Director of Central Intelligence

~~Secret~~

The Soviet Space Program

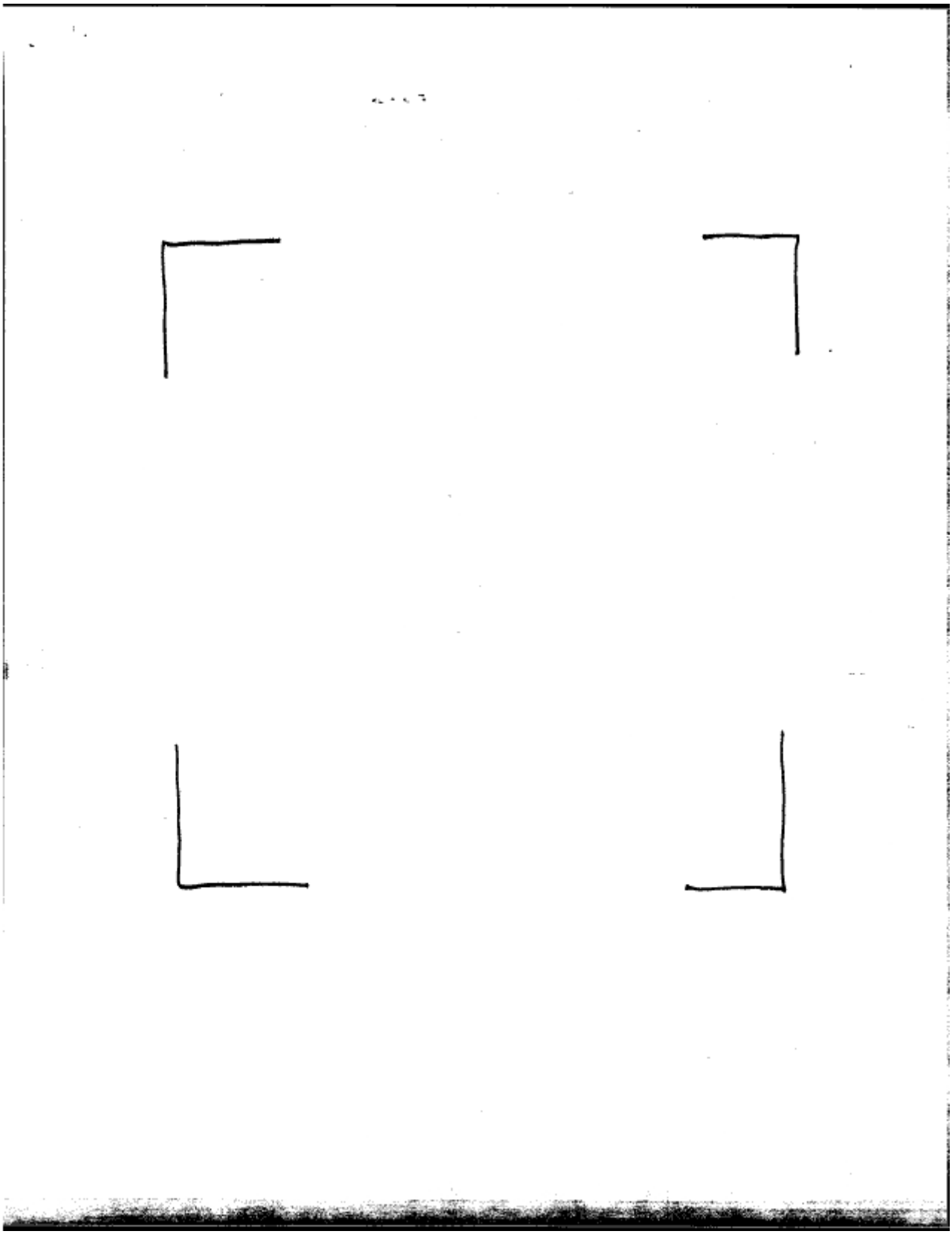
National Intelligence Estimate
Key Judgments

~~Secret~~

NIE 11-1-83

19 July 1983

Copy 329



~~SECRET~~

NIE 11-1-83

THE SOVIET SPACE PROGRAM

KEY JUDGMENTS

Information available as of 19 July 1983 was used in the preparation of this Estimate.

THIS ESTIMATE IS ISSUED BY THE DIRECTOR OF CENTRAL INTELLIGENCE.

THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS, EXCEPT AS NOTED IN THE TEXT.

The following intelligence organizations participated in the preparation of the Estimate:

The Central Intelligence Agency, the Defense Intelligence Agency, the National Security Agency, and the intelligence organization of the Department of State.

Also Participating:

The Assistant Chief of Staff for Intelligence, Department of the Army

The Director of Naval Intelligence, Department of the Navy

The Assistant Chief of Staff, Intelligence, Department of the Air Force

The Director of Intelligence, Headquarters, Marine Corps

SCOPE NOTE

This Estimate describes current Soviet space capabilities, identifies elements of the space program in various stages of development, and estimates how these will affect future Soviet capabilities in space through the 1980s and into the 1990s in the absence of space-related arms control agreements. Volume I presents the Key Judgments and a summary of how expected Soviet space developments will affect political, military, and economic competition as well as Soviet prestige. Volume II provides a more detailed discussion of the missions and capabilities of the Soviet space program.

For purposes of this Estimate, we have judged the likelihood of various Soviet space developments as ranging from very low to very high. These judgments, stated in terms of probability of occurrence, would be:

Very low = less than 10 percent

Low = 10 to 40 percent

Moderate = 40 to 60 percent

High = 60 to 90 percent

Very high = more than 90 percent.

[NEXT PAGE IS BLANK]

KEY JUDGMENTS

We believe the principal goals of the Soviet space program are to:

— Provide global support to Soviet military forces.

— Enhance the worldwide influence and prestige of the Soviet Union.

— Deny enemies the use of space in wartime.

— Contribute to the Soviet economy.

Military activities account for more than 70 percent of the current Soviet space program in terms of annual launches and the estimated total cost of the program. Moreover, from the Soviet military perspective, space is viewed as an extension of theaters of operations rather than as a separate arena of conflict.

The current Soviet space program includes about 110 active satellites that provide communications, intelligence, targeting, warning, navigation, mapping, weather, research, and other functions. In addition, research and reconnaissance are conducted from a manned space complex. Current Soviet antisatellite (ASAT) capabilities are limited and fall short of meeting the apparent requirement to be able to deny enemy use of space in time of war. The USSR has an operational ASAT orbital interceptor, ground-based test lasers with probable ASAT capabilities, and the technological capability to conduct electronic warfare (EW) against space systems.

Although their current space program lacks some of the capabilities found in the technologically sophisticated US space program, the Soviets' space systems adequately satisfy most of their current requirements. The space program, moreover, has several unique features, including ocean reconnaissance satellites for naval targeting, orbital interceptors for the destruction of satellites in low orbit, and long-duration manned space missions that have increasingly emphasized military research and applications.

The Soviet space program is expensive—the dollar cost equivalent is more than $20 billion. Currently this amounts to more than 1.5

percent of the Soviet gross national product (GNP). Part of this high cost is due to the high launch rates—about 100 per year—necessary for the Soviets to maintain their systems in orbit. Average lifetimes of Soviet satellites are quite short, and many have experienced reliability problems. Moreover, Soviet satellites are concentrated primarily in low-altitude orbits that generally require more frequent replenishment.

Soviet space expenditures will continue at high levels during the next 10 years, and the rate of growth in military space investment will continue to outpace the rate of growth of the Soviet economy and overall military spending:

— Seventeen new Soviet space systems that have been identified in various stages of development are likely to undergo testing in the next 10 years. (See figure 1.) Most of them are expected to be deployed by the early 1990s. This will result mainly in improvements to current capabilities.

— Major new capabilities in the next 10 years will result from the successful introduction of a reusable space transportation system, a space tug, a military space plane, and a heavy-lift launch vehicle. Any delay in development of the heavy-lift launch vehicle will seriously affect several other Soviet space systems.

— The reliability of Soviet space systems also will improve, but some reliability problems will remain because of poor product engineering, limitations in technology, and inadequate quality control. Newer satellites should achieve an average lifetime of three years, nearly doubling the average lifetime of older systems.

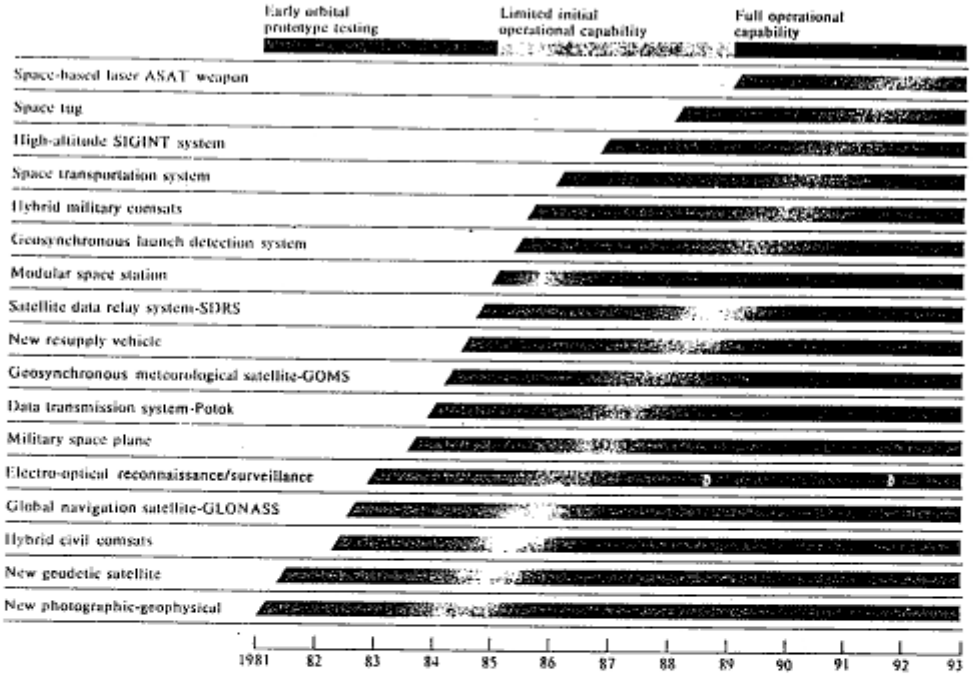
The most significant result of the increased effort in space will be the extension of the Soviet military reach by providing global support to military operations:

— Command and control communications will be available on a global basis, providing an expanding number of military users with continuous, secure, and reliable communications.

— Intelligence collection, targeting, global navigation, and weather data will be more accurate and timely.

— As satellite data relay systems become available, intelligence and target information will be increasingly available to tactical commanders.

Figure 1
Major New Soviet Space Systems in Development



Secret

300268 8-83

For the rest of this century, Soviet space-related weapon systems will probably be limited to ASAT roles:

— We do not expect significant improvements in the capabilities of the nonnuclear orbital ASAT interceptors. We do not anticipate the development of a high-altitude conventional orbital ASAT capability.

— Potentially, the most serious threat to US space systems is active EW, especially against high-altitude satellites. An additional view holds that, if a Soviet active EW capability against satellites does exist, brute force jamming would be the most likely EW technique. On the basis of available evidence, it is

difficult to judge with any confidence that a Soviet technological capability would include more complex forms of jamming.[1]

— Although potentially capable, we believe that Soviet intercontinental ballistic missiles and direct-ascent antiballistic missiles (ABMs) are unlikely to be used in ASAT roles. Nevertheless, unprotected satellites will remain vulnerable to the long-range and persistent effects of nuclear detonations in space.

— We believe there is a high probability that a prototype high-energy laser ASAT weapon will be tested in low orbit by the early 1990s. A high-altitude version may be tested by the end of the century. A space-based laser of the 1-megawatt class could be tested in the late 1980s at the earliest, but prototype testing is more likely to occur in the early 1990s. If testing proves successful, an initial operational low-altitude system consisting of a few satellite weapons, having an ASAT range of hundreds of kilometers, could be available by the mid-1990s. The psychological impact of the first test of a space-based laser in a weapon-related mode would be greater than the actual military significance of such a weapon in its initial applications.

Space-based weapons for ballistic missile defense (BMD) will require greater technological advances than those needed for an ASAT mission. Thus, the Soviets are unlikely to have a prototype space-based laser BMD system until at least the mid-1990s or an operational system until after the year 2000.

In a transition to war, we believe the Soviets would expand the deployment of naval targeting and photoreconnaissance systems to reach full operational potential. Short of direct US-Soviet conflict, it seems unlikely that the Soviet leadership would risk physical destruction of US satellites, whereas it could perceive nondestructive interference as a somewhat less risky option. Should war occur, the use of active electronic warfare against space systems would probably be the initial ASAT activity. We do not believe that any ASAT activity would be undertaken merely for warning or demonstration purposes. The likelihood of their launching orbital ASAT interceptors against selected US satellites probably would be high during a NATO–Warsaw Pact conflict. In such a conflict, the Soviets may perceive an operational advantage if both sides experience significant satellite losses. In addition, the USSR's quick-launch capabilities provide an advantage over the United States in restoring satellite capabilities, assuming its launchpads remain intact.

[1] *The holder of this view is the Director, National Security Agency.*

In a nuclear war, Soviet space systems would have key vulnerabilities. Their launch and control sites are not hardened, and their satellites probably have limited protection. In the future, key satellite systems could be replaced either by using reserves stored in orbit or by launching satellites from mobile facilities. However, the development of smaller communications and photoreconnaissance satellites would be required for use with a mobile launch capability.

Manned space activities are receiving increased emphasis in the Soviet space program:

— By 1986 manned space activities, which are predominantly military in nature, will account for more than one-fourth of Soviet space expenditures.

— The Soviet leadership has announced the national objective of establishing a continuously manned space station, which we believe will be achieved by about 1986.

— Beyond research and development, the military purposes of manned space stations remain unclear, but reconnaissance, to include ocean surveillance, is likely to be the main military mission. In addition, a military space plane is under development. The space plane mission also is unclear, but is likely to include reconnaissance.

Increased Soviet space activities will offer potential economic benefits:

— The USSR will be able to offer a variety of space services at competitive prices. These services, particularly telecommunications and space launches, could provide sources of hard currency earnings.

— Manufacturing and materials processing in space is another area of potential economic benefit to the USSR. Soviet experiments are sufficiently advanced to begin production in space within the next few years. The Soviet space shuttle will enable regular harvesting of products manufactured in space.

Increased Soviet space activities will also enhance Soviet prestige:

— A visible, highly publicized, continuously manned Soviet space station will receive frequent worldwide attention.

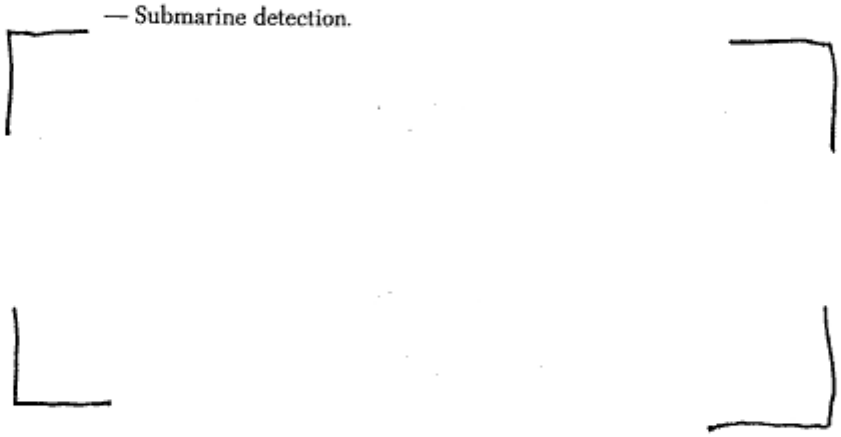
— A manned Mars mission or the establishment of a manned lunar base could be undertaken in the mid-to-late 1990s. If actually undertaken and successful, such activities would demonstrate Soviet scientific and technical prowess.

— Unmanned lunar and planetary exploration, such as the coming Venus–Halley's Comet mission, will enhance the USSR's desired image as a peaceful and technologically advanced nation.

Our ability to anticipate developments in the Soviet space program is becoming increasingly difficult[ ]Therefore, unanticipated developments will be increasingly possible. Our perception of the Soviet space threat would increase significantly if breakthroughs occur in:

— Space-related weapons.

— Submarine detection.



DISSEMINATION NOTICE

1. This document was disseminated by the Directorate of Intelligence. This copy is for the information and use of the recipient and of persons under his or her jurisdiction on a need-to-know basis. Additional essential dissemination may be authorized by the following officials within their respective departments:

a. Director, Bureau of Intelligence and Research, for the Department of State
b. Director, Defense Intelligence Agency, for the Office of the Secretary of Defense and the organization of the Joint Chiefs of Staff
c. Assistant Chief of Staff for Intelligence, for the Department of the Army
d. Director of Naval Intelligence, for the Department of the Navy
e. Assistant Chief of Staff, Intelligence, for the Department of the Air Force
f. Director of Intelligence, for Headquarters, Marine Corps
g. Assistant Secretary for Defense Programs, for the Department of Energy
h. Assistant Director, FBI, for the Federal Bureau of Investigation
i. Director of NSA, for the National Security Agency
j. Special Assistant to the Secretary for National Security, for the Department of the Treasury
k. The Deputy Director for Intelligence for any other Department or Agency

2. This document may be retained, or destroyed by burning in accordance with applicable security regulations, or returned to the Directorate of Intelligence.

3. When this document is disseminated overseas, the overseas recipients may retain it for a period not in excess of one year. At the end of this period, the document should be destroyed or returned to the forwarding agency, or permission should be requested of the forwarding agency to retain it in accordance with IAC-D-69/2, 22 June 1953.

4. The title of this document when used separately from the text is unclassified.