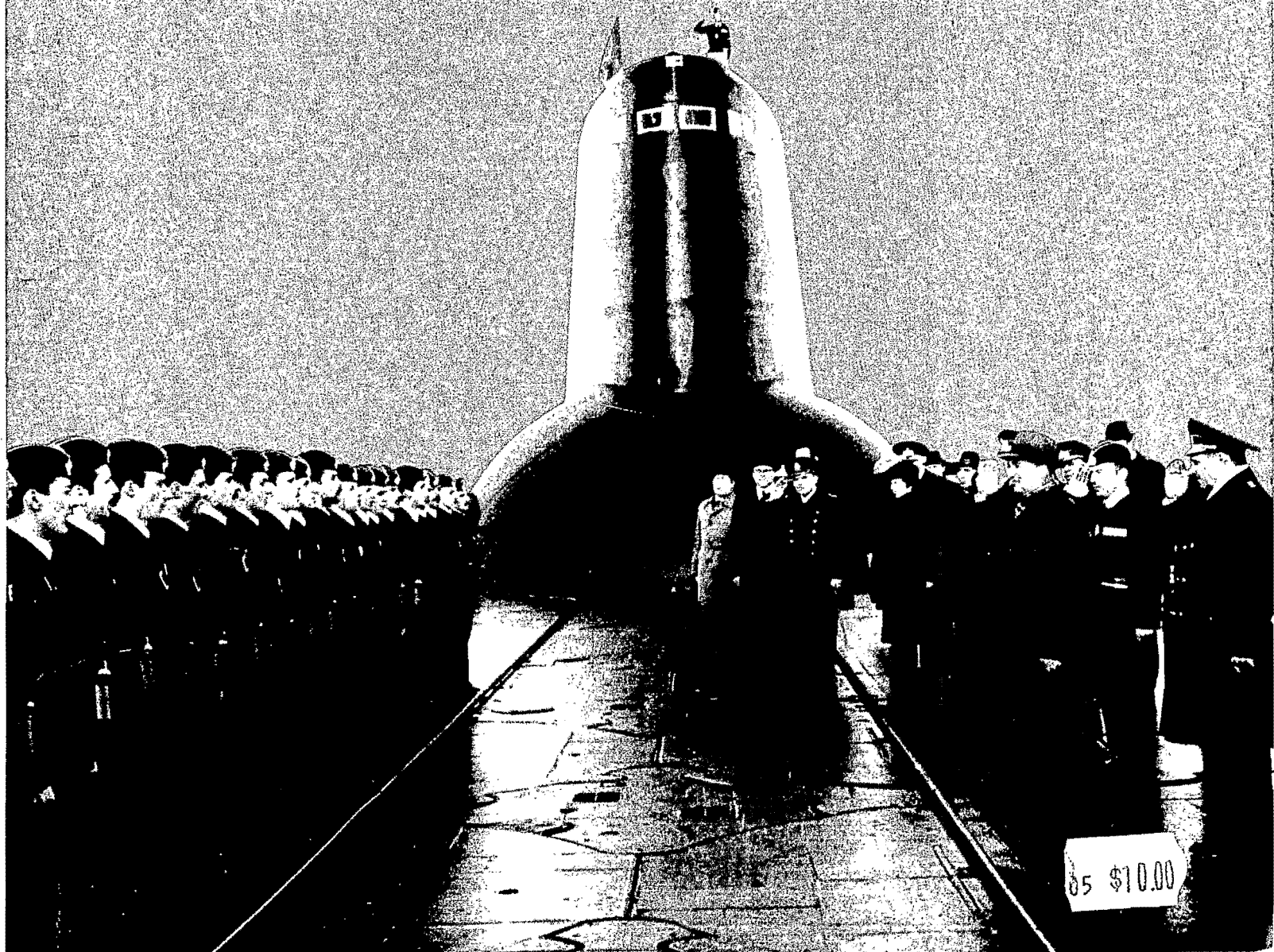


SOVIET MILITARY POWER:

AN ASSESSMENT OF THE THREAT
1988



that the radar is designed for ballistic missile detection and tracking.

Advanced Strategic Defense Technologies

Since the 1960s, the Soviets have been conducting a substantial research program to develop a defense against ballistic missiles. As noted by General Secretary Gorbachev, this effort covers many of the same technologies currently being explored by the US SDI. The Soviet effort, however, involves a much greater investment of plant space, capital, and manpower.

For example, the Soviet laser research program, with ballistic missile defense applicability, has historically been much larger than its US counterpart. At Sary Shagan, one of a half-dozen major R&D facilities involved in laser research, the Soviets are believed to be developing several lasers for strategic applications such as air defense or a terminal ABM, and at least one laser believed capable of an antisatellite mission.

Moscow hopes that its huge investment to design and build high-energy lasers will provide it with laser systems for strategic air defense, space-based antisatellite missions and, conceivably, defense against ballistic missiles. The first prototype systems, some with limited operational capability, might be seen before the end of the decade, but except for air defense, full-scale, fully operational defensive systems are not expected until the late 1990s at the earliest.

In some areas of ballistic missile defense-related technology, the USSR has progressed beyond technology research. It has ground-based lasers with some capability to attack US satellites, and it could have a space-based antisatellite laser prototype within the next several years. The Soviets also could have ground-based laser prototypes for ballistic missile defense in the early 1990s, and they could begin testing a limited-scale deployment system in the late 1990s.

Moscow is exploring several other advanced technologies for use in ballistic missile defense. Since the late 1960s, for instance, the Soviets have explored the use of particle beam and kinetic energy weapons for antisatellite (ASAT) and ballistic missile defense missions. Although the Soviets may be able to test a prototype particle beam ASAT weapon in the mid-to-late 1990s, operational systems that could destroy satellites or incoming ballistic missiles will not exist until the 21st century.

Long-range, space-based kinetic energy weapons for defense against ballistic missiles probably could not be

developed until at least the mid-1990s. The Soviets could, however, deploy a short-range, space-based system for space station defense or close-in attack by a maneuvering satellite in the near future.

The USSR has also conducted research in the use of radio-frequency weapons to interfere with or destroy the electronic components of ballistic missile warheads or satellites. A ground-based version of such a weapon could be tested in the 1990s. Free-electron lasers, which generate intense microwave and millimeter-wave pulses, have been developed by the Soviets, possibly for use in radio-frequency weapons.

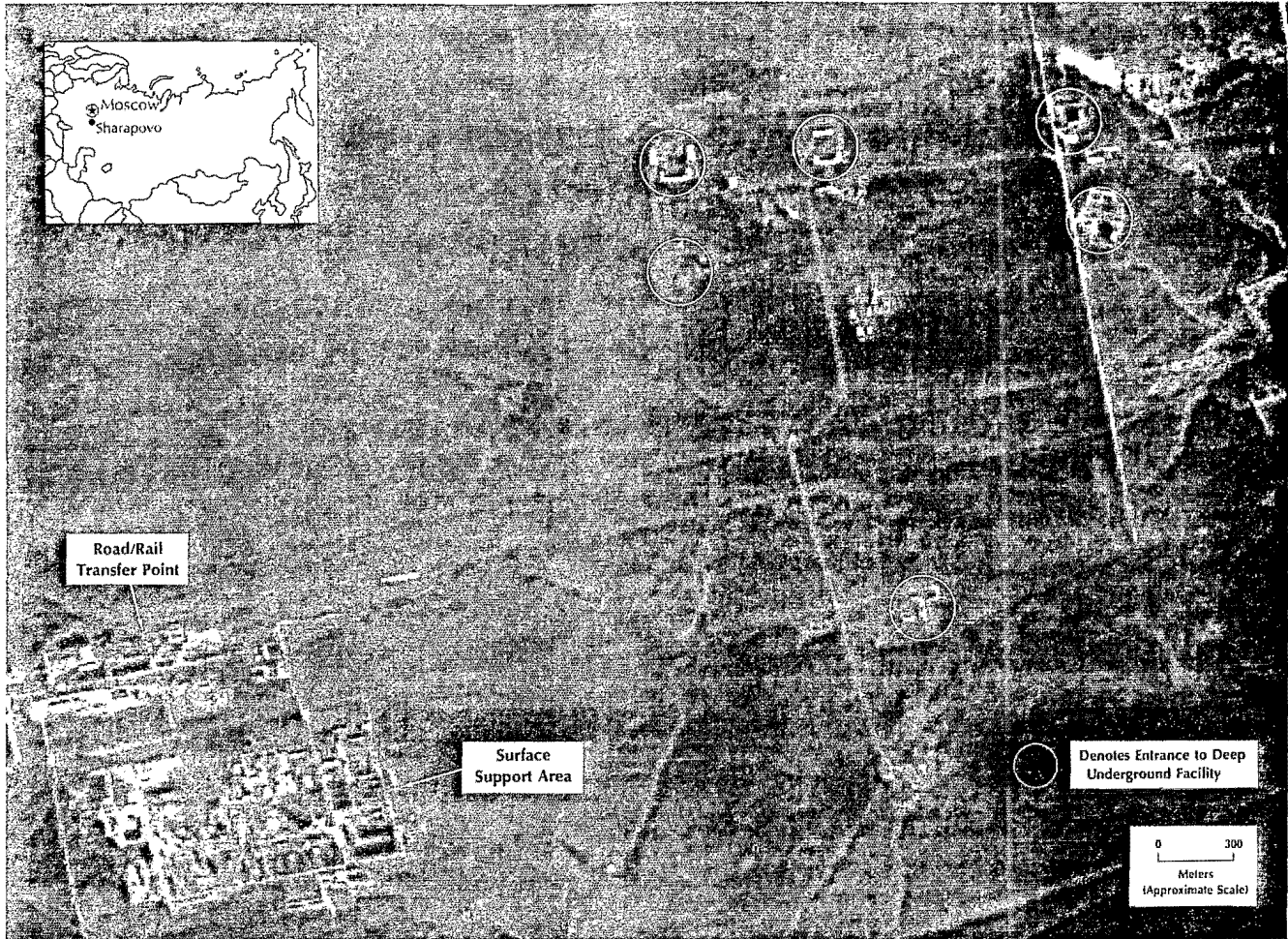
Passive Defense

The Soviet passive defense program is a comprehensive system of measures designed to inhibit the effects of a nuclear attack on the Soviet Union. The main objectives of the passive defense program in effect today are: ensuring the survival and continuity of the Soviet leadership; planning for efficient wartime mobilization of manpower and the economy; protecting the industrial base and essential workers; and providing a credible reconstitution capability. Integral to the Soviet passive defense program are thousands of hardened facilities.

Deep Underground Facilities

For 40 years, the Soviet Union has had a vast program underway to ensure the survival of the leadership in the event of nuclear war. This multifaceted program has involved the construction of deep underground bunkers, tunnels, secret subway lines, and other facilities beneath Moscow, other major Soviet cities, and the sites of major military commands. This program is designed solely to protect the senior Soviet leadership from the effects of nuclear war. These deep underground facilities today are, in some cases, hundreds of meters deep and can accommodate thousands of people. As nuclear arsenals on both sides have become larger and more potent, these facilities have been expanded and have reached greater depths.

Neither changes in the Soviets' leadership nor the restructuring of the strategic balance and the refinements in military doctrine that accompanied these changes appear to have diminished their commitment to the program. Over the program's history, its purpose has remained unchanged — leadership survival so that it can maintain internal control and ensure that Soviet military power can be centrally directed throughout all phases of a world war. The secrecy of the program and the uncertainty about the extent and nature of these facilities are major causes for concern.



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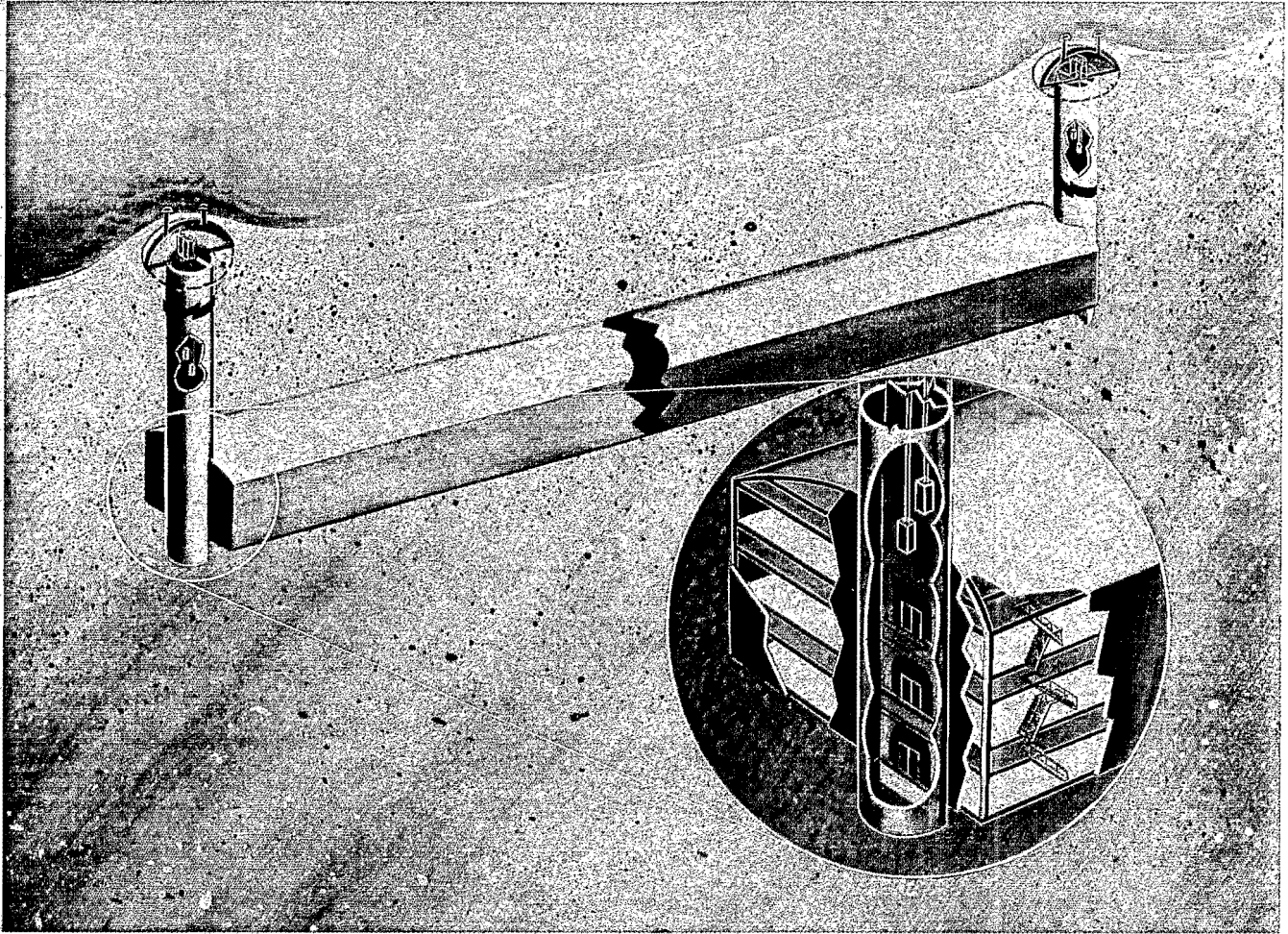
Some underground facilities designed to protect the Soviet leadership are relatively shallow and can accommodate thousands of people. This deep underground facility is a wartime relocation center for the Soviet National Command Authority.

The deep underground program, which rivals Soviet offensive strategic weapons programs both in scale and level of commitment, remained undiminished even as the Soviets agreed to limit their defenses against ballistic missiles in the ABM Treaty. Indeed, a major augmentation of the original activities was started about the time the ABM Treaty was being concluded. Yet another round of construction on these complexes began in the early 1980s, when Soviet leaders were publicly emphasizing that a nuclear war would be so catastrophic that attempts to achieve victory or even seriously limit damage in such a war no longer made sense. The latest round of construction coincided with intensified Soviet preparations for the possibility that a nuclear war could be protracted.

The deep underground facilities beneath the city of Moscow are directly associated with the main centers of state power. They provide the leaders of the various organs of state control the opportunity to move from their peacetime offices through concealed entryways down

to protective quarters below the city, in some cases, hundreds of meters down. Once there, the Politburo, the Central Committee, the Ministry of Defense, the KGB, and the apparatuses of the many other state ministries can remain sheltered while the USSR converts to a wartime posture. The fruits of this 40-year construction program now offer the Soviet wartime leadership the option of remaining beneath Moscow or, at some point, boarding secret subway lines connecting these deep underground facilities. From there the Soviets can make their way to nearby underground complexes outside Moscow where they plan to survive nuclear strikes and to direct the war effort. The support infrastructure for these facilities is substantial. A highly redundant communications system, consisting of both on-site and remote elements, supports these complexes and permits the leadership to send orders and receive reports through the wartime management structure.

These installations also have highly effective life support systems capable of protecting their occupants



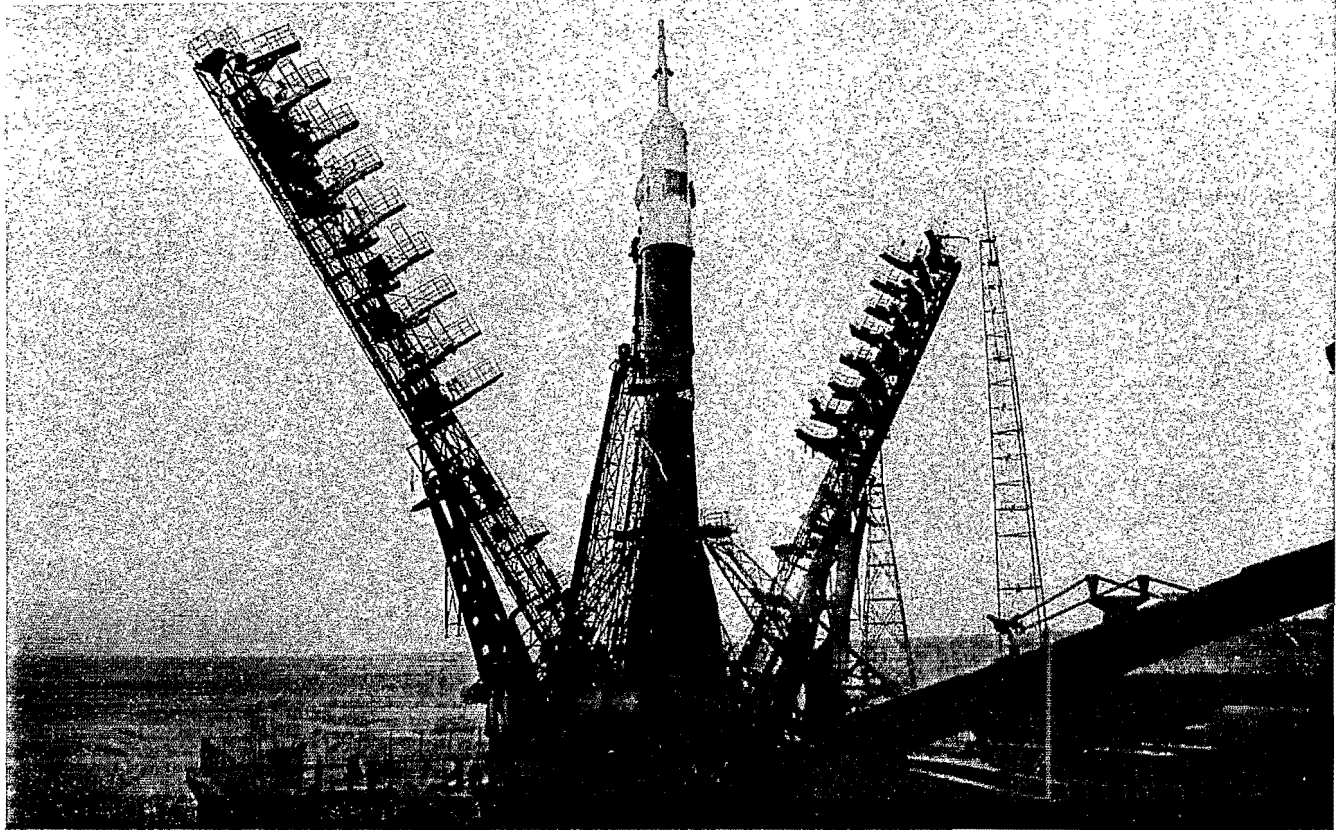
Soviet leaders in Moscow can move to protective quarters hundreds of meters below the city if hostilities seem imminent. Additionally some deep underground complexes are located far outside urban areas.

against chemical and biological attack. Such arrangements may enable independent operations to be carried out from these facilities for many months. The top leadership of the USSR also has the option of going by secret subway lines out to Vnukovo Airfield, about 17 miles southwest of the Kremlin, and from there flying to remote facilities. They also have a fleet of aircraft, trains, and other vehicles that provide yet another option for survival; these platforms have extensive communications support, which would permit the surviving leadership to reconstitute Soviet military power for ensuing military operations. While Soviet preparations for leadership protection are most intensive around Moscow because of its critical role in wartime management, there are similar programs in other key cities. Moreover, Soviet planning calls for the leadership's evacuation from several hundred additional cities to rural relocation facilities.

The Soviets also use worked-out mines to increase the number of relocation facilities. These old mines

have the added advantage of reducing the cost of the passive defense program since the excavation costs have already been recovered. The mines would also provide concealed storage sites for military stores and equipment, expanded storage capacity for the strategic stocks reserve network, and improved continuity of economic activity in wartime. By using these old mines, the Soviets can expand the already large number of underground facilities available for leadership protection quickly and inexpensively.

The Soviets' experience with civil defense, leadership protection, and massive relocation efforts during World War II has taught them the benefits of a leadership protection program. While continuing improvements indicate the program does not yet fully meet Soviet requirements, the Soviets have made extensive preparations to give the leadership the potential for effective performance in a nuclear war. The enormous and continuing Soviet investments in the leadership protection program indicate that they believe its benefits



TASS/NOVATO

The SL-4, operational for 24 years, is still the workhorse of the Soviet space program.

are well worth the large cost. Unceasing efforts in strategic offensive forces and active defensive forces modernization, when coupled with efforts to protect the leadership, clearly indicate that the USSR expects to exercise national command and control through all phases of protracted nuclear war.

SPACE FORCES

The continuing evolution of Soviet military space doctrine, the increasing number of military-related launches, and the high priority given to development of space-related strategic offensive and defensive systems reflect the Soviet determination to use space primarily for military purposes. The long-term Soviet commitment to space was reaffirmed by General Secretary Gorbachev in May 1987 when he declared, "We do not intend to relax our efforts and lose our vanguard position in the conquest of space."

Space Programs and Capabilities

The Soviets currently operate about 50 types of space systems for military and civilian uses, including manned space stations (MIR and the inactive SALYUT 7), and reconnaissance, launch-detection, navigational, meteo-

rological, and communications satellites. Some types of satellites — the Soviet space station, the materials processing satellite, the radar ocean reconnaissance satellite (RORSAT), the electronic intelligence (ELINT) ocean reconnaissance satellite (EORSAT), and the radar-carrying oceanographic satellite — are unique to the Soviets.

The USSR conducts approximately 100 space launches annually from its three "cosmodromes." One of these, Tyuratam, is the world's largest. To maintain their impressive launch rate, the Soviets have about 20 launch pads and use eight operational types of boosters to launch their payloads. A ninth booster, the SL-X-17, is in development and testing. Their high launch rate allows the Soviets to maintain an increasing number of active satellites in orbit — up from about 120 in 1982 to about 150 in 1987. At least 90 percent of the Soviet satellites in orbit have a military purpose and can support offensive or defensive operations.

Although the Soviets steadfastly maintain they have no military space program, about 150 of the approximately 200 operational Soviet satellites projected to be in orbit by the mid-1990s will most likely have purely military missions such as ocean reconnaissance