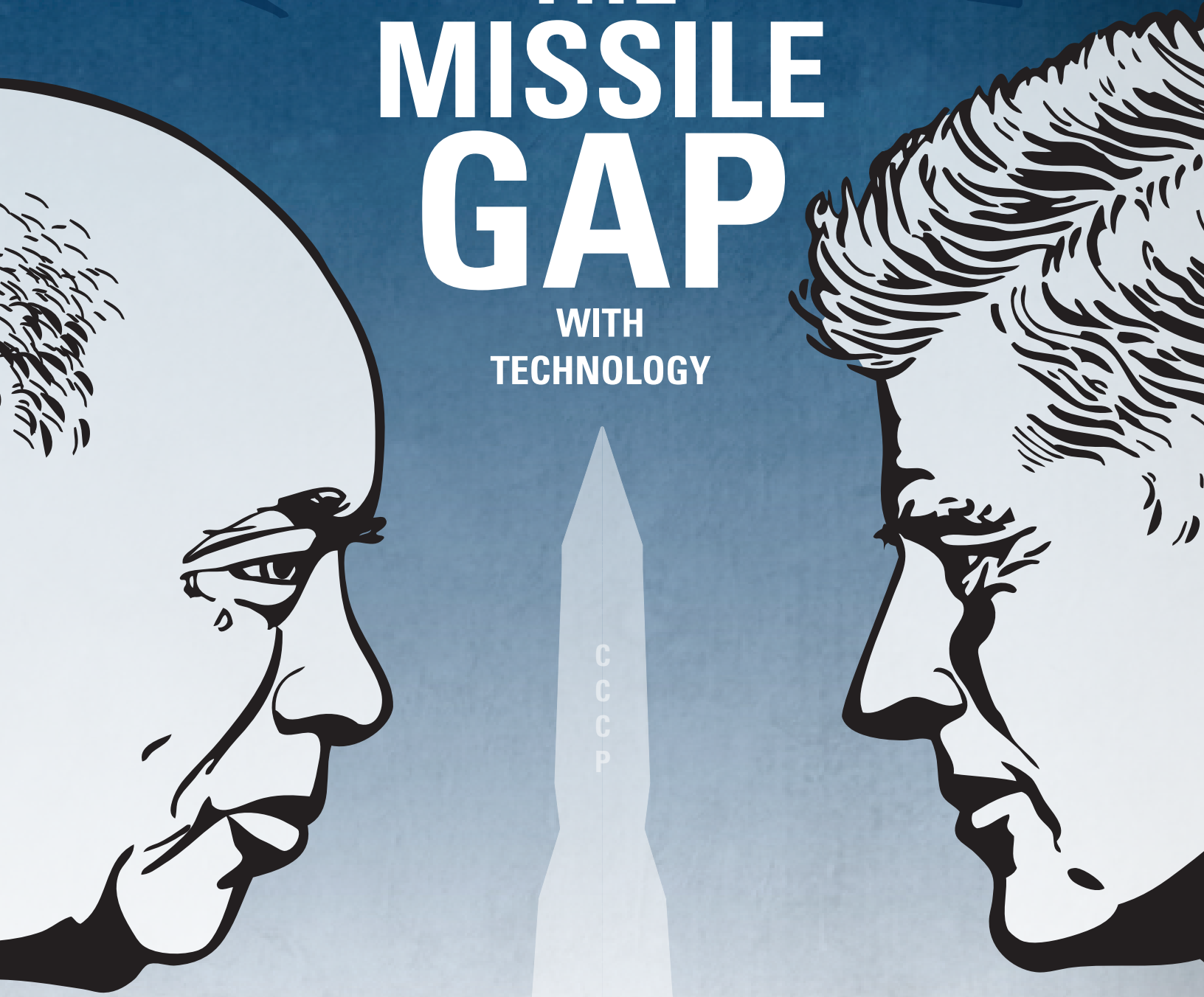


PENETRATING THE IRON CURTAIN:

RESOLVING THE MISSILE GAP

WITH
TECHNOLOGY



JOAN BIRD & JOHN BIRD
EDITORS



JOHN F. KENNEDY
PRESIDENTIAL LIBRARY AND MUSEUM





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PARTNERS



HISTORICAL COLLECTIONS

The Historical Collections Division (HCD) of CIA's Information Management Services is responsible for executing the Agency's Historical Review Program. This program seeks to identify and declassify collections of documents that detail the Agency's analysis and activities relating to historically significant topics and events. HCD's goals include increasing the usability and accessibility of historical collections. HCD also develops release events and partnerships to highlight each collection and make it available to the broadest audience possible.

The mission of HCD is to:

- Promote an accurate, objective understanding of the information and intelligence that has helped shape major US foreign policy decisions.
- Broaden access to lessons-learned, presenting historical material that gives greater understanding to the scope and context of past actions.
- Improve current decision-making and analysis by facilitating reflection on the impacts and effects arising from past foreign policy decisions.
- Showcase CIA's contributions to national security and provide the American public with valuable insight into the workings of its government.
- Demonstrate the CIA's commitment to the Open Government Initiative and its three core values: Transparency, Participation, and Collaboration.

JOHN F. KENNEDY

PRESIDENTIAL LIBRARY AND MUSEUM

The John F. Kennedy Presidential Library and Museum is dedicated to the memory of our nation's thirty-fifth president and to all those who through the art of politics seek a new and better world. Thomas J. Putnam serves as the Director of the John F. Kennedy Presidential Library and Museum.

Our purpose is to advance the study and understanding of President Kennedy's life and career and the times in which he lived; and to promote a greater appreciation of America's political and cultural heritage, the process of governing and the importance of public service.

We accomplish our mission by:

- preserving and making accessible the records of President Kennedy and his times;
- promoting open discourse on critical issues of our own time; and
- educating and encouraging citizens to contribute, through public and community service, to shaping our nation's future.

As an organization dedicated to public service, we affirm that our understanding of "public" is truly inclusive -- that people of all backgrounds, ages, and viewpoints are made to feel welcome, and that the Library actively makes its resources, programs and services accessible, especially to those who remain under-served. We are committed to creating full access and opportunity in the areas of recruitment, employment, promotion, and work assignments.

We serve the public as we would wish to be served: With a sense of pride, with professionalism, with courtesy, and with a commitment to excellence.

Realizing that communicating openly, honestly, and with integrity is vital to fulfilling our mission, we readily share knowledge with constituents and co-workers, and recognize the responsibility of each of us to stay informed.

As a relatively small institution with a wide-ranging agenda, the Library's success flows directly from the quality of each staff member's contribution, and from a genuine spirit of cooperation and teamwork based on courtesy and mutual respect.

AGENDA

- 1:00pm – 1:10pm **WELCOME AND OPENING REMARKS**
 Mr. Tom Putnam
 Director, John F. Kennedy Presidential Library
- 1:10pm – 1:15pm **THE CIA'S HISTORICAL REVIEW PROGRAM**
 Mr. Joe Lambert
 Director, Information Management Services, CIA
- 1:15pm – 2:45pm **INTELLIGENCE PANELS**
OVERVIEW OF THE MISSILE GAP
 John Bird, Co-author with Joan Bird of this study
- FACING THE MISSILE GAP**
 Edward Proctor
 Drafter of the National Intelligence Estimate, and Chief of CIA's Guided Missile Task Force during the Missile Gap crisis
- THE PROBLEMS OF INTELLIGENCE ANALYSIS**
 Robert Jervis
 Author of *Why Intelligence Fails: Lessons from the Iranian Revolution and the Iraq War*
- 3:15pm – 4:45pm **US POLICY IMPLICATIONS**
THE US CONTEXT OF THE MISSILE GAP CONTROVERSY
 Fred Kaplan
 Author of *Wizards of Armageddon*
- THE MISSILE GAP FROM A HISTORIAN'S VANTAGE**
 Tim Naftali Author with Aleksandr Fursenko of
"One Hell of a Gamble": Khrushchev, Castro and Kennedy 1958-1964
- INTELLIGENCE UNCERTAINTIES FROM THE POLICYMAKERS VANTAGE**
 Ted Warner
 Secretary of Defense Representative to New START
- 4:45pm **CLOSING REMARKS AND INTRODUCTION TO THE FORUM**
 Tom Putnam
- 4:50pm – 5:30pm **Reception and Individual Discussions with Panel Members**
- 5:30pm – 7:00pm **50th Anniversary: The Missile Gap Controversy**
 50 years ago this month, President Kennedy received national security estimates that the gap between the USSR and the USA was a myth. Join historians Timothy Naftali , Fred Kaplan and John Prados for a discussion of this pivotal moment in history.
- 7:30pm – 9:00pm **Reception for Invited Guests**

SYMPOSIUM SPEAKERS AND EDITORS

John Bird

John Bird, one of the authors of this study, had a 32 year career as an analyst of Soviet military issues at CIA. He has a Master of Arts in economics from the University of Washington and is a graduate of the National War College. In addition to his many assignments within the CIA, he served as Deputy National Intelligence Officer for General Purpose forces, as Director of the Strategic Warning Staff and as National Intelligence Officer for Warning. He was chief of the Intelligence Community's monitoring authority for all US arms control treaties and agreements. He also served as the Intelligence Community's Senior Intelligence Representative to the Conference on Disarmament during the negotiations that resulted in the Chemical Weapons Treaty. Since his retirement from CIA in 1994 he has worked with the Naval War College designing and assessing war games, and for the Army Training and Doctrine Command designing and assessing their Army After Next series of war games. In addition he has undertaken projects for the Intelligence Community during the last several years.

Robert Jervis

Robert Jervis (Ph.D., University of California at Berkeley, 1968) is the Adlai E. Stevenson Professor of International Politics and Deputy Chair of the Political Science Department at Columbia University, and has been a member of the faculty since 1980. He has also held professorial appointments at the University of California at Los Angeles and Harvard University. In 2000-2001, he served as the President of the American Political Science Association. Dr. Jervis is the co-editor of the Cornell Studies in Security Affairs, a series published by Cornell University Press, and the member of numerous editorial review boards for scholarly journals. His publications include *Perception and Misperception in International Politics* (Princeton University Press, 1976), *The Meaning of the Nuclear Revolution* (Cornell University Press, 1989), *Systems Effects: Complexity in Political and Social Life* (Princeton University Press, 1997), *American Foreign Policy in a New Era* (Routledge, 2005), and *Why Intelligence Fails: Lessons from the Fall of the Shah and Iraqi WMD*, Cornell University Press, April 2010 and several edited volumes and numerous articles in scholarly journals.

Fred Kaplan

Fred Kaplan is the national-security columnist for the online magazine Slate and a senior Schwartz fellow at the New American Foundation. For 20 years, he was a staff reporter for the *Boston Globe*, writing as the paper's military correspondent (1982-91), Moscow Bureau Chief (1992-95), and New York Bureau Chief (1995-2002). In 1983, he was a leading member of the team that wrote the *Globe's* Pulitzer Prize-winning Sunday magazine on the nuclear arms race.

Kaplan is the author of the prize-winning book about the history of nuclear strategy, *The Wizards of Armageddon* (Simon & Schuster, 1983; reprinted by Stanford University Press 1991). *Daydream Believers: How a Few Grand Ideas Wrecked American Power* (Wiley & Sons, 2008), and *1959: The Year Everything Changed* (Wiley & Sons, 2009).

He has written articles about politics, culture, and technology for the *New York Times*, *The Atlantic Monthly*, *The New Yorker*, *The Washington Post*, *Newsweek*, *The Washington Monthly*, *Nature*, *Scientific American*, *The Bulletin of the Atomic Scientists*, *The New York Magazine*, *Architectural Digest*, and other publications.

From 1978-80, Kaplan worked as the national-security adviser to Representative Les Aspin in the US House of Representatives. He graduated from Oberlin College, and has a Ph.D. in political science from the Massachusetts Institute of Technology.

Timothy Naftali

Timothy Naftali is the director of the Richard Nixon Presidential Library and Museum, a part of the National Archives and Records Administration. Before joining the National Archives, Naftali taught history at several universities, including the University of Virginia, where he also served as director of the Presidential Recording Program at the Miller Center of Public affairs.

Naftali is a prolific writer for both popular and scholarly audiences. His work has appeared on Slate.com, The New York Times, the Washington Post, Foreign Affairs, and other publications, and he has appeared on National Public Radio, the History Channel, and C-Span. He is the author of four books, including *Blind Sport: The Secret History of American Counterterrorism* and, with Aleksander Fursenko, *“One Hell of A Gamble”: Khrushchev, Castro, and Kennedy, 1958-1964*. His second book with Fursenko, *Khrushchev’s Cold War: The Inside Story of an American Adversary*, received the Duke of Westminster’s Medal for Military Literature in June 2007. His most recent book, *George H.W. Bush*, appeared in December 2007 as part of The American Presidents Series, edited by the late Arthur M. Schlesinger, Jr., and Sean Wilentz.

Dr. Edward W. Proctor

Dr. Proctor had a 27 year career with the CIA, where he played a key role in foreign intelligence analysis. He has a Master of Arts in economics from Brown University and a PhD in economics from Harvard University. He began his career at CIA as an analyst of Soviet military-economic issues and was described as the US government’s senior foreign intelligence analyst. He managed several components in the Directorate of Intelligence where he developed integrated analysis of the Soviet Union’s strategic weapons program, led the CIA’s Guided Missile Task Force and played the key role in the successful determination by the United States of the true state of Soviet strategic capabilities, thereby resolving the “missile gap” problem. He set the model for rigorous and relevant intelligence analysis. He served on the Board of National Estimates. As Director of the Directorate of Intelligence, he brought a new level of sophistication to intelligence analysis.

Edward (Ted) Warner III

Edward (Ted) Warner III is the Secretary of Defense Representative to New START and senior advisor to the Undersecretary (Policy) for Arms Control and Strategic Stability. He served as a deputy head of the US delegation that successfully concluded the New START Treaty with the Russian Federation in April 2010. The New START Treaty was ratified by the United States Senate on December 22, 2010.

Warner was Assistant Secretary of defense for Strategy and Requirements from May 1993 until November 1997, and Assistant Secretary of Defense for Strategy and Threat Reduction from November 1997 until October 2000. Warner was also responsible for Department of Defense policy for countering the proliferation of weapons of mass destruction; policy issues associated with US nuclear forces, ballistic missile defense, arms control, and cooperative threat reduction; as well as defense relations with Russia and the other newly independent states that emerged following the collapse of the Soviet Union.

Warner served in the Air Force for 20 years. His assignments included head of the Staff Group, Office of the Air Force Chief of Staff; assistant air attaché at the US Embassy, Moscow; analyst of Soviet military affairs with the Central Intelligence Agency; and an assistant professor of political science at the US Air Force Academy.

He graduated from the United States Naval Academy in 1962 with a degree in marine engineering. He completed a masters and a doctoral degree in politics at Princeton University.

Joan Bird

Joan Bird, one of the co-editors of this study, had a 29 year career at CIA as a senior analyst of Soviet issues, including Soviet space activities, Soviet policies on potential space weapons, and arms control of space and defense issues. She is a graduate of West Virginia University and spent three years at the Center for Naval War Studies of Naval War College developing ways to incorporate intelligence, space, communications and information operations in their studies and wargames. In addition to 25 years as an analyst, she spent 3 years as a member of the Defense and Space negotiating team and a year supporting the US delegation to the UN Conference on Disarmament on arms control for space. Since retirement in 1997 she has worked for the Naval War College working with the players and assessors of Information Operations in the Naval War College War Games, and for the Army Training and Doctrine Command assessing the information operations play of their Army after Next Series of war games. She is a co-author of several historical studies for the Historical Collections Division of CIA.



PENETRATING THE IRON CURTAIN: RESOLVING THE MISSILE GAP WITH TECHNOLOGY¹

In the mid-1950s the US faced the first real challenge since World War II to its strategic superiority over any nation on earth. First it seemed that the Soviet Union was challenging us by producing and deploying a large strategic bomber force. Then, even as that perception was disproved, it became evident that the Soviets were placing their major effort toward developing strategic missiles against which, once launched, there was no defense. As the Eisenhower Administration strove to formulate policy to address the new circumstances, the Intelligence Community provided no clear picture of the scale, rate of production or breadth of deployment of Soviet missiles. The perceived missile gap that ensued was based on a comparison between US ICBM strength as then programmed, and reasonable, although erroneous estimates of prospective Soviet ICBM strength that were generally accepted by responsible officials.

The administration increasingly turned to the CIA with assignments to collect, produce, and disseminate missile intelligence to policymakers. It was a challenging mission that put CIA up against a Soviet Union, a country from which little information, clues, secrets, or whispers emanated, and any that did might only be intended to deceive. The goal was not only to guess what was behind the curtain, but also to find all ways possible to approximate with ever greater certainty.

These papers provide an enhanced analysis by and for scholars interested in that important, historic controversy. On the way to the solution, the process became overshadowed and sidelined by competing political, corporate, diplomatic, technological, and intelligence goals, providing us today with a fascinating template that is not far afield of the complexities facing modern intelligence missions and acts.

To convey the intelligence controversy, CIA has released a large selection of intelligence documents, declassified for the first time, coupled with others which were formerly declassified, but are released here again with significant withheld text now restored based on new, broader declassification guidelines. Together, these documents provide new insight into the reasoning, steps, and sidesteps used to determine Soviet missile strength in an atmosphere of growing national alarm and pressure. And it happened by CIA's eventual ability to crack the total Iron Curtain darkness and turn it into a thin, transparent veil, converting those early 'best guesses' into reliable, solid "I can easily show you" numbers and photos. But, for the moment, let's start at the beginning.

The attempt to collect intelligence on the Soviets began with an initial period of poor collection capabilities and consequent limited analysis. With few well-placed human sources inside the Soviet Union, it was only with the CIA's development of, what can only be called, timely technological wizardry—the U-2 aircraft and Corona Satellite reconnaissance program—that breakthroughs occurred in gaining valuable, game-changing intelligence. Coupled with the innovative use of aerial and satellite photography and other technical collection programs, the efforts began to produce solid, national intelligence.

¹ This essay was produced by Joan and John Bird.

At the outset of this period, the National Intelligence Estimates (NIEs) could best be characterized as a collection of possibilities about the Soviet ICBM program lacking a firm basis for national security policy-making. By the time the Soviets launched the first successful ICBM in August 1957, the urgency triggered an outsized national concern over what many saw as an alarming “missile gap.” Better intelligence was demanded. The imprecision of the earlier NIEs, and the widely differing views of their contributors² added to the quandary of policymakers. Nonetheless, national intelligence products provided extensive alternative hypotheses—based on differing interpretations of the limited information collected—for different rates of development and production of Soviet ICBMs. Fortunately, as collection improved, the range of estimates narrowed until all but one member organization of the Intelligence Community joined in the consensus.

The apparent success of the Soviet ICBM and satellite (Sputnik) programs in 1957 spawned major reactions in the United States including the stimulation of new science and engineering studies; new college student financial assistance programs; and the initial or accelerated funding of about a dozen strategic attack programs simultaneously. The Intelligence Community determined that the “missile gap” was merely a product of ignorance and that the gap in missile programs actually favored the United States, not the USSR. That estimate provided, for the first time in over seven years, a basis for a new rationalization of defense procurement programs during the period 1962-1963. More importantly, it punctured Khrushchev’s carefully nurtured deception of Soviet superiority just as the Berlin Crisis was coming to a head.

This study and supporting documents include this essay about the intelligence problems associated with the missile gap; an historical and originally classified essay written by two senior CIA intelligence analysts in the early 1970s; and Chapter 10 from *Wizards of Armageddon* by Fred Kaplan, critiquing the whole Missile Gap controversy. Most important for historians, this study contains a DVD attached to the back cover containing the declassified copies of some 200 intelligence and other documents pertaining to the missile gap controversy. There is also a linked “Catalogue of Documents” that provides information about who, what, where the documents were produced and, in some cases, to whom they were disseminated along with a brief description of the contents of each document.

What was the “Missile Gap”?

The “missile gap” was in essence a growing perception in the West, especially in the USA, that the Soviet Union was quickly developing an intercontinental range ballistic missile (ICBM) capability earlier, in greater numbers, and with far more capability than that of the United States. Although there were several ingredients in the US perception (actually a misperception), the principal ones were: effective Soviet secrecy; limited intelligence collection; biased analysis; Soviet deceptive announcements, and the actual Soviet success in testing intercontinental-range ballistic missiles. All of them were justified concerns.

² CIA participation in the collection and production of intelligence in the 1950s was constrained by National Security Council Intelligence Directives (NSCID). In particular see NSCID Number 1 (Revised), Duties and Responsibilities, 28 March 1952; NSCID Number 2, Coordination of Collection Activities Abroad, 13 January 1948; and NSCID Number 3, Coordination of Intelligence Production, 21 April for details about the responsibilities of the CIA and other Intelligence Community entities. These NSCIDs limited the role of CIA to economic and scientific collection and analysis, and directed the military services to provide military intelligence. The revised version of the NSCID broadened the areas for which the CIA could produce intelligence

Effective Soviet Secrecy

After World War II, Stalin reinstated in the Soviet Union draconian peacetime security measures. Travel in the USSR by foreigners was severely constrained; even visiting communists were closely monitored. Westerners faced far greater travel restrictions including wholesale proscription against travel in most of the USSR. Interaction with Soviet citizens inside the USSR exposed those citizens to harsh counterintelligence responses by Soviet secret police organizations, variously named the MGB, MVD, and finally the KGB. Despite liberalizing reforms by Khrushchev, opportunities for travel in the USSR and interaction with its citizens continued to be severely hindered. Under these circumstances, Western intelligence organizations were unable to establish and maintain clandestine USSR military sources with access to the Soviet missile programs during most of the 1950s.

Limited Intelligence Collection

Despite the tight security imposed by Stalin and his successors, CIA, with the participation of the US military, did develop some information about the Soviet programs from a number of sources—in the beginning, mainly émigrés—who could provide insight into the Soviet development efforts, but those sources provided little information about current activity. Analysis of all the bits of information from the various human sources eventually succeeded in providing the basis for major technical collection efforts against the Soviet missile test center at Kapustin Yar, a location north of the Caspian Sea area. For example, the British attempted to photograph the Kapustin Yar test center in 1953 but their special Canberra reconnaissance aircraft was damaged and almost shot down by Soviet fighters. Other technical collection efforts included radar, intercepted telemetry, and finally, the U-2 photography. Through these efforts, the US intelligence organizations were able to monitor the Soviet medium- and intermediate-range missile (MRBM and IRBM) development process centered in Kapustin Yar.

The Soviet ICBM test site, however, was in a more remote part of Central Asia. Human sources had scant information, but some of the technical collection systems in place for the Kapustin Yar effort yielded important evidence at the beginning of ICBM testing. Other evidence, which became available, provided the basis for searching for a new ICBM launch complex in Kazakhstan and an associated instrumented impact area on the Kamchatka Peninsula. New collection efforts against activity at this site substantially revealed the characteristics of the first Soviet ICBM. A U-2 mission penetrated the Soviet air defenses and successfully photographed the Tyura Tarn ICBM test launch area in Kazakhstan in August 1957. In 1960, the CORONA satellites³ began providing low resolution, broad area coverage of the USSR. By the summer of 1961, new intelligence estimates dramatically reduced the projections of Soviet ICBM deployment. Not only was the technical penetration of the Soviet missile program successful, but the clandestine service had developed an inside source. Colonel Oleg Penkovskiy, with access at the upper levels of the Ministry of Defense. In 1961, Penkovskiy reported senior Soviet generals believed that the initial Soviet version of an intercontinental range missile was unsuccessful and Khrushchev's boastings about it were mere chest-thumping bluffs. By the end of 1962 the veil of total secrecy maintained by the Soviet Union had begun to wear.

³ CORONA is the code name for the first covert satellite reconnaissance program. The CORONA satellites were first successful on a small scale on the fourteenth attempt in August 1960. Problems with the satellites did not end then but gradually usable, albeit very low resolution coverage of the territory of USSR was obtained.

Soviet Deception

Starting in January 1957⁴, Soviet statements in general—and First Secretary of the Communist Party of the USSR Khrushchev in particular—clearly distorted the facts of Soviet development, creating the false impression that Soviet ICBM development, production, and deployment were far more advanced than was true. Yet, the Soviet propaganda found a receptive US audience. The chapter from the *Wizards of Armageddon* by Fred Kaplan (reproduced in this study) relates that the US response was driven by self-interests that ranged from encouraging support for a greater military budget or share thereof, to urging support for a more aggressive foreign policy within the Eisenhower administration, to political support for opponents of the administration.

Political Pressures Grow In Information Vacuum

The political pressures, which fed upon the facts and the misperceptions of the Soviet ICBM program, included the selective leakage of intelligence judgments, and the exaggeration and distortion of the Soviet statements by the press and politicians. Before satellite photography and the new clandestine information were available, the military services clearly [and understandably] took positions in the National Estimates reflecting their convictions—public and private—that the projections of various Soviet weapons procurement and deployment programs would unquestionably impact their share of US defense appropriations. In contrast, leaked information to opposition politicians seeking to discredit the Eisenhower administration put pressure on the administration to seek every means to discover the reality of the situation, resulting in the development of the U-2 for overflights of the USSR and finally, the successful satellite reconnaissance program.

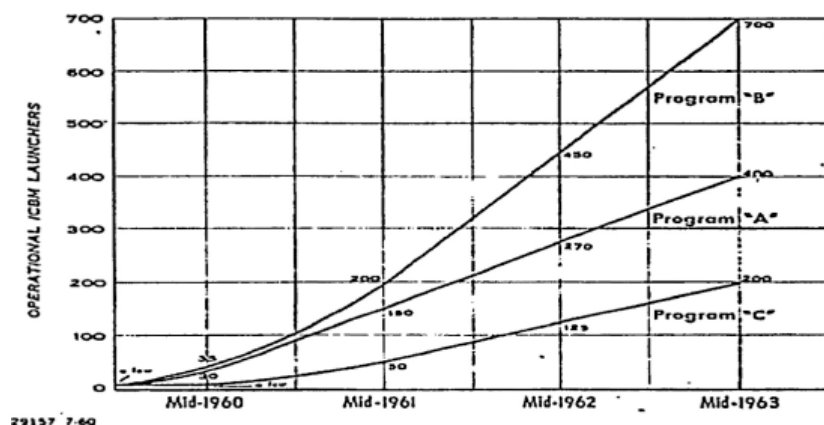
US and Soviet foreign policy initiatives added to the problem, with disincentives to undertake risky intelligence collection efforts. Opposing the pressure to succeed with more and bolder intelligence collection were other administration pleas to use the opportunity to achieve some kind of negotiated arms control, and the not unrelated vigorous complaints by the Soviets over violations of their territory. These external political pressures so influenced President Eisenhower that he actually stopped the U-2 overflights for sixteen months at the height of the missile gap controversy. However, as internal political pressures grew to unmask the true state of the Soviet ICBM program, the President relented and reauthorized overflights. Although successful right up to the Soviet downing of Gary Power's U-2 over Sverdlovsk, U-2-collected photography did not answer the crucial question about the extent of Soviet ICBM deployment. The political controversies and pressures persisted into mid-to-late 1961 when enough successful flights of the new US CORONA photographic satellites provided coverage of the USSR sufficient to indicate the Soviets did not have many deployed ICBMs—in fact, far fewer than the United States.

Biased Analysis

Analysis can be biased for a number of reasons: bad data; implicit assumptions, and self-interest rank highest. Before the arrival of the comprehensive photographic coverage of the USSR by the CORONA satellites, the limited information available about production and deployment of Soviet ICBMs was an inadequate basis for statistical analysis and, as events proved, even for judgments based on intuition.

⁴ See Document 58, FBIS Radio Propaganda Report, *Soviet Propaganda Treatment of the USSR's Strategic Rocket Capability*, page 6.

With the military branches and other military entities providing, exclusively, intelligence analysis on all aspects of the Soviet forces, including size, operations, and capabilities, it does not seem surprising the most egregious exaggerations of Soviet military strength emanated from the branch of service likely to benefit by an overblown enemy threat. The US Army and US Navy intelligence estimates of Soviet ICBM production were very conservative. In the National Intelligence Estimate NIE 11-8-60, *Soviet Capabilities for Long-Range Attack*⁵, they estimated the Soviets would have only a few ICBMS by mid-1960 and about 50 by mid-1961. In the same estimate, the USAF confidently estimated the Soviets would have 35 by mid-1960 and about 200 by mid-1961. The CIA estimate fell between the two. However, as that NIE and the few following prior to September 1961 indicated, there clearly was little evidence to support any of those estimates other than a few flight tests of the first Soviet ICBM and some gross estimates of potential ICBM production capacity. All the estimates were of a larger force than existed. In the graph below taken from NIE 11-8-1960 the USAF estimate is "Program B"; the Army and Navy estimate is "Program C"; and the CIA estimate is "Program A."



During the period up to 1964, the bureaucratic undertone of resistance to allowing the CIA to engage in any sort of intelligence on military issues continued. The CIA's rectifying analysis of the bomber and missile gaps, and later of the Soviet ground forces, ultimately resulted in modifications of the national intelligence regulations—the NSCIDs and DCIDs⁶—authorizing or requiring various IC actions that broadened CIA's role.

Real World Facts Emerge

The Gap...

On 26 August 1957, the Soviets announced they successfully tested an ICBM⁷. The IC intelligence analysts believed it was a launch from the new ICBM and space launch center near Tyura Tam in Kazakhstan and that the missile traveled across the USSR to an intended impact on the Kamchatka Peninsula near the Pacific coast of the USSR. Within two days of the announcement, a U-2 was launched to photograph the site. On 4 October 1957, the Soviets successfully launched the first space

⁵ See Document 84 for NIE 11-8-1960, *Soviet Capabilities for Long-Range Attack*.

⁶ DCIDs are Director Central Intelligence Directives.

⁷ See 26 August 1957 FBIS Soviet and Eastern Europe Daily Report for the TASS report. The "ICBM" was known later as the SS-6 or Type A surface-to-surface missile.

satellite: Sputnik. In the eyes of the world, both feats established a prominent place for Soviet space science. In reality, the Soviet ICBM was unwieldy as a weapon for it required a massive infrastructure and was deployed only to one operational location. Most US intelligence organizations greatly overestimated the extent of production and deployment of this missile, and it was these estimates that became the Soviet side of the “missile gap” equation.

At the time, the Soviets also were developing two new models of an ICBM, the SS-7 and the SS-8⁸, that would be tested beginning in the early 1960s and deployed in some number by 1963. The early evidence of preparations for their deployment tended to blend with the testing of the SS-6, creating, in the eyes of many, the basis for estimating an early and widespread deployment of the SS-6 system, a deployment that never occurred. During the same period, the United States was frantically working on several versions of an ICBM capable of carrying a nuclear warhead to targets in the USSR or China. While publicized launch failures and pessimism about the future of US efforts became the basis for the US side of the “missile gap,” it hid the reality that several missiles then under development were successful and deployed. Indeed their deployment outstripped the Soviet’s efforts so much that by 1961, and probably as early as 1959, the “gap” was actually in favor of the US though not widely recognized as such.

Development of ICBMs and Reconnaissance Programs...

Many wondered how the Soviets had gained such a head start, but the Soviet ICBM program was the culmination of a long, deliberate research and development program started soon after World War II. It was significantly aided in the early years by German rocket scientists and equipment captured at the end of the war. The West learned of the program through interviews with returnees and an occasional defector. Western intelligence organizations soon set up technical collection systems to monitor missile development at the Soviet’s Kapustin Yar test range. The big radar set-up by the USAF at Diyarbakir, Turkey was one example. The Soviet program evolved through the German V-2 and the Soviet equivalents to longer-range missiles capable of traveling 700-1000 nautical miles or more. As these latter missiles were being tested, evidence began to suggest a new test range was being developed near Novokazalinsk and Dzhusaly in the Kazakh SSR, with an impact area at Klyuchi on the Kamchatka Peninsula. On 5 August 1957, a CIA U-2 reconnaissance aircraft searching along the Chkalov-Tashkent rail line in the Kzyl-Orda Oblast’ in Kazakhstan photographed—in the distance—what was identified as the Tyura Tam missile test range head. It was 21 days later when the Soviets announced they had successfully launched an ICBM, and two days after that announcement when another U-2 flew directly over the site providing definitive photography of all its features⁹.

The Dawn of Satellite Reconnaissance

The U-2 program successfully provided important photography of the two main Soviet missile test centers at Tyura Tam and Kapustin Yar but it did not provide photography of most of the potential USSR deployment areas. In recognition of the limitations of aerial reconnaissance, both the CIA and the USAF proposed to develop reconnaissance satellites to cover the wide expanse of the USSR. The President approved the CIA program in February 1958 and, in August 1960, the first fully successful satellite in that program yielded more usable photography of the USSR than all 24 U-2 flights together. A new era in intelligence collection and analysis was dawning.

⁸ These ICBMs were also known in the Intelligence Community as type B and type C respectively.

⁹ For an exhaustive description of the U-2 program, see Document 164, Central Intelligence Agency and Overhead Reconnaissance: the U-2 and OXCART Programs, 1954-1974 by Gregory W. Pedlow and Donald E. Welzenbach, History Staff, Central Intelligence Agency, Washington, D.C., 1992.

Proving a Negative...

Not recognized at the time, the real problem to be solved for US intelligence was not to prove a positive, i.e., where were the Soviet ICBMs, but to try to prove a negative—that there was no widespread Soviet ICBM deployment. Only full coverage of all potential launch sites would suffice as proof. Those intelligence organizations postulating a large, widely-dispersed force continued to press their views in the December NIE 11-4-60¹⁰ even as the increasingly successful satellite reconnaissance program was covering large sections of the USSR but finding little cause to support a Soviet force in being. This situation changed rapidly as the increasingly comprehensive satellite coverage and photo interpretation¹¹ indicated the suspected sites were not ICBM sites at all, or were only in an early state of construction. Although a clandestine report from Soviet Colonel Oleg Penkovskiy indicated in the spring of 1961 that Khrushchev had been carrying out a massive deception and only a very small number of ICBMs were operational, it was not until later in the summer that the true reduced status of the Soviet ICBM program became clear. The change in the National Intelligence Estimates of Soviet ICBM operational force levels between the June 1961 estimate and the September edition¹² reflected the now clearer picture of actual ICBM deployment in the USSR.

As late as mid-1963, in the Kennedy Administration, the full picture of what happened about the missile gap was still being investigated. The documents attached to this study from the Kennedy Presidential Library clearly show the President wanted the whole episode sorted out in a study or history that he requested of National Security Advisor McGeorge “Mac” Bundy in the spring of 1963.

In sum, the efforts of the two nations to produce an ICBM force proceeded in parallel with the Soviets making the first, highly public, successful ICBM launch in August 1957, and the United States deploying the first unit of ICBMs in 1959 followed by a steady stream of new US deployments well before meaningful Soviet deployment began. Yet this clear outcome only became evident following years of thoughtful yet frustrating analysis-in-the-dark, and then was only partially helped by U-2 photographic coverage, and finally saw a full resolution to the missile gap question through HUMINT [Penkovskiy] and USSR-wide satellite reconnaissance.

The missile gap controversy enjoyed the fortunate good timing of a series of technological advancements and human sources that brought weak, successive approximations of the earlier NIEs into the realm of reliable, solid evidence suitable for sound policymaking. And it demonstrates that intelligence involves considerable effort, inventiveness, luck, diplomacy, and a sound leadership to keep the mission from becoming snared in all the side issues that often surround matters of alarming international competition and internal national anxieties. There are many ‘take home lessons’ in the attached documents that display America’s quick and cautious response to the unknown and overstated Soviet ICBM threat of 1955-1964.

¹⁰See Document 92, NIE 11-4-60, *Main Trends in Soviet Capabilities and Policies, 1960-1965*, 1 December 1950.

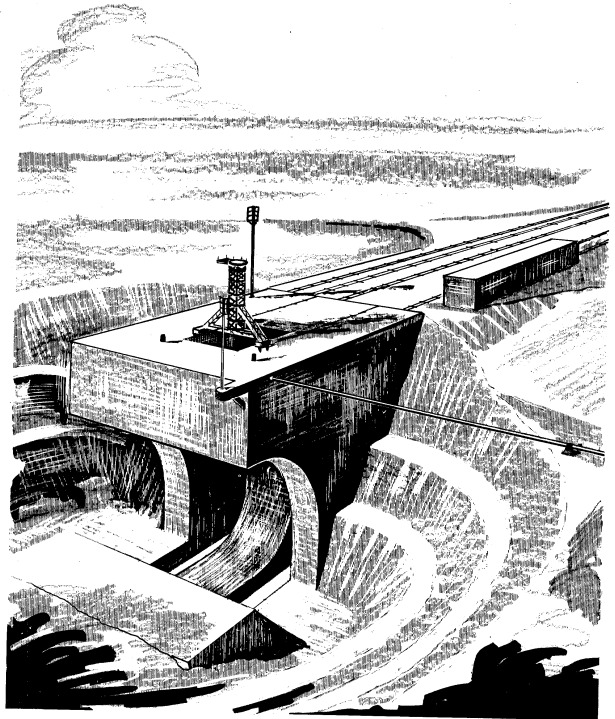
¹¹These reports produced by the National Photographic Interpretation Center are replicated on the attached DVD.

¹²See Documents 98,98a, 130,131 and 134 for the estimates of this period.



PRELIMINARY SKETCH OF MISSILE LAUNCH PLATFORM

TYURA TAM



U-2 photography of Tyuratam
Missile Testing Range

Launch of Sputnik,
4 October 1957



APPROVED FOR RELEASE
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Closing the Missile Gap

Leonard F. Parkinson and Logan H. Potter

The search for information on the Soviet missile program became the most critical and elusive intelligence problem and the most demanding in terms of approach and management of the many substantive issues encountered in the first 20 years of strategic research at CIA. The Agency drafted its first national intelligence estimate on Soviet guided missile development in 1954. Nonetheless, it was not until 1957 that American policymakers, military planners, and intelligence analysts began to worry that the Soviet missile program had outstripped US development efforts. TASS' announcement of a successful flight test of an intercontinental ballistic missile (ICBM) in August 1957, followed in the next few weeks by the launches of Sputniks I and II—the world's first artificial satellites—prompted the Intelligence Community to draft its fourth estimate of the Soviet missile program in as many years. Special National Intelligence Estimate 11-10-57 can be considered the beginning of the "missile gap" controversy; its judgment that the Soviet SS-6 ICBM flight test program had "an extremely high priority... if indeed it is not presently on a 'crash' basis," would be reconsidered and hotly debated for several more years.¹ At the heart of the dispute was an information gap of major proportions that was closed in late 1961 by those sources that at the beginning were thought to have the greatest promise—clandestine, communications, and photographic intelligence.

Soviet Missile Development

At the end of World War II, the Soviets began to exploit Hitler's missile effort, including the removal of missiles, missile equipment, and

¹ Director of Central Intelligence, Special National Intelligence Estimate (SNIE) 11-10-57, *The Soviet ICBM Program*, 10 December 1957, (declassified). All of the NIEs (as well as SNIEs and SEs) mentioned in this essay are declassified and available in Record Group 263 (Central Intelligence Agency) at the National Archives and Records Administration. Many of the NIEs cited are reprinted in Donald P. Steury, editor, *Intentions and Capabilities: Estimates on Soviet Strategic Forces, 1950-1983* (Washington: Central Intelligence Agency, 1996).

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400 German scientists and technicians to the USSR. Using this German base, the USSR created a large research and development program for rockets of all types, including ballistic missiles. Almost all of the industrial effort supporting this activity was obscured from the West by highly effective security procedures. []

On 5 February 1959 Soviet Premier Nikita S. Khrushchev announced to the world that the Soviet Union "now has the means to deliver a blow to aggressors in any part of the world. It is not just rhetoric when we say that we have organized the mass production of intercontinental ballistic missiles; nor do we say this as a threat to anyone, but to make clear the real situation."² US analysts had watched Soviet missile development for years, and this was not the first of Khrushchev's many boasts. Nonetheless, his new threat, along with others in the winter of 1958-59, had commanded the attention of DCI Allen Dulles and the new United States Intelligence Board (USIB) of the National Security Council. USIB assigned the drafting of an assessment for the DCI to the Guided Missiles Branch of the Directorate of Intelligence's Office of Research and Reports (ORR). The task of reevaluating the evidence fell to Roland Inlow, Chief of ORR's Guided Missiles Branch. His branch's report that winter noted that only limited new evidence on Soviet ICBM development had appeared, and was still being evaluated. []

Meanwhile, interest in Soviet ICBM statements continued at a high level through the first half of 1959, a period in which Khrushchev's first Berlin campaign withered away in the face of NATO's united response to his six-month deadline for a one-sided German peace treaty. In February or March, Inlow requested an analysis of Moscow's rocket claims from the DDI's Radio Propaganda Branch of the Foreign Broadcast Information Division (FBID). In June, at the request of DDI Robert Amory, Edward Proctor and Inlow collaborated on a paper assessing FBID's assessment of the Soviet statements. The June paper, like Inlow's January memorandum for the White House, accepted as fact the assertion that the USSR had commenced mass production of intercontinental ballistic missiles. []

² Quoted in NIE 11-5-59, *Soviet Capabilities in Guided Missiles and Space Vehicles*, 3 November 1959. []

³ Roland Inlow, Chief, Guided Missiles Branch, to Edward W. Proctor, Chief, Industrial Division, Office of Research and Reports, "Monthly Report, December 1958," 6 January 1959 (hereinafter cited as IDERA Monthly Reports), (S); Otto E. Guthe, Assistant Director for Research and Reports, to Robert Amory, Deputy Director for Intelligence, "Soviet ICBM Production Under Certain Assumptions," 29 June 1959; both documents reside in Office of Russian and European Analysis Job 79R01001A, Box 4, (S). It was not possible to locate accurate job and box numbers for every document cited in this study. All box citations, however, are to Job 79R01001A []

⁴ IDERA Monthly Reports, June 1959, Box 4. []

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In response to White House and Congressional concern that deployment and series production were under way somewhere in the USSR, CIA scheduled three major estimates for late 1959 on the Soviet program. In retrospect, these stood as the crucial NIEs of the entire missile controversy; they established a realistic forecast for the beginning of deployment of the first operational missiles. Two estimates projected numbers of launchers, and, for the first time, subordinated total numbers of missiles to the militarily more important number of launchers. Finally, the same two NIEs marked the beginning of the Intelligence Community's internal controversy over the intended size and pace of the Soviet ICBM program.

Controversy With the Air Force (U)

Sherman Kent, chairman of the Board of National Estimates, asked that Edward Proctor be made available to work full time on the three estimates. Proctor was detailed to the Office of National Estimates (ONE) in South Building that August. In the meantime, the interagency Guided Missile and Astronautics Intelligence Committee (GMAIC), the Office of Scientific Intelligence's (OSI) Guided Missile Division, and ORR's Guided Missiles Branch spent all of August preparing contributions. Supplementary contributions for the estimates and memoranda on ICBM production for senior officials in the Eisenhower administration and for DCI Allen Dulles took the rest of the year.

To support this research and analysis, Dulles called on the "Hyland panel" to try to answer a more refined set of questions.⁵ The panel comprised Laurence Hyland of Hughes Aircraft, Charles R. Irvine of Advanced Research Projects Agency, and Brig. Gen. Osmond J. Ritland of the Air Force's Ballistic Missile Division. These holdovers from the previous year's three-day meeting were joined by Maj. Gen. John B. Medaris of the Army Ballistic Missile Agency, OSI's consultant Dr. W. H. Pickering of the Jet Propulsion Laboratory, Rear Adm. William F. Raborn, Jr., Director of Navy's Special Projects (Raborn, then working on the Polaris nuclear submarine program, would become DCI in 1965), Dr. Albert D. Wheelon of Space Technology Laboratory, and Dr. William J. Perry of Sylvania Electronics Defense Laboratory.

The panel convened on 24 August 1959. After listening to briefings on Soviet strategic requirements, production and deployment, U-2

⁵ The Hyland Panel first convened in 1954 to critique NIE 11-6-54, *Soviet Capabilities and Probable Programs in the Guided Missile Field*, 5 October 1954. The Panel's membership varied at its several meetings in the 1950s and early 1960s.

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The U-2 "spy plane." The U-2 was instrumental in proving the so-called "missile gap" did not exist. (U)

photographic coverage, range activities, and telemetry, the panel turned its attention to some critical questions:

- At what priority is the USSR developing an ICBM system and what progress toward development of an operational weapon system are the Soviets likely to have made to date from test activities at Tyura Tam?⁶ Is there evidence of support to this program in activities at Kapustin Yar?
- What is the likelihood that the program has already been successful enough to permit the USSR to establish an initial operational capability? What characteristics might an operational ICBM system have at present?
- What is the likelihood that the Soviets have or are now flight testing more than one generation of ICBM?
- Is there any evidence to support the present existence of or preparation for an operational ICBM capability in the USSR? Or a production program for ICBMs and system equipment? Would such evidence be detectable by current US collection capabilities?

⁶ "Tyuratani" was the subsequent spelling

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- What is the likelihood that the USSR is emphasizing space flight at the expense of ICBM development and that many of the tests, now evaluated as ICBMs, may in reality be development of space vehicle propulsion systems?
- What changes, if any, are required in the panel's November 1958 report regarding ICBM production quantities and timing?⁷

The panel came up with some tentative answers. The members correctly concluded that the SS-6 weighed about 500,000 pounds, and came close to the mark with an estimate of 750,000 pounds of initial thrust (its thrust was one million pounds). On the basis of continued SS-6 testing and the lack of evidence of the development of a second-generation ICBM, the panel members did not doubt that the SS-6 would be deployed. They had doubts, however, regarding the configuration of the missile, and could not choose between a "parallel stage" or a "one-and-a-half stage." Like the rest of the contemporary Intelligence Community, the panel was right in its estimation of a 6,000-pound warhead.⁸

The Hyland panel's conclusion that the pace of the Soviet program was "deliberate" was a sharp turn from the community's earlier belief in a crash program. This key conclusion was largely based on the small number of tests that the USSR had conducted since the panel's last meeting in November 1958. Up to that time, 10 tests had taken place at Tyuratam. The panel expected 20 to 30 more would be conducted by July 1959, but by the time the panel met in August, the Soviets had tested only 15 more. Thus, the total was 25, instead of the panel's anticipated 30 to 40. In light of this limited testing, the panel concluded that the only short-term development could be a deployment of 10 ICBMs. The operational site the panel picked was at Polyarnyy Ural in northern Russia. The Intelligence Community had detected construction activity at this site similar to that at Tyuratam.⁹

⁷ "Agenda, Director of Central Intelligence Ad Hoc Panel on Soviet ICBM Program, Barton Hall, Room 1521, 24, 25, 26 August 1959," (S). See also John A. White, Secretary, DCI Ad Hoc Panel on Soviet ICBM Program, "Meeting of Director of Central Intelligence Ad Hoc Panel on Soviet ICBM Status," 11 August 1959, (S). Both in Box 4.

⁸ Charles M. Townsend, Deputy Executive Secretary, USIB, memorandum for the United States Intelligence Board, "Notes on Discussion Between the US Intelligence Board and the Hyland Panel," 8 September 1959, Box 4, (TS Daunt).

⁹ Ibid. (TS Daunt). The Soviets may have intended to deploy an SS-6 ICBM complex at Polyarnyy Ural, but for reasons still obscure, construction activity was abandoned during 1959. The construction of the Plesetsk SS-6 complex also began in 1959, but it was not firmly identified as such until a satellite photographic mission in 1962.

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The premise of a deliberate pace in the Soviet testing program led the panel to conclude that the Soviets would deploy no more than 400 to 500 missiles and that these could be operational by late 1962.¹⁰ This premise and conclusion had a major impact on the next three national intelligence estimates. The first was NIE 11-5-59, a reference aid designed to display all available intelligence data on the capabilities of Soviet missiles and space vehicles. The estimate formally endorsed the panel's premise—based on a smaller number of tests than had been anticipated—that the Soviet ICBM program was proceeding in an orderly fashion. Initial operational capability would be, the NIE assumed for planning purposes, 1 January 1960. But the estimate did not restate the panel's conclusion on operational ICBM levels; it made no effort to project force levels.¹¹

NIE 11-8-59 did and, in so doing, formally inaugurated the Intelligence Community controversy. For the first time, missiles on launchers became the central measure of force levels. But in the range of projections, the low side was directly keyed to the output of a single plant, the high side to two plants. Army and Navy opted for the low side; State, Air Force, and the Pentagon chose the high side out to mid-1961. Beyond that period, a formal dissent from the Air Force's Assistant Chief of Staff, Intelligence, Maj. Gen. James H. Walsh, provided still higher figures (see table below).

Soviet ICBMs Deployed as Projected in NIE 11-8-59			
	Intelligence Community	Air Force Footnote	Actual Number of Launchers *
Jan 1960 (IOC)	10	10	—
Mid-1960	35	35	4
Mid-1961	140-200	185	4
Mid-1962	250-350	385	38
Mid-1963	350-450	640	91

* Sources: NIE 11-8-59, *Soviet Capabilities for Strategic Attack Through Mid-1964*, 9 February 1960. Analysis of the entire Soviet ICBM program in the 1960s produced the actual number of launchers.

¹⁰ Ibid., (TS Daunt)

¹¹ NIE 11-5-59, *Soviet Capabilities in Guided Missiles and Space Vehicles*, 3 November 1959, and Annex A.

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The Air Force did not object to the community's new conclusion that the Soviet ICBM effort was "not a crash program." Rather, Walsh attacked the idea that "The goal of the [Soviet ICBM] program is probably an ICBM force as large as Soviet planners deem necessary to provide a substantial deterrent and preemptive attack capability." In his view, the Soviet Union was trying to attain decisive military superiority over the United States and would not be satisfied either with deterrence or a preemptive attack capability.¹² []

NIE 11-4-59 followed 11-8-59, although formal USIB concurrence for both came on 9 February 1960. NIE 11-4-59 differed sharply from the Air Force's belief that the Soviet program was aimed at all-out superiority. The estimate held that, while the USSR would build a "substantial long-range missile force," uncertainties, risks, and high economic costs would prevent it from constructing a force powerful enough to "permit them to plan attacks on Western retaliatory forces with the degree and certainty of success required to insure that the USSR could win a general war without incurring unacceptable damage."¹³ []

Of the three estimates, NIE 11-8-59 was by far the most important, because of the controversy surrounding its quantitative projections of ICBM force levels. Its major flaw was the lack of knowledge of the Soviet decision to limit deployment of SS-6 ICBMs, an analytical mistake that the Intelligence Community made on the basis of the strongest evidence available—the continued testing of the SS-6. NIE 11-8-59 was mainly Proctor's effort, and DDI Robert Amory and ONE's Sherman Kent commended him for it. Proctor briefed DCI Dulles in December on the draft estimate. The NIE became the basis for Dulles's testimony in the acrimonious joint Senate committee hearing on Friday, 29 January 1960.¹⁴ []

Allen Dulles Goes Before the Senate []

The January Senate hearing was the roughest "missile-gap" proceeding on record and underscored the problems of strategic research before satellite reconnaissance. The next two missile NIEs and an important (though temporary) consolidation of CIA's missile-intelligence expertise

¹² NIE 11-8-59, *Soviet Capabilities for Strategic Attack Through Mid-1964*. []

¹³ NIE 11-4-59, *Main Trends in Soviet Capabilities and Policies, 1959-64*, 9 February 1960. []

¹⁴ IDERA Monthly Reports, 1959. []

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followed the hearing. DCI Dulles appeared as the prime witness before the Senate's Committee on Aeronautical and Space Sciences and the Preparedness Investigating Subcommittee of the Committee on Armed Services, both chaired by Senator Lyndon B. Johnson (D-TX). [redacted]

Johnson called the committees to order and announced that its members intended to "interrogate (Allen Dulles) not only as to the nature and magnitude of the threat, but also to determine why the yardstick for measuring this threat was changed, and the extent to which it has been changed." Johnson noted that Secretary of Defense Neil H. McElroy had testified the previous year that the Soviets "could have a 3-to-1 missile superiority in the near future." In a January 1960 hearing only a week before Dulles's testimony, the new Secretary of Defense, Thomas S. Gates, Jr., said that there was no "missile gap" because the analytical assumptions had changed. According to Gates, the US Intelligence Community now looked at the issue from the perspective of what the Soviets intended to do rather than what they could do.¹⁵ [redacted]

In his testimony on 29 January, DCI Dulles repeatedly explained that the latest estimate did not rely exclusively on a "new yardstick," but that as more and more evidence on the Soviet ballistic-missile program came into CIA, Agency analysts were able to get a hold on Soviet programming decisions.¹⁶ [redacted]

Dulles used a chart to point out that 15 of the 21 successful Soviet ICBM firings to 3,500 nautical miles or more had taken place in 1959. "Somewhere in the range of 20 percent" of the tests failed after launch, but the CIA did not know the number of failures before launch.¹⁷ The DCI then discussed the more recent tests, and concluded that the Soviet Union had made "very real progress in ballistic missiles during 1959," with a measured and orderly test-firing program. "For planning purposes," he said, the USSR had an initial operating capability of "a few, say ten" operational ICBMs at completed launching facilities.¹⁸ [redacted]

¹⁵ US Senate, "Hearing Held before Committee on Aeronautical and Space Sciences and Preparedness Investigating Subcommittee of the Committee on Armed Services, Briefing by Allen Dulles, Director, Central Intelligence Agency," 29 January 1960, (TS). Hereafter cited as "Senate Hearing." Secretary Gates's testimony was in a closed session of the House Committee on Armed Services, "Hearings before the Committee on Armed Services," 22 January 1960. [redacted]

¹⁶ Senate Hearing, p. 73, (TS) [redacted]

¹⁷ Ibid., pp. 14-15. Senator Symington asked: "Does that mean that you do know it, that you do not want to say it, or you just don't know it?" Dulles: "No, I meant that presentation about failures was sensitive. It is sensitive to distinguish the sources that are used to learn about failures. They are highly sensitive sources.... But we don't get enough intelligence with regard to (failures before launching). It is just (that) they never get off the pad at all. We never get much information." [redacted]

¹⁸ Ibid., pp. 17-18, (TS). [redacted]

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After a brief treatment of the community's reexamination of Soviet ICBM accuracy and reliability, Dulles turned to the projected ICBM force goals over the next two years, using another chart to explain the changes from the 1958 estimate. He observed that such deployments could be accomplished by the middle of the next year without appreciably hindering other Soviet military programs or civil programs relating to the goals of the USSR's Seven-Year Plan. At this point, Dulles acknowledged that there was a conflict with Air Force Intelligence, which "believes that the growth of the missile force, particularly after 1962, will be considerably greater than this."¹⁹ []

Dulles then spelled out the Intelligence Community's generally agreed position on Soviet strategic intentions. The figures he used assumed that the Soviets were not engaged in a "crash" ICBM development program and were not subordinating everything else to it. Dulles explained that Khrushchev was persuaded that he had the ability to take over the Free World without war, and "therefore he is straining his resources and his capabilities in many ways to promote his ability to take over the free world in this way."²⁰ []

Dulles had to endure a vigorous cross-examination from Special Counsel Edwin L. Weisl, lasting until the hearing recessed at 1735. The Senate's skeptical response to Dulles's testimony at this hearing would influence the next several national estimates as well as Edward Proctor's and Roland Inlow's work days (and nights) in ways that they and about 30 other CIA officers would long remember. []

The Guided Missile Task Force []

Angry over the course and tone of the Senate hearing, Dulles immediately intensified CIA's intelligence effort against Soviet ICBMs. He ordered a briefing to learn in detail the activities of each component in the Intelligence Community dealing with the enigma of Soviet ICBM deployment. []

Within CIA, the onus was initially on Inlow, who reported to Dulles by 5 February 1960 not only on ORR's but also on OSI's activities related to the problem of deployment. With time only to complete

¹⁹ Ibid., pp. 22-23, (TS). []

²⁰ Ibid., pp. 37-38, 39. (TS). In the afternoon session, Senator Jackson appeared to take exception to Dulles's view of Khrushchev's plans. "Well, I think that Mr. Khrushchev, if he can get a war—get one going in which he can destroy the enemy and that is the only way he can do it and survive himself, he will do it." Ibid., p. 154. []

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a rough draft, Inlow's defense emphasized that not a single Soviet ICBM launch site had yet been identified. He reported that NIE 11-8-59 was controversial mainly because USIB member agencies could not agree about their views on the Soviet ICBM goal: military superiority, a high level of deterrence, or a modest capability with the principal emphasis on space. Because of the paucity of data on intentions and capabilities, most of the DDI activity, Inlow wrote, "had been focused on stimulating and guiding collection activity."²¹

Inlow's briefing described the analytic effort of the past two years. He highlighted twelve major research areas, described their results, and noted the number of manhours committed to the projects thus far.²² The total DDI analytical manpower allocated directly or indirectly to the specific problem of ICBM deployment probably represented no more than 10-to-12 full-time research analysts. Moreover, it had only been since mid-1959 that ORR had as many as five or six analysts working exclusively on deployment of the 15 or so Soviet missile systems CIA believed operational. Resource limitations, extremely heavy demands for intelligence support of all kinds, and the complexity of the problem made it impossible to ensure systematic and comprehensive exploitation of all of the material already available in the community. On the other hand, doubling or tripling the analytical resources devoted to the problem probably would not materially improve the rate of progress in the next year or two.

Dulles responded to Inlow's briefing by ordering USIB members to cooperate in a reexamination of deployment data and to resolve the differences between the Air Force and the rest of the community. In February, USIB once again directed the GMAIC to rework the evidence on production and deployment. To accomplish this "highest priority" task as quickly as possible, USIB approved temporary working groups on production and deployment. GMAIC appointed Inlow chairman of the Production Working Group, and assigned an Army officer the chair on the Deployment Working Group.²³

The specific question before GMAIC was whether NIE 11-8-59 had accurately estimated the pace of the Soviet ICBM program.

²¹ Memorandum for Assistant Director for Research and Reports, from Roland S. Inlow, Chief of the Guided Missiles Branch, "ORR-OSI Activities Concerning Soviet ICBM Deployment," 18 February 1960.

²² Ibid.

²³ IDERA Monthly Reports, 1959 and 1960, (Secret), Earl McFarland, Jr., Chairman, Guided Missiles and Astronautics Intelligence Committee [GMAIC], memorandum for Chairman, United States Intelligence Board, "Re-examination of NIE 11-8-59," 2 March 1960.

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GMAIC's two new working groups were to evaluate the evidence on every potential launch site and production facility, and each working-group member was required to divulge the evidence his intelligence component held. For the effort, Inlow committed about half of the analysts in his branch plus the support of three other branches in ORR.²⁴ []

At issue was a closely held, extensive Air Force list of suspected ICBM launch sites. A dispute arose when Air Force, probably in late February 1960, briefed USIB on its isolated position. Because data backing up this briefing had not been made available to GMAIC, Col. Earl F. McFarland, Jr., USAF, reported to USIB that he had served, in effect, a summons on his own career component: GMAIC requested a written version of the briefing, with graphics, that the Air Force gave USIB.²⁵ []

Air Force eventually supplied the list, and by 4 April 1960 the Deployment Working Group completed its report. Judging from a later GMAIC study, the group had evaluated about 95 potential launch locations and divided these into six categories: one confirmed site (Tyuratam), no probable sites, and four possible sites (Kapustin Yar, Plesetsk, Polyarnyy Ural, and Ust'-Ukhta). Twelve other locations were undetermined and the remainder fell into the doubtful or negative categories. Outside the test range, not a single operational ICBM could be conclusively identified.²⁶ []

For Proctor and Inlow the substantive problem was baffling. They had evidence of continuing testing, but no evidence on deployment. The latter could be (and was) explained away with the argument that large areas of the USSR still had not been covered by the U-2 program. The absence of telltale signs of a substantial program, however, could not be explained away. US contractors had informed Proctor, Inlow, and Clarence Baier of the numerous factors involved in US missile deployment, and these DDI officers had, in turn, used this information to determine the features of a substantial Soviet ICBM program (defined, as early as SNIE 11-10-57, as 500 operational missiles). The analogy suggested that the number of workers and telltale signals would have to be almost astronomical. Inlow assessed that hundreds of thousands—up to 500,000—construction workers and numerous manufacturing plants

²⁴ IDERA Monthly Reports, 1960, (Secret); McFarland, "Re-examination of NIE 11-8-59." []

²⁵ Ibid.; Amory to Dulles, "Memorandum to DCI Dated 16 February 1960, Subject: 'Intelligence Activities Directed Against ICBM Deployment,'" 8 July 1960, Box 4. []

²⁶ Report of the GMAIC Deployment Working Group, "Soviet Surface to Surface Missile Deployment," 1 September 1960, (TS Daunt Chess); Authors' interview of John G. Godaire, 3 June 1971, transcript in Box 8. []

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would have to be involved in a support effort to acquire this substantial operational ICBM capability at the times projected in the NIEs.²⁷ [redacted]

For the Air Force, the substantive problem was simple: the Intelligence Community's collection efforts were missing critical evidence of a substantial Soviet ICBM program. Air Force generals, like Thomas S. Powers of the Strategic Air Command, publicly asserted that the USSR could destroy US retaliatory forces, frequently challenged the Eisenhower Administration's defense policy, and even more frequently received congressional support from influential Senators, including Stuart Symington, Henry Jackson, Lyndon Johnson, and John Kennedy. Thus, when new estimates would be made later in the year, the Air Force would increase its projections of deployed Soviet ICBM launchers while the rest of the community would make substantial reductions—although even these overestimated the scope of the Soviet deployment program.²⁸ [redacted]

To ensure that it had not missed something, CIA undertook the first DDI consolidation of missile research in the Agency's history. In February 1960, DDI Amory suggested the idea of establishing an ad hoc DDI Guided Missile Task Force (GMTF), and DCI Dulles promptly agreed to his proposal. A single temporary component with Proctor as chief and Inlow as his deputy included OSI and ORR expertise. Not only did this arrangement reflect Agency senior officials' confidence in Proctor and Inlow, it also gave de facto recognition to ORR that it had the primary responsibility for CIA intelligence analysis on the building and fielding of rockets (with OSI retaining responsibility for analysis of research and development).²⁹ [redacted]

The GMTF included about 30 analysts when it began operations in April 1960. The Task Force dispensed with standard administrative chores and occupied itself with substantive and methodological problems. Even the title of the group did not apparently concern its administrators. It was, for example, sometimes referred to in its own reports as the "DD/I Task Force on Long-Range Ballistic Missiles," or the "DD/I Task Force on Ballistic Missiles," or just the "DD/I Task Force." [redacted]

²⁷ Edward W. Proctor, Chief, Guided Missile Task Force, to Amory, "Status of Guided Missile Task Force Research," 15 October 1960, Box 4, (TS Daunt); Godaire interview, [redacted] see also SNIE 11-10-57, *The Soviet ICBM Program*, (declassified). (S)

²⁸ Godaire interview. [redacted]

²⁹ Ibid., (S); Amory, "Memorandum to DCI Dated 16 February 1960, Subject: 'Intelligence Activities Directed Against ICBM Deployment,'" 8 July 1960, (S); IDERA Monthly Reports, 1960. [redacted]

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Proctor's and Inlow's GMTF produced detailed and comprehensive reports on both ICBM production and deployment. The principal objectives of the task force were spelled out in Proctor's first six-month status report the following October:

- The allocation of adequate personnel resources and their integration into an effective research team on the problems of production and deployment of long-range ballistic missiles.
- A more intensive focusing of the research effort on the substantive areas most likely to yield definite results.
- Assurance that all available evidence is being thoroughly and systematically exploited.
- Development of new approaches to both research and collection problems

His summation of the results of the first six months was honest, his forecast for a breakthrough (a view which apparently reflected his concern about the trouble-plagued CORONA project) was pessimistic, and his strategy was simply to try harder: "The fact that we have not achieved and cannot yet anticipate major breakthroughs," Proctor noted, "has further increased our sense of urgency in seeking solutions to this critical problem."³⁰

The "missile gap" controversy that Spring led directly to a spectacular failure—the Soviet shootdown of Francis Gary Powers's U-2 on 1 May 1960. The primary targets for the Powers mission were Tyuratam, Severodvinsk, and the suspect ICBM complexes at Plesetsk and Yur'ya. The planned mission would have identified launch facilities at Plesetsk and Yur'ya. More importantly, Yur'ya and Complex C at Tyuratam could have been identified with a second-generation ICBM, thereby questioning the basis of the NIEs that had opened the dispute in the first place. But the U-2's crash and Powers's capture marked the abrupt end of the U-2 program over the USSR, and contributed to Proctor's forecast that major breakthroughs could not be anticipated.³¹

The seemingly unpromising future of overhead photography prompted the task force and GMAIC's two working groups to reexamine all the evidence to ensure that the Intelligence Community had not

³⁰ Proctor, "Status of Guided Missile Task Force Research," 15 October 1960, (TS Daunt).

³¹ National Photographic Interpretation Center (NPIC), NPIC/R-1/61, Photographic Interpretation Report, "Yur'ya ICBM Launch Complex," July 1961, (TS Chess); Proctor, "Status of Guided Missile Task Force Research," 15 October 1960, (TS Daunt).

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overlooked anything. In June, GMAIC's ad hoc Production Working Group completed a 109-page supplement to its earlier evaluation of potential ICBM production plants.³² The supplement supported earlier findings that the Scientific Research Institute (NII 88) in Kaliningrad "probably" fabricated ICBMs for the test range (it did) and that Design Bureau (OKB) Plant 456 in Chimki "very probably" developed the engines used in the Soviet ICBMs (as it did as well). Four categories of missile production (airframe, production and final assembly, propulsion, and ground-rail transport) and some 50 individual plants had been evaluated in the process of preparing the group's supplement. The Deployment Working Group used this study as part of its review (which could confirm only Tyuratam as an ICBM launch area), completed in September.³³ []

The two GMAIC reports formed the base for the extensive support the GMTF provided on NIE 11-8-60. The task force took four major approaches. First, [] GMTF Deployment Group attempted to determine the most likely Soviet concepts for ICBM deployment. In this endeavor, the group used data from the Soviet test ranges, information on missile characteristics, and (with support from Space Technology Laboratory) relevant analogies from the US missile business. Second, Baier's GMTF Production Group reviewed Soviet long-range missile programs to identify the kinds of activity taking place at various phases of each program and to determine the extent of interrelationships. Third, Baier's group tried to develop a methodology for estimating the production capacity of a final assembly plant. Finally, the same group prepared a detailed analysis of the major ballistic missile prototype production centers located in the Moscow area.³⁴ []

None of the GMTF studies was complete by the time the Intelligence Community published NIE 11-8-60, but then none was expected to improve the projection on ICBM deployment because U-2 photographs were no longer available.³⁵ Consequently, the community

³² GMAIC, Supplemental Report of the Ad Hoc Working Group on ICBM Production, "Evaluation of Evidence on Soviet ICBM Production," 17 June 1960, (TS Daunt) []

³³ GMAIC, "Soviet Surface-to-Surface Missile Deployment," 1 September 1960, (TS Daunt Chess); NPIC, Photographic Interpretation Report, "Chronology of Moskva Missile and Space Propulsion Development Center Khimki 456, USSR," February 1968, (TS Chess); ATIC, "Kaliningrad Guided Missile Plant and Experimental Station NII-88 and Kaliningrad Arms Plant 88 (55°55'N-37°49'E)," June 1958. []

³⁴ Proctor, "Status of Guided Missile Task Force Research," 15 October 1960, (TS Daunt) []

³⁵ Ibid.; Authors' interview with Edward W. Proctor, 15 December 1970, transcript in Box 8, (TS Daunt); Interview with Roland Inlow, January 1971, transcript in Box 8, (TS Daunt) []

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controversy over Soviet ICBMs got out of hand and the NIE of 1960 increased rather than reduced uncertainty.

The End of the Dark Era

With the circulation of NIE 11-8-60 on 1 August 1960, the controversy over Soviet ICBMs hit an historic level of acrimony. Unable to resolve any significant differences regarding projected force levels, the estimate illustrated individual departmental and agency positions in a chart. Program "A," estimating a Soviet force of 400 ICBMs by mid-1963, was the DCI's pick as the nearest approximation of the actual Soviet program. The Air Force's Assistant Chief of Staff, Intelligence, argued for the more ambitious program "B," estimating a Soviet force of 700 ICBMs by mid-1963, and complained in a footnote that the rates of increase shown in its projection should be continued through 1965. The Director of Intelligence and Research of the State Department, the Assistant to the Secretary of Defense for Special Operations, and the Director for Intelligence of the Joint Staff picked an undefined area within the "A-B" range. The Army's and Navy's intelligence services believed that program "C" (a Soviet force of 200 ICBMs by mid-1963) most nearly reflected the actual Soviet effort. Most participants agreed, however, that the Soviet Union had only "a few—say 10" deployed ICBMs.

Thirty-six dissenting departmental footnotes to the estimate supported the short-term interests of the individual services. The estimate's summary highlighted that the threat programs "A" and "B" posed was practically the same through the end of 1960; that is, before the year's end, either projection would give the Soviets the capability to destroy major US metropolitan areas. At the beginning of the next year, "A" or "B" would pose a threat to SAC's operational airbase system. By mid-1961, the Air Force's projection would give Soviet planners "high assurance" of being able to damage most of the SAC airbase system in an initial salvo, whereas CIA's projected program would reach this hypothetical capability late in the year. Navy's and Army's low projection for 1961 (which in fact was too high) gave the Soviets the capability to inflict massive destruction only on US urban areas. NIE 11-8-60

* NIE 11-8-60, *Soviet Capabilities For Long Range Attack Through Mid-1965*, 1 August 1960.

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concluded, with objections only from the Air Force, that none of the above catastrophes was imminent."⁷ [redacted]

Shortly after the dissemination of this extraordinarily dissent-ridden NIE, a series of closely spaced breakthroughs marked the beginning of the end of the "missile gap" controversy. The first involved CORONA. After months in a standdown, a successful diagnostic flight test of Discoverer XIII took place on 10 August 1960. Discoverer XIV, launched a week later, carried a camera and 20 pounds of film. This mission gave the Intelligence Community its first usable satellite photographic coverage of the USSR. Although the photographs did not provide direct evidence on ICBM deployment, the next mission, launched on 10 December, provided the first coverage of an ICBM site. The resolution was much lower than that obtained from the U-2's cameras, but the area of coverage was much greater and the interpretability of the product soon improved. This source of overhead reconnaissance would provide masses of highly classified information on Soviet development programs and deployments, but was modestly—and appropriately—codenamed "KEYHOLE."⁸ Proctor and Inlow's task force prepared the first report based on KEYHOLE photography. "An Assessment of an Installation at Plesetsk, USSR, as an ICBM Site" represented the first of the all-source, in-depth studies that would become a standard item in the new era. [redacted]

The second break involved [redacted]

[redacted] a second-generation Soviet ICBM exploding during its launch from Tyuratam. ICBM analysts knew almost immediately that something odd had happened, but could piece together only gradually the extent and significance of the tragedy. The Soviet press never mentioned the incident."⁹ [redacted]

On 25 October 1960, Moscow Radio reported the death ("as the result of an air crash" on the 24th) of Marshal Mitrofan Nedelin, the Commander in Chief of the recently formed Soviet Strategic Rocket Forces. Later analysis in the GMTF confirmed that beginning on the 25th an unusually large number of aircraft from Moscow and Dnepropetrovsk had flown into the Tyuratam area. These flights could not be

⁷ Ibid. [redacted]

⁸ Kenneth E. Greer, "Corona," reprinted in Kevin C. Ruffner, editor, *CORONA: America's First Satellite Program* (Washington: Central Intelligence Agency, 1995), p. 26. [redacted]

⁹ Proctor to Amory, "Major Soviet Missile Disaster in October 1960," 25 September 1961, Box 10, (TS Dinar). [redacted]

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Col. Oleg Penkovsky, GRU (U)

logically associated with any subsequent test event because the range went into a standdown for a three-month period. In succeeding months, clandestine sources told of an explosion and of the death or injury of

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hundreds of important officials and range personnel at the test center. The flights in late October were, most likely, filled with caskets, consultants, and medical personnel.⁴⁰ []

When all the data were assembled, the disaster appeared to result from a malfunction of a quite different ICBM undergoing its initial range test. Data on ICBM launches on 2 February and 3 March 1961 confirmed that a new missile, later designated the SS-7, had entered the test-range phase. Beginning in June 1961, improved KEYHOLE photography exposed the progress of SS-7 deployment. Then data from a launch on 9 April confirmed the arrival of another new missile, the SS-8. The Soviets had two second-generation ICBMs under development. []

The third breakthrough involved Soviet Col. Oleg Vladimirovich Penkovskiy. In August 1960, Penkovskiy, a high-ranking official in the Chief Intelligence Directorate (GRU) of the Red Army General Staff, established contact with the CIA and the British. The case would cover the period of August 1960 through August 1962 and provide more than 8,000 pages of translated reporting, the bulk of which carried the code-name IRONBARK. Most of these reports constituted highly classified Soviet Ministry of Defense documents. During this period, three series of lengthy debriefing and briefing sessions were held with Colonel Penkovskiy. According to Richard Helms, then the Deputy Director for Plans, "Every Western intelligence requirement of any priority was covered with him during this time and all aspects of his knowledgeability and access were explored." Over 90 percent of the approximately 5,000 pages of Russian-language documentary information provided by Penkovskiy concerned military subjects. Roughly half of this information came from the Chief Intelligence Directorate library, while the remainder he photographed either in the missile and artillery headquarters of Marshal Varentsov or at the Dzerzhinskiy Academy.⁴¹ []

The IRONBARK documents gave strategic researchers their first comprehensive look into Soviet strategic thinking. They also provided a wealth of information on Soviet ballistic missiles. The top secret publication of the Soviet's newly formed Strategic Rocket Forces, *The Information Bulletin of the Missile Troops*, permitted Agency analysts to learn the organization and structure of the USSR's strategic missile units, the functions of the various staffs in each unit, how these units were linked to the military high command in Moscow, and the activities of missile units at different levels of combat readiness. Through three sessions with Colonel Penkovskiy in England and France, sessions

⁴⁰ Ibid., (TS Dinar). []

⁴¹ Richard Helms, Deputy Director for Plans, to John A. McCone, Director of Central Intelligence, "Essential Facts of the Penkovskiy Case," 31 May 1963. []

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which, when written up in clandestine reports, generally carried the innocent-sounding codename CHICKADEE, Agency analysts received detailed technical information on the missiles themselves, the yields of their warheads, targeting methods, and targets.⁴² []

In April 1961, Penkovskiy had his first face-to-face sessions with his British and American case officers. In an Information Report of 16 May 1961, Penkovskiy described the "missile gap" as a hoax. Khrushchev, he said, was more interested in fostering the impression that the Soviet Union already had a tremendous ICBM program when in fact it was practically nonexistent. Penkovskiy cautioned that the USSR would eventually have many missiles because "millions of men's efforts are directed to this work," and the "entire economy of a nation is directed by a one-party system to which all is subordinate."⁴³ []

Penkovskiy's testimony alone was not enough to close the "missile gap," but it tentatively supported the almost heretical argument for a limited Soviet ICBM program. Inlow's reaction to the first CHICKADEE report was to recognize that, after all the urgent collection efforts of the past three years, the evidence on ICBM production, deployment, and training "really hadn't been much."⁴⁴ []

Force projections in the previous estimates had been based on the empirically supported assumption that the Soviets would widely deploy the SS-6. Penkovskiy's report, following the tape of the SS-7 missile disaster, weakened this assumption.⁴⁵ []

The SS-6, though a good rocket, was in the later words of the Hyland Panel "a large and difficult-to-handle missile." The SS-6 used cryogenic fuel, which could not be stored in the missile for long. Built in Kalinin-grad's NII 881, the SS-6 system was reliable and no doubt met original design specifications, and it remained the prime booster for the Soviet space program. But from a technical standpoint, the inability to store fuel on the SS-6 (and the enormous amount of support facilities it required) made the cryogenic technology less desirable for military applications.

⁴² For a discussion of later uses of IRONBARK and CHICKADEE, see Leonard F. Parkinson, "Penkovskiy's Legacy and Strategic Research," *Studies in Intelligence* 16 (Spring 1972). This article has been declassified and can be found in Record Group 263 (Central Intelligence Agency), National Archives and Records Administration. []

⁴³ After Penkovskiy's apprehension in late 1962, the DDP circulated this report as CSDB No. 3/652, 800, "The Soviet ICBM Program," 21 February 1963, Box 5. (s)

⁴⁴ Godaire interview. []

⁴⁵ Except for the Air Force, which dissented from NIE 11-8/1-61, asserting that the Soviets would deploy the SS-6 as an interim measure until second-generation missiles became available. The Air Force also predicted that accelerated deployment would follow at a far faster pace and larger scale than did the majority of the Intelligence Community. NIE 11-8/1-61, *Strength and Deployment of Soviet Long Range Ballistic Missile Forces*, 21 September 1961. []

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The smaller SS-7, built at the Dnepropetrovsk Missile Development and Production Center, used storable liquid fuel and did not require anywhere near the support facilities of the first-generation system.⁴⁶ []

With new information derived from virtually every area of the classic and modern intelligence collection spectrum, the majority USIB's NIE 11-8-61 of June 1961, *Soviet Capabilities For Long-Range Attack*, started to close the "gap" by substantially reducing projected force levels. But not all the revolutionary findings had been fully appreciated. Only hinting that fundamental improvements in collection were within grasp, the estimate cautiously concluded that the evidence at hand was not sufficient to "establish with certainty even the present strength of the ICBM force." Thus the range of projection remained wide, but most of the estimates (save the Air Force's) were reasonable, and the Army's and Navy's came close to the mark (see table below).

Soviet ICBMs Deployed as Projected in NIE 11-8-61				
	NIE 11-8-61	State's Footnote	Army's and Navy's Footnote	Air Force's Footnote
Mid-1961	50 to 100	75 to 125	"a few"	"at least 120"
Mid-1962	100 to 200	150 to 300	50 to 100	300
Mid-1963	150 to 300	200 to 450	100 to 200	550
Mid-1964	200 to 400	—	150 to 300	850
Mid-1965	—	—	—	1150
Mid-1966	—	—	—	1450

The estimate, in a veiled reference to KEYHOLE photography of Plesetsk, noted that US intelligence, "through intensive collection efforts by all available means," had achieved partial coverage of the regions best suited to the deployment of Soviet ICBMs.⁴⁷ []

⁴⁶ USIB-D-33.8/7, "Working Notes on 6 June 1962 Meeting With USIB Ad Hoc Panel on Status of Soviet ICBM Program," 14 June 1962, Box 5, (TS Dinar); CIA, FMSAC-STIR/TCS/71-21, SR IR 71-16, "The SS-9 ICBM Program: Organizational Aspects of Soviet Decision Making," September 1971, (TS Umbra). []

⁴⁷ NIE 11-8-61, *Soviet Capabilities For Long-Range Attack*, 7 June 1961 (with later USIB action completed on 13 June 1961). State's footnote seemed to reject the "new yardstick" of estimating on the basis of programming information that DCI Dulles had defended before the two Senate committees on 29 January 1960. Thus the Director of Intelligence and Research Roger Hilsman argued in his footnote that the NIE "should include an estimate of the largest ICBM force which the USSR could have in mid-1961... and the probable Soviet force level in mid-1961. (Emphasis in original.) []

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Most importantly, NIE 11-8-61 formally opened up the case for limited near-term deployment. Its authors were not sure whether "The inadequacy of confirming evidence regarding deployment is attributable either to (a) the limitations of our coverage, combined with the success of Soviet security measures, or (b) the fact that deployment has been on a relatively small scale to date." ⁴⁸ []

The Hyland Panel reconvened to try to clarify the uncertainty. The members for the panel's third meeting included Hyland and Perry (the only carryovers from the 1959 meeting); Dr. Hendrik W. Bode, the Vice President of Bell Telephone Laboratories; Lt. Gen. Howell M. Estes, the Deputy Commander of Air Force's Aerospace Systems; Dr. George B. Kistiakowsky from Harvard (by then a veteran in the missile controversy who, from July 1959 to January 1961, had succeeded Killian as the President's Special Assistant for Science and Technology); Arthur E. Raymond, RAND Corporation's Vice President and its Director of Research; and Navy's Special Projects Technical Director, Rear Adm. Levering Smith. In early September 1961 the members heard briefings on the new data leading up to the new estimate and on recent determinations that KEYHOLE photography of June and July 1961 had identified two ICBM complexes. ⁴⁹ []

After considering all the evidence, the panel members decided that, while "there may be as many as 50 ICBM launch pads under construction or in use in the USSR," there were no more than 25 operational launching pads. The panel concluded that the threat to the United States from Soviet ICBMs should be materially downgraded, and that the missiles did not represent an adequate first strike capability. ⁵⁰ []

The "missile-gap" issue was over, but it required an NIE to put it to final rest. NIE 11-8/1-61 of 21 September 1961 did just that in its two opening sentences. "New information, providing a much firmer base for estimates on Soviet long-range ballistic missiles, has caused a sharp downward revision in our estimate of present Soviet ICBM strength,"

⁴⁸ Ibid. []

⁴⁹ Harry J. Thompson, Acting Executive Secretary, USIB, "Report of USIB Ad Hoc Panel on Status of Soviet ICBM Progress," 8 September 1961, (TS); NPIC/R-1/61, "ICBM Complex Yur'ya, USSR," (TS Chess); NPIC/B-18/61, "Possible ICBM Launch Site Near Kostroma, USSR," August 1961 (TS Chess) []

⁵⁰ Thompson, "Report of USIB Ad Hoc Panel," (TS). Terms were soon needed to distinguish among the three ICBMs. The Intelligence Community adopted the designation "Category A" for the SS-6. Because it was not possible to tell which of the remaining ICBMs had come next, the panel could only describe the SS-7 as the "Category B or C" vehicle. The SS-8 was described, for a time, as the "Category C or B" missile. []

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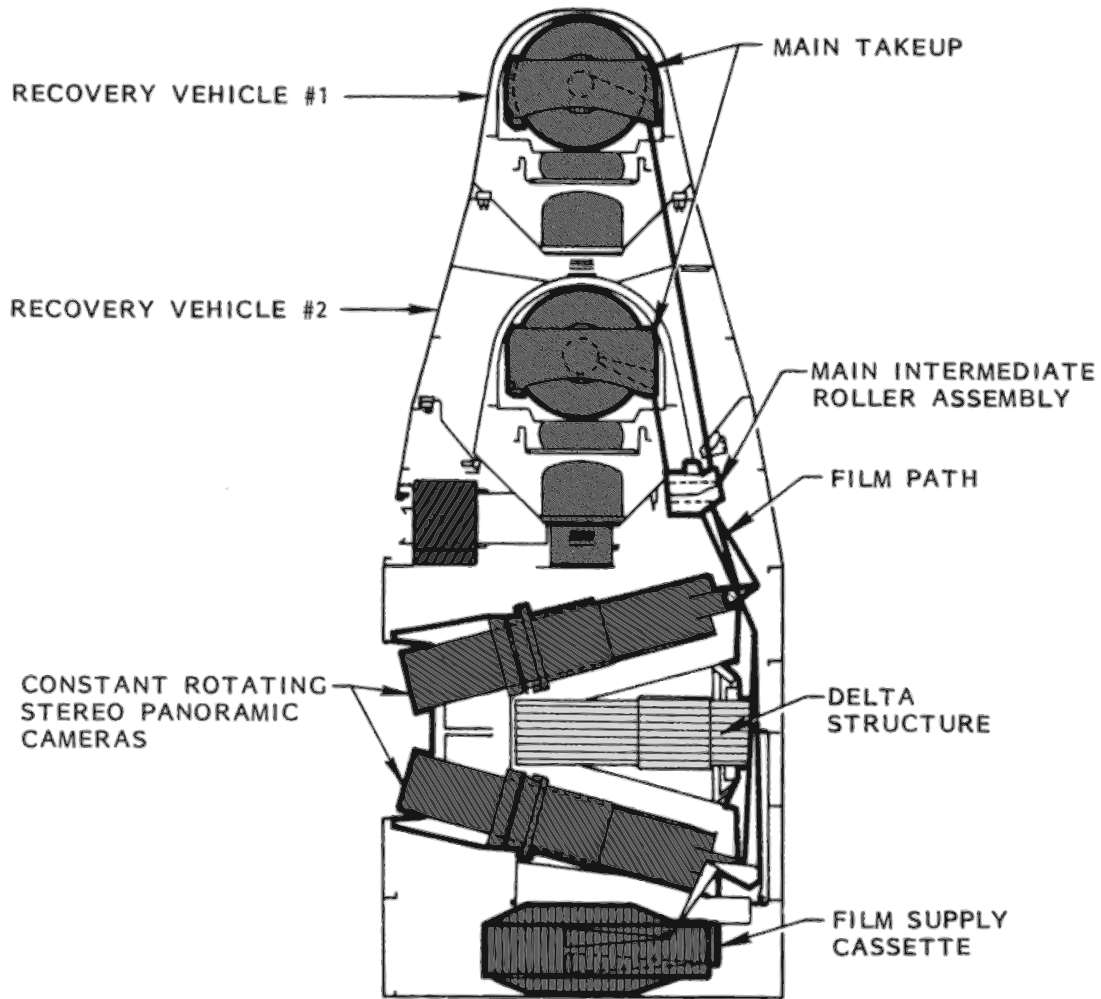
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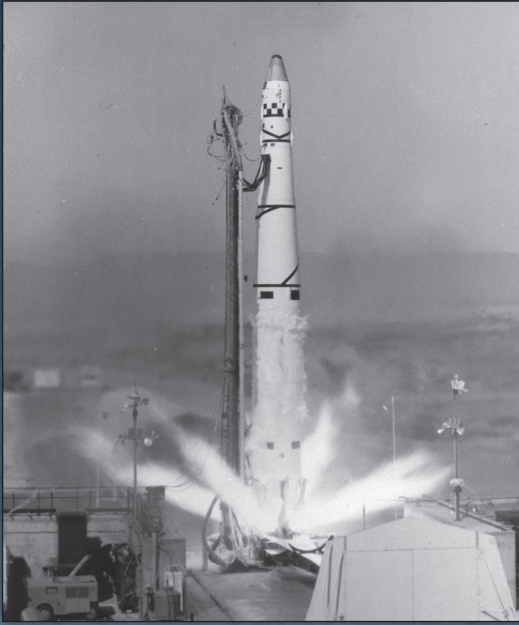
the NIE said. "We now estimate that the present Soviet ICBM strength is in the range of 10-to-25 launchers from which missiles can be fired against the US, and that this force level will not increase markedly during the months immediately ahead." The "dark era" in strategic research was over, thanks to CORONA and KEYHOLE.⁵¹

⁵¹ NIE 11-8/1-61, *Strength and Deployment of Soviet Long-Range Ballistic Missile Forces*, 21 September 1961. Four days later, columnist Joseph Alsop (who had actively pushed the "missile gap") leaked the main thrust of NIE 11-8/1-61: "Prior to the recent recalculation the maximum number of ICBMs that the Soviets were thought to have at this time was on the order of 200—just about enough to permit the Soviets to consider a surprise attack on the United States. The maximum has now been drastically reduced, however, to less than a quarter of the former figure—well under 50 ICBMs and, therefore, not nearly enough to allow the Soviets to consider a surprise attack on this country"; "Facts About the Missile Balance," *The Washington Post*, 25 September 1961.

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SCHEMATIC OF THE CORONA SATELLITE





10 THE MISSILE GAP¹

IN THE MONTHS leading up to Sputnik and the Gaither Report, but following the transmittal of Albert Wohlstetter's R-290 report for RAND, Air Force Intelligence was predicting the end of deterrence for the United States in a matter of a few years. On September 30, 1957, a special Air Force panel delivered a report to General Thomas White, Air Force Chief of Staff, noting that the Soviet Union's major objectives were "first, destroy or neutralize U.S. capabilities and nuclear retaliatory forces; and second, to deliver an attack on urban, industrial, political and psychological targets in the U.S. so as to prevent mobilization of the U.S. weapons potential."

Having a substantial ICBM force would give the Soviets the means to fulfill their objectives, and the panel predicted that by 1963 a Soviet attack that aimed three missiles at each SAC air base and missile site would destroy so much of America's nuclear strength that "the Soviets might well consider that they would be in a position to initiate general war with very little risk of retaliatory major destruction to their national strengths."

On November 12, the intelligence community's official National Intelligence Estimate stated that the Soviets could have 500 operational ICBMs by the end of 1962 or, if they built their program on a crash basis, by the end of 1961. Some officers in SAC Intelligence figured that the Soviets might have many more than that, perhaps up to 1,000. Meanwhile, the United States was scheduled to have only twenty-four Atlas missiles ready to go by 1960 and only sixty-five by 1961. This estimate was not a matter of controversy within the intelligence community; it was a position held by Air Force Intelligence and by estimators inside the CIA alike.

Yet there was no hard evidence for these claims of a missile gap. The estimate sprang from the demise of worries about a "bomber gap," which the intelligence community had also commonly predicted a few years earlier, but which was now commonly agreed to have been a gap that never was and that almost certainly would never be.

By 1954, it was clear that the Soviets had built a prototype design of a bomber with potential intercontinental range that the United States dubbed the Bison. After surreptitiously observing from afar an April rehearsal for the May Day air show, American air attaches in Russia reported seeing at least twelve and maybe twenty Bison planes in the air. Intelligence analysts in the U.S. Air Force reasoned that if the Russians were putting that many in the air at one time, then they could have something like twenty-five to forty Bisons off the production line.

The real intelligence scare came a year later, on July 13, 1955, the U.S.S.R.'s Aviation Day, when the Russians proudly display their air power. American attaches reported seeing ten Bisons flying by, then another formation of nine Bisons, then still another nine—twenty-eight planes in all. Again, Air Force Intelligence reasoned that the Soviets must have about twice that number actually built, which meant that the production lines were cranking out many more Bisons than they had previously guessed. The intelligence estimates for what the Soviets would have a few years hence began to explode. The 1956 National Intelligence Estimate, known as the NIE, predicted that the Soviets could have 500 bombers with the range to attack the United States four or five years into the future; at one point. Air Force was predicting as many as 600 to 800 Bisons.

¹ *Wizards of Armageddon* by Fred Kaplan. Copyright © 1983 by Fred Kaplan, First published by Simon & Schuster, Inc., in 1983

The air attaches' reports did not form the basis of these projections; they merely provided what seemed to be concrete evidence supporting a massive array of data that was beginning to come in. The plant that produced all the Bisons, called the Fili Plant, happened to be in Moscow. Americans naturally were not allowed to enter the plant, but they could fairly easily observe activities going on around it. They could hear and often even see the planes taking off from the runway; and since they knew that the planes flew from the plant to a nearby military air base and never came back, they were not faced with the problem of distinguishing takeoffs from landings. From captured German reconnaissance photos taken from the air during World War II, analysts back in the U.S. could calculate the plant's size and floor space, as well as the most efficient use of that space and, from that, infer some numbers on likely production rates. The attaches in Moscow could report the approximate size of any expansions or new annexes to the plant.

Air Force Intelligence also knew of a measure devised by American aircraft companies called the "learning curve," which assumed that over-time, and with greater efficiencies gradually built in, production of aircraft would grow at a certain, calculable rate. Air Force Intelligence also assumed that the plant had two labor shifts, and that sometime in the next couple of years, after the Fili Plant had reached the peak of its "learning curve," the Soviets would have constructed a second plant to build still more Bison bombers.

When all these factors were taken into account, it appeared that the Soviets could have built 500 or so intercontinental bombers by the early 1960s.

Yet there was another assumption that entered into these calculations, something less tangible but, in the eyes of intelligence analysts of the day, far more real and certain. The Soviet Union's primary goal was to attack a large number of strategic and urban-industrial targets inside the United States. U.S. targeting studies had revealed that the Soviets would need something like 500 bombers of intercontinental range to accomplish the goals that intelligence had imputed to them. Therefore, any evidence that seemed to confirm the assumption about Soviet aims—regardless of evidence that might point to other conclusions—was viewed as truth. At that time, the Central Intelligence Agency had no charter to do military analysis; that job was assigned to the intelligence staffs of the individual services. However, there was an oversight board, the Office of National Estimates, ONE, headed by a veteran intelligence analyst, Sherman Kent. ONE was responsible for producing the annual National Intelligence Estimate, and so had the authority to look into intelligence in all fields, including military. While technically independent of the CIA, it was housed in the Agency's headquarters. Still, ONE had to rely almost entirely on Air Force Intelligence for analysis and estimates of Soviet long-range missiles and bombers.

However, there was a division of the CIA in charge of economic intelligence, headed by a young analyst named Ed Proctor, who managed to grab one slice of military intelligence: trying to calculate how much money the Soviets were spending on their armed forces. This task allowed Proctor and his staff to obtain as much data as they wanted on Soviet bombers, which allowed them to get heavily involved with the whole question of bomber production and production rates. In short, through a cleverly roundabout route, the CIA's economic division got into the business of analyzing all the technical and arcane issues that lay at the very heart of the Strategic Forces section of the NIE—formally the exclusive province of the military services, especially the Air Force.

From their studies of other economic sectors of the U.S.S.R., the analysts in Proctor's shop knew practically everything there was to know about Soviet factory markings—things like how serial numbers on manufactured goods can reveal what year and month a particular item was produced. In this sense, airplanes were just like any other manufactured goods, and the serial number, so to speak, was the tail number on each plane, which the CIA could detect on a few of the many photographs taken with long-range lenses by the American air attaches observing the goings-on at the Fili Plant in Moscow.

Not long after they began amassing this sort of data. Proctor and his team began to conclude that the Air Force estimate—the official National Intelligence Estimate—could not be right. One of the assumptions behind that estimate was that the Bison bombers were produced in batches of ten. The assumption was integral to all the other assumptions and, thus, to the overall estimate. Ten was the logical number, given the Air Force estimates of the Fili Plant's floor space, of the plant's "learning curve," of the number of labor shifts working on production. And ten was the absolutely necessary number, given the more basic assumption that the Soviets wanted to be able to attack a whole variety of American targets as soon as possible. If the number were significantly less than ten, then all the other assumptions were wrong, including the basic one concerning Soviet aims and intentions.

And yet the CIA was coming to believe that the Soviets were producing the Bisons in batches of only five. The analysts would see Bisons marked with tail numbers ending with 10, 11, 12, 13, 14 or 20, 21, 22, 23, 24 or 30, 31, 32, 33, 34—but not a single plane ending with 15, 16, 17, 18, 19 or 25, 26, 27, 28, 29. . . . Moreover, there was another set of numbers on the plane indicating when it was manufactured. As it turned out, about as much time elapsed between the plane with numbers ending in, say, 22 and 24 as between planes ending in 24 and 31. In other words, there probably would not have been enough time to produce 25, 26, 27, 28, 29 and 30 in the interim.

Thus, if no airplanes with higher end numbers existed, then that clearly meant they were being produced in batches of five, not ten; and that clearly meant that the estimate was all wrong, that the Soviets were producing only about half as many Bison bombers as the NIE projected, and that meant that all the other assumptions behind the NIE—from the efficiency of a Soviet aircraft plant to the objectives of the Kremlin—were also wrong.

By 1957, not only was Proctor's shop convinced that the NIE was wrong, but so were a number of analysts on the staff of the Office of National Estimates.

Allen Dulles was in a spot. As manager of the entire intelligence community, he was reluctant to abandon the estimate of the Air Force, the source of all the data that the community was receiving on Soviet bomber production. He was also reluctant to accept immediately the critique made by Proctor's shop. That division might know a lot about economics and factory markings, but could he really believe that the men who worked there knew as much about airplanes as the Air Force did? They had never even looked much at airplanes before they got involved in this exercise. Furthermore, if the NIEs that the Agency had been supporting the past few years were based on totally faulty data and assumptions, how would they come up with a new estimate—who could produce one—and what would that say, politically, about the wisdom of the CIA?

So, a fight broke out between Air Force Intelligence and the CIA. The Air Force had stakes beyond merely protecting its reputation as a reliable intelligence agency: a large Soviet strategic air force meant guaranteed support for a large American strategic air force, which meant more prestige and a greater share of the defense budget than for the Army and the Navy. Not surprisingly, in this internal clash, Army Intelligence sided with the CIA's economic division.

The Air Force response to the CIA critique sounded entirely reasonable. The Air Force, its intelligence officers pointed out, made a logical estimate. It accorded with everybody's perception of Soviet intentions; it accorded with their estimates of the Fili Plant's floor space, with the July 1955 air display over Moscow and with their judgment that the Soviets produced ten planes per batch. All that the CIA analysts had was the absence of any data that proved conclusively the estimate of ten per batch. The Air Force didn't think that the sample size was large enough to conclude that the Soviets produced only five per batch, at least not in the face of all the other conflicting information.

The CIA economic division's response was equally logical, but in precisely the opposite direction. The five-per-batch number that they had come up with was absolutely solid, they said, and the confidence levels were very high. This meant that the Fili Plant was not producing to what the Air Force thought was full capacity, that the plant did not work in two shifts, that its learning curve had not yet peaked, that the Soviets were not planning to build a second Bison plant. The air show of July 1955 was a bit tougher to challenge, but all the other bits of data suggested either that it had been a fluke or that the Soviets must have been flying every single bomber in their inventory, not, as the Air Force had assumed, half of them².

The dispute reached a bitter stalemate—when along came Khrushchev's belligerent bragging about the U.S.S.R.'s terrifying ICBM program and then, on October 4, the launching of Sputnik. That settled the great dispute over the bomber gap. The CIA's economic analysts won. The big bomber projections were dropped from the NIE. But they were dropped only because Sputnik allowed all of the broad assumptions about Soviet behavior and intentions to be preserved. The intelligence community could still argue that the Soviets wanted a big nuclear force aimed at the United States, but that they had now decided to build one in the form of ICBMs, not bombers. The NIE could still be judged fundamentally sound in its assessment of the nature and magnitude of the Soviet threat. And the U.S. Air Force could still use the estimates as its rationale for a gigantic fleet of long-range bombers and missiles of its own.

A new consensus was reached. And the consensus included not just Air Force Intelligence officers but also CIA analysts. Very few, even among the CIA skeptics, had ever altered their assumptions about the nature of the Soviet threat. They had been a bit puzzled by their own discoveries. But they viewed themselves as independent analysts, not attached or beholden to any military service—unlike their adversaries in Air Force Intelligence, who were under constant pressure to make their estimates of Soviet forces consistent with the budgetary desires of the Air Force proper. And they were eager to get into the strategic-estimates game, where all the big action and excitement lay. Challenging the predominant strategic estimators, the officers of Air Force Intelligence, and doing so with solid evidence and creative but logical analysis, was the best way to go about getting there. But when it came to thinking about Soviet aims and intentions, there was no question in 1957, even among the skeptical economists in the CIA, that the Reds were out to clobber America.

²Years later, some intelligence analysts would speculate that the same planes might have been flying around the display area twice, but the theory has never been confirmed.

And so, as the bomber gap ended, the missile gap began.

The members of the Gaither Committee, the analysts at the RAND Corporation, the Democrats in Congress who criticized Eisenhower's defense programs, had no way of knowing that the missile-gap intelligence estimates virtually appeared out of thin air, supplanting the bomber-gap estimates as the latter proved illusory.

The first NIE ascribing a huge missile arsenal to the Soviet Union was released in November 1957, and projected that the Russians would have 500 ICBMs by the end of 1962 or, if they embarked on a crash program, the end of 1961. There was no solid evidence for this estimate. All the earlier intelligence assumptions had led to the conclusion that the Soviets could have 500 intercontinental bombers by that date. When that projection proved false, Air Force Intelligence essentially changed "bombers" to "ICBMs," but retained the original number 500.

By 1958, mainly with the aid of photographs taken from U-2 reconnaissance airplanes, which had begun flying spy missions over Russia in 1956, the Air Force had enough data to estimate the floor space of factories producing missiles. As with the bomber-gap estimates, they could figure the most efficient use of that floor space, assume a "learning curve" in the production, go on to assume that additional production plants would be utilized once the "learning curve" peaked, and infer from all this some figures on production rate.

From these extrapolations, the Air Force essentially confirmed the NIE of the previous year. The NIE of 1959 also concluded that if the Soviets decided to start a general nuclear war, their first move would be to destroy the Western nuclear forces in order to minimize or prevent retaliation. Since the 100 ICBMs that the Soviets could have by 1959 or 1960 would be enough to demolish almost all of SAC's air bases, the situation seemed very grim.

However, by mid-1958, something seemed to appear not quite right with this estimate, and the early skeptics came once again from the inner corridors of the CIA—this time from the science and technology division headed by Herbert (Pete) Scoville, Jr., and his specialist on missiles, Sidney Graybeal. Just as the CIA's economic division got involved with the NIEs during the bomber-gap period because of its experience in examining factory markings, the CIA science and technology office became involved during this period in the late 1950s because it knew about missies.

No American had ever laid eyes on an actual Soviet missile, but these CIA scientists came up with some ingenious methods for essentially reconstructing one. The method involved monitoring Soviet missile test flights—originally with radar technology, later with acoustic, telemetric, optical, and infrared sensors. From the data intercepted, Scoville, Graybeal and their staff could infer rough estimates of a missile's size, weight, fuel loading, inner workings, accuracy and (based on its weight) explosive power.

In the course of monitoring these tests, however, the CIA scientists began to notice that the rate of Soviet ICBM testing had slowed down considerably. The Soviets were still testing plenty of short-range missiles; by the summer of 1958, they had tested a dozen medium- and intermediate-range missiles; but they had fired only six intercontinental-range missiles, and they had not fired any for quite a while. Still, the CIA stuck to its original estimate. Again, it was the dilemma of negative evidence: how long do you wait for something to happen before you conclude that it isn't going to happen? It was too early to draw conclusions.

Still, officers in Air Force Intelligence thought that the CIA was vastly underestimating the Soviet ICBM test program, and began to worry that if the CIA were allowed to dominate on this issue, the estimate on Soviet missile production might eventually change—thus endangering the massive missile program that the Air Force was advocating. Word began to get around that the Soviets were doing a lot more testing than the CIA was reporting; that this information was being systematically suppressed and kept away from Allen Dulles; that in fact Soviet missile production was also a lot more vigorous than the NIEs suggested.

Finally, the word trickled down to Stuart Symington, the Democratic Senator from Missouri. Symington was the ideal man to take on the job of pushing the Air Force's case. A senior member of the Armed Services Committee, former Secretary of the Air Force in the Truman Administration, sharp critic of Eisenhower's defense policies, the most vocal advocate of the Gaither Report's public release, the most spirited warning siren on the missile gap and clearly laying the groundwork for his ambitions in the upcoming 1960 Presidential election, Symington was a man who was eager to jump on board any claim or statistic bemoaning America's military weakness or decrying Russia's military strength.

Symington heard about the reports of underestimating in the CIA from Colonel Thomas Lanphier, a man well plugged into the Air Force gossip network, having ridden for more than a decade on his fame as the war hero who directed the air ambush that trapped and shot down Japanese war leader Admiral Yamamoto during World War II. Lanphier had also been Symington's executive assistant when he was Secretary of the Air Force; he was president of the Air Force Association shortly after that, and he was now assistant to the president of Convair, manufacturer of the Atlas ICBM. Lanphier had his own stakes in beating down the CIA, since a large Soviet ICBM program made it more likely that his own company would be awarded a large ICBM production contract.

Symington, meanwhile, saw in Lanphier's report the makings of a terrific scandal that would work to his own political favor. Symington requested a personal briefing from Allen Dulles at CIA headquarters in late July 1958. The data that Dulles gave him on Soviet missile testing differed so considerably from Lanphier's data that Symington requested another session with Dulles on August 6, this time bringing Lanphier with him. Dulles brought in Howard Stoertz, the Soviet specialist on the ONE staff, to comment and take notes. Lanphier's basic message to Dulles was that he, the Director of Central Intelligence, was being misled by his own people on the number of ICBM tests the Soviet Union was conducting, that the real number was much higher than six. Stoertz and Dulles both said they had never heard anything like this before, but would investigate the matter. A new interagency intelligence committee had recently been established under the supervision of Air Force Colonel Earl McFarland, called the Guided Missiles Intelligence Committee, or "Gimmick," for short. Dulles had McFarland look into Lanphier's claims. Over the next couple of weeks, GMIC hunted but found nothing. One reasonable hypothesis it came up with was that Lanphier's sources in Air Force Intelligence were counting a lot of intermediate- and medium-range missile tests, in addition to ICBM tests. The U.S. had a radar in Turkey that looked out across the Black Sea toward the Caspian Sea. Both Soviet missile test ranges—one of which tested ICBMs, the other IRBMs and MRBMs—were within view of this radar.

In any event, another meeting was held with Dulles, Symington and Lanphier in mid-August. McFarland was also present and reported there was nothing to substantiate Colonel Lanphier's report; that, as Dulles had told him on August 6, the Soviets had fired only six ICBMs, four of which were believed to have landed in the target area.

To Lanphier, it didn't add up. If the Soviets were going to deploy 100 ICBMs by 1959 or 1960, much less 500 by 1961 or 1962, then they had to have fired more than six test missiles by August of 1958. There were lead times involved. In Convair's experience, a missile had to be tested at least twenty times before it could be declared operationally ready and reliable; then there was the additional time it would take to transport the missiles to their bases, set up launching sites, command-control centers and so forth. If the testing data were correct, then the National Intelligence Estimate must be wrong.

Over the next several months, Dulles and his staff reached the conclusion, hesitantly but inexorably, that the estimate must indeed be wrong. There simply were not very many more Soviet ICBM tests being conducted. It was the dilemma of negative evidence again, but they had waited a long time now and the evidence was still negative. Yet, as in the bomber-gap period, the estimate they had was all there was. If the CIA and the ONE denied its validity, where would they find the data for a new one?

Moreover, over the past year, much more had been learned about the technology of missiles. The scientific analysts realized, to a much greater degree than before, how complicated it was to set up an operational missile site. Before, they had just considered the task to be one of building and deploying missiles; now they realized that the support equipment—the launchers, the communications system and the like—was much bulkier, more complex, more time-consuming to set up. They realized that even if the Soviets had a lot of missiles, they might not have so many of them on launchers, ready to be fired in the event of war.

Then there were the U-2 photographs that were coming back. The U-2 was a super-secret program. Outside the intelligence community, only slightly more than a handful of Pentagon, White House and State Department officials knew of its existence. Certainly nobody in Congress was aware of it. The plane flew at 80,000 feet, was "armed" with a very long range lens camera with remarkably good resolution (developed by Edwin Land, inventor of the Polaroid), and had been making spy sorties across the Russian border since 1956.

The interagency Guided Missiles Intelligence Committee had developed criteria on where to look for ICBMs: for example, it figured they would have to sit not very far off the tracks of the Soviet Union's huge railroad systems, the only network that could move the missiles around. But, even with the U-2, there were some uncertainties. The plane had not yet been flown over all the area around the tracks. More particularly, it had not yet reached Plesetsk, in northern Russia, where the Soviets had been test firing (and perhaps getting ready to deploy) their ICBMs.

The end of the year was approaching; the negative evidence was still negative. The NIE for that year was delayed, deliberately, the analysts racking their brains, going over the data again and again, looking for something that might be interpreted as a positive sign of more ICBM testing, some ICBM deployment. But there was nothing.

Finally, on February 9, 1960, two months late, the NIE was released. It was a hodgepodge. It offered no consensus, and the bottoms of the pages were filled with dissenting footnotes signed by the intelligence agencies of the various services. The date by which the Soviets could have 500 ICBMs was pushed back to mid-1963, perhaps even further back than that. They would have only 50 ICBMs by mid-1960, only 35 of them on launchers. By mid-1961, they would have between 175 and 270 missiles, 140 to 200 of them on launchers. By mid-1962, they would have 325 to 400, with 250 to 350 on launchers. By mid-1963, 450 to 650, with 350 to 450—still fewer than 500—on launchers.

The differences in the numbers reflected the differences between the CIA, which picked the lower numbers, and the Air Force, which estimated the higher numbers. And in the footnotes were the Army and Navy intelligence services' dissents, which—using the same data available to the CIA and Air Force Intelligence—arrived at still lower numbers. The Soviets, they said, would have only 50 missiles by mid-1961, only 125 by mid-1962 and 200 by mid-1963.

At this point, very few in the CIA or the Air Force were willing to take these extraordinarily low estimates seriously. For one thing, the politics of the situation seemed clear: the Army and the Navy competed against the Air Force for scarce budgetary resources; if the Soviets had only a few ICBMs in the works, that would deny the Air Force its chief rationale for building several thousand ICBMs and would, thus, leave more for the non-nuclear forces of the Army and the Navy.

Second, Navy Intelligence was automatically suspect. Keith Brewer, head of ONI, the Office of Naval Intelligence, had not believed the Soviets had set off an atomic bomb, and for many years after the fact. The Navy was always estimating, since that time, that the Soviets had only about one-fifth the fissionable material that the rest of the intelligence community was estimating. Brewer had worked at the Oak Ridge nuclear laboratory in Tennessee during the war, and simply could not believe that any other nation, especially the Soviet Union, had the collective brains and know-how to do what he and his associates had done.

There was a third reason why the Army-Navy numbers were rejected, and this was most critical. With the Air Force numbers, the Soviets could still damage or destroy most of the American SAC bases by mid-1961. The CIA numbers were only slightly less pessimistic, pushing the danger date back to late 1961. Whatever the fine differences, SAC still seemed dangerously vulnerable.

By this time, for all their earlier objections, top Air Force officers had come to accept the assumptions about SAC vulnerability laid out by the Wohlstetter-Hoffman R-290 report from RAND and by the Gaither Report. In the few years since, Air Force Chief of Staff General Tommy White and the new SAC Commander, General Tommy Power (LeMay left SAC around the time of the Gaither Committee and came to the Pentagon to become Vice Chief of Staff), had put in motion several programs on dispersal of bases and airborne alert of the bombers themselves, all with the purpose of reducing their vulnerability to attack.

Yet the Air Force was compelled to take these steps only after realizing it would be in its interest to do so. If the policy-makers were assuming that a certain percentage of the planes would get destroyed on the ground, that meant still more bombers for the Air Force—to allow for the attrition and still be able to fulfill the "military requirements." And if SAC bombers were up in the air flying around all the time, that yielded two bonuses: higher morale for the pilots, who loved to fly, and a better

chance of getting “modernized” bombers sooner, since already-deployed ones will be worn out much sooner. In short, some of the R-290 and Gaither recommendations provided perfect intellectual rationales for a more steadily funded and larger Strategic Air Command.

Significantly, the only portion of the R-290/Gaither program that the Air Force consistently and successfully resisted was the notion of putting the bombers inside underground hardened shelters. Officers argued that it would be too expensive, maybe \$10 billion or more, and that it might not protect, ultimately, the bomber against radiation effects. But the real reason had more to do with Air Force interests. With hardening, the dispersal and airborne-alert programs, so advantageous to the Air Force budget, might be cut back. To spend money on offense, not defense, was practically dogma in Air Force circles.

SAC was even more eager to use intelligence estimates as a method of advancing its own interests. The forceful leaders of SAC’s own intelligence agency at the time were Generals James Walsh and George Keegan. Keegan was the more fiery of the two. He received his first training in intelligence as a member of a small advisory group to the Air Force Assistant Chief of Staff for Intelligence in the early 1950s. Keegan’s boss was Professor Stefan Possony, an extremely right-wing Russophobic Sovietologist with a particular penchant for conspiratorial views of history. This advisory group’s mission was to brainstorm on what kinds of horrifying things the Russians might be doing, and then to find the evidence.

Keegan had learned his job well, and was a full believer in the technique. He was a forceful speaker, a master showman, a superb briefer. Around the late 1950s, as even Air Force Intelligence was giving way on high Soviet ICBM estimates, SAC kept a full steam blowing. Keegan and Walsh had briefings, charts, diagrams, photographs proving that the Russians were already fielding ICBMs but that they were hiding them—in barn silos, medieval monasteries, mysterious-looking buildings out in the middle of nowhere.

With so many Soviet missiles that you could never know precisely how many there were or where they were located, arguments for an enormous SAC force could proceed indefinitely. The military requirements worked both ways: the large number of Soviet ICBMs meant a large number of targets to hit, which required a large number of SAC bombers and missiles; likewise, with so many Soviet missiles that might attack SAC, America needed hundreds and hundreds more to allow for heavy attrition. The Air Force proper finally agreed officially with the view that the Soviets were probably engaging in deceptive practices in their ICBM program. But not even Air Force Intelligence was willing to go as far as Keegan.

Still, with SAC or Air Force or even CIA intelligence estimates on the size of the near-future Soviet ICBM arsenal taken as the truth, the fundamental assumptions about the nature and magnitude of the Soviet threat could still be retained as legitimate.

On the other hand, if the Army and Navy numbers were treated seriously, the Soviets would appear to pose essentially no great threat to SAC. They would not have enough missiles to do so until mid-1963; and by that time, the Navy would have several new Polaris submarines, nuclear-powered, each carrying sixteen nuclear-tipped missiles, based underwater and virtually invulnerable to attack. Moreover, thanks in part to such studies as R-290 and the Gaither Report, the Air Force would have started to field its new Minuteman ICBMs in dispersed and hardened shelters.

The Army-Navy numbers, in other words, said there was no great danger to SAC, and no missile gap.

Throughout this period, nobody in the Senate knew the origins of the missile gap, knew that it sprang from the failure of the bomber gap to materialize. Nobody knew of the wide disagreements among the intelligence agencies as to the number of ICBMs the Soviets might have in place by the early 1960s. Nobody knew about the U-2 flights. Symington and most of the other Democrats, many of whom took their cues on this point from him, heard only about the Air Force Intelligence estimates, which (next to those of SAC Intelligence) were most pessimistic of all. Thus, when they heard Allen Dulles or Defense Secretary Neil McElroy or his successor as of December 1959, Thomas Gates, or even President Eisenhower say that there would be no missile gap, the Democrats and other critics of the Administration felt that these officials must be knaves or fools, that they were deluded or misled, that they were endangering the nation merely by their presence in high office.

But Eisenhower did know the background of the bomber gap and the missile gap. When charges of the missile gap began to circulate widely among political opponents in 1958, he assigned his staff secretary, Brigadier General Andrew Goodpaster, to find out whatever happened to the mysteriously vanished bomber gap. Goodpaster went through all the old NIEs, talked with intelligence officers, and learned how the NIEs had assumed that another Bison plant would be built, how they relied on a host of assumptions concerning production rates that turned out to be false. When he reported his findings to Eisenhower, the President felt secure in resisting all the fuss about a new gap. And when, in 1959 and 1960, the CIA started to back off somewhat, when the year of maximum danger started to recede into the distant future, Eisenhower felt his judgment vindicated.

On August 29, 1958, after he had met twice with Allen Dulles, Symington met with Eisenhower and gave him a letter, telling him that the intelligence community was wrong, that he was being misled. Eisenhower told Symington that whoever his sources were in Air Force Intelligence, they could not possibly know everything that those in the upper levels of the agency knew. Eisenhower never told Symington or anyone else in Congress about the U-2 or the Turkish radar site, but that was what he was talking about.

The missile gap also dominated the discussions of the day at the RAND Corporation. But there it was a more sophisticated conceptualization than the simple bean-count comparisons tossed around by Symington and his followers. The strategists of RAND preferred to call it a "deterrence gap." The issue was not so much that the Russians had more missiles as it was that SAC was so vulnerable that even the low side of the official intelligence estimates indicated that the Soviets would have enough missiles to knock out America's power to strike back—in Bernard Brodie's by-now ancient phrase, "to retaliate in kind"—after an aggressive first-strike. That being so, the nation's and thus the free world's ability to deter Soviet aggression was on the verge of being shattered.

Still, this more sophisticated view was the product of quantitative analysis, and the numbers came from the National Intelligence Estimates that foresaw an impending missile gap. And like the Stuart Symingtons of the world, most of the RAND strategists knew much less about those estimates than they thought they did. CIA policy on the distribution of the annual NIEs had changed after 1958: henceforth, no contracting firms—and that included RAND—were to receive copies. By coincidence, the 1958 NIE represented the peak year of the missile gap. It was

not until 1959 that the estimated numbers of future Soviet missiles began to go down and the Army and the Navy began to add their footnotes. But almost none of the RAND analysts knew anything about this. They received intelligence estimates only from the Air Force Chief of Staff, and did not know that, from 1959 on, the Air Force numbers were considerably higher than those of the rest of the intelligence community. If RAND got any dissenting data at all, it came from SAC Intelligence, whose officers thought that the Air Force estimates were on the low side.

In quantitative studies, there is a technique known as "sensitivity analysis": the idea is that in a world of uncertainties, an analyst should test the validity of his conclusions by altering the key assumptions; if within a reasonable range of assumptions the conclusions remain roughly the same, then they could reasonably be considered correct. Having read only intelligence estimates estimating 500 Soviet ICBMs by the early 1960s, the RAND strategists thought they were being more than reasonable to do sensitivity analysis assuming that the Soviets attacked the U.S. with only 150 or even 250 ICBMs. They had no way of knowing that some intelligence agencies were predicting only 50.

At the height of the missile-gap period, Albert Wohlstetter decided to go public. It was an unusual thing to do among the RAND strategists. With few exceptions, they had stuck to the more restricted world of top-secret studies and high-level briefings. First, there was the matter of security: not much could be said without broaching regulations on classified materials. Second, there was the elitist notion, pervasive at RAND, that influencing military officers and Pentagon officials was what really counted, that airing views to the general public served little purpose and might, in fact, be seen as stepping out of bounds or displaying disloyalty to RAND's sponsor, the U.S. Air Force. Third, at least in Wohlstetter's case, there was the condescension toward "the essay tradition," toward popular articles that lacked or failed to reflect the rigors of systems analysis.

Still, in May 1958, Rowan Gaither, Phil Mosley, a professor at Columbia who also sat on RAND's board, and Jim Perkins, a former adviser to the Gaither Committee, asked Wohlstetter to give a talk on SAC vulnerability to the prestigious Council on Foreign Relations in New York. Naturally, Wohlstetter accepted. Among the attendants was Hamilton Armstrong, editor of the Council's influential quarterly, *Foreign Affairs*. Armstrong was impressed with the talk and asked Wohlstetter to write it up for the journal.

The article appeared in the January 1959 issue, and was titled "The Delicate Balance of Terror." It was essentially a distillation of the two major works that Wohlstetter had directed at RAND, the overseas-base study and R-290. Yet unlike those analyses, "The Delicate Balance of Terror" was aimed at the "outsiders" taking part in the defense debate, the civilian "defense-intellectual" community in Washington and at Harvard and MIT, the denizens of the foreign-policy establishment who read and wrote for magazines like *Foreign Affairs* and who influenced the tenor and substance of the general discussion of all such issues.

It had been a nearly universal assumption among this outside community, even among those who vigorously disagreed about much else, that America's ability to retaliate after a Soviet first strike was pretty well assured. Wohlstetter's article challenged that assumption. Without quantifying the argument, as he had in the classified report, he made the basic point that SAC was terribly vulnerable, that the U.S. might not be able to retaliate with enough power to deter Soviet aggression. The public debate, he wrote, was misleading on this score, tending to confuse

deterrence “with matching or exceeding the enemy’s ability to strike first,” when the critical element was to build a nuclear force that could survive a Soviet first-strike and proceed to carry out a devastating second-strike.

That thesis had been around ever since Bernard Brodie wrote *The Absolute Weapon* in 1946, but it was news to most readers when Wohlstetter wrote that the “notion that a carefully planned surprise attack can be checkmated almost effortlessly, that, in short, we may resume our deep pre-Sputnik sleep, is wrong....” Correcting the problem of vulnerability and maintaining the delicate balance of terror will involve measures that “are hard, do involve sacrifice ... and, above all... entail a new image of ourselves in a world of persistent danger.” He concluded, “It is by no means certain that we shall meet the task.”

The article created a huge sensation among the defense intellectuals along the Washington-New York-Cambridge corridor. Its language was somber, its logic compelling, its tone and argument confirming the general feeling among the foreign-policy establishment that Eisenhower was bungling the job miserably and putting the nation at great risk.

More critically, at a time when many feared that the Russians were surpassing the United States, Wohlstetter’s article helped create an intellectual framework in which this fear could be stated respectably. The danger was not the “international Communist conspiracy” or anything of an embarrassingly ideological or, for that matter, political nature. Rather, it was this almost mechanical concept of a very delicately balanced set of scales that once tipped even slightly off balance, threw the entire order of international relations out of kilter, placed the West in supreme danger, wiped out the deterrent power of America’s nuclear weapons and slid the world toward the precipice of a calamitously destructive war that the Soviet Union would almost certainly win.

Wohlstetter had diligently sought to avoid any connection between his article and the missile-gap thesis. Indeed, he explicitly stated in the piece that numerical comparisons between Russian and American missile arsenals were beside the point, that it was how much strength we had after a Soviet first-strike that counted. But his views were actually much closer to those of the missile-gap doomsayers than he cared to acknowledge. They were subtler and more sophisticated, but the assumptions in both were identical. They were based on the highly pessimistic intelligence estimates that lay at the heart of the missile gap. And they contained the same assumptions about Russian intentions, the same judgment that the Soviets would very likely threaten to attack the United States once they had, on paper, the technical ability to do so.

Wohlstetter’s contribution to the period was an escalation of the intellectual plane on which the missile gap could be blithely assumed and seriously discussed. The very phrase “missile gap” was coming to symbolize everything complacent, stultified, unforward-looking about the Eisenhower Administration. For those who sensed that merely comparing missile numbers might be a popularly potent but intellectually inadequate critique of Eisenhower’s defense programs, “The Delicate Balance of Terror” provided a new platform for attack. Among the critics who would inevitably have great influence in the next Democratic Administration, the RAND technique of how to assess the strategic balance and how to deter nuclear war—developed and calculated in detailed studies over nearly the past decade—triumphed.

Over that same decade, another thread of ideas was being spun at the RAND Corporation—ideas about not only how to deter nuclear war, but also how to fight one.

Chapter 10: THE MISSILE GAP Endnotes

155 "first, destroy or": "Estimate of Sino-Soviet Bloc Capabilities World- Wide, '59-63 and Assessment of Dimensions of Soviet ICBM Threat to Security of U.S.," p.2, *Thomas White Papers*, Box 6, McConnell Report folder, LoC*

155 "the Soviets might": *Ibid.*, p. 8.*

155 November 12 NIE: Summarized in memo, Lawrence McQuade to Paul Nitze, "But Where Did the Missile Gap Go?" May31; 1963, p.7, National Security File, Box298, Missile Gap, Feb.-May 1963, JFKL.

155 number of Atlas missiles: Letter, Sen. Stuart Symington to Eisenhower, Aug.29, 1958, White House office file, Office of Staff Secretary, Subject Series, Alpha Subseries, Box24, Symington Letter [8-12/58] folder, DDEL.

156 1955 air-show overcount: Lawrence Freedman, *U.S. Intelligence and the Soviet Strategic Threat* (Boulder, Colo.: Westview Press, 1977), p.66. The rest of the section on the bomber gap comes, unless otherwise specified, from interviews.

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161 NIE on Soviet first move: *Ibid.*, p.9.

161 100 ICBMs by 1959: *Ibid.*, pp.7-8.

163 Symington-Lanphier-Dulles meetings: Howard Stoertz, Jr., Memo for Record, "Discussion of Soviet and U.S. Long Range Ballistic Missile Programs," Aug. 18, 1958, White House Office file, Office of Staff Secretary, Subject Series, Alpha Subseries, Box24, Symington Letter folder, DDEL;* letter, Stuart Symington to Eisenhower, Aug. 29, 1958, *loc cit.*

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171 "with matching ": Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs*, Jan. 1959, pp.212-13 .

171"notion that a ": *Ibid.*, p. 234.

171 "are hard": *Ibid.*, p. 234.

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DVD CONTENTS

The Central Intelligence Agency's Information Management Services reviewed, redacted, and released 189 documents for this study. Almost all were previously classified, some declassified and released earlier, some with some text restored from earlier redactions and some released for the first time. The accompanying DVD contains the 189 documents totaling more than 4,200 pages of material. All documents are also available on the CIA website at www.cia.gov. The material is organized into the following categories:

DECLASSIFIED DOCUMENTS FOLDER CONTAINS:

Catalogue of documents for the Missile Gap document Collection—generally arranged chronologically and featuring CIA Intelligence Reports, National Intelligence Estimates, CIA Clandestine Services Information Reports, Photographic Intelligence Reports and official memoranda relating to the missile gap. There is also appended a list of frequently used acronyms, codewords and abbreviations;

Document List generally arranged chronologically;

The Released Documents, Accessible Directly or from the Catalogue or List.

The John F. Kennedy Presidential Library provided formerly classified documents from its collection related to the missile gap for this event:

Catalogue of the Official Papers of the Kennedy Administration on the Missile Gap;

Document List of Official Papers of the Kennedy Administration on the Missile Gap;

The Released Documents.

The DVD also contains some topical newsreel coverage and photographs of President Kennedy and Premier Khrushchev at the Vienna Summit, June 1961.

The DVD includes information on how to view the materials and will work on most computers. The documents are in PDF format.

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