HR70-14

APPROVED FOR RELEASEL DATE: 12-Jul-2011



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. 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

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).



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.

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

*IDERA Monthly Reports, June 1959, Box 4.



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



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.

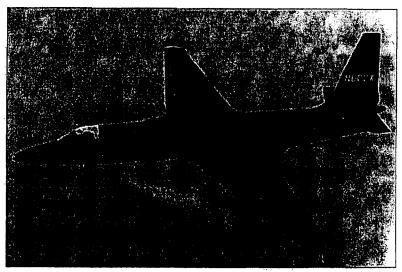
To support this research and analysis, Dulles called on the "Hyland panel" to try to answer a more refined set of questions. The panel comprised Laurence Hyland of Hughes Aircraft, Charles R. Irvine of Advanced Research Projects Agency, and Brig. Gen. Osmond J. Ritland of the Air Force's Ballistic Missile 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

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.







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

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?

""Tyuratam" was the subsequent spelling





- 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?

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.

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.?

^{*}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).

* 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.



[&]quot;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.

Secret

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. 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.

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).

	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

¹⁰ Ibid., (TS Daunt).

[&]quot;NE 11-5-59, Soviet Capabilities in Guided Missiles and Space Vehicles, 3 November 1959, and Annex A





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

NIE 11-8-59, Soviet Capabilities for Strategic Attack Through Mid-1964
 NIE 11-4-59, Main Trends in Soviet Capabilities and Policies, 1959-64, 9 February 1960
 IDERA Monthly Reports, 1959.



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).

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.

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.

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." 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."

Secret

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.

4 Senate Hearing p. 73 (TS)

^{*}Senate Hearing, p. 73, (TS) 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."

Secret

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."

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



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."²

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.

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]



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.
 Ibid



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.²⁴

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

^{**} IDERA Monthly Reports, 1960, (Secret); McFarland, "Re-examination of NIE 11-8-59."

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

** 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.



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

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.²⁴

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

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."

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.



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, see also SNIE 11-10-57, The Soviet ICBM Program, (declassified). (s)
 Godaire interview.



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."

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.

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).

[&]quot;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)

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. 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.

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.

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

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

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

"Bibl.; 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).



Closing the	Missi	le Gap							
ontroversy	over	Soviet	ICBMs	got out	of hand	and	the	NIE	C

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 I 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.3

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.



concluded, with objections only from the Air Force, that none of the above catastrophes was imminent.³⁷

Shortly after the dissemination of this extraordinarily dissentridden NIE, a series of closely spaced breakthroughs marked the beginning of the end of the "missile gap" controversy. The first involved CO-RONA. After months in a standdown, a successful diagnostic flight testof 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."38 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.

The second break involved

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.³⁹

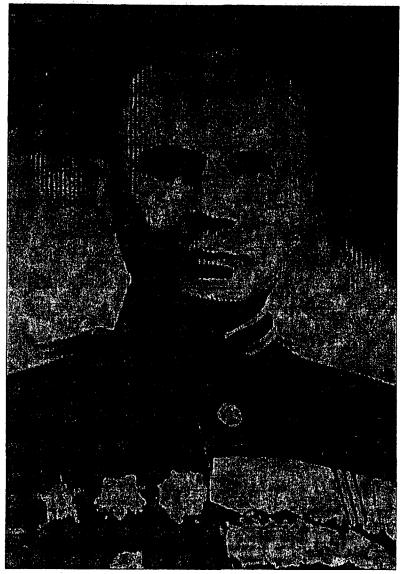
On 25 October 1960, Moscow Radio reported the death ("as the result of an air crash" on the 24th) of Marshal Mitrofan Nedelin, the Commander in Chief of the recently formed Soviet Strategic Rocket Forces. Later analysis in the GMTF confirmed that beginning on the 25th an unusually large number of aircraft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

Servet

[&]quot;Ibid. B. Greer, "Corona," reprinted in Kevin C. Ruffner, editor, CORONA: America's First Satellite Program (Washington: Central Intelligence Agency, 1995), p. 26.

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





Col. Oleg Penkovsky, GRU

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 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.

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 codename 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."

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

Ibid., (TS Dinar)
 Richard Helms, Deputy Director for Plans, to John A. McCone, Director of Central Intelligence, "Essential Facts of the Penkovskiy Case," 31 May 1963





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.⁴

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. Khruschev, 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."

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 CHICKA-DEE 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."

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 Kaliningrad'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.

^{**} 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



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. 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) "Godaire interview.



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.

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		_	· <u> </u>	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

[&]quot;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.)



[&]quot;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)



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.

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.

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,"

[&]quot;Ibid. 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)
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.





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.

"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

