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NATIONAL INTELLIGENCE ESTIMATE

CIA HISTORICAL REVIEW PROGRAM

Soviet Forces for Intercontinental Conflict Through the Mid-1980s

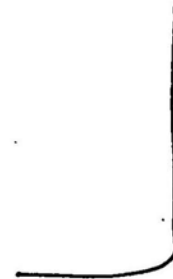
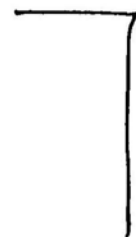
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Key Judgments and Summary
ADVANCE DISSEMINATION

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NIE 11-3/8-75

SOVIET FORCES FOR INTERCONTINENTAL
CONFLICT THROUGH THE MID-1980s

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THE UNITED STATES INTELLIGENCE BOARD CONCURS, EXCEPT AS NOTED IN THE TEXT, AS FOLLOWS:

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

The Central Intelligence Agency, the intelligence organizations of the Departments of State and Defense, the National Security Agency and the Energy Research and Development Administration.

Concurring:

The Deputy Director of Central Intelligence representing the Central Intelligence Agency

The Director of Intelligence and Research representing the Department of State

The Director, Defense Intelligence Agency

The Director, National Security Agency

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SOVIET FORCES FOR INTERCONTINENTAL CONFLICT THROUGH THE MID-1980s

NOTE

This Estimate is primarily concerned with present and future Soviet forces for intercontinental attack (ICBMs, SLBMs, and bombers) and for strategic defense against bombers, missiles, and ballistic missile submarines. Other Soviet forces which might have some role in an intercontinental conflict are discussed in NIE 11-15-74, "Soviet Naval Policies and Programs," in NIE 11-14-75, "Warsaw Pact Forces Opposite NATO," and in NIE 11-10-73, "Soviet Military Posture and Policies in the Third World."

The findings of this NIE are contained in three volumes. Volume I presents the key judgments and the summary of the estimate from which they are drawn. The full estimate is Volume II. In Volume III are annexes providing tables of future force projections and supplementary technical material on ICBM accuracies and directed-energy weapon systems.

The contents of all three volumes draw on the findings of several interagency reports and memorandums prepared by committees of the United States Intelligence Board and ad hoc interagency groups. (See the last page of Volume I for a list of these issuances.)

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KEY JUDGMENTS

In this Estimate, we call particular attention to current and prospective developments which could markedly increase Soviet strategic capabilities during the next ten years:

- The Soviets are steadily deploying new types of ICBMs. In about 1980 they will have a force of up to 900 missiles of these types, most of them with MIRVs. They are also moving ahead with the development of several ICBMs beyond those now being deployed.
- The capability of the Soviet ICBM force to destroy US Minuteman silos is growing. It will probably pose a major threat in the early 1980s. A more rapid increase in this threat is possible but unlikely.
- The Soviets have the potential to make the task of penetration by bombers to targets in the USSR considerably more difficult by 1985 than it is today.
- The Soviets are pursuing extensive research and development in such areas as submarine detection and defensive lasers.

We also call attention to the large uncertainties about some aspects of Soviet strategic policy and forces, especially about the quality of key weapons and supporting systems in the future. Forecasts of the strategic environment over the next ten years must therefore be made with varying degrees of uncertainty:

- *It is almost certain* that, despite prospective improvements in Soviet forces, the USSR will not acquire deployed forces capable of launching a nuclear attack so effective that the US could not cause devastating damage to the USSR in retaliation.
- *It is probable* that US and Soviet strategic capabilities will remain in roughly equal balance, although the long-standing US qualitative superiority in strategic weapons and supporting technology will come under increasing challenge.¹

¹ The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes there is little reasonable doubt that the Soviets are striving for general strategic superiority over the US by the end of the next decade. If the current massive Soviet R&D programs achieve the breakthroughs being sought, an important shift in the USSR's favor in the strategic balance could occur by 1985.

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- *It is possible but unlikely* that the Soviets will acquire capabilities that would be perceived as providing them with more strategic power to back up their policies than that available to the US.

Recent Developments

In strategic offensive forces, the Soviets continue their broad program of major improvements. The trends are about as we had forecast in last year's Estimate, but the diversity of the ballistic missile submarine program and the potential hard-target capabilities of ICBM systems are somewhat greater than we had expected. The main things we have learned during this past year are:

- The new ICBMs are being deployed at a moderate pace. About 100 of the new ICBMs, most of them with MIRVs, are now operational in new and converted hard silos. In accordance with the Interim Agreement, the Soviets have started to deactivate older, soft ICBM launchers in exchange for new SLBM launchers.
- Despite some continuing developmental problems, the new ICBMs are estimated to have better accuracies and higher yields than we had expected, implying somewhat better capabilities to destroy hard targets like Minuteman silos.
- Development of a land-mobile ICBM could now be complete, but there is as yet no sign of its deployment.
- Two and possibly three models of ballistic missile submarines capable of carrying long-range SLBMs are believed to be in production. A new and large type of ballistic missile submarine may have started construction. A new small SLBM and a new or modified large SLBM have begun flight testing; a MIRV payload has recently been identified on the latter.
- The Soviets continue to maintain only a few ballistic missile submarines on patrol stations. Limited probes near North American coasts were conducted this year, possibly portending changes in patrol patterns. There is also an increasing number of SSBNs with missiles of sufficient range to reach targets in the US at any given time, even without leaving port.
- The Backfire bomber has been deployed in small numbers this year, both in Naval Aviation and in Long Range Aviation at bases occupied by intermediate-range bombers. The Backfire has extensive capability for use in various missions in Eurasia

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and for naval missions over the open seas. We continue to believe it has capabilities for operation against the continental US. There are differing views within the Intelligence Community about Soviet intentions to use it for this purpose.

- We have obtained no confirmation of Soviet hints that a new heavy bomber is being developed.
- There is no firm evidence that the Soviets are developing long-range cruise missiles, but they have the design and development experience to be able to do so.

The Soviets continue to devote more resources to strategic defense than they do to forces for intercontinental attack. In addition to routine improvements in what is by far the largest air defense system in the world, the following are the main developments in Soviet strategic defenses we have noted during the past year:

- The Soviets continue to construct ballistic missile detection and tracking systems to close small gaps in existing coverage, to increase their assurance of reliable warning, and perhaps to provide some additional warning time.
- They are placing additional emphasis on surveillance systems and training for defense against aircraft at low altitudes, though there are no indications of major improvements in performance.
- We have obtained additional evidence supporting earlier indications that nuclear warheads are available for a significant number of Soviet surface-to-air missiles.
- The Soviets continue their research and development on ABM systems (at a pace not significantly reduced from that which existed prior to the ABM Treaty), on radars, on SAMs designed for low-altitude air defense, and on directed-energy systems which probably include lasers with capabilities against low-orbiting satellites.
- They have continued their extensive investigation of techniques for overcoming their deficiencies in detecting and tracking SSBNs at sea. Soviet attempts to trail US SSBNs near our operating bases have resulted in no known successes.

Soviet Objectives

Our judgments about the strategic objectives of the Soviet leaders are based on what they say (in public and sometimes in private), on what we observe of their programs, and on our appreciation of the internal and external forces operating on them in the present period of

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risky opportunities. It is apparent that they see no contradiction between their policies of detente and arms-limitation negotiations and their continuing buildup of strategic forces. Much that we observe in their present posture and programs can be attributed to a combination of traditional defensive prudence, a military doctrine which stresses war-fighting capabilities, superpower competitiveness, worst-case assumptions about US capabilities, and a variety of internal political and institutional factors. But the scope and vigor of these programs, at a time when the USSR has achieved a powerful deterrent as well as recognition as the strategic equal of the US, raise the elusive question of whether the Soviet leaders embrace as an objective some form of strategic nuclear superiority over the US.

Deeply held ideological and doctrinal convictions impel the Soviet leaders to pose as an ultimate goal the attainment of a dominant position over the West, particularly the US, in terms of political, economic, social, and military strength. We do not doubt that if they thought they could achieve it, the Soviets would try to attain the capability to launch a nuclear attack so effective that the US could not cause devastating damage to the USSR in retaliation. Although the Soviet leaders may now entertain some hope—and, in the view of some agencies, already believe—that US resolve as a strategic competitor is weakening, they know realistically that the US need not concede the USSR a superior position in the next ten years. Nevertheless, they are probably striving for a strategic posture which has some visible and therefore politically useful advantages over the US and which would give the USSR better capabilities than the US to fight a nuclear war.

The Soviets probably view SALT as having the potential for limiting the costs and risks of the strategic arms competition. Their objectives for the SALT process probably include constraining US options (especially in areas where they fear they may be less able to compete) and leaving open their own options to the extent possible. Considering the history of Soviet strategic policy and force improvement programs, we believe that under a SALT TWO agreement based on the Vladivostok accord, the Soviets would probably seek in their strategic programs:

- to ensure deterrence of all forms of nuclear attack on the USSR;
- to improve war-fighting capabilities, aimed at the survival of the USSR as a national entity should deterrence fail;
- to counterbalance, with both peripheral and intercontinental forces, the combined nuclear strengths of the US and its allies and of China;

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- to narrow or close the gap between the US and the USSR in important weapon technologies and to hedge against future US force improvements; and
- to acquire strategic advantages, real or perceived, should US behavior permit.

If a SALT TWO agreement is not achieved, we believe that the Soviet leaders' objectives for their strategic forces would be much the same. But they would be free of SALT TWO restrictions, which would have forced them in 1977 to make a small reduction in the number of their intercontinental delivery vehicles, and thereafter to have confronted the difficult choices involved in trading old weapons for new to stay within the 2,400 aggregate ceiling. In the absence of such restrictions, we would expect the Soviets to build and retain strategic offensive forces larger than the limits proposed at Vladivostok and considerably larger than US programmed forces. Increases in force levels would be especially likely if US-Soviet relations significantly worsened. In any case, the Soviets would not expect quantitative competition to alter the strategic balance. Implicit in the Vladivostok accord was a Soviet judgment that the USSR could not achieve significant advantages over the US by continued competition in numbers of strategic weapons. The Soviets have evidently come to recognize that the strategic environment in the 1980s will be affected most importantly by the qualitative aspects of the forces of the two sides. Their progress in this area will be largely independent of SALT TWO.

Dramatic near-term changes in Soviet strategic policy would not be likely under a post-Brezhnev regime. The policies now being pursued have emerged from the interplay of many factors which would remain unaltered. To the extent that Brezhnev as an individual may be a moderating influence, any changes would likely be in the direction of increases in strategic capabilities, especially if SALT TWO fails to produce an agreement. Other adjustments in Soviet policy for strategic forces could result from the USSR's own technological advances or from US-Soviet confrontations over the next ten years. Finally, changes could emerge in response to US force developments such as improvements in hard-target kill capabilities; deployment of small, accurate long-range cruise missiles; and concepts and options for the selective use of nuclear weapons in limited intercontinental warfare.

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Future Capabilities

Varying degrees of uncertainty characterize our estimates of Soviet strategic policy and of the quantity and quality of Soviet forces. Forecasts for the next few years can be made with relatively high confidence by extrapolating from current evidence. For the period of primary concern, five to ten years hence, estimates of system characteristics and force composition must be based on very limited evidence and indirect considerations. A SALT TWO agreement based on the Vladivostok accord would considerably reduce quantitative uncertainties about forces for intercontinental attack. We warn, however, that uncertainties about the quality of strategic weapons and forces—which exist now and will persist in the future—are in some areas large enough to affect judgments about important aspects of the future strategic balance.

Our best estimate of Soviet offensive force development over the next ten years, assuming a SALT TWO agreement, is that deployment of new systems will continue at about the pace now demonstrated, that ICBM accuracy will continue to improve, and that force survivability and flexibility also will improve. Soviet ICBM forces will probably pose a major threat to US Minuteman silos in the early 1980s, assuming that the Soviets can perfect techniques for precisely timed two-RV attacks on a single target. This is somewhat earlier than forecast last year. Moreover, by the early 1980s Soviet offensive forces will lead programed US forces in numbers of missile RVs, though the US will retain a large lead in the total number of missile and bomber weapons combined.

We have examined a number of other alternatives for future Soviet forces, which are all plausible but not equally consistent with past trends and current evidence. These range from (a) a force the Soviets might regard as meeting minimum requirements for strategic parity and military effectiveness against currently programed US forces under a SALT TWO agreement, to (b) a force the Soviets might build if the SALT process failed, US-Soviet relations worsened, and the Soviets achieved high rates of deployment and technological advance. The principal differences in the countersilo capabilities of these alternative forces are encompassed by the large range of uncertainty in our estimates of such key weapon characteristics as ICBM accuracy. At the more threatening but highly unlikely extreme of this range of uncertainty, Soviet ICBMs would pose a major threat to Minuteman silos by the end of the 1970s.

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The Soviets could increase the threat against US bombers on alert by deploying some of their SSBNs closer to the US coastline to reduce the potential warning time of an attack. In assessing the military advantages of adopting this more threatening posture, the Soviets would have to consider planned introduction of the B-1 bomber and countermeasures available for existing bombers. We believe the Soviets would conclude that the US could preserve the survivability of most of its alert bombers against attacks by SLBMs throughout the next ten years.

In the field of strategic defense, it is unlikely that the Soviets will significantly improve their low-altitude air defenses before 1980. The most likely improvements we foresee in their air surveillance and control, interceptors, and SAM systems would have the potential for overcoming most of the technical deficiencies in their capabilities to counter low-altitude bombers by 1985, but it might be possible for them to do so earlier with a very high level of effort. Assuming rapid and widespread deployment of such systems, low-altitude penetration of Soviet air defenses by bombers will be considerably more difficult by 1985 than it is today. The actual effectiveness of Soviet air defenses, however, would continue to depend heavily on the degree of degradation resulting from ballistic missile strikes and on the performance of US electronic countermeasures and bomber penetration aids and tactics. Neither we nor the Soviets would likely be able to predict these effects with confidence.

The future effectiveness of Soviet defenses against ballistic missile submarines on patrol will depend in large part on how successful the Soviets are in detecting and tracking SSBNs in broad ocean areas. From our understanding of the technologies involved and research and development programs in the US and the USSR, we conclude that the Soviets have little potential for achieving success in either of these areas in the next ten years. Moreover, improvements in US SSBNs and expansion of their operating areas will compound the Soviet problem of finding, tracking, and attacking them. These judgments must be qualified, however, by gaps in our knowledge [

] of possible future Soviet developments. The Soviets will almost certainly continue to develop their strategy and capability for detection of SSBNs, and we expect improvements in their capabilities to detect and destroy SSBNs in confined water areas. We conclude, however, that these improvements will not overcome deficiencies in open-ocean detection and submarine tracking, and that Soviet ASW capabilities will fall short of being able to prevent most US submarines on station from launching their missiles.

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Despite prospective improvements in their forces, the problems and uncertainties which the Soviets would face if they contemplated attacking the US would remain formidable for the next ten years:

- The Soviets would be uncertain about the outcome of an attack on US Minuteman silos and would probably expect a considerable number to survive.
- They would almost certainly consider their ASW forces to be unable to locate and simultaneously destroy more than a few US ballistic missile submarines at sea.
- Under the ABM Treaty their ABM defenses would be insignificant.
- They would still not have high confidence in their ability to defend against US bombers.
- They would probably expect their civil defenses to be able to preserve a political and economic cadre and to contribute to the survivability of the Soviet Union as a national entity, but they would have to expect massive casualties, industrial destruction, and a breakdown of the economy.

Under these circumstances, with the forces and weapons we can foresee, it is extremely unlikely that during the next ten years the Soviet leaders would come to believe that either side could launch an attack which would prevent devastating retaliation. During the period, however, Soviet offensive forces will gain considerably relative to the US in such quantitative measures as missile throw weight and missile RVs, although SALT TWO limits would establish and preserve symmetry in total delivery vehicles and MIRVed missile launchers. Furthermore, the long-standing US qualitative superiority in strategic weaponry and supporting technologies will come under increasing challenge. Under the most threatening but unlikely circumstance of very rapid Soviet technological advance, especially if combined with a large Soviet buildup in the absence of a SALT TWO agreement, the USSR could achieve capabilities that might be perceived as giving it more strategic power to back up its policies than that available to the US. Foreseeable Soviet strategic forces, however, would not eliminate the USSR's vulnerability to retaliation. A crisis resolution, therefore, probably would not rest on the strategic weapons balance, but rather would depend on other factors, such as the comparative strengths and dispositions of US and Soviet conventional forces.

We have reexamined Soviet R&D programs and prospects for major advances in fields having strategic offensive and defensive applications

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that might seriously erode US deterrent capabilities. We have given particular attention to lasers for use in air and missile defense and to systems for detecting and trailing US ballistic missile submarines. The Soviets are working actively in both fields, and there are gaps in our knowledge of this work. The available evidence, together with our appreciation of the physical, engineering, and operational hurdles which must be overcome, leads us to rate as small the chances that the Soviets can sharply alter the strategic balance through technological advance in the next ten years.² Nevertheless, the scope and progress of Soviet R&D, particularly in strategic air defense and ASW, bear especially close watching in the years ahead.

² *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the USSR is embarked on a directed-energy weapons research program of such magnitude that it could have a major if not decisive impact on the strategic balance before 1985.*

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SUMMARY

THE USSR'S CURRENT STRATEGIC SITUATION

1. The Soviet Union is pressing forward with a broad program for improving strategic forces. During the past year, its size, pace, and general direction have been about what we expected, but its diversity has been somewhat greater than anticipated.

— *In offensive forces*, three new ICBM systems are being deployed at the expected moderate pace, and development work on a fourth is essentially complete. These systems have somewhat better accuracies and higher yields than forecast last year. The nuclear-powered ballistic missile submarine (SSBN) force continues to grow, and as many as three types are now in production. New generations of ICBMs and submarine-launched ballistic missiles (SLBMs) are being developed, and there are hints of a new heavy bomber and a new and very large SSBN.

— *In defensive forces*, the Soviets continue modernizing their air defenses, expanding their capabilities for early warning of a missile attack, and improving civil defense. They are pursuing developmental work on ABM sys-

tems. Their R&D programs also include systems for defense against low-altitude air attack, and a continuing search for ASW capabilities to counter the US SSBN force.

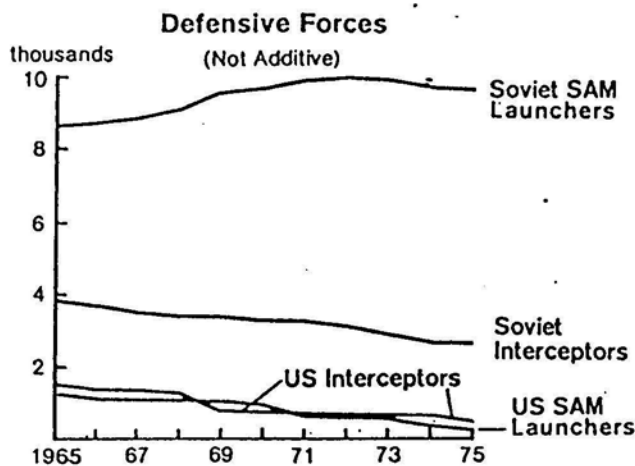
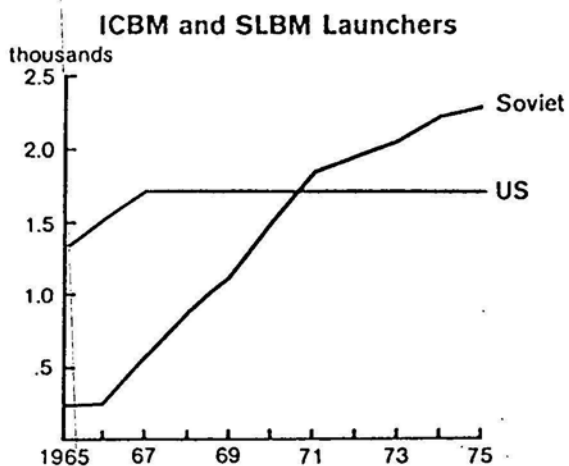
2. These developments follow more than a decade of large-scale deployment and modernization programs (see Figure 1) which have moved Soviet strategic forces well beyond the minimum requirements of deterrence. The Soviets' motivations for improving their strategic posture involve their beliefs about the military and political utility of strategic forces; their perceptions of US capabilities and intentions; their goals and expectations for detente and SALT; and internal factors, such as economic pressures and institutional concerns. Beyond these considerations is the larger and more elusive question of how seriously, if at all, the Soviets are pursuing an objective of some form of strategic nuclear superiority over the United States in the long term.

3. At a minimum, Soviet leaders view improvements to strategic nuclear capabilities as strengthening the foundation of the USSR's superpower status. They believe that the growth of Soviet strategic power, along with political and economic events, has helped create a new "correlation of

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Figure 1

Historical Trends in Selected Aspects of Strategic Forces



* Excludes ICBM silo launchers under construction or conversion and SLBM launchers on SSBNs undergoing sea trials, conversion, or shipyard overhaul. Missile payloads composed of MRVs (which are not independently targetable) are counted as one RV.

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forces"³ more favorable to the USSR. This, in turn, creates a predisposition on the part of Western policymakers to see the USSR as a necessary participant in dealing with various world problems. In potential crisis situations, it gives the USSR bargaining leverage and greater latitude for action. In the event of direct superpower confrontation, the Soviets expect their strategic power to enhance the prospect of favorable outcomes while reducing the likelihood of nuclear war.

FACTORS INFLUENCING SOVIET STRATEGIC POLICY

4. The Soviets have a high regard for the technical, industrial, and economic prowess of the United States and assume that the US will continue to improve its strategic posture. Illustrative of this attitude is the Soviets' expressed concern about US development programs for the B-1 bomber, Trident SSBN, and strategic cruise missiles. In SALT negotiations and higher level diplomatic conversations, the Soviets have shown great eagerness to stop, slow, or limit these programs. They have voiced concern that US policy on limited nuclear options will spur further weapon improvements. Their concern about US technological advance is also reflected [

] in such areas as geophysical warfare and laser and charged-particle beam weapons.

5. Nevertheless, the Soviets are probably uncertain about the resolve of the US to remain a vigorous strategic and political competitor. On the one hand, they observe the US seeking improvements and innovations in weapon technology, funding new weapon systems, and adjusting strategic doctrines in response to a new strategic environment. On the other hand, they witness strong pressures in the US to limit defense spending, already eroded by inflation, to reduce military commitments abroad, and to accept the fraying of US alliance relationships. Soviet leaders do not know

³ "Correlation of forces" is a frequently used Soviet term roughly synonymous with "balance of power" but more broadly construed to encompass political, social, and economic as well as military elements.

how contradictory trends in US attitudes will net out during the next decade.

The Defense Intelligence Agency, the Assistant Chief of Staff for Intelligence, Department of the Army, the Director of Naval Intelligence, Department of the Navy, and the Assistant Chief of Staff, Intelligence, Department of the Air Force, believe that Soviet leaders expect the US to be forced by international and domestic developments to be a less effective strategic competitor. (See Volume II, Chapter I, for further discussion of this subject.)

The Soviets appear to maintain an ideological faith that, in the long term, problems in the West represent another phase in the steady retreat of the capitalist world before the advance of "socialism," i.e., Soviet power. In the meantime, however, the situation is fraught with both dangers and opportunities that have to be manipulated with a delicate mix of pressure and patience.

6. Detente for the USSR is the quest for limited spheres of cooperation with the US and its allies within a larger context of continued competition. Soviet policy is intended to nurture changes favorable to Soviet interests while avoiding challenges to the US and its allies which would provoke them into concerted counteraction. The Soviets are committed to detente and arms limitations as well as ambitious arms development programs. Despite these contradictions, Soviet leaders will probably have little reason to change the general character of their detente policy in the next few years. They see in detente opportunities to reduce Western competitiveness, to constrain US strategic programs, to improve the Soviet economic base, and to acquire militarily significant Western technologies. At the same time, the Soviets expect to exploit opportunities derived from any weakening of the United States as a competitor.

7. Future Soviet policy is not immutable. It will be affected over the next decade by (a) leadership changes within the Soviet party and governmental structure, (b) major technological advances, or (c) US-Soviet confrontations arising from regional conflicts of interest.

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8. For the present, strategic arms limitation is central to Soviet detente policy. Soviet leaders value SALT as an incentive for US commitment to detente and as confirmation of their strategic and political equality with the US. In Soviet eyes, the most tangible achievement of SALT to date has been the ABM Treaty. It averted a costly and potentially dangerous competition in ABM deployment when the Soviets viewed the US as having major technological advantages. By comparison, Soviet strategic interest in limitations on offensive arms has been more conditional and less pressing. Although admitting that any comprehensive treaty on offensive forces would have to accord roughly equal treatment to both sides, the Soviets have generally sought in SALT TWO negotiations to create a bargaining situation in which they can (a) pursue programs to hedge against future threats, (b) keep open their own options to catch up in qualitative areas where they now lag the US, and (c) constrain US options in areas where they fear they may prove less able to compete.

9. The Soviets probably view SALT as having the potential for limiting the costs and risks of the strategic arms competition. Implicit in the Vladivostok understanding is the Soviet judgment that the USSR could not achieve dramatic advantages over the US by continued competition in numbers of strategic weapons.

For the views of the Assistant Chief of Staff, Intelligence, Department of the Air Force, on the potential for significant advantage that might result from Soviet research and development programs, see paragraph 21.

Nevertheless, the Soviets foresee a vigorous qualitative strategic arms competition with the US and presumably believe they could maintain and possibly improve their relative position in a situation in which an agreement limited numbers to equal ceilings.

10. Should SALT TWO fail to achieve an agreement, Soviet strategic behavior would probably depend a good deal on the resultant political atmosphere. Detente between the US and the USSR would no doubt be seen as having suffered a set-

back, but the Soviets would probably seek to minimize the adverse impact of a SALT TWO failure on other aspects of US-Soviet relations, in part by continuing the negotiations. In these circumstances, the quantitative aspects of Soviet force modernization programs, including the pace of the Soviet modernization activities, would probably not be dramatically altered. Indeed, in the event that negotiations were prolonged, the Soviets might seek to extend the limitations of the Interim Agreement in order to help sustain detente and to forestall possible US abrogation of the ABM Treaty. On the other hand, if the failure of SALT TWO were accompanied or followed by a significant worsening in US-Soviet relations, or if the Soviets decided deliberately to risk such worsening in an attempt to pressure the US, then their force levels and the pace of their building programs could increase considerably.

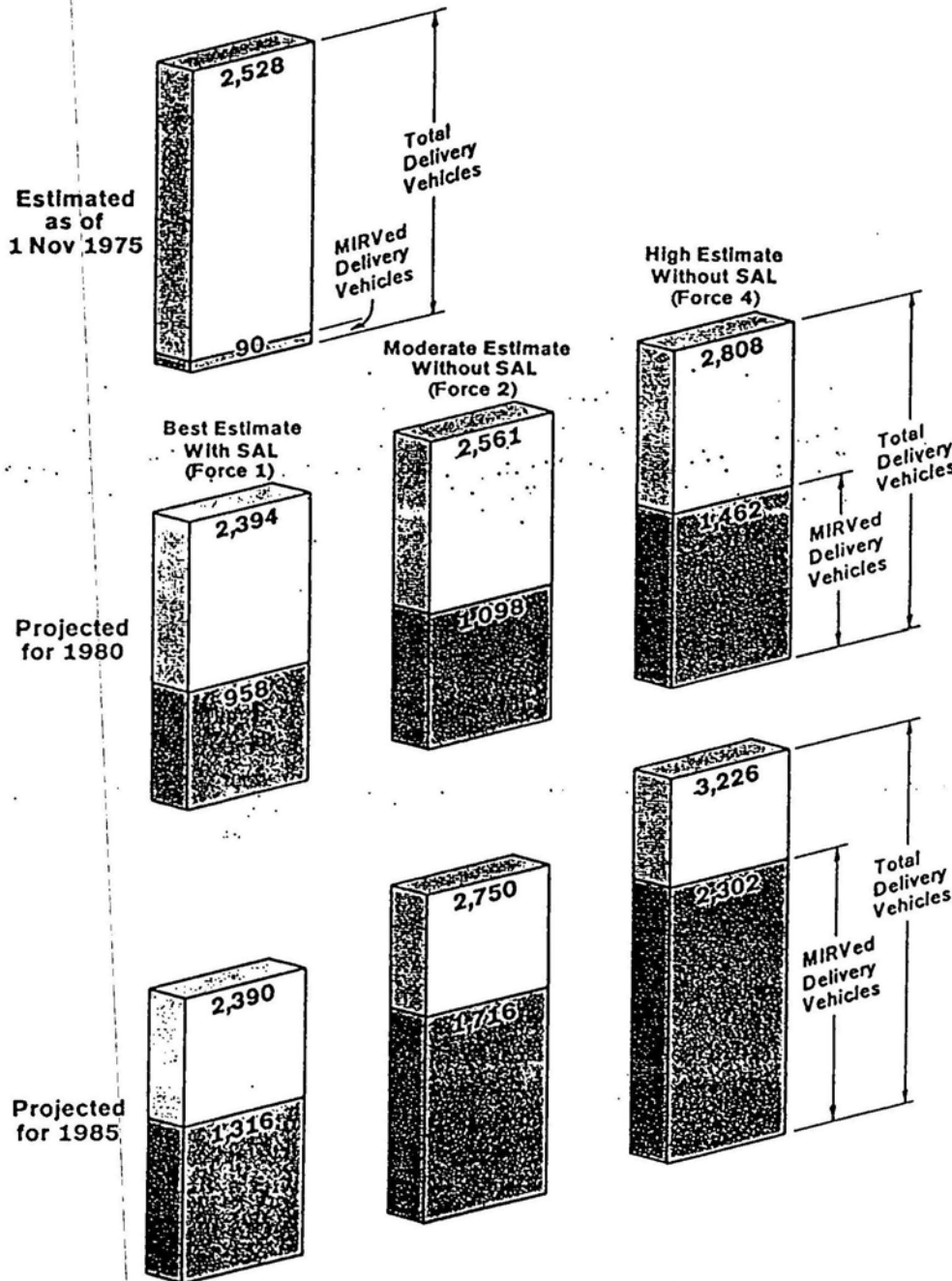
11. Even with moderately paced programs, Soviet offensive force levels would probably grow in the absence of the Vladivostok ceilings. They could be considerably higher than those ceilings by 1985 if US-Soviet relations worsened. Figure 2 illustrates the gross quantitative aspects of our alternative projections of Soviet force levels in the absence of a SALT TWO agreement, and compares them with our current best estimate assuming an agreement and with our estimate of Soviet forces as of 1 November 1975. (For quantitative and qualitative details of these projections, and for the rationale behind each of them, see Chapter V of Volume II and Annex A of Volume III.)

12. We believe that a force approximating the "moderate" force is, in the absence of political or military stimuli to higher force levels, a more likely reflection of Soviet behavior if there is no SALT TWO agreement. This projection assumes that the Soviets intend to avoid further erosion of US-Soviet detente, and that they concentrate on qualitative force improvements. It extrapolates the current Soviet modernization programs and reflects a level of effort comparable to that demonstrated in the recent past. The "high" force without an agreement, on the other hand, reflects a drastic deterioration of US-Soviet relations and the highest plausible level of Soviet effort and achievement.

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Figure 2

Projected Soviet Force Levels Under Varying Assumptions *



* The following systems have been excluded from the aggregates of delivery vehicles: all Backfire bombers, 18 SS-9 launchers at Tyuratam, 16 SLBM launchers on older missile submarines used as test platforms, 57 SLBM launchers on G-class diesel-powered submarines, 50 Bison bombers configured as tankers, 5 Bear reconnaissance aircraft, and some 60 Bear aircraft assigned to Naval Aviation.

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The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that while Force 2 characterizes a likely Soviet response to a SALT TWO failure in terms of the weapon systems projected in that force, current Soviet efforts in directed energy and other advanced technologies suggest that strategic programs may be quite different from those projected. For further discussion of his views on that subject, see paragraphs 123 and 124.

The Department of State believes that the political assumptions concerning a "failure" of SALT TWO are too vague for the resulting force projections to be useful to policymakers. It is not clear, for example, whether we expect the Soviets to continue SALT negotiations indefinitely in the absence of any progress. It is the Department's view that if "failure" of SALT is intended to suggest that no SALT agreement is concluded over the next ten years and the Interim Agreement is not extended—in short, that SALT fails totally—then this could only reflect a severe deterioration in US-Soviet relations which almost certainly would be accompanied by expansion and modernization of Soviet strategic forces at a faster pace than projected in Force 2. In these circumstances, it is the Department's view that Force 2 underestimates the likely threat by a small margin in 1980 and by a very substantial margin in 1985.

13. Soviet strategic policy continues to be influenced by military doctrine which calls for war-winning capabilities. Central to the Soviet concept of "victory" is a favorable force balance combined with skillfully developed weapons-employment policy, resolute political and military command, and a better capability than the US to survive nuclear damage. As part of their concept of survival as a national entity, the Soviets stress active and passive defense of the homeland, economic resiliency, and social discipline. While they acknowledge in classified sources and the current dominance of offensive over defensive technology, they recognize that this situation could be altered. They value the capabilities of their present active and passive strategic defenses and are devoting considerable resources to their improvement. The Soviets' commitment to a concept of national survival in nuclear war is also re-

flected in the counterforce emphasis in planning for the use of offensive weapons and in their concept of preemption. Mutual assured destruction as a desirable and lasting basis for a stable strategic nuclear relationship between superpowers has never been doctrinally accepted in the USSR. But Soviet political and military leaders probably regard mutual assured destruction as a reality which will be operative at least over the next decade.

14. The Soviets are evidently considering the implications of US weapons-employment policy calling for limited uses of strategic forces. In the few theoretical discussions in available Soviet sources, however, there is scant suggestion that limited strategic nuclear operations at the intercontinental level are being planned. In their writings and statements, the Soviets have generally rejected the possibility that either the US or the USSR would be able to exercise restraint once nuclear weapons had been employed against its homeland. There is tentative evidence, however, that the Soviets could be incorporating limited nuclear employment concepts into their military doctrine for a theater war.

15. Soviet decisions on strategic force modernization are probably based on generous assumptions about US capabilities and a perception of the strategic threat as dynamic and improving. They take into account not only the US-USSR balance in intercontinental nuclear forces but also US forward-based systems plus the nuclear forces of US allies and China. Such decisions are the result of complex institutional, organizational, and personal politics, as well as objective considerations of strategic needs. The interests of the armed services, missile and aircraft design bureaus, and industrial components undoubtedly are also taken into account in arriving at national defense needs and integrated with the level of resource support available. The Soviet leadership recognizes the need to maintain a large, efficient, and functioning base of military R&D and industrial components as a national defense asset. The Soviet military has not opposed detente, partly because this policy has not unduly interfered with ambitious programs for the armed services. Nevertheless, persistent rhetoric by the military in the Soviet press on the need for vigilance is a reflection of the case made to political leaders that the interests of the military cannot be ignored as the policy of detente is pursued.

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16. Although the development and production of strategic weaponry require an appropriation of scarce, high-quality resources, strategic programs have been well funded and executed, even during periods of lagging economic growth. The estimated dollar costs of Soviet strategic offensive and defensive forces combined—that is, what we estimate it would cost in the US to develop and produce Soviet hardware and operate these forces—have nearly doubled over the past decade and have exceeded US spending for comparable programs every year since 1966.⁴ We estimate that they were at least 60 percent higher than our own by 1975. While some leaders have expressed concern over the burden of defense spending, and numerous Soviet sources attest to the need for more cost effectiveness in military decisions, the Soviets have not acted as though costs have inhibited military programs the leaders regard as important.

17. Recent information suggests, however, that the Soviets' total expenditures for defense (in rubles) have been substantially higher, and the burden of their defense programs much greater, than we thought. Thus, if a SALT TWO agreement is reached, some economy-minded leaders may push for a more critical scrutiny of strategic programs. Reducing expenditures would be difficult, given the momentum of strategic programs, perceived military requirements, institutional factors, and the projected availability of resources from a constantly expanding industrial sector.

18. For many years the Soviets have been engaged in various forms of concealment and deception activities relating to their strategic missile, naval, and air systems. Examination of all aspects of the Soviet concealment and deception program suggests that it may have three fundamental objectives relevant to the conduct of nuclear war. First, it may be intended, in the future, to deny the US sufficient intelligence to assess confidently the characteristics of new weapon systems. Second, it may be intended to prevent us from determining the patterns and extent of deployment of land-based mobile missiles and ballistic missile submarines. Third,

⁴ The Soviet costs here totaled exclude ASW, which we are not able to separate into strategic and tactical elements because of the dual-purpose nature of the assigned manpower, ships, and weapons.

in the period just preceding or during a nuclear war, the Soviets may hope that concealment and deception efforts would add to the survival of strategic weapons and degrade the US capability for strategic warning.

LONG-TERM SOVIET OBJECTIVES FOR INTERCONTINENTAL NUCLEAR FORCES

19. Deeply held ideological and doctrinal convictions impel Soviet leaders to pose as an ultimate goal the attainment of a dominant position over the West, particularly the United States, in terms of political, economic, social, and military strength. The Soviets' convictions about the eventual supremacy of their system remain strong, and recent events probably have increased their optimism about the long term. While the Soviets may be optimistic about longer term prospects, their strategic policies and programs are likely to be guided by more proximate and attainable goals during the next ten years.

20. We do not doubt that if they thought they could achieve it, the Soviets would try to attain the capability to launch a nuclear first strike so effective that the US could not retaliate with a counterstrike powerful enough to cause devastating damage to the Soviet Union. We do not believe they presently count on a combination of actions by the USSR and lack of actions by the US which would produce this kind of superiority during the next ten years. Soviet expectations for strategic offensive and defensive forces during the period of this Estimate, however, evidently reach well beyond a force that merely continues to assure retaliation sufficient to deter an all-out attack. The Soviets probably will have the following objectives for their strategic programs during the period of this Estimate:

- to ensure deterrence of all forms of nuclear attack on the USSR;
- to improve war-fighting capabilities, aimed at the survival of the USSR as a national entity should deterrence fail;
- to counterbalance, with both peripheral and intercontinental forces, the combined nuclear strengths of the US and its allies and of China;
- to narrow or close the gap between the US and the USSR in important weapon technology.

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gies and to hedge against future US force improvements; and

— to acquire strategic advantages, real or perceived, should US behavior permit.

21. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the emphasis in the preceding paragraph on strategic nuclear capabilities places far too narrow a focus on Soviet long-range goals. Current evidence cited in this Estimate on increased Soviet defense expenditures, doctrinal writings regarding the necessity of attaining strategic superiority, strategic hardening programs, development of new offensive missile systems, and research on advanced weapon technology, along with significant improvements in general-purpose forces, leaves little reasonable doubt that the Soviets are striving for general strategic superiority over the US (encompassing political, economic, and technological as well as military power) by the end of the next decade. He further believes that, if the current massive Soviet programs in ASW and directed-energy weapon technology achieve the breakthroughs being sought, an important shift in the strategic balance in the USSR's favor could occur by 1985.*

PRESENT FORCES FOR INTERCONTINENTAL ATTACK AND PROSPECTS FOR IMPROVEMENT

A. INTERCONTINENTAL BALLISTIC MISSILE FORCES

Deployed Forces

22. As of 1 November 1975, the Soviets had a total of 1,603 ICBM launchers at deployed complexes (four less than last year). They also had 18 SS-9 launchers at the Tyuratam test center which we believe are part of the operational force. Of these 1,621 launchers, 1,441 were operational, 150 were under construction, conversion, or modernization, and 30 SS-7 above-ground launchers remained nonoperational. (Characteristics of Soviet ICBMs are shown in Figures 3 and 4 and the status of the force is shown in Table I.)

The New Missiles

23. The initial developmental testing of three of the four new Soviet ICBMs has been completed and a total of 100—20 SS-17s, 10 SS-18s, and 70 SS-19s—are now operational. Testing of the SS-X-16 is virtually complete, and deployment could begin at any time—if it is not already under way.

— The SS-X-16, a small solid-propellant missile is probably being developed as a replacement for the silo-based SS-13. It has about double the throw weight of the SS-13. All the SS-X-16s tested have carried a single RV, but the system has a postboost vehicle and may eventually be MIRVed. The Soviets are also working on a mobile version of this system.

— The SS-17 is a medium-size liquid-propellant missile employing a pop-up launch technique. It has somewhat more throw weight than previously estimated—and more than twice the throw weight of the SS-11 missiles which it is replacing. Except for a few initial tests, all the SS-17 firings have been with MIRVs, indicating that only a MIRVed version will be deployed.

— The SS-19, the second medium-size liquid-propellant missile carrying MIRVs, has been characterized by Soviet leaders as the "main missile." It has slightly more throw weight than the SS-17. The initial flight test program for the SS-19 has been completed, and like the SS-17, it is being deployed as a replacement for the SS-11.

— The SS-18 is a large liquid-propellant missile employing a pop-up launch technique like the SS-17. It has slightly more throw weight than the SS-9 it is replacing. A single-RV version of the missile, the SS-18 Mod 1, is now deployed, and flight testing of the SS-18 Mod 2 with MIRVs is virtually complete. A second single-RV version, the SS-18 Mod 3, has been tested and has longer range and a lighter RV than the Mod 1.

24. *Accuracies.* This year we have refined our estimates of the accuracies of the new missiles. We now believe that the circular errors probable (CEPs) for the SS-18 and SS-19 ICBMs are somewhat better, and that the CEPs of the SS-X-16 and

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TABLE I
 Status of the Soviet ICBM Force¹
 (Number of Launchers as of 1 November 1975)

System	Operational	Under Construction, Modernization, or Conversion	Non-Operational	Total
ICBM soft				
SS-7.....	90	..	30 ²	120
SS-8.....	10	..	..	10
Subtotal.....	100	..	30	130
ICBM hard				
SS-7.....	66	..	..	66
SS-8.....	9	..	..	9
SS-9.....	228	..	..	228
SS-11.....	860 ³	20 ⁴	..	880
SS-13.....	60	..	..	60
SS-17.....	20	..	..	20
SS-18.....	10	70 ⁵	..	80
SS-19.....	70	60	..	130
Subtotal.....	1,323	150	..	1,473
Total.....	1,423	150	30	1,603
SS-9s believed to be operational at Tyuratam.....	18	..	..	18

¹ This table does not include 39 silos which we believe are intended for command and control, although their possible conversion to missile launchers cannot be excluded. We have also excluded close to 100 launchers used for test and training.

² These launchers are carried as nonoperational, although most could be restored to operational service in a few weeks. Not included are four SS-7 soft launchers which have been destroyed.

³ Includes 60 SS-11 Mod 2 or Mod 3 ICBMs currently deployed in SS-19 silos at Derazhnya and Pervomaysk.

⁴ These 20 SS-11 Mod 1 silos are out of service for four to six months during modernization for installation of the SS-11 Mod 2 or Mod 3.

⁵ Fifty-four of these are SS-9 silos being converted to the SS-18 silo configuration. The other 16 were built from scratch.

SS-17 are considerably better, than forecast last year. [

25. [

The SS-18 and SS-19 ICBMs are potentially the more accurate of the new systems.

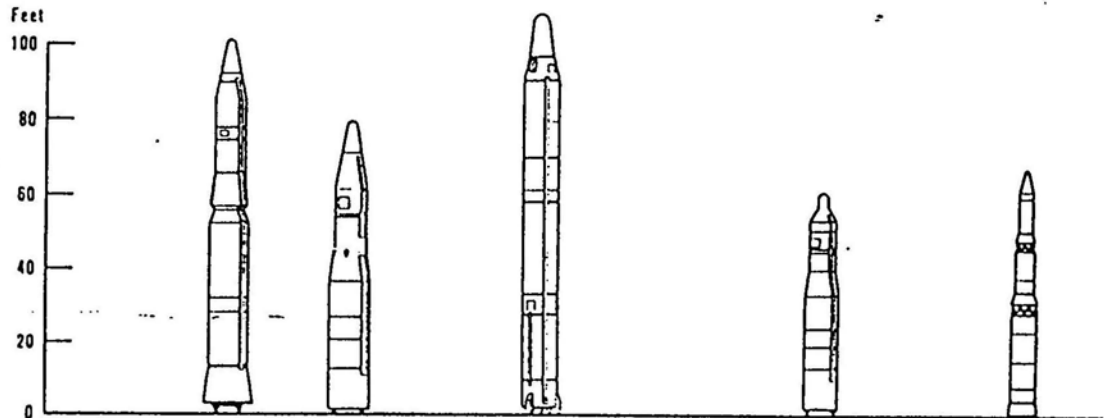
26. This year we have addressed the effects of operational factors on Soviet ICBM accuracies more specifically than we have in the past. In addition to estimating the technically feasible CEPs, we have estimated operational CEPs phased over time. (For our current estimates of operational system accuracies between now and 1980, see Table II.) Operational CEPs on the order of 0.20 nm could be

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Figure 3

Estimated Characteristics of Older Soviet ICBMs



SYSTEM	SS-7		SS-8		SS-9				SS-11			SS-13	
	Mod 1, 2	3	1	1	2	3	4	1	2	3	1	2	
IOC	1962-63	1963	1963	1967	1966	1969	1971	1966	1973	1973	1969	?	
Throw Weight (lbs)	3,500	4,200	3,500	9,500	13,500	9,000	12,500						
Maximum Operational Range (NRE) (nm)	6,500	5,500	6,000	7,000	5,300	6,000 as a DICBM orbital as a FOBS	5,500 or 6,000 ³	6,000	6,000	5,500	5,100	5,100	
Number of RVs	1	1	1	1	1	1	3 MRVs	1	1 RV and penalds	3 MRVs	1	1	
Warhead Yield (MT) ⁴													
System CEP (nm)	1.0	1.0	1.0	0.4 or 0.6	0.4 or 0.6	1.0-2.0 (DICBM) 1.5-3.0 (FOBS)	About 1.8						
Volume (cubic meters)													
Force Reliability	70%	70%	55%	75%	75%	70%	70%	75%	75%	75%	70%	70%	

5. For the SS-9 Mods 1 and 2 system CEPs, DIA supports the lower value, while CIA, State, and USAF support the higher value.

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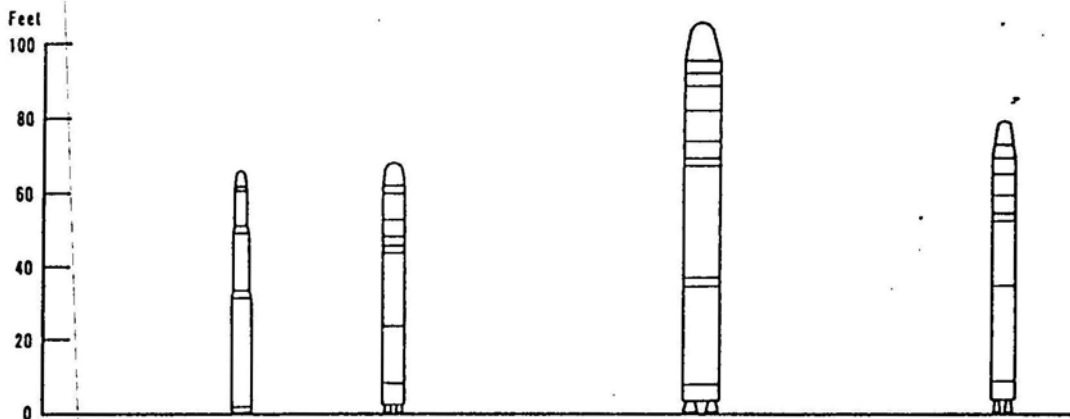
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Figure 4

Estimated Characteristics of New Soviet ICBMs



SYSTEM	SS-X-16	SS-17	SS-18			SS-19
	Mod		1	2	3	
IOC	Late 1975	1975	1974	Late 1975 or Early 1976	Late 1975 or Early 1976	1974
Throw Weight (lbs)	2,100					
Maximum Operational Range (NRE) (nm)	5,000	5,500	6,000	5,500	7,000	5,000
Number of RVs (post boost vehicle indicated if applicable)	1 (on PBV)	4 MIRVs (on PBV)	1	8 MIRVs (on PBV)	1	6 MIRVs (on PBV)
Warhead Yield (MT) ²						
System CEP (nm) ⁴	0.34					

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TABLE II

Operational Accuracies of New Soviet ICBM Systems¹

achieved by the early 1980s with major modifications to the new ICBMs. We believe that the Soviets could develop entirely new ICBM systems before 1985 which would have potential CEPs of 0.10 to 0.15 nm. However, operational CEPs toward the lower end of this spread probably could not be achieved until the late 1980s.

27. *Warhead Yields.* Our estimates of the warhead yields of the new Soviet ICBMs have increased slightly since last year. [

28. *Survivability.* The new and converted missile silos provide much better protection than the older silos against blast overpressure, against ground

shock, and probably against electromagnetic effects. Analysis conducted during the past year has resulted in a slight upward adjustment in our estimates of the hardness of the new Soviet silos. Even if the true hardness values are at the lower end of the ranges of our uncertainty, the new silos will make the Soviet ICBM forces much more survivable. Survivability would be further enhanced if the Soviets deploy mobile systems.

Deployment Plans

29. As noted, deployment of three of the four new ICBMs—the SS-17, SS-18, and SS-19—is now under way. Silo improvement and deployment of the new missiles are proceeding at about the steady and moderate pace forecast last year. While the Soviets could deploy the new systems more rapidly, they appear to have decided to have no more than 10 to 20 percent of their ICBMs off line for force modernization at any one time. It is now evident that all of the SS-9 and SS-11 complexes are now or soon will be involved in silo conversion and modernization programs. We estimate that present Soviet programs call for the deployment of the

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SS-11 Mods 2 and 3 in about 420 modernized silos by early 1976. It is unlikely that further change in these silos is planned during the 1970s. On the basis of a number of factors, including construction activities at SS-11 complexes, we expect that 200 converted SS-11 silos will have SS-17s with MIRVs, and that SS-19s with MIRVs will be deployed in some 410 all-new silos and converted SS-11 silos.

30. The deployment plans for the SS-X-16 and the SS-18 are less clear. During the past year, activities at SS-9 complexes indicated that all the 288 SS-9 silos will be converted for the SS-18. Deployment of the SS-18 in these silos, as well as in 20 all-new silos (started prior to the Interim Agreement) will result in a force of 308 SS-18s in the field. We are uncertain, however, about the mix of single-RV and MIRV variants. [

] While we believe that the bulk of the SS-18 force will have MIRVs, testing of a second single-RV variant suggests that the Soviets see some military requirement for long-range, high-yield, single-warhead ICBMs, at least during the near term.

31. The SS-X-16 will probably be deployed in the 60 SS-13 silos. As observed earlier, the test program for this system is essentially complete, and deployment, if it is not already under way, could begin soon. [

] 32. The Soviets are also working on a mobile version of the SS-X-16, but we believe that they have decided to forgo its deployment if a SALT TWO agreement based on the Vladivostok accord is reached. The Soviets will almost certainly continue working on a mobile version of the SS-X-16 to maintain their technology in this area, and to hedge against a breakdown in SALT negotiations and the possibility of an increase in the vulnerability of silo-based ICBMs.

33. If the Soviets follow past deployment practices while having no more than 10 to 20 percent of their ICBMs off line, the present silo construction, conversion, and modernization programs and deployment of the new ICBMs will be completed by the early 1980s. The Soviets will continue to dismantle older SS-7 and SS-8 launchers in exchange for SLBM launchers as required by the terms of the Interim Agreement.

Follow-on Systems

34. The Soviets have vigorous R&D programs under way which are likely to result in flight testing of several more new and modified ICBMs between now and the early 1980s. [

] It is likely, however, that future Soviet ICBMs will have operational accuracies on the order of 0.15 nm CEP in the mid-1980s, advanced reentry vehicles, better warheads, and improved components leading to increased targeting flexibility and prolonged missile readiness.

See discussion of follow-on ICBMs, Volume II, Chapter II, for the view of the Assistant Chief of Staff, Intelligence, Department of the Air Force, on the Soviet ballistic missile programs.

B. SUBMARINE-LAUNCHED BALLISTIC MISSILE FORCES

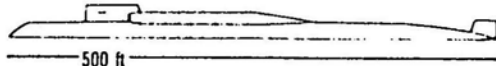

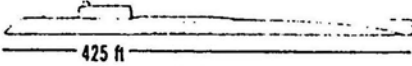

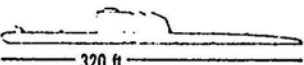
Present Programs

35. As of 1 November 1975 the Soviets had 715 SLBM launchers on 54 nuclear-powered submarines which had reached operational status and 72 launchers on five new SSBNs on sea trials. In addition, there were at least 136 launchers on nine nuclear submarines still under construction. There are also 67 launchers on 21 older diesel-powered units. The Interim Agreement permits the Soviets up to 950 launchers on 62 modern ballistic missile submarines, provided that for all launchers over 740 on nuclear-powered submarines they dismantle or destroy equal numbers of older ICBM or SLBM launchers. The Soviets presently have about 800

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Operational Soviet Ballistic Missile Submarines

Figure 5

		Year Operational	Propulsion	Missile	
Mod D class		1975	nuclear	16 SS-N-8	(4,200 nm)
D class		1973	nuclear	12 SS-N-8	(4,200 nm)
Y class		1968	nuclear	16 SS-N-6	(1,300-1,600 nm)
H class*		1960	nuclear	3 SS-N-5	(700 nm)
G class		1960	diesel	3 or 3 SS-N-4	(300 nm)
				3 SS-N-5	(700 nm)

*One H-class was converted to test the 4,200 nm SS-N-8 missile. It carries six launch tubes.

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SAL-accountable SLBM launchers on submarines, thus requiring the dismantling of some older ICBM launchers. (The characteristics of Soviet ballistic missile submarines and SLBMs are shown in Figures 5 and 6, and the status of the force is shown in Table III.)

36. The diversity of the current SSBN program is greater than we previously anticipated. It possibly includes as many as three types of the D-class, rather than the two we estimated last year, and perhaps a new class of submarine. During the past year two additional launches of the 12-tube D-class submarines carrying the 4,200 nm SS-N-8 missile brought to 13 the number of D-class units launched as of 1 November 1975. Also, four lengthened D-class units (which we have designated the Mod D) were launched, the first of which is now operational. A Mod D-class SSBN carries 16 of the long-range SS-N-8 missiles. Evidence of activity at the main Soviet SSBN production facility suggests that construction is under way on a [] version of the D class which we have designated the Mod D follow-on. []

missile complement could be as low as 16 or as high as 20.

37. Statements of Soviet officials and SSBN construction activity suggest that the Soviets are working on yet another new ballistic missile submarine considerably larger than any of the D-class variants. If so, the new submarine could be operational by about 1979 or 1980.

38. There is evidence that the Soviets have at least two new SLBMs under development. A new "small" missile, possibly their first solid-propellant SLBM [] has begun flight testing. The test missiles probably carried a single warhead, []

[] could be ready for deployment by late 1978, probably on a Y-class submarine with 12 tubes which has been under modification for several years. []

[] We expect the range [] to be greater than 1,600 nm, perhaps as much as 3,000 nm.

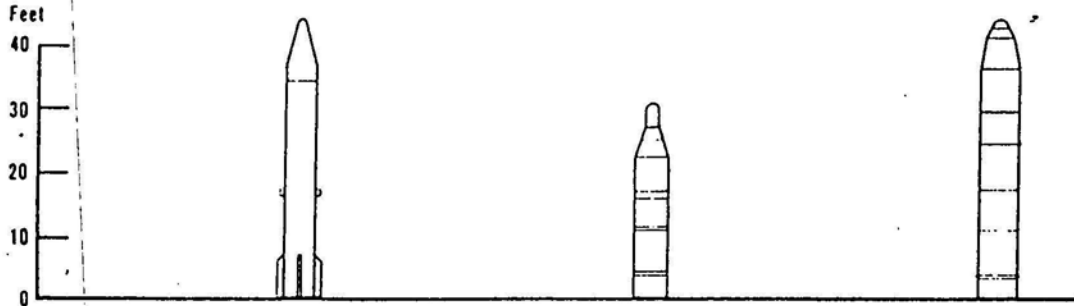
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Figure 6

Estimated Characteristics of Operational Soviet SLBMs



SYSTEM Mod	SS-N-5	SS-N-6			SS-N-8
		1	2	3	
IOC	1963	1968	1973	?	1973
Throw Weight (lbs)	2,800				
Maximum Operational Range (NRE) (nm)	700	1,300	1,600	1,600	4,200
Number of RVs	1	1	1	2, possibly 3, MRVs	1
Warhead Yield (MT)					
System CEP (nm)	1.0-2.0				

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TABLE III

**Status of the Soviet Ballistic Missile Submarine Force
(Number of Hulls/Tubes as of 1 November 1975)**

Submarine Class	Operational ¹	Hulls/Tubes		On Building Ways
		on Sea Trials	Total	
Y.....	34/540 ²	..	34/540	..
D ³	11/132	2/24	13/156	2-4/24-48 ⁴
Mod D ³	1/16	3/48	4/64	..
Mod D follow-on ³.....	..	..	..	7/112-140 ⁵
New Class.....	..	..	..	0-1/0-24
Total Submarines Counted Under Interim Agreement.....	46	5	51	9-12
H-II, H-III ⁶	8/27 ⁷	..	8/27	..
.....	2/10	..	2/10	..
Total Tubes Counted Under Interim Agreement.....	725	72	797	136-212
G-I, G-II ⁸	19/57	..	19/57	..
Total Hulls and Tubes.....	75/782	5/72	80/854	9-12/136-212

¹ Includes units undergoing refueling, overhaul, or conversion.

² One Y-class submarine modified to carry 12 rather than 16 missile tubes is counted with 12 tubes here, but for SALT monitoring purposes is considered to have 16 tubes until sea trials begin.

³ To distinguish the various versions of the D-class, we have arbitrarily designated the 12-tube submarine as the "D," the 16-tube unit as the "Mod D," and the latest variant as the "Mod D follow-on."

⁴ The number of launchers to be carried by the Mod D follow-on is unknown, but it will almost certainly carry at least 16 and could carry as many as 20.

⁵ The launchers on H-class nuclear submarines are counted under the terms of the SALT Interim Agreement but not the submarines. Also, we counted the launchers on three older submarines which have been converted to test modern missiles: two G-class diesel units and the nuclear-powered H-III.

⁶ The estimate of the H-class order of battle was recently revised from nine to eight units.

⁷ Unless converted to fire modern missiles, launchers on G-class submarines are not included in the Interim Agreement. One G-class unit is being converted to a nonmissile submarine.

39. The Soviets also are testing a new large SLBM. This new missile, with liquid-propellant stages similar to those of the SS-N-8, was test-fired to a range of 3,000 nm in late October and again in early November 1975. This is the first Soviet SLBM to carry MIRVs. It has a postboost vehicle with MIRVs. It could be ready for deployment in 1977 or early 1978 in the Mod D follow-on.

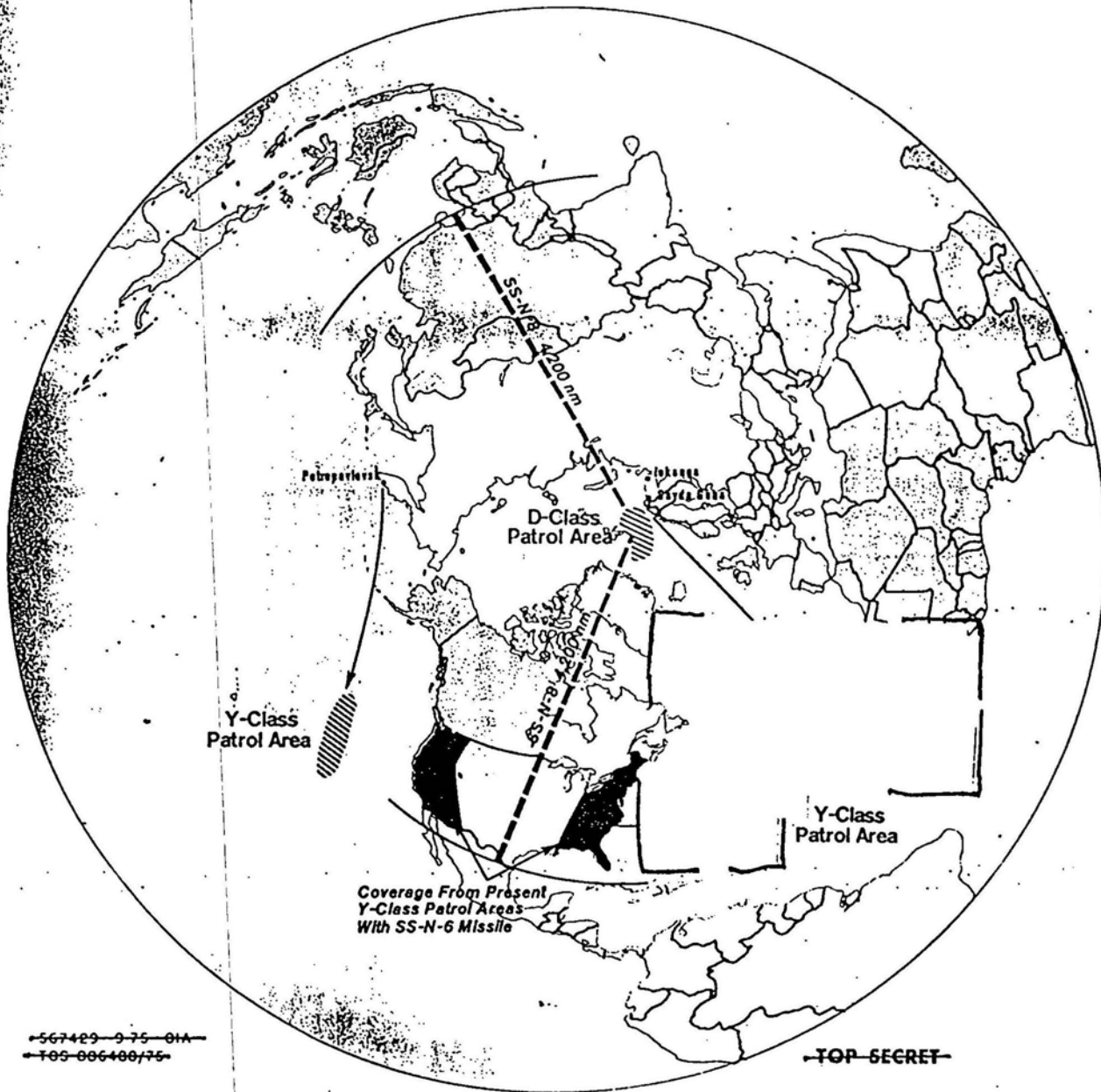
Submarine Patrols

40. The Soviets continue to maintain only a small portion of their SLBM force at sea, a policy consistent with their view that a period of international tension would precede any nuclear war. Only about 15 percent of their Y- and D-class SSBNs are normally in transit or on patrol (the patrol areas are shown in Figure 7). Four Y-class units are normally on station—two off each coast of the US. During the past year D-class patrols, initially intermittent and limited to the Barents Sea, progressed into the Greenland Sea on a regular basis.

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Figure 7

Patrol Areas and Missile Ranges of Soviet SSBN Force



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As more D-class submarines become operational their patrol areas will probably expand. [

The differences noted last year among intelligence agencies as to the distance Backfire can travel on supersonic missions have not been resolved. This year there are additional differences about the best estimate of Backfire's high-altitude subsonic range capability and in the spread of uncertainty about that estimate.

41. We believe over the next ten years the Soviets will continue to deploy only about 15 to 20 percent of their SSBN force on patrol and in transit. With longer range missiles and expanded operating areas, the Soviet force will have better survivability and substantially more SLBMs within range of US targets (see Figure 8).

C. BOMBERS

Deployed Forces

42. The Long Range Aviation (LRA) force has been at about its present size for the past decade, and we believe that the Soviets intend to retain a relatively small intercontinental bomber force to complement their formidable ICBM and SLBM forces. The bomber units continue to train for a variety of other missions, including attack on enemy naval forces and reconnaissance. The LRA bomber and tanker component of the Soviet intercontinental attack forces consists of 140 Bear and Bison bombers and 50 Bison tankers. There are currently about 10 Backfire aircraft operational with LRA and 10 with the Soviet Navy. (See Figures 9 and 10 for characteristics of Soviet strategic aircraft and their ranges from bases in the USSR.)

Backfire

43. During the past year deployment of the Soviets' new twin-engine, swing-wing bomber, Backfire B, confirmed our previous judgment that the Soviets would give first priority to deployment of the bomber for peripheral missions. About 55 Backfires have been produced to date, and additional deliveries of the aircraft to operational bases are expected before the end of the year.

44. Analysis of the Backfire's performance has continued over the past year, resulting in a small reduction in estimates of its range and radius [

45. The Defense Intelligence Agency, the Assistant Chief of Staff for Intelligence, Department of the Army, and the Assistant Chief of Staff, Intelligence, Department of the Air Force, now estimate its range capability on such missions to be 5,400 nm (2,900 nm radius) [

the preliminary estimate of the Central Intelligence Agency is 5,100 nm range (2,700 nm radius) [

and the preliminary estimate of the Director of Naval Intelligence, Department of the Navy, based on incomplete analysis, indicates that the radius may be as low as 2,400 nm.

46. The Department of State questions whether it is possible to pick a "best" mission radius given the present state of the analysis and agency differences. [

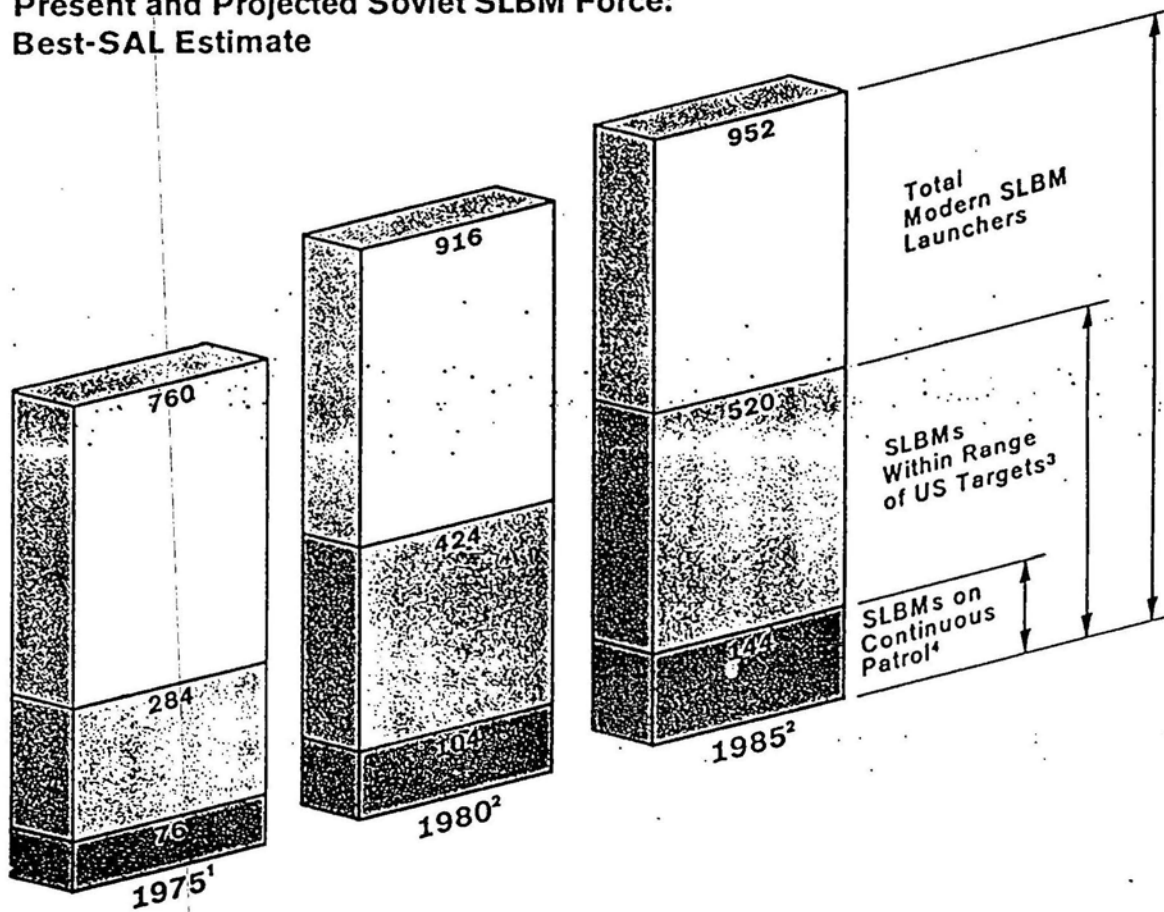
It further notes that senior military members of the Soviet SALT Delegation recently suggested that the Backfire could fly radius missions of 4,000 km, or about 2,160 nm. Given the differences in these figures, which are not likely to be resolved quickly, the Department believes that policy decisions (e.g., in relation to SALT) will have to be made without benefit of an agreed, unambiguous assessment of Backfire performance.

47. The Backfire is a versatile aircraft capable of performing the various missions of LRA and Soviet Naval Aviation. These include nuclear and nonnuclear attack, antiship strike, reconnaissance, and electronic warfare missions. The Backfire has extensive capability for use in various theater missions in Eurasia and for naval missions over the open seas. It also has capabilities for operations against the continental US.

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Figure 8

**Present and Projected Soviet SLBM Force:
Best-SAL Estimate**



1. Figures for 1975 are as of 1 November. The total includes 715 launchers on operational submarines and 72 launchers on 5 new units on sea trials. It excludes 27 launchers on older H-class nuclear submarines.
2. Projections are as of midyear and are from Force 1, our best estimate of Soviet force levels through 1985 under a SAL agreement.
3. Excludes units estimated to be off line for conversion or overhaul.
4. Assumes that the Soviets continue to maintain about 10 percent of their SLBM force on continuous patrol through 1980 and increase this proportion to about 15 percent by 1985.

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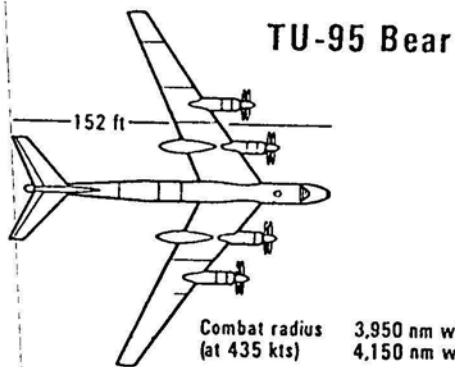
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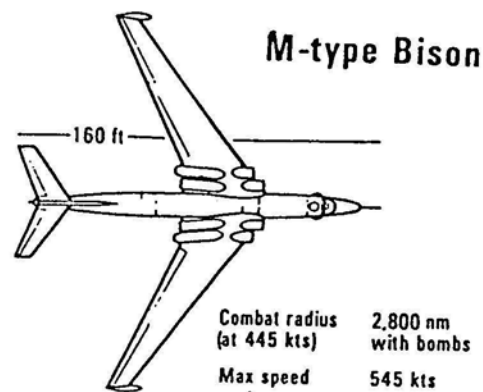
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Soviet Strategic Aircraft

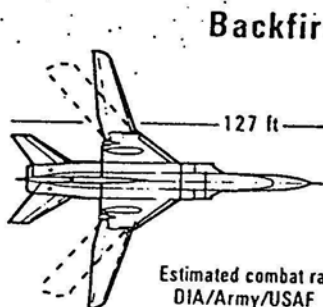
Figure 9



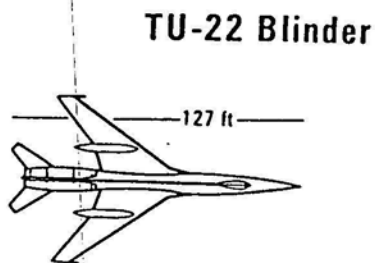
Combat radius 3,950 nm with ASMs
 (at 435 kts) 4,150 nm with bombs
 Max speed 500 kts
 Year operational 1956



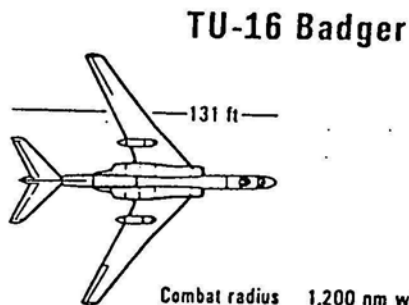
Combat radius 2,800 nm
 (at 445 kts) with bombs
 Max speed 545 kts
 Year operational 1956



Estimated combat radius (at 455 kts) with bombs*
 DIA/Army/USAF 2,900 nm
 CIA (preliminary) 2,700 nm
 Max speed 1,150 kts
 Year operational 1974



Combat radius 1,450 nm with ASMs
 (at 515 kts) 1,750 nm with bombs
 Max speed 1,030 kts
 Year operational 1962



Combat radius 1,200 nm with ASMs
 (at 445 kts) 1,650 nm with bombs
 Max speed 540 kts
 Year operational 1954



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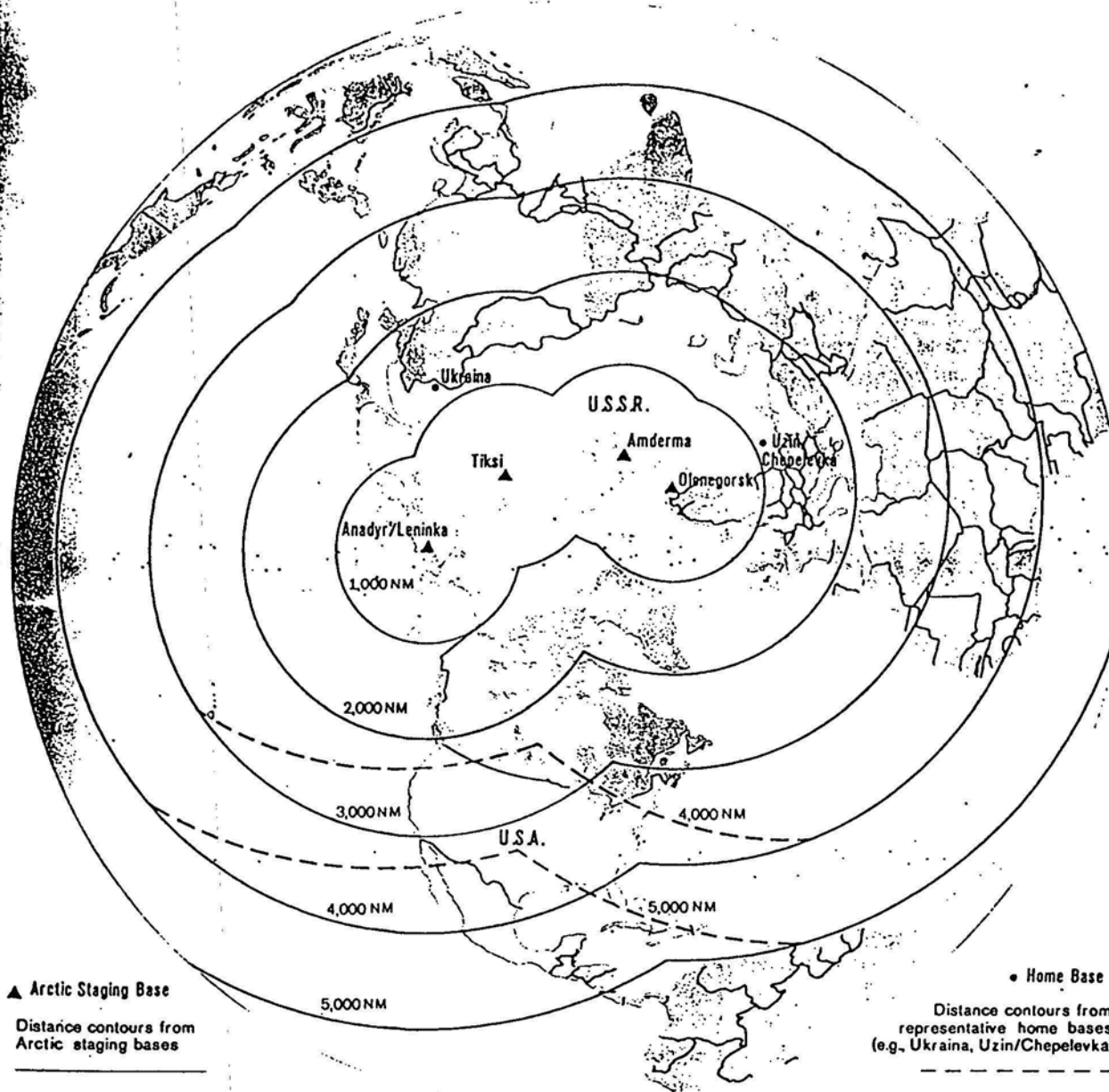


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Figure 10

Distance Contours from Long Range Aviation Home and Staging Bases



▲ Arctic Staging Base
Distance contours from Arctic staging bases

● Home Base
Distance contours from representative home bases (e.g., Ukraina, Uzin/Chepelevka)

CAPABILITIES FOR HIGH-ALTITUDE SUBSONIC MISSION

Bear A Bomber
Bear B/C ASM Carrier
Bison B/C Bomber
Backfire B Bomber²

UNREFUELED RADIUS RANGE

Bear A Bomber: 4,150 / 7,800
Bear B/C ASM Carrier: 3,950 / 7,150
Bison B/C Bomber: 2,800 / 5,250
DIA/Army/USAF: 2,900 / 5,400
CIA (preliminary): 2,700 / 5,100

ONE REFUELING¹ RADIUS RANGE

Bear A Bomber: - / -
Bear B/C ASM Carrier: 5,050 / 9,200
Bison B/C Bomber: 3,950 / 7,300
DIA/Army/USAF: 4,000 / 7,500
CIA (preliminary): 3,800 / 7,200

PAYLOAD

25,000-lb. bombload
1 AS-3 (25,000 lbs.)
25,000-lb. bombload
20,800-lb. bombload

1. Using a Bison tanker.

2. []

-Top Secret-

48. We believe it is likely that Backfires will continue to be assigned to theater and naval missions and—with the exception of the Defense Intelligence Agency, the Assistant Chief of Staff for Intelligence, Department of the Army, and the Assistant Chief of Staff, Intelligence, Department of the Air Force—we believe it is correspondingly unlikely that they will be specifically assigned to intercontinental missions.

The Defense Intelligence Agency and the Assistant Chief of Staff for Intelligence, Department of the Army, believe it is premature to judge Soviet intentions for future employment of the Backfire. They and the Assistant Chief of Staff, Intelligence, Department of the Air Force, note that its intercontinental capability, regardless of present intentions, gives the Soviets the option to use that capability at their initiative. Further, the Assistant Chief of Staff, Intelligence, Department of the Air Force, believes some portion of the Backfire force will be used for missions against the continental US.

(For elaboration of positions concerning the Backfire's role, see Volume II, Chapter II.)

49. While all Backfires seen to date have had refueling probes, we are uncertain what tanker the Soviets would use with the bomber. Early in the flight-test program, Backfires conducted air-to-air refueling operations with Bison tankers. Even if all Bisons were converted to tankers, however, the force would be too small to refuel a large number of Backfires as well as Bear bombers. We therefore would expect the Soviets to deploy a new tanker if they intended to conduct extensive air-to-air refueling for Backfire operations. In 1973 the Soviets apparently were engaged in research on a tanker version of the IL-76 Candid jet transport, but we have no indications that the program has proceeded beyond this preliminary stage.

Future Systems

50. Since March 1974 Soviet officials have alluded to the development of a new intercontinental bomber and, on several occasions, have stated that

the aircraft would have "characteristics similar to the B-1." We have not seen any evidence to support these claims. In any case, a new bomber probably would not be in service in significant numbers before the mid-1980s.

D. STRATEGIC CRUISE MISSILES

51. There is no firm evidence that the Soviets are developing long-range cruise missiles. They have the design and development experience to do so, however, based on the variety of cruise missile systems which they have developed since the 1950s. Should the Soviets pursue such development, they could begin by modifying current cruise missile systems to give them increased ranges and improved accuracy. Such modifications could be ready for deployment a year or two after flight testing began. By about 1980 the Soviets could have a new generation of large long-range cruise missiles based on current technology, possibly with multiple warheads and improved accuracy. Development of small, highly accurate air- and sea-launched strategic cruise missiles would require technology which we believe will not be available to the Soviets until the 1980s.

SOVIET FORCES FOR STRATEGIC DEFENSE AND PROSPECTS FOR IMPROVEMENT

52. The Soviets continue the emphasis on defense of the homeland that has characterized their military planning since World War II. They are pressing ahead in their strategic defense programs with improved air defenses, R&D on ABM systems, extensive efforts to develop better ASW capabilities, research on advanced technologies for defense, an ongoing civil defense effort, and a large program for hardening strategically important facilities. The long-standing Soviet commitment to strategic defense, which has produced in the USSR what is by far the largest air defense system in the world, contrasts sharply with the policies of the US, which have resulted in the deliberate deemphasis of comparable forces. The level of resources devoted to strategic defenses of all types in the USSR has for years exceeded those devoted to forces for intercontinental attack.

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53. In addition to a number of routine improvements in each of the elements of Soviet strategic defense forces, the following are noteworthy developments of the past year:

- The Soviets continue to construct ballistic missile detection and tracking systems to close small gaps in existing coverage, to increase their assurance of reliable warning, and perhaps to provide some additional warning time.
- They are placing additional emphasis on surveillance systems and training for defense against aircraft at low altitudes, though there are no indications of major improvements in performance.
- We have obtained additional evidence supporting earlier indications that nuclear warheads are available for a significant number of Soviet surface-to-air missiles.
- The Soviets continue their research and development on ABM systems (at a pace not significantly reduced from that which existed prior to the ABM Treaty), on radars, on SAMs designed for low-altitude air defense, and on directed-energy systems which probably include lasers with capabilities against low-orbiting satellites.
- They have continued their extensive investigation of techniques for overcoming deficiencies in detecting and trailing SSBNs at sea. Soviet attempts to trail US SSBNs near our operating bases have resulted in no known successes.

A. DEFENSE AGAINST BALLISTIC MISSILES

Warning Systems

54. When the new Hen House at Mukachevo is operational in 1977, the Soviets will have essentially complete ballistic missile early warning radar coverage of missiles launched into the European USSR (see Figure 11). In addition, next to the Hen House at Olenegorsk they are constructing a new large phased-array which will probably provide redundant ballistic missile early warning coverage. Hen House radars can provide about 13 minutes' warning against a US ICBM attack on Moscow.

55. We believe that over-the-horizon detection (OHD) radars the Soviets are constructing at Kiev and Komsomol'sk are to have a US ICBM detection role, but we cannot yet rule out the possibility they are for aircraft detection. OHD radars are not as reliable as Hen House radars but could provide about 30 minutes' warning of a US ICBM attack. The Kiev radar may begin initial operations in 1976 and the Komsomol'sk radar could begin operations in 1978 or 1979.

Antiballistic Missile Systems

56. The ABM system at Moscow is the only one the Soviets have deployed. It would provide little defense against a massive US attack, but could protect Moscow and a fairly wide area of the western USSR against a small, accidental, or unauthorized launch. Similarly, small unsophisticated attacks against the Moscow area by third countries probably could be defeated.

57. The Soviets have not chosen to deploy the additional ABM radars and interceptors allowed by the ABM Treaty. These factors, plus the recent relatively slow pace of ABM R&D programs at Sary Shagan, lead us to believe the Soviets have become dissatisfied with the effectiveness of conventional ABM systems. Nevertheless, they are continuing R&D as a hedge against treaty abrogation and to explore potential solutions to the problem of ballistic missile defense.

58. At the Sary Shagan missile test center the Soviets are working on an ABM system which apparently could be deployed much more rapidly than the Moscow ABM system. [

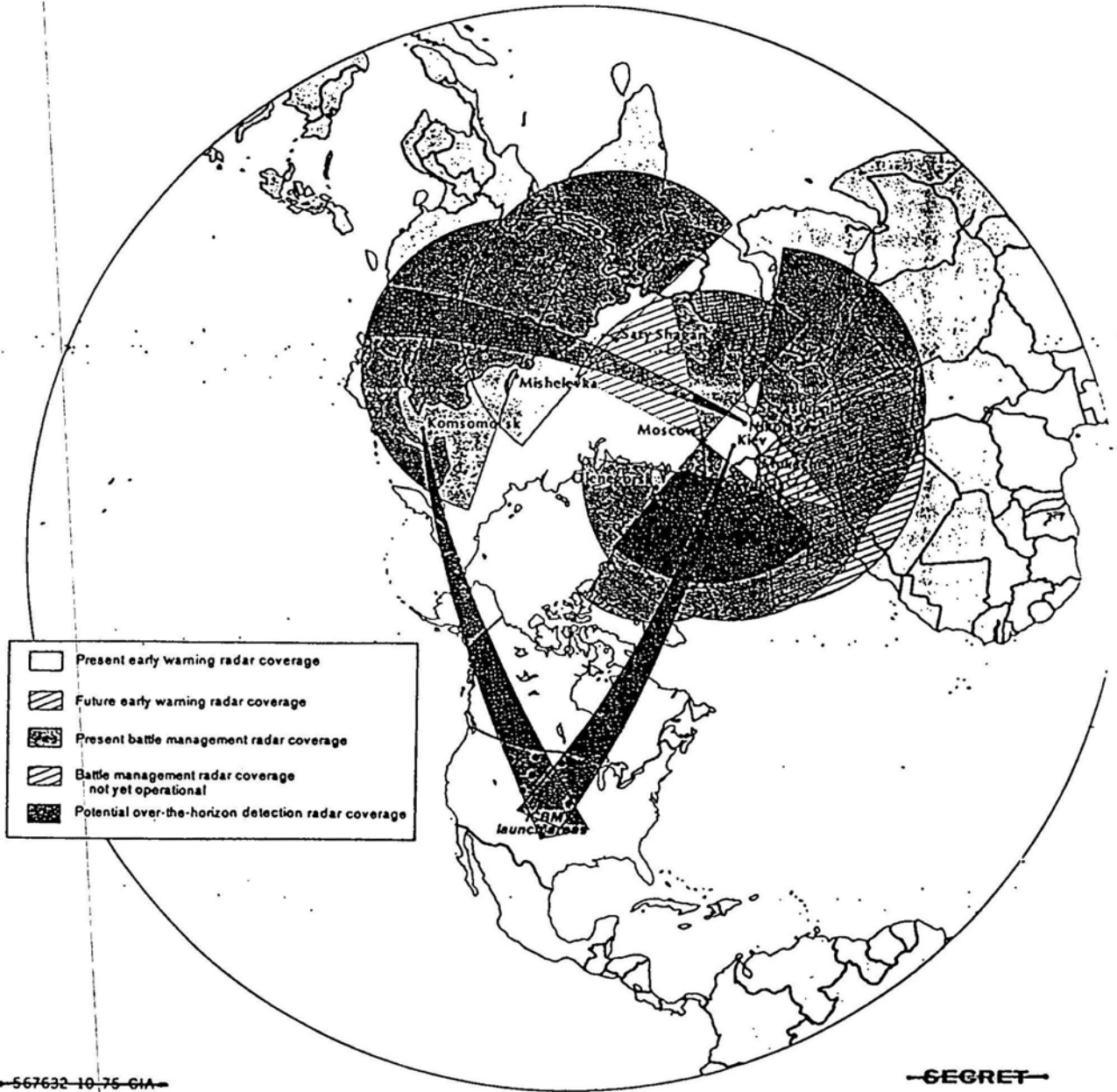
] The pace of testing of the interceptor has been slow. The interceptor has not been fired against a ballistic missile target. If the Soviets were to make a concerted effort to solve their technical problems, the system could be ready for deployment in a year or so. Although one complex of the new system could be deployed in less than six months, an extensive deployment program would require several years to complete.

59. Our analysis of the system shows that, without external battle management data, it would provide only marginal defense against US ICBMs and none at all against Poseidon. But it could provide

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Figure 11

Soviet Ballistic Missile Early Warning and Acquisition Radar Coverage



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some defense against US Polaris and Chinese missiles. The system's performance could be significantly improved if a high-performance interceptor were developed to perform engagements in the atmosphere. [

[] At least three years of flight testing would be required before such a missile could be ready for deployment.

60. A system tested at the Emba tactical air defense test center is assessed as possibly being intended for defense against tactical ballistic missiles. Its missile could have substantial potential as an interceptor in a strategic ABM role.

61. Another system being developed in a different area at Sary Shagan has a technical potential for improving the Moscow ABM defense. However,

[] the construction of what is probably a laser at the facility lead us to believe the Soviets may now be investigating advanced concepts for ABM and antisatellite applications. The laser does not have sufficient power to destroy missile warheads but perhaps could be used to discriminate small warheads hidden in chaff clouds.

62. The Soviets have high-priority R&D programs to exploit advanced technologies for strategic defense, and they appear to be convinced that these programs have potential for weapon applications over the long term. (See Volume II, Annex C) We do not believe, however, they could develop laser or charged-particle beam weapons for ballistic missile defense before the 1990s.

The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the USSR is embarked on a directed-energy weapons research program of such magnitude that it could have a major if not decisive impact on the strategic balance before 1985. For supporting evidence on this view, see paragraphs 123 and 124.

63. The current Soviet SAMs were not deployed to provide ABM defense and probably are not suitable for this role. The ABM Treaty prohibits modifications of SAMs for an ABM role and further prohibits testing of SAM equipment in such a

role. [

[]
The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that modification of the SA-5 for terminal point intercept of reentry vehicles is basically simple to achieve. [] and that it may already have been done.

B. AIR DEFENSE

64. We believe that the USSR's present air defenses, while the most extensive in the world, could not effectively counter a large-scale air attack. Most of the currently deployed Soviet air defense systems were designed to counter the medium-to-high-altitude bomber and stand-off missile threats which were evolving in the late 1950s and early 1960s. But Soviet air defenses have critical deficiencies in combating low-altitude attacks. We have detected R&D activities, modifications to current systems, and deployment programs which appear intended to overcome these deficiencies.

Air Surveillance and Control

65. The Soviets have deployed over 5,500 early warning and ground-controlled intercept (GCI) radars. The spacing of radar sites in the western USSR and selected portions of the remainder of the country suggests that continuous coverage exists at about 1,000 feet, and even lower in heavily defended areas. But [

[] the Soviets still have serious problems [

[] at low altitudes. [

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66. The Soviets currently use a semiautomatic reporting system with much of the air surveillance force [

67. In an apparent attempt to overcome these deficiencies, the Soviets began introducing new data systems and changes in the air defense command and control structure in the late 1960s and early 1970s. [

68. An alternative or a supplement to widespread improvement in GCI would be the introduction of an effective airborne warning and control system (AWACS) which could detect, track, and vector interceptors against targets at all altitudes over both sea and land. AWACS aircraft probably would be more sophisticated than the ground radars required to do the same job, but fewer would be needed because of their greatly increased line of sight. An AWACS could be particularly effective if employed with an interceptor with an advanced lookdown/shootdown system. However, as in the case of the lookdown/shootdown system, there is no evidence of Soviet development of an effective AWACS. If the Soviets elected to build such a system, it could be introduced by 1985, but several years more would be required for widespread deployment.

Interceptors

69. The current first-line interceptor aircraft in the Soviet Air Defense Forces (PVO Strany) were

first deployed between 1959 and 1970. Of these, the high-altitude, high-speed Foxbat interceptor and the latest version of the Flagon point defense interceptor continue to be produced. The Flagon and the older Firebar currently are the most effective interceptors against low-altitude targets. Their low-altitude capabilities, however, are limited by their radar performance and weapon capability. (See Figure 12 for characteristics of the newer interceptors.)

70. The Flogger interceptor, which is now deployed with Soviet Tactical Aviation, will likely be deployed within the PVO Strany in the near future. The Flogger has a limited capability to detect, track, and engage low-altitude targets below its own altitude. To exploit this limited capability, substantial improvements must be made in the supporting air surveillance and GCI network. [

substantial improvements over current low-altitude capabilities could be achieved in the 1980-85 period. Given a high-priority Soviet effort, this capability could be achieved even sooner.

Surface-to-Air Missiles

71. All Soviet strategic SAM systems (SA-1, SA-2, SA-3, and SA-5) have been modernized during their lifetime. The new versions have improved performance such as low-altitude capability or increased range. (Figure 13 gives characteristics of currently deployed SAMs, and Figure 14 shows SAM coverage of the USSR.) Evidence [

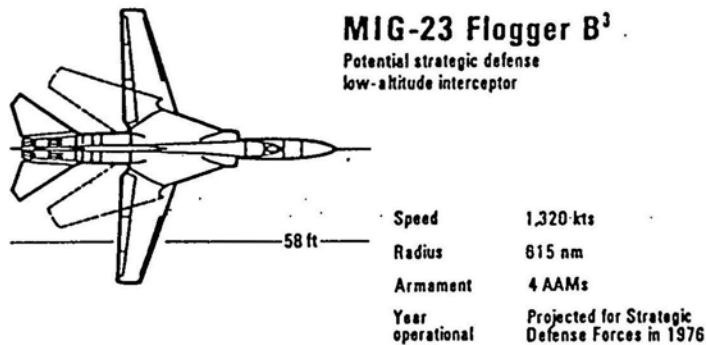
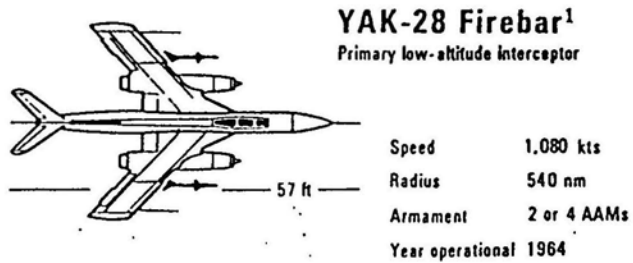
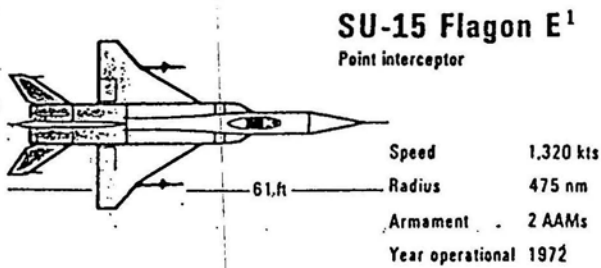
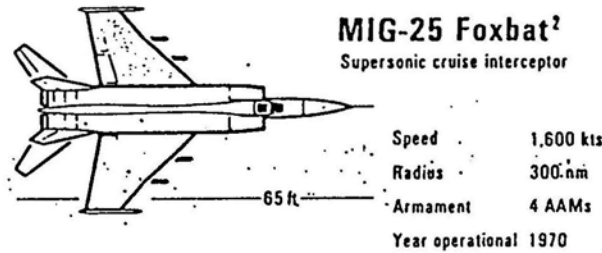
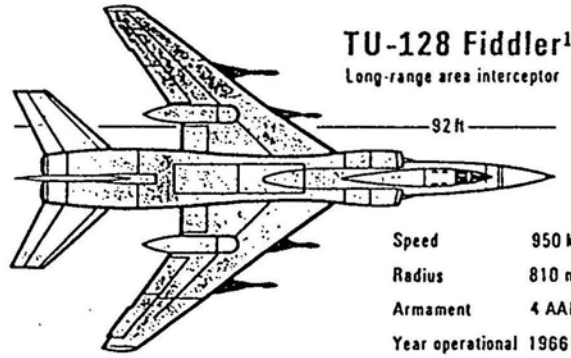
] has confirmed previous indications that nuclear warheads are available to some SA-1 and SA-5 units. We further believe that a considerable portion of the SA-2 force is so equipped. [

] The increased lethal radius of a nuclear war-

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Newer Soviet Strategic Defense Interceptors

Figure 12



1. Mission performance figures calculated for optimum *subsonic* area intercept profile.
2. Mission performance figures calculated for optimum *supersonic* area intercept profile.
3. Mission performance figures calculated for optimum low-altitude intercept profile.

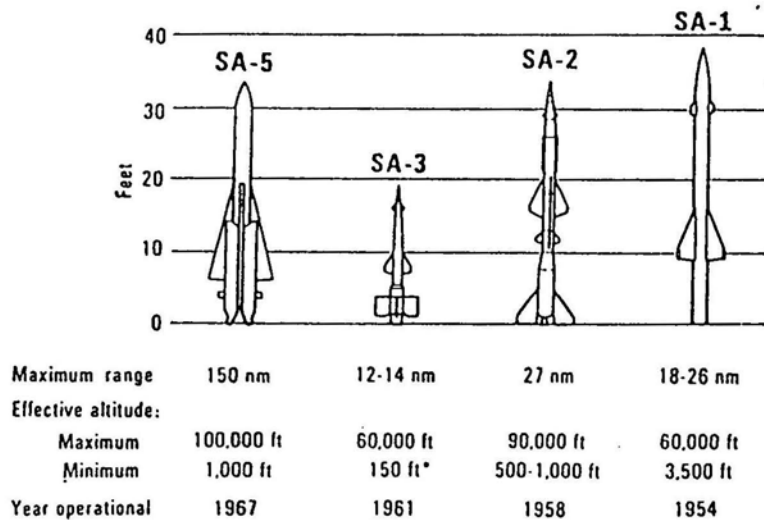
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Figure 13

Currently Deployed Soviet Strategic SAMs



*See Volume II for Army, Navy, and Air Force views on the conditions required for a 150-foot minimum altitude capability.

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head could compensate for the large miss distances inherent in SA-2 operations at low altitudes. The use of nuclear warheads would extend the effective range of the SA-2 at low altitudes, but the fixed sites would continue to be vulnerable to the tactics of avoidance, destruction, and possibly jamming.

72. There is evidence that the Soviets have a new low-altitude SAM system under development at a complex in the Sary Shagan test center. One component of the system, a radar with an elevated antenna, incorporates desirable features for low-altitude detection and tracking. □

□ The Soviets might also improve their low-altitude defenses by deploying the mobile SA-6 system to PVO Strany. Another possibility is that the defensive system under development at the Emba test center which appears intended for use against tactical ballistic missiles could also have a strategic air defense application. The system would probably have a capability against the short-range attack missile (SRAM) in its high-altitude semibalistic flight mode, but it probably would not be

effective against low-altitude SRAMs because the system's radar would need sophisticated clutter-processing equipment which is not required for use against tactical ballistic missiles.

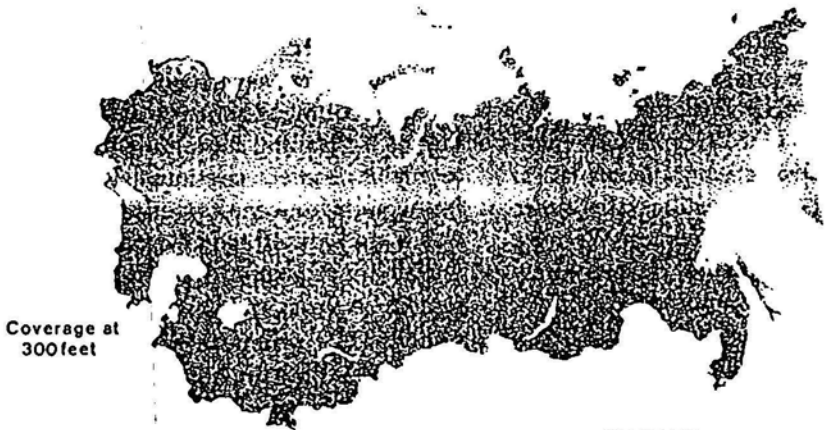
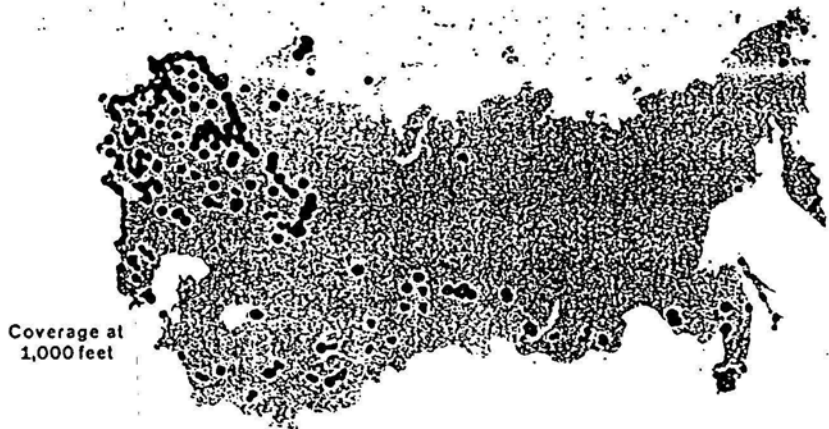
Prospects for Improvement of Low-Altitude Defenses

73. It is unlikely that the Soviets will have significantly better low-altitude air defenses before 1980. In subsequent years, however, we foresee in Soviet air defenses—in air surveillance and control, in interceptors, and in surface-to-air missiles—the potential for overcoming most of the current technical deficiencies for defense against low-altitude bombers. By 1985, if the Soviets carry out the programs we have judged as likely, they will have gone a long way toward solving the problems of defending against today's low-altitude threat, thus making the task of low-altitude penetration considerably more difficult. The actual effectiveness of Soviet air defenses, however, would depend heavily on the circumstances of the attack, on the degradation of air defenses resulting from ballistic missile strikes, on the effects of electronic warfare, and on develop-

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Figure 14

Current SAM Coverage of the USSR



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ments in US offensive forces—factors which we are unable to measure. We believe the Soviets will not have an effective defense against the SRAM by 1985, and will have to rely on attacking the SRAM carrier prior to missile launch.

74. We have considered the possibility of air defense applications of directed-energy technologies—i.e., lasers and other beam weapons. We do not believe feasible applications of these technologies during the next decade would have any better prospect for overcoming Soviet deficiencies in low-altitude air defenses than the improvements we have estimated as likely.

C. DEFENSE AGAINST BALLISTIC MISSILE SUBMARINES

75. The Soviets currently do not have an effective defense against the US SSBN force. To counter US SSBNs the Soviets would have to conduct near-simultaneous strikes against virtually the entire force. This would require a wide-area ocean surveillance system to determine the location of all SSBNs at approximately the same time, or it would require a nearly continuous tracking capability—probably by means of trailing—for maintaining contact on submarines located over a somewhat longer period until the time selected for a simultaneous attack.

76. Evidence from Soviet writings [] indicates that the Soviet Navy would try to destroy as many SSBNs as possible prior to the outbreak of hostilities. We believe the Soviets desire, but do not expect to attain, the capability to conduct a coordinated strike against all SSBNs. The Soviets' ASW capabilities are currently limited by their inability to detect SSBNs in broad ocean areas and to maintain trail once an SSBN is detected. The future effectiveness of Soviet ASW capabilities will depend in considerable measure on the extent to which new acoustic and nonacoustic systems are developed to overcome these deficiencies. We note that the Soviets are continuing to develop new ASW sensors, platforms, and weapons.

Wide-Area Ocean Surveillance

77. It is unlikely that the Soviets will develop an open-ocean acoustic system as capable as the US Sound Surveillance System (SOSUS) during the period of this Estimate. This judgment is based

on the technical difficulties the Soviets would have in developing such a system and the geographic constraints on deployment. Furthermore, they may be discouraged from pursuing this approach by the prospect that US SSBNs will be quieter and have expanded operating areas in the future, and that the background noise levels in all ocean areas will increase.

78. The Soviets could also conduct coordinated acoustic searches by ships. This approach would require development of high-performance acoustic systems such as hull-mounted sonars or towed-array sensors with high search rates. It would also require large numbers of ASW platforms, rapid processing of acoustic data, and coordinated surveillance techniques and control systems. Considering the demands of this approach to a wide-area search capability, its pursuit does not appear promising.

79. We expect that the Soviets will try to develop airborne systems with longer range sensors—such as radars and infrared detectors—for detection of surface effects. There are unknowns in assessing the potential of such systems, but given our understanding of submarine-produced surface effects, we doubt that reliable detection systems will be achieved during the next ten years.

Long-Term Trail

80. To conduct a coordinated strike through the use of trailing tactics, the Soviets would have to establish and maintain trails on SSBNs at sea for periods as long as several weeks before any sizable number of deployed SSBNs would be vulnerable. In overt trail the target is aware of being followed and could take evasive measures to break trail. Covert trailing requires a delicate balance on the part of the trailing submarine to follow close enough to maintain near-continuous contact but to stay far enough from the target to avoid detection itself. For a trail using acoustic means, the trailing submarine must have a decided acoustic advantage to remain covert and maintain trail for extended periods. US submarines now enjoy a substantial advantage, both in quietness and in passive sonar performance, over Soviet submarines. The Soviets would have to overcome major gaps in both areas before they could approach a capability to trail US SSBNs covertly for extended periods using

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acoustic techniques. We have identified no serious program by the Soviets to control radiated noise to the same extent as has the US. It is doubtful that they could achieve in the next ten years the required acoustic advantage, even in the absence of further US improvements in quieting. We conclude that successful acoustic passive trail over long periods will remain beyond Soviet capabilities for the foreseeable future.

81. The Soviets could attempt to maintain a long-range trail with active sonars [

While there are many unknowns in assessing the Soviet potential for developing a successful system of this type, its achievement is unlikely.]

82. The Soviets could develop, using the research they have been conducting, nonacoustic techniques for detection of submarine submerged wakes for use in covert trailing. [

] A large force of attack submarines would be necessary to realize the full potential of wake detection trailing against the SSBN force at sea. In view of these considerations, we do not believe that an effective Soviet system of any type for long-range nonacoustic trail will be fully operational during the next ten years.

Assessment of Future ASW Capabilities

83. The future effectiveness of Soviet defenses against ballistic missile submarines will depend on

how successful the Soviets are in detecting and tracking SSBNs in broad ocean areas. From our understanding of the technologies involved and of the research and development programs in the US and the USSR, we conclude that the Soviets have little potential for achieving success in either of these areas in the next ten years. Moreover, improvements in US SSBNs and expansion of their operating areas will compound the Soviets' problem of finding and tracking them. These judgments must be qualified, however, by gaps in our knowledge [

] of possible future Soviet developments. The Soviets will almost certainly continue to develop their strategy and capability for detection of SSBNs, and we expect improvements in their capabilities to detect and destroy SSBNs in confined water areas. We conclude, however, that these improvements will not overcome deficiencies in open-ocean detection and submarine tracking, and that Soviet ASW capabilities will fall short of being able to prevent most US submarines on station from launching their missiles.

D. ANTISATELLITE DEFENSE

84. The Soviets have an antisatellite capability. Since 1971 they have had an operational orbital system which can conduct nonnuclear intercepts of satellites which pass over the USSR at altitudes below about 2,500 nautical miles. Galosh missiles armed with nuclear warheads could also be used to attack satellites at altitudes up to about 700 nm. It is unlikely, however, that the Soviets would use the nuclear-armed Galosh in any situation short of nuclear war.

85. The Soviets have completed construction of what we believe is a laser system at the Sary Shagan test range. While we cannot yet determine the primary purpose of this system, it could be an anti-satellite weapon system. If so, we estimate that it could disable satellites below about 300 nm altitude under favorable conditions. However, short of preparation for war or in retaliation for what they believed to be prior US action against their own satellites, we believe it is unlikely that the Soviets would attack any US satellites.

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E. CIVIL DEFENSE AND HARDENING OF FACILITIES

86. The Soviet Union has the largest and most highly developed civil defense organization and program in the world. We believe its main goal is to protect top government authorities and a cadre of key military, political, and economic officials. In the event of a nuclear war, we believe that civil defense would not be able to prevent massive casualties, industrial destruction, and the breakdown of the economic structure. The Soviets would probably expect their civil defense to be able to preserve a political and economic cadre both during and after a war and to contribute to the survivability of the USSR as a national entity.

87. The Soviets have made large investments in passive defense through hardening of facilities. These are designed to improve the survivability of their military capabilities and to provide a limited industrial base for recovery after the cessation of hostilities. The scope of the hardening program is another indicator of the USSR's effort to improve its strategic posture.

FUTURE FORCES AND THEIR IMPLICATIONS

A. FUTURE FORCES

Uncertainties

88. In projecting the size, characteristics, and mix of Soviet strategic forces we face varying degrees of uncertainty.

- *For the near term*, we rely most heavily upon the extrapolation of observed activity. Soviet decisions involving the next two years or so have generally been made, and the activity resulting from these decisions is now under way. We have relatively high confidence in these estimates.
- Soviet forces for *the midterm*, the period two to five years hence, are less easily determined. We have some confidence in our forecasts for this period because the forces will be composed largely of existing systems.
- We cannot estimate with confidence and precision *the longer term* forces (i.e., five to ten years hence). [

] Soviet decisions affecting this time period may not yet be made or may be subject to change.

89. In constructing alternative force projections to examine possible Soviet forces and capabilities in the midterm and longer term, we have varied not only the deployment rates and levels of technological achievement but also the characteristics of weapon systems to take account of uncertainties. Some of the uncertainties in our estimates of some weapon system characteristics are not significant for our judgments about Soviet strategic capabilities. Other estimates of weapon system characteristics have ranges of uncertainty which allow markedly different implications for strategic capabilities.

90. In illustrating the impact of these uncertainties, we assign our "best" estimates of weapon characteristics to those projections which assume levels of effort and steady progress in technological development comparable to what the Soviets have demonstrated in the past. For those illustrative force projections that assume a high level of effort, rapid technological progress, and early introduction of new weapon systems, we assign the more threatening end of our uncertainty interval in weapon system characteristics. The least threatening end of our uncertainty interval is assigned to the illustrative force projection that assumes low levels of effort and technological achievement. It is highly unlikely that all of these extremes of weapon characteristics would occur in combination.

Meeting the Vladivostok Ceilings

91. *Aggregate of 2,400.* Between now and October 1977 the USSR will have about 100 or more strategic delivery vehicles beyond the 2,400 aggregate limit proposed at Vladivostok. The actual number will depend on the precise terms of a SALT TWO agreement. We have no conclusive evidence to help us estimate which systems the Soviets would dismantle to reduce their forces to satisfy a limit of 2,400. It is expected that the Soviets themselves will experience difficulties in determining which forces to cut. For purposes of projecting Soviet offensive forces under the limits of the Vladivostok accord, we have made reductions to the force levels of all three elements—ICBMs, SLBMs, and bombers. These reductions involve

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cutting back the Bison and Bear bomber force by about one third, and dismantling all SS-7 and SS-8 ICBMs and all seven H-II class submarines.

92. *Limit of 1,320 MIRV Launchers.* The Vladivostok limit of 1,320 launchers carrying MIRVs is not likely to impact upon Soviet forces before the early 1980s. As the Soviets approach the limit, the principal impact will probably be on follow-on systems which may appear in the 1980s. We believe that the bulk of Soviet systems with MIRVs will be in the Strategic Rocket Forces.

Alternative Force Projections

93. We have projected five ways in which Soviet strategic forces might develop under different circumstances through the mid-1980s (see Table IV). Although all of the projections are consistent with currently observed activity and are within Soviet resource capabilities, they are not considered equally likely developments. In all of our projections, we have assumed that the Interim Agreement remains in force through 1977 and that the ABM Treaty remains in effect over the next ten years.⁶ For three of these projections we have assumed that the Vladivostok ceilings of 2,400 total delivery vehicles and 1,320 missiles carrying MIRVs are ratified in a SALT TWO agreement to take effect in 1977. In the two other projections we have assumed that a SALT TWO agreement is not reached.

— *Best-SAL.* Force 1 assumes that the US and USSR reach a SALT TWO agreement based on the Vladivostok accord and that Soviet-US political relations do not deteriorate. This force spreads a reduction to 2,400 delivery vehicles among the three elements of Soviet intercontinental attack forces. In this projection, force deployments are at rates consistent with past Soviet practices, and our best estimates of Soviet technological achievements are used.

⁶ The following systems have been excluded in the aggregates of delivery vehicles: all Backfire bombers, 18 SS-9 launchers at Tyuratam, 16 SLBM launchers on older missile submarines used as test platforms, 57 SLBM launchers on G-class diesel-powered submarines, 50 Bison bombers configured as tankers, 5 Bear reconnaissance aircraft, and some 60 Bear aircraft assigned to Naval Aviation. Should any of these systems be counted in a 2,400 aggregate, our projections would have to be changed.

This projection is our best estimate under a SALT TWO agreement. (The estimated composition of the Soviet ICBM force under this projection is illustrated in Figure 15.)

— *Moderate-No-SAL.* Force 2 assumes that a SALT TWO agreement cannot be obtained; that both sides, after the lapse of the Interim Agreement, continue to support the SALT negotiating process; and that US-USSR relations do not deteriorate significantly. In this projection, the pace of Soviet force deployments and technological achievements is not markedly different from that of Force 1. This force represents a moderate level of effort in the absence of a SALT TWO agreement.

(See paragraph 12 for a discussion of differences as to the likelihood of such a force in the absence of a SALT TWO agreement.)

— *High-SAL.* Force 3 assumes that a SALT TWO agreement based on the Vladivostok understanding is ratified, but that the Soviets step up their deployment programs within the SALT TWO limit and also achieve high levels of technical success in weapons improvements. This force represents the highest level of effort and achievement we believe plausible for the Soviets under SALT TWO constraints.

— *High-No-SAL.* Force 4 assumes that no offensive arms limitation agreement can be reached, and that US-Soviet relations deteriorate drastically. This force represents the highest level of deployment effort and technological achievement we believe plausible for the Soviets in the absence of a SALT TWO agreement. *We think it is highly unlikely, however, that the Soviets will achieve all the technical successes implied by Forces 3 and 4.*

— *Low-SAL.* Force 5 assumes that a SALT TWO agreement based on the Vladivostok understanding is reached. This force is a projection of the lowest level of deployment effort and technological achievement we believe might occur under a SALT TWO agreement.

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TABLE IV
Summary Comparison of Force Projections¹

	Force 1	Force 2	Force 3	Force 4	Force 5
Offensive System IOC Dates					
New silo-based ICBMs	'75, '76	'75, '76	'75, '76	'75, '76	'75, '76
Versions improved for accuracy	'81	'81	z	z	'81, '82, '85
Mobile SS-X-16	z	'77	z	'76	z
More accurate follow-on ICBMs	'81, '83, '84	'83, '84	'80, '81	'80, '81	z
MIRVed SLBM	'78	'78	'78	'78	'79
New type of SSBN	'80	'80	'79	'79	'84
Follow-on heavy bomber ³	'81	'81	'80	'80	z
ICBM Deployment Rates² (annual average)					
New silo-based ICBMs	180	180	270	270	140
Versions improved for accuracy	150	250	z	z	160
Mobile SS-X-16	z	'30	z	50	z
More accurate follow-on ICBMs	240	150	300	300	z
Defensive System IOC Dates					
Flogger	'76	'76	'76	'76	z
New interceptor	'83	'83	'82	'82	z
Overland AWACS	z	z	'84	'84	z
New mobile low-altitude SAM	'80	'80	'78	'78	'82
Force Levels in 1980					
ICBM silos	1,398	1,398	1,338	1,510	1,398
Mobile ICBMs	z	60	z	100	z
SLBMs	916	958	964	1,058	920
MIRVed missiles	958	1,098	1,130	1,462	800
Bison, Bear, and follow-on heavy bombers ⁴	80	145	70	140	70
(Backfires in Long Range Aviation ⁵)	(110)	(110)	(120)	(120)	(100)
SAM launchers	7,360	7,360	10,120	10,120	6,300
Air Defense Interceptors	2,385	2,385	2,430	2,430	2,210
Force Levels in 1985					
ICBM silos	1,348	1,398	1,338	1,570	1,398
Mobile ICBMs	z	180	z	300	z
SLBMs	952	1,032	952	1,156	912
MIRVed missiles	1,316	1,716	1,316	2,302	1,314
Bison, Bear, and follow-on heavy bombers ⁴	90	140	100	200	70
(Backfires in Long Range Aviation ⁵)	(240)	(240)	(300)	(300)	(120)
SAM launchers	6,250	6,250	8,550	8,550	5,550
Air Defense Interceptors	2,175	2,175	2,445	2,445	2,020

¹ See Volumes II and III for further details on these projections and for the relationship of these forces to those projected in the Defense Intelligence Projections for Planning, designed specifically for planning in the Department of Defense.

² Not deployed in this force.

³ Excluding prototypes.

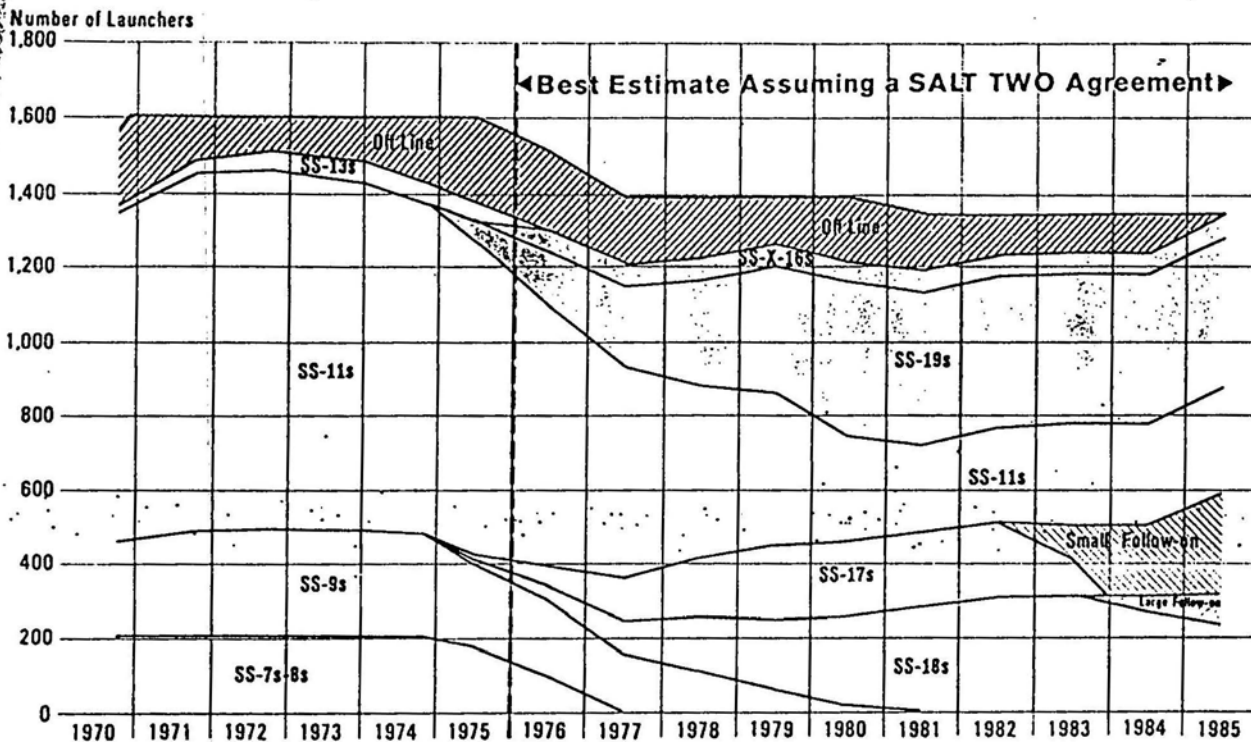
⁴ Excluding nonbomber variants and Bear aircraft in Naval Aviation.

⁵ Excluding Backfires assigned to Naval Aviation and those used in a training role.

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Figure 15

Soviet ICBM Force, 1970-85



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B. IMPLICATIONS OF OFFENSIVE FORCE PROJECTIONS

Quantitative Measures

94. Figures 16a and 16b compare the five projected Soviet offensive forces with the US programed offensive force. The graphs show that:

- In total delivery vehicles the Moderate-No-SAL and High-No-SAL forces exceed US programed forces throughout the period of the Estimate.
- In total MIRVed delivery vehicles the two No-SAL forces surpass the US programed force beginning about 1980.
- In on-line missile throw weight, all five Soviet forces exceed the US programed force from the outset by substantial and growing margins.

— In on-line missile throw weight and bomber loadings combined, only the High-No-SAL force exceeds the US programed force by 1985.

— In on-line missile RVs, the US programed force begins to lose its lead [] first to the High-No-SAL and High-SAL forces and eventually to all five forces.

— In total on-line missile RVs and bomber weapons, only the High-No-SAL force overtakes the US programed numbers.

— In on-line equivalent megatons, all Soviet forces now outstrip the US, and all but the Low-SAL force will be well ahead of the US by 1985.

Interaction Analysis

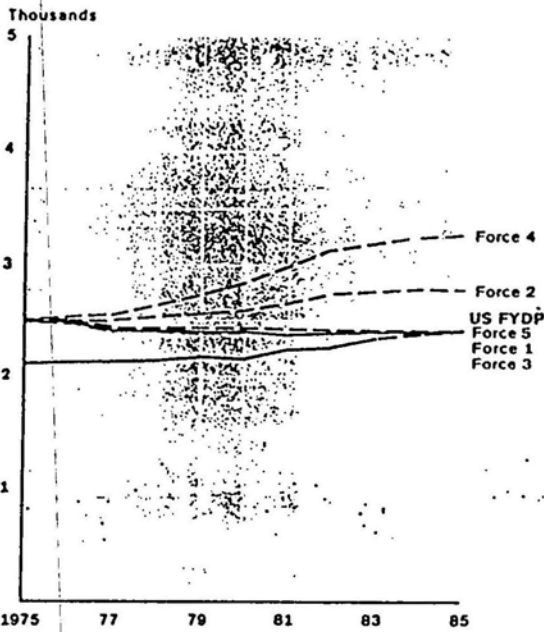
95. The interaction analysis presented in this section shows changes in selected Soviet capabilities

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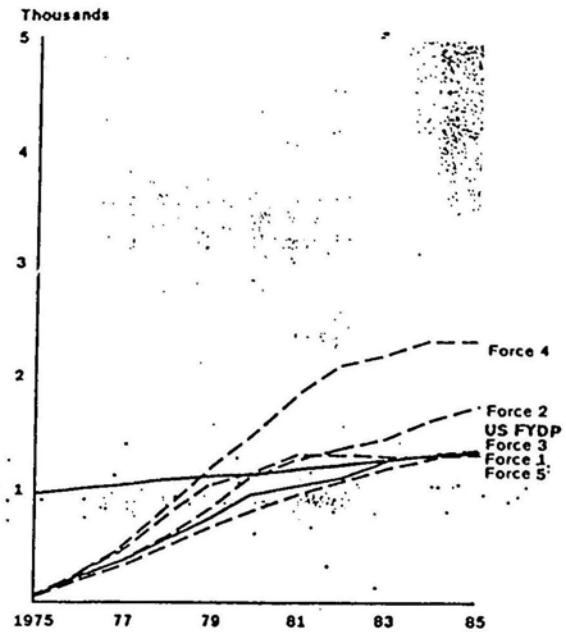
Figure 16a

Quantitative Comparisons of Forces for Intercontinental Attack*

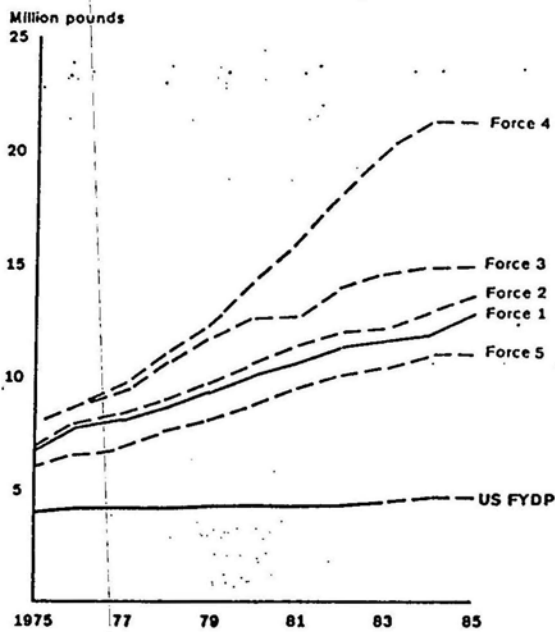
Total Delivery Vehicles



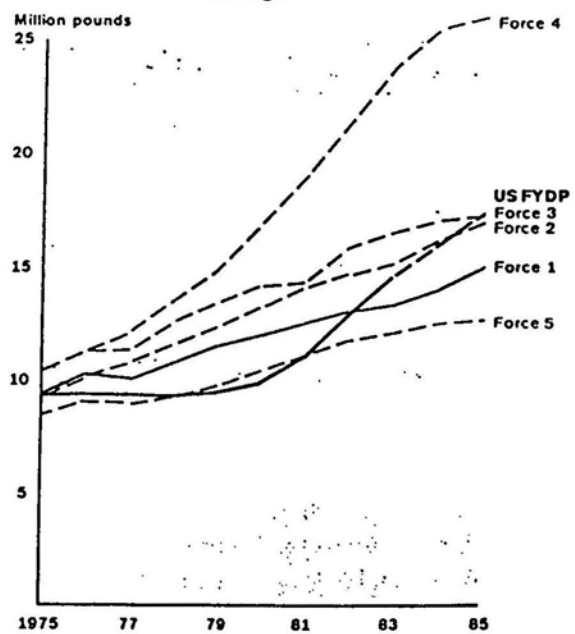
Total MIRVed Delivery Vehicles



On-Line Missile Throw Weight



On-Line Missile Throw Weight and Bomber Loadings



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Figure 16b

*Note: Total delivery vehicles include ICBMs operational, in conversion, or under construction; SLBM launchers operational, under conversion, or in shipyard overhaul; and operational intercontinental bombers. Excluded are SLBM launchers in SSBNs which have not yet begun initial sea trials and bombers configured for tanker or reconnaissance missions.

On-line static measures exclude ICBM silo launchers under construction or conversion and SLBM launchers on SSBNs undergoing sea trials, conversion, or shipyard overhaul.

Missile payloads composed of MRVs (which are not independently targetable) are counted as one RV.

The US programed force (FYDP) is derived and, after 1983, extrapolated from the force projections of the US Department of Defense Five-Year Defense Program as of January 1975. The extrapolations are not intended to predict US programmatic decisions.

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over the next ten years and compares the offensive capabilities implied by the five Soviet force projections. It is limited to scenarios involving surprise counterforce attacks by one side's ICBMs against the other's ICBM silos. No attempt has been made to include bomber and SLBM attacks or to assess the effects of strategic defenses against attacking forces. Furthermore, the analysis is not intended to portray the most likely results of a nuclear exchange between the US and the USSR nor to predict major US programmatic decisions. Such an assessment would require consideration of many additional factors, not least of which would be the effectiveness of command and control on both sides. Only stereotyped scenarios and nominal measures of the effectiveness of Soviet forces have been used, along with announced US programed forces and force options and standard Department of Defense planning characteristics for US weapon systems. Our purposes are to identify major aspects of the strategic environment the US will confront in the next ten years, as well as key considerations which would affect Soviet evaluations of the USSR's prospective strategic capabilities.

96. We have used the projections of ICBM forces in the US and the USSR over the next decade to examine Soviet ICBM countersilo capability and the vulnerability of Soviet ICBM silos to an attack by the US. We are uncertain of Soviet capabilities against US silos and the capabilities of Soviet silos to withstand a US ICBM attack. The USSR has a comparable problem, although over the next decade it will probably face somewhat less uncertainty than the US in judgments about the opponent's capabilities. The Soviets have relatively free access to information on US programs and weapon systems, and are evaluating the hardness of their own silos in field tests using high explosives and underground nuclear devices.

97. In the face of uncertainty, prudent military planners tend to make conservative estimates of their own force capabilities and to make worst-case estimates of the capabilities of the opponent's forces. These perspectives could lead one side to believe that its own force posture would not permit a significant silo-killing capability, while the other side might believe that the very same force posture was threatening to it. On the other hand,

it is possible for either side to overestimate its countersilo capabilities. We expect continuing uncertainty about such matters during the next decade. It is in the context of this uncertainty that decisions at SALT and for strategic force planning must be made.

Soviet Countersilo Capability

98. Figure 17a displays calculated results of hypothetical attacks on US Minuteman silos by the Soviet ICBMs in the five force projections. Figure 17b illustrates the degree to which the outcome of such attacks is influenced by several variables in Soviet capabilities of differing importance.

99. With the deployment of the new Soviet MIRV systems, both sides will have sufficient weapons to target more than one RV against each opposing silo. However, the actual capability to compound the damage expectancy (DE) by detonating more than one reentry vehicle on a single target is dependent upon whether "fratricide" effects can be overcome. (See Annex G in Volume III of NIE 11-3/8-74 for a detailed discussion of the fratricide problem.) Because of uncertainties about fratricide effects, countersilo capabilities are shown separately in the figure for attacks using one and two RVs.

The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes the two-RV (damage compounded) case overstates the Soviet threat to US silos. In his view, the only two-RV attack the Soviets could reasonably attempt would be one in which the second RV is effective only if the first RV is unreliable. This would result in a threat to Minuteman somewhere between that shown for the one-RV and two-RV cases.

100. Our Force 1 estimate shows an increasing but moderate threat to Minuteman silos through about 1980. If the Soviets were able to develop fully effective two-RV attack techniques, only about 150 Minuteman silos would survive a Force 1 attack in 1985. If the Soviets targeted only one RV per silo (whether it was because they were unable to solve the problems of a two-RV attack or because they lacked confidence in its success under operational conditions), about 350 Minuteman silos would survive a Force 1 attack in 1985. (These calculations

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do not take into account variations in operational performance likely to occur in a large-scale attack or the possibility that US missiles might be launched on tactical warning.)

101. The different countersilo capabilities of these forces arise almost entirely from their differing qualitative characteristics, largely independent of whether force levels are constrained by the quantitative limitations of a SALT TWO agreement. Indeed, the principal differences in the countersilo capabilities of the five force projections are encompassed by the range of uncertainty in our best estimates of such key weapon characteristics as ICBM accuracy.

Soviet Silo Survivability

102. A possible Soviet view of the USSR's own silo survival problem is shown in Figure 18. It illustrates the estimated number of Soviet silos surviving after hypothetical attacks by two potential US forces.⁷ The attacks involve one or two RVs against Soviet silos hardened to our best-estimate levels. A conservative Soviet planner could forecast that even with the improvements in silo hardness now in progress, a very substantial part of his ICBM force could be in jeopardy before the mid-1980s. The Soviets' emphasis on war-fighting capabilities and their MIRV deployment programs indicate that they perceive requirements for large numbers of warheads. Should US hard-target kill capabilities improve in the future more than the Soviets anticipated when they authorized their

⁷ The first US force, derived from the Department of Defense Five-Year Defense Program (FYDP) as of January 1975, contains an improved Minuteman III.

The second is a modification to the FYDP force for the purpose of illustrating a highly threatening US counterforce potential in the absence of a SALT TWO agreement. This hypothetical force assumes that all 1,000 Minuteman silos receive the improved Minuteman III and that new silo launchers built for the M-X are added to the force beginning in 1983.

Even under a SALT TWO agreement, the M-X could be deployed as a replacement for Minuteman III, but MIRVing all 1,000 ICBM silos and adding M-X launchers would exceed the limits of the Vladivostok accord unless the US drastically reduced its planned force of MIRVed SLBMs. This force is not intended as a prediction of actual US deployments, but as representing the kind of high US option conservative Soviet planners might consider.

present silo upgrade programs, they may feel required to alter the mix of their offensive forces in favor of more survivable systems. If so, Soviet emphasis may shift toward larger numbers of mobile systems than are projected in our best estimate, and the reductions we forecast as being shared among force components may in fact fall most heavily on fixed ICBMs.

Residual RVs After Surprise Attack

103. Figures 19a and 19b compare the US and Soviet residual ICBM and SLBM warheads available for immediate retargeting after a hypothetical attack by either side on the other's missile silos, employing up to two RVs per target. It is assumed that neither side launches its missiles on warning, and that the SSBN forces are deployed normally. Figure 19a compares the differing results of calculations using the SAL-limited projections of Soviet forces (Forces 1, 3, and 5); Figure 19b uses the No-SAL projections (Forces 2 and 4). In both cases the US force used is from the US FYDP. This is for illustrative purposes, and variations in future US strategic forces would change the results.

104. The calculations show that after a hypothetical Soviet surprise attack, the Soviets would have to expect the US to retain surviving missile RVs, largely on SLBMs at sea, through the next ten years. In the near term, the Soviets would retain fewer than 2,000 RVs for attacking targets other than US silos. As more MIRVed missiles become available in the late 1970s and the 1980s, however, this number grows rapidly—particularly in Force 4, which would have more than 12,000 remaining RVs.

105. After a hypothetical US surprise attack on Soviet silos, all of the Soviet forces except Force 4 would have some 2,500 RVs or fewer surviving in 1985. For Force 4, the residual would be about twice that. The number of US RVs remaining after such an attack for use against other targets would be throughout the period.

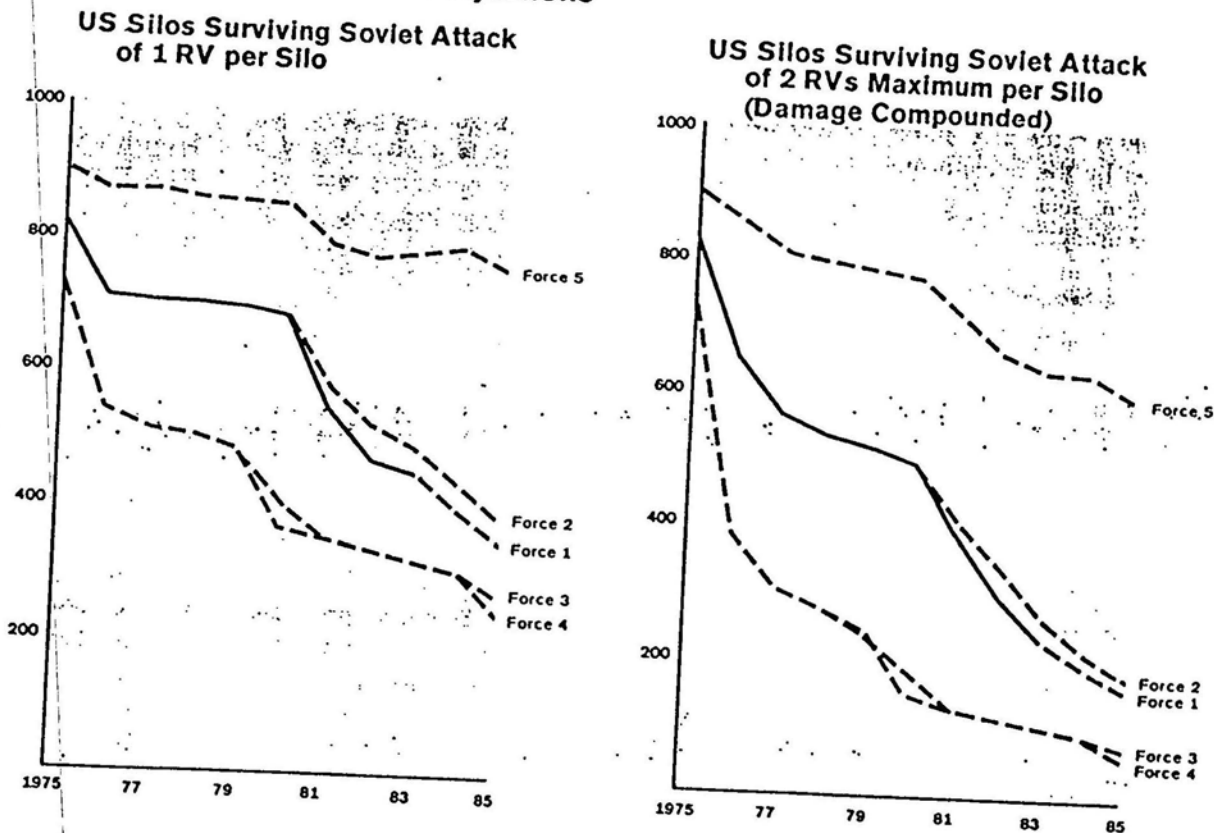
Threat to US Bombers and SSBNs

106. The US maintains a large day-to-day alert bomber force, capable of becoming airborne upon warning by satellite and radar warning systems. A surprise Soviet ICBM attack could destroy most of

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Potential Soviet Threats to US Silos: Comparison of Force Projections

Figure 17a

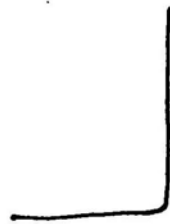


The graphs above show the calculated results of hypothetical Soviet ICBM attacks on US Minuteman silos, using the five different Soviet forces projected in this Estimate. The forces vary in both quantitative and qualitative characteristics, with the latter accounting for most of the differences in the silo-killing capabilities. Forces 1 and 2 incorporate our best estimates of Soviet ICBM accuracy and yield for these forces. Forces 3 and 4 reflect a combination of the most threatening extremes of our estimates in both respects, while Force 5 reflects the least threatening extremes. The reader is cautioned that these extremes are highly unlikely, and that their use may result in unrealistic conclusions.

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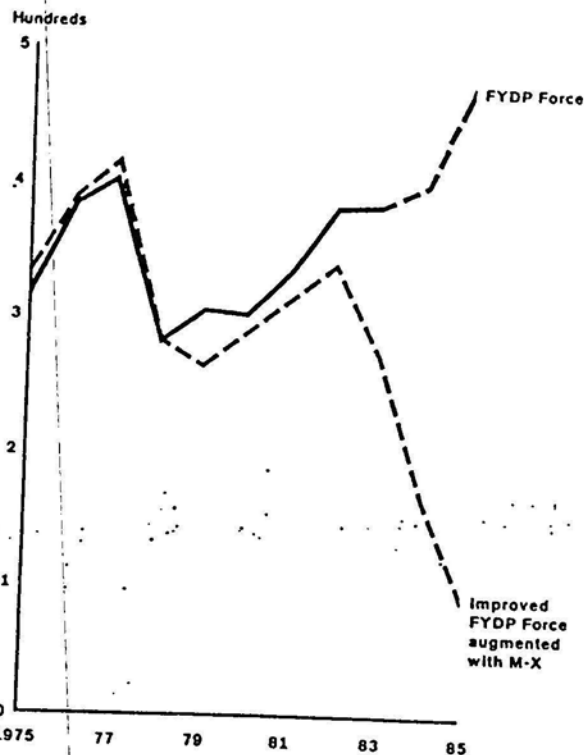
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Soviet ICBM Silos Surviving A US Attack of Two RVs per Silo (Damage Compounded)

Figure 18



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the nonalert aircraft. Current Soviet SLBMs fired from the present SSBN patrol areas, assuming that our missile detection system provided timely warning, would be only slightly more effective.

107. The Soviets could increase the threat against the current US bombers on alert by deploying some of their SSBNs closer to the US coastline. SLBMs fired on depressed trajectories could further reduce US reaction time, although there is no indication that the Soviets have tested this technique. In evaluating their present and future capabilities to destroy US bombers prior to launch, the Soviets would have to consider improvements to the US bomber force such as the planned introduction of the B-1 and available countermeasures such as changing the basing and alert posture of the bomber force. We believe the Soviets would conclude that the US could preserve the survivability of most of its alert bombers against

attacks by SLBMs throughout the next ten years. Moreover, because of the difference in flight times of ICBMs attacking US missile silos and SLBMs attacking US bomber bases, Soviet planners could not count on maximizing the prelaunch destruction of both US bombers and ICBMs.

108. In a surprise attack during the next ten years, Soviet offensive forces could destroy those US SSBNs in port—almost half of the total US force. Survival of the remaining US submarines, those at sea, would depend on the effectiveness of Soviet ASW forces.

Assessment of Alternative Offensive Force Capabilities

109. The alternative Soviet offensive forces we have projected differ in their capabilities for wag-

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ing intercontinental warfare and in their political significance:

- In Force 5 (Low-SAL), the image of Soviet offensive power grows gradually, but a severe threat to the survival of the US Minuteman force is not attained during the period of this Estimate. This force might be regarded as meeting minimum Soviet standards of perceived strategic parity and force effectiveness against currently programed US forces.
- Force 3 (High-SAL) or Force 4 (High-No-SAL) would appear far more formidable to the US and its allies. In the late 1970s, either of these forces would surpass the currently programed US force in most conventional static measures of offensive strategic power. In some measures—notably on-line missile RVs, missile throw weight, and total equivalent megatons—Soviet advantage would be very substantial. Moreover, these forces are assumed to have high accuracies and yields and thus would pose a more severe threat to Minuteman silos than Forces 1 and 2. Force 3 or Force 4, even in combination with Soviet strategic defense, would not provide the Soviets with the capability to prevent devastating retaliation. If, however, the Soviets could attain these force capabilities without provoking US counterefforts greater than implied by US programed forces, they then could be perceived as giving the USSR more strategic power to back up its policies than that available to the US.
- Force 1 (Best-SAL) and Force 2 (Moderate-No-SAL) are less formidable than Force 3 or Force 4, but closer in overall capability to those forces than to Force 5. Forces 1 and 2 would pose a major threat to US Minuteman silos by the early 1980s assuming a two-RV attack. Moreover, by that time, Soviet offensive forces will lead programed US forces in numbers of missile RVs, though the US will have a large lead in the total number of missile and bomber weapons combined.

C. IMPLICATIONS OF DEFENSIVE FORCE PROJECTIONS

110. There are major differences in the five illustrative force projections in both the number and quality of strategic air and missile defenses:

- In Force 5 (Low-SAL), the Soviets make little effort to increase their defenses against the threat from the US, implying acquiescence in (though probably not doctrinal acceptance of) the concept of mutual assured destruction. The defenses projected in this force would be useful primarily against limited strategic attacks. The ABM defense at Moscow remains unchanged.
- Forces 3 and 4 (High-SAL and High-No-SAL) assume high levels of deployment and technical achievement in providing improved air, missile, and SSBN defenses. ABM launchers would be increased to 100 as permitted under the ABM Treaty. By 1985, the Soviets would have two new low-altitude SAM systems and at least two interceptors which would be capable of engaging low-altitude bombers.

The rationale for Forces 3 and 4 calls for higher levels of effort in ASW than the other three projections. The strategic defenses in Forces 3 and 4 would largely overcome many of the technical deficiencies in current air defenses. Even with the effort implied by Forces 3 and 4, we believe technical deficiencies would remain in defenses against SSBNs.

- Forces 1 and 2 (Best-SAL and Moderate-No-SAL) are generally in line with past Soviet practices and current trends in development and deployment of strategic defenses. Antiballistic missile launchers would be increased to 100 as permitted under the ABM Treaty, and the current high level of effort to develop effective ASW systems would continue. A new interceptor, an overwater AWACS, a new SAM, and improved ground-based air surveillance systems would be introduced in the early 1980s to improve low-altitude

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Figure 19 a

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bomber defenses. These defenses would have improved capabilities against limited attacks. They would not, however, overcome as many of the deficiencies in current strategic defenses as would Forces 3 and 4.

Air and Missile Defenses

111. Thus the changes in Soviet strategic air and missile defense capabilities we have projected range from modest improvements to very high levels of effort and achievement, with the exception that, in all five forces, missile defenses are limited by the ABM Treaty. It is unlikely that the Soviets will significantly improve their low-altitude air defense before 1980. The most likely improvements we foresee in their air surveillance and control, interceptors, and SAM systems would have the potential for overcoming most of the technical deficiencies in their capabilities to counter low-altitude bombers by 1985, but it might be possible for them to do so earlier with a very high level of effort. Assuming rapid and widespread deployment of such systems, low-altitude penetration of Soviet air defenses by bombers will be considerably more difficult by 1985 than it is today. The effectiveness of Soviet air defenses, however, would continue to depend heavily on the degradation resulting from ballistic missile strikes and on the performance of US ECM and bomber penetration aids and tactics. Neither we nor the Soviets would likely be able to predict these with confidence.

Defense Against SSBNs

112. The future effectiveness of Soviet defenses against ballistic missile submarines will depend on how successful the Soviets are in detecting SSBNs in broad ocean areas and in tracking them—probably by trailing—once detected. From our understanding of the technologies involved and research and development programs in the US and the USSR, we conclude the Soviets have little potential for achieving success in either of these areas in the next ten years.

113. There are geographic and technical constraints on Soviet deployment of a US SOSUS-type system. The limited ranges of acoustic and non-acoustic submarine detection sensors which we believe could be operationally deployed during the next ten years would require prohibitively large

numbers of ASW platforms. Wake-detection sensors which might be feasible for use in trailing would probably be of limited range and subject to countermeasures. For covert trailing with acoustic sensors, the Soviets would have to overcome and surpass the substantial US advantage in quietness and passive sonar performance. Moreover, improvements in US SSBNs and expansion of their operating areas will compound the Soviet problem of finding and tracking them. These judgments must be qualified, however, by limitations in our knowledge of possible future Soviet developments.

114. The Soviets will almost certainly continue to develop their strategy and capabilities for detection of SSBNs. We do expect improvements in Soviet capabilities to detect and destroy SSBNs in confined water areas. We conclude, however, that these improvements will not overcome deficiencies in open-ocean detection and submarine trailing, and that Soviet ASW capabilities will fall short of being able to prevent most US submarines on station from launching their missiles.

D. IMPLICATIONS FOR THE STRATEGIC ENVIRONMENT

Deterrence and the Balance

115. The future Soviet forces we have projected represent differing capabilities for waging inter-continental nuclear warfare. They also would differ in their political significance, depending on how they were perceived by the Soviets, the US, and other nations. Whether the Soviets' strategic capabilities would give them a psychological edge in a crisis would depend heavily on how perceptions of strategic forces in the USSR and the US affected the resolve of both sides and their views about overall military capabilities.

116. Despite prospective improvements in their forces, the problems and uncertainties which the Soviets would face if they contemplated attacking the US would remain formidable for the next ten years:

—The Soviets would be uncertain about the outcome of an attack on US Minuteman silos and would probably expect a considerable number to survive.

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- They would almost certainly consider their ASW forces to be unable to locate and simultaneously destroy more than a few US ballistic missile submarines at sea.
- Under the ABM Treaty their ABM defenses would be insignificant.
- They would still not have high confidence in their ability to defend against US bombers.
- They would probably expect their civil defenses to be able to preserve a political and economic cadre and to contribute to the survivability of the Soviet Union as a national entity, but they would have to expect massive casualties, industrial destruction, and a breakdown of the economy.

117. Under these circumstances, with the forces and weapons we can foresee, it is extremely unlikely that during the next ten years the Soviet leaders would come to believe that either side could launch an attack which would prevent devastating retaliation. Thus, the strategic environment will be characterized by continued mutual deterrence during the period of this Estimate. Nevertheless, Soviet forces will be much stronger in several quantitative aspects, such as missile throw weight and missile RVs, even though SALT TWO limits would establish and preserve symmetry in total delivery vehicles and MIRVed missile launchers. Furthermore, the long-standing US qualitative superiority in strategic weaponry and supporting technologies will come under increasing challenge. Under the most threatening but unlikely circumstance of very rapid Soviet technological advance, the USSR would achieve capabilities that might be perceived as giving it more strategic power to back up its policies than that available to the US. Foreseeable Soviet strategic forces, however, would not eliminate the USSR's vulnerability to retaliation. A crisis resolution, therefore, probably would not rest on the strategic weapons balance, but rather would depend on other factors, such as the comparative strengths and dispositions of US and Soviet conventional forces.

Potential for Dramatic Technological Advance

118. We have again assessed Soviet R&D programs and prospects for major advances in fields having strategic applications that might seriously

erode US retaliatory capabilities. Our assessments are based on our understanding of the Soviets' strategic research and interest in advanced concepts, their present and projected technological achievements, and their requirements for strategic weapon systems. Our assessments are also supported by the results of analogous US research.

119. For many strategic missions, the development of important new weapon systems may require only relatively modest advances. We found this to be true in the offensive area, where the Soviets could choose several different alternative paths to the problem of attaining high-accuracy ICBMs for hard-target kill other than by improvements to inertial guidance and ballistic RVs. The Soviets currently possess the technology to initiate development of a ground radio beacon navigation update system for ICBMs and could in the 1980-85 period begin development of precision navigation satellites or terminally guided maneuverable re-entry vehicles (MARVs) as alternative solutions to the accuracy problem. If the Soviets chose to do so they also could begin development of large, low-accuracy strategic cruise missiles prior to 1980 and small, highly accurate air- and sea-launched cruise missiles in the 1980-85 period. It is not likely that such developments in the offensive weapons area could, in and of themselves, sharply alter the strategic balance.

120. For strategic defensive problems—nation-wide defense against ballistic missiles or SSBN detection, for example—suitable technological solutions do not appear imminent and, indeed, may not be feasible. Nevertheless, interest in advanced weapon concepts which might provide long-term solutions is high in the Soviet Union. Accordingly, we have reviewed indications of Soviet research in the more advanced weapon concepts whose sudden appearance in the Soviet Union would be significant. We have given particular attention to lasers for use in air and missile defense and to non-acoustic systems for detecting and trailing US ballistic missile submarines on patrol. The Soviets are working actively in both fields, and there are gaps in our knowledge of this work. However, the evidence on their programs, together with our appreciation of the inherent physical and engineering hurdles which must be overcome, leads us to rate as small the chances that in the next ten years

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the Soviets will be able to field operational systems so advanced that they would sharply reduce the US potential for a retaliatory strike on the Soviet Union. Furthermore, in the more exotic areas, such as particle beam weapons, we do not believe that these concepts are far enough developed to provide the basis for effective defense against bombers, ballistic missiles, or SSBNs during the period under consideration.

121. In the coming years, however, the Soviets will have a growing potential for significant and perhaps novel weapon developments. Soviet programs in R&D relevant to advanced weapon systems are both broad and intensive, and the Soviet base of applied technology is growing. [

] 122. Even given these uncertainties, we believe that there are no avenues of research known to the United States, including the application of lasers and charged particle beams, that show much promise of overturning the strategic balance during the next decade. Nevertheless, the scope and vigor of Soviet research and development, particularly in strategic defensive systems, bear especially close watching in the years ahead.

123. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the USSR is embarked on a directed-energy weapons research program of such magnitude that it could have a major if not decisive impact on the strategic balance before 1985.* [

] Overall, this research clearly leads the West in both level of effort and achievement. The Soviet investment to date in related di-

rected-energy facilities, construction, personnel costs, research, and testing could well be on the order of 5 to 10 billion dollars. [

] Evidence further suggests that pivotal experimental development and testing in directed-energy programs is presently under way and should be completed by the 1977-80 period.

124. In the view of the Assistant Chief of Staff, Intelligence, Department of the Air Force, Soviet advances in directed energy must also be viewed in context with other significant investments being made by the Soviet Union in at least eight major new ballistic missile programs (beyond those now being deployed); new aircraft and naval systems; and a strategic hardening program conservatively estimated as having cost the equivalent of about 23 billion dollars to date (on the basis of USAF civil engineering cost factors). As a consequence, the Soviets may anticipate major changes in capability which, in their perception and that of other world powers, would give them advantages against US ballistic missiles, manned aircraft, and a wide range of strategic/tactical land and ocean weapon systems considerably beyond those implied by this Estimate.

The Likely Strategic Environment

125. If the USSR's forces develop according to our best estimates, Soviet leaders can expect to achieve some gains relative to the US during the next ten years even though their forces will fall far short of giving them a near retaliation-free first-strike capability. We have projected Force 1 as the most likely Soviet program under a SALT TWO agreement on the basis of current evidence and past Soviet practices. It represents a vigorous, highly competitive Soviet effort to maintain and improve offensive and defensive forces and is generally consistent with previously observed Soviet activities. We can interpret many aspects of the Soviet strategic force developments which underlie our Force 1 projection as a prudent response to the present strategic situation. Silo hardening, MIRVing, mobile ICBM development, and even R&D on rapidly deployable ABM systems can be explained in terms of Soviet security needs, including needs to hedge

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against potential US force improvements and the failure of the SALT process. Some other aspects of what we see—especially the growing threat to the Minuteman force from large numbers of more accurate, high-yield ICBM warheads, and the vigor of Soviet research and development in strategic systems—can be interpreted as motivated by a determination to achieve important strategic advantages over the US.

126. Considering the history of Soviet strategic policy and force improvement programs, we believe that a program like Force 1 under a SALT TWO agreement would be intended by the Soviet leaders to serve the following purposes:

- to ensure deterrence of all forms of nuclear attack on the USSR;
- to improve war-fighting capabilities aimed at the survival of the USSR as a national entity should deterrence fail;
- to counterbalance, using both peripheral and intercontinental forces, the combined strategic strengths of the US and its allies and of China;
- to narrow or close the gap between the US and the USSR in important weapon technologies, and to hedge against future US force improvements; and
- to acquire strategic advantages, real or perceived, should US behavior permit.

(For the views of the Assistant Chief of Staff, Intelligence, Department of the Air Force, see paragraph 21.)

127. In the absence of a SALT TWO agreement, we believe that Soviet programs would be intended to serve much the same purposes. We would expect the Soviets to build and retain strategic forces numerically superior to those of the US. The Soviets, however, would not expect quantitative competition following a SALT TWO failure to alter the strategic balance. The Soviets have evidently come to recognize that the key to the strategic environment in the 1980s will lie in the qualitative aspects of the forces of the two sides. Their progress in this area will be largely independent of SALT TWO.

128. The Soviet leaders will continue to regard strategic nuclear power as central to their national aspirations. They do not readily recognize that programs they deem essential to their security can easily be read as threatening to the US deterrent, warranting a countervailing US response. By the same token, they tend to assess US developments, including certain features of the US programed force, as deliberately threatening. In the coming years, even under a SALT TWO agreement, uncertainties faced by each side in assessing the capabilities of the other's future forces, particularly their qualitative characteristics, will tend to aggravate more fundamental concerns about the adversary's strategic objectives.

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INTERAGENCY REPORTS AND MEMORANDUMS RELEVANT TO
NIE 11-3/8-75

Prospects for Determining Accuracies of Soviet Strategic Ballistic Missiles
(Guided Missile and Astronautics Intelligence Committee), June 1974

Annex C: The Problem of Fratricide, NIE 11-3/8-74, Soviet Forces for Inter-
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for Success (Ad Hoc Interagency Group), forthcoming

Prospects for Improvement in Soviet Low-Altitude Air Defenses (Ad Hoc Inter-
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Soviet Dependence on Space Systems (Ad Hoc Interagency Group), forthcoming

Concealment and Deception in Soviet Strategic Programs (Ad Hoc Interagency
Group), September 1975

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