and then wait for better information from atmospheric filtering before attacking the target, maybe using a

¹⁸⁹ Ibid, 10-3.

¹⁹⁰ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 109, <https://history.state.gov/historicaldocuments/frus1969-76v34/d109>, (accessed January 29, 2022).

¹⁹¹ Central Intelligence Agency, “SOVIET STRATEGIC DEFENSES (EXCLUDES GLOSSARY AND ANNEX) (NIE 11-3-71),” 4 January 1971, Top Secret, National Intelligence Estimate 11-3-71, released by the Freedom of Information Act (FOIA), document no. 0000268008, <https://www.cia.gov/readingroom/document/0000268008>, (accessed January 11, 2022).

different intercept geometry, and attacking from a higher point in space. It is not clear whether Improved Spartan with its loitering capability was the version ultimately deployed near Grand Forks, but the upgrades were much discussed, and loiter-mode is quite fascinating.

The developments under Nike-X resulted in a selection of component pieces which needed to be put together into a coherent system. Fierce arguments were had over the correct composition of those pieces or whether it should be constructed in the first place. This was the problem which faced the Johnson and Nixon administrations. Describing a set of goals to be achieved by an anti-ballistic missile system and compiling the components to achieve those goals proved extraordinarily contentious. The bitter debates it provoked led to revisions of those goals and compositions, which influenced the technology, as evidenced by the various radars discussed above. These controversies resulted in a series of circumscriptions and caveats which made the technology less effective as political deliberation and maneuverings divorced it from the mission it was designed for. This process began almost immediately after Nike-X was chosen over Zeus, and the initial phases of these contortions played out during the Johnson presidency.

The Interregnum: 1963-1965

After the decision to pursue Nike-X over Nike-Zeus in 1962 in the aftermath of the October crisis, the issue lay somewhat dormant for a number of years. The new technology incorporated into Nike-X required time to mature, and until then, there was little else anyone could do. Many actors used this period to reassess or reconfigure their positions on ABM, including the Joint Chiefs and McNamara. There was also a new president, Lyndon Baines Johnson, who had different priorities than Kennedy. Johnson wanted to pursue an aggressive and sweeping set of domestic policy goals, the Great Society, but he needed to maintain confidence in the militarized containment of the Soviet Union to do so, including going to war in

Vietnam.¹⁹² Moreover, he saw spending on defense, particularly nuclear weapons, as cutting into the funds available for social spending programs like Medicare and Social Security, and enjoined McNamara to help him accomplish this.¹⁹³ Together, Johnson and McNamara attempted to limit attempts at missile defense as a part of this project. As Cameron notes, their “framework, imposing strong cost-effectiveness constraints on missile defense, was designed to keep ABM in research and development almost indefinitely in a way that would satisfy both the need for strategic strength and budgetary prudence.”¹⁹⁴ This task was made difficult as the administration escalated its involvement in Vietnam during the 1960s. It became increasingly difficult to pay for the war and the Great Society, and social backlash to the conflict became prevalent, pushing Johnson and later Nixon towards détente. Johnson and McNamara’s approach was successful for a time, until a combination of factors militated against deferring the ABM issue.

The Soviets were not helpful to McNamara and Johnson in their endeavor. They had two different projects which could potentially serve a missile defense role which McNamara had to discuss in his recommendations for force planning for FY 1966-1970. One of the Soviet programs was near Moscow and more confidently assessed as the beginnings of a missile defense system.¹⁹⁵ The second was a string of installations near Leningrad which became known as the Tallinn Line and were the subject of a fierce debate within the intelligence community.¹⁹⁶ Nevertheless, McNamara concluded in 1964 that though there was “considerable uncertainty”

¹⁹² Cameron, *The Double Game*, 50.

¹⁹³ Ibid.

¹⁹⁴ Ibid, 58.

¹⁹⁵ United States Department of Defense, Office of the Secretary, “Recommended FY 1966-1970 programs for strategic offensive forces, continental air and missile defense forces, and civil defense,” Top Secret, Memorandum, December 3, 1964, DNSA, Doc ID: 1679158526, <https://www.proquest.com/government-official-publications/recommended-fy-1966-1970-programs-strategic/docview/1679158526/se-2?accountid=7103> (accessed November 7, 2021).

¹⁹⁶ Ibid.

regarding these programs, “even if they were to deploy ABM defenses, our penetration aids and multiple warheads should keep the “entry price” of missile attacks against defended targets within tolerable limits.”¹⁹⁷ By the following year, National Intelligence Estimates concluded the Soviets could likely achieve an initial operational capability for the Moscow system in 1967 or 1968, and would expand their defenses beyond the capitol.¹⁹⁸ As the Soviets progressed with the Tallinn Line and Moscow systems over this period, pressure began to increase on the administration from many quarters, including the Joint Chiefs of Staff.

One of the most significant developments of the period from 1963 to 1965 happened at the Joint Chiefs of Staff. After several years of having their programs slashed and being played off against each other, they finally found common cause in opposing McNamara. One of the issues they chose to organize around was missile defense, ultimately appealing directly to Congress in 1966. The beginnings of this unity can be seen in 1964, however. While Taylor, still Chair of the JCS, notes that the Chiefs did not reach a consensus on Nike-X, the contention was over a question of the optimum balance between offenses and defenses as well as how much longer Nike-X needed to remain in development, rather than the necessity and eventual deployment of the system.¹⁹⁹ Taylor thought having defenses would help limit damage to the U.S. in the event of nuclear conflict, and therefore some components should go into pre-

¹⁹⁷ Ibid, 16.

¹⁹⁸ Central Intelligence Agency, “STATUS OF THE SOVIET ABM PROGRAM AND ESTIMATED SOVIET REACTIONS TO US DEPLOYMENT OF ABMS,” 30 November 1965, Top Secret, Memo, released by the Freedom of Information Act (FOIA), document no. CIA-RDP79R00904A001200010002-8, <https://www.cia.gov/readingroom/document/cia-rdp79r00904a001200010002-8>, (accessed February 13, 2022).

¹⁹⁹ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 21, <https://history.state.gov/historicaldocuments/frus1964-68v10/d21>, (accessed January 16, 2022); *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 22, <https://history.state.gov/historicaldocuments/frus1964-68v10/d22>, (accessed January 16, 2022).

production and 200 interceptors, enough to defend one area, should be produced as a prototype.²⁰⁰ This conclusion was echoed by General Earle G. Wheeler, who took over as Chair of the JCS in July of 1964 after a stint as Secretary of the Army.²⁰¹ However, since there were still questions concerning the ideal composition between offensive and defensive nuclear forces and no clear preferred concept of deployment, McNamara was able to fend off calls for production to begin in FY 1966.²⁰²

The following year, however, the Chiefs began presenting a united front in favor of ABM and Nike-X. By November, they were unanimous in their belief that “the requirement for an effective ballistic missile defense is a very real and urgent one” and thus production and “phased deployment” should begin at the “earliest practicable date.”²⁰³ They articulated that “our strategic defense posture” “could be placed in jeopardy by delay in the IOC of the Nike-X system,” constituting “a military risk that should not be accepted.”²⁰⁴ The conformity of opinion was enabled by a proposal from the Army and Bell Telephone Laboratories that October which finalized a deployment concept they could support. The Chiefs had a few complaints about the overly limited nature of the Army-BTL proposal, but were mollified by its design, which would

²⁰⁰ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, Document 22.*

²⁰¹ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, eds. David S. Patterson* (Washington: United States Government Printing Office, 2001), Document 61, <https://history.state.gov/historicaldocuments/frus1964-68v10/d61>, (accessed January 16, 2022).

²⁰² United States Department of Defense, Office of the Secretary, “Recommended FY 1966-1970 programs for strategic offensive forces, continental air and missile defense forces, and civil defense,” Top Secret, Memorandum, December 3, 1964, DNSA, Doc ID: 1679158526, <https://www.proquest.com/government-official-publications/recommended-fy-1966-1970-programs-strategic/docview/1679158526/se-2?accountid=7103> (accessed November 7, 2021).

²⁰³ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, eds. David S. Patterson* (Washington: United States Government Printing Office, 2001), Document 104, <https://history.state.gov/historicaldocuments/frus1964-68v10/d104>, (accessed January 17, 2022).

²⁰⁴ *Ibid.*

“permit controlled growth” as well as “providing the necessary decision latitude required for a program of this magnitude.”²⁰⁵

The Army-BTL proposal was outlined in a review conducted by the President’s Science Advisory Committee. It consisted of a “high-altitude, area defense of the entire country and a limited deployment of terminal Nike-X defense for high-value targets.”²⁰⁶ This two-layered system created defense in depth, which the Air Force had discussed in 1962, theoretically enhancing its effectiveness and meaning the proposed system could fulfill many roles. The basic architecture of the Army-BTL proposal, an area defense component coupled with a terminal Nike-X defense for select sites, proved a surprisingly resilient concept, and would form the basis for most ABM proposals going forwards. The justification and argumentation in favor of that architecture, however, was incredibly fluid and malleable.

The Army-BTL proposal was “intended to ensure that the United States will be essentially invulnerable to Chinese nuclear attack for a considerable period of time.”²⁰⁷ Considering that the People’s Republic of China had detonated its first nuclear device the previous year, and the concerns about the “rationality” or aggressiveness of the PRC, there were genuine fears about Chinese nuclear attacks in Washington. The rationale of secondary powers or accidental attacks had been part of the discussion since the Eisenhower administration and had even been alluded to in McNamara’s memo on strategic force recommendations the year

²⁰⁵ Ibid.

²⁰⁶ United States President's Science Advisory Committee, Strategic Military Panel, “Report on the Proposed Army-BTL Ballistic Missile Defense System,” Top Secret, Report, October 29, 1965, DNSA, Doc ID: 1679150636. <https://www.proquest.com/government-official-publications/report-on-proposed-army-btl-ballistic-missile/docview/1679150636/se-2?accountid=7103> (accessed November 7, 2021).

²⁰⁷ Ibid.

before.²⁰⁸ McNamara had noted that “a small, balanced defense program involving a moderate civil defense effort and a very limited deployment of a low cost configuration of the NIKE X system (which is technically feasible without commitment to a full-scale deployment) could, indeed, significantly reduce fatalities” from an attack by a smaller nuclear armed power.²⁰⁹ The connection McNamara made in this, and previous memos, between ABM and civil defenses was also made by PSAC, who noted that if the system were expanded, as it was designed to be, “a substantial expansion of our civil defense program would surely have to be considered.”²¹⁰ However, the PSAC report noted some significant problems with using China as a justification for the ABM system, criticisms which would become staples of the debate for the next few years.

The first of these problems was the timeframe. When the program was proposed, intelligence estimates placed the initial operational capability of a Chinese ICBM at somewhere between 1970-1975 at the earliest.²¹¹ Even if this prediction proved true, it would just be a handful of missiles and launchers, not a fully-fledged arsenal. Additionally, there was little justification for having an absolute defense against this threat instead of deterring it using the vastly superior U.S. arsenal, similar to the situation vis-à-vis the Soviet Union. Moreover, focusing on a hypothetical ICBM threat from the PRC neglected the capabilities they did possess or were closer to achieving. The Chinese had acquired a Golf-class missile submarine, cruise missiles, and potentially medium range ballistic missiles (MRBM) from the Soviets.²¹² The Army-BTL system would not add to defense against the air-breathing cruise missiles and was

²⁰⁸ United States Department of Defense, Office of the Secretary, “Recommended FY 1966-1970 programs for strategic offensive forces, continental air and missile defense forces, and civil defense,” 24.

²⁰⁹ Ibid.

²¹⁰ United States President's Science Advisory Committee, Strategic Military Panel, “Report on the Proposed Army-BTL Ballistic Missile Defense System,” 3

²¹¹ Ibid, 5.

²¹² Ibid, 5-6.

poorly configured to deal with a submarine-launched version of the MRBM. If the MRBM was launched against targets in the continental United States, the distance would be too short for the missile to be intercepted by the area defense component, requiring the terminal Nike-X component to destroy it.²¹³ Obviating the area defense component, and the proliferation of terminal Nike-X sites required to achieve the goal of defending the entire country, would have undercut the limited and low-cost criteria of such a defense. PSAC suggested a reasonable and significantly cheaper response to the submarine launched missile threat from China would be enhanced anti-submarine warfare efforts and capabilities.

PSAC further recognized that even if there were earnest concerns about Chinese missiles, this justification for an ABM would not fool anyone. The national origin of the target missile is of no concern to the interceptor, and the report acknowledged that “no matter how much we advertise the fact that the defense is directed at the Chinese, the Soviet Union and the rest of the world will probably consider that the principal significance of the system relates to its impact on the U.S.-Soviet strategic nuclear confrontation.”²¹⁴ This was particularly true of the growth potential built into the program, which made it seem inevitable that the program would evolve over time to address the Soviet threat. It further noted that it seemed unlikely the Soviets would not take measures to ensure their arsenal could penetrate the defenses, either by incorporating penetration aids in their existing missiles, or simply pursuing a larger arsenal.²¹⁵

The phenomenon described above in which developments on one side of the arms race provoked a response on the other side came to be known as “action/reaction.” This is one of the

²¹³ Ibid, 8.

²¹⁴ Ibid, 9.

²¹⁵ Ibid.

main characteristics of arms races as a function of the security dilemma, as described by many political scientists.²¹⁶ The action/reaction cycle had become more prominent in the mind of McNamara and others after the Cuban Missile Crisis. He had warned about Soviet investments in penetration aids, large yield warheads, and larger numbers of warheads in his recommendations for the FY 1964 budget written one month after the crisis.²¹⁷ These concerns were reinforced by a Special National Intelligence Estimate (SNIE) drawn up by the CIA. The SNIE remarked that the Soviets would see the announcement of any ABM system, regardless of size or orientation, as a move to make their arsenal useless and a step towards a policy of nuclear warfighting.²¹⁸ It went on to outline a number of responses in addition to those mentioned by McNamara, including more strategic bombers and cruise missiles, more SLBMs, additional effort on their ABM, as well as space weapons.²¹⁹

The space weapons response option merits some additional examination, as the version the Soviets developed has become a classic in the genre of options to defeat an anti-ballistic missile defense. In 1963, the CIA had warned the Soviets had the capability to place nuclear weapons in orbit.²²⁰ While noting the Soviets did not appear to intend to do so, the report further noted the Soviets would likely “consider them as one way of introducing additional

²¹⁶ Robert Jervis. *The Meaning of Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca: Cornell University Press, 1989).

²¹⁷ *Foreign Relations of the United States, 1961–1963, Volume VIII, National Security Policy, Document 111.*

²¹⁸ Central Intelligence Agency, “REACTIONS TO CERTAIN US BALLISTIC MISSILE DEFENSE PROGRAMS (SNIE 11-12-65),” 3 August 1965, Secret, Special National Intelligence Estimate 11-12-65, released by the Freedom of Information Act (FOIA), document no. 0000278470, <https://www.cia.gov/readingroom/document/0000278470>, (accessed January 11, 2022), 2-3.

²¹⁹ *Ibid*, 3.

²²⁰ Central Intelligence Agency, “SOVIET CAPABILITIES AND INTENTIONS TO ORBIT NUCLEAR WEAPONS (NIE 11-9-63),” 1 June 1963, Secret, National Intelligence Estimate 11-9-63, released by the Freedom of Information Act (FOIA), document no. 0000267777, <https://www.cia.gov/readingroom/document/0000267777>, (accessed January 11, 2022), 1.

complications into US defense planning.”²²¹ What became known as a Fractional Orbital Bombardment System (FOBS) would use an ICBM booster to place a nuclear warhead into low earth orbit, and then fire retro rockets to cause the warhead to de-orbit and re-enter the atmosphere.²²² The word “fractional” in the name indicates that the weapon does not complete a full orbit, only a fraction of one, as completing a full orbit would violate the Outer Space Treaty’s provisions on emplacing nuclear weapons in space, depending on how the treaty was interpreted. This had the advantage of being less predictable than a ballistic trajectory since the time of re-entry was unpredictable. Moreover, FOBS could be sent over the south pole, rather than the north pole, avoiding the majority of U.S. early warning and ABM radars, making it perfect for attacking an ABM system.²²³ However, if sent over the north pole on a similar path to a ballistic missile, it could actually reach its target faster than an ICBM.²²⁴ As American efforts on ABM advanced, so too did Soviet work on their FOBS, succinctly demonstrating the action/reaction phenomenon in real time.

In December of 1965, McNamara held a meeting about the FY 1967 budget, where three different deployment options for Nike-X were considered. A light defense of the deterrent, a light defense against China, and a heavy defense against the Soviet Union.²²⁵ By the end of 1965 multiple problems had emerged for McNamara and Johnson’s position on ABM, and the meeting demonstrates McNamara was cognizant of this. The Soviets appeared to be progressing, if

²²¹ Ibid, 14.

²²² Asif A. Siddiqi. 2000. “The Soviet Fractional Orbital Bombardment System (FOBS): A Short Technical History.” *Quest: The History of Spaceflight*, volume 7, no. 4, 22.

²²³ Ibid.

²²⁴ Ibid.

²²⁵ United States Department of Defense, Office of the Secretary, “Record of Meeting on DOD [Department of Defense] FY 1967 Budget (Nov. 9, 1965),” November 10, 1965, DNSA, Doc ID: 1679163681, <https://www.proquest.com/government-official-publications/record-meeting-on-dod-department-defense-fy-1967/docview/1679163681/se-2?accountid=7103> (accessed November 7, 2021).

fitfully, with their system, which aggravated the domestic politics of the arms race. The Chiefs were becoming more vocal about the issue and increased their coordination within the interagency, intercabinet competition. A more specific plan and justification had emerged for an ABM program, which enhanced the bureaucratic position of those in favor of an ABM. Dean Rusk assured McNamara there were no foreign policy problems which would impede or outweigh the ABM.²²⁶ Congress, while amenable to capping the defense budget earlier in the 1960s, had defense committees in both houses dominated by hawkish Southern Democrats.²²⁷ The end of this period of relative calm for ABM discussions demonstrates the importance of both the domestic perception of the arms race, and the bureaucratic actors involved, to the decision-making process. The confluence of these factors in 1966 and 1967 ultimately forced the Johnson administration's hand on ABM and undermined the framework Johnson and McNamara had used to delay it.

Pressure Rises, Bets are Hedged: 1966

While ABM and Nike-X laid low for much of 1966, by that December McNamara was outlining to Johnson six reasons why the issue had finally come to a head for the administration. These included the accelerated deployment of hardened Soviet ICBMs, Soviet ABM deployments, Chinese missile tests, Nike-X's progress, the Chiefs, and Congress.²²⁸ McNamara was able to secure the deferral of ABM for another year, but he saw the writing on the wall and was forced into some uncomfortable positions to do so. Afraid of the repercussions of a system

²²⁶ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 105, <https://history.state.gov/historicaldocuments/frus1964-68v10/d105>, (accessed January 17, 2022).

²²⁷ Cameron, *The Double Game*, 54-55.

²²⁸ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 160, <https://history.state.gov/historicaldocuments/frus1964-68v10/d160>, (accessed January 17, 2022).

designed to defend against Soviet countervalue strikes, McNamara, Deputy Secretary of Defense Cyrus Vance, and others, worked to lay the groundwork for a more limited system while also attempting to engage the Soviets in negotiations over an ABM freeze.

The largest and most problematic factor for those opposed to the ABM was Soviet activity. The Tallinn Line was again the subject of controversy. In their National Intelligence Estimate on Soviet strategic air and missile defenses for that year, the CIA concluded that while there may be some latent capability in the line to intercept ballistic missiles, its mission was to defend against aircraft or cruise missiles.²²⁹ This conclusion was contested by the Defense Intelligence Agency and many others at the Pentagon who saw it as “more likely” to have an ABM role as well.²³⁰ While this may have been their genuine belief, the motivations for a more hawkish assessment of Tallinn were clear, as it would bolster the premise that the U.S. was falling behind on ABM and justify a new program.

Even if Tallinn had no ABM capability, the Moscow system, which also came to be known as Galosh, was coming online. While the CIA was unsure whether Galosh, a new system, or no system would be used to protect the entirety of the Soviet Union, they were confident that the initial operational capability of the system would be in the next year or so, and it would be fully operational around 1970.²³¹ Moreover, the CIA postulated that the full scope of the program would reflect what actions the U.S. took in its strategic force planning, tacitly endorsing McNamara’s action/reaction understanding. Yet, the NIE noted that there were profound limitations to the Moscow system. There were significant radar gaps, meaning Polaris missiles

²²⁹ Central Intelligence Agency, “SOVIET STRATEGIC AIR AND MISSILE DEFENSES (NIE 11-3-66),” 4 October 1966, Top Secret, National Intelligence Estimate 11-3-66, released by the Freedom of Information Act (FOIA), document no. 0000267914, <https://www.cia.gov/readingroom/document/0000267914>, (accessed January 11, 2022), 1.

²³⁰ Ibid.

²³¹ Ibid, 3.

launched from submarines in parts of the Mediterranean and Indian oceans would not be spotted.²³² It was further assessed that the system could be easily saturated and would be susceptible to penetration aids and blackout attacks.²³³ The U.S. had already developed the Polaris A-3, a missile with three re-entry vehicles which were designed to help saturate an ABM even though they were not independently targetable.²³⁴ This multiple re-entry vehicle (MRV) technology was distinct from the much more complex multiple independently-targetable re-entry vehicle (MIRV) technology. The former is more akin to the scattering of a shotgun shell, whereas each warhead in the latter could theoretically be accurately guided to a distinct target.

The impact of Galosh was discussed during a pivotal meeting at Johnson's ranch on December 6th, in which General McConnell said it had "imposed heavy additional costs" on the U.S. strategic forces to "assure our continued penetration ability."²³⁵ McNamara's response to this assertion was that the U.S. had overcompensated in targeting Galosh, concluding "the Soviet ABM's have not saved Soviet lives."²³⁶ This was borne out by declassified targeting documents, which indicated that the Moscow system, Tallinn Line, and its accompanying radars would have been targeted by about 130 warheads, with 70 dedicated to the Moscow installations.²³⁷ This would have included over 100 Minuteman ICBMs, or about 10% of the total ICBM force.²³⁸ The

²³² Ibid, 18.

²³³ Ibid.

²³⁴ Fred Kaplan, *The Wizards of Armageddon*, 343.

²³⁵ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 150, <https://history.state.gov/historicaldocuments/frus1964-68v10/d150>, (accessed January 15, 2022).

²³⁶ Ibid.

²³⁷ Hans M. Kristensen, Matthew G. McKinzie & Robert S. Norris, "The Protection Paradox," *Bulletin of the Atomic Scientists*, volume 60, no. 2, 71-72.

²³⁸ Ibid, 71.

U.S. targeting response to Galosh thoroughly demonstrated the futility of ABM in the face of a determined and well equipped adversary.

Despite the American overreaction to Soviet ABM developments, the intelligence was not public. It was a conversation happening internally within the administration and the military. But there were concerns about the Russian advancements leaking to the press, Congress, and the public. Yet, the administration could only keep this under wraps for so long, and on November 10th, McNamara announced that Soviet ABM deployment was under way, with some additional general details about Galosh.²³⁹ A State Department report noted that “as more information on the Soviet progress in ABM leaks out, pressures in Congress for a US ABM deployment will grow.”²⁴⁰ McNamara expounded on this, commenting that even though “more mature reflection on all of the factors involved in this vastly complex problem should convince at least the majority of the informed public,” it would require “a massive program” to “present all of the relevant information, and in an understandable form, to both the Congress and the general public.”²⁴¹ These concerns were echoed by Cyrus Vance. He argued “the first reaction of most Americans will inevitably be in favor of an immediate start on deployment, if for no other reason than the Soviets are deploying an ABM system.”²⁴² It is easy to see the allure of these arguments, as it is hard to argue against a system that saves lives, and that the other side has.

²³⁹ Yanarella, *The Missile Defense Controversy*, 118.

²⁴⁰ United States Department of State, Bureau of Politico-Military Affairs, “Presidential Memorandum on Strategic Offensive and Defensive Forces [Includes Cover Memorandum from Jeffrey Kitchen],” Top Secret, Report, November 8, 1966, DNSA, <https://www.proquest.com/government-official-publications/presidential-memorandum-on-strategic-offensive/docview/1679164016/se-2?accountid=7103> (accessed November 7, 2021), Tab C, 16.

²⁴¹ *Foreign Relations of the United States, 1964–1968*, Volume X, National Security Policy, Document 160.

²⁴² *Foreign Relations of the United States, 1964–1968*, Volume X, National Security Policy, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 155, <https://history.state.gov/historicaldocuments/frus1964-68v10/d155>, (accessed January 17, 2022).

The emphasis on saving lives in the event of nuclear conflict was a large part of the arguments deployed by the Joint Chiefs in 1966 in favor of a system to defend against Soviet attacks. The JCS was advocating for the beginning of a 25-city defense that year. They said that the Soviet ABM and increasingly numerous hardened Soviet missile sites were complicating targeting for the U.S., and therefore an ABM was needed to maintain U.S. superiority and prevent an imbalance from emerging.²⁴³ Even though the complication was resolved by throwing warheads at it, the Chiefs reiterated the need for superiority. This point was sometimes articulated with remarkable racist panache, such as when “General McConnell said he can’t forget that we are dealing with the descendants of Genghis Khan. They only understand force.”²⁴⁴ This was complemented by the usual argumentative suspects, such as accidental launch, defending against China, protecting the population, and hedging against nuclear blackmail.²⁴⁵

During the meeting at Johnson’s ranch in Texas, the president asked what the real difference between the Chiefs and McNamara was. McNamara articulated that “the difference lay less in rational calculation than in the inherently emotional nature of the issue. It was extremely hard to make the case for a policy which appeared to be denying protection to our people, when the Soviet Union was willing to employ large resources to protect its people.”²⁴⁶ The argument against it centered on the action/reaction cycle and relied on sound, yet counterintuitive logic. He warned that “we would be launching ourselves and the Soviet Union into two decades of escalatory action in the nuclear field” but “we would each end up no better

²⁴³ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, Document 150.*

²⁴⁴ *Ibid.*

²⁴⁵ *Ibid.*

²⁴⁶ *Ibid.*

off than we are at present.”²⁴⁷ Vance noted the Soviets would not be the only ones to expand, since Congress would likely try to dramatically expand the 25 city program the JCS were advocating for, anticipating other regions and cities clamoring for protection.²⁴⁸ While uncertainty about the effectiveness of the technology was still a big issue, McNamara recognized that it was becoming a less and less compelling argument, especially in the context of Soviet deployments.

Interestingly, the Chiefs either did not understand the logic of action/reaction, or they were ignoring it. General Johnson stated that “an ABM system would cut our casualties in a nuclear exchange,” ignoring McNamara’s point about the Soviets re-establishing their ability to penetrate it.²⁴⁹ An interesting note, however, pertains to the state of Soviet work on defeating ABM at this point. A study from the Defense Science Board Task Force on Ballistic Missile Defense that September had noted the Soviet had not done very much work on penetration aids, and it would take a while for them to defeat an ABM, further extending U.S. supremacy for a period.²⁵⁰ While this argument did not account for saturation attacks or more innovative approaches like FOBS, it is interesting to note the lag in Soviet work in this field.

To minimize the damage in the event of an ABM being deployed and Johnson succumbing to pressure from the Chiefs, Congress, and others, McNamara activated two strategies. Firstly, he laid the groundwork for a system to defend against China. The more limited

²⁴⁷ Ibid.

²⁴⁸ Ibid.

²⁴⁹ Ibid.

²⁵⁰ United States Department of Defense, Office of the Director of Defense Research and Engineering, Defense Science Board Task Force on Ballistic Missile Defense, “Ballistic Missile Defense [Includes Cover Letter from Frederick Seitz to the Robert McNamara],” Classification Unknown, Report, September 15, 1966, DNSA, <https://www.proquest.com/government-official-publications/ballistic-missile-defense-includes-cover-letter/docview/1679150682/se-2?accountid=7103> (accessed November 7, 2021).

nature of the threat would allow the defense to be more limited as well. He emphasized in testimony before the House Armed Services Committee that what was then known as the “Nth country threat” “has become more real and the feasibility of a moderately priced defense against it more promising” in the past year.²⁵¹ However, he noted that a threat to the continental U.S. from China had yet to emerge, and that the deployment of an ABM in response to it should be linked to the pace at which that threat evolved.²⁵² McNamara used this type of caveat, where certain measures by adversaries could justify ABM deployment by the U.S., to try to create litmus tests for whether deployment should happen. One he set up in the Soviet context was “if early Soviet MIRV threat emerges,” which would be very surprising even in the context of the most extreme Soviet threat assessments.²⁵³ Nevertheless, McNamara was trying to create the conditions where if an ABM had to happen, it would be a more limited kind, less likely to provoke a significant new chapter in the arms race.

The second strategy McNamara proposed was negotiation. He thought that if there could be an agreement about ABM between the U.S. and the Soviets, it would remove much of the pressure to deploy. This was raised at the much-discussed meeting at LBJ’s ranch, where Johnson “wondered if the best opportunity for agreement among us would not be a decision to move ahead on a limited basis and to see what we can negotiate with the Soviet Union.”²⁵⁴ This

²⁵¹ United States Department of Defense, Office of the Secretary, “Statement of Secretary of Defense Robert S. McNamara before the House Armed Services Committee on the Fiscal Year 1967-1971 Defense Program and 1967 Defense Budget,” Secret, Statement, 1966, DNSA, <https://www.proquest.com/government-official-publications/statement-secretary-defense-robert-s-mcnamara/docview/1679163724/se-2?accountid=7103> (accessed November 7, 2021).

²⁵² Ibid.

²⁵³ United States Department of State, Bureau of Politico-Military Affairs, “Presidential Memorandum on Strategic Offensive and Defensive Forces [Includes Cover Memorandum from Jeffrey Kitchen],” Top Secret, Report, November 8, 1966, DNSA, <https://www.proquest.com/government-official-publications/presidential-memorandum-on-strategic-offensive/docview/1679164016/se-2?accountid=7103> (accessed November 7, 2021).

²⁵⁴ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, Document 150.*

was quickly acted upon, as two days later, December 8th, Ambassador at Large Llewellyn E. Thompson mentioned to Secretary of State Dean Rusk that his “guess is that the Soviets will take us up on this,” and was rather bullish on the prospect of negotiations. Talking to the Soviets and discussing defending against China were therefore the two prongs of the strategy McNamara activated to attempt to limit the repercussions or damage from a decision to deploy if he lost that battle entirely. These precautions underscore McNamara’s aptitude for bureaucratic wrangling, and his deep concern about the trajectory of the arms race should an anti-Soviet ABM be pursued.

These measures, however, did not endear McNamara with the Joint Chiefs of Staff. Now that they were largely in agreement on ABM, the Chiefs were consistently pressing for a deployment or production decision. Multiple memos near the end of the year from General Wheeler, the Chair of the JCS, hammered the message that they were no longer in support of postponement home to McNamara.²⁵⁵ It became clear that McNamara and Vance were at odds with the JCS on this issue, with a memo from Vance to Johnson even identifying it as one of the five “major issues between” the parties.²⁵⁶ It was compounded by the Chiefs frustration with McNamara over the conduct of the Vietnam war, particularly the aerial bombardment

²⁵⁵ United States Joint Chiefs of Staff, Chairman, “U.S. and Soviet ABM's [Anti-Ballistic Missiles],” November 21, 1966, DNSA, <https://www.proquest.com/government-official-publications/u-s-soviet-abms-anti-ballistic-missiles/docview/1679150602/se-2?accountid=7103> (accessed November 7, 2021); United States, Joint Chiefs of Staff, Chairman, “Production and Deployment of NIKE-X [Includes Routing Slip],” December 29, 1966, DNSA, <https://www.proquest.com/government-official-publications/production-deployment-nike-x-includes-routing/docview/1679150565/se-2?accountid=7103> (accessed November 7, 2021).

²⁵⁶ United States Department of Defense, Deputy Secretary, “[Five Major Issues between Joint Chiefs of Staff and Robert McNamara and Cyrus Vance; Includes Routing Memorandum],” December 13, 1966, DNSA, <https://www.proquest.com/government-official-publications/five-major-issues-between-joint-chiefs-staff/docview/1679150965/se-2?accountid=7103> (accessed November 7, 2021).

campaign.²⁵⁷ McNamara's consistent rejection of their recommendations on this issue ultimately precipitated their direct appeal to Congress, exacerbating the pressures for an ABM.

Congress, and especially the Senate, would become the focal point for the ABM controversy over the next few years. In addition to being worried about their reaction to the news of the Soviet ABM, the administration was keeping tabs on the general sentiment on the issue in the legislative branch. Cyrus Vance noted to Johnson how even though "Congress is divided" they still "believe that a substantial majority favor going ahead with some form of deployment."²⁵⁸ It was emphasized the support was "led by Senator Russell and has strong backing in the Armed Services Committees of both Houses."²⁵⁹ Indeed, earlier that year, McNamara had fought off the tandem efforts of both Armed Services Committees and the JCS to secure preproduction of components by emphasizing Congress' resistance to funding civil defense funding, an issue so toxic that "even pro-ABM figures such as Jackson were not willing to go to the mat."²⁶⁰ This impression was reinforced by McNamara at the pivotal ranch meeting in December, who said a liberal 25% would oppose it, while another 40% would back Russell, Jackson, Strom Thurmond, and the other supporters, leaving about 35% to be persuaded.²⁶¹ However, he elaborated that Congress had been interested in the issue for a while, and had "voted \$165 million for ABM's" without a plan beyond that "they merely wanted to move in that direction."²⁶² This was therefore a political issue ripe for controversy, especially with an election in the offing.

²⁵⁷ Cameron, *The Double Game*, 73.

²⁵⁸ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, Document 155.*

²⁵⁹ *Ibid.*

²⁶⁰ Yanarella. *The Missile Defense Controversy*, 117; Cameron, *The Double Game*, 61.

²⁶¹ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy, Document 150.*

²⁶² *Ibid.*

Rumblings of an “ABM Gap” were building among Republicans who were gearing up for an election in 1968. The Republican National Committee published two pamphlets on the ABM question during 1967, attacking Johnson’s position.²⁶³ There was frustration with not only the continued progress of the Soviet ABM and lack of a comparative U.S. program, but with concerns about executive authority in this area as well. Johnson had not been spending money Congress had appropriated for production and deployment of ABM, an act of executive noncompliance.²⁶⁴ This became “a major symbol of misplaced power” impinging on the Congressional prerogative of appropriation, which spurred frustration in Congress.²⁶⁵ This dissatisfaction presaged the fight in Congress the following year which was the first real pushback the executive experienced on nuclear weapons issues and reflected the growing antipathy towards the Pentagon.²⁶⁶ This situation laid out clear domestic political stakes for the Democrats and the Johnson administration. Consolidation between the Southern and hawkish Democrats as well as Republicans over needing to be tough on Communism and confident in the arms race, JCS frustration with McNamara, and the now public Soviet ABM forced the administration to make a decision early the following year.

By 1966, the ABM advocates had become stronger in the interagency and intercabinet debates than in the Eisenhower and early Kennedy administrations. Coordination among the Joint Chiefs was a significant factor, but the domestic politics of the arms race flaring up over Galosh deployments was crucial. Even though the actual effective countermeasure to the Soviet ABM had been taken, penetration aids, MRVs, and saturation, the domestic political

²⁶³ Yanarella, *The Missile Defense Controversy*, 125.

²⁶⁴ *Ibid*, 137.

²⁶⁵ *Ibid*.

²⁶⁶ *Ibid*.

interpretation was that the United States also needed an ABM. In response to the increasing strength of those forces, McNamara pursued a multifaceted bureaucratic strategy to try and salvage, or at least mitigate the damage to, the project he and Johnson were pursuing, adding caveats and conditions to circumscribe any ABM. These maneuverings highlight the interaction of the interagency debates and the domestic politics of the arms race, while demonstrating how these deliberations could become convoluted as various actors and agendas competed.

All Roads Lead to San Francisco: 1967

January was a busy and decisive month for ABM in the Johnson administration. It began on the 4th with a meeting in which McNamara outlined three options available to the president: do nothing, a thin system, or a heavy system. Johnson succinctly surmised the conversation, stating “the Chiefs wish to go all the way; the scientists say No; but if we go we should go with a thin system because it might help our negotiations with the Soviet Union.”²⁶⁷ The Chiefs heavy, Soviet oriented system would provide the most military protection, but would also be very expensive at around \$40 billion, and would exacerbate the action/reaction dynamic of the arms race. Doing nothing was increasingly seen as politically infeasible. The light system would provide a defense against China, accidents, protect some Minuteman fields, and of course have a latent capability against the Soviets. This was couched as the option to thread the needle, resolve the political problem of ABM without unduly upsetting the arms race.

The perspective of the light ABM being a safe middle ground was prophetically dismembered earlier that day by Spurgeon Keeny, a staffer on the National Security Council, in a memo to Donald Hornig, the President’s Special Assistant for Science and Technology. Keeny

²⁶⁷ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 166, <https://history.state.gov/historicaldocuments/frus1964-68v10/d166>, (accessed January 16, 2022).

argued the thin system would “satisfy no one.”²⁶⁸ Liberals would attack it as an “unnecessary and dangerous expense further undercutting the prospects of the Great Society” while conservatives would pillory it as “inadequate and as a devious device to avoid coming to grips with the real problem of providing real protection for the U.S. population against a Soviet attack” and most people, who do not really care, “will be presented with a spectacle of a major Administration decision which is attacked on all sides.”²⁶⁹ Keeny further worried it would be impossible to keep the system from being expanded by justifications by the military and industry, especially since it would be incredibly difficult to explain why some parts of the country were defended and others were not.²⁷⁰ Keeny’s assessment of the domestic political fallout of the decision was remarkably accurate. He accurately outlined the political fault lines of the issue and provided a warning of the Congressional battles to come in the Nixon administration, where liberal Democrats would no longer feel obligated to support the plans of their party’s president.

The concern for the political consequences is readily apparent in a phone call between McNamara and Johnson the evening of the 4th. When asked his honest opinion on the situation, McNamara replied “I still favor doing nothing as we initially recommended” but recognized “it would be a helluva political crisis if you did nothing. The forces pushing you to do something are very, very strong indeed.”²⁷¹ The Secretary concluded “if we’re to go ahead, then I think the best thing to do is the ‘thin’ system.”²⁷² He worried, though, that if he testified against the heavy

²⁶⁸ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 165, <https://history.state.gov/historicaldocuments/frus1964-68v10/d165>, (accessed January 17, 2022).

²⁶⁹ *Ibid.*

²⁷⁰ *Ibid.*

²⁷¹ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 167, <https://history.state.gov/historicaldocuments/frus1964-68v10/d167>, (accessed January 17, 2022).

²⁷² *Ibid.*

system the JCS preferred, Congress would “absolutely crucify him and through me you.”²⁷³ In discussing strategies for advocating for a limited system, Johnson suggested pursuing an agreement with the Soviets, and having funding for a thin system set up as a “contingency” if negotiations failed. McNamara responded enthusiastically, “Oh, oh, yes, oh, yes, yes, yes, there’s a real possibility of that, Mr. President,” and mentioned the Soviet openness to talks recently relayed from the State Department.²⁷⁴ The coupling of negotiations and a “contingency” system was adopted as the administration’s position moving forward on the issue in Johnson’s State of the Union address a few days later on January 10th and other public statements shortly thereafter.²⁷⁵

Johnson had begun activating the plans McNamara had laid down in case he lost the battle over whether to deploy Nike-X. Johnson had been increasingly involved in the ABM issue since the winter of 1966, even though he was not particularly interested in the controversy or saw significant national security stakes in the outcome.²⁷⁶ However, Johnson was an adroit political actor, and saw the ABM’s importance in the context of domestic politics. The Vietnam War was costing him the support of many liberal Democrats, and negotiations with the Soviets over ABM might help him shed public perception that he was a warmonger, casting him instead as a peacemaker.²⁷⁷ The second half of the plan, committing to deploy an ABM if the talks failed, would shore up his right flank, defanging critiques about an “ABM Gap” alluded to in

²⁷³ Ibid.

²⁷⁴ Ibid.

²⁷⁵ Morton Halperin. 1972. “The Decision to Deploy the ABM: Bureaucratic and Domestic Politics in the Johnson Administration.” *World Politics* 25(1): 62-95. <https://www.jstor.org/stable/2010431>, 82.

²⁷⁶ Ibid, 74. Halperin implies this may be due to Johnson’s lack of strong foreign policy positions, and his focus on domestic issues. Halperin argues Johnson’s relationships with the participants of the debate, McNamara, the Chiefs, Congressional leaders, defined the issue for him.

²⁷⁷ Ibid, 86.

Republican National Committee booklets which would emerge that February.²⁷⁸ Therefore, Johnson used the State of the Union and the plan he and McNamara had created to solidify his domestic position as much as possible.

While the administration announced it would request funds for an ABM, the scope and character of that ABM had not been determined. Pending negotiations with the Soviets, the question had changed from whether to deploy an ABM, to what ABM should be deployed. This battle would rage through the Summer of 1967, definitively ended by McNamara's speech in San Francisco in September. This period saw McNamara activate his second prepared strategy, the limited defense against China. One of the first notable events in this contest was a large meeting on January 23rd. It gathered Johnson, the Joint Chiefs, and all the current and former Presidential Science Advisors and Directors of Defense Research and Engineering to get their assessment of the ABM issue.²⁷⁹ Johnson asked the assembled advisors whether the system would work, and whether a heavy or thick defense against the Soviet Union should be pursued. The answer to both questions was unanimous and negative.²⁸⁰ Not one of the advisors thought a heavy anti-Soviet system should be deployed. The uniformity of this conclusion was used by McNamara in his efforts to prevent the heavy or thick ABM, designed to defend against attacks from the Soviet Union.

The Joint Chiefs were still very interested in deploying Nike-X in what was known as "Posture A." It was the proposal to have an area defense of the continental U.S. using Spartan and a terminal defense of 25 cities using Sprint components. This posture was advocated by the

²⁷⁸ Yanarella. *The Missile Defense Controversy*, 125.

²⁷⁹ *Ibid*, 124.

²⁸⁰ *Ibid*, 124; Halperin, "The Decision to Deploy the ABM," 85.

Chair of the JCS, General Wheeler, before the House Armed Services Committee in early March.²⁸¹ Wheeler argued it would not only save lives, since “one nation will probably survive best in a nuclear exchange,” but it would also make it more difficult to deter the Soviets if they could limit damage from U.S. strikes with their ABM and the U.S. lacked any similar capability. Moreover, the Chiefs “reaffirm their recommendation that a decision be made now to initiate deployment of Nike-X for an initial operational capability in FY 1972.”²⁸² They thought deployment during negotiations would increase the pressure on the Soviets to agree to a freeze, while reiterating their skepticism of U.S. ABM decisions influencing Soviet offensive missile procurement.²⁸³ This was contested by McNamara and the other civilians in leadership positions at the Pentagon in their testimony to Congress. They reiterated the significance of action/reaction in favor of a more limited ABM system, while emphasizing that a defense against the Soviets would require expanded civil and air defenses.²⁸⁴

The challenge articulated by the Chiefs to McNamara’s logic of action/reaction reflected their different understandings of deterrence by this point. Early in the Kennedy administration when discussions of counterforce strategies and damage limitation were popular, the military had recognized the utility of these ideas to get the forces and programs they wanted. Counterforce expanded the list of targets and leaned towards preemptive strikes while damage limitation suggested the importance of defenses. As the attitudes of the civilians in control of the Pentagon

²⁸¹ United States Joint Chiefs of Staff, Chairman, “Statement by general earle G. wheeler, USA chairman of the joint chiefs of staff before the house armed services committee on thursday, 2 march 1967,” March 2, 1967, DNSA, <https://www.proquest.com/government-official-publications/statement-general-earle-g-wheeler-usa-chairman/docview/1679150458/se-2?accountid=7103> (accessed November 7, 2021).

²⁸² *Foreign Relations of the United States, 1964–1968*, Volume XI, Arms Control and Disarmament, eds. Evans Gerakas, David S. Patterson, and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 176, <https://history.state.gov/historicaldocuments/frus1964-68v11/d176>, (accessed January 21, 2022).

²⁸³ Ibid.

²⁸⁴ Yanarella. *The Missile Defense Controversy*, 129, 131.

started to shift, especially after the Cuban Missile Crisis, the military maintained their adherence to damage limitation and counterforce as an understanding of deterrence. This perspective sought to minmax capabilities and forces to keep damage during a general nuclear war to a minimum and held that those capabilities would increase the credibility of deterrent threats and leverage in crises.²⁸⁵ McNamara and others who had been deeply involved in the crisis came to a different understanding of deterrence which became known as assured destruction. Later pilloried by opponents as “MAD,” assured destruction rested on the assumption that if the force could ride out a Soviet first strike and retaliate, generating a certain amount of damage, it was credible and sufficient to deter the U.S.S.R.

Despite doctrinal disputes between the two camps, a compromise was reached between the Office of the Secretary of Defense and the Joint Chiefs of Staff. A likely tacit agreement was reached on supporting a light ABM system. McNamara accepted this since he understood he was very unlikely to win if his position was only no deployment, considering Johnson’s decision, the continued unity of the JCS, and the burgeoning pressure in both houses of Congress and many salient committees.²⁸⁶ However, it seems the JCS declined the press their advantage and momentum in this milieu to get a heavy system for two reasons. First, a light ABM system got the Chiefs support since it was couched as a “first step,” leaving it open to expansion later.²⁸⁷ They understood that it would likely expand over time, acting as a “stepping-stone” to a heavier system, meaning their goal would be achieved eventually, especially in the more granular planning phases.

²⁸⁵ Freedman and Michaels, *The Evolution of Nuclear Strategy*, 308.

²⁸⁶ *Ibid*, 138.

²⁸⁷ *Ibid*, 136.

Second was the Army's waning interest in ABM. As opposed to the 1950s where it had to fight tooth and nail for relevance and interservice conflict was rampant, the stakes for the Army on ABM were no longer as high.²⁸⁸ A more diverse and better funded set of missions, especially those surrounding limited war and insurgency like in Vietnam, had relative prominence over the ABM question now.²⁸⁹ The preoccupation of the Army, still the largest proponent of ABM, with the land war in southeast Asia meant it was not as interested in the more difficult legislative and bureaucratic fight required to get a heavy system. This was probably especially true since McNamara had again hitched the heavy anti-Soviet system to toxic civil defenses which few of the Army's Congressional supporters would be enthused about having to defend. Thus, the Army seemed "quite prepared" to accept a limited system in 1967 to finally get deployment going.²⁹⁰

During this period, the Soviet interest in talks had been plumbed and found to be amenable. There had been communication between embassies as well as a few letters between Johnson and Chairman Alexei Kosygin, where Johnson unsubtly explained, "I face great pressures from the Members of the Congress and from public opinion not only to deploy defensive systems in this country, but also to increase greatly our capabilities to penetrate any defensive systems which you might establish."²⁹¹ Johnson and McNamara saw an opportunity in the aftermath of the 1967 Arab-Israeli war in which Israel decisively defeated a coalition of Arab states including Egypt, Syria, and Jordan. In the aftermath of the conflict, Kosygin was planning

²⁸⁸ Ibid, 131-132.

²⁸⁹ Ibid, 132.

²⁹⁰ Ibid.

²⁹¹ *Foreign Relations of the United States, 1964-1968, Volume XI, Arms Control and Disarmament*, eds. Evans Gerakas, David S. Patterson, and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 178, <https://history.state.gov/historicaldocuments/frus1964-68v11/d178>, (accessed January 21, 2022).

to speak at the United Nations in New York, and a summit was hastily organized at Glassboro State College in New Jersey.²⁹² While efforts at arms control would have to come far behind the Arab-Israeli conflict and Vietnam during the summit, Johnson thought he and McNamara could convince Kosygin of their good intentions.²⁹³

The Glassboro Summit, held June 23rd to the 25th, 1967, was ultimately a disappointment, as Kosygin appeared unreceptive to Johnson's broader appeals to ideals of war and peace or McNamara's analytical, military-technical arguments. After hearing the Secretary of Defense's presentation on strategic arms control, he complained about a lack of interest in offensive limitations, and "maintained that Soviet ABMs were purely defensive and so posed no threat to the other side."²⁹⁴ Eventually Kosygin even shouted, "defense is moral, aggression is immoral!"²⁹⁵ While Kosygin's positions likely reflected the dominance of the Soviet military in defense policymaking and the lack of intellectual work done on the effects of missile defenses to the strategic balance, the Johnson administration was deflated and bearish on the prospects of an ABM freeze after the summit.²⁹⁶

As diplomatic prospects withered that summer, preparations for announcing the ABM commenced. As a consolation to McNamara, who he still wanted a good relationship with, Johnson allowed him to announce the deployment in whatever way he wanted. By early August the President's Special Assistant Walt Rostow informed Johnson the Defense Secretary intended

²⁹² Cameron, *The Double Game*, 85-86.

²⁹³ Ibid, 86.

²⁹⁴ Ibid, 87.

²⁹⁵ Ibid.

²⁹⁶ Ibid, 87-88.

to hold a speech in mid-September to announce the new system.²⁹⁷ This resulted in a flurry of notifications and consultations with allies and partners, as well as the preparation of a public relations blitz to follow the announcement. This included interesting discussions with the Canadian Defense Minister and Ambassador, where the Canadians turned down an offer to get involved in the system since “at the moment Canada is violently anti-ABM” and they assessed there was less than a 1% chance of the government agreeing to it.²⁹⁸ Once again alert to the vagaries of domestic politics, Spurgeon Keeny urged Walt Rostow to convince McNamara that the speech should be given in January instead. If done in January, “the announcement would be submerged” somewhat “in the many other problems and decisions in the FY-1969 budget.”²⁹⁹ Keeny was joined by the Acting Director of the Arms Control and Disarmament Agency who thought the announcement might sour negotiations for the Treaty on the Non-Proliferation of Nuclear Weapons.³⁰⁰ Nevertheless, McNamara held to the mid-September announcement date.

While there was enough pressure to get an ABM decision across the finish line interagency and intercabinet dynamics allowed McNamara to secure the limited, China-oriented ABM for 1967. The clear implications for domestic politics encouraged Johnson to move forward with an ABM, leaving its character to be largely determined by the other actors involved. The Army’s flagging interest and the Chiefs astute assumption that the system would spread encouraged them to compromise with McNamara. Neither side got what they truly

²⁹⁷ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 185, <https://history.state.gov/historicaldocuments/frus1964-68v10/d185>, (accessed January 17, 2022).

²⁹⁸ *Foreign Relations of the United States, 1964–1968, Volume X, National Security Policy*, eds. David S. Patterson (Washington: United States Government Printing Office, 2001), Document 190, <https://history.state.gov/historicaldocuments/frus1964-68v10/d190>, (accessed January 17, 2022).

²⁹⁹ *Ibid.*

³⁰⁰ *Foreign Relations of the United States, 1964–1968, Volume XI, Arms Control and Disarmament*, eds. Evans Gerakas, David S. Patterson, and Carolyn B. Yee (Washington: United States Government Printing Office, 1997), Document 204, <https://history.state.gov/historicaldocuments/frus1964-68v11/d204>, (accessed January 21, 2022).

wanted, and therefore a system whose explicit mission was largely nonsensical, as China did not pose a severe ballistic missile threat and Sentinel was not configured to defend against the SLBMs or cruise missiles the PRC had, moved forward. The intense bureaucratic fight, spurred by changing interpretations of the arms race by domestic politics, produced this strange system by the end of the Johnson administration.

The King's Wizard's Speech

On September 18th, 1967, Robert McNamara addressed the editors of United Press International in San Francisco. The speech is puzzling, yet significant. It began with a discussion of the futility of nuclear superiority in megatonnage or number of warheads or launchers when confronted with an assured second strike. He continued to describe the Soviet ABM, the U.S. offensive reaction to Galosh, and comment on the U.S.'s efforts on missile defense. McNamara clearly outlined his critiques of ABM, noting the cost, \$40 billion or multiples thereof, as well as the Soviet ability to saturate a defense with more offensive warheads. He said "this is the whole crux of the nuclear action-reaction phenomenon. Were we to deploy a heavy ABM system throughout the United States, the Soviets would clearly be strongly motivated to so increase their offensive capability as to cancel out our defensive advantage."³⁰¹ McNamara told the audience of the scientific consensus behind this conclusion, and further argued "There is no point whatever in our responding by going to a massive ABM deployment to protect our population, when such a system would be ineffective against a sophisticated Soviet offense."³⁰² McNamara concluded

³⁰¹ Robert S. McNamara. 1967. "Remarks by Secretary of Defense Robert S. McNamara, September 18, 1967." *Bulletin of the Atomic Scientists*, volume 23, no. 10. <https://doi.org/10.1080/00963402.1967.11455145>, 30.

³⁰² Ibid.

this part of his speech with a warning that we must not “trigger a senseless spiral upward of nuclear arms.”³⁰³

The argument then took a sharp turn. McNamara said it was important to distinguish between a system to protect against Soviet attack and one designed to defend strategic offensive forces or from a Chinese attack.³⁰⁴ He discussed China’s progress since their first nuclear test in 1964, and the benefits of protecting the Minuteman fields from attack.³⁰⁵ However, he repeatedly emphasized the light and limited nature of this defense, and called for resistance to the inevitable “temptation” to expand it “into a heavy Soviet-oriented ABM,” lamenting the “mad momentum intrinsic to the development of all new nuclear weaponry.”³⁰⁶ McNamara feared the inexorable push for more weapons and greater superiority, and worried about the effects of adding an offense-defense competition to the already dangerous and costly arms race.

The second half of McNamara’s speech was jarring and confusing for many, who had just listened to a diatribe against nuclear superiority and the folly of ABM systems. However, it makes sense considering the choices available to the Secretary and his profound concern about a potential heavy ABM. Fred Kaplan relates a conversation between Paul Warnke, then Assistant Secretary of Defense for International Security Affairs, and McNamara during the drafting process for the speech. Warnke asked “China bomb, Bob?” McNamara allegedly looked downcast, shuffled some papers around, and replied “what else am I going to blame it on?”³⁰⁷ McNamara saw the China threat rationale as indefensible, and hoped that would help raise

³⁰³ Ibid.

³⁰⁴ Ibid.

³⁰⁵ Ibid, 31.

³⁰⁶ Ibid.

³⁰⁷ Kaplan, *Wizards of Armageddon*, 347.

opposition to the ABM. In early 1968, Robert McNamara left the Department of Defense to become the President of the World Bank. His differences with Johnson over the conduct of the Vietnam War had become too significant and troublesome. McNamara compiled his major speeches into a book, *The Essence of Security*, which only included the first part of the San Francisco speech. The latter part, which “served his purposes as a bureaucrat under pressure but embarrassed him as an intellectual,” was squirreled away in an appendix.³⁰⁸

After the decision to deploy a light ABM was taken, the implementation of the plan was turned over to the Army, and largely overseen by the Deputy Secretary of Defense, Paul Nitze. Nitze was interested in keeping the possibility of expansion to a heavier or larger system open.³⁰⁹ Additionally, the Army oversaw selecting the precise sites for radars and missile launchers for the system. In order to lay the groundwork for a more expansive system, they chose sites close to cities, and eventually “the Army was able to tell the Congress that actual deployment was not different in any significant way from the projected first stages of an anti-Russian system, and that the system being deployed was expected to grow.”³¹⁰ It seemed McNamara was unsuccessful in placing guardrails on the expansion of the limited system through his speech.

Another development that would belie the success of the effort to frame the system as limited and oriented at China rather than the Soviet Union occurred earlier that summer. A report from the State Department’s Bureau of Intelligence and Research cataloged the 11th test of a probable Soviet FOBS on August 8th, suggesting a “major effort” on the part of the U.S.S.R.³¹¹ It

³⁰⁸ Ibid, 348.

³⁰⁹ Halperin, “The Decision to Deploy the ABM,” 89

³¹⁰ Ibid, 90.

³¹¹ Thomas L. Hughes, United States Department of State, Bureau of Intelligence and Research, “Tests of Soviet Fractional Orbital Bombardment System (FOBS),” Secret, Intelligence Note 669, August 14, 1967, NSA, <https://nsarchive.gwu.edu/document/21718-document-28-thomas-l-hughes-secretary>, (accessed December 11, 2021).

was assessed that the FOBS used the new SS-9 missile, and could deliver a 5 megaton warhead over the south pole, “without our present Ballistic Missile Early Warning System (BMEWS) being able to provide tactical warning.”³¹² While the report concluded that the FOBS was unlikely to upset the “basic strategic balance,” it did recognize the system “can also serve to complicate the US problem of developing an effective ABM defense.”³¹³ The Soviets were likely also skeptical of the China rationale, and were finalizing a responsive system prior to deployment. The Soviet FOBS was declared operational July 21st.³¹⁴

The contradictions of McNamara’s speech laid bare the confusion and awkwardness of the system produced by the process discussed above. The compromise between the military and civilian leadership of the Pentagon produced something with an explicit justification that made little sense. This discrepancy was exacerbated by the competing visions McNamara and the military had for the future of the system. McNamara saw Sentinel as the area defense component and 25 cities defended by Sprints. Paul Nitze and others within the defense bureaucracy, however, began planning to build an eventual heavy defense, despite the declared limited role of the system. This was problematic considering implementation had been ceded by McNamara to Nitze and others. These elements indicate that even though McNamara was leaving the DOD and the decision to pursue an anti-China system had been taken, the bureaucratic fights would linger, and the system would continue to change as various actors with diverse agendas wrangled for control. Had the protests of 1968 not materialized, activating another aspect of the peculiar

³¹² Ibid.

³¹³ Ibid.

³¹⁴ Siddiqi, “The Soviet Fractional Orbital Bombardment System (FOBS), 24.

domestic politics of the arms race, Sentinel might have slowly expanded into the heavy anti-Soviet ABM McNamara feared.

Nuclear NIMBYism: 1968

Now that the broader policy questions surrounding ABM had been settled, 1968 was characterized by planning as the shape of what was now known as Sentinel came into focus. In November 1967, the Army had published an initial list of 10 potential Sentinel Sites, and by December 1968, had expanded the list to 17 sites.³¹⁵ Some potential locations included Albany, Georgia; Chicago, Illinois; Dallas Texas; Grand Forks Air Force Base, North Dakota; New York, New York; Oahu, Hawaii; Salt Lake City, Utah; Seattle, Washington; Boston, Massachusetts; and Detroit, Michigan. The sites were initially not going to house Sprint interceptors, since a thin defense would rely more on the long-range Spartans, but in the event a decision was taken to expand the scope of the system, the Army wanted the sites to be close enough that the cities could be defended with the Sprint missiles.³¹⁶ Considering the range of the Sprint was relatively short, around 40 miles, this required the sites to be closer to population centers to provide adequate coverage.³¹⁷ As Sentinel planning proceeded, local citizens were informed about the plans to construct the ABM sites near them, triggering a cascade of protests which would prevent the Army's program of heavy population defense from ever coming to fruition.

The initial interest in the site announcements generally came from scientists who had been paying attention to ABM. In Illinois, for example, researchers at Argonne National

³¹⁵ A. Hessing Cahn. "Scientists and the ABM." (PhD Dissertation, Massachusetts Institute of Technology, 1971.), 45; United States Army, Secretary, "Selection of Sentinel Site--Chicago Area," December 10, 1968, DNSA, <https://www.proquest.com/government-official-publications/selection-sentinel-site-chicago-area/docview/1679157124/se-2?accountid=7103> (accessed November 7, 2021).

³¹⁶ James Cameron. 2014. "From the Grass Roots to the Summit: The Impact of US Suburban Protest on US Missile-Defense Policy, 1968-1972." *The International History Review*, volume 36, no. 2. 344-345.

³¹⁷ Ibid.

Laboratory were the first to take note of the announcement of an impending nearby ABM site and inform the local population.³¹⁸ Similarly, in Seattle, scientists at University of Washington took the announcements to residents.³¹⁹ Anti-nuclear weapons organizations were also helpful in raising awareness of the plans, especially in Boston. Organizations formed in response to a growing understanding of the Army's proposals, including Citizens Against the ABM, which helped coordinate various campaigns to stop the sites. There were distinct strategies taken by opponents of ABM. While older residents generally wrote to their representatives and set up petitions, younger groups wanted to picket and march, with the elder's strategy generally prevailing.³²⁰ There were many public meetings where residents could engage with poorly prepared Army officials who were confronted by both experts asking pointed questions about technical problems, and citizens' concerns about the effects the installations would have on their neighborhoods.³²¹ Many experts and scientists who had previously been in PSAC or ARPA were available as they had left government over Vietnam.³²² An often returned to point by citizens was that "the threat posed by the People's Republic of China was far less pressing than other fears far closer to home."³²³

These more proximate fears were varied, yet often profound for these residents, motivating large and successful protest movements. In some ways, their reticence to cooperate with the Army reflected the loss of confidence in the military during the Vietnam War.³²⁴ People were less trusting in the late-1960s than they had been in the 1950s when they had welcomed the

³¹⁸ Ibid, 345.

³¹⁹ Ibid.

³²⁰ Ibid.

³²¹ Ibid, 346.

³²² Ibid, 351.

³²³ Ibid, 346.

³²⁴ Ibid, 349.

Nike-Ajax and Hercules batteries. This skepticism materialized in concerns about accidents or low altitude interceptor detonations, as well as worries that these installations would turn their cities into “megaton magnets,” drawing more warheads the way the Moscow system had.³²⁵ Moreover, people fundamentally did not want to be reminded of the ever-present nuclear threat embodied in these defense sites.³²⁶ However, worries about accidents or the military facets of the ABM were less pressing to residents than other issues.

People were often concerned about the impact of the new ABM sites on the “green spaces” in their suburban neighborhoods. Residents wanted to preserve recreational spaces and “unspoiled parkland” which they felt was being taken up by new housing developments, and environmental degradation was seen as the third most pressing concern to Americans after Vietnam and unemployment by 1969.³²⁷ This attitude had been successfully wielded by the Johnson administration to help pass several Great Society environmental protections such as the Water Conservation Act or the Air Quality Act. The Army, however, drew the ire of those worried about the environment and green spaces in their neighborhood when they designated undeveloped open spaces in suburban areas as the probable sites for the ABM.³²⁸

Another criticism was tied up in the emerging socio-economic concerns of white suburbanites in the late 1960s. Many residents criticized the development of this new military boondoggle as they saw it as trading off with efforts to help improve cities that were troubled and under pressure.³²⁹ This zero-sum understanding of government spending viewed the money

³²⁵ Cameron, “From the Grass Roots to the Summit,” 349; Spinardi, “The Rise and Fall of Safeguard”, 316.

³²⁶ Cameron, “From the Grass Roots to the Summit,” 348.

³²⁷ Ibid, 346-347.

³²⁸ Ibid, 347.

³²⁹ Ibid.

being spent on missile defense as coming out of coffers which could be better used to combat urban poverty and unrest. These seemed like more pressing issues, especially in 1968 after the conflagrations following the Democratic National Convention in Chicago and the Black Power movement, which created fears of insecurity among middle- and upper-class whites which was entirely unrelated to a nuclear China.³³⁰

The implied welfare spending trade off was not the only economic issue protesters saw in the ABM issue, though. In choosing sites to defend the cities listed above, the Army somehow managed to select some of the most affluent areas of the country.³³¹ These suburbanites were deeply concerned about the effect that having nuclear armed ballistic missile interceptors nearby would have on their property values. Residents were particularly invested in their property values at that point since they were one of the few assets holding value well in the face of Vietnam and Great Society induced inflation.³³² Making their zip code a “megaton magnet” likely jeopardized these citizens’ sense of economic security and they were unwilling to sacrifice their wealth for the goal of national security.

These affluent white suburban protesters were comfortable with other groups being disadvantaged in this way. The pervasive sentiment was that “if this ‘military-industrial boondoggle’ needed to be deployed in an urban area, then it should be somewhere uglier and poorer that had less to lose financially from having Sentinel located in its backyard.”³³³ These protests had also met with considerable success. In Seattle, protestors managed to lobby Scoop Jackson, an essential ABM advocate, to convince the Army to move the site out of a wealthy

³³⁰ Ibid.

³³¹ Ibid, 347-348

³³² Ibid.

³³³ Ibid, 349.

neighborhood to somewhere 20 miles away. By the end of 1968, “this coalition combined the rhetoric of home and neighbourhood with technical knowledge against what they perceived as an untrustworthy military elite in Washington” to vociferously challenge Sentinel.³³⁴ It was in this environment of white suburban backlash that Richard Nixon, who defeated Hubert Humphrey after Johnson declined to seek re-election, took the Presidency, and with it, the task of implementing the ABM.

The protests which began in 1968 illustrate the peculiar domestic politics of the arms race. Domestic pressure for a comparable ABM system to the Soviets was important for convincing the Johnson administration to deploy Sentinel. However, once the implications of that were felt in wealthy white suburban communities, public opinion on it soured rapidly. The tension within the domestic politics of the strategic competition is well demonstrated by Scoop Jackson, who ardently campaigned for the ABM, but whose constituents would not allow it to be sited near them. The incoming Nixon administration faced the unenviable problem of synthesizing this angry public reaction to the siting plan with the need for an ABM as determined by the administrative decision-making process. 1968 demonstrates that for many, the arms race was just fine, so long as it mostly stayed out of sight.

We’ve Seen the Last of Good King Richard: Nixon, Sentinel, and Safeguard in 1969

The Nixon administration hit the ground running on foreign policy and nuclear weapons issues. There were some ambitious goals they wanted to accomplish, including a solution to Vietnam, quelling domestic unrest, and arms control, which encouraged their embrace of

³³⁴ Ibid, 352.

détente.³³⁵ Considering the Vietnam War and a perceived relative decline in U.S. power, the Nixon Doctrine sought to rely more on regional allies to prosecute the Cold War, allowing U.S. commitments to be scaled down, while also capitalizing on the emerging Sino-Soviet split.³³⁶ This approach, a desire to end the Vietnam War in particular, would ultimately produce better relations with both the Soviet Union and the People's Republic of China. Nixon's partner in this effort was Henry Kissinger, a former professor of international relations at Harvard. They initially operated off an understanding of international relations with the Soviet Union which subordinated regional conflicts like Vietnam and the arms race to larger geopolitical goals. The administration, for instance, did not want to consider Strategic Arms Limitation Talks, or SALT, in isolation from Vietnam or other issues, but sought to link them together. This attitude extended towards Sentinel as well, since even though Nixon was interested in arms control agreements with the Soviets, he was also "profoundly aware of the domestic political cost of conceding numerical parity to the Soviet Union in strategic armaments."³³⁷ Therefore, the administration wanted to reassess nuclear doctrine, the ABM, and foreign policy, to try and achieve their goals.

Nixon's re-evaluation of Sentinel took place in February and early March of 1969 and produced a new arrangement of the Nike-X components with a distinct rationale to justify it. The change solved some political problems for Nixon and had diverse reasoning behind it. Firstly, Nixon had been elected by a very slim margin, mainly by reaching out to Southern Democrats who were alienated by civil rights. He was therefore very sensitive to popular domestic concerns

³³⁵ Henry R. Maar III. "Subtraction by Addition: The Nixon Administration and the Domestic Politics of Arms Control." In *The Cold War at Home and Abroad* edited by Andrew L. Johns and Mitchell B. Lerner, (Lexington: University of Kentucky Press, 2018), 124.

³³⁶ Herring. *From Colony to Superpower*, 760.

³³⁷ Cameron, *The Double Game*, 107.

which may imperil his re-election.³³⁸ He did not want to have to deal with the protests surrounding the suburban ABM deployments, which might have angered voters early in his presidency. A report from that February by PSAC noted that “siting near cities has a particularly bad political effect in the current context of the urban crises,” which was surprising to planners since “it was thought that as batteries would be installed to protect only a few cities, other communities would clamor that they wished protection also. Thus far, however, substantial opposition has been expressed in each city.”³³⁹ The public backlash to the city defense component of Sentinel created powerful incentives for the administration to change course.

The increasing pressure of the protests domestically was complemented by new military concerns which would justify a shift in the program as well. The Soviet ICBM force was expanding, particularly the large SS-9 missile. The Soviets were building about 200 ICBMs per year, which would bring them closer to parity with the U.S. in terms of launchers.³⁴⁰ This was part of the Soviet reaction to the outcome of the Cuban Missile Crisis that was referenced earlier. Moreover, there were concerns about multiple warheads on the SS-9. In June of 1969, it was reported to Kissinger and Nixon that the Soviets had been testing a multiple re-entry vehicle (MRV) variant of the SS-9 since August of 1968, Kissinger and Nixon saw as a first step towards a multiple independently targetable re-entry vehicle (MIRV) system.³⁴¹ As the Soviets advanced their MRV program, reaching greater accuracies, Kissinger and Nixon were concerned they

³³⁸ Cameron, “From the Grass Roots to the Summit,” 357-358.

³³⁹ United States President's Science Advisory Committee, Strategic Military Panel, “Report on the Sentinel ABM System and Possible Alternative Options by the Strategic Military Panel of the President's Science Advisory Committee [Includes Attachments],” Secret, Report, February 17, 1969, DNSA, <https://www.proquest.com/government-official-publications/report-on-sentinel-abm-system-possible/docview/1748542889/se-2?accountid=7103> (accessed November 7, 2021), 12.

³⁴⁰ Cameron, *The Double Game*, 110.

³⁴¹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 33, <https://history.state.gov/historicaldocuments/frus1969-76v34/d33>, (accessed January 28, 2022).

would be able to target and kill the Minuteman silos at the fields in the northern Midwest of the U.S., neutralizing one leg of the deterrent triad.³⁴² Moreover, an expanded Soviet ICBM force could also threaten the bomber fleet. The extreme worries felt by some were succinctly surmised by a briefer from the Joint Strategic Target Planning Staff, who concluded “we see new land mobile ICBM, FOBS, MIRVs. Their R&D may exceed ours by factor of two. Pindown possible.”³⁴³ Pindown referred to a strategy where chronologically staggered nuclear detonations over silo fields by an adversary would either prevent the missiles in the silos from being launched or destroy them as they launched during the boost phases. These factors significantly shaped the Nixon administration’s decisions on ABM in those first few months of the presidency.

On February 6th, the new Secretary of Defense, Melvin Laird, ordered a halt to the entire Sentinel program until a month-long review could be completed.³⁴⁴ This spurred a flurry of action in the administration, with reports and proposals being drawn up, as well as outside, such as the Senate Foreign Relations Committee holding educational hearings on the issue.³⁴⁵ By February 14th, as indicated by certain NSC meeting talking points, Kissinger had identified five available choices regarding Sentinel. Proceed with the current program, delay it, redirect the system to defend the Minuteman fields and put money towards research and development,

³⁴² Ibid.

³⁴³ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 5, <https://history.state.gov/historicaldocuments/frus1969-76v34/d5>, (accessed January 21, 2022).

³⁴⁴ Yanarella, *The Missile Defense Controversy*, 144.

³⁴⁵ Ibid.

redirect the system to an anti-Soviet posture, or cancel sentinel and proceed with research and development.³⁴⁶

In evaluating these options, the Nixon administration was as cognizant about the technical shortcomings of Nike-X as the Johnson administration. A PSAC report on Sentinel and alternative options conceded that the “unstated objective is to provide the base for a possible anti-Soviet system,” but “against a large, sophisticated attack such as the USSR could mount in the same time period, the Sentinel system as such would have little or no value.”³⁴⁷ They further noted that China had the “technical capability” to develop sufficiently advanced countermeasures to penetrate the ABM in a few years if they so desired.³⁴⁸ The report further elaborated on the various alternatives identified by Kissinger in those talking points. Even though those talking points identified five alternatives, by mid-February, some aspects of the pivot had solidified. In an NSC meeting on the 14th, Secretary Laird was asked about the ABM by Nixon, remarking “I think we can cut back the program by \$200 million, move some of the sites away from the cities, but we should go forward. Don’t use it against Soviet Union except for sub launches and misfires. Say it is to take out 20–25 Chinese ICBMs in a few years.”³⁴⁹ The administration had already cut the troublesome urban defense component to quell protest. While at that point they were still holding to the China rationale, the meeting also mentioned that “[Minuteman] could be

³⁴⁶ United States National Security Council, Staff, “Strategic Forces,” Top Secret, Talking Point, February 14, 1969, DNSA, <https://www.proquest.com/government-official-publications/strategic-forces/docview/1748543342/se-2?accountid=7103> (accessed November 7, 2021).

³⁴⁷ United States President's Science Advisory Committee, Strategic Military Panel, “Report on the Sentinel ABM System and Possible Alternative Options by the Strategic Military Panel of the President's Science Advisory Committee [Includes Attachments],” Secret, Report, February 17, 1969, DNSA, <https://www.proquest.com/government-official-publications/report-on-sentinel-abm-system-possible/docview/1748542889/se-2?accountid=7103> (accessed November 7, 2021).

³⁴⁸ Ibid.

³⁴⁹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 7, <https://history.state.gov/historicaldocuments/frus1969-76v34/d7>, (accessed January 26, 2022).

upgraded to an ABM,” which would become the focal point for discussions about alternatives to Sentinel.³⁵⁰

Using Nike components to defend ICBMs was an old idea, which had been discussed during the Kennedy years by the Air Force in a bid to wrest control of the ABM mission from the Army. However, the Nixon administration was also cognizant of the effects of action reaction in a rather nuanced way, with an NSC staff paper outlining that “understanding the action/reaction process is complicated by the fact that the current Soviet build-up may have already anticipated new developments on our part, so that go aheads on new U.S. programs would not necessarily lead to additional Soviet reactions.”³⁵¹ This was one of the reasons why Minuteman defense began to gain credence among Nixon’s advisors. During an NSC meeting on February 19th, Deputy Secretary of Defense David Packard noted the Soviets “would see cities defense as prelude to other offensive build-up” by the U.S., supported by Gerard Smith, Director of the Arms Control and Disarmament Agency, who said “population protection is historically a signal of going for first strike. Would be more threatening.”³⁵² A February 25th PSAC report on the “Active Defense of the Deterrent” pitched it as being less likely to spur a new round of the arms race as McNamara had predicted since it wouldn’t imperil the Soviet deterrent’s ability to strike U.S. cities and other countervalue targets and was indistinguishable from other passive defenses like hardening silos.³⁵³

³⁵⁰ Ibid.

³⁵¹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 6, <https://history.state.gov/historicaldocuments/frus1969-76v34/d6>, (accessed January 26, 2022).

³⁵² *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 8, <https://history.state.gov/historicaldocuments/frus1969-76v34/d8>, (accessed January 26, 2022).

³⁵³ United States President's Science Advisory Committee, Strategic Military Panel, “Report on the Active Defense of the Deterrent by the Strategic Military Panel of the President's Science Advisory Committee,” Secret, Report,

It is that clear by the end of February the administration had taken ABM installations near cities off the table and thought a defense of the deterrent increasingly appealing to try and escape some of the concerning action/reaction dynamics. This consolidated around a scheme known as Deployment Model 1-69, “a reduced number of sites, Missile Site Radars and Perimeter Acquisition Radars and missiles,” but with “proposed locations further removed from cities.”³⁵⁴ 1-69 would provide “additional warnings for CONUS-based bombers against SLBMs and FOBS; some protection against ICBMs, SLBMs, and FOBS; an option for protecting a portion of Minuteman force.”³⁵⁵ The JCS, in a memo to Laird, noted that while it did “not provide the necessary capabilities against the primary threat,” it did “add to the overall defensive capability and strategic posture” and was “compatible with future improvement” meriting their endorsement.³⁵⁶ Chair of the JCS General Wheeler said he would advocate for an “ABM defense which gave first strike capability” if it was technically feasible, “destabilizing or not. Wouldn’t bother me,” but would allow 1-69 as an extension of the compromise they had made under McNamara.³⁵⁷

This plan was presented to Nixon in an NSC briefing by the DOD and a memo. Kissinger told Nixon beforehand that “I believe you should approve the DOD plan.”³⁵⁸ The memo laid out four options for ABM at this point; defend the cities against the Soviets, an area defense against

February 25, 1969, DNSA, <https://www.proquest.com/government-official-publications/report-on-active-defense-deterrent-strategic/docview/1748543063/se-2?accountid=7103> (accessed November 7, 2021).

³⁵⁴ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 11, <https://history.state.gov/historicaldocuments/frus1969-76v34/d11>, (accessed January 28, 2022).

³⁵⁵ *Ibid.*

³⁵⁶ *Ibid.*

³⁵⁷ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, Document 8.

³⁵⁸ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 15, <https://history.state.gov/historicaldocuments/frus1969-76v34/d15>, (accessed January 28, 2022).

China like Sentinel, modified Sentinel, or no ABM.³⁵⁹ It noted the unanimous recommendation of the JCS and DOD for modified Sentinel, and that the basic physical change “is the improved directional coverage of the radar system, which protects the bomber bases against Soviet SLBM or FOBS attack.”³⁶⁰ The report was more trepidatious about the threat to Minuteman than Nixon and others, arguing it was “not essential to the maintenance of our deterrent” if they “accept current intelligence estimates of probable Soviet threats.”³⁶¹ However, even with a changed emphasis on retaliatory forces, particularly bombers, area defense against China was an important part of the rationale. The memo articulated that “we could justify the deployment as a defense against China with the defense of our retaliatory forces as an add-on” or vice-versa.³⁶² The memo, marked up by Nixon, had four handwritten notes on the cover sheet: “1. They have closed the gap. 2. They continue to increase. 3. They want to talk. 4. We must see that the gap is not widened on other side.”³⁶³ Nixon’s note demonstrates his preoccupation with perceived Soviet offensive and defensive gains compared to relatively lackluster U.S. programming, and the conclusion that SALT is the best answer to this to prevent superiority, or even parity, from being lost.

Modified Sentinel, as outlined in that memo from the DOD, was accepted as the system the administration would defend going forward. While still defending against a largely nonexistent threat from China, some of the emphasis would shift to guarding bomber bases from

³⁵⁹ Henry Kissinger, United States Assistant to the President for National Security Affairs, “Modified Sentinel System [Includes Attachment],” Top Secret, Action Memorandum, March 5, 1969, DNSA, <https://www.proquest.com/government-official-publications/modified-sentinel-system-includes-attachment/docview/1748542857/se-2?accountid=7103> (accessed November 7, 2021).

³⁶⁰ Ibid.

³⁶¹ Ibid.

³⁶² Ibid.

³⁶³ Ibid.

SLBM and FOBS attacks and the Minuteman fields from attack. This was announced on March 14th by Nixon, who spoke to the press at a conference.³⁶⁴ The system was also rebranded as Safeguard at the meeting. During a meeting Nixon held with the bipartisan leadership before the announcement, the system was explicitly couched as a response to the SS-9 and the threat it posed, and he assured them that it could not be expanded into a thick ABM defense against the Soviet Union.³⁶⁵ There was a lingering question at this meeting about why a decision on ABM had to be taken now. Nixon informed the Congressional leadership that the urgency was because a delay of six months now would result in a slip in deployment of two years.³⁶⁶ This assessment of the timetable reflected the arcana of component production and site construction, but also served Nixon's goal of rallying hawkish support for the project. Therefore, taking measures then would ensure the system was operational by 1973.

In addition to changing the course of the ABM, the Nixon administration developed a new doctrine called "strategic sufficiency." It became clear that despite the many bullet points describing what strategic sufficiency meant, for the Nixon administration, "the word "sufficiency" will always be seen in a political context," and "the NSC will call sufficiency whatever it decides upon with regard to strategic forces."³⁶⁷ However, as NSC member Laurence Lynn was oft quick to point out, "maintenance of area defense against third countries and accidents is a Presidentially-approved criterion of strategic sufficiency," and thus "should be

³⁶⁴ Yanarella, *The Missile Defense Controversy*, 145.

³⁶⁵ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 24, <https://history.state.gov/historicaldocuments/frus1969-76v34/d24>, (accessed January 28, 2022).

³⁶⁶ *Ibid.*

³⁶⁷ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 32, <https://history.state.gov/historicaldocuments/frus1969-76v34/d32>, (accessed January 28, 2022).

given priority.”³⁶⁸ Lynn was a staunch defender of the area defense component of Safeguard, and over the course of the rest of 1969 became increasingly concerned it would fall through the cracks of the planning process, intentionally or unintentionally. He was worried DOD, and the Air Force in particular, would try to scuttle area defense and Safeguard writ large, since “they want the money for Air Force programs such as hard rock silos and mobile Minuteman, and Safeguard is directly competitive with these programs.”³⁶⁹ These were valid concerns Lynn held, since the Safeguard Phase I funding for FY 1971 only covered the Minuteman fields at Grand Forks and Malmstrom with no money for area defense, and it was the component “least popular with Congress and the part that draws the fire of the arms controllers.”³⁷⁰ Lynn’s fretting over area defense reflected both the coming debates over what Safeguard Phase II would look like, including the questions of defending the National Command Authority in D.C. and the effects of SALT, as well as the truly ferocious debate which had transpired over Safeguard in Congress the Summer and Fall of 1969.

The pivot from Sentinel to Safeguard would have increasingly problematic effects, especially at the technical level, and reflected the new dynamic brought to the decision-making process by the Nixon administration. The new administration was much more sensitive to the domestic politics of the arms race. Nixon and others were hugely concerned about the effects of the ABM protests, which created incentives to change the program. These impulses were exacerbated by potentially inflated Soviet threats to U.S. superiority or parity, such as the SS-9.

³⁶⁸ Laurence Lynn, United States National Security Council, Staff, “Status of Safeguard ABM Program [Includes Attachments],” Top Secret, Memorandum, October 25, 1969, DNSA, <https://www.proquest.com/government-official-publications/status-safeguard-abm-program-includes-attachments/docview/1748542780/se-2?accountid=7103> (accessed November 7, 2021).

³⁶⁹ Ibid.

³⁷⁰ Ibid.

The new civilian administration was imbued with a need to do something on ABM and move it away from the cities. The JCS accepted this, as it was still a steppingstone to their desired larger plan as per their compromise with McNamara. While concerns held by Lynn and others meant the intercabinet and interagency disputes would continue, for the Nixon administration Safeguard was a bureaucratically acceptable solution to the domestic political problems raised by Sentinel. One aspect of domestic politics had been integrated with interagency outcomes. Now it just had to pass Congress.

Polemics and Prophecy: The Congressional Debate of 1969

As the Nixon administration reached consensus on Safeguard in early March of 1969, it was already anticipating heavy resistance in Congress, particularly the Senate. Gerry Smith warned that whatever the rationale for the system ultimately was, it would be “subject to informed skeptical probing by the Congress, the press, the public and our Allies.”³⁷¹ This was elaborated in a memo focused on the issue by Bryce Harlow, the President’s Assistant for Congressional Relations. Harlow concluded “the ABM system advanced by LBJ has no chance whatsoever,” and “a modified system can now be passed only with maximum effort, including all-out Presidential participation.”³⁷² Harlow’s assessment was bleak, arguing that Safeguard would lose 58-42, one third of Republicans were opposed, and the Republicans Senate leadership was divided.³⁷³ However, he thought 18 of those projected to oppose the plan could be swayed by “cogently and powerfully advanced” arguments, and “given a total effort, you would prevail

³⁷¹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 20, <https://history.state.gov/historicaldocuments/frus1969-76v34/d20>, (accessed January 28, 2022).

³⁷² *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, (Washington: United States Government Printing Office, 2011), Document 21, <https://history.state.gov/historicaldocuments/frus1969-76v34/d21>, (accessed January 28, 2022).

³⁷³ *Ibid.*

in the Congress.”³⁷⁴ Harlow presciently observed that many were trying to make it a party issue of military need versus social need, and Senator Ed Kennedy and others may make it “an issue that will be ridden into the 1972 election campaign.”³⁷⁵ Harlow’s memo clearly laid out the domestic political stakes in the fight for an ABM, recognizing the Presidential ambitions involved and maneuvering required to succeed.

This Congressional confrontation had been foreshadowed in 1968. An amendment had been introduced to postpone Sentinel by a year and had received 34 votes in the Senate.³⁷⁶ Moreover, those votes were bipartisan. This was an indication of the fight that would come later, especially as the protests escalated that winter, bringing more attention to the issue. Now that Nixon was in the White House, Democrats who had abstained from the vote in 1968 for Johnson would not do so for Nixon. 8 Democratic Senators who had previously abstained ended up voting against Safeguard in 1969 and 5 Democrats switched their votes from supporting to opposing.³⁷⁷ However, many Democrat Senators maintained their position, and “the ABM debates became a divisive battle between liberal and conservative wings of the Democratic Party in the Senate.”³⁷⁸ In the end, 21 Democrat Senators voted for Safeguard, 16 of them from the south.³⁷⁹

After the pivot from Sentinel to Safeguard was announced, the administration began its justification campaign to Congress. An initial flashpoint was couching the program as a response to the SS-9, as Nixon had done when he announced Safeguard to the bipartisan leadership. This

³⁷⁴ Ibid.

³⁷⁵ Ibid.

³⁷⁶ Cameron, *The Double Game*, 112.

³⁷⁷ Ibid.

³⁷⁸ Ibid, 114.

³⁷⁹ Ibid, 123.

rationale was repeated by Secretary of Defense Laird but was contested by the Central Intelligence Agency. Contravening the administration, CIA Director Richard Helms argued there was no data to support the SS-9 threat as the administration had articulated it. They were testing MRVs not MIRVs, meaning the multiple warhead version, the SS-9 Mod 4, was not accurate enough to kill a Minuteman silo.³⁸⁰ Instead, Helms argued busting the Minuteman silos could only be done by the single warhead variants, the SS-9 Mod 1 or SS-9 Mod 2, and thus there were insufficient numbers of the massive Soviet missile to threaten the whole Minuteman force.³⁸¹

This tension between the CIA and the administration provoked a heated debate in Congress between two civilian experts, George Rathjens and Albert Wohlstetter. Rathjens was trained as a chemist and had been Chief Scientist at ARPA before leaving government and testified to Congress that even if the Soviets had 500 highly accurate, MIRVed SS-9s, a quarter of the Minuteman force would still survive a Soviet first strike.³⁸² Wohlstetter was a mathematical logician who had worked in the economics division at RAND until being fired and continuing at University of Chicago and the Stanford Research Institute, the Army's think tank.³⁸³ He had produced incredibly influential pieces such as a study on the vulnerability overseas strategic bomber bases and pioneered a mode of analysis which became incredibly influential both at RAND and in government.³⁸⁴ Wohlstetter countered that Rathjens had made factual errors and only 5% of the Minuteman would survive. This became a heated and impassioned debate between the two over arcane details of nuclear conflict, that demonstrated "how abstract and esoteric the military-technical debate over ABM had become" as well as "the

³⁸⁰ Ibid, 117.

³⁸¹ Ibid.

³⁸² Yanarella, *The Missile Defense Controversy*, 162; Cameron, *The Double Game*, 117.

³⁸³ Kaplan, *Wizards of Armageddon*, 86, 348.

³⁸⁴ Ibid, 110.

deep levels of mistrust and antipathy that existed between the two sides.”³⁸⁵ The highly visible debate in Congress between the two undermined confidence in the administration and its plan.

Those in favor of the ABM outside of government were undeterred, however. Dean Acheson and Paul Nitze established the Committee to Maintain a Prudent Defense Policy to advocate for the ABM.³⁸⁶ They brought on Wohlstetter, who in turn recruited some of his students, namely Paul Wolfowitz, Richard Perle, and Peter Wilson.³⁸⁷ This remarkably hawkish collection of future foreign policy influencers who would go on to be key neo-conservatives worked to support Safeguard in Congress, collaborating with Scoop Jackson and others. The work of this committee and the Rathjens/Wohlstetter debate demonstrated that presidential administrations no longer had a monopoly on expert nuclear knowledge. With the profusion of scientists and experts who had trained in the Kennedy and Johnson administration but had left government for various reasons, there was a new and large pool of available talent.³⁸⁸ The contention between the two sides of the debate demonstrated for the first time that the Executive no longer reflected a unified political and expert consensus on nuclear weapons issues and opened the door for strong challenges on those topics from Congress and the public in the future.³⁸⁹

In June, the Senate Armed Services Committee approved a bill with funding for Safeguard in a 10-7 vote. This was another ominous sign as this type of bill generally had unanimous support coming out of committee.³⁹⁰ Nixon considered pivoting yet again, and

³⁸⁵ Cameron, *The Double Game*, 118.

³⁸⁶ Donald R. Baucom, *The Origins of SDI*, 43.

³⁸⁷ Ibid.

³⁸⁸ Cameron, *The Double Game*, 119.

³⁸⁹ Ibid, 119-120.

³⁹⁰ Donald R. Baucom, *The Origins of SDI*, 45.

supporting various amendments which were more limited, such as the McIntyre amendment which would only begin constructing radars and withhold funding for land and missile purchases.³⁹¹ However, the administration eventually decided against it and prepared for the upcoming battle that fall.

Ultimately Safeguard was passed by the Senate that October, and “all the strategic and ideological arguments notwithstanding,” it was “won through old-fashioned arm twisting and horse-trading.”³⁹² There were two amendments in the Senate which were locus points of opposition to Safeguard. First was the Cooper-Hardt amendment, which provided funding for research and development. but not for deployment. There were also a variety of Smith amendments, but the one which proceeded the furthest provided funding for research and development for ABM systems which were not Safeguard, and withheld funding for Safeguard.³⁹³ On the day the Senate was to vote on the funding bill and the amendments, more ill portents gathered. The most notable was that “as the Senate was gaveled into order, a woman dressed in black stood up in the gallery and shouted: ‘I prophesy against ABM in the name of Jesus Christ!’”³⁹⁴ She was removed, and voting commenced. The Cooper-Hardt amendment failed in a voted of 49-50. The Smith amendment also failed, but at a 50-50 vote tie, Vice President Spiro Agnew was required to cast the decisive vote in favor of Safeguard.³⁹⁵

The astonishingly close Senate debate on ABM reflected the tenuous domestic political basis Safeguard rested. This further demonstrates the peculiar nature of the domestic politics of

³⁹¹ Cameron, *The Double Game*, 122.

³⁹² Ibid, 123.

³⁹³ Ibid.

³⁹⁴ Donald R. Baucom, *The Origins of SDI*, 49-50.

³⁹⁵ Cameron, *The Double Game*, 123.

the strategic arms competition, and the competing pressures it put on administrations. The lack of political consensus in Congress was important as it limited Safeguard's scope to whatever Congress would support. This situation added another force to the planning process and resulted in further abstraction from the goals and objectives Nike-X was originally designed for. The conclusion of this debate reveals how domestic politics as they played out in the Senate were synthesized with the interagency and intercabinet decision from the Nixon administration to produce Safeguard, and ultimately Safeguard's demise in 1975. As 1969 demonstrated, Congress would influence the Nixon administration's approach to not only implementing Safeguard Phase II and SALT but dealing with the need to test one of the nuclear warheads used in the ABM as well.

Spicy Physics: The Warheads of Nike-X

As Safeguard advanced legislatively, the design and testing of components was being finalized. Work on the nuclear warheads to be used in Safeguard was coming to fruition. Both types of interceptors used in the Nike-X system, the Spartan and the Sprint, were designed to use nuclear warheads to destroy enemy re-entry vehicles. This is very different from modern anti-ballistic missile interceptors, which have neither a conventional nor a nuclear warhead, relying instead on the kinetic force of the impact with the target. However, neither the Spartan nor the Sprint used the explosive or concussive power of nuclear bombs to accomplish this, and the differences between the warheads reflects the different roles of the interceptors. The Sprint used a warhead known as the W-66, while the Spartan used the W-71.

The W-66 warhead was designed and built by Los Alamos National Laboratory specifically for the Sprint interceptors. There is very little publicly available information on the W-66. Only 70 were ever produced, specifically to deploy on the Sprints in the Safeguard

installation at Grand Forks, North Dakota. The W-66 was what is known as an “enhanced radiation warhead” or ERW. ERWs are more commonly known as neutron bombs, which acquired notoriety during the Carter administration. Instead of generating an explosion to kill an incoming re-entry vehicle, the W-66 was configured to create much more radiation than a traditional nuclear device. This means the W-66 had a much lower yield than other warheads, generating a 1 kiloton explosion. The neutrons produced by the W-66 were supposed to disrupt the warhead in the enemy re-entry vehicle, causing some of the fissile material in the warhead to fission before intended and causing it to “fizzle.”³⁹⁶ Since much of the fissile material in the enemy warhead was prematurely fissioned before it was put into a critical configuration through implosion by high explosives, a critical mass of fissionable material cannot be created and therefore neither can a nuclear explosion.³⁹⁷

This method may seem overly complicated compared to the much simpler method of triggering a massive nuclear explosion near an incoming re-entry vehicle and killing it with the blast and shock produced by that. Using a more traditional nuclear device is effective for defending against bombers or cruise missiles since they both operate at comparably lower altitudes. However, the higher altitudes required for ballistic missile re-entry vehicle interception have much less air, especially above 60,000 feet. This poses a problem, as blast and shock effects from a nuclear explosion require a medium, such as air or water, to move through and destroy a target.³⁹⁸ So even though there is still air, and the interception is still occurring in the atmosphere, the medium is too thin to adequately transfer the shock and blast effects to kill the

³⁹⁶ Peter D. Zimmerman and Charles D. Ferguson, “Sweeping The Skies,” *Bulletin of the Atomic Scientists* 59, no. 6 (2003): 60. <https://doi.org/10.2968%2F059006012>.

³⁹⁷ *Ibid*, 59-60.

³⁹⁸ *Ibid*, 59.

incoming re-entry vehicle. Therefore, the W-66 was a sensible choice for the Sprint missile and reflects its role since it could theoretically deal with enemy re-entry vehicles in the atmosphere after drag had separated the genuine threats from the decoys.

The role and strategy for the interceptor is also reflected in the pairing of the Spartan missile and the W-71 warhead. The Spartan was created to intercept exo-atmospheric targets, targets outside of the atmosphere. Space is a vacuum and therefore has no medium for explosive effects to move through, requiring the same cleverness displayed in the W-66 but with a slightly different approach. Lawrence Livermore National Laboratory designed and produced only about 30 W-71 warheads, matching the number of Spartan interceptors deployed at Grand Forks. The W-71 was a thermonuclear device and was not an ERW like the W-66. Thermonuclear weapons use the heat and pressure generated from the explosion of a fission-based primary, to compress fusion fuel, known as a secondary, with the resulting fusion reaction causing the nuclear explosion. The secondary of the W-71, which contained the fusion fuel, was covered in a layer of gold. The gold was added to increase the number of x-rays produced by the warhead, which were the mechanism the W-71 used to destroy incoming re-entry vehicles. Once the x-rays

hit the outer skin of a warhead they stop, and their energy heats up a very thin layer of material. That sheath explodes away from the reentry vehicle, producing an intense shockwave that travels through the warhead. The shockwave is so intense that it is likely to destroy the structure of the intercepted nuclear weapon. In addition, plasmas may form on the powered electronics in the reentry vehicle, causing them to fail from “system generated electromagnetic pulse.”³⁹⁹

The gold layer also played a role in a quirky twist of fate. When the W-71 was eventually dismantled in the late 1980s and early 1990s, the steep rise in the price of gold in the 1980s

³⁹⁹ Ibid.

resulted in it being incredibly valuable.⁴⁰⁰ So much so, that a Department of Energy official testifying before Congress remarked that dismantling the W-71 “is a gold mine.”⁴⁰¹

This design helped the Spartan fulfill its role as an area defense interceptor, since it could kill incoming re-entry vehicles in space before they got back into the atmosphere and would have to be handled by a more distributed and position-based defense. The gold wrapped secondary and the use of thermal x-rays to kill warheads were not the only distinctive aspects of the W-71. Spartan also carried one of the higher yield nuclear weapons in the US arsenal during the Cold War, since “in order to accomplish its formidable mission, its warhead had to yield around five megatons.”⁴⁰²

Testing Travails and the Problem of Sea Otters

The saga of testing the W-71 warhead was also remarkable and somewhat unique for the time and reflected the domestic political issues surrounding ABM in the Johnson and Nixon administrations. It was difficult to truly understand the effects of a warhead designed to be used exo-atmospherically like the W-71 due to the Limited Test Ban Treaty. Signed in 1963 by President Kennedy and Premier Khrushchev, the LTBT prohibited “nuclear tests in the atmosphere, in space, and under water” forcing testing to be conducted underground.⁴⁰³ By the time the decision to deploy an ABM had been taken and the W-71 was ready to be tested, these prohibitions had long been in place, meaning the warhead could not be tested in the environment it had been designed for. This precise problem had been one of the major points against the

⁴⁰⁰ Arjun Makhijani, Steven I. Schwartz, and Robert S. Norris, “Dismantling the Bomb,” in *Atomic Audit: The Costs and Consequences of U.S. Nuclear Weapons since 1940*, ed. Steven Schwartz (Washington, D.C., Brookings Institution Press), 332.

⁴⁰¹ Ibid.

⁴⁰² Glenn Seaborg and Benjamin Loeb, *The Atomic Energy Commission Under Nixon: Adjusting to Troubled Times* (New York: Palgrave Macmillan, 1993), 31.

⁴⁰³ Ibid.

LTBT prior to its ratification in 1963, with figures like Edward Teller arguing it would make testing an ABM warhead impossible.⁴⁰⁴ This line of reasoning was elaborated on by the Republican National Committee, which released a report attacking the Kennedy/Johnson Administration over the treaty, pinpointing that the Soviet Union had already finished tests of their ABM warhead prior to signing and were therefore far ahead of the U.S.⁴⁰⁵ The attacks from Teller and the Republicans were rebutted in part by Harold Brown, then Director of Defense Research and Engineering at the Department of Defense. He described the research of the U.S. and the Soviets as being roughly equivalent, and further argued that it was irrelevant due to the numerical advantage of offensive warheads over defensive interceptors.⁴⁰⁶ Nonetheless, the LTBT was ratified 80-14, exceeding the required two thirds majority by 14 votes.

Because of the limitations on testing imposed by the treaty, the test of the W-71 would have to be conducted underground, making it “by far the largest underground tests yet performed anywhere.”⁴⁰⁷ In fact, the approximately five megaton warhead was concluded to be too large for the Nevada Test Site, where concerns about aftershocks and the venting of radioactive air near Las Vegas has become a more concerning issue. During the late 1960s there had been seismic aftershocks of 4.0-4.5 on the Richter scale after tests in the Nevada Test Site as well as some public outcry by environmental and scientific groups and billionaire Howard Hughes, spurring the creation of a specialist panel led by Dr. Kenneth Pitzer of Stanford University.⁴⁰⁸ The product, the Pitzer report, was released in 1968 and not made public by the Johnson

⁴⁰⁴ Powaski. *March to Armageddon*, 110-111.

⁴⁰⁵ Cameron, *The Double Game*, 72.

⁴⁰⁶ Powaski. *March to Armageddon*, 110-111.

⁴⁰⁷ Seaborg and Loeb, *The Atomic Energy Commission Under Nixon*, 31.

⁴⁰⁸ *Ibid.*

administration to prevent public backlash, since it did indicate there could be more serious aftershocks at the Nevada site, especially for high yield tests.⁴⁰⁹

Other test sites were considered, including a new central Nevada site and one in the remote Brooks Mountain Range in central Alaska, but ultimately Amchitka Island in the western Aleutians was chosen since it was both isolated and cheaper than the Brooks Range site.⁴¹⁰ There were extensive preparations undertaken at Amchitka before the test of the W-71, including the planned detonation of a one megaton device to calibrate the instruments. This test was postponed since it would have occurred in the middle of the fierce 1969 Congressional debate over Safeguard.⁴¹¹ After the approval of funds by the Senate in August of 1969, the Atomic Energy Commission prepared for Milrow, the calibration test at Amchitka.

The announcement of Milrow, however, provoked significant public outcry, as there were concerns about whether it would create an earthquake, tidal wave, tsunami, or other problem.⁴¹² There was public pressure to lower the yield of the test so it would be less likely to generate those effects, which was quickly translated into political pressure from the Nixon administration. Glenn Seaborg, then chair of the Atomic Energy Commission, along with the rest of the AEC still believed that the full yield Milrow test was necessary to get any valuable information. Seaborg received a letter from the Deputy Secretary of Defense Packard saying, “he now found the technical arguments for one yield or another weak in comparison with the political considerations,” asking for a lower-yield test.⁴¹³ This was one of many letters the AEC received

⁴⁰⁹ Ibid, 31-32.

⁴¹⁰ Ibid, 32.

⁴¹¹ Ibid, 35.

⁴¹² Ibid, 36, 38.

⁴¹³ Ibid.

from Senators and other officials asking for either a delay to assess the impact of testing or for lower yields. The Canadian government also repeatedly expressed concern about testing in Amchitka as it could pose some risk to Canadian territory.⁴¹⁴

Milrow eventually was conducted “without follow-on earthquakes or tidal waves,” but swelling of public opinion against testing in Amchitka continued to build as preparations progressed for Cannikin, the test of the W-71.⁴¹⁵ Seaborg, recognizing Nixon’s sensitivity to domestic political pressures, warned Packard “Cannikin might fail to receive final presidential approval unless problems of public reaction were resolved.”⁴¹⁶ Importantly, this negative reaction was separate from that which had emerged against ABM, since the connection between Safeguard and Cannikin was classified. When additional transparency was discussed to defang the public concerns, Seaborg remarks there was reluctance due to “a fear that it might revive the domestic ABM debate,” which had been so energetic in 1969.⁴¹⁷ A letter from Packard to Seaborg was more explicit, stating that “officially linking this shot with the Safeguard program could generate sufficient adverse Congressional and public reaction to jeopardize the entire Safeguard program.”⁴¹⁸

When the news of Cannikin’s yield and purpose did break, in the form of a *Washington Post* article, it did not torpedo the entire program. While the AEC was able to field complaints from the Senate about environmental impact assessments and other repercussions, they also cut a more cautionary tack because of “an increasingly hostile public. This was not a concern we

⁴¹⁴ Ibid, 41.

⁴¹⁵ Ibid, 38.

⁴¹⁶ Ibid, 41.

⁴¹⁷ Ibid, 42.

⁴¹⁸ Ibid, 43.

would have had ten, or even five, years earlier-before the environmental movement burst onto the scene in full vigor in 1969.”⁴¹⁹ In spite of the opposition to the test from the public, other governments, and parts of Congress, Cannikin proceeded onwards.

During the public relations work after the *Washington Post* article, the Atomic Energy Commission released some “softening information.” They described a program to remove sea otters from the area around Amchitka and fly them to Oregon, where they would not be affected by the test.⁴²⁰ They had thus far removed 600 otters and would fly out 60 more in 1971 before the test.

A final effort to delay the test materialized at the last minute. Eight environmental organizations filed an appeal to the Supreme Court asking for a temporary injunction against the test on the grounds that it violated the National Environmental Protection Act.⁴²¹ The court agreed to hear oral arguments both for and against the test only eight hours before the test was scheduled to occur.⁴²² This case had the potential to delay the test in order to allow for more thorough argumentation on whether it complied with NEPA and the merits of the test in general. However, the court ruled four to three in favor of letting the test proceed as planned and delivered their decision a mere five hours before the scheduled time.⁴²³

⁴¹⁹ Ibid, 44.

⁴²⁰ Ibid, 43.

⁴²¹ Thomas O’Toole, “Court to Hear Last-Minute A-Test Plea: Court to Hear Cannikin Delay Plea,” *The Washington Post*, November 6, 1971. ProQuest Historical Newspapers: The Washington Post. Doc ID: 148008638. <https://www.proquest.com/historical-newspapers/court-hear-last-minute-test-plea/docview/148008638/se-2?accountid=7103> (Accessed December 2, 2021).

⁴²² Ibid.

⁴²³ Thomas O’Toole, “H-Bomb Exploded; No Damage Noted: High Court Bars Delay In 4.3 Vote,” *The Washington Post*, November 7, 1971. ProQuest Historical Newspapers: The Washington Post. Doc ID: 148166137. <https://www.proquest.com/docview/148166137/abstract/669853F1FD63459FPQ/1?accountid=7103> (accessed December 16, 2021).

On November 6, 1971, on Amchitka Island at the bottom of a shaft drilled 1.76 km deep, 6,150 feet, “a distance equivalent to four Chicago Sears Towers stacked end on end,” the 850,000-pound W-71 was detonated.⁴²⁴ The explosion registered 7.0 on the Richter scale and uplifted a fault line in the Bering Sea by 42 inches.⁴²⁵ Even though Seaborg had resigned by that time, his successor James Schlessinger was on the island with a member of his family, as Seaborg had said he would be willing to be.⁴²⁶ There was minimal damage to the island, with a few rockslides and eagle’s nests disturbed. The test of the warhead for the Spartan missiles was the last conducted at Amchitka, prompting Seaborg to remark that “the huge effort that went into their development and testing can stand as a monument to the futility and wastefulness of the nuclear arms race.”⁴²⁷ In another monument to futility, a few months after the test, scientists working for the AEC reported that instead of killing 20-100 sea otters as had been predicted in the environmental impact assessment, the test had “definitely killed 900-1100 sea otters.”⁴²⁸

Poorly Threaded Needles: 1970, SALT, and Safeguard Phase II

As the plans for testing the W-71 progressed, the Nixon administration was still fighting to keep Safeguard on track. After Safeguard Phase I was approved, the administration faced the difficult task of balancing plans for expanding the system in a way that could receive Congressional approval with making progress at limiting ABMs through SALT. The result was a tepid expansion in Safeguard Phase II, and a significant blunder at SALT, throwing the utility of

⁴²⁴ Michael Krepon, *Better Safe Than Sorry: The Ironies of Living With the Bomb* (Stanford: Stanford University Press, 2009), 52.

⁴²⁵ Ibid.

⁴²⁶ Seaborg and Loeb, *The Atomic Energy Commission Under Nixon*, 47.

⁴²⁷ Ibid.

⁴²⁸ “900 OTTER DEATHS TIED TO ATE TEST,” *New York Times*, December 12, 1971, 49.

<https://www.nytimes.com/1971/12/12/archives/900-otter-deaths-tied-to-atom-test-2-aec-scientists-report-definite.html>.

Safeguard into question and severely constraining the administration's diplomatic efforts to constrain the arms race. The administration's work on determining how to proceed with Phase II began in early 1970 to be prepared before the opening of the first substantive round of SALT negotiations at Helsinki in April.

In the aftermath of the Congressional debates in the fall of 1969, Safeguard Phase I began with work at the Air Force Bases at Malmstrom and Grand Forks, and the intention of eventually expanding to a full 12 site defense. Safeguard Phase II as presented by the Nixon administration to Congress was the addition of one site at Whiteman AFB to protect the nearby Minuteman fields, as well as commencing preparatory work on five other sites, including one to defend the National Command Authority in Washington D. C. This was the absolute minimum they felt they could put forward while maintaining momentum for the system, and it "had all the hallmarks of a classic bureaucratic compromise."⁴²⁹ Additionally, Phase II was supposed to be palatable to Congress, and keep options open for SALT.⁴³⁰ This result was the outcome of bargaining and debate between NSC members, the DOD, JCS, and ACDA.

One of the most invested members in this debate was again Laurence Lynn, who continued his crusade to preserve the area defense component of Safeguard from the year before. Lynn felt area defense was crucial to defending against the Chinese threat, and therefore supported the addition of the Whiteman site, as well as a site in the Pacific Northwest to that end.⁴³¹ It seemed that Kissinger and Nixon shared Lynn's attachment to area defense, with

⁴²⁹ Cameron, *The Double Game*, 126.

⁴³⁰ *Ibid*, 126-127.

⁴³¹ United States National Security Council, Staff, "Memo for President on ABM [Includes Attachment]," Top Secret, Memorandum, February 6, 1970, DNSA, <https://www.proquest.com/government-official-publications/memo-president-on-abm-includes-attachment/docview/1748543111/se-2?accountid=7103> (accessed November 7, 2021).

Kissinger stating at a Defense Program Review Committee meeting that “the light area defense is not negotiable,” and “we should assume that’s what he [Nixon] wants now.”⁴³² However, the Pacific Northwest site immediately encountered problems, since it had to be in Washington, and Scoop Jackson would not support it since he was facing re-election in a year, resulting in that site being cut from the proposal.⁴³³ Lynn also wanted to include a site to defend the National Command Authority, since it would correspond to the Russian Moscow system aiding in SALT, as well as providing additional warning and defense of the critical command and control infrastructure in D.C.⁴³⁴

Lynn had few allies in wanting to continue expanding Safeguard along the 12-site plan, mainly Deputy Secretary of Defense Packard. Yet, Lynn did not seem concerned about alienating his allies either, often lambasting them for “the deep inadequacy of the Defense Department’s work on this issue and their fundamental failure to understand what is needed to present an effective case for this system against determined opposition.”⁴³⁵ Lynn thought that “Mr. Packard apparently sees FY 71 commitment to all of Phase 2 mainly as a bargaining

⁴³² *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 118, <https://history.state.gov/historicaldocuments/frus1969-76v34/d118>, (accessed January 29, 2022).

⁴³³ United States National Security Council, Staff, “Memo for President on ABM [Includes Attachment],” Top Secret, Memorandum, February 6, 1970, DNSA, <https://www.proquest.com/government-official-publications/memo-president-on-abm-includes-attachment/docview/1748543111/se-2?accountid=7103> (accessed November 7, 2021).

⁴³⁴ Laurence E. Lynn, United States National Security Council, Staff, “Department of Defense Proposal for further Safeguard Deployment [Includes Attachments],” Top Secret, Action Memorandum, January 5, 1970, DNSA, <https://www.proquest.com/government-official-publications/department-defense-proposal-further-safeguard/docview/1748543008/se-2?accountid=7103> (accessed November 7, 2021).

⁴³⁵ Laurence Lynn, United States National Security Council, Staff, “DOD Statements on Safeguard Rationale [Attachments Not Included],” Top Secret, Action Memorandum, February 16, 1970, DNSA, <https://www.proquest.com/government-official-publications/dod-statements-on-safeguard-rationale-attachments/docview/1748543184/se-2?accountid=7103> (accessed November 7, 2021).

counter for SALT.”⁴³⁶ However, Packard was motivated by the expanding Soviet offensive threat, warning about the pace of Soviet ballistic missile submarine construction and postulating that by the mid-1970s, the new re-entry vehicles for the SS-9 Mod 4 would increase accuracy enough to allow it to bust Minuteman silos.⁴³⁷ Packard thought “the threat against which Safeguard was configured last year has continued to evolve” and “Phase 1 only would not be adequate,” and recommended “proceeding with the first step of Phase 2 deployment.”⁴³⁸ Yet, the Deputy Secretary considered full Safeguard to be insufficient to protect Minuteman, and wanted to consider hard rock silos and mobility as well.⁴³⁹

Packard’s theories about the ability of the Soviets to overwhelm Safeguard were shared by Secretary Laird. However, Laird thought the appropriate response might be a new strategic bomber, the B-1, or the Undersea Long-Range Missile System, which ultimately became the C-4 Trident I SLBM.⁴⁴⁰ Later in the year, Laird also considered hard rock silos and mobile Minuteman, and worried that “we could be faced with a situation of devoting substantial and scarce resources to preserving the current capability in Minuteman at the expense of added offensive capabilities in the face of a growing threat.”⁴⁴¹ In short, Laird was also distressed about

⁴³⁶ Laurence E. Lynn, United States National Security Council, Staff, “Department of Defense Proposal for further Safeguard Deployment [Includes Attachments],” Top Secret, Action Memorandum, January 5, 1970, DNSA, <https://www.proquest.com/government-official-publications/department-defense-proposal-further-safeguard/docview/1748543008/se-2?accountid=7103> (accessed November 7, 2021).

⁴³⁷ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 117, <https://history.state.gov/historicaldocuments/frus1969-76v34/d117>, (accessed January 29, 2022).

⁴³⁸ Ibid.

⁴³⁹ Ibid.

⁴⁴⁰ Memorandum for Dr. Kissinger from Laurence E. Lynn, “FY 71 Safeguard ABM Decision”, Top Secret, Memorandum, January 16, 1970, NSA, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB36/docs/doc19.pdf>, (accessed December 14, 2021), 3-4.

⁴⁴¹ *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 156, <https://history.state.gov/historicaldocuments/frus1969-76v34/d156>, (accessed February 7, 2022).

Minuteman survivability, but wanted to compensate with more offenses rather than investing in defenses he saw as inadequate.

The Arms Control and Disarmament Agency, led by Gerald Smith, had little influence in these discussions, but was invested in the success of SALT. They wanted Safeguard Phase II to stay in research and development instead of deployment to make SALT easier.⁴⁴² Deferring deployment could have made the negotiations appear more genuine to the Soviets. However, many, including Lynn, disputed this argument, suggesting that Safeguard Phase II deployments would increase the pressure on the Soviets to make a deal.⁴⁴³ This latter argument won out, especially as Nixon and Kissinger conceived of continuing Safeguard as a bargaining chip contributing to their SALT position.⁴⁴⁴

Finally, continuing their trend of becoming less interested in the program they had vociferously advocated for earlier, the Joint Chiefs of Staff were the least interested in Safeguard Phase II. They did “not endorse the full twelve site program, only the step to be taken in FY 71.”⁴⁴⁵ Lynn was worried that the Chiefs, and in particular the Army, was more interested in newer hard point defenses to defend smaller areas than the area defenses of Safeguard. Lynn noted “the Army, in pushing its alternative hard point defense concepts, is vigorously poormouthing the Minuteman defense potential of Safeguard,” which, if or when it leaked, “could significantly strengthen the opposition’s arguments not only against expanding the

⁴⁴² Memorandum for Dr. Kissinger from Lawrence E. Lynn, "FY 71 Safeguard ABM Decision", Top Secret, Memorandum, January 16, 1970, NSA, <https://nsarchive2.gwu.edu/NSAEBB/NSAEBB36/docs/doc19.pdf>, (accessed December 14, 2021).

⁴⁴³ Ibid.

⁴⁴⁴ Cameron, *The Double Game*, 111-112.

⁴⁴⁵ Laurence E. Lynn, United States National Security Council, Staff, “Department of Defense Proposal for further Safeguard Deployment [Includes Attachments],” Top Secret, Action Memorandum, January 5, 1970, DNSA, <https://www.proquest.com/government-official-publications/department-defense-proposal-further-safeguard/docview/1748543008/se-2?accountid=7103> (accessed November 7, 2021).

system, but even against the Phase I decision.”⁴⁴⁶ The “poormouthing” Lynn was referencing largely came from a study by the Army Ballistic Missile Defense Agency which suggested Safeguard would only increase the number of Minuteman to survive a Soviet strike by 20, about 2% of the total Minuteman force.⁴⁴⁷ While this was a projection for the mid-1970s assuming the Soviets had finished their force modernization, it did point towards some looming technical problems for Safeguard.

April was a difficult month for Safeguard and the Nixon administration. Bell Laboratories informed the government they had no interest in working on ABM after they completed Safeguard Phase II. Lynn put this less subtly in a memo to Kissinger, concluding Bell Labs “has apparently decided that Safeguard is not worth building.”⁴⁴⁸ One of Bell’s main complaints was the components were designed for Sentinel, not Safeguard, and would therefore not be very effective as the architecture had dramatically changed, with Lynn summarizing that “the components were designed for one mission and then the politicians changed the mission and what can you expect.”⁴⁴⁹ Lynn was irate, acerbically noting “everyone is at fault except Ma Bell and she, conscience-stricken, won’t have any more of it.”⁴⁵⁰ Kissinger, diplomatically translating Lynn’s report into a memo presentable to Nixon, informed the President that “while the system will meet the technical specifications set for it, it is their belief that its contribution to military

⁴⁴⁶ United States National Security Council, Staff, “PSAC Strategic Military Panel Comments on Minuteman ABM Defense [Includes Attachments],” Secret, Information Memorandum, January 5, 1970, DNSA, <https://www.proquest.com/government-official-publications/psac-strategic-military-panel-comments-on/docview/1748543085/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁴⁷ Ibid.

⁴⁴⁸ United States Assistant to the President for National Security Affairs, “Contractor Doubts about Safeguard [Includes Attachment],” Secret, Memorandum, April 15, 1970, DNSA, <https://www.proquest.com/government-official-publications/contractor-doubts-about-safeguard-includes/docview/1748543033/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁴⁹ Ibid.

⁴⁵⁰ Ibid.

missions will be very slight.”⁴⁵¹ The Minuteman defense could be defeated by attacking the radars with a few warheads, simple Chinese penetration aids could “shrink the area defense coverage to insignificance,” and it would not be effective at protecting the bombers from SLBMs.⁴⁵² Kissinger concluded that “these arguments coming from the mouths of the senior officials of the company in charge of building the system, are potentially devastating.”⁴⁵³

Kissinger was likely correct that if it became more widely known that the company which built and designed Safeguard had little confidence in its ability to achieve its purported mission, the already fragile Congressional basis for the program would crumble and it would be a major embarrassment for the administration which had fought so hard for Safeguard.

Disaster on the technical level was accompanied by disaster at the diplomatic level. The first substantive phase of SALT began in April as well, and the administration’s opening position was the product of intense infighting between ACDA, the State Department, and the Defense Department, and seemed to take no notice of the domestic politics surrounding ABM.⁴⁵⁴ The U.S. proposed limiting ABM to low-levels of interceptors to defend National Command Authorities, or capitals. The fundamental problem with this position was the Soviets had such a system, but the U.S. did not, was in the midst of building an entirely different system, and only tentative plans to begin construction on an NCA defense. The Soviets were quick to recognize this, and accepted this agreement in principle on defenses, while rejecting the much tougher U.S.

⁴⁵¹ Ibid.

⁴⁵² Ibid.

⁴⁵³ Ibid.

⁴⁵⁴ Cameron, *The Double Game*, 128.

proposal on offensive arms, trying to delink negotiations about offensive and defensive arms.⁴⁵⁵ This savvy move by the Soviets effectively deprived the U.S. of Safeguard as a bargaining chip.

While negotiators would try until May of 1971 to recover from their slip up at SALT, the administration still had to get Safeguard Phase II through Congress. By July they had concocted a rationale for Safeguard Phase II. Outlined by Kissinger at a Defense Program Review Committee meeting, they wanted “Safeguard to provide against accidents, a minor attack from a major country or a major attack from a minor country.”⁴⁵⁶ While Packard worried about budget cuts affecting area defense, pondering whether to just leave Safeguard in research and development, Kissinger insisted, with the support of Gerry Smith at this point, “Safeguard is a card we need during SALT. It is the program of greatest interest to the Soviets.”⁴⁵⁷ However, by August 10th, Packard noted “our Congressional people tell us that we are now one vote ahead in Congress,” but that they “only want to continue the current program” and not recommend anything more expansive than Phase II.⁴⁵⁸ A few days later, the Senate once again took up the issue of Safeguard. They ultimately eliminated funding for preliminary work at any area defense sites, only authorizing preparation for additional Minuteman sites. Another version of the Cooper-Hardt amendment was defeated, 47 votes to 52, which would have prevented the Whiteman preparations as well as preliminary work at another Minuteman site.⁴⁵⁹ This victory

⁴⁵⁵ Ibid, 127.

⁴⁵⁶ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 145, <https://history.state.gov/historicaldocuments/frus1969-76v34/d145>, (accessed February 7, 2022).

⁴⁵⁷ Ibid.

⁴⁵⁸ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 149, <https://history.state.gov/historicaldocuments/frus1969-76v34/d149>, (accessed February 7, 2022).

⁴⁵⁹ Yanarella, *The Missile Defense Controversy*, 160.

was hard won, requiring the circulation of a letter by Gerry Smith stating continued deployments were crucial to SALT, and was ultimately the end of Congressional debate on the issue.⁴⁶⁰

Over the course of 1970, between Congress and the Nixon administration, Safeguard was pared down to a defense of Minuteman, a role it was not designed for and, according to its designer, would be marginally effective at. The intercabinet and interagency debate produced tepid support for expansion towards the originally planned 12 site system. ACDA, the Army, and Laird were either uninterested or skeptical, Lynn and Packard thought it important for the military balance, and Nixon and Kissinger saw it as an important part of SALT. The NCA bungle at SALT further demonstrates the deleterious effect the complex decision-making process had on the ABM. The dramatic revisions to ABM conducted during the first two years of the Nixon administration reveal the problems and confusion generated by the integration of the interagency and intercabinet debates with the domestic politics of the arms race, and the peculiar programs it produced. While the arms race had spurred the construction of a U.S. ABM system under Johnson, domestic politics and interagency bickering under Nixon ensured it had become strategically meaningless.

Wheeling and Dealing: 1971-1972

The first task for the Nixon administration in 1971 was reconciling Safeguard with their SALT position. This required the integration of an NCA defense into the ABM system and managing to get that through Congress. Kissinger was thoroughly upset the administration found itself in this position, complaining “we are building an area defense which we can’t have, justifying a missile defense which won’t work and negotiating an NCA defense we don’t

⁴⁶⁰ Ibid.

want.”⁴⁶¹ Packard was not very interested in NCA defense, stating “the only reason to go ahead is for an agreement,” and observing “we will have trouble justifying it.”⁴⁶² However, they were aware they had few options, as Kissinger wondered out loud at a Verification Panel meeting, “how can we object to asking for authorization for NCA if we are proposing it to the Russians? How can we convince the Russians we’re serious?”⁴⁶³ Gerry Smith observed, at SALT “our bargaining power depends on our program having bi-partisan support in Congress” and needing to ask for an NCA defense might have jeopardized that.⁴⁶⁴

Concerns about Congress’s reaction to proposals for defending Washington D.C. had stymied concrete plans for an NCA defense the year before. It could activate the same types of protests seen in 1969 which had scuttled Sentinel, and the optics of carving out a defense for the politicians and generals would be rather negative.⁴⁶⁵ Moreover, Laurence Lynn had noted that Scoop Jackson, whose support was crucial in the Senate, opposed an NCA defense in 1970 “on the ground that it introduces unnecessary complications into the debate.”⁴⁶⁶ Congress’ anticipated skepticism was therefore priced into the calculations the administration was making about how to proceed with ABM in 1971.

⁴⁶¹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 167, <https://history.state.gov/historicaldocuments/frus1969-76v34/d167>, (accessed February 7, 2022).

⁴⁶² *Ibid.*

⁴⁶³ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 168, <https://history.state.gov/historicaldocuments/frus1969-76v34/d168>, (accessed February 7, 2022).

⁴⁶⁴ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 167, <https://history.state.gov/historicaldocuments/frus1969-76v34/d167>, (accessed February 7, 2022).

⁴⁶⁵ Spinardi, “The Rise and Fall of Safeguard,” 325.

⁴⁶⁶ United States National Security Council, Staff, “Memo for President on ABM [Includes Attachment],” Top Secret, Memorandum, February 6, 1970, DNSA, <https://www.proquest.com/government-official-publications/memo-president-on-abm-includes-attachment/docview/1748543111/se-2?accountid=7103> (accessed November 7, 2021).

As more technical criticism of Safeguard in the Minuteman defense role was absorbed, especially in the Department of Defense, hard-site defense became a larger part of the discussion. A Verification Panel meeting was held to determine the distinction between hard-site defense and Safeguard. The biggest change was disaggregating the radars, using many smaller, low quality radars, rather than a few high quality radars like the MSR.⁴⁶⁷ Another change was it would rely on many more interceptors, with one projection concluding 700 interceptors would be used to defend 100 Minuteman ICBMs.⁴⁶⁸ Kissinger recognized this would hugely impact SALT as they would need to negotiate a high limit on interceptors, with Packard thinking “we can’t put a limit on interceptors.”⁴⁶⁹ Hard-site defense could not defend against SLBMs either, only the ICBM corridors, due to radar placement and having fewer radar faces than the MSR or MAR. However, Gerry Smith assessed beginning work on a hard-site defense would make SALT appear disingenuous and would struggle in Congress. This appeared to be the accepted view in the rest of the administration, as moves towards deploying a hard-site defense were absent from any of the proposals the administration ultimately considered.

By mid-January, other proposals had been put together by other agencies like the Defense Department and the Arms Control and Disarmament Agency. According to Ronald Spiers, the Director of the Bureau of Politico-Military Affairs at the State Department, DOD wanted funding for 1000 psi hardening for Minuteman silos, four Safeguard sites, preparation for an NCA site, and preparation for a mobile ICBM.⁴⁷⁰ This was elaborated by Laird in a memo to Nixon,

⁴⁶⁷ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 168, <https://history.state.gov/historicaldocuments/frus1969-76v34/d168>, (accessed February 7, 2022).

⁴⁶⁸ *Ibid.*

⁴⁶⁹ *Ibid.*

⁴⁷⁰ United States Department of State, Bureau of Politico-Military Affairs, Director, “Safeguard [Includes Attachment],” Top Secret, Information Memorandum, January 18, 1971, DNSA,

arguing that “abandoning area defense may be, on balance, a proper price to pay to achieve a strategically acceptable agreement with the Soviets.”⁴⁷¹ Laird was still worried about Minuteman survivability, but thought that mutual offensive reductions might be a better solution than building defenses, complementing his skepticism from the previous year.⁴⁷² Spiers noted that the “general view” was that the DOD proposal should be scaled down “to minimize the difficulties both for the negotiations and in Congress.”⁴⁷³ ACDA also proposed 1000 psi hardening for Minuteman, but wanted a minimum rate of construction at Grand Forks and Malmstrom, deferral of the Whiteman site, and studies performed on NCA defense.⁴⁷⁴

By the end of January, these various positions were synthesized into a set of alternatives in an NSC paper. There was a “high level” option which would move forward on the Grand Forks, Malmstrom, Whiteman, and Warren sites, as well as begin planning for an NCA site.⁴⁷⁵ The “intermediate level” would continue work on Grand Forks, Malmstrom, and Whiteman, make beginning work at Warren contingent on the outcome of SALT, and plan for an NCA site.⁴⁷⁶ Finally, the “low level” would just authorize progress on Malmstrom and Grand Forks.⁴⁷⁷ The report also noted that “Congress rejected the Washington site last year,” and concluded that

<https://www.proquest.com/government-official-publications/safeguard-includes-attachment/docview/1748543884/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁷¹ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 170, <https://history.state.gov/historicaldocuments/frus1969-76v34/d170>, (accessed February 7, 2022).

⁴⁷² Ibid.

⁴⁷³ United States Department of State, Bureau of Politico-Military Affairs, Director, “Safeguard [Includes Attachment],” Top Secret, Information Memorandum, January 18, 1971, DNSA, <https://www.proquest.com/government-official-publications/safeguard-includes-attachment/docview/1748543884/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁷⁴ Ibid.

⁴⁷⁵ *Foreign Relations of the United States, 1969–1976, Volume XXXIV, National Security Policy, 1969–1972*, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 169, <https://history.state.gov/historicaldocuments/frus1969-76v34/d169>, (accessed February 7, 2022).

⁴⁷⁶ Ibid.

⁴⁷⁷ Ibid.

if they asked “for less than full construction for the four sites for Minuteman defense, it can be argued that we will minimize Congressional opposition.”⁴⁷⁸ These options were passed on to Nixon by Kissinger, who included one more alternative which was to continue with Grand Forks, Malmstrom, and Whiteman, while choosing either Warren or the NCA site depending on the outcome of SALT.⁴⁷⁹ This was the option Kissinger recommended and Nixon chose, which artfully skirted a full debate about an NCA site.⁴⁸⁰ Kissinger reported it was “generally agreed that we should request authorization for advance preparation for the NDA defense” to “determine whether we can get Congressional support for the NDA and relates our Safeguard proposal to our SALT position.”⁴⁸¹ While this did bear some risk of getting rejected by Congress, Kissinger concluded “it would still be more prudent to rely upon the Congress than upon the Soviets.”⁴⁸²

As this approach to expanding Safeguard and mollifying Congress was being determined, talks with the Soviets continued, with the goals of breaking the Soviets insistence on an NCA only ABM agreement and holding a summit. The emphasis put on the summit reflected Nixon’s true goals for SALT, and international agreements in general, which was to win domestic political battles. He wanted to use them to “break the back of this generation of Democratic

⁴⁷⁸ Ibid.

⁴⁷⁹ United States National Security Council, Staff, “Safeguard Review [Attached to Forwarding Memorandum; Includes Attachments],” Top Secret, Action Memorandum, January 29, 1971, DNSA, <https://www.proquest.com/government-official-publications/safeguard-review-attached-forwarding-memorandum/docview/1748543932/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁸⁰ Ibid; *Foreign Relations of the United States, 1969–1976*, Volume XXXIV, National Security Policy, 1969–1972, ed. M. Todd Bennett, Washington: United States Government Printing Office, 2011), Document 173, <https://history.state.gov/historicaldocuments/frus1969-76v34/d173>, (accessed February 7, 2022).

⁴⁸¹ United States National Security Council, Staff, “Safeguard Review [Attached to Forwarding Memorandum; Includes Attachments],” Top Secret, Action Memorandum, January 29, 1971, DNSA, <https://www.proquest.com/government-official-publications/safeguard-review-attached-forwarding-memorandum/docview/1748543932/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁸² Ibid.

leaders.”⁴⁸³ This was becoming ever more important to Nixon as public opinion soured over the invasion of Cambodia and the Kent State shootings.⁴⁸⁴ The Soviets recognized Nixon’s domestic focus and sensitivity, with Anatoly Dobrynin, the Soviet ambassador to the United States, advising the Kremlin to manipulate Nixon’s re-election chances to get a better agreement for the Soviets.⁴⁸⁵ Kissinger finally managed to get Dobrynin and the Soviets to drop their insistence on the NCA-only language for ABM negotiations and pursue negotiations of an offensive and defensive agreement at the same time by calling and telling Dobrynin that Nixon was furious.⁴⁸⁶ Dobrynin was worried Nixon’s personal characteristics may jeopardize any agreement and broader relations, and on May 12th he dropped the NCA-only ABM position.⁴⁸⁷ This produced the May 20 agreement, whose announcement was “pure domestic political theater, designed to outflank Nixon’s Democratic critics, who were themselves limbering up for the 1972 contest.”⁴⁸⁸ This agreement was a joint statement that the U.S. and the U.S.S.R. would focus on an ABM agreement and “certain measures” on offenses.⁴⁸⁹

While the agreement began a reconciliation with Democratic doves which would last until Watergate, Nixon’s conservative allies had to be reassured.⁴⁹⁰ Hawks like Stennis and Jackson worried the connection between the offensive and defensive talks was too loose, which was correct. Nixon, however, needed the support of these more hawkish Senators to demonstrate a wide base of support for SALT.⁴⁹¹ His solution was to simply lie to Jackson, saying there was

⁴⁸³ Cameron, *The Double Game*, 142.

⁴⁸⁴ *Ibid.* 131.

⁴⁸⁵ *Ibid.*, 142.

⁴⁸⁶ *Ibid.*, 143-144.

⁴⁸⁷ *Ibid.*

⁴⁸⁸ *Ibid.*, 137.

⁴⁸⁹ *Ibid.*, 144.

⁴⁹⁰ *Ibid.*, 145.

⁴⁹¹ *Ibid.*, 147.

an explicit, but secret, linkage between offenses and defenses, and Jackson had to keep quiet about it.⁴⁹² Later, getting SALT approved by the Senate required not only emphasizing the U.S. lead in MIRVs and aggrandizing Soviet production of SSBNs, but the approval of the B-1 bomber and Trident SLBM programs as well in order to pacify Republicans and hawks who felt worried about the agreement.⁴⁹³

The domestic hurdles surrounding Safeguard were still problematic. Congress not only killed consideration of Warren or an NCA defense in their debates over the FY 1972 budget but had withdrawn their authorization for the Whiteman site as well.⁴⁹⁴ This continued resistance meant Safeguard proceeded on a minimum energy trajectory for another year, with the Grand Forks construction approximately 80% complete by February 1972.⁴⁹⁵ Taken with the acceptance of the very tenuous connection between offenses and defense recognized in the May 20 agreement, it appeared that “Nixon and Kissinger accepted that domestic political opposition now made Safeguard an almost useless bargaining chips at SALT.”⁴⁹⁶

After the May 20 agreement, Nixon was determined to have a summit with the Soviets, and Dobrynin insightfully recognized the optics of summitry were more important to Nixon than the substance of the agreement made there.⁴⁹⁷ The Soviets acceded to the high-profile meeting to take place in late May of 1972, with a final round of SALT occurring earlier that month in Helsinki. However, even though they had accepted the summit, the Soviets were not budging on

⁴⁹² Ibid, 148.

⁴⁹³ Ibid, 158-159

⁴⁹⁴ United States Department of Defense, “F.Y. '73 Safeguard Rationale [Attached to Cover Memorandum],” Top Secret, Background Paper, February 12, 1972, DNSA, <https://www.proquest.com/government-official-publications/f-y-73-safeguard-rationale-attached-cover/docview/1748543681/se-2?accountid=7103> (accessed November 7, 2021).

⁴⁹⁵ Ibid.

⁴⁹⁶ Cameron, *The Double Game*, 141.

⁴⁹⁷ Ibid, 153.

significant disagreements over SSBNs and other issues.⁴⁹⁸ Even at the final round at Helsinki, less than a month before the summit, the Soviets were holding firm on ABM talks. The U.S. ultimately had to accept, with the pressure of the summit looming, that each party would get two ABM sites, with one of them being the National Command Authority, locking the U.S. into de facto inequality as Congress had rejected an NCA site.⁴⁹⁹ However, Nixon felt compelled to outline the stakes to Dobrynin that an agreement be reached, “in effect asking Dobrynin to get the White House out of its domestic political predicament.”⁵⁰⁰ Nixon said there had to be high-profile agreements at the summit, and the Soviets needed to make concessions to appease the hawks, “otherwise the American public would consider the summit a failure.”⁵⁰¹

The SALT I Treaty and the Anti-Ballistic Missile Treaty were signed by Nixon and Brezhnev May 26th, 1972. Nixon’s notion that he desperately needed an agreement from the Moscow summit produced a deeply uneven outcome. On offensive forces, the U.S was allowed 44 SSBNs with 656 SLBMs, with the option for 54 more SLBMs if they retired the older Titan I ICBM, and 1054 ICBMs.⁵⁰² The Soviets were allowed 62 SSBNs with 950 SLBMs, but only if they retired the SS-7 and SS-8 missiles, as well as 1618 ICBMs.⁵⁰³ The ABM Treaty was separate from SALT, however, and more egalitarian. It restricted each party to two ABM sites, one of them being the NCA, with 100 interceptors per site.⁵⁰⁴ It further restricted the parties to two large phased-array radars per site, colloquially known as “battle management radars,” and 18

⁴⁹⁸ Ibid.

⁴⁹⁹ Ibid, 158.

⁵⁰⁰ Ibid, 155.

⁵⁰¹ Ibid.

⁵⁰² Ibid, 157-158.

⁵⁰³ Ibid.

⁵⁰⁴ U.S. Department of State. “Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems.” *U.S. Department of State*. Accessed February 27, 2022. <https://2009-2017.state.gov/t/isn/trty/16332.htm>.

less capable radars per site.⁵⁰⁵ Each site would have a radius of 150 km, and the radars confined to six complexes with three km diameter within the site.⁵⁰⁶ The treaty further prevented the development of “sea-based, air-based, space-based, or mobile land-based” ABM systems, and the transfer of ABM interceptors or radars to third parties.⁵⁰⁷ The ABM Treaty was ratified by the Senate August 3rd, and entered into force October 3rd, 1972. The rejection of defenses embodied in the treaty codified mutual vulnerability between the two largest nuclear powers. Mutual vulnerability, the idea that each side is vulnerable to nuclear attacks by the other, is one of the foundational pillars of deterrence.

The Nixon administration’s sprint to a SALT deal in 1971 and 1972 embodied many of the problems highlighted earlier. Safeguard’s shortcomings in the Minuteman defense role provoked more disunity at the interagency and intercabinet levels as parts of the DOD floated a completely new system and architecture, hard-site defense. However, hard-site defense was rejected because the administration had already sold Safeguard to Congress, and it might have undermined SALT. The interagency process contributed to the disjuncture between the actual Safeguard plan and the SALT negotiating position. However, the domestic politics of the arms race precluded an NCA site, compromising the administration’s SALT strategy. The difficulty of navigating these myriad actors, motivations, and limitations underscores how problematic the result of integrating the domestic politics of the arms race with interagency and intercabinet debates could be. These tumultuous circumstances produced the incredibly limited and ineffectual single Safeguard deployment at Grand Forks.

⁵⁰⁵ Ibid.

⁵⁰⁶ Ibid.

⁵⁰⁷ Ibid.

Denouement

It is important to keep in mind that none of these systems, their development, production, and deployment, are free. There is always a cost, usually monetary, but sometimes in lives. There is no such thing as a bloodless or costless arms race. It is difficult to assess the cost of Nike-Ajax because spending records before 1962 are either fragmentary or incredibly aggregated.⁵⁰⁸ The numbers are much clearer for the other systems since they were deployed or developed after 1962. Nike-Hercules cost \$7 billion from 1962-1995, not including the cost of its nuclear warheads.⁵⁰⁹ Nike-Zeus still managed to cost \$3.2 billion despite never being deployed or produced.⁵¹⁰ The cost of testing and maintaining some Nike-Zeus interceptors as anti-satellite weapons from 1963 to 1967 cost \$53 million. \$9.2 billion was spent on Nike-X, and \$21.3 billion was spent on Safeguard.⁵¹¹ In sum, approximately \$40.7 billion was spent on the programs discussed here, not including the cost of developing and producing the nuclear warheads. These vast sums of money put towards a system with an operational life of a handful of months suggest the hollow nature of this type of strategic competition.

In 1974, the U.S. and the Soviet Union signed a protocol to the 1972 ABM treaty. The protocol further restricted each party from two ABM sites to one, requiring each party to choose to defend either their National Command Authority or an ICBM field.⁵¹² The Soviets chose to retain the Moscow system, and the U.S. chose to defend one of its ICBM fields. The Stanley R. Mickelsen Safeguard Complex near Grand Forks, North Dakota, reached its initial operational

⁵⁰⁸ Ibid, 283-284.

⁵⁰⁹ Ibid, 284.

⁵¹⁰ Ibid, 294.

⁵¹¹ Ibid, 294-295.

⁵¹² U.S. Department of State. "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems." *U.S. Department of State*. Accessed February 27, 2022. <https://2009-2017.state.gov/t/isn/trty/16332.htm>.

capability on April 1st, 1975.⁵¹³ In addition to the 30 Spartan and 70 Sprint interceptors, it used a MSR and set of PARs to defend 150 Minuteman missiles.⁵¹⁴ It became fully operational October 1st that year. On October 2nd, the House of Representatives voted to shut down the installation.⁵¹⁵ In a series of close votes that November, the Senate elected not to close down the facility entirely, but decided instead, in a 52-47 vote, to just keep the radar operating.⁵¹⁶ In February of 1976, the Army stopped radiating the radar, and began removing the interceptors and their warheads from their cells.⁵¹⁷ Safeguard had finally died.

The ABM Treaty would go on to provide the bedrock for arms control and strategic stability between the U.S. and the Soviet Union, later the Russian Federation, until the George W. Bush administration abrogated the treaty 2002. In the post-Cold War world, and particularly the post 9/11 world, the second Bush administration was no longer comfortable with the premise of mutual vulnerability, seeking to defend against threats from North Korea and elsewhere. While the decision to start building ABM systems again was taken in the wake of a dramatic reevaluation of the nature of national security threats and strategic conceptual paradigms, it has been profoundly deleterious. Missile defenses have risen to be one of the most prominent issues in nuclear weapons and arms control. Many facets of the situation the U.S. found itself in from the late 1950s through the early 1970s have returned, and the same arms race dynamics of competition between offenses and defenses are manifesting again. Since leaving the ABM treaty, the U.S. has installed the Ground-Based Midcourse Defense system in Alaska and California for national missile defense and pursued other missile defense and defeat programs under the

⁵¹³ Baucom, *The Origins of SDI*, 96.

⁵¹⁴ *Ibid*, 92.

⁵¹⁵ *Ibid*, 96.

⁵¹⁶ *Ibid*, 97.

⁵¹⁷ *Ibid*.

Missile Defense Agency.⁵¹⁸ This agency has spent over \$174 billion since 2002 “for the purpose of detecting, tracking, and defeating enemy ballistic missiles,” with programs to defend against ICBMs meeting very limited success.⁵¹⁹ This trend is likely to continue, with \$20.4 billion for missile defense and defeat requested in the 2022 budget.⁵²⁰ The United States appears committed to pursuing defenses, following a path similar to that taken in the 1960s and 1970s.

In March, 2018, Vladimir Putin, president of the Russian Federation, announced a slate of new programs to defeat these U.S. ABM systems, drawing on ideas originally generated in response to the Strategic Defense Initiative.⁵²¹ These include hypersonic glide vehicles, a nuclear powered nuclear armed underwater drone, and a nuclear powered nuclear armed cruise missile, among others.⁵²² This has been accompanied by rather explicit statements from the Russian government arguing that the next round of nuclear arms control treaties must cover missile defenses, or else agreement will be extraordinarily unlikely.⁵²³ The People’s Republic of China, on the other hand, has taken the more traditional route to defeating missile defenses. Eschewing Putin’s wacky doomsday McGuffins, in October 2021 China tested a Fractional Orbital Bombardment System.⁵²⁴ Although the Soviets stopped deploying their FOBS after the early

⁵¹⁸ U.S. Government Accountability Office, *MISSILE DEFENSE Addressing Cost Estimating and Reporting Shortfalls Could Improve Insight into Full Costs of Programs and Flight Tests*, February 2022, <https://www.gao.gov/assets/gao-22-104344.pdf>, 1.

⁵¹⁹ *Ibid.*

⁵²⁰ “Seeking Alignment: Missile Defense and Defeat in the 2022 Budget,” Wes Rumbaugh and Tom Karako, CSIS, December 10, 2021, <https://www.csis.org/analysis/seeking-alignment-missile-defense-and-defeat-2022-budget>.

⁵²¹ Hanna Notte, Sarah Bidgood, Nikolai Sokov, Michael Duitsman, and William Potter, “Russia’s novel weapons systems: military innovation in the post-Soviet period,” *The Nonproliferation Review* (August 2021), <https://doi.org/10.1080/10736700.2021.1946271>, 1-2, 9, 28.

⁵²² *Ibid.*, 2.

⁵²³ Laura Grego, “A Better Missile Defense Strategy,” *Arms Control Today*, January/February 2021, <https://www.armscontrol.org/act/2020-12/features/better-missile-defense-strategy>.

⁵²⁴ Jeffrey Lewis, “China’s Orbital Bombardment System Is Big, Bad News—but Not a Breakthrough,” *Foreign Policy*, October 18, 2021, <https://foreignpolicy.com/2021/10/18/hypersonic-china-missile-nuclear-fobs/>.

1980s, it is still a relatively simple and prudent means of defeating missile defenses.⁵²⁵ It is more effective now since none of the current ABM radars used to queue U.S. national missile defenses can track a target coming over the South Pole, whereas the MSR in Safeguard had 4 faces to cover most attack angles. These technical developments have been accompanied by explicit Russian nuclear threats surrounding their invasion of Ukraine which began in February 2022. While the threat of nuclear war did not fade with the end of the Cold War, Putin's use of nuclear threats to cover the invasion of another country further suggests the enduring salience of these issues. Unfortunately, the competition between offenses and defenses that so terrified McNamara, Vance, and others appears to be in full swing 50 years later.

A granular, bureaucratic history of the first time the United States grappled with the problem of ABM, like this one, is valuable for those interested in the topic and policymakers faced with the contemporary incarnation of this problem. It can help make sense of the myriad influences on ABM policy in the United States, from domestic politics to interservice and bureaucratic rivalries. The investigation of Sentinel and Safeguard suggest that instead of being responsive to genuine threats, as assessed by intelligence estimates or administration consensus, these programs were highly impacted by those domestic and interagency politics. Moreover, achieving a better understanding of how these programs and policies are produced through such complex and contentious interagency and intercabinet debates demonstrates why programs succeed, fail, or become mutated beyond being useful. The programs produced by this process were often bureaucratic compromises caught between diverse agendas, seeking to please many audiences at once but often sating none. This conclusion demonstrates the importance of decisive

⁵²⁵ Ibid.

decision-making and implementation, and the problems facing those who sought to build consensus through this interagency and intercabinet process.

Additionally, examining these events can elucidate the conditions which propel these types of policies forward and suggest ways to moderate and curb the worst excesses of them. Recognizing the impact of the domestic politics, and how it can oversimplify and push for more aggressive arms racing, is important for grappling with these issues. The Eisenhower administration's decisions demonstrated that ignoring more hawkish domestic voices is sometimes necessary to make good policy, but they also suffered electoral consequences because of it. However, it is possible to temper those impulses for arms racing through organization and protest. Making nuclear weapons feel proximate to individuals and communities can have significant effects on attitudes towards programs, which can be harnessed to change policy. Most importantly, this story demonstrates how futile and wasteful arms races can be and cautions against recklessly pushing forward with attempts to make ourselves invulnerable, especially at the cost of negotiation and arms control.

Appendix



Figure 1: Missile Site Radar at the Mickelson Safeguard Complex near Grand Forks, North Dakota. | "5. Distant view of west oblique of missile site control building. To right can be seen intake and exhaust of MSRPP, on far right is accessway - Stanley R. Mickelsen Safeguard Complex, Missile Site Control Building, Northeast of Tactical Road; southeast of Tactical Road South, Nekoma, Cavalier County, ND", Benjamin Halperin, Library of Congress, <https://www.loc.gov/pictures/item/nd0046.photos.199338p/>.



Figure 2: The Nike Family of missiles. Left to Right, Ajax, Hercules, Zeus. | Redstone Arsenal Historical Information, U.S. Army, http://www.redstone.army.mil/history/archives/nikefam/nike_family_02.jpg.



Figure 3: Nike-Hercules missile on a launcher | Redstone Arsenal Historical Information, U.S. Army, https://history.redstone.army.mil/miss/nike/hercphotos/herc_wsmr_1970_03.jpg.



Figure 4: Nike family of missiles. Top to bottom, Zeus, Hercules, Ajax. | Redstone Arsenal Historical Information, U.S. Army, http://www.redstone.army.mil/history/archives/nikefam/nike_family_04.jpg.

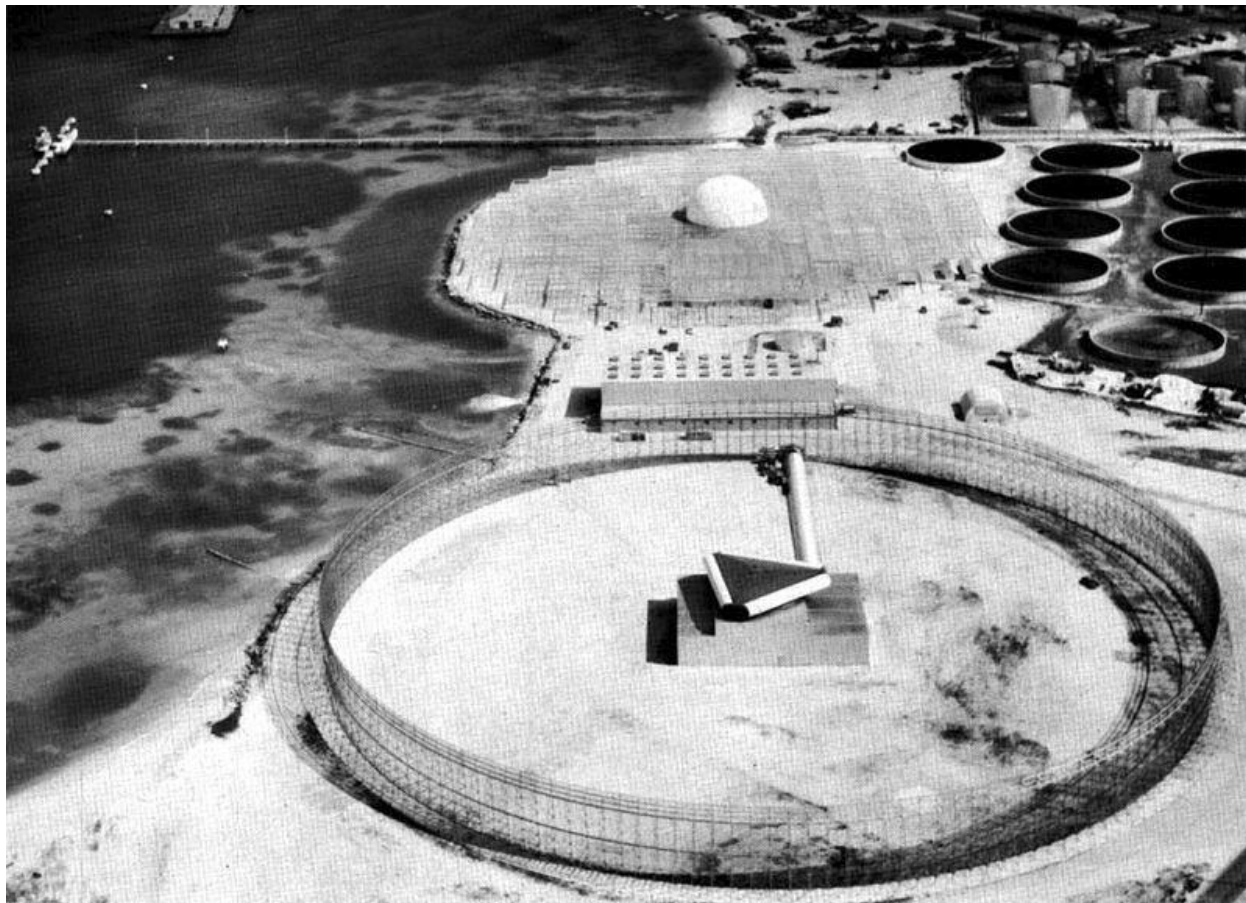


Figure 5: Nike-Zeus Acquisition Radar. The transmitter is the triangle in the foreground, and the receiver is the hemisphere in the background. The transmitter had to be rotated physically which limited the number of targets it could track and how rapidly it could re-scan them. | U.S. Navy All Hands Magazine, January 1963, p. 8, <https://media.defense.gov/2019/Apr/27/2002122253/-1/-1/1/ah196301.pdf>.



Figure 6: Nike-Zeus Target Tracking Radar on the left and Discrimination Radar on the Right at White Sands Missile Range. | U.S. Army, <http://www.wsmr-history.org/ZeusRadar1.htm>.

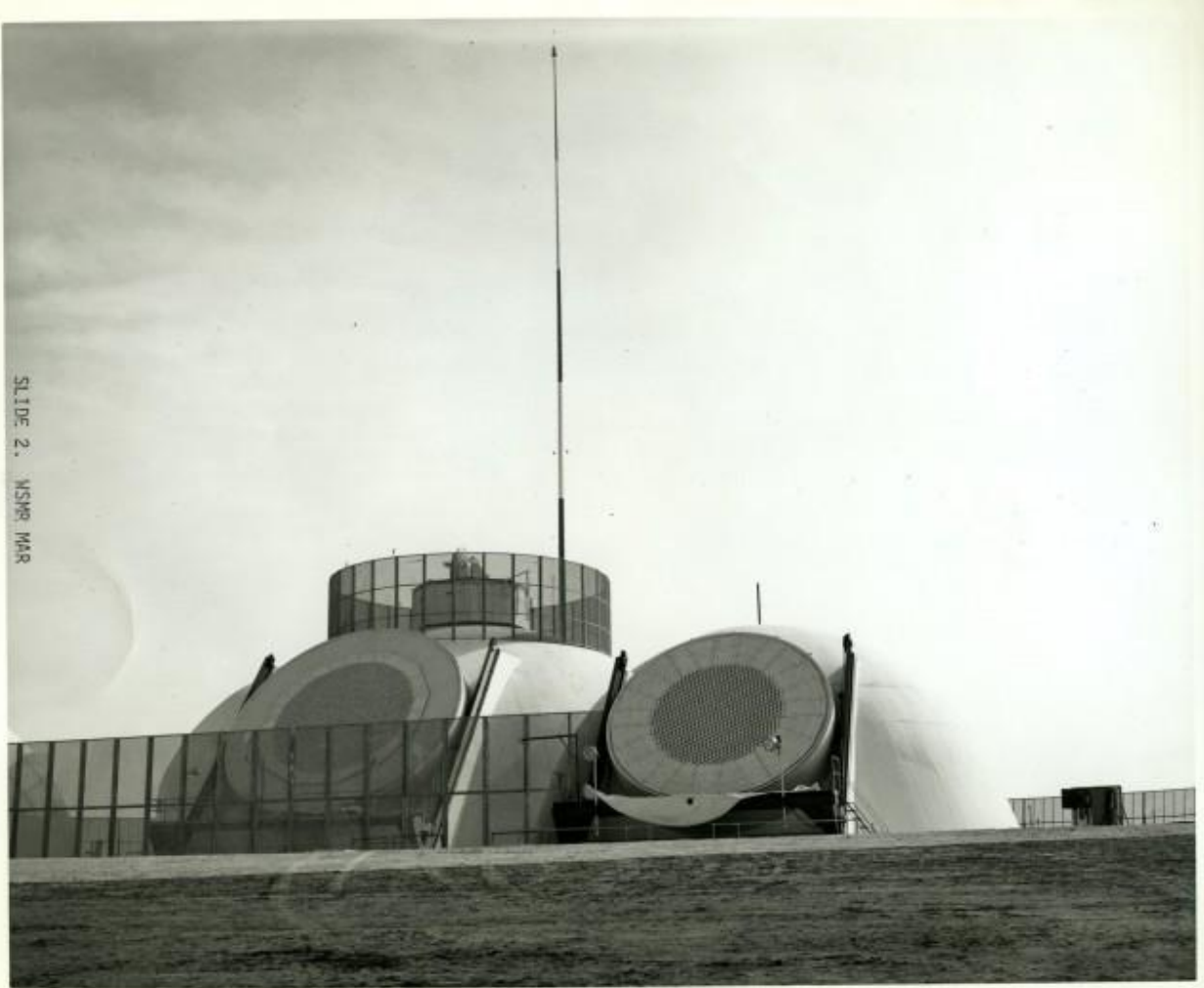


Figure 7: The Multifunction Array Radar or MAR developed as part of the Nike-X program at White Sands Missile Range. | U.S. Army, SMDC/ARSTRAT Command Historian, 2017, https://www.army.mil/article/186715/smdc_history_mar_milestone_demonstrates_radar_capabilities.

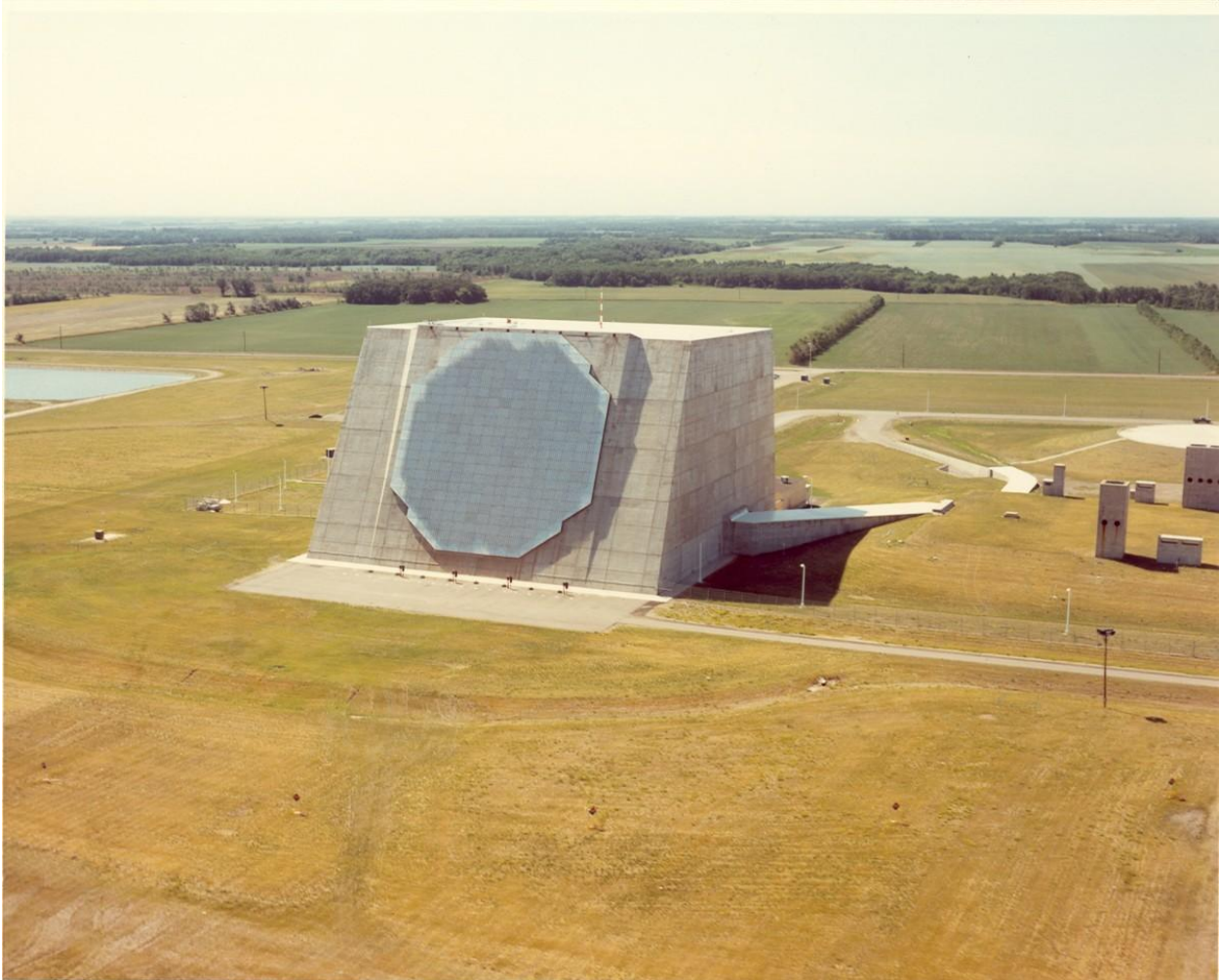


Figure 8: The Perimeter Acquisition Radar or PAR developed as part of the Nike-X program. | U.S. Army, USASMDC/ARSTRAT command historian, 2017, https://www.army.mil/article/190736/smdc_history_par_conducts_initial_satellite_test.



Figure 9: A test of the Sprint interceptor, October 28, 1970 at Kwajalein Atoll. | U.S. Army, USASMDC/ARSTRAT Historical Office, 2015, https://www.army.mil/article/157826/smdc_history_if_at_first_you_dont_succeed.



Figure 10: A test of the Spartan Interceptor. | U.S. Army, USASMDC/ARSTRAT Command Historian, 2017, https://www.army.mil/article/194445/smdc_history_safeguard_achieves_full_operational_capability.



Figure 11: Cannikin Test Area on Amchitka Island in Alaska, where the W-71 warhead was tested. | Courtesy of Los Alamos National Laboratory Archives, https://farm9.staticflickr.com/8149/7597459378_bd4cde498e.jpg.



Figure 12: The Cannikin Device, containing the W-71 warhead, which was lowered into a nearly two-kilometer-deep shaft to be tested on Amchitka Island, Alaska. | Courtesy of Los Alamos National Laboratory Archives, https://farm9.staticflickr.com/8430/7597458904_385f8106ed.jpg.



Figure 13: Models left to right, Spartan interceptor, Galosh interceptor, Minuteman III ICBM, SS-9 ICBM (the first two stages were also used for the Soviet FOBS). | “Photographic copy of photograph (original print in possession of CSSD-HO, Huntsville, AL). Photographer unknown. View of rocket models, allowing a comparison of the Spartan, galosh (USSR), minute man III, and SS-9 (USSR) missiles - Stanley R. Mickelsen Safeguard Complex, Missile Launch Area, Within Exclusion Area, Nekoma, Cavalier County, ND,” Library of Congress, <https://www.loc.gov/pictures/item/nd0050.photos.199380p/>.



Figure 14: The Mickelson Safeguard Complex seen from above. | “7. Photographic copy of photograph, date unknown (original print in possession of James E. Zielinski Earth Tech, Huntsville, AL). Pan American World Airways, photographer. Aerial view (north to south) of missile launch area. Warhead handling building can be seen at the bottom center of the picture and the universal missile building in the middle right. In the distance can be seen the missile site control building and related structures - Stanley R. Mickelsen Safeguard Complex, Missile Launch Area, Within Exclusion Area, Nekoma, Cavalier County, ND,” Library of Congress, <https://www.loc.gov/pictures/item/nd0050.photos.199376p/>.

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