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NATIONAL INTELLIGENCE ESTIMATE

Soviet Forces for Intercontinental Conflict Through the Mid-1980s

Volume 1
Key Judgments and Summary

[ ]

~~Top Secret~~
NIE 11-3/8-76
~~IGS 080121-76, 1~~
21 December 1976

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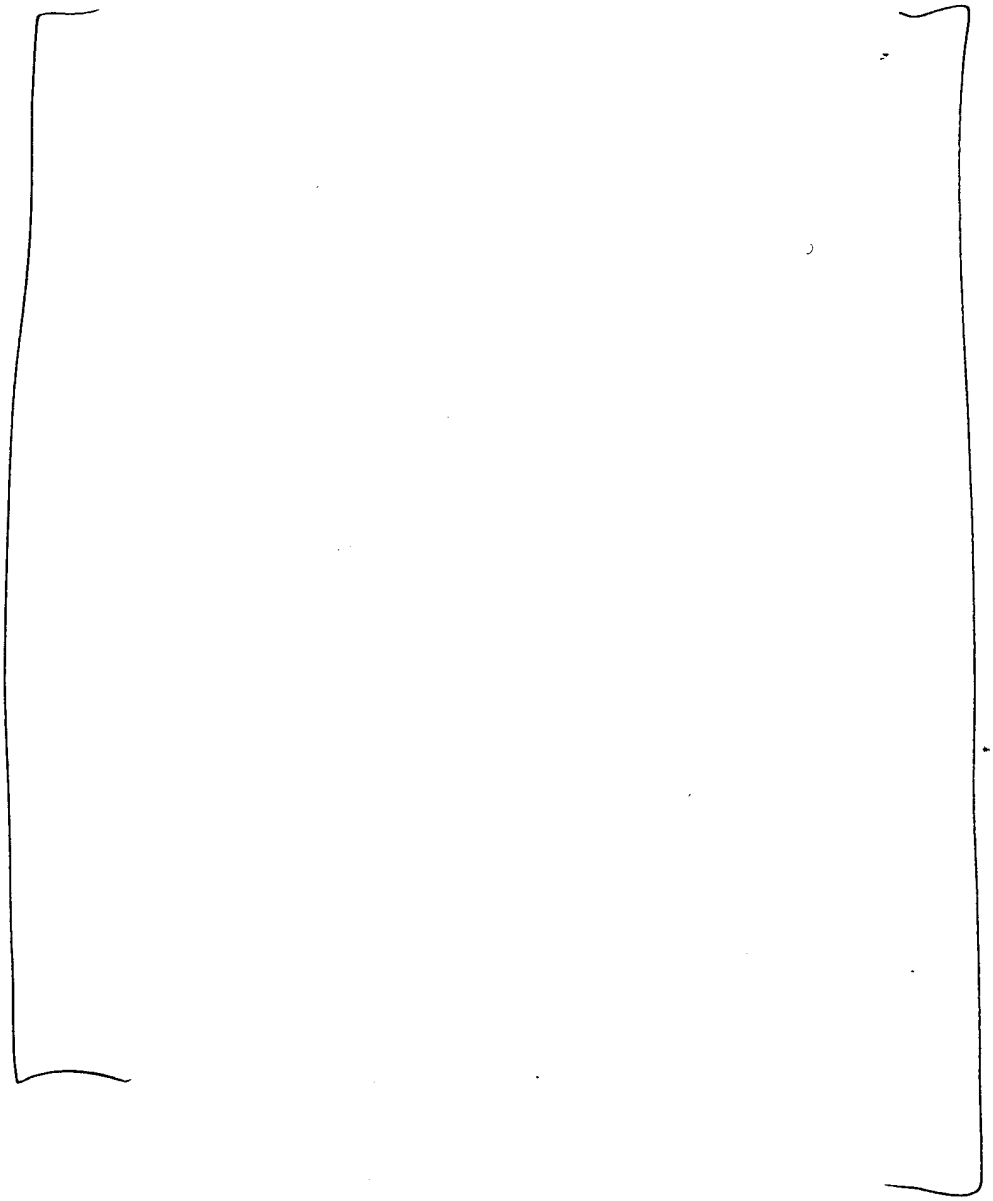

THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON, D. C. 20505

MEMORANDUM FOR: Recipients of National Intelligence Estimate 11-3/8-76, "Soviet Forces for Intercontinental Conflict Through the Mid-1980s"

FROM George Bush

1. The attached National Intelligence Estimate is the official appraisal of the Director of Central Intelligence. This Estimate, including its italicized statements of differing views by members of The National Foreign Intelligence Board, was drafted and coordinated by professional intelligence officers of the US Intelligence Community and was approved by me with the advice of the Board.

2. The judgments arrived at in this Estimate were made after all parties to the Estimate had the benefit of alternative views from the various elements of the Community and from panels of experts from outside government on a few selected subjects. The assembling of the panels of outside experts, and the consideration of their views, was agreed upon by me and the President's Foreign Intelligence Advisory Board as an experiment, the purpose of which was to determine whether those known for their more somber views of Soviet capabilities and objectives could present the evidence in a sufficiently convincing way to alter the analytical judgments that otherwise would have been presented in the attached document. The views of these experts did have some effect. But to the extent that this Estimate presents a starker appreciation of Soviet strategic capabilities and objectives, it is but the latest in a series of estimates that have done so as evidence has accumulated on the continuing persistence and vigor of Soviet programs in the strategic offensive and defensive fields.

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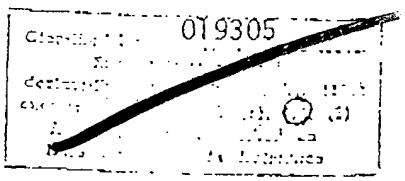


3. The experiment in competitive analysis that was begun with this Estimate has not been completed, and any final judgment on its utility cannot be rendered. Nevertheless, there is a negative aspect that is already clear and which concerns me deeply; namely, the selective leaks regarding the details of the process and, worse, the substantive conclusions developed by the "Team B" panel that was concerned with Soviet strategic objectives. Inspired by these selective leaks, allegations have appeared in the press that the judgments appearing in this official Estimate were shaped by pressure from the "Team B."

4. There is no truth to such allegations. The judgments in the attached Estimate are the best that can be made on the basis of the analysis of the available evidence.

5. Although these leaks may appear to discredit what I continue to regard as a worthwhile experiment, they have not diminished the integrity of the Estimate itself, nor the integrity of the Intelligence Community.

George Bush

Attachment

~~SECRET~~

THE DIRECTOR OF CENTRAL INTELLIGENCE

WASHINGTON, D. C. 20505

National Intelligence Officers

3 March 1977

MEMORANDUM FOR: Holders of NIE 11-3/8-76

SUBJECT: Errata Sheet for Volume 1, Key Judgments and Summary

REFERENCE: TCS 889121-76/1, SOVIET FORCES FOR INTERCONTINENTAL CONFLICT THROUGH THE MID-1980s, dated 21 December 1976

1. The following pen-and-ink corrections should be made in Volume 1 of NIE 11-3/8-76, "Soviet Forces for Intercontinental Conflict Through the Mid-1980s," dated 21 December 1976:

Page 36, Figure 10, Soviet Long-Range and Intermediate-Range Bombers: for Bison B/C Bomber (line 3 of the tabulation), under "One Refueling," change 3,950 radius to read "4,150" and 7,300 range to read "7,900."

Page 61, Table V, Summary Comparison of Force Projections: under "Force Levels in 1981," change 2,755-2,840 Air Defense Interceptors (line 8) for both Force 1 and Force 2 to read "2,755-2,820"; under "Force Levels in 1986," change 2,795-3,030 Air Defense Interceptors (line 8) for Forces 1 and 2 to read "2,795-3,025"; also under "Force Levels in 1986," change 1,950 and 2,930 MIRVed Missiles (line 4) for Forces 2 and 4 to read "2,010" and "2,954," respectively.

2. Addressees are also advised that plotting errors were made in the charts on page 63, Figure 20, Quantitative Comparisons of Forces for Intercontinental Attack. Because of these errors, the projections for Force 3 beyond 1982 are incorrect in the last five charts, although the end points for 1986 remain approximately the same in each case. These errors do not affect any of the judgments made in the text. The reader should refer to Volume 2, Figure V-1, for a correct version of this graphic.

Richard Lehman
Deputy to the DCI for National Intelligence

NIE 11-3/8-76

SOVIET FORCES FOR INTERCONTINENTAL CONFLICT THROUGH THE MID-1980s

THIS ESTIMATE IS ISSUED BY THE DIRECTOR OF CENTRAL INTELLIGENCE.

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

The Deputy Assistant Administrator for National Security, Energy Research and Development Administration

Abstaining:

The Special Assistant to the Secretary for National Security, Department of the Treasury

The Assistant Director, Federal Bureau of Investigation

Also Participating:

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

The Director of Naval Intelligence, Department of the Navy

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

FOREWORD

This Estimate considers Soviet offensive and defensive forces for intercontinental nuclear conflict through the mid-1980s. It draws upon the findings of other recent Intelligence Community assessments which consider in greater detail some of the issues addressed herein, for example:

NIO IIM 76-010J (TCS 889070-76), Prospects for Improvement in Soviet Low-Altitude Air Defense, dated March 1976

NIO IIM 76-012J (TCS 889068-76), Soviet Approaches to Defense Against Ballistic Missile Submarines and Prospects for Success, dated March 1976

WSSIC-TCS 890561/76, Low Altitude Air Defense Capabilities of Soviet Nuclear-Equipped SAMs, dated August 1976

JAEIC 1-7 (TCS 4058/76), The Soviet Atomic Energy Program, dated October 1976

STIC-76-002JX (TCS 3695/76), Soviet R&D Related to Particle Beam Weapons, dated October 1976

NIO IIM 76-041J (TCS 889110-76), Soviet Civil Defense, dated November 1976

WSSIC-TCS 891087-76, Soviet ICBM Silo Hardness Estimates, dated November 1976

NIO IIM TCS 889114-76, Prospects for Soviet Interference with US Space Systems in Crisis or Conflict (in preparation)

The Estimate does not consider all the systems which the Soviets regard as strategic. It does not cover in detail all the Soviet medium- and intermediate-range nuclear delivery systems, which are intended mainly for operations on the Eurasian periphery. Nor does the Estimate treat Soviet objectives and policies governing the use of all elements of national power toward the attainment of overall strategic goals. For

information on these subjects, the reader is referred to the following issuances of the Intelligence Community:

NIE 11-4-77, Soviet Strategic Objectives (in preparation)

NIE 11-14-75, Warsaw Pact Forces Opposite NATO, dated 4 September 1975

NIE 11-10-76, Soviet Military Policy in the Third World, dated 21 October 1976

NIE 11-15-74, Soviet Naval Policy and Programs, dated 23 December 1974

NIO IIM TCS 889118-76, Soviet Strategic Forces for Peripheral Attack (in preparation)

NIO IIM 76-039J (TCS 889106-76), Trends in Soviet Military Programs, dated October 1976

In estimating Soviet objectives, policies, and programs, we have assumed that future United States forces will be as described in the Department of Defense, Five-Year Defense Program (FYDP), October 1976, which includes US programs for such strategic systems as the Trident ballistic missile submarine, the B-1 bomber, the improved Minuteman III missile, the M-X ICBM, and advanced cruise missiles. We have made this assumption in the belief that US programed forces probably comprise the minimum future US inventory of forces for intercontinental conflict against which the Soviets plan and evaluate their own programs. Our forecast of the strategic environment does not attempt to weigh the implications of increases or decreases in programed levels of US effort or of alternative US decisions about specific weapon systems.

In order to judge the future overall effectiveness of all Soviet forces for intercontinental conflict—defensive as well as offensive—a detailed net assessment is required which pays particular attention to operational factors and to the way in which the full range of US and Soviet forces and capabilities might interact. We have not made such a net assessment.

The findings of this NIE are contained in three volumes. Volume I presents the key judgments and the summary of the Estimate. The full Estimate is in Volume II. Supplementary annexes and tables of future force projections are contained in Volume III.

CONTENTS

KEY JUDGMENTS

CURRENT DEVELOPMENTS IN SOVIET PROGRAMS

In offensive forces for intercontinental conflict, the Soviets are continuing their long-term effort to acquire more powerful, flexible, and survivable weapon systems.

— New intercontinental ballistic missiles (ICBMs) are being deployed at a moderate pace. About 200 now are operational, most of them with multiple independently targetable reentry vehicles (MIRVs), and there will probably be more than 900 in 1980. These missiles have better accuracy, greater throw weight, and more survivable silos than their predecessors. Deployment of a land-mobile ICBM is apparently still deferred.

— Several units of a new version of the Soviets' latest class of nuclear-powered ballistic missile submarine (SSBN) have been launched. They will probably carry the first Soviet submarine-launched ballistic missile (SLBM) to be equipped with MIRVs. A new, large ballistic missile submarine may be under construction. If so, it could be operational by about 1980.

— Improvements in ICBMs and SLBMs will not stop with the current missiles. The Soviets are developing a number of new and modified ICBMs and SLBMs, [ ] These systems will incorporate qualitative improvements, probably including still better accuracy.

— The Backfire bomber continues to be deployed. There are uncertainties and differences of view within the Intelligence Community about the extent of the Backfire's capability for intercontinental operations and about Soviet intentions to employ it in this role. We have additional evidence this year pointing to Soviet development of a new long-range bomber and a new aerial tanker.

The Soviets are also pressing ahead with efforts to improve their strategic defenses.

— Large new radars under construction in the northwestern USSR will improve and extend Soviet ballistic missile early warning capabilities when they become operational in about 1979. There are uncertainties and differences of view in the Intelligence Community about whether these radars will also be given capabilities to direct and manage antiballistic missile (ABM) defenses. The Soviets continue their research and development on ABM systems.

— A number of programs are aimed at remedying the critical deficiencies in Soviet defenses against low-altitude air attack. The Soviets have been deploying data-handling systems and are introducing an improved fighter into strategic air defense forces. New air defense radars, a new low-altitude surface-to-air missile (SAM) system, and a new fighter with better low-altitude intercept capabilities are under development and could be operational by about 1980.

— Soviet forces for antisubmarine warfare (ASW) are improving but are not now an effective counter to US SSBNs. The Soviets continue to investigate both acoustic and nonacoustic techniques in an effort to solve their fundamental problem of detecting and tracking SSBNs at sea.

— The Soviets have this year demonstrated a capability to attack satellites at low to medium altitudes in a more timely manner.

— Soviet civil defense preparations are steadily improving. This program is more extensive and better developed than we had previously understood. The Soviets also continue to harden facilities associated with strategic forces.

— The Soviets are conducting research and development which could lead to directed-energy weapons having important applications in strategic defense. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that this effort includes a large and well-funded program to develop a charged-particle-beam weapon.*

SOVIET OBJECTIVES AND EXPECTATIONS

The growth of Soviet capabilities for intercontinental conflict over the past decade has provided the USSR with a powerful deterrent and

has contributed to its recognition as a superpower equal to the US. An assessment of the perceptions and objectives underlying present Soviet programs is a matter of interpretation and considerable uncertainty. Much that we observe can be attributed to a combination of defensive prudence, superpower competitiveness, worst-case assumptions about US capabilities, a military doctrine which stresses war-fighting capabilities, and a variety of internal political and institutional factors. But the continuing persistence and vigor of Soviet programs give rise to the question of whether the Soviet leaders now hold as an operative, practical objective the achievement of clear strategic superiority over the US during the period of this Estimate.

The Soviets' belief in the eventual supremacy of their system is strong. They see their forces for intercontinental conflict as contributing to their ultimate goal of achieving a dominant position over the West, particularly the United States, in terms of political, economic, social, and military strength. Having come this far in strategic arms competition with the US, the Soviets may be optimistic about their long-term prospects in this competition. But they cannot be certain about future US behavior or about their own future strategic capabilities relative to those of the US. They have seen US technology and industry mobilized to great effect in the past and are concerned about current US force modernization programs. Thus, they probably cannot today set practical policy objectives in terms of some specific relationship between their intercontinental capabilities and those of the US, to be achieved in a specific period of time.

We do not believe that the Soviet leaders presently count on a combination of actions by the USSR and lack of action by the US which would give them, in the next 10 years, a capability for intercontinental conflict so effective that the USSR could devastate the US while preventing the US from devastating the USSR. Soviet expectations, however, clearly reach well beyond a capability that merely contines to be sufficient to deter an all-out attack.

In our view, the Soviets are striving to achieve war-fighting and war-survival capabilities which would leave the USSR in a better position than the US if war occurred. The Soviets also aim for intercontinental forces which have visible and therefore politically useful advantages over the US. They hope that their capabilities for intercontinental conflict will give them more latitude than they have had in the past for the vigorous pursuit of foreign policy objectives, and that these capabilities will discourage the US and others from using force or the threat of force to influence Soviet actions.

The Director, Bureau of Intelligence and Research, Department of State, agrees with the statement above on the ultimate Soviet goal but believes the Soviet leaders have more modest expectations for their strategic programs. He would emphasize that the Soviet leaders

- *know that the US need not concede the USSR any meaningful strategic advantage and do not expect the US to do so, whatever their assessment of present US resolve might be; and*
- *do not entertain, as a practical objective in the foreseeable future, the achievement of what could reasonably be characterized as a "war-winning" or "war-survival" posture.*

Rather, in his view, Soviet strategic weapon programs are pragmatic in nature and are guided by more proximate foreign policy goals. He sees the Soviets undertaking vigorous strategic force improvements with a view to achieving incremental advantages where possible but, above all, to avoid falling behind the US in a strategic environment increasingly characterized by qualitative competition—and thus losing the position of rough equivalence with the US which they have achieved in recent years through great effort. Moreover, he believes it unlikely that the Soviet leaders anticipate any improvement in the USSR's strategic situation vis-a-vis the US over the next 10 years which would substantially influence their behavior—especially their inclination for risk taking—during periods of crisis or confrontation with the West.

The Defense Intelligence Agency, the Energy Research and Development Administration, 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 the Soviets do, in fact, see as attainable their objective of achieving the capability to wage an intercontinental nuclear war, should such a war occur, and survive it with resources sufficient to dominate the postwar period. Further, these agencies believe that this objective serves as a practical guideline for Soviet strategic force development even though the Soviets have not necessarily set a specific date for its achievement. In their view:

- *Soviet programs for improving forces for intercontinental conflict (including those for strategic hardening and civil defense), their extensive research on advanced weapons technology, and their resource allocation priorities are in keeping with this objective and illustrate its practical effect.*

— *In combination with other military and nonmilitary developments, the buildup of intercontinental nuclear capabilities is integral to a programed Soviet effort to achieve the ultimate goal of a dominant position in the world.*

— *While it cannot be said with confidence when the Soviets believe they will achieve this goal, they expect to move closer to it over the next 10 years and, as a result, to be able increasingly to deter US initiatives and to inhibit US opposition to Soviet initiatives.*

The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that this Estimate understates, as have previous NIEs, the Soviet drive for strategic superiority. The lines of Soviet strategic policy, objectives, and doctrines enunciated in a large body of authoritative literature are viewed within the context of differing US perceptions and aspirations rather than in the larger context of Soviet history, ideology, and military investment.

The Soviets have made great strides toward achieving general military superiority over all perceived constellations of enemies and for attaining a war-winning capability at all levels of conflict. War survival and civil defense efforts to date have already placed the US in a position of serious strategic disadvantage by neutralizing much of its capability to destroy or damage effectively those elements of the Soviet leadership, command, military, and urban-industrial structure required for maintaining a credible deterrent balance. A realistic calculation of nuclear fatality exchange ratios in a war today would probably show the USSR emerging with considerably more than a twenty-to-one advantage.

There now is a substantial basis for judging that the Soviets' negotiations at SALT and their detente, economic, and arms-control diplomacy have thus far been exploited by them for strategic advantage: by slowing down US defense investment and by permitting easy access to high US technology. The net effect of improved Soviet and East European access to loans, goods, and services from many Western countries is that inefficient sectors of the Soviet economy are in effect being subsidized, thus encouraging uninterrupted investment in strategic forces. A degree of hostage control is being acquired over elements of the West European banking structure by Moscow and its East European allies—in the form of extensive loans (now approaching allowable limits for many banks)—which has serious economic warfare implications. Additionally, the extraordinary advances being made by the Soviets in ASW and high-energy particle-beam technology could

place the Free World's offensive ballistic missile capability at serious risk well before the terminal date of this Estimate.

While the present NIE is much improved over some of its predecessor documents, it falls far short of grasping the essential realities of Soviet conflict purpose and evolving capability, the latter clearly constituting the most extensive peacetime war preparations in recorded history—a situation not unlike that of the mid-1930s, when the entire Free World failed to appreciate the true nature of Nazi Germany's readily discernible preparations for war and conflict. The dissenting judgments of the past five years regarding Soviet defense expenditures, Soviet strategic objectives and policy, ICBM refire capability, predictions in 1973 that some 10 to 15 major new or modified offensive ballistic missile systems were under development, Soviet war-survival and civil-defense measures, Backfire bomber capability, and directed-energy weapons development have often served as the principal means of alerting the national leadership to trends which now are clearly evidenced. Failure now to anticipate the implications of such trends will impact adversely on lead times essential for the alteration of policy and redirection of technology programs.

Such lead-time impacts are illustrated dramatically in judgments of the late 1960s and 1970 which implied that Soviet goals entailed no more than strategic parity and did not involve commitment to a major civil defense program. The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the former was the basis for US arms control policy in 1969, while the latter influenced the ABM Treaty of 1972. He is concerned that the present perceptions of Soviet goals and evolving capability provide an inadequate basis for the pursuit of further negotiations at SALT or the reformulation of national defense and foreign security policy. At issue is whether present intelligence perceptions provide an adequate basis for averting global conflict in the decades ahead.

TRENDS IN FORCES AND CAPABILITIES

Varying degrees of uncertainty characterize our estimates of Soviet strategic programs and of the quantity and quality of Soviet forces. Forecasts for the next few years can be made with relatively high confidence on the basis of direct evidence. For the period of primary concern—five to 10 years hence—estimates of system characteristics and force composition must be based on very limited evidence and indirect considerations. In this connection, it should be noted that uncertainties about the quality of strategic weapons and forces—at

present and particularly for the future—are in some areas large enough to affect judgments about important aspects of the strategic balance.

Our forecast for the next 10 years assumes that the ABM Treaty remains in effect and that US forces will evolve as currently programed. We employ commonly used measures of force capability but cannot take full account of operational factors which would affect the actual outcome of an intercontinental conflict. Examples of such factors are the efficiency and vulnerability of US and Soviet command and control systems, and the effectiveness of US air attacks and Soviet air defenses in an electronic warfare environment.

Offensive Capabilities

The bulk of Soviet intercontinental striking power will remain in ICBM forces. The striking power and survivability of SLBM forces will continue to grow. A relatively small intercontinental bomber force will be retained to complement the ballistic missile forces.

— In the early 1980s, the number of Soviet missile reentry vehicles (RVs) will probably approximate and possibly exceed that of the US. The large Soviet advantage in missile throw weight will be much greater than it is today, and the Soviet advantage in total equivalent megatonnage (EMT) will be somewhat greater. Soviet ICBMs will pose an increased threat to US missile silos; this threat could become a major one in the next year or so if Soviet ICBM capabilities are at the more threatening but highly unlikely extremes of our range of uncertainty. Soviet silo-based ICBMs, however, will not be very much more vulnerable than at present. Despite the probability that the US will continue to have more varied offensive forces with a larger total number of weapons, increasing Soviet missile throw weight and numbers of RVs, and the increased threat to US silo-based ICBMs, will add to perceptions of Soviet strategic power.

— After the early 1980s, the raw power of Soviet offensive forces will continue to increase. Soviet ICBMs will pose a major threat to US missile silos, although the Soviets themselves would remain uncertain about the results of countersilo attacks. If US forces develop as now programed and Soviet forces continue to develop along present lines, some of the earlier Soviet gains in relative offensive capabilities will be eroded. With the deployment of new US systems, Soviet forces would be likely to fall behind in numbers of missile RVs and farther behind in total weapons. In any event, the chances that the Soviets could

achieve a large lead in missile RVs would be reduced. Their advantage in total EMT would be likely to drop back to about today's level, but their advantage in missile throw weight would remain very large. The Soviets could judge that their own silo-based missile forces had become very vulnerable.

In the next few years, SLBMs will become a larger percentage of the total Soviet ICBM and SLBM force, thus increasing the proportion of launchers which can achieve better survivability through mobility. Although the Soviets have evidently deferred deployment of a land-mobile ICBM, they will probably continue R&D on such systems and might deploy one to counter a perceived danger to their silo-based ICBMs. A land-mobile intermediate-range ballistic missile (IRBM) now about to be deployed will be difficult for US intelligence to distinguish from a similar land-mobile ICBM and might be convertible to an ICBM fairly rapidly.

The Soviets could at any time increase the threat to US bombers on alert by deploying SSBNs close to US coastlines to reduce the potential warning times available to bomber bases. In deciding whether to rely on SLBMs for this purpose, the Soviets would have to consider US ASW capabilities, US options to reduce the vulnerability of existing bombers, and the US B-1 program. We believe the Soviets would conclude that, throughout the next 10 years, most US alert bombers would survive a surprise SLBM attack.

We believe the Soviets have no compelling military reasons to deploy long-range cruise missile systems in the present strategic environment. They evidently believe the US has a technological advantage in such systems, but if they cannot prevent US deployment through SALT, they may follow suit. They could modify any one of several existing air- and sea-launched cruise missiles for long-range use or could develop large, new ones for deployment by the end of the 1970s. Small, long-range cruise missiles accurate enough to destroy hard targets probably could not be flight-tested before the early to mid-1980s.

Soviet intercontinental striking power would be increased if Backfire bombers were employed against the US. The Backfire is well suited to operations against land and sea targets on the Eurasian periphery using a variety of flight profiles, and it has some capability for operations against the US on high-altitude subsonic profiles. *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, estimate that the Backfire has significant capabilities for operations against the US without air-to-*

air refueling. The Central Intelligence Agency and the Department of State estimate that it has marginal capabilities against the US under the same conditions. With air-to-air refueling, the Backfire would have considerably increased capability for intercontinental operations, even in the case of the lowest performance estimate. In addition, the Backfire could be modified in various ways to improve its range.

We believe it is likely that Backfires will continue to be assigned to theater and naval missions and—with the exception of DIA, ERDA, Army, and Air Force—we believe it is correspondingly unlikely that they will be assigned to intercontinental missions. If the Soviets decided to assign any substantial number of Backfires to missions against the US, they almost certainly would upgrade the performance of the aircraft or deploy a force of compatible new tankers for their support. *The Defense Intelligence Agency, the Energy Research and Development Administration, the Assistant Chief of Staff for Intelligence, Department of the Army, and the Assitant Chief of Staff, Intelligence, Department of the Air Force, believe the available evidence on Backfire employment indicates only that peripheral and naval attack are its current primary missions. Since the Soviets could use the Backfire's intercontinental capabilities at their initiative, these agencies believe that the Backfire clearly poses a threat to the US, even without the deployment of a compatible tanker force or the upgrading of the aircraft's performance. The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that a portion of the Backfire force will have missions against the contiguous US.*

Defensive Capabilities

The Soviets are continuing to improve their ballistic missile detection and tracking systems to close gaps in existing coverage, to make warning information more precise, and to provide additional warning time. We believe that two large phased-array radars now under construction in the northern USSR will be used for ballistic missile warning. Radars such as these, however, could also be given the capability for ABM battle management—that is, to provide tracking and prediction data to support ABM defenses. *The Central Intelligence Agency and the Department of State, basing their judgment on analysis of the individual characteristics, locations, and orientation of these two radars and on the status of the Soviet ABM research and development program, believe that both radars are intended only for ballistic missile early warning. 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, however, believe*

the available evidence regarding these radars does not permit a confident judgment about whether they may also be intended for ABM battle management. Concern about the possible use of the large phased-array radars for ABM battle management would increase if the Soviets started to construct more such radars in locations appropriate for ABM support and if the Soviets pursued ABM research and development vigorously. *The Department of State believes that the extent to which construction of additional such radars would be cause for concern would also depend on the assessment at the time of the likelihood of Soviet abrogation of the ABM Treaty. This assessment, in turn, would depend in large part on the extent to which the circumstances which led the Soviets to negotiate this treaty—and thus avoid an ABM competition with the US—had changed. The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes the two radars alone might be able to support significant deployment of ABM defenses in the western and central USSR.*

An ABM system which the Soviets have been developing since 1967 is more rapidly deployable than the current system at Moscow. The pace of flight testing has been slow over the past two years, but recently the interceptor missile was fired against a live target for the first time. With this interceptor, the system appears to have at best a limited capability. Recent construction at the test range suggests development of a high-acceleration interceptor, which could greatly enhance the system's capability. If development proceeds vigorously, the system could be ready for deployment in one to three years or so, depending on whether it includes the high-acceleration interceptor. This ABM research and development activity probably is a hedge against uncertainties about the future strategic situation. We believe it is highly unlikely that the Soviets now plan to deploy ABM defenses beyond Moscow.

The USSR will probably not have significantly better defenses against low-altitude air attack before 1980. For the period beyond that time, we estimate that:

— For defense against low-altitude bombers, improvements in Soviet air defenses will have the potential for overcoming many existing technical deficiencies by the mid-1980s. It might be possible for the Soviets to overcome these deficiencies somewhat earlier with a very high level of effort. If Soviet deployments are at the rates we think probable, bomber penetration of Soviet defenses would be considerably more difficult in the mid-1980s than it would be today.

— For defense against short-range attack missiles (SRAMs) in flight, one Soviet SAM system now under development might have some capability. While there are uncertainties about the characteristics of this system, we believe that, if it has any capability against SRAMs, engagements would be at short ranges with low reliability. We believe that the Soviets will not have an effective defense against the SRAM by the mid-1980s.

— For defense against low-altitude cruise missiles in flight, current Soviet low-altitude SAMs and future air defense systems would have some capabilities. Their effectiveness will depend on their specific characteristics, their numbers, and their deployment patterns. We are uncertain about the degree of protection that could be achieved against low-altitude cruise missiles in the mid-1980s, but we believe it would be low. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes, however, that the Soviet SAM system under development might have capabilities permitting deployment to provide some limited terminal defense against cruise missiles for approximately half the estimated target groupings in the USSR in the mid-1980s.*

The combination of US air attack forces will continue to be more difficult to defend against than any one of its elements alone. The air defense problems which the Soviets now face would be complicated even further by US deployment of advanced bombers and cruise missiles. US penetration tactics and the degradation of defenses by ballistic missile strikes would continue to weigh heavily against the overall effectiveness of Soviet air defenses. We cannot, however, assess the full effects of these and other operational factors.

Recent developments point to modest but steady improvement in Soviet ASW systems and continued growth in their numbers. The future effectiveness of Soviet defenses against SSBNs on patrol will depend in large part on how successful the Soviets are in detecting and tracking SSBNs at sea. Improved US SSBNs and greatly expanded SSBN operating areas will further compound the Soviet problem. From our understanding of the technologies involved and of the R&D programs in the US and the USSR, we believe that the Soviets have little potential for overcoming SSBN detection and tracking problems in broad ocean areas. This judgment must be qualified, however, because of gaps in our knowledge of some technical aspects of potential sensor developments. On the basis of evidence now available, we believe that Soviet capabilities against SSBNs in confined waters will improve during the period of this Estimate, but that Soviet ASW capabilities

will fall short of being able to prevent most US SSBNs on station from launching their missiles.

Soviet civil defense preparations could have a significant impact on both Soviet and US assessments of the likely outcome of a nuclear conflict. The Soviets probably believe that civil defense measures contribute to giving the USSR a chance to survive as a national entity and to be in a better position than the US after a nuclear exchange. The priorities of the Soviet program evidently are: first, to assure the continuity of government by protecting the leadership; second, to provide for the continuity of important economic functions and the protection of essential workers; and, last, to protect the nonessential part of the population.

There are gaps in our knowledge of the civil defense program. Our tentative judgment is that, under optimum conditions which included an adequate period of warning and evacuation, Soviet civil defenses would assure survival of a large percentage of the leadership, reduce urban casualties to a small percentage, and give the Soviets a good chance of sustaining the population with essential supplies. With minimal warning, some key leaders would probably survive, but the urban population would suffer high casualties and the chances of adequately supplying survivors would be poor. The Soviets probably do not have a highly optimistic view about the effectiveness of their present civil defenses. Even under the most favorable conditions, they probably would expect a breakdown of the economy and, under the worst conditions, catastrophic human casualties as well.

Our evidence of Soviet civil defense preparation indicates a continuing, steady program rather than a crash effort. Because of the gaps in our knowledge, however, we cannot make a confident estimate of its pace and future effectiveness.

The Department of State believes that the Soviet civil defense program is seen by the Soviet leadership primarily as a prudent hedge against the possibility of attack by a nuclear-armed adversary. The Department believes that these Soviet civil defense efforts will not materially increase Soviet willingness to risk a nuclear exchange and will not undermine the deterrent value of US strategic attack forces. It further believes that, at the present time, the scope of the civil defense program does not indicate Soviet strategic objectives beyond maintenance of rough equivalence with the US.

The Defense Intelligence Agency, the Energy Research and Development Administration, 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 the impact of Soviet war-survival efforts upon the US-USSR strategic balance is greater than can be inferred from the foregoing discussion of the Soviet civil defense program. In their view, the Soviets see their civil and passive defense program as an essential element in the achievement of the capability to wage intercontinental nuclear war, should one occur, and survive with resources sufficient to dominate the postwar period. These agencies believe that this program will have a definite and increasing impact on US-USSR strategic balance assessments in the years ahead. Further, they believe the Soviets will attempt to enhance their influence, particularly in the Third World and Europe, by capitalizing on real and perceived improvements in their war-waging capabilities. The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that the strategic balance already has been altered in a major way by civil defense and other measures the Soviets have carried out thus far.

OTHER CONSIDERATIONS

Some of the Soviets' present programs reflect concerns that US programs would affect their own strategic position adversely. Examples are ICBM silo hardening and the deployment of long-range SLBMs. We are uncertain about the implications of others. The mobile IRBM and ICBM programs, for example, would enable the Soviets to place more of their missiles on launchers less vulnerable to attack. By their continuing efforts to improve ABM technology, the Soviets could put themselves in a position to deploy additional ABM defenses if the ABM Treaty were abrogated. Such programs probably represent Soviet hedges against future US threats as well as deterrents to US withdrawal from strategic arms limitation agreements. They could also represent efforts to give the Soviet leaders the future option to break out of such limitations if they concluded that the situation warranted.

A SALT TWO agreement based on the Vladivostok accord would confront the Soviets with difficult choices and trade-offs between new and existing systems within an aggregate ceiling on delivery vehicles. It would limit the more extreme possibilities for growth in Soviet missile throw weight and number of missile RVs. In the absence of a SALT TWO agreement, the Soviets would probably increase their intercontinental delivery forces moderately; it is possible that they would increase them considerably. They would not, however, expect quantitative competition alone to alter the strategic balance significantly. They have evidently come to recognize that the strategic environment in the

1980s will be most significantly affected by the quality of the forces deployed by the two sides. Their progress in this area will be largely independent of SALT TWO.

Soviet R&D programs are consistent with a desire both to avoid slipping behind the US and to gain the lead in the technology of strategic offensive and defensive forces, particularly if US programs falter. We continue to examine closely Soviet R&D programs and prospects for major advances that might seriously erode US deterrent capabilities. We give particular attention to R&D applicable to directed-energy weapons for use in air and missile defense and to the detection and tracking of 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 such technological advances in the next 10 years. But Soviet efforts in these fields merit very close watching.

The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the Soviets are significantly ahead of the West in the technologies applicable to particle-beam-weapons research, and that the Soviets could be operating a prototype charged-particle-beam system by 1985.

PROSPECTS FOR THE STRATEGIC ENVIRONMENT

The long time period of this Estimate and the gaps in our understanding and information about aspects of Soviet capabilities require that judgments about the future strategic environment be made with varying degrees of certainty. We conclude that:

— The strength of Soviet offensive forces for intercontinental attack will continue to increase. It may be at its greatest relative to US programed forces in the early 1980s. In subsequent years, some of the earlier Soviet gains will be eroded, assuming that US forces develop as now programed and Soviet forces continue to develop along present lines.

— Soviet ICBMs will pose an increasing threat to US missile silos, but Soviet forces will almost certainly remain unable to prevent most US alert bombers and SLBMs at sea from being launched. Soviet defenses will almost certainly remain penetrable by missile and bomber weapons.

— Soviet forces will be able to inflict massive damage on the US in either initial or retaliatory attacks. It is extremely unlikely that Soviet forces will be able to prevent massive damage to the USSR from initial or retaliatory US attacks.

— There are critical uncertainties, however, about the degree to which the Soviets in the 1980s would be able to reduce human casualties and limit damage to those functions and facilities which the leadership would consider essential to the survival of their society.

SUMMARY ESTIMATE

I. SOVIET POLICY FOR INTERCONTINENTAL FORCES

1. The Soviets are continuing to press forward with a broad and vigorous program for improving their capabilities for intercontinental conflict. Soviet programs during the past decade have enabled the USSR to surpass the US in a growing number of quantitative measures, although the United States has maintained many qualitative advantages in such capabilities (see Figure 1). Current Soviet programs include:

- **In offensive forces,** the deployment of a new generation of ICBMs with multiple independently targetable reentry vehicles (MIRVs), greater throw weight, better accuracy, and more survivable silos; the production of a third version of the D-class SSBN, probably to carry a new MIRVed missile; the development of additional new or modified ICBM and SLBM systems; the development of a new, large SSBN, a new heavy bomber, and possibly an aerial tanker; and continued deployment of the Backfire bomber, the range and missions of which remain controversial.

- **In defensive forces,** continuing expansion of Soviet capabilities for obtaining early warning of missile attack; improvement in capabilities against air attack, especially low-altitude attack; continuing search for ASW capabilities to counter the US SSBN force; improvement of civil defense capabilities and other passive defense measures; and further developmental work on ABM systems and an antisatellite system.

There are more uncertainties and differences of view this year about the Soviet perceptions and objectives which underlie these developments than there were last year.

A. Factors Influencing Soviet Forces for Intercontinental Conflict

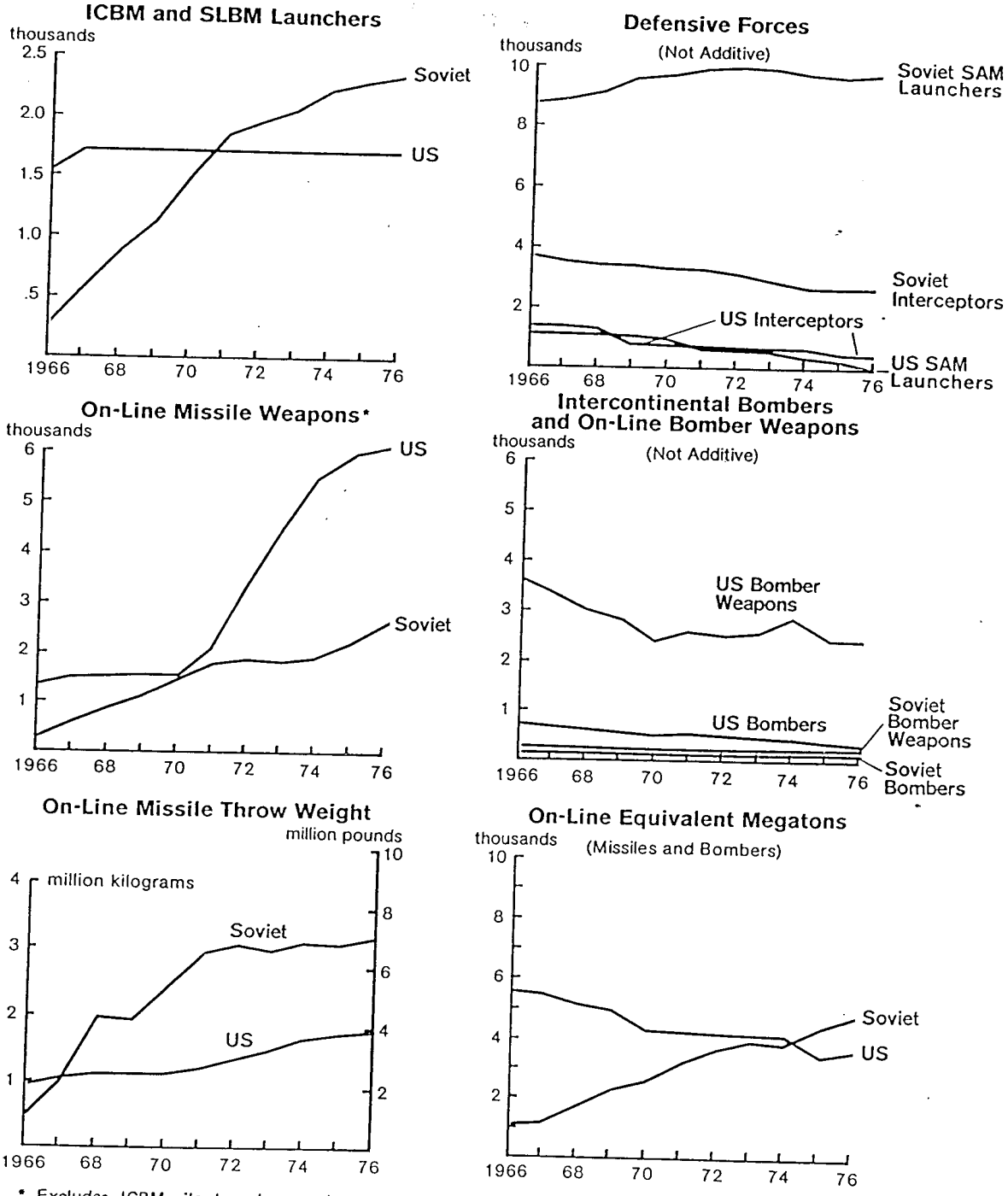
The Utility of Forces

2. Soviet forces for intercontinental conflict have political as well as military utility. The Soviets see these forces, along with other military capabilities, as serving their long-term aim of achieving a dominant position over the West. At present, they believe that the growth of their capabilities for intercontinental conflict, along with political, economic, and other military developments, have helped create a new "correlation of forces" in the world that is more favorable to the USSR. ("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.) In the Soviet view, the present correlation requires Western policymakers to accord the USSR the status of a superpower equal to the US, and to give greater consideration to the USSR now than in the past when dealing with various world situations. In a confrontation, the Soviets expect their strategic power to enhance the prospect of favorable outcomes, while reducing the likelihood of nuclear war. They would, however, expect the resolution of a local crisis or conflict to rest as well on factors other than the strategic weapons balance, such as the comparative strengths and dispositions of general purpose forces. [1]

[1] Under the conditions of local crisis or conflict described above, the readiness of US theater forces and of reserves based in the contiguous United States becomes increasingly important. Since the mid-1960s, the Soviets have carried out a major expansion and renovation of their theater forces. Overall, the changes of the past decade have not only expanded the size of Soviet forces but have also made them more balanced and operationally flexible, with improved capabilities for both nuclear and nonnuclear warfare. See NIE 11-14-75 for a detailed discussion of the momentum of the Soviet drive to maintain superiority of theater forces in Europe.

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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3. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that heavy-handed Soviet support for clients in the Middle East, Southeast Asia, and Angola since the attainment of strategic superiority attests to the Soviets' growing confidence and to the political leverage which they seek from their forces for intercontinental conflict. He further believes that the sizable asymmetry of the current strategic nuclear relationship between the US and the USSR resulting from the combination of strategic offensive and defensive forces being developed and deployed by the Soviets, along with massive war-survival preparations, should allow the Soviets a growing ability to coerce at all levels of confrontation—short of and including nuclear.*

4. The available open and classified Soviet literature indicates that the Soviets are committed to improving their capabilities for waging nuclear war. This commitment reflects a leadership consensus on the need to assure the survival of the Soviet Union in case of such a war and a military doctrine which holds that a nuclear war could be won. Although the Soviet leaders apparently accept mutual deterrence as a present reality in East-West relations, the US concept of mutual assured destruction has never been doctrinally accepted in the USSR. The Soviets do not see the present correlation of forces as desirable or lasting, or as a condition which would preclude major confrontations between the US and the USSR.

5. Soviet military doctrine calls for capabilities to fight, survive, and win a nuclear war. In the Soviet view, war-fighting capabilities constitute the best deterrent. Thus, Soviet doctrine emphasizes counterforce capabilities and the necessity to destroy an enemy's war-making ability, and also stresses active and passive defense measures to limit damage to the Soviet homeland. The extent of Soviet active and passive defense efforts contrasts sharply with that of the US.

Perceptions of the US

6. Both open and clandestinely acquired Soviet writings reflect high respect for the economic, technical, and industrial prowess of the United States. Although the Soviets continue to believe that problems in the West represent another phase in the steady retreat of capitalism, Soviet commentators have viewed the recent US recession as essentially cyclical rather than the beginning of a final crisis of capitalism. The Soviets probably assume that US strength and resiliency will permit continued improvement in US strategic capabilities.

7. Some trends in US policies over the past year or so probably fueled Soviet hopes that the US was weakening in its resolve to remain a vigorous strategic and political competitor. The Soviets probably saw events in Angola, for example, as an indication of US reluctance to confront Soviet influence more directly in some parts of the world. This perception may have made the Soviets feel bolder about involvement in areas of low risk to themselves or of marginal concern to the US. On the other hand, in the atmosphere of cooler relations between the superpowers following the war in Angola and the Conference on Security and Cooperation in Europe (CSCE), the Soviets have witnessed a closer dialogue between the US and its allies, a greater willingness by Congress to vote for defense funding, and a more assertive US attitude against further expansion of Soviet influence. These developments are probably perceived by Soviet leaders as elements of a stiffened US policy toward the USSR. Since the US election, key Soviet leaders have indicated that they expect no important shift in US defense policy under the new administration. They have expressed guarded optimism about the future of detente and SALT. *The Defense Intelligence Agency, the Energy Research and Development Administration, 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 this paragraph overstates Soviet concern about US willingness to adopt a more assertive attitude toward the USSR's efforts to enhance its influence.*

Attitudes Toward Detente and SALT

8. Detente for the Soviets provides for limited spheres of cooperation and relaxation of tensions within a larger context of continued competition. In its broadest aspect, detente is looked upon as a framework for nurturing changes favorable to Soviet interests, while avoiding direct challenges to the US and its allies that would provoke them into concerted and effective counteraction. For the USSR, detente affords opportunities to reduce Western competitiveness, to constrain US strategic programs, to improve the Soviet economic base, and to acquire militarily

useful Western technologies. At the same time, a highly competitive relationship with the US is assumed, with recurring gains and losses for both sides.

9. The Soviet leaders value SALT for a variety of reasons. The process itself confirms and continually publicizes the USSR as the strategic and political equal of the US, and it has a prominent place in Soviet detente policy. It provides a forum for constraining US strategic arms programs and for influencing US strategic goals and perceptions of the USSR. The ABM Treaty averted a competition in ABM deployment at a time when the Soviets viewed the US as having major advantages in ABM technologies. Implicit in the more recent Vladivostok understanding is Moscow's judgment that the USSR can compete successfully with the US during the next decade in a situation in which the aggregate ceiling on ICBM launchers, SLBM launchers, and limited types of bombers is equal on both sides. The Soviets foresee a vigorous qualitative strategic arms competition with the US in which they will continue to strive to maintain and enhance their relative position.

10. The Soviets' interest in negotiating a SALT TWO treaty has undoubtedly been sustained by ongoing US strategic programs and by concern over the forthcoming expiration of the Interim Agreement on Offensive Arms and mutual review of the ABM Treaty. Even during the period of uncertainty prior to the US elections, the Soviets reaffirmed their interest in securing such an agreement and showed a willingness to move ahead on the technical issues being discussed in Geneva. More recently, Brezhnev has stressed the importance to the USSR of concluding a SALT TWO agreement based on the Vladivostok accord.

11. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the Soviets view SALT as a means through which they can achieve a superior strategic position over the US. He would note that, shortly after the signing of the SALT ONE agreement, the Soviets began unambiguous testing of four new ICBM systems, at least three of which are now being deployed. He would note further that today the Soviets are engaged in a number of development programs for both offensive and defensive strategic weapons which superficially would not be SAL-accountable but which have inherent capabilities to make them so. For example, he believes the SS-X-20 could be fired with a lighter payload to ranges of up to nearly 8,300 km (4,500 nm). In defensive weaponry, he believes the SA-5 long-range SAM may already have been covertly modified to give it an ABM capability.*

12. *In a related area, he notes that, while signing the ABM Treaty—which in effect agreed to keeping the populations of both the USSR and the US hostage to the nuclear threat by leaving them undefended—the Soviets had previously initiated a massive civilian and industrial sheltering program, which has since been accelerated. Thus, he believes that the Soviets viewed their passive defense program as retaining the protective benefits which widespread ABM deployment might have provided, while inducing the US to end its own ABM deployment. Consequently, he considers the ABM Treaty to have been intended by the Soviets as a diplomatic deception.*

13. *In sum, the Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that SALT ONE has had little, if any, constraining impact on programs designed to give the Soviets strategic superiority over the US. Moreover, he believes that the Soviets have programs underway designed to circumvent any strategic arms agreement or treaty which they might agree to sign.*

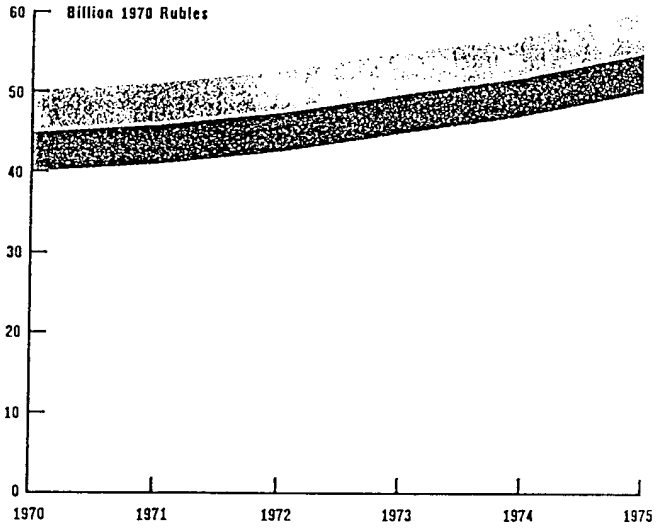
Economic Considerations

14. New evidence and analysis of Soviet defense expenditures indicate that we have underestimated the proportion of GNP the Soviets have devoted to defense and, therefore, that they have been willing to accept a heavier defense burden than we previously thought to be the case. This analysis also indicates that Soviet defense industries are less efficient than formerly believed. It leads the Central Intelligence Agency to estimate that the overall Soviet defense budget absorbs some 11 to 13 percent of the Soviet GNP, as compared with 6 percent for the US. There has been little change, however, in the share of Soviet GNP taken by defense. (See Figure 2 for a graphic summary of the results of the new analysis.) Expenditures for forces for intercontinental conflict have increased sharply in the past few years, largely because of the deployment of new systems for intercontinental attack. *The Defense Intelligence Agency and the Assistant Chief of Staff for Intelli-*

Figure 2

Estimated Soviet Expenditures for Defense, 1970-1975

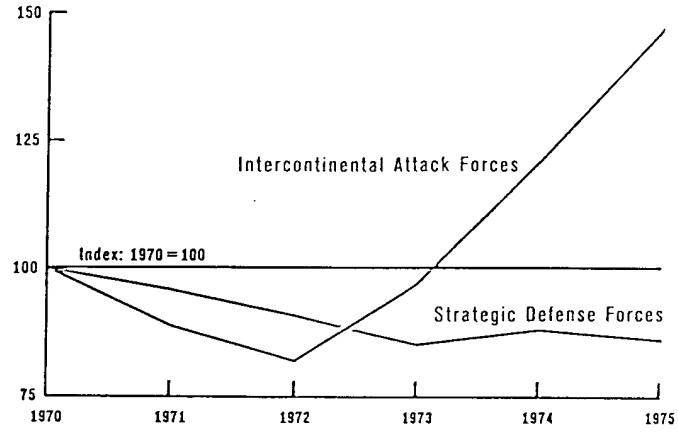
A. Estimated Total Expenditures



Estimate defined as the Soviets might view their defense effort.

Estimate defined for comparison with US accounts.

B. Index of Growth of Estimated Total Expenditures for Procurement and Operation of Intercontinental Attack and Strategic Defense Forces (Calculated in 1970 Rubles)



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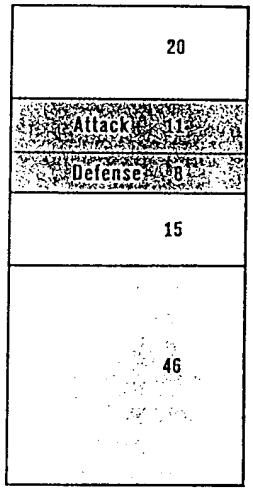
C. Percentage Distribution of Estimated Total Expenditures (Calculated in 1970 Rubles)



Research, Development, Testing, and Evaluation

Forces for Intercontinental Conflict

Command and General Support

General Purpose and Peripheral Attack Forces

The expenditures shown in Charts B and C for forces for intercontinental conflict represent spending on procurement for and operation of these forces, and are derived from our order-of-battle data on deployed forces. Such expenditures accounted for roughly one-fifth of total Soviet defense spending over the 1970-1975 period. Outlays related to forces for intercontinental conflict actually consume a substantially larger share of total Soviet defense outlays, however, for the following reasons:

— Outlays for military research, development, testing, and evaluation (RDT&E)—about 20 percent of total outlays—and for command and general support (C&GS) activities—about 15 percent—clearly impact on forces for intercontinental conflict. CIA believes that the largest share of RDT&E funds is for the development of intercontinental attack and strategic defense systems and that a portion of spending for C&GS certainly is for activities supporting the forces for intercontinental conflict.

— Costs for those naval forces which have an ASW capability are included in the outlays for general-purpose naval forces, although we realize they have in part a mission against SSBNs.

— Expenditures for Backfire aircraft are included with outlays for peripheral attack forces. It should be noted, however, that there are differing views on the capabilities and role of the Backfire (see Chapter II).

— No estimate of the cost of the Soviet civil defense program is available. A community-wide effort currently is underway to develop such an estimate.

gence, Department of the Army, believe that the percentage of Soviet GNP devoted to defense spending could be somewhat higher.

15. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, notes that use over the last decade of undervalued ruble prices has led to unrealistically low estimates of Soviet defense spending. He believes that new Soviet pricing data alone do not provide a sufficient basis for revising estimates of the productivity of Soviet defense industry. He rejects the negative notion regarding Soviet defense industries as "less efficient than formerly believed." He also believes that the extent of the economic burden of the Soviet defense effort is greater than reflected, because of its physical dimension and because of the economic growth rate and the paucity of consumer goods. The principal causes of low estimates, in his judgment, have been the costing methodologies used, failure to account for 10 to 15 major ballistic missile systems known to be under development, and inadequate accounting with respect to a significantly large number of imprecisely defined defense-related activities. He believes that more complete exploitation of data available from recent Soviet emigres, coupled with extensive analysis of pertinent overhead photography, could add several percentage points to the estimate of the portion of Soviet GNP devoted to defense spending.*

16. We see no evidence that economic considerations would inhibit the Soviets from continuing the present pace and magnitude of their strategic programs or from undertaking increases if these were deemed essential by the leadership. Major military programs have been generously supported, even in periods of economic setback, and the military sector continues to command the best of the USSR's scarce high-quality resources. If a SALT TWO agreement is reached, economy-minded leaders may push for more critical scrutiny of strategic programs. Reduction of expenditures would be unlikely, however, given the momentum of strategic programs, the political perceptions and military doctrine which animate them, institutional influences, and the projected availability of resources from a constantly expanding industrial sector.

Commitment to Research and Development

17. The Soviet leadership fosters a large and efficient base of military R&D as a national defense asset. As their design and industrial capabilities have grown over the years, the Soviets have made generous allocations for weapons development, as well as for basic scientific research and industrial technology in support of R&D goals, regardless of shortages or difficulties elsewhere in the economy. The steady increase in the number, variety, and sophistication of R&D organizations and programs over the past decade indicates a major commitment to the continuing development of strategic systems in the USSR. In offensive missiles alone, we have evidence that at least 10 new or modified ICBM and SLBM systems are under development. It is unlikely that all of these will be deployed, but development of several more probably will be undertaken during the period of this Estimate.

18. The Soviets' broad base of technology has given them increased flexibility in weapons development, a better basis for evaluating perceived US threats, and a better capability for evolutionary development of weapon systems using proven technology. In their R&D establishment, the Soviets appear to have organizational and technological problems which may impede their efforts to develop and deploy exotic weapon systems. In recent years, however, they have embarked on energetic and well-funded military R&D programs in fields where significant and perhaps novel weapon systems may emerge, such as in the areas of ASW sensors and directed-energy weapons. In these areas, the Soviets have extensive R&D efforts in progress, even though the potential in terms of practical weapons development is not always clear.

B. Present Objectives for Intercontinental Forces

19. There remains the more fundamental question of the USSR's present objectives for its forces for intercontinental conflict. Our understanding of this subject is far from complete. We base our judgments about the Soviet leaders' objectives for intercontinental forces on a combination of Soviet statements and writings, both openly available and clandestinely acquired, on the past and present development and deployment activities which we observe, and on our appreciation of the challenges, opportunities, and constraints which we believe are operating on the Soviet leadership.

20. In addressing this question, we distinguish between ultimate goals based on pervasive ideological principal and practical objectives which Soviet leaders may expect to achieve in some definable time period. It is a matter of interpretation and considerable uncertainty as to whether the two are becoming one. Much that we observe in their present posture and programs can be attributed to a combination of traditional defensive prudence, 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 continuing persistence and vigor of Soviet strategic programs gives rise to the question of whether the Soviet leaders now hold as an operative, practical objective the achievement of clear strategic superiority over the US within the next decade.

21. Deeply held ideological and doctrinal convictions cause the Soviet leaders to hold 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' belief in the eventual supremacy of their system is strong. Having come this far in strategic arms competition with the US, the Soviets may be optimistic about their long-term prospects, but they cannot be certain about future US behavior or about their own future capabilities relative to those of the US. They have high respect for US technological and industrial strength. They have seen it mobilized to great effect in the past and are concerned that current US force modernization programs could affect their own strategic position adversely. Thus, the Soviet leaders probably cannot today set practical policy objectives in terms of some specific and immutable posture for their intercontinental forces to be achieved in a predetermined period of time. Their programs almost certainly are framed and adjusted to hedge against possible future developments.

22. We do not doubt that if they thought they could achieve it, the Soviets would program now to attain capabilities for intercontinental nuclear conflict so effective that the USSR could devastate the US while preventing the US from devastating the USSR. We do not believe, however, that they presently count on a combination of actions by the USSR and lack of actions by the US which would produce such capabilities during the next 10 years. Soviet expectations, however, clearly reach well beyond a capability for intercontinental conflict that merely continues to be sufficient to deter an all-out attack.

23. In our view, the Soviets are striving to achieve a war-fighting and war-survival posture which would leave the USSR in a better position than the US if war occurred. The Soviets also aim for intercontinental forces which have visible and therefore politically useful advantages over the US. They hope that their capabilities for intercontinental conflict will give them more latitude than they have had in the past for the vigorous pursuit of foreign policy objectives, and that these capabilities will discourage the US and others from using force or the threat of force to influence Soviet actions.

24. *The Director, Bureau of Intelligence and Research, Department of State, agrees with the statement above on the ultimate Soviet goal, but believes the Soviet leaders have more modest expectations for their strategic programs. He would emphasize that the Soviet leaders*

- *know that the US need not concede the USSR any meaningful strategic advantage and do not expect the US to do so, whatever their assessment of present US resolve might be; and*

- *do not entertain, as a practical objective in the foreseeable future, the achievement of what could reasonably be characterized as a "war-winning" or "war-survival" posture.*

Rather, in his view, Soviet strategic weapon programs are pragmatic in nature and are guided by more proximate foreign policy goals. He sees the Soviets undertaking vigorous strategic force improvements with a view to achieving incremental advantages where possible but, above all, to avoid falling behind the US in a strategic environment increasingly characterized by qualitative competition—and thus losing the position of rough equivalence with the US which they have achieved in recent years through great effort. Moreover, he believes it unlikely that the Soviet leaders anticipate any improvement in the USSR's strategic situation vis-a-vis the US over the next 10 years which would substantially influence their behavior—and especially their inclination for risktaking—during periods of crisis or confrontation with the West.

25. *The Defense Intelligence Agency, the Energy Research and Development Administration, 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 the foregoing discussion is in error in that it gives the impression that the Soviets believe that ultimate goals cannot serve as practical policy objectives for future force development because they cannot be achieved in some predetermined time period—for example, the 10-year period of this Estimate. These agencies believe that the Soviets do, in fact, see as attainable their objective of achieving the capability to wage an intercontinental nuclear war, should such a war occur, and survive it with resources sufficient to dominate the postwar period. Further, these agencies believe that this objective serves as a practical guideline for Soviet strategic force development, even though the Soviets have not necessarily set a specific date for its achievement. In their view:*

- *Soviet programs for improving forces for intercontinental conflict (including those for strategic hardening and civil defense), their extensive research on advanced weapons technology, and their resource allocation priorities are in keeping with this objective, illustrate its practical effect, and are bringing it progressively closer to realization.*
- *In combination with other military and nonmilitary developments, the buildup of intercontinental nuclear capabilities is integral to a programed Soviet effort to achieve the ultimate goal of a dominant position in the world.*
- *While it cannot be said with confidence when the Soviets believe they will achieve this goal, they expect to move closer to it over the next 10 years and, as a result, to be able increasingly to deter US initiatives and to inhibit US opposition to Soviet initiatives.*

26. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that this Estimate understates, as have previous NIEs, the Soviet drive for strategic superiority. The lines of Soviet strategic policy, objectives, and doctrines enunciated in a large body of authoritative literature are viewed within the context of differing US perceptions and aspirations rather than in the larger context of Soviet history, ideology, and military investment.*

27. *The Soviets have made great strides toward achieving general military superiority over all perceived constellations of enemies and for attaining a war-winning capability at all levels of conflict. War survival and civil defense efforts to date have already placed the US in a position of serious strategic disadvantage by neutralizing much of the US capability to destroy or damage effectively those elements of the Soviet leadership, command, military, and urban-industrial structure required for maintaining a credible deterrent balance. A realistic calculation of nuclear fatality exchange ratios in a war today would probably show the USSR emerging with considerably more than a twenty-to-one advantage.*

28. *There now is a substantial basis for judging that the Soviets' negotiations at SALT and their detente, economic, and arms-control diplomacy have thus far been exploited by them for strategic advantage: by slowing down US defense investment and by permitting easy access to high US technology. The net effect of improved Soviet and East European access to loans, goods, and services from many Western countries is that inefficient sectors of the Soviet economy are in effect being subsidized, thus encouraging uninterrupted investment in strategic forces. A degree of hostage control is being acquired over elements of the West European banking structure by Moscow and its East European allies—in the form of extensive loans (now approaching allowable limits for many banks)—which has serious economic warfare implications. Additionally, the extraordinary advances being made by the Soviets in ASW and high-energy particle-beam technology could place the Free World's offensive ballistic missile capability at serious risk well before the terminal date of this Estimate.*

29. *While the present NIE is much improved over some of its predecessor documents, it falls far short of grasping the essential realities of Soviet conflict purpose and evolving capability, the latter clearly constituting the most extensive peacetime war preparations in recorded history—a situation not unlike that of the mid-1930s, when the entire Free World failed to appreciate the true nature of Nazi Germany's readily discernible preparations for war and conflict. The dissenting judgments of the past five years*

regarding Soviet defense expenditures, Soviet strategic objectives and policy, ICBM refire capability, predictions in 1973 that some 10 to 15 major new or modified offensive ballistic missile systems were under development, Soviet war-survival and civil-defense measures, Backfire bomber capability, and directed-energy weapons development have often served as the principal means of alerting the national leadership to trends which now are clearly evidenced. Failure now to anticipate the implications of such trends will impact adversely on lead times essential for the alteration of policy and redirection of technology programs.

30. Such lead time impacts are illustrated dramatically in judgments of the late 1960s and 1970 which implied that Soviet goals entailed no more than strategic parity and did not involve commitment to a major civil defense program. The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the former was the basis for US arms control policy in 1969 while the latter influenced the ABM Treaty of 1972. He is concerned that the present perceptions of Soviet goals and evolving capability provide an inadequate basis for the pursuit of further negotiations at SALT or the reformulation of national defense and foreign security policy. At issue is whether present intelligence perceptions provide an adequate basis for averting global conflict in the decades ahead.

II. SOVIET FORCES FOR INTERCONTINENTAL ATTACK

A. Intercontinental Ballistic Missile Forces

Deployed Forces

31. The Soviets had 1,556 ICBM launchers at operational complexes as of 1 November 1976—47 fewer than last year, because of completed deactivations of older launchers. In addition, there are 18 SS-9 launchers at the Tyuratam missile test center which we continue to believe are part of the operational force. Of the total force at operational complexes, 1,340 ICBM launchers were operational, 146 were under construction or conversion, and 70 were in the process of being dismantled under terms of the Interim Agreement. (See Table I for the status of the ICBM force and Figures 3 and 4 for system characteristics; see Volume II for additional details on both.)

The New Missiles

32. All four of the new Soviet ICBMs incorporate major qualitative improvements over the systems they are replacing:

— Three of the four new ICBMs are being deployed with MIRVs. Versions of the new SS-17 and SS-19 carry four and six MIRVs respectively. The SS-18 has been tested with both eight and 10 MIRVs. A single-RV version of the SS-18 has also been deployed. Single-RV versions of the SS-17 and SS-19 are being tested.

— The new systems have more throw weight (i.e., the useful weight which can be delivered to a target) than their predecessors. The SS-17 and SS-19 ICBMs have three to four times the throw weight of the SS-11 missiles which they are replacing.

— The new systems are more accurate than their predecessors. (We refer to accuracy as "circular error probable," or CEP; CEP is expressed as the radius of a circle into which there is a 50-50 chance that the warhead of a missile will fall.) We estimate [redacted] that accuracy will improve somewhat as the Soviets gain experience with the missiles (see Table II).

— The silos for the new ICBMs are several times harder—and thus less vulnerable to attack—than the older silos.

Our estimates of ICBM throw weight, accuracy, yield, and silo hardness are subject to varying degrees of uncertainty. Most important to the attack capabilities of the new missiles is the uncertainty in operational CEPs, which significantly affects judgments concerning the capability of Soviet ICBMs to attack hard targets. The implications of uncertainty about accuracy and yield, as well as improvements in accuracy anticipated in future modifications and new missiles, are discussed in later paragraphs of this section and in Section V.[2]

[2] For a full discussion of the methods of arriving at estimates of Soviet ICBM accuracies, and of the uncertainties in those estimates, see Volume III, Annex C.

Table I

Status of the Soviet ICBM Force
(Number of Launchers as of 1 November 1976)

System	Operational	Under Construction or Conversion	Dismantling Underway	Total [1]
ICBM Soft				
SS-7	40	—	44	84
SS-8	—	—	8	8
Subtotal	40	—	52	92
ICBM Hard				
SS-7	48	—	9	57
SS-8	—	—	9	9
SS-9	174	—	—	174
SS-11	790[2]	—	—	790
SS-13[3]	60	—	—	60
SS-17	40	10	—	50
SS-18	48	86[4]	—	134
SS-19	140[5]	50	—	190
Subtotal	1,300	146	18	1,464
TOTAL	1,340	146	70[6]	1,556
SS-9s believed to be operational at Tyuratam	18			

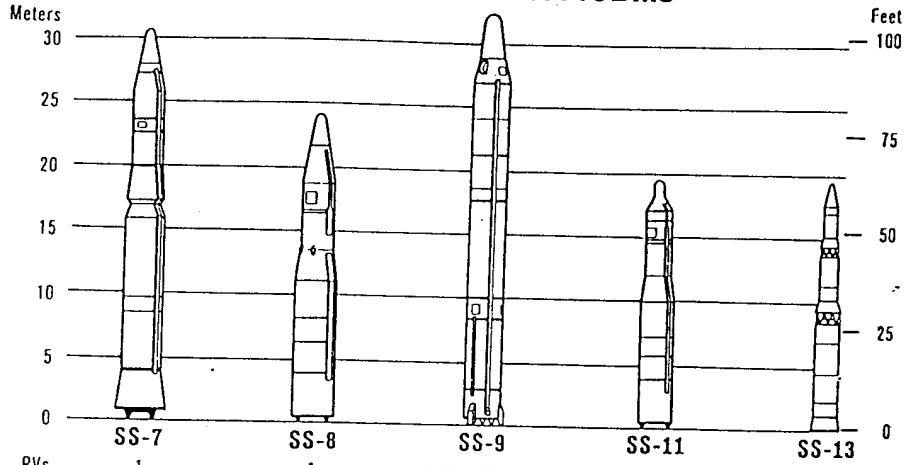
[redacted]

33. **Silo Modernization, Conversion, and Deactivation.** As many as 228 silos were operational with the new missiles on 1 November 1976. As last year, there is good evidence that the program now underway calls for a total of 610 SS-17 and SS-19 and 308 SS-18 silos. The conversion of older silos to house the new ICBMs continues at a moderate pace. This pace is evidently dictated in part by a Soviet desire to keep most of the ICBM force in service at any given time. (No more than 10 to 15 percent of the total ICBM force is off line for conversion at any one time.) The overall pace of conversion starts has increased this year and is slightly higher than we had predicted at this time last year.[3] Conversion of SS-9 silos for the SS-18 is proceeding more rapidly than we expected, while conversion of SS-11 silos for their replacements is somewhat slower. There is conflicting evidence as to whether the SS-X-16 is being deployed in the 60 silos for the older SS-13 missile. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that deployment of the SS-X-16 to replace the SS-13 is underway.*

[3] See Figure 5 for a graphic portrayal of the Soviet silo conversion and modernization programs.

Estimated Characteristics of Older Soviet ICBMs

Figure 3



	SS-7	SS-8	SS-9	SS-11	SS-13
RVs	1	1	1 RV or 3 MRVs	1 RV or 3 MRVs*	1
Yield (each RV)	[				]
CEP	[				]
Operational mode	soft pads or triple silos	soft pads or triple silos	single silos (groups of 6)	single silos (groups of 10)	single silos (groups of 10)
Year operational	1963	1963	1966	1966	1969

[ ]

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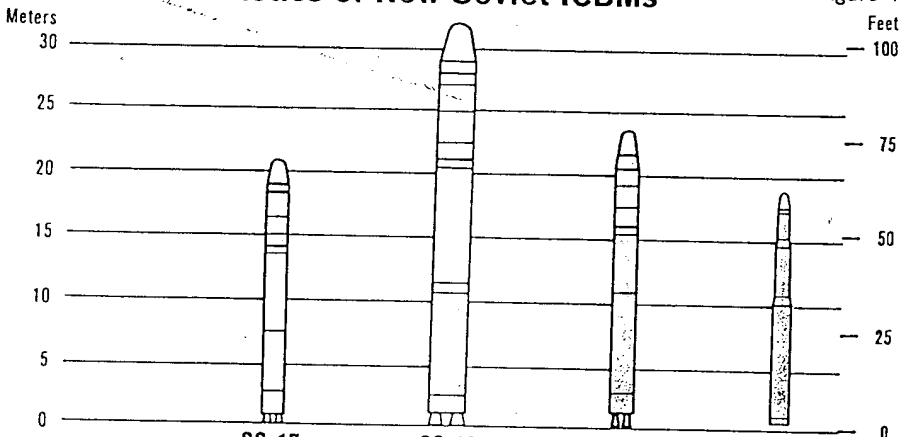
Estimated Characteristics of New Soviet ICBMs

Figure 4



	SS-17	SS-18	SS-19	SS-X-16
RVs	1 RV or 4 MIRVs	1 RV or 8-10 MIRVs	1 RV or 6 MIRVs	1
Yield (each RV)	[			]
CEP	[			]
Operational mode	single silos (groups of 10)	single silos (groups of 6 or 10)	single silos (groups of 10)	single silo
Year operational	1975*	1974	1974*	?**

*Year operational refers to MIRV version. See Volume II, Chapter II, for details on single-RV development.

**The missile was available for deployment in 1975. See Volume II, Chapter II, for a discussion of its deployment status.

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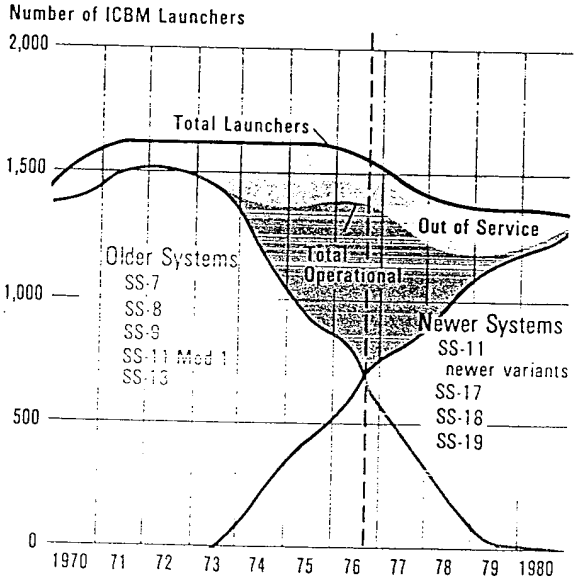
[redacted]

Figure 5

Impact of Silo Conversion and Modernization Programs on Soviet ICBM Forces



As the newer systems enter the force and the older systems are phased out, the total number of operational ICBMs will decline slightly because the SS-7s and SS-8s are not being replaced. Throughout this process, a small proportion of the silos will be temporarily out of service while they are being reworked or converted. We expect the Soviets to complete the deployment of the newer systems by the end of 1980, but we believe that about 10 to 15 percent of the force will continue to be off line in preparation for future systems developed in the interim.

~~Silos in use~~

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34. If our projections of number and pace are correct, deployment of SS-17, SS-18, and SS-19 missiles in 918 silos will be accomplished in about 1980. Chronologically, the Soviets are about halfway through what evidently will be an eight-year deployment program. In addition, a program to retrofit 420 SS-11 silos with newer variants of the SS-11 system was completed in the summer of 1976. We expect the Soviets to complete the dismantling of the last of their older SS-7 and SS-8 launchers by about 1978.

35. Force Mix. Until this year, it appeared that only one of the new ICBMs, the SS-18, would be deployed in both the single-RV and MIRV variants; the SS-17 and SS-19 appeared to be intended for MIRVs only, and the smaller SS-X-16 for single RVs. This year, the Soviets started flight testing single-RV payloads on the SS-17 and SS-19. We are confident that most of the SS-18s now operational are the single-RV variant, and that all SS-17s and SS-19s now operational are MIRVed.[

]The MIRV variant of the SS-18 is now ready, however, and probably has been installed in at least a few silos. At two operational complexes, we know that SS-11s were loaded into the earliest silos configured for the SS-19 (also because of the chronology), but there is uncertainty about which missile has been installed in the silos converted more recently at these locations. We are confident that the Soviets had no more than about 190 MIRVed ICBMs operational on 1 November 1976; there may have been only about 130.

36. It will continue to be difficult if not impossible to determine the precise force mix. There are no external differences between the silos for the single-RV and MIRVed variants of the new missiles, no pattern of segregating variants by deployment complex is evident, and we have yet to discover any indicator which would conclusively establish that an SS-11 missile is in fact installed in a silo configured for the SS-19. The last of these problems, which may reflect a temporary lag in SS-19 production, is likely to disappear in due course as the Soviets deploy SS-19s to all silos configured for them, but if the Soviets carry to completion the development of both single-RV and MIRV versions of all their new ICBMs, this will further complicate the picture.[ ]

Land-Mobile Missiles

37. We believe that the Soviets have developed a mobile version of the SS-X-16 ICBM, but it appears that deployment has been deferred. If the development of mobile ICBMs is not banned by a SALT TWO agreement, we believe that the Soviets will continue to work on such systems—possibly on a MIRVed variant or an entirely new follow-on to the SS-X-16—to maintain their technology and to hedge against the possibility of a breakdown in SALT or the possibility of increased ICBM silo vulnerability.

38. The solid-propellant SS-X-20 mobile missile, a two-stage derivative of the SS-X-16, carries three MIRVs. Estimates of the range of the SS-X-20 in its current configuration vary: *the Central Intelligence Agency estimates a range of 4,100 kilometers (2,200 nm); the Defense Intelligence Agency, 4,600 km (2,500 nm); and the Assistant Chief of Staff, Intelligence, Department of the Air Force, about 5,500 km (3,000 nm).* Regardless of the differing range estimates, all agencies agree that the SS-X-20, as currently configured, is an intermediate-range ballistic missile and that it will replace aging SS-4 medium-range ballistic missiles and SS-5 IRBMs. Preparations for the initial deployment of the SS-X-20 are now underway. (Figure 6 shows potential SS-X-20 target coverage, considering the spread of range estimates indicated above.)

39. The range of the SS-X-20 could be extended in several ways if the Soviets chose to do so. Range increases to over 5,500 km (3,000 nm) could be attained by using a lighter payload. *The Central Intelligence Agency believes that the range of the SS-X-20 could be extended to as much as 7,000 km (3,800 nm); the Assistant Chief of Staff, Intelligence, Department of the Air Force, believes the range could be extended to 8,300 km (4,500 nm).* The greatest range extension could be achieved by conversion of an SS-X-20 to an SS-X-16 ICBM. The third stage of the SS-X-16 is relatively small and could be deployed to an operational SS-X-20 storage area without detection. The ground support vehicles associated with the SS-X-16 appear identical to those of the SS-X-20.[ ]The similarity between the two systems will make it difficult for us to determine whether the Soviets are deploying SS-X-16 ICBMs with SS-X-20 launch units.

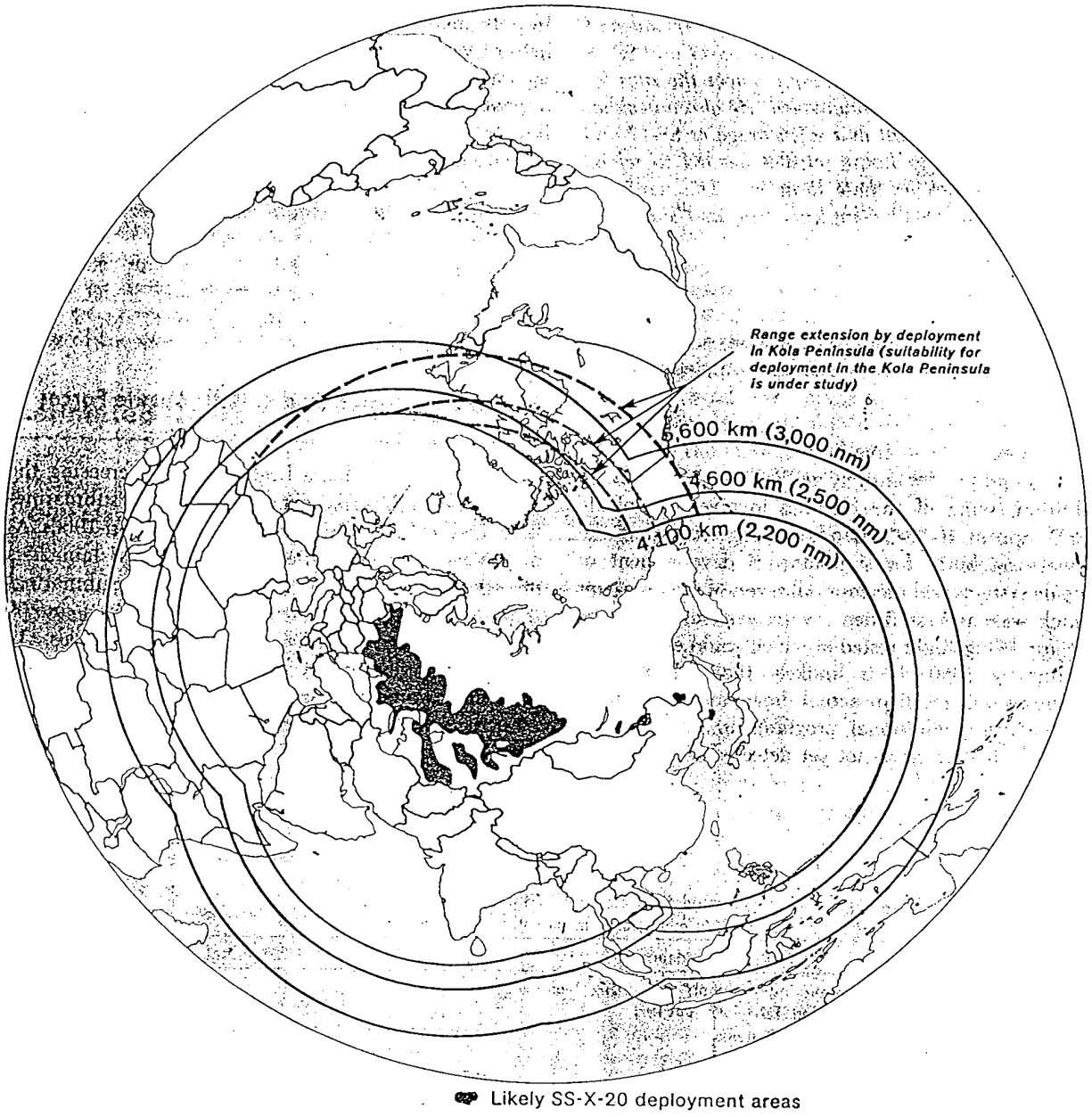
Missions and Capabilities

40. In the past, analysis enabled us to determine that the SS-9 was the only missile in the force suitable for use against hardened targets and that it was targeted against US ICBMs. It has become more difficult to determine the specific types of targets for which the Soviets intend to use their new ICBM systems. Initially, it appeared that the SS-18 and SS-19 were designed to achieve significantly better accuracies than the SS-17, and would be more suitable for use against hard targets. Now, however, all of the new missiles appear to have about the same accuracy.[ ]In view of the throw weights and potential accuracies of these systems, however, the MIRVed versions as well—especially that of the SS-18—will contribute to Soviet counterforce capabilities. This contribution will increase in the future as these systems are improved and modified. Thus, the Soviets are acquiring greater flexibility to use their various ICBMs against both hard and soft targets.

41. The SS-17 and SS-18 use a cold launch technique which would permit the Soviets to reload the silos for these missiles in a relatively short time—some 12 to 24 hours. There are no indications that the Soviets are providing the equipment or facilities necessary to support a substantial rapid refire capability for silo launchers, and we think it unlikely

Likely Deployment Areas and Target Coverage of SS-X-20

Figure 6



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that they will do so in the future. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the Soviets are planning to reload and refire a portion of their projected 500 SS-17 and SS-18 force. The cold launch technique leaves the silos for these missiles virtually undamaged. He also notes that there is sufficient hard and soft storage at SS-17 and SS-18 complexes to house missiles needed to reload most of the silos at these locations. The hardened facilities are at SS-17 complexes only and supported the SS-7 in the past.*

Future ICBMs

42. There is evidence that improvements in the ICBM force will not stop with the completion of the current deployment program.[

]In addition, some of the facilities involved in missile R&D appear to be expanding, suggesting that the Soviet capability for simultaneous development of missile systems will increase. All[ ]of the programs which we have identified involve systems which are already being flight tested or which could enter flight testing by 1980. It is unlikely that all of these programs will result in actual deployment, but there probably are additional programs in the planning stages which we have not yet detected.

43. In developing new or modified ICBMs, we expect one Soviet objective to be improved accuracy. Improvements in missile accuracy are likely to involve better inertial guidance systems and reduction of RV separation errors. Over the longer term, several other approaches are possible, among which an attractive but technically demanding approach would be to develop a maneuvering RV (MaRV) designed for high accuracy. We would not expect the Soviets to be able to deploy a highly accurate MaRV before the 1985-1987 time period, but we cannot rule out the possibility that they could do so as early as 1982-1983. Table III shows our estimate of future Soviet ICBM accuracies. (See Volume III, Annex C, for a more detailed discussion.)

B. Submarine-Launched Ballistic Missile Forces

Present Forces

44. The Soviets have been steadily increasing the size and overall strike capability of their submarine-launched ballistic missile force since the mid-1960s. As of 1 November 1976, they had 799 SLBM launchers on 60 nuclear-powered ballistic missile submarines (SSBNs) which had reached operational status, and 60 more launchers on four SSBNs on sea trials. In addition, there were at least 136 launchers on nine nuclear-powered submarines still outfitting or under construction. Enough SSBNs now are under construction to exceed the Interim Agreement limits of 62

[ ]

modern SSBNs and 950 modern SLBM launchers in early 1978, shortly after the agreement expires. In addition, there are 54 launchers for older missiles on diesel submarines, but these units are believed to be assigned to peripheral rather than intercontinental targets. (The characteristics of Soviet ballistic missile submarines and SLBMs are shown in Figures 7 and 8; the status of the force is shown in Table IV.)

45. The Soviets continue to launch SSBNs at the rate of about six per year. They now have launched four units of a third version of the D-class SSBN, which we designate the D-III. One of these units is believed recently to have conducted the first at-sea firing of the new MIRVed SS-NX-18 SLBM. The first MIRVed Soviet SLBM system will, therefore, probably become operational in 1977.

46. Last year we believed that the D-III would be even longer than the 16-tube modified D-class (the D-II) and that it might carry as many as 20 launchers. [redacted] the only observable difference between the two variants is that the turtleback on the D-III is a little over one meter (about four feet) higher than that of the D-II. The higher turtleback is required to permit the D-III to carry the SS-NX-18, which is longer than the older non-MIRVed SS-N-8 carried on D-Is and D-IIs. Modification of these submarines to carry the SS-NX-18 would require major shipyard work which probably

Figure 7

Estimated Characteristics of Soviet Ballistic Missile Submarines

		Year Operational	Propulsion	Missile	
D-III class	150 m (500 ft)	1977	nuclear	16 SS-NX-18	7,400 km[1] (4,000 nm)
D-II class	150 m (500 ft)	1975	nuclear	16 SS-N-8	7,800 km[1] (4,200 nm)
D-I class	135m (450 ft)	1973	nuclear	12 SS-N-8	7,800 km[1] (4,200 nm)
Y class[2]	130 m (425 ft)	1968	nuclear	16 SS-N-6	2,400-3,000 km (1,300-1,600 nm)
H-II class[3]	115 m (380 ft)	1963	nuclear	3 SS-N-5	1,300 km (700 nm)
G-II class[3]	95 m (320 ft)	1966	diesel	3 SS-N-5	1,300 km (700 nm)

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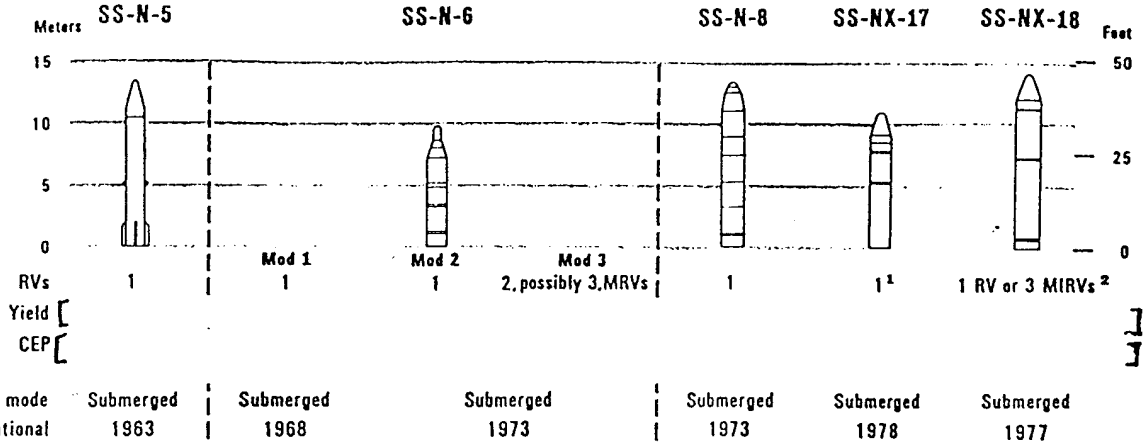
1. These estimates were made prior to the recent firing of a standard or modified SS-N-8 to a range of about 9,000 km (4,900 nm) and an SS-NX-18 to about 8,400 km (4,500 nm). Analysis of these events is continuing.

2. One Y-class was modified to carry 12 longer SLBM tubes, presumably for the SS-NX-17.

3. One H-class and two G-class units were converted to test platforms for modern SLBMs. Some G-I class submarines are still operational, and these carry the SS-N-4 SLBM.

Figure 8

Estimated Characteristics of Soviet SLBMs



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1. Only one RV has been tested to date. Capability may exist for up to 3 MIRVs.

2. Only two RVs have been tested to date with the MIRVed version.

[ ]

could be identified [

]

47. One Y-class SSBN (which we call the Mod-Y) has been extensively modified. It now has only 12 tubes, which will accommodate another new SLBM—probably the solid-propelled SS-NX-17. Because of its size and weight, we believe that the SS-NX-17 cannot be retrofitted into unmodified Y-class units. There are no indications that the Soviets are modifying any additional Y-class submarines. In view of the advanced status of the SS-NX-17 flight test program and the fact that no other submarines have been detected undergoing modification, it seems doubtful that the SS-NX-17 will be extensively deployed. Since the Soviets have not previously flight-tested solid-propellant SLBMs, however, a final decision on deployment of the weapon system may have been delayed. *The Director of Naval Intelligence, Department of the Navy, believes that the SS-NX-17 is being developed for the 12-tube, modified Y-class SSBN. This first application of solid-propellant technology to Soviet SLBMs, the improvements in reliability, safety, and accuracy, and the increased readiness, in addition to a potential MIRVed payload, would upgrade the Y-class weapon system. In his view, this upgrading could eventually involve 50 to 60 percent of the Y-class inventory.*

48. We continue to believe that the Soviets are developing a new class of much larger SSBN—about the size of the US Trident. If such a submarine is

Table IV

Status of the Soviet Ballistic Missile Submarine Force
(Number of Hulls/Tubes as of 1 November 1976)

Submarine Class	Operational [1]	On Sea Trials	Total	On Buildings Ways
Y	33/528	—	33/528	—
Mod-Y	1/12	—	1/12	—
D-I	14/168	1/12	15/180	2/24
D-II	4/64	—	4/64	—
D-III	—	3/48	3/48	7/112[2]
New Class	—	—	—	0-1/0-24
Total Submarines Accountable Under Interim Agreement	52	4	56	9-10
H-II, H-III [3]	8/27	—	8/27	—
402K, 402M [3]	2/10	—	2/10	—
Total Tubes Accountable Under Interim Agreement	809	60	869[4]	136/160
G-I, G-II [5]	18/54	—	18/54	—
Total Hulls and Tubes	80/863	4/60	84/923	9-10/136-160

[1] Includes units undergoing refueling, overhaul, or conversion.

[2] One of these submarines has been launched and is fitting out.

[3] The launchers on H-class SSBNs are counted under the terms of the Interim Agreement, but the submarines are not. Also, we count the launchers on two G-class diesel units—designated the 402K and 402M—which have been converted to fire modern missiles.

[4] For SAL purposes, the Mod-Y is still considered to have 16 tubes, thus bringing the accountable total to 873.

[5] Unless converted to fire modern missiles, launchers on G-class submarines are not included in the Interim Agreement. All unconverted units are believed to be assigned to a peripheral attack mission.

already under construction, as some evidence suggests, it could be operational with a new, large SLBM by about 1980.

Patrol Posture

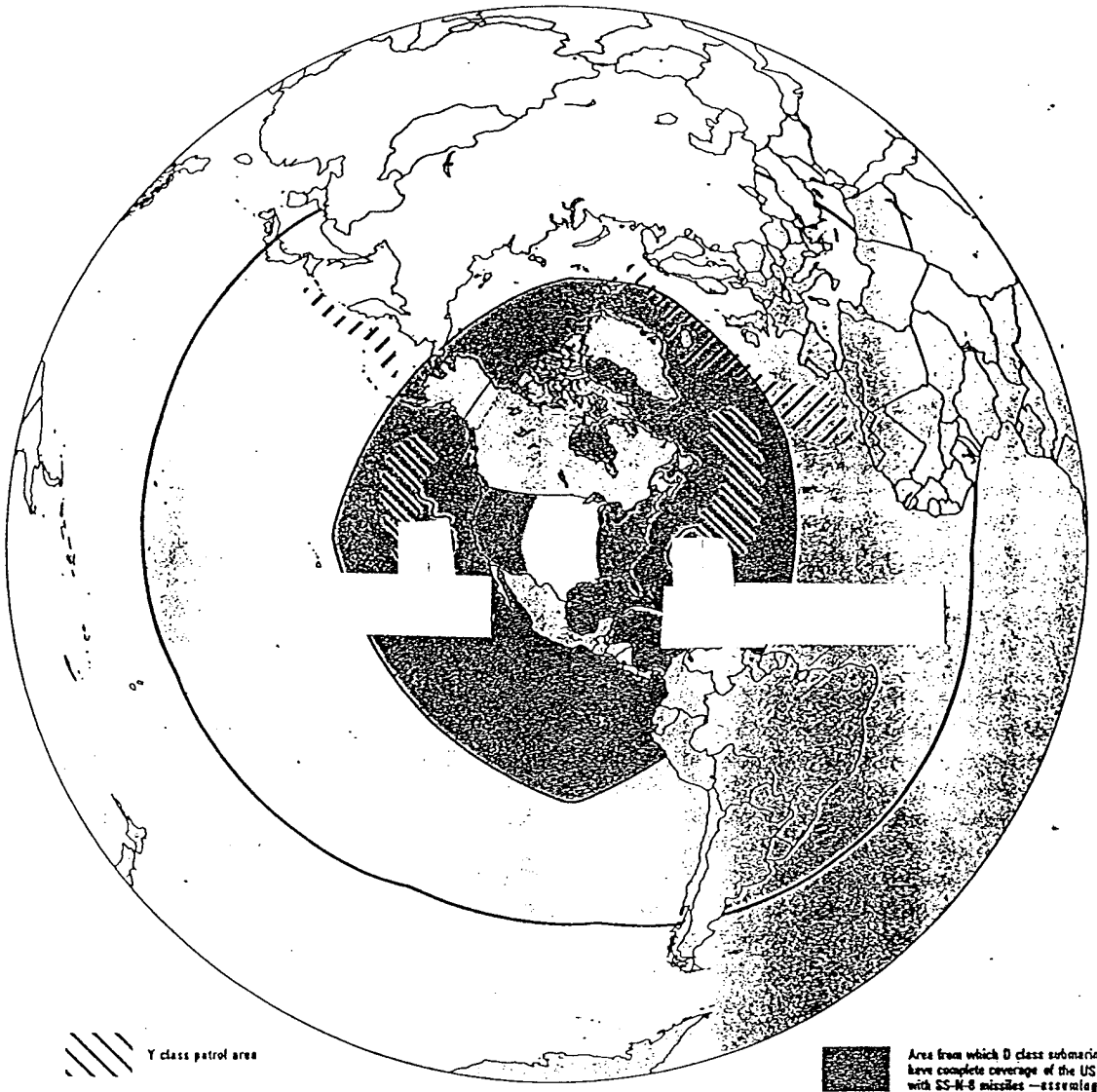
49. The Soviets continue to maintain only a small portion of their SLBM force on operational patrol; this is consistent with their view that a period of increased tension would likely precede a nuclear war. SS-N-8 missiles can reach the US from the vicinity of home ports in the USSR, however, so the number of SLBMs normally within firing range of the US is increasing as additional D-class units equipped with long-range SLBMs become operational. The number of Y-class submarines on patrol at any given time remains at four—two off each coast of the US—and will evidently remain at about present levels. The number of D-class units on patrol has varied from one to possibly as many as five; these units normally patrol much closer to home than the Y-class. The Soviets probably will routinely keep at least two D-class units on station in the Northern Fleet patrol area and at least one in the Northern Pacific, although opportunities for more distant patrols exist (see Figure 9). The possibility of further extension and variation of patrol patterns is raised by the recent firing of a standard or modified SS-N-8 to about 9,000 km (4,900 nm) and by SSBN patrol excursions near US coasts in the past two years.

Future SLBMs

50. The two new Soviet SLBMs—the SS-NX-17 and SS-NX-18—continue to undergo flight testing. Both of these new missiles have postboost vehicles required for MIRVs, but thus far only one—the SS-NX-18—has been tested with a MIRVed payload. As with their latest land-based ICBMs, the Soviets are also testing the SS-NX-18 with a single reentry vehicle. If development of both variants is carried to completion,

Figure 9

Potential Soviet SSBN Deployment Areas and Coverage of US Targets



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it will be difficult to estimate the mix of MIRVed and single-RV SS-NX-18s.

51. We believe the Soviets will begin flight testing a new and still larger SLBM in the next few years for the new, much larger submarine noted above.[ ]

52. There are continuing differences within the Intelligence Community concerning SLBM accuracies, but we are confident that no current Soviet SLBM systems pose a threat to hard targets. Although we expect both the SS-NX-17 and SS-NX-18 to have improved accuracy, neither system is expected to have the accuracy and yield combination to threaten US ICBM silos. We do not know whether this would be the case for the new large SLBM cited above.

C. Intercontinental Bomber Forces

Deployed Forces

53. Soviet Long Range Aviation (LRA) currently includes 190 long-range Bear and Bison bombers, of which 35 to 45 Bisons are configured as tankers.[4] Some 20 Backfire bombers have been assigned to the LRA so far. All agencies agree that the Backfire will be employed for peripheral attack and antiship missions, but there are continuing uncertainties and disagreements about its capability for intercontinental attack and about Soviet intentions to employ it in this role. The remainder of the LRA force consists of 640 intermediate-range Badger and Blinder bombers. (See Figure 10 for the characteristics of Soviet strategic aircraft.) In addition to the traditional and most important missions of intercontinental and peripheral strategic attack, LRA units train for a variety of other missions, including antiship strike, reconnaissance, and electronic warfare. We believe that the Soviets will continue to retain a relatively small intercontinental bomber force to complement their formidable ICBM and SLBM forces.

LRA Operations Against the Contiguous US

54. In the event of general war, the LRA intercontinental bomber force probably would follow the initial ballistic missile attack with strikes primarily against preassigned targets. We do not know whether LRA aircraft would fly radius (two-way) missions or range (one-way) missions against North America with recovery outside the US. Range missions, if employed, would permit indirect routing and longer low-level operations and would reduce the need for in-flight refueling and Arctic staging. LRA is maintained at a low day-to-day readiness, making it vulnerable to surprise attack. With a period of strategic warning, we believe the Soviets would take measures to protect their bomber force—primarily by increasing their alert posture, including dispersal of aircraft.

The Backfire Bomber

55. Production and Deployment. We estimate that about 90 Backfires had been built as of 1 November 1976—about 50 of which have been delivered to LRA and Soviet Naval Aviation (SNA) units. Judging from past and current indicators of aircraft production priorities, we believe the Soviets will produce some 200 Backfires by 1980 and nearly 500 by the mid-1980s. Production could be higher if the priority were increased. New construction at the Kazan' airframe plant, which will increase the size of the facility by about 20 percent, may be indicative of Soviet plans to increase production of the Backfire. The plant continues to produce the IL-62 transport and to overhaul Badgers, however, and we would expect both of these programs to end prior to a significant increase in Backfire production. About 85 percent of the Backfires produced probably will go to LRA and SNA operational units in roughly equal numbers, with the remaining 15 percent used for replacements and for testing and training.

56. To date, Backfires have been operationally deployed only to Badger bases and have replaced some Badgers at these bases. There are indications that the Soviets are preparing to deploy the Backfire to another SNA base and to four more LRA Badger bases.

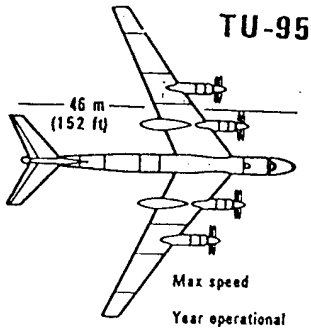
57. Performance. During the past year, we have obtained additional technical intelligence on the Backfire,[ ] and new evidence on missile loadings. Although this new evidence has contributed to our analysis, it has not significantly affected agency positions regarding Backfire performance. Because of differing interpretations of available evidence and differing technical

[4] Reanalysis indicates that there are fewer Bison tankers than the 50 we have previously estimated.

Soviet Long-Range and Intermediate-Range Bombers

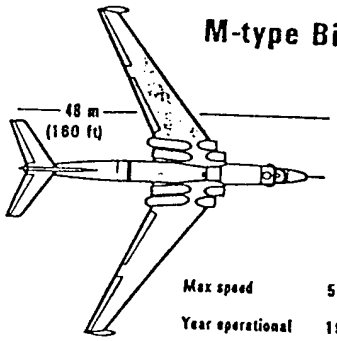
Figure 10

TU-95 Bear



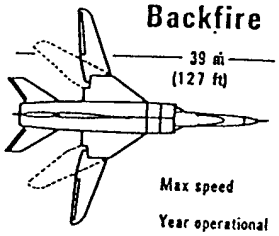
Max speed 500 kn
Year operational 1956

M-type Bison



Max speed 540 kn
Year operational 1956

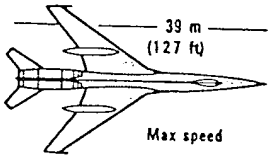
Backfire



Max speed
Year operational 1974

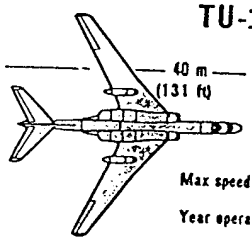
	CIA/State Assessment	DIA/Army/ Air Force Assessment
Max speed	1,050 kn	1,150 kn

TU-22 Blinder



Max speed 1,030 kn
Year operational 1962

TU-16 Badger



Max speed 540 kn
Year operational 1954

Capabilities for High-Altitude Subsonic Mission (in nautical miles):[1]

	Unrefueled		One Refueling	
	Radius	Range	Radius	Range
Bear A Bomber	4,500	8,800	-	-
Bear ASM Carrier [2]	3,950	7,150	5,050	9,200
Bison B/C Bomber	3,050	5,950	3,950	7,300
Backfire Bomber [3,4]				
CIA, State	1,825-2,150	3,525-4,150	2,825-3,200	5,475-6,225
DIA, Army, Air Force	2,900	5,400	4,000	7,500
Badger Bomber [5]	1,550	2,950	2,200	4,150
Blinder Bomber [5]	1,700	3,250	2,350	4,450

1. For aircraft with bombs, with one exception, the combat range and radius have been normalized with a 4,500 kg (10,000 lb) bomb payload. The DIA/Army/Air Force assessment of the Backfire assumes a 9,400 kg (20,800 lb) bomb payload.

2. Assumed payload is one AS-3 weighing 11,000 kg (25,000 lb)

3. Backfire aircraft can also carry ASMs. See Volume II for the Backfire's range and radius with ASMs.

4. The uncertainties in the estimates of the Backfire's performance are as follows: CIA/State range ±300 nm, radius ±160 nm; DIA/Army/Air Force range and radius +3%, -9% (2-sigma confidence level).

5. Badger and Blinder ASM carriers also exist, but for purposes of this Estimate only the capabilities of the bomber versions are shown.

assumptions, current estimates range from an aircraft clearly capable of intercontinental operations without air-to-air refueling to one with marginal intercontinental capabilities under the same conditions. Although efforts to resolve these differences are underway, we cannot state confidently that we will be able to narrow them significantly.

58. *The Central Intelligence Agency has completed a reassessment of the Backfire's performance*[

]*On the basis of this analysis, CIA concludes that Backfire's takeoff weight and engine power are less than previously estimated. CIA estimates that the Backfire, as tested and currently deployed, has a maximum high-altitude, subsonic, unrefueled range of 3,500 to 4,150 nm and a corresponding radius of 1,800 to 2,150 nm with a 4,500 kg (10,000 lb) payload. The higher values assume a design optimized for subsonic performance and the lower assume a design compromised for both subsonic and supersonic performance. CIA has considered both designs because they represent reasonable upper and lower bounds of subsonic cruise efficiency—an important performance characteristic about which there currently is no direct evidence.*

59. *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, continue to believe that the Backfire, with a 9,400 kg (20,800 lb) payload has a range of 5,400 nm and a radius of 2,900 nm for the high-altitude, subsonic mission. They note that numerous analyses by government and industry groups using all available intelligence sources support their estimate and that no new information has surfaced during the past year which dictates a change in their assessment.*

60. *The Department of State believes that the Backfire design represents a compromise between requirements for low-level penetration and high-altitude subsonic cruise. The Department believes that CIA's methodology is sound and generally supports that agency's assessment. It is the Department's view, however, that the uncertainties are such that Backfire's capabilities could be greater than CIA's estimates for this assumption (1,800 nm radius and 3,500 nm range) but probably are still within CIA's overall radius and range estimates.*

61. *The Energy Research and Development Administration and the Director of Naval Intelligence, Department of the Navy, believe that it is not possible to derive a confident single-figure estimate of the Backfire's maximum radius and range with the evidence now in hand.*

62. Air-to-Air Refueling. All Backfires observed to date have refueling probes, and air-to-air refueling operations were conducted as part of the Backfire test program. The use of air-to-air refueling would enhance the Backfire's capabilities both for peripheral attack and naval missions. With air-to-air refueling, the Backfire would have a considerably increased capability for intercontinental operations, even in the case of the lowest estimates of its current performance. Figure 11 shows the following: without air-to-air refueling, the Backfire could reach targets in the contiguous US under either assessment of its performance, but, according to the CIA and State assessment, only on one-way missions; with one in-flight refueling, according to the DIA, Army, and Air Force assessment, the Backfire could reach virtually all targets in the contiguous US on two-way missions; according to the CIA and State assessment, with one in-flight refueling, Backfire could reach all targets in the contiguous US on one-way missions, but its target coverage would still be only marginal on two-way missions.

63. Upgrade Potential. All agencies agree that, with various modifications, the range of the Backfire could be significantly improved. Some modifications—such as adding external fuel tanks or using weapons bay fuel tanks—could be made relatively quickly and easily. *In the view of the Central Intelligence Agency, other improvements in the Backfire's performance would be required to compensate for any resultant significant increase in weight. The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that current takeoff performance of the Backfire is sufficient to allow for carrying additional fuel without additional improvements.*

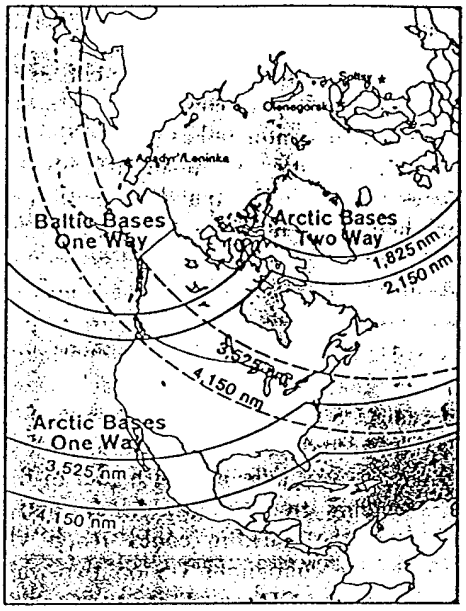
64. Other modifications—such as aerodynamic design improvements in the wing or lengthening the fuselage to permit greater fuel capacity—would be more complex. They probably would be incorporated into new Backfires. *The Central Intelligence Agency has not yet evaluated the potential range enhance-*

Figure 11

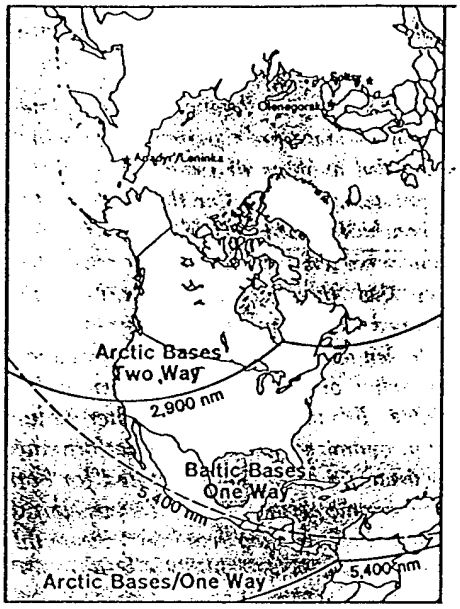
Assessments of Backfire's Capability Against the United States

Unrefueled Mission

CIA, State Assessment

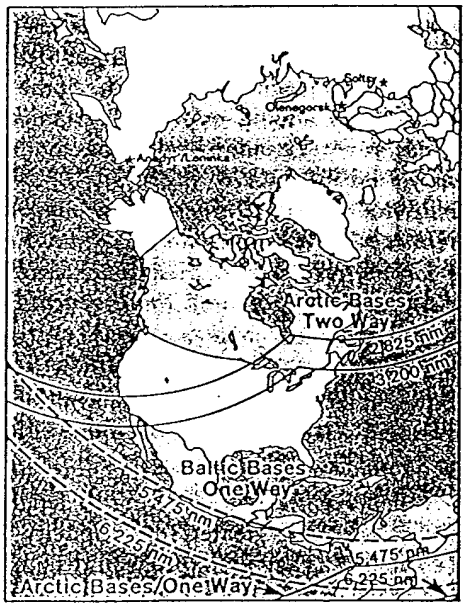


DIA, Army, Air Force Assessment



Refueled Mission

CIA, State Assessment



DIA, Army, Air Force Assessment

Note: A high-altitude, subsonic profile is used and the distances shown are for a payload of bombs. (See Figure 10 for assumptions)

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ment of such modifications. The DIA, Army, and Air Force estimates of Backfire range would be increased as follows:

Modification	*Range Increase*
Add external fuel tanks	*10 percent*
Use weapons-bay fuel tanks	*8 percent*
Incorporate improved engines	*10 percent*
Incorporate aerodynamic improvements	*8 percent*
Lengthen fuselage	*15 percent*

Two or more of the above possibilities could be combined, but the overall improvement would not be greater than 20 to 30 percent, because of offsetting design considerations.

65. **Likelihood of Employment Against the US.** There is no direct evidence about current or future Soviet intentions to employ the Backfire in intercontinental operations, and differences of opinion exist about whether Backfires will be used in this role. The differences involve not only the question of the Backfire's assessed capabilities but also the question of how much weight should be assigned to the available indicators of intent.

66. 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 Energy Research and Development Administration, 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 history of the Backfire's development, the observed patterns of deployment to date, and the low-altitude and supersonic characteristics built into the aircraft strongly suggest that the Soviets designed it as an intermediate-range bomber and ASM carrier to fulfill the peripheral and naval attack missions. The capability of the Backfire to conduct a wide range of peripheral and naval missions on specialized flight profiles, however, also gives it at least some capability for intercontinental operations. We cannot, therefore, exclude the possibility that some portion of a growing Backfire force would be employed against targets in the US, although it is more likely that a new intercontinental bomber would be deployed for such use. If the Soviets decided to assign any substantial number of Backfires to intercontinental attack, they almost certainly would upgrade the performance of the aircraft or deploy a force of compatible new tankers to support them.

67. *The Central Intelligence Agency concurs with the judgment in the preceding paragraph but believes there is additional persuasive evidence that the primary missions of this aircraft are peripheral and naval attack. The evidence shows that, as early as 1966, the Soviets undertook a program to redesign the TU-22 Blinder intermediate-range bomber to overcome serious deficiencies which became apparent after that aircraft entered operational service. The results of that effort, as reported by human sources, correlate closely with what is known about the Backfire program. In CIA's view, this correlation confirms its judgment that the Backfire was designed for the roles for which the Blinder was intended—i.e., peripheral and naval attack—but found lacking.*

68. *The Defense Intelligence Agency, the Energy Research and Development Administration, the Assistant Chief of Staff for Intelligence, Department of the Army, and the Assistant Chief of Staff, Intelligence, Department of the Air Force, believe that available evidence on Backfire employment indicates only that peripheral and naval attack are the aircraft's current primary missions. That evidence, in their view, does not support the conclusion that the Backfire was specifically designed as an intermediate-range bomber to satisfy peripheral and naval requirements. Their detailed technical analysis of the Backfire's performance indicates that it is a long-range bomber with significant, unrefueled capabilities for intercontinental, as well as peripheral and naval, operations. While they agree that observed Backfire basing at LRA Badger airfields is consistent with peripheral missions, they would stress that the flexibility of bomber aircraft and the presence of Bear and Bison bases in the same geographic area reduce the significance of the location of these airfields and of past aircraft asssociations for the assessment of the Backfire's missions. In the view of these agencies, the evidence relating the Backfire to the TU-22 Blinder, even if valid, does not indicate that the Backfire was intended only for missions performed by the Blinder. Since the Soviets could use the Backfire's intercontinental capabilities at their own initiative, these agencies believe that those capabilities should be a prime consideration in assessing the aircraft's present and future missions. Thus, in their view, the Backfire clearly poses a threat to the contiguous US, even without the deployment of*

a compatible tanker force or the upgrading of the aircraft's performance. The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that some portion of the Backfire force will be used in missions against the contiguous US.

Future Systems

69. We have additional evidence this year that the Soviets are developing a new, long-range bomber, [ ]We believe the chances are better than even that such a bomber will be deployed during the period of this Estimate. There is no evidence, however, that the Soviets have completed a prototype. If a prototype were completed in the near future and the Soviets followed past practice, the first unit probably would be operational in the early 1980s. There also is new evidence this year that the Soviets are developing a new tanker to replace the Bison—probably a variant of the IL-76 Candid transport. If so, it could enter service in significant numbers in the early 1980s The Soviets also continue to work on improved penetration aids for bombers.

D. Long-Range Cruise Missiles

70. The Soviets have considerable experience in the development and deployment of cruise missiles for a variety of tactical and relatively short-range strategic applications, but they have exhibited little interest in long-range cruise missiles since the late 1950s.[5] Soviet efforts in SALT to impose tight constraints on cruise missiles, while not ruling out the possibility that the USSR has long-range cruise missiles under development, suggest that the Soviets believe the present advantage in such programs rests with the US. Given the present strategic environment, the Soviets do not appear to have compelling military reasons to develop long-range cruise missiles. If such missiles are permitted by a SALT TWO agreement but are included in delivery vehicle ceilings, the Soviets probably would not sacrifice other weapons to have them. If they are not limited and the US deploys them, the Soviets might follow suit.

71. If the Soviets decided to add long-range strategic cruise missiles to their arsenal, they could follow one of three approaches: upgrade an existing cruise missile; develop a new, large cruise missile using current or near-term technology; or develop new technologies in guidance and propulsion for use in small, accurate systems later on. Any one of six existing Soviet air- and sea-launched cruise missiles could be modified for long-range employment. Such modified missiles could have maximum ranges of from 760 to nearly 1,700 km (400-900 nm) and could be made accurate enough to attack large, soft targets. Using available technology, the Soviets could develop a new, large cruise missile with a range of about 4,000 km (2,100 nm) and bring it into service by the end of the 1970s, but they probably could not make it much more accurate than a modified version of an existing system.

72. A highly accurate, large cruise missile, possibly with multiple warheads, probably could be available for deployment in the 1980-1985 period. Small, long-range cruise missiles accurate enough to destroy hard targets probably could not be ready for flight testing before the early to mid-1980s; guidance probably would be the pacing technology.

III. SOVIET STRATEGIC DEFENSES

73. The Soviets are pressing ahead with a variety of programs to improve their strategic defenses. These programs apparently are intended to assure the survivability of the USSR as a national entity in the event of nuclear war and are consistent with the emphasis in Soviet military doctrine on improving war-fighting capabilities.

A. Defense Against Ballistic Missiles

Warning Systems

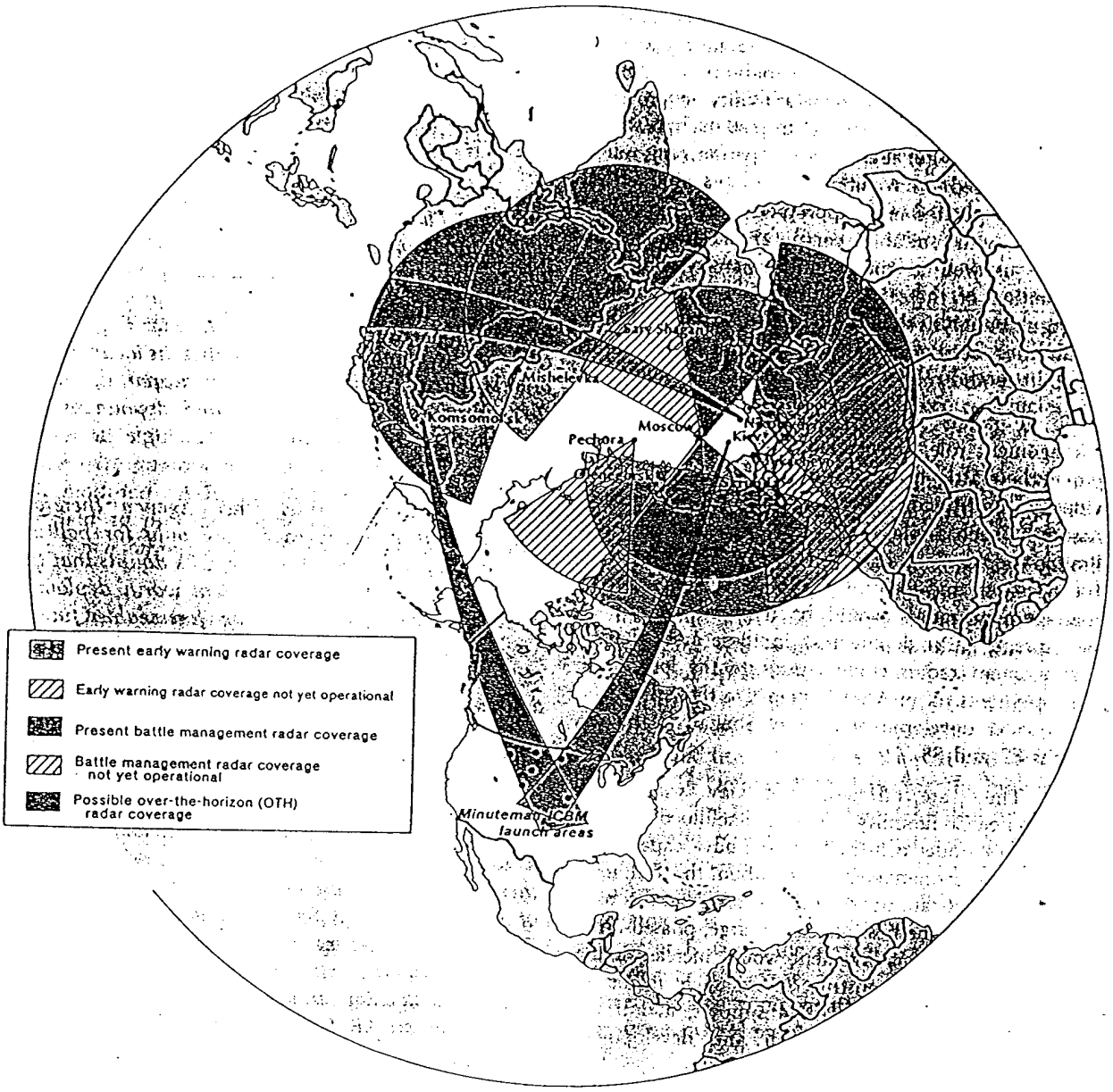
74. With completion of a new Hen House radar at Mukachevo in the western USSR in 1977, the Soviets will have essentially complete ballistic missile early warning (BMEW) radar coverage of missiles fired toward the European part of the country (see Figure 12). In addition, new, large phased-array radars are under construction at two locations—Olenegorsk (next to an existing Hen House there) and Pechora, both in the northwestern USSR.[6] Both radars could be operational by about 1979.

[5] For the purpose of this discussion, "long range" means in excess of 600 km (320 nm)—a distinguishing range limitation used in SALT.

[6] Early warning radars at these locations are permitted by the ABM Treaty; ABM battle management radars are not.

Figure 12

Soviet Ballistic Missile Early Warning and Battle Management Radar Coverage



NOTES

1. There are differences of view about whether the radars at Pechora and Olenegorsk will also be given ABM battle management capabilities. See text for discussion.

2. The over-the-horizon radars at Kiev and Komsomol'sk probably could be used to detect both ballistic missile launches and aircraft, but with differing degrees of reliability. For ease of presentation, only the coverage for missile launch detection is shown.

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75. We believe that both the new radars will improve Soviet ballistic missile early warning capabilities and coverage and that they will be used in this role. Large phased-array radars such as these, however, could be given the capability for ABM battle management—i.e., the capability to provide tracking and prediction data to support the operation of ABM systems. For such radars to perform this role, they would need to have appropriate signal characteristics, to be operated in an appropriate way, and to be equipped with suitable computer hardware and software as well as data transmission systems.[

]

76. If radars at these locations had a battle management role, they would not significantly improve the battle management support already provided to the Moscow ABM system by existing radars. Assuming such a role, they could provide support for limited deployment of additional ABM defenses in the western and central USSR. Additional battle management radars would be required to support widespread ABM deployment in these areas. Battle management radars could constitute the long-lead-time elements of an ABM system like the ABM-X-3, now under development at Sary Shagan (see paragraphs 87 and 88).

77. There are differences of view within the Intelligence Community about the likelihood that the radars now under construction will have capabilities for ABM battle management and about the likelihood that the Soviets are building them for use in this role. Concern about the possible use of large, phased-array radars for battle management would increase if the Soviets started to construct more such radars in locations appropriate for ABM support, and if the Soviets pursued ABM research and development vigorously.

78. *The Central Intelligence Agency believes that differences in the locations, physical characteristics, and orientations of these two new radars require that they be considered separately. CIA believes that the design of the new Olenegorsk radar was dictated by its intended use with the Hen House radar at this same location. In CIA's view, the combined capabilities of the new radar and the Hen House will not make them suitable for an ABM battle management role, because the Hen House is highly susceptible to nuclear blackout and thus cannot be defended by nuclear-armed ABMs. CIA does not believe the Soviets would base an ABM defense on a battle management radar which is not itself defendable.*

79. *The Central Intelligence Agency further believes that the design of the Pechora radar—which is different—was dictated by a requirement to operate autonomously, performing both search and tracking functions. There is no Hen House at this location. The new radar is oriented to view US ICBMs launched toward the central USSR, and thus will provide early warning to areas which are not now provided such information. Although the Pechora radar might have ABM battle management capabilities, its location and orientation are not suitable for supporting ABM systems in the western USSR, and defense of the central USSR is probably not as high in Soviet priorities.*

80. *The Central Intelligence Agency therefore believes that the new radars are only for ballistic missile early warning. Moreover, CIA doubts that the Soviets will have an ABM system worth deploying against the US threat in the foreseeable future. Nevertheless, further deployment of Pechora-type radars in locations appropriate for supporting ABM defense would be of major concern.*

81. *The Department of State generally supports the CIA assessment of the role and capabilities of these radars. The Department believes, however, that the extent to which construction of additional such radars would be cause for concern would depend not only on their locations but also on the assessment at that time of the likelihood of Soviet abrogation of the ABM Treaty. This assessment, in turn, would depend in large part on the extent to which the circumstances which led the Soviets to negotiate this treaty—and thus avoid an ABM competition with the US—had changed.*

82. *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, agree that the radars at Pechora and Olenegorsk will be used to provide BMEW. The Olenegorsk radar would improve the BMEW capabilities of the Hen House system, and the Pechora installation would extend coverage to areas not now covered. These agencies believe, however,*

that the available evidence regarding these radars does not permit a confident judgment about whether they may also be intended to perform ABM battle management. Their analysis leads them to believe that both the Olenegorsk and Pechora installations would be capable of accomplishing battle management functions. They recognize that the radars are vulnerable to nuclear effects but believe that this does not preclude their defense. These agencies believe that the Soviets could develop a deployable ABM system within the period of this Estimate, and that these radars could provide the necessary battle management support if the Soviets chose to deploy such a system in violation of the ABM Treaty or after withdrawing from it.

83. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that the two radars now under construction might, in combination with appropriate weapon systems (e.g., ABM-X-3, modified SA-5s, directed-energy weapons), be sufficient to provide significant ballistic missile defense for a large portion of the western and central USSR.*

84. Over-the-horizon (OTH) detection radars at Kiev and Komsomol'sk probably could be used to detect both ballistic missile launches and aircraft, but with differing degrees of reliability. If not disabled by missile attacks, OTH radars have the potential for greatly increasing warning time against aircraft attacks, regardless of aircraft altitude. Depending on radio propagation conditions, they could also provide about 30 minutes' warning of an ICBM attack. Signals from the Kiev radar were intercepted during 1976; the Komsomol'sk radar is not expected to be transmitting before 1978. The Soviets are also testing a space-based warning system, which probably will be operational by the early 1980s for detection of ICBM and SLBM launches and nuclear detonations.

Antiballistic Missile Defense

85. The ABM system at Moscow became operational in 1968; 64 launchers are deployed at four complexes around the city. The system would provide little defense against a massive US missile attack but could provide some protection for Moscow and a fairly large area of the western USSR against a small, accidental, or unauthorized US launch, or against a small, unsophisticated attack by a third country. Unless their R&D programs result in significant improvements, we believe it is unlikely that the Soviets will either replace the current Moscow system or augment it with the radars and 36 additional launchers allowed by the ABM Treaty.

86. Soviet ABM research and development are conducted at the Sary Shagan missile test center. At one complex there, the Soviets appeared to be developing a follow-on to the Moscow system, but no missiles were ever flight tested, and the launchers now have been removed. In 1972, however, we were able to identify at this complex what probably is a high-power laser. This facility may be an antisatellite system under development; on the other hand, it may be intended to serve other objectives, including the development of laser radars for ABM or space support. The laser could not destroy missile reentry vehicles but probably could disable most satellites at low altitudes.

87. At another complex at Sary Shagan, the Soviets are continuing to work on an ABM system—designated the ABM-X-3—which could be deployed more rapidly than the Moscow system. Individual sites for this system could be deployed in about six months, but widespread deployment would take several years. The Soviets began work on this system in 1967, but apparently experienced technical problems in its development. There have been problems with the associated radar, some launchers have been removed, and test activity over the past two years has been low. In October 1976, however, the interceptor missile was fired at a live target for the first time. There is also recent evidence that the Soviets will pursue the development of a high-acceleration, endoatmospheric interceptor at this complex. If development is pursued vigorously and the original interceptor is used, the system could be ready for deployment in a year or so. A high-acceleration interceptor, as a component for this system or for a new system, would require at least three years of flight testing.

88. Using the present interceptor, the ABM-X-3 system would have little or no capability to engage missile RVs without external battle management data. With such data, it would have a limited capability to do so, provided the interceptor were launched before its engagement radar acquired the target. *The Central Intelligence Agency doubts the feasibility of such a mode of operation.* Introduction of a high-acceleration interceptor into this system would greatly

enhance its capability, although external radar data probably would still be required.

89. The R&D goals of this development program could range from avoiding technological surprise to fully developing an ABM system suitable for deployment. The broader underlying intentions might be:

— to hedge against abrogation of the ABM Treaty;

— to deter US abrogation by demonstrating a capability to respond with widespread ABM deployment; and

— to deploy a new ABM system widely as soon as developed.

We think it highly unlikely that this program reflects a present intent to deploy beyond Moscow. It probably is a hedge against uncertainties about the future strategic situation.

90. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that, in addition to the conventional ABM developments discussed above, the Soviets have established a high-priority, well-funded R&D program emphasizing directed-energy technologies, which he believes are being investigated for ballistic missile defense application. For a summary of his views on this development program see paragraph 117.*

SAMs in an ABM Role

91. We believe that the current Soviet SAMs were not deployed to provide ABM defense and that they are not suitable for this role. The ABM Treaty prohibits testing of SAM equipment in an ABM role. While the Soviets might undertake a clandestine program to upgrade their current SAM systems to achieve a measure of ABM capability, we believe this unlikely, because the kind of improvements which could be achieved in a covert program would not result in any significant ABM defense. We believe that a more ambitious upgrade program, one that might achieve a significant measure of ABM defense, would be detected early in the program. *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 and not been detected.*

B. Antisatellite Systems

92. The Soviets have an orbital antisatellite system armed with a nonnuclear warhead capable of intercepting satellites which pass over the USSR at altitudes below about 4,600 km (2,500 nm). Currently, the Soviets have only two launchers for this system—both at the Tyuratam test range—but some evidence suggests that the program may soon be expanded to the Plesetsk test range in the northwestern USSR. This year, following four years without any test flights, the Soviets demonstrated the capability to accomplish an intercept after only one orbit of the interceptor, and thus to shorten the reaction time available for countermeasures.

93. We believe the Soviets can currently employ electronic warfare against US space systems. They have ground stations to collect signals, they probably can jam satellite receivers and control links, and they may be able to degrade some US space systems by other means as well.

94. In addition to the probable laser at Sary Shagan, work is evidently underway on a space-based laser, which we believe would be suitable for use against satellites. The project is judged to be in early R&D, but we believe that a prototype could be developed and launched by the mid-1980s.

C. Strategic Air Defense

95. Despite its massive size and widespread deployment, the Soviet air defense system is critically deficient in its ability to defend against air-to-surface missiles and bombers attacking at low altitude.[7] Current deficiencies include:

— critical gaps in low-altitude radar coverage;

— too few ground-controlled intercept (GCI) sites for controlling air defense interceptors, and deficiencies in GCI radar tracking, equipment, and procedures;

— the lack of an airborne warning and control system (AWACS) for fighter interceptors;

— the inability of most, if not all, Soviet interceptors effectively to detect and engage low-altitude

[redacted]

targets while the interceptor is flying above the target;

— the limited low-altitude capabilities of current Soviet strategic SAM systems; and

— the lack of a defense against the US short-range attack missile (SRAM).

The Soviets are working on a number of programs to overcome these deficiencies, but we do not expect any significant improvement in Soviet capabilities for low-altitude air defense before about 1980.

Air Surveillance and Control

96. The spacing of air surveillance radar sites suggests that there is virtually continuous radar coverage down to about 300 m (1,000 ft) in the more populated areas of the USSR and at even lower altitudes in heavily defended areas (see Figure 13). Terrain masking, however, would reduce low-altitude coverage in many areas (see Figure 14 for one example), and the Soviets have great difficulty in maintaining accurate tracking data on targets at the lower altitudes in any case. They have undertaken training which attempts to respond to the low-altitude threat.

97. In an attempt to overcome their deficiencies in air surveillance and tracking, the Soviets began, in recent years, to introduce new data systems and changes in their air defense control structure. The intent was to net groups of air surveillance radars and control centers more effectively and to provide accurate and timely target tracking data from those control centers directly to individual SAM and interceptor units. New data systems have been deployed widely with SAM sites. The available evidence suggests that deployment for interceptor support is still limited, but there is uncertainty on this point.

98. Intercepts by fighter aircraft are still conducted only within line of sight of the radar at the controlling GCI unit. If data from a number of outlying radar stations were rapidly and accurately transmitted to the GCI units, interceptor vectoring beyond the GCI unit's radar line of sight (i.e., remote vectoring) would be possible. In vectoring interceptors to their targets, the Soviets could compensate for some inaccuracies and lack of timeliness in tracking data if they had an interceptor with good capabilities to locate and track aircraft flying below the interceptor's altitude. The Flogger interceptor, now being deployed to strategic defense fighter forces, can detect and track targets below its altitude, but its capabilities in combination with the most widely deployed GCI system are too limited to be effective for intercepting low-altitude targets.

99. There are differing judgments within the Intelligence Community about whether the new Soviet data systems are sufficiently accurate to permit remote vectoring. *The Central Intelligence Agency and the Assistant Chief of Staff, Intelligence, Department of the Air Force, hold that the capabilities of the new data systems, in combination with current interceptors, are not sufficient to allow effective remote vectoring against low-altitude targets. The Defense Intelligence Agency and the National Security Agency hold that the new data systems are technically sufficient to permit remote vectoring of the Flogger interceptor against low-altitude aircraft but that neither these data systems nor the Flogger aircraft are being deployed widely enough to upgrade the present defenses before about 1980.* All agencies agree, however, that after about 1980, the Soviets will have both interceptors and data systems of sufficient quality to permit the use of remote vectoring and that these systems will be widely deployed.

100. An alternative or supplement to widespread improvement in ground control intercept capabilities would be the introduction of an AWACS which could detect, track, and vector interceptors against aircraft and cruise missiles at any altitude over land as well as water. Development of an overwater AWACS capability would be a complex undertaking in view of the Soviet state of the art; an overland AWACS would be even more so. While we have no evidence that the Soviets are developing such systems, we believe that they could initiate deployment of an AWACS capable of lookdown overwater operations in the early 1980s and a more advanced system capable of overland operations by 1985.

Figure 13

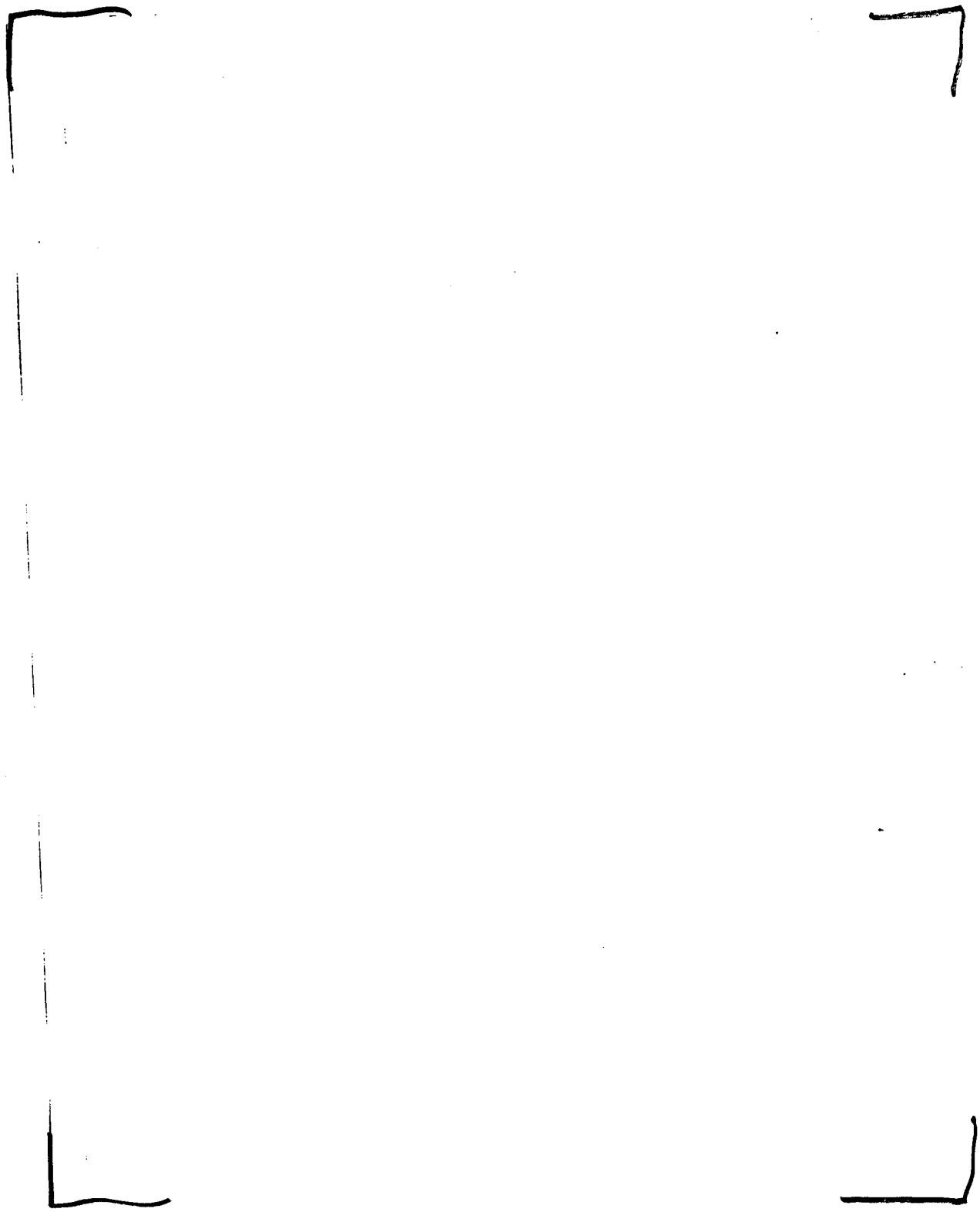

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Figure 14

Interceptors

101. Figures 15 and 16 show the characteristics of the newer Soviet interceptors and the locations at which they are deployed. Except for the Flogger, currently deployed Soviet interceptors are unable to detect and track aircraft at low altitudes. As noted above, the Flogger has a limited ability to detect, track, and engage aircraft below its altitude. It is now being deployed with strategic air defense forces. In addition, the Soviets are developing a new interceptor, reportedly a modified Foxbat, which will probably have a lookdown/shootdown system.[6] This aircraft could be introduced by about 1980. We expect it to have a better low-altitude engagement capability than the Flogger. We believe the Soviets could introduce an advanced lookdown/shootdown system by the mid-1980s. Such a system would have good detection and tracking capabilities against aircraft. We are less certain about its capability against cruise missiles, but it probably would be able to detect and track them at reduced ranges.

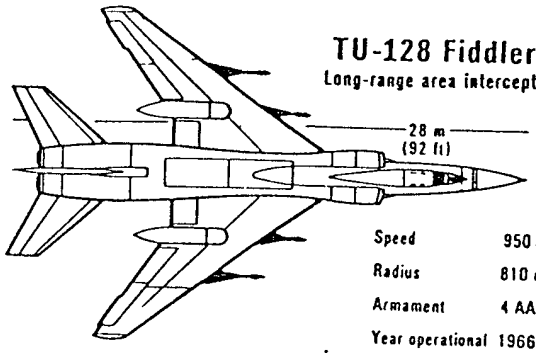
Surface-to-Air Missiles

102. Soviet strategic SAM systems have little capability against aircraft penetrating the USSR at low altitudes. (See Figures 16 and 17 for the deployment, coverage, and characteristics of these systems.) They are deployed at fixed locations, well known to US intelligence, and vulnerable to avoidance or suppression tactics. The Soviets have constructed alternate SAM sites, but their locations are also known. Soviet SA-2 and SA-3 SAMs could operate from unprepared locations not known to intelligence. Movement of large numbers of SAMs to unprepared locations in the period immediately prior to conflict, however, would require extensive planning for their support as well as exercises to practice such movements. There are no indications

[6] A lookdown/shootdown system is one that can detect, track, and engage a low-altitude penetrator from an altitude well above the target under conditions where the target return is masked by ground clutter.

Newer Soviet Strategic Defense Interceptors

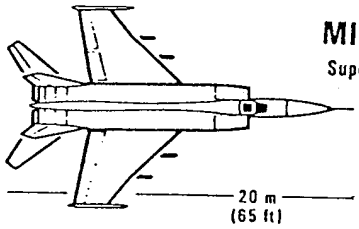
Figure 15



TU-128 Fiddler[1]

Long-range area interceptor

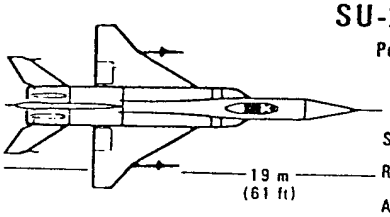
Speed	950 kn
Radius	810 nm
Armament	4 AAMs
Year operational	1966



MIG-25 Foxbat[2]

Supersonic interceptor

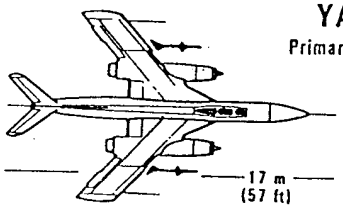
Speed	1,600 kn
Radius	300 nm
Armament	4 AAMs
Year operational	1970



SU-15 Flagon E[1]

Point interceptor

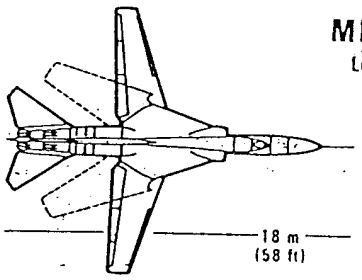
Speed	1,320 kn
Radius	475 nm
Armament	2 AAMs
Year operational	1972



YAK-28 Firebar[1]

Primary low-altitude interceptor

Speed	1,080 kn
Radius	540 nm
Armament	2 or 4 AAMs
Year operational	1964



MIG-23 Flogger B[3]

Low-altitude interceptor

Speed	1,320 kn
Radius	615 nm
Armament	4 AAMs
Year operational with strategic defense forces	1976

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 16

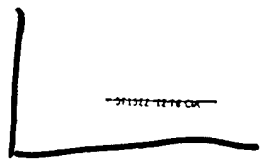
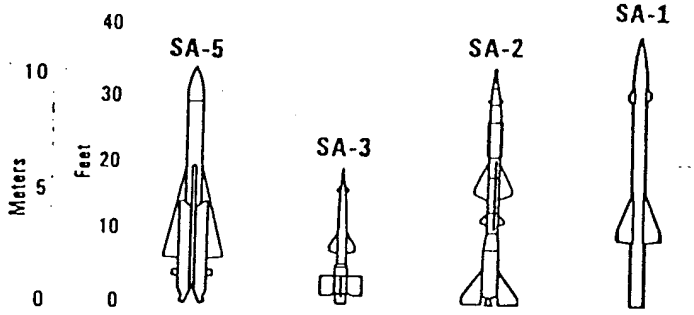


Figure 17

Currently Deployed Soviet Strategic SAMs



	SA-5	SA-3	SA-2	SA-1
Maximum range	150 nm	12-14 nm	27 nm	18-26 nm
Effective altitude				
Maximum	30,500 m (100,000 ft)	18,300 m (60,000 ft)	27,500 m (90,000 ft)	18,300 m (60,000 ft)
Minimum*	300 m (1,000 ft)	45 m (150 ft)	150-300 m (500-1,000 ft)	1,070 m (3,500 ft)
Maximum range at minimum effective altitude*	20 nm	5-7 nm	10 nm	10 nm
Year operational	1967	1961	1958	1954

*Assumes optimum conditions and conventional high-explosive warheads.

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] they have made any such preparations.

103. The use of nuclear warheads on surface-to-air missiles could increase the effectiveness of SAMs against low-altitude targets. We now have evidence which indicates that nuclear warheads are available to all SA-1 sites (the SA-1 is deployed only around Moscow), more than half the SA-2 sites, and to a small but growing number of SA-5 sites. There is no evidence that nuclear warheads are available for the SA-3 or that the SA-3 has a nuclear option.[

]

104. From what we know about the characteristics of Soviet strategic SAM systems, all but the Defense Intelligence Agency and the Assistant Chief of Staff for Intelligence, Department of the Army, believe that the SA-2 is the only one that could be employed with a nuclear warhead against low-altitude targets using its normal engagement mode. In this mode, use of a nuclear warhead could compensate for the large miss distances which would occur at the extremes of the SA-2's low-altitude range. It would be technically possible to extend the effective low-altitude range of an SA-2 with a nuclear warhead to as much as 37 km (20 nm) using an engagement mode which did not require elevation tracking. There is no evidence, however, of SA-2 employment in this mode. The SA-2 probably would be used with a nuclear warhead only in situations in which the danger of collateral damage was acceptable and in which the attacking vehicle was within line of sight of the firing unit's radar. Operating at fixed locations, the SA-2 would still be vulnerable to avoidance and suppression tactics.

105. *The Defense Intelligence Agency and the Assistant Chief of Staff for Intelligence, Department of the Army, believe that the possibility of a nuclear option for the SA-3 cannot be discounted and that it is premature to dismiss the use of nuclear-armed SA-1s and SA-5s against low-altitude targets. They further*

believe that the air defense data systems now in use in the USSR are timely and accurate enough to allow the Soviets to use nuclear-armed SAMs against targets at ranges beyond line of sight.

106. The Soviets are developing a new, low-altitude, strategic SAM system at the Sary Shagan missile test center. If development continues as expected, the system could be operational by 1980. The new system is transportable and appears suitable for use against low-altitude aircraft and low-altitude cruise missiles. Our preliminary estimate is that the system's maximum engagement range would be about 31 km (17 nm) against an aircraft the size of the B-1 and 13-28 km (7-15 nm) against cruise missiles at an altitude of about 60 m (200 ft). Its ability to engage such targets would depend on its reliability under various operational conditions and on the penetration tactics used by the US.

107. We estimate on the basis of past Soviet practices and deployment rates that about 200 sites for the new SAM system would be operational by the mid-1980s. We are uncertain about the degree of protection that this number of sites could provide. All but the Assistant Chief of Staff, Intelligence, Department of the Air Force, believe, however, that deployment on this scale would not provide an effective terminal defense against cruise missiles for more than a small proportion of the target base. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the foregoing understates the Soviet capability to defend against in-flight cruise missiles.*

[redacted] *He recognizes that the effectiveness of the SAM system is uncertain at present and would be highly dependent on the attack scenario and on the characteristics of the SAM's targets (radar cross section, altitude, velocity, and capability to operate in an electronic warfare environment). As an example of the uncertainties about this system's capabilities, he notes that some agencies have assessed it to have a potential cruise missile engagement range of as much as 37 km (20 nm). He believes further data on the SAM system are needed before we can begin to resolve uncertainties as to its capabilities.*

108. There are uncertainties about the capability of the new SAM system to engage short-range attack missiles. *Analyses by the Central Intelligence Agency and the Assistant Chief of Staff, Intelligence, Department of the Air Force, lead them to believe that the radars associated with the system could not successfully direct an intercept against a low-altitude SRAM. Analyses by the Defense Intelligence Agency, the Assistant Chief of Staff for Intelligence, Department of the Army, and the National Security Agency lead these agencies to believe that, under optimum conditions, the new system might be able to intercept a low-altitude SRAM at about 10 km (5 nm). With such a small engagement zone and the likelihood that combat conditions would be less than optimum, however, it is unlikely that the system would achieve high reliability against such a difficult target.* All agree that the new SAM might be able to engage a SRAM on a semiballistic profile, although there is uncertainty about whether the system has a suitable search radar and about whether the system will have the short reaction time required for such an engagement. Given the technical limitations it appears to have, the system probably would not provide an effective defense against SRAM attacks.

Electronic Warfare

109. During the past year we learned that about half of the ground-based jamming equipment in the USSR belongs to Soviet strategic air defense forces. Previously we had believed that this equipment belonged to the Soviet ground forces. These jammers probably would be used against terrain avoidance radars and bombing and navigation equipment. The overall effectiveness of Soviet defensive jamming would depend on a number of factors, however, such as weather, the number and location of jammers, bomber penetration tactics, US electronic counter-countermeasures (ECCM), and improvements in US bomber forces.

110. The Soviets are aware of the degradation which jamming by enemy forces can have on their own air defense systems, and they have developed a variety of ECCM measures to minimize the effects of such jamming. In view of the many uncertainties, we are unable to make a confident judgment about the effectiveness of Soviet ECCM. Such evidence as we have suggests that, in the aggregate, current Soviet ECCM would not be successful in offsetting the effects of US electronic countermeasures (ECM).

Tactical Forces for Strategic Air Defense

111. In addition to their strategic air defense forces (PVO Strany), the Soviets have sizable tactical air defense elements in the USSR. The tactical SAMs deployed with the Soviet ground forces have better low-altitude capabilities than those deployed with the PVO, and most of them are mobile. The interceptors of tactical aviation have no better low-altitude capabilities than those in PVO. Nevertheless, if they were available, Soviet tactical air defenses could be the source of significant additional resources for defense of the USSR. Since the Soviets apparently believe that an intercontinental nuclear war would result from the escalation of lesser conflicts, it is doubtful that they rely heavily on tactical air defense forces for strategic defense purposes.

Future Air Defense Capabilities

112. It is unlikely that the Soviets will have significantly better low-altitude defenses against bombers before 1980. Probable improvements in air surveillance and control, in interceptors, and in surface-to-air missiles have the potential for overcoming many of the current technical deficiencies in Soviet defenses against low-altitude bombers by the mid-1980s. It might be possible for the Soviets to overcome these deficiencies somewhat earlier with a very high level of effort. If Soviet deployments are at the rates we think probable, bomber penetration of Soviet defenses would be considerably more difficult in the mid-1980s than it would be today.

113. The only Soviet defensive system which might be able to engage the SRAM is the new SAM under development. While there are uncertainties about the characteristics of the new system, we believe that, if it has any capability against the SRAM, engagements would be at short ranges with low reliability. We therefore believe that the Soviets will not have an effective defense against the SRAM by the mid-1980s and will have to seek to attack SRAM carriers prior to missile launch.

114. For defense against low-altitude cruise missiles, current low-altitude SAM systems might have some capabilities at short ranges. Future Soviet air defense systems—advanced AWACS, interceptors, and SAMs—will have some capabilities against low-altitude cruise missiles in flight. Their effectiveness would depend upon their specific characteristics, their numbers, and their deployment patterns. We are uncertain about the degree of protection that could be achieved against low-altitude cruise missiles in the mid-1980s. All but the Assistant Chief of Staff, Intelligence, Department of the Air Force, believe, however, that the combination of characteristics and numbers of Soviet defensive systems will be insufficient to provide protection for more than a small proportion of the target base. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that, in treating cruise missiles as a separate entity, the foregoing discussion understates the Soviet capability to defend against a cruise missile force. He believes that the analysis reflected in his text in paragraph 107 indicates a potential Soviet capability to defend more than a small proportion of the target base against in-flight cruise missiles. Further, he believes that, in an attempt to deal with a purely cruise missile force, the Soviets could expand on the numbers of defensive elements forecast in this Estimate.*

115. The combination of US air attack forces will continue to be more difficult to defend against than any one of its elements alone. The air defense problems which the Soviets now face would be complicated even further by US deployment of advanced bombers and cruise missiles. US penetration tactics and the degradation of defenses by ballistic missile strikes would continue to weigh heavily against the overall effectiveness of Soviet air defenses. We cannot, however, assess the full effects of these and other operational factors.

D. Advanced Technologies for Air, Missile, and Space Defense

116. The Soviets have a large and growing capacity to exploit promising avenues in research and development which might lead to new means of strategic defense. While we expect them to continue to develop and produce a wide range of equipment based on evolutionary improvements in existing technology, we also expect them to stress research and development in areas which could lead to radically new weapon systems. In particular, we have considered the possibility that the Soviets might develop directed-energy weapons—lasers, electromagnetic pulse, and particle-beam weapons—for strategic defense purposes.

— The Soviets reportedly have a space-based laser weapon in early R&D. From what we know about the system, we believe it would be suitable for use against satellites, and we judge that a prototype could be launched by the mid-1980s. We do not believe it would be suitable for missile defense, but it could be a steppingstone to longer term development for such purposes.

— There is no direct evidence of Soviet work on a nonnuclear electromagnetic pulse weapon, and we doubt that the Soviets could develop such a weapon for strategic defense during the period of this Estimate.

— We believe that the Soviets have conducted preliminary studies on the feasibility of particle-beam weapons, but we find no direct or convincing evidence that they have embarked on a development program for such a system. We do not believe they could begin testing a prototype before the late 1980s.[9]

We caution, however, that the Soviets do have high-priority R&D programs underway to exploit advanced technologies, so developments in these areas bear close scrutiny.

117. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the potential capabilities of particle-beam weapons were so attractive to the Soviets that they have been making a vigorous effort to determine their feasibility. He considers that Soviet development of particle-beam weapons is the most important strategic undertaking since the development of the atomic bomb. The evidence thus far accumulated* [ ] *leaves little doubt that the Soviets are 10 to 20 years ahead of US science in actively developing particle-beam technology to intercept and destroy ballistic missile RVs. He believes that a development and testing facility to demonstrate the feasibility of beam propagation for a beam weapon is nearing completion, that a prototype for a particle-beam weapon system could be available by 1985, and that particle-beam weapons for ABM defense could be operational by the late 1980s.*

[9] For a full discussion of this topic, see the Scientific and Technical Intelligence Committee report entitled "Soviet R&D Related to Particle Beam Weapons," October 1976, STIC-76-002JX (TCS 3695/76).

E. Defense Against Ballistic Missile Submarines

118. The USSR currently does not have an effective counter to the US SSBN force, but the development of an effective defense against SSBNs is a major Soviet objective. We believe the Soviets seek the capability to conduct a coordinated strike against all Western SSBNs. During a period of escalating tensions preceding a possible conflict, they probably would attempt to find and track as many SSBNs as possible. [ ] once hostilities started, they would try to destroy nearly simultaneously those SSBNs which had been localized. The Soviets probably would also attack US command, control, and communication facilities in an effort to delay, disrupt, or prevent execution of US SLBM strikes. Attempts at attrition would follow.

119. The Soviets have been steadily improving the size and capability of their ASW forces (see Figure 18). Nonetheless, a major Soviet weakness in anti-SSBN operations is the lack of an effective broad-ocean surveillance capability. We believe Soviet knowledge of the location of US SSBNs at sea is limited to the general areas in which the SSBNs operate. Other weaknesses include the short range of Soviet ASW sensors, inadequate force levels, too few bases for airborne ASW operations over the open ocean, and difficulties in integrating the USSR's own submarines into coordinated ASW operations. To use most effectively the capabilities they do have, the Soviets conduct coordinated ASW operations with several types of platforms, tactics, and weapons. [ ]

Research and Development in ASW Systems

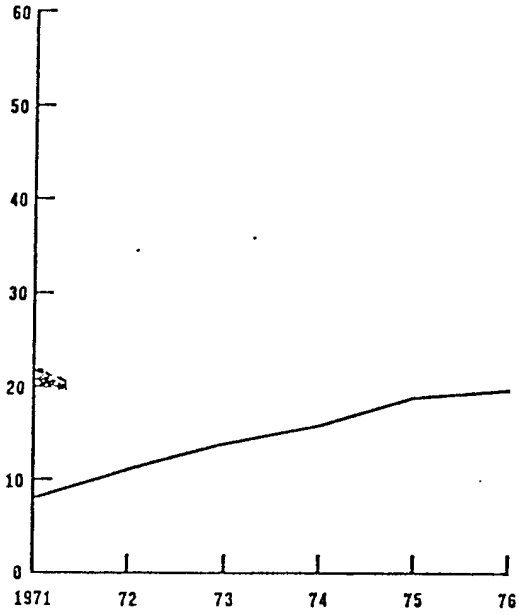
120. The Soviets are carrying out extensive research in ASW sensors, employing both acoustic and nonacoustic techniques. They have apparently installed a towed acoustic system aboard a uniquely configured surface combatant. This ship may be involved in array testing and evaluation. Towed passive arrays would enhance surface ship passive acoustic performance, and surface ship towed-array technology could be adapted to submarines. The high noise level of Soviet nuclear-powered submarines will

Figure 18

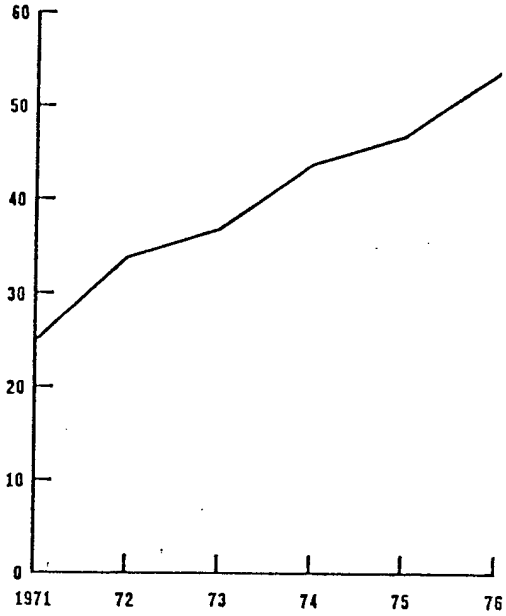
Growth of Soviet ASW Forces, 1971-1976

(number of units capable of open-ocean ASW operations)

A. Selected Nuclear Submarines



B. Selected Major Surface Combatants

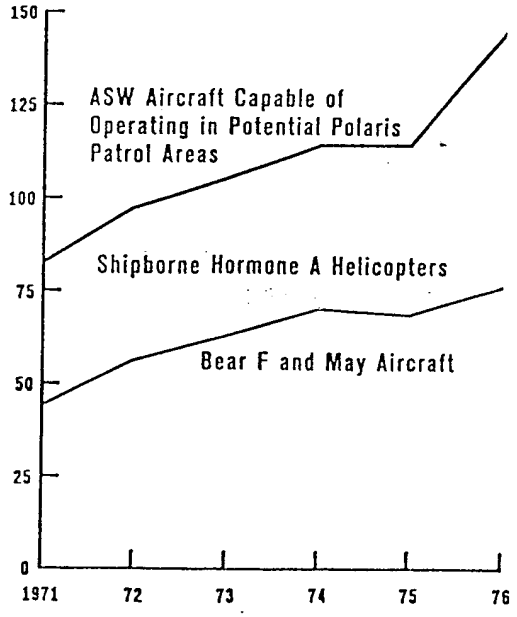


Graph A shows the number of A-Class and V-class submarines.

Graph B includes eight classes of ships: Kiev, Moskva, Kara, Kresta II, Kanin, Kashin, Krivak, and Kresta I. The first four classes (a total of 15 ships) carry 68 Hormone A ASW helicopters. Only the three ships of the Moskva and Kiev classes carry more than one of these helicopters.

Graph C includes Hormone A ASW helicopters which are carried on 15 Soviet surface ships (see note for Chart B).

C. Selected ASW Aircraft



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probably continue to interfere with the effective operation of their passive sonars. A towed array isolates the passive sensors from the submarine's own self-noise and allows for enhanced passive sonar performance. Passive acoustic sonars could also be improved through a submarine quieting program. Noise reduction for existing Soviet submarines is less likely than the introduction of quieting on a new class.

121. We believe it unlikely that the Soviets will attempt to develop a passive, acoustic, open-ocean system comparable to that of the US sound surveillance system (SOSUS) during the period of this Estimate. This judgment is based primarily on the technical difficulties involved as well as on geographic constraints, such as the lack of reliable overseas sites for shore terminals. Passive acoustic systems may be developed for barrier arrays, however, which could be deployed in straits or confined waters, such as the Barents Sea.

122. Soviet investigation of nonacoustic detection techniques includes airborne radars to detect surface disturbances caused by a submerged submarine, infrared sensors to detect thermal effects, and systems to detect extremely low frequency radiation generated by a submarine.[

]

Prospects for Improvement of Anti-SSBN Capabilities

123. Recent developments point to modest but steady improvement in Soviet ASW systems. The future Soviet effort probably will focus on the use of many platforms and sensors with relatively short-range detection capabilities, rather than on the use of fewer systems with a broad-ocean surveillance capability. Improved US SSBNs and greatly expanded SSBN operating areas will further compound the Soviets' problem. From our understanding of the technologies involved and of the R&D programs in the US and the USSR, we believe that the Soviets have little potential for overcoming SSBN detection and tracking problems in broad ocean areas. This judgment must be qualified, however, because of gaps in our knowledge of some technical aspects of potential sensor developments. On the basis of evidence now available, we believe that Soviet capabilities against SSBNs in confined waters will improve during the period of this Estimate, but that Soviet ASW capabilities will fall short of being able to prevent most US SSBNs on station from launching their missiles. Nevertheless, Soviet ASW research and development merit close and careful watching in the years ahead.

F. Civil Defense

124. A significant shift in emphasis in the Soviet civil defense program occurred in the late 1960s and early 1970s, when the Soviets subordinated the entire program to military direction. A recent review of all available evidence on the Soviet program has revealed that some of the civil defense preparations which the Soviets have had underway since that time are more extensive and better developed than we had previously understood. The Soviet civil defense program is evidently being pursued in accordance with the following priorities: first, to assure the continuity of government by protecting the leadership; second, to provide for the continuity of important economic functions and the protection of essential workers; and last, to protect the nonessential part of the population.

125. Hardened shelters and command posts are now available for the top political and military leadership and for military and civilian leaders at a number of capitals and military headquarters below the national level. Although Soviet planning calls for redistributing industries outside urban areas, the expansion of Soviet industry in the past 15 years has not significantly reduced its vulnerability to nuclear attack. Soviet heavy industries remain mostly in large urban areas. The vulnerability of industry has been reduced somewhat, however, by expansion of some industries from urban centers into the suburbs or nearby towns and by producing certain military equipment at more than one facility. In addition, we have information on several hundred underground structures at a wide variety of industrial facilities.

126. The number of hardened shelters, particularly for industrial workers and other essential personnel, is increasing. We can make no estimate at present of what percentage of such personnel could be accommodated. Plans call for the mass evacuation of nonessential personnel and for the construction of

relatively simple fallout shelters in evacuation areas. The Soviets have reserves of food and fuel outside urban areas, but we do not know the actual size of these reserves or how long they would last. In general, it appears that the Soviets' greatest difficulty in the event of large-scale nuclear attacks would not be the gross size of their reserves but the problem of preserving a distribution system and operating it under chaotic conditions.

127. Major gaps remain in our knowledge of the Soviet civil defense program. Thus, we can make only tentative assessments of how effective that program would be under wartime conditions. It is our tentative judgment that, under optimum conditions which included an adequate period of warning and evacuation, Soviet civil defenses would assure survival of a large percentage of the leadership, would reduce prompt casualties among the urban population to a small percentage, and would give the Soviets a good chance of being able to sustain the population with essential supplies. With minimal warning, some key leaders would probably survive, but the urban population would suffer very high casualties and the chances of adequately supplying survivors would be poor.

128. The civil defense measures which the Soviets are taking could have a significant impact on both US and Soviet assessments of the likely outcome of a nuclear exchange. The Soviets probably believe that civil defense measures contribute to giving the USSR a chance to survive as a national entity and to be in a better position than the US after a nuclear exchange. The Soviets, however, probably do not have a highly optimistic view of the extent to which their present civil defenses could preserve the fabric of Soviet society in the event of large-scale nuclear attacks. Even under the most favorable circumstances, they probably would have to expect a breakdown of the economy and, under the worst conditions, catastrophic human casualties as well. The effectiveness of the program in the future will depend in considerable measure on the pace and thoroughness with which the Soviets carry out their stated civil defense plans. The evidence to date does not suggest that the Soviets are carrying out their civil defense programs at a crash pace, but rather that they have a continuing, steady program. It is not possible at present, however, to make a confident estimate of the pace and future effectiveness of the program.

129. *The Defense Intelligence Agency, the Energy Research and Development Administration, 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 the impact of Soviet war-survival efforts upon the US-USSR strategic balance is greater than can be inferred from the foregoing discussion of the Soviet civil defense program. In their view, the Soviets see their civil and passive defense program as an essential element in the achievement of the capability to wage intercontinental nuclear war, should one occur, and survive with resources sufficient to dominate the postwar period. These agencies believe that this program will have a definite and increasing impact on US-USSR strategic balance assessments in the years ahead. Further, they believe the Soviets will attempt to enhance their influence, particularly in the Third World and Europe, by capitalizing on real and perceived improvements in their war-waging capabilities. The Assistant Chief of Staff, Intelligence, Department of the Air Force, further believes that the strategic balance already has been altered in a major way by civil defense and other measures the Soviets have carried out thus far.*

130. *The Department of State believes that the Soviet civil defense program is seen by the Soviet leadership primarily as a prudent hedge against the possibility of attack by a nuclear-armed adversary. Moreover, the Department of State believes that these Soviet civil defense efforts will not materially increase Soviet willingness to risk a nuclear exchange and will not undermine the deterrent value of US strategic attack forces. While fully agreeing that this is an important area of activity which deserves closer attention by the US Intelligence Community, the Department of State believes that at the present time the scope of the civil defense program does not indicate Soviet strategic objectives beyond maintenance of rough equivalence with the US.*

IV. OTHER FACTORS AFFECTING SOVIET CAPABILITIES FOR INTERCONTINENTAL CONFLICT

131. The Soviets today possess sufficiently numerous and survivable intercontinental capabilities to ensure the execution of a devastating retaliatory strike, even if caught unawares by a massive US attack. In a

first or preemptive strike against the US, however, these forces are capable neither of fully destroying US offensive forces nor of effectively defending against a US retaliatory strike. Details of the factors addressed in this section affecting Soviet capabilities for intercontinental conflict probably would not significantly influence these broad generalizations.

132. These factors can be highly relevant, however, to judgments about how Soviet decisionmakers and military commands would function and the decisions they might make in a period of crisis or conflict when the risk of intercontinental nuclear war had become high, in the period during which an intercontinental conflict was actually in progress, and in the event that the US employed selective nuclear options in such a conflict. We have only limited evidence on which to base judgments on these questions.

133. We believe that Soviet initiation of unprovoked, deliberate nuclear war is highly unlikely. Only a Soviet perception that a severe crisis or some major local conflict involving the large-scale commitment of US and Soviet forces was likely to escalate to the nuclear level would, in our judgment, bring the Soviets to consider such initiation. Nevertheless, if they were to decide to attack the US in peacetime circumstances, we believe that they could minimize indications of their intent by limiting their initial strike forces to ICBMs and to those SLBMs within range of their targets. Preparations could be completed within several hours after the decision to strike had been promulgated. Under these circumstances, there would be few indications and little time for analysis upon which US warning staffs could reach and convey a confident judgment that the Soviets were about to strike.

134. We continue to believe that the Soviets could engage in limited intercontinental nuclear war if they chose to do so. Soviet leaders contemplating a response to a limited US attack would consider the circumstances at the time and what they perceived to be the consequences of their reaction. They probably would not be able to distinguish between a massive US attack and a substantial selective attack on their territory. Moreover, if they had not specifically planned for it in advance, their targeting doctrine and force structure might make it difficult for them to respond promptly in kind to what they perceived to be a small-scale limited attack. Even if they could, their willingness to respond would be influenced by their expressed conviction that limited nuclear warfare would likely escalate quickly to an unrestrained conflict, as well as by their military doctrine calling for a maximum effort to destroy the enemy's capability to fight.

135. During at least the next several years, therefore, it is highly unlikely that the Soviets would merely respond in kind to a small-scale, limited US attack. Any Soviet response to a limited strike by the US would be likely, at a minimum, to involve a large-scale attack on selected military targets, primarily nuclear delivery means, rather than a more limited attack with lesser objectives.

A. Command, Control, and Communications

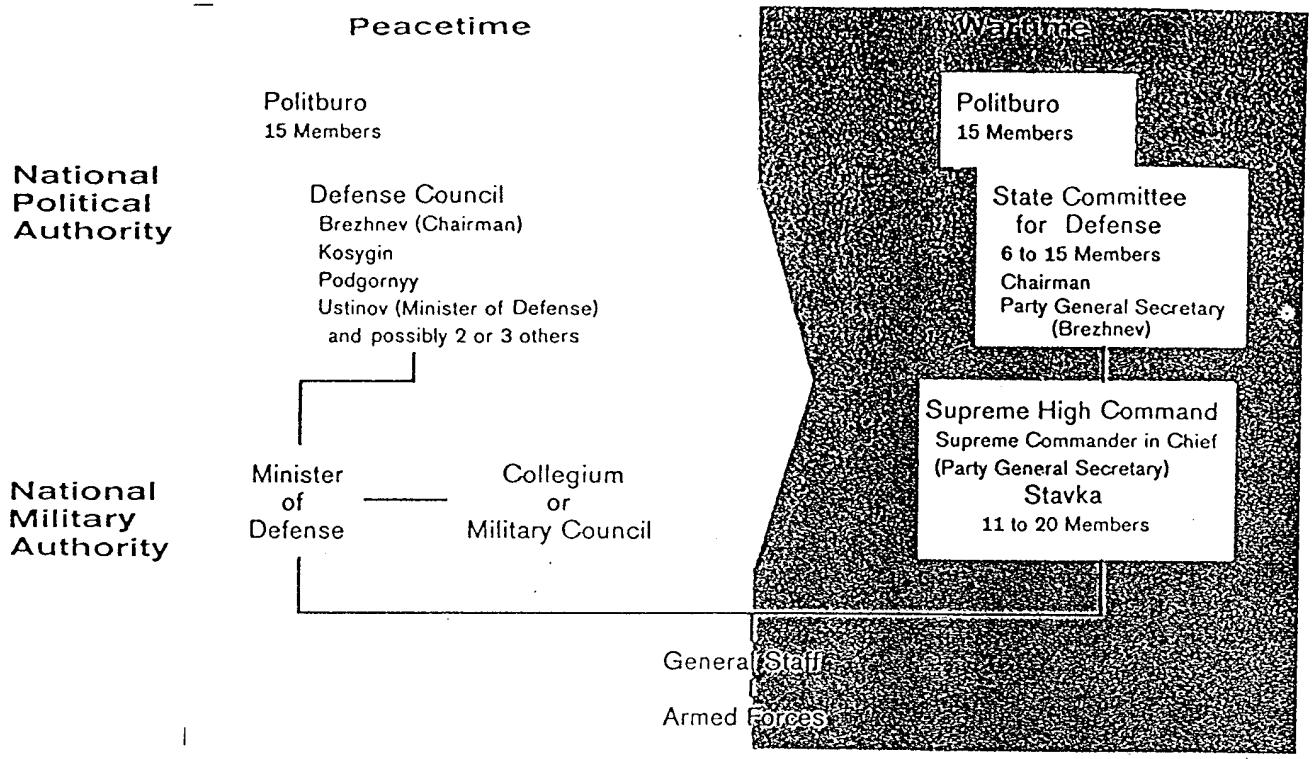
136. Ultimate authority for the direction of the Soviet military in both peace and war rests with the Politburo. In wartime, however, the Soviet command structure would be different from that in peacetime (see Figure 19). The Defense Council would form the nucleus of a national defense command which would consider all defense issues. The Supreme High Command would constitute the military leadership of the armed forces and would include the predesignated Supreme Commander in Chief (currently Brezhnev) and his Stavka (General Headquarters). The General Staff would implement the decisions of the Supreme High Command. Through a system of interlocking memberships in the several decisionmaking bodies, the political leadership would continue to dominate the political-military command structure.

137. Centralization may be a weakness in the system. The rapid assumption of decisionmaking authority, including authority to terminate a conflict, might prove difficult should the top national political leaders be killed, incapacitated, or isolated. Likewise, if there were a post-Brezhnev period of political jockeying, full efficiency of leadership in a crisis or wartime situation would have to await the growth of new bonds of personal trust and mutual dependence.

138. [

Figure 19

Soviet Command Authorities: Transition to Wartime



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139. Command and control survivability has increased substantially since the late 1960s. Most major command posts and communications centers have been hardened and provided with hardened alternate facilities. Underground antennas have been widely deployed and a number of switching centers serving main communications routes have been bunkered. On the other hand, the warning and control networks serving Soviet air, missile, and antisatellite defense forces, as well as the facilities serving Soviet space tracking and space-based reconnaissance and communications capabilities, remain soft and vulnerable.

140. The Soviets frequently complain in their military literature about weaknesses in their command and communications system and note that their present information-handling capability does not fully meet their requirements. They continue to place great emphasis on improving their ability to acquire and integrate battle management data and on improving the redundancy and protection of means for maintaining control over their forces in a variety of circumstances and over a period of warfare which they assume will last for some time.

141. We believe that the system would be degraded in a nuclear war, even if not directly attacked, but that it almost certainly would be able to support continued intercontinental operations. Under direct attack, the system would suffer additional degradation and probably would not be able to perform all battle management functions. The extent and duration of the degradation would depend on the nature of the attack and on the Soviets' ability to reconstitute the system. There are too many uncertainties at this time for us to judge the extent to which the USSR's ability to conduct intercontinental nuclear war would

be constrained under these circumstances. We believe, however, that the Soviets would be able to carry out retaliatory strikes.

B. Intelligence and Warning

142. A variety of sources contribute to Soviet strategic warning capabilities, but the Soviets appear to depend heavily on the reporting of their large and redundant signal intelligence (SIGINT) network. Changes in the status of US strategic forces are known to be prime SIGINT targets. We believe the Soviets can monitor enemy force postures in sufficient detail to provide enough strategic warning to permit prompt and accurate interpretation of the changes that Soviet doctrine anticipates would likely precede an enemy attack.

143. The Soviets routinely maintain the bulk of their forces for intercontinental conflict in a relatively low state of readiness, expecting to have time to alert them in a period of tension or upon receiving strategic warning, although the hardness and reaction times of ICBM forces are making such warning less essential for the Soviets. For tactical warning, existing sensors could provide Moscow with up to 13 minutes' warning of ICBM attack and up to five minutes' warning of SLBM attack. In the future, tactical warning will probably be increased to as much as 30 minutes through the use of a satellite early warning system and over-the-horizon radars.

C. Strategic Targeting and Operations

144. Foremost among Soviet targeting objectives in an intercontinental conflict would be the weakening of an enemy's capability to attack the Soviet homeland and military forces. A second objective would be the neutralization of enemy industrial capabilities and major economic and administrative control centers. A third would be the isolation of the US from other theaters of warfare by disrupting air and sea lines of communication. We judge that the Soviets would launch an intercontinental attack in a number of waves over an extended period, with some forces held in reserve. We also judge that the Soviets have the capability to retarget their forces.

D. Concealment and Deception

145. Concealment and deception techniques—the use of camouflage, dummy targets, diversionary tactics, dummy communication nets, emission control procedures, false information, and the like—are an integral part of Soviet military doctrine. Although many of the techniques which we detect appear to be experimental and are often crude, there have been cases which were uncovered only after prolonged analysis.[

]

146. Examination of the concealment and deception programs which we have detected suggests three general objectives: to deny the US the capability to determine the characteristics of new weapon systems, to add to the survivability of Soviet forces, and to degrade US strategic warning capabilities. The trends of the past five years or so indicate that the selectivity, centralized direction, and sophistication of concealment and deception measures applied to Soviet strategic forces are likely to increase in the future. We believe that the Soviet leaders would see little prospect of successfully achieving meaningful strategic advantage over the US under cover of even a broad program of concealment and deception. Nevertheless, we cannot exclude the possibility that Soviet leaders, if they came to believe they could succeed, would approve a more extensive program of concealment and deception designed to contribute to the achievement of a significant strategic advantage over the US. *The Department of State believes that unless US-Soviet relations deteriorated sharply, it is highly unlikely that the Soviets would seek to achieve meaningful strategic advantage under cover of concealment and deception, and—as noted above—they probably would see little prospect of success in such an undertaking. For the views of the Assistant Chief of Staff, Intelligence, Department of the Air Force, on this subject, see paragraphs 11-13.*

E. Interference With US Space Systems

147. The Soviets now possess capabilities to destroy or degrade some US space systems. From their military doctrine[ ]we conclude that, during or immediately preceding an intercontinental nuclear war, the Soviets would seek to interfere with US space systems used for reconnaissance and military support.

If intercontinental warfare resulted from a crisis or local conflict, the likelihood that the Soviets would already have interfered with US space systems would vary with the circumstances. In general, the likelihood of such interference would be low in circumstances where US and Soviet forces were not directly engaged and would rise with the level of direct US-Soviet involvement. In the case of a NATO-Warsaw Pact conflict in Central Europe, there would be a high likelihood of Soviet interference.

148. Even in the absence of crisis of conflict, all but the Department of State believe that the Soviets might seek selectively to degrade certain classes of US space sensors. *The Department of State believes that the use of active measures to degrade US space sensors would constitute interference with these US space systems, and that the judgment in the preceding paragraph continues to apply—that is, the likelihood of such interference would be low in other than conflict situations.*

V. FUTURE FORCES AND THEIR IMPLICATIONS

A. Future Force Projections

149. In projecting the size, characteristics, and mix of Soviet forces for intercontinental conflict, we face varying degrees of uncertainty:

- In projecting Soviet force levels and mixes for the near term (i.e., the next two years or so), we rely most heavily on observed activity; we have relatively high confidence in these near-term estimates.
- We are less certain about force levels and mixes for the midterm (about two to five years hence), but can still project with some confidence because Soviet forces will consist mostly of systems already deployed or in testing.
- Large uncertainties pervade our projections of force levels and mixes for the longer term (the period from five to 10 years hence), because we almost never have direct evidence on Soviet long-range planning. Our long-term projections are based partly on indirect evidence and some insights into the Soviet research and development process and partly on our assessment of overall Soviet objectives, technological prospects, and priorities.
- There are also uncertainties in estimating the characteristics of individual weapon systems, even for the present and near term, in part because the Soviets go to considerable lengths to deny us information on system characteristics.

Alternative Force Projections

150. In view of the variety of deployed forces potentially available through 1986, we project five alternative forces to illustrate the range of capabilities which the Soviets might develop and deploy under differing circumstances:

- Force 1 (Best-SAL) represents our best projection of Soviet strategic force developments if a SALT TWO agreement based on the Vladivostok accord is reached and Soviet programs continue at the approximate levels of effort and technological achievement demonstrated in the recent past.
- Force 2 (Moderate-No-SAL) illustrates generally similar levels of effort and achievement, but without a SALT TWO limitation.
- Force 3 (High-SAL) illustrates a high level of Soviet effort and technological achievement under a SALT TWO limitation.
- Force 4 (High-No-SAL) illustrates a similarly high level of effort and achievement, but without SALT TWO limitations.
- Force 5 (Low-SAL) reflects a low level of effort and achievement within SALT TWO constraints.

151. We consider both the high forces to be upper-boundary cases and, thus, highly unlikely, because the Soviets probably could not sustain such high levels of effort and achieve such consistantly high technological success on all fronts simultaneously through the entire 10-year period. The low force is considered an equally unlikely boundary case. The projections, summarized in Table V, are discussed in detail in Volume II, Chapter V, and tabulated in toto in Volume III, Annex A. They encompass both intercontinental attack and strategic defense forces. We do not include projections of Soviet anti-SSBN ASW forces because of the difficulty in separating ASW from general purpose naval forces.

152. In all projections, we assume that the ABM Treaty remains in effect throughout the period. In

Table V

Summary Comparison of Force Projections [1]

	Force 1	Force 2	Force 3	Force 4	Force 5
Offensive System IOC Dates					
Follow-On ICBMs	1982	1982	1980	1980	1984
ICBM Carrying MaRVs	[2]	[2]	1982	1982	[2]
Mobile SS-X-16	[2]	1978	1979[3]	1978	[2]
MIRVed SLBMs	1977	1977	1977	1977	1978
New SSBN/SLBM System [4]	1980	1980	1979	1979	1984
Follow-On Long-Range Bomber [5]	1981	1981	1980	1980	1981
Defensive System IOC Dates					
New Interceptor	1981	1981	1980	1980	1981
Advanced Lookdown/Shoot-down System [6]	1985	1985	1984	1984	[2]
Overwater AWACS	1982	1982	1980	1980	[2]
Overland AWACS	[2]	[2]	1984	1984	[2]
New Mobile Low-Altitude SAM	1980	1980	1978	1978	1982
Force Levels in 1981					
ICBM Silos	1,318	1,398	1,288	1,506	1,338
Mobile ICBMs	[2]	80	40	150	[2]
SLBMs	984	1,054	984	1,101	968
MIRVed Missiles	956	1,202	1,074	1,606	800
Bison, Bear, Follow-On Bombers [7]	66	156	87	167	76
(Backfires) [8]	(248)	(248)	(339)	(339)	(204)
SAM Launchers	8,610	8,610	10,132	10,132	6,260
Air Defense Interceptors	2,755-2,840[9]	2,755-2,840[9]	2,925	2,925	2,475
Force Levels in 1986					
ICBM Silos	1,278	1,398	1,178	1,570	1,278
Mobile ICBMs	[2]	110	100	340	[2]
SLBMs	1,024	1,108	1,028	1,196	984
MIRVed Missiles	1,274	1,950	1,294	2,930	1,248
Bison, Bear, Follow-On Bombers [7]	95	215	94	235	135
(Backfires) [8]	(475)	(475)	(734)	(734)	(324)
SAM Launchers	6,340	6,340	9,970	9,970	5,300
Air Defense Interceptors	2,795-3,030[9]	2,795-3,030[9]	3,240	3,240	2,465

[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] An improved modification to the mobile SS-X-16 is deployed in Force 3.

[4] *The Director of Naval Intelligence, Department of the Navy, believes this system could not be operational before 1981.*

[5] Excluding prototypes.

[6] An advanced lookdown/shootdown system is projected for incorporation into airframes then in production.

[7] Excluding nonbomber variants and Bear aircraft in Soviet Naval Aviation.

[8] Including Backfires assigned to strike missions in Long Range Aviation and Soviet Naval Aviation and those aircraft produced but not assigned to operational units.

[9] *The Central Intelligence Agency supports the lower number; the Defense Intelligence Agency the higher figure.*

projecting forces within the constraints of a SALT TWO agreement, we have assumed that Backfire bombers, among other things, are excluded from a 2,400 aggregate ceiling.[10]

153. In the next few years, SLBMs will become a larger percentage of the total Soviet ICBM and SLBM force, thus increasing the proportion of launchers which can achieve better survivability through mobility. Although the Soviets have evidently deferred deployment of a land-mobile ICBM, they will probably continue R&D on such systems and might deploy one to counter a perceived danger to their silo-based ICBMs. For purposes of illustrating the land-mobile option under a SALT agreement, we have included land-mobile missiles in one of our SALT-limited projections, but not in the other two.

Static Measures of Offensive Forces

154. Using certain quantitative measures of offensive forces commonly used by the US defense and SALT community, we compare in Figure 20 the US and Soviet offensive forces actually deployed from 1966 through 1976 and compare the several projected Soviet forces with the US programed force from 1977 through 1986. We assume that US forces evolve as programed through 1984 in the US Five-Year Defense Program (FYDP) dated October 1976, and have extrapolated directly from it for the final two years of the period. No attempt is made to compare future US and Soviet forces should US force programs change.

155. In 1966, the US led in almost all static measures of offensive power. At that time, however, the Soviets had large ICBM and SLBM deployment programs underway, including a program to deploy considerable numbers of heavy ICBMs. The US had leveled off in the number of launchers by then, but began in 1970 to deploy MIRVed ICBMs and SLBMs in existing launchers. By the mid-1970s, the static measures reflected a situation wherein the US still led in some measures while the USSR led in others. (None of these static measures reflects significant qualitative force characteristics, such as missile accuracy.)

156. For the future, the graphs in Figure 20 show that:

- In **total delivery vehicles**, the two No-SAL Soviet forces exceed the US programed force 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 RVs**, the US programed force loses its lead in 1978-79 to the Soviet High-SAL and High-No-SAL Forces, and in about 1981 to the Moderate-No-SAL Force, while the Best-SAL Force grows to be about equal to the US force in the mid-1980s, when the US force begins to climb again.
- In **on-line missile RVs and bomber weapons**, none of the Soviet forces except the High-No-SAL Force overtakes the US programed force.
- In **on-line missile throw weight**, all five Soviet forces exceed the US programed forces by substantial margins throughout the period of this Estimate.
- In **combined on-line missile throw weight and bomber loadings**, all Soviet forces exceed the US programed force until the early 1980s, although the Best-SAL Force and the US force are not greatly different, but the US force then climbs sharply to exceed all but the High-No-SAL Force by the mid-1980s.[11]

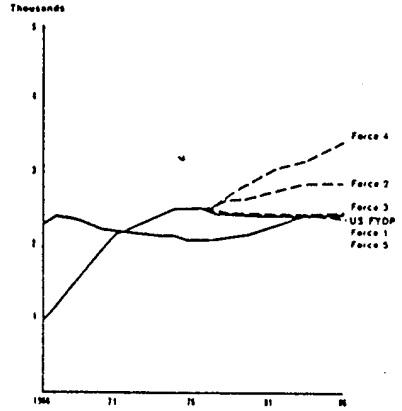
[10] Other excluded elements are the 18 SS-9 launchers at Tyuratam which we believe are part of the operational force; the 16 SLBM tubes on older submarines that have been modified to carry new SLBM launchers; the SLBM tubes on G-class diesel submarines; 35 to 45 Bison tankers; and about 75 Bear aircraft which are used for ASW and reconnaissance.

[11] It is inherently difficult to aggregate missile throw weight and the bomber equivalent of missile throw weight. Our method of handling this problem is to aggregate the full throw weight of each ballistic missile and the full weight of weapons normally carried as payload by each bomber. This includes the full weight of the postboost vehicle of each MIRVed missile and the full weight of each air-to-surface missile carried by a bomber, even though these weights include propulsion systems and structures in addition to nuclear payload. Other methods of combining missile throw weight and bomber payloads could result in significantly different results. One frequently used method computes bomber payload by relating it to ICBM throw weight employed to carry weapons of comparable yield. For example, the throw weight equivalent of a B-52 G/H with four bombs and six SRAMs would be 5,040 kg (11,100 lb), as compared with 10,250 kg (22,600 lb) when computed using our method. If this alternative method were employed, bombers would contribute considerably less to the total measure, and the throw weight in all Soviet forces would exceed the US programed force throughout the period of this Estimate.

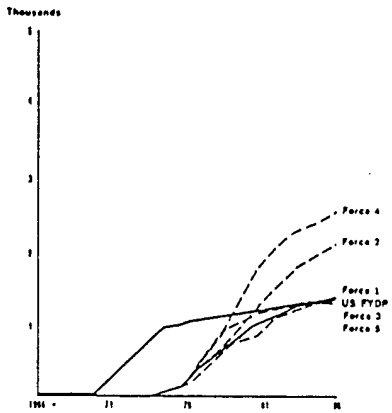
Figure 20

Quantitative Comparisons of Forces for Intercontinental Attack

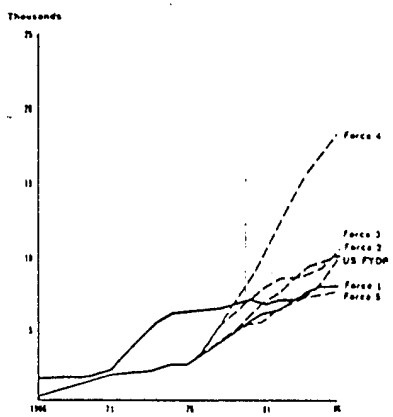
Total Delivery Vehicles



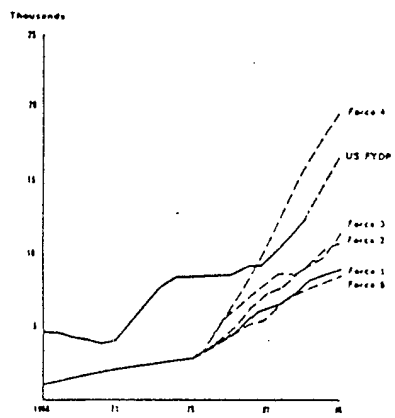
Total MIRVed Delivery Vehicles



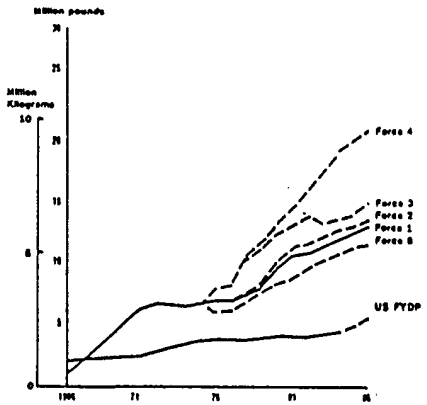
On-Line Missile RVs



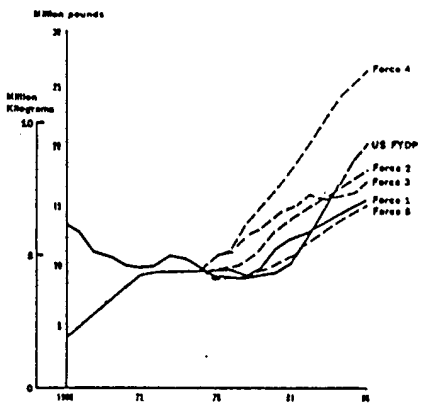
On-Line Missile RVs and Bomber Weapons



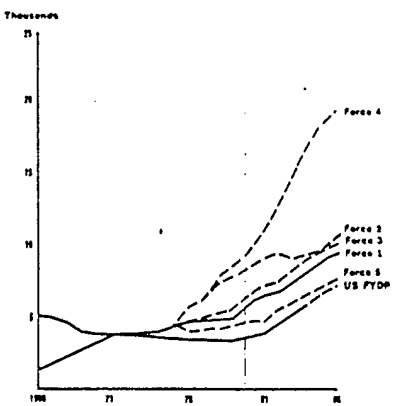
On-Line Missile Throw Weight



On-Line Missile Throw Weight and Bomber Loadings



On-Line Equivalent Megatons



Note: The figures for total delivery vehicles include ICBMs operational, in conversion, or under construction; SLBM launchers operational, under conversion, in shipyard overhaul, and on sea trials; and operational long-range bombers. The figures do not include SLBM launchers in SSBNs which have not yet begun initial sea trials or land-mobile ICBMs produced but not in units. Also excluded from the Soviet figures are Backfire aircraft, ICBM launchers at Tyuratam, Beer heavy bombers in naval aviation and reconnaissance, Bison tankers, SLBM launchers on older submarines reconfigured to carry modern SLBMs, and the launchers aboard G-class submarines.

The figures for 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 is derived and, after 1984, extrapolated from the force projections of the US Department of Defense Five-Year Defense Program (FYDP) as of October 1976.

For details on assumptions used in making these calculations, see Volume II, Chapter V.

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— In on-line equivalent megatonnage (EMT), all Soviet forces now lead the US and remain ahead in the mid-1980s. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that EMT has become a less meaningful measure for evaluating US force damage potential, primarily because of the Soviets' extensive passive defense program.*

B. Threat to ICBM Silos

Soviet Countersilo Capabilities

157. Our assessment of Soviet countersilo capabilities is affected by a number of uncertainties. The most significant are the accuracy, yield, and reliability of Soviet ICBMs, the hardness of US silos, and the effects of fratricide (i.e., the degrading effect of one missile RV on another if two or more are employed in closely spaced nuclear attacks on a single target). These factors are discussed in detail in Volume III, Annex B. In this analysis, our uncertainties about Soviet ICBM characteristics are aggregated in the several projected Soviet forces to show the variety of possible implications. Also treated as a variable is the question of whether the Soviets can overcome fratricide effects. US ICBM silo hardness, however, is taken from US planning factors and is not varied.

158. It should also be noted that the analysis presented here does not represent a net assessment of the interaction between US and the Soviet strategic forces under actual wartime conditions; such an assessment would require consideration of many additional operational factors. Only stereotyped scenarios have been used here, US and Soviet ICBM forces are considered in isolation, command and control systems are assumed to function effectively, and no detailed war game has been performed. Accordingly, this analysis is meant only to illustrate trends; it should not be used to evaluate various alternative US force mixes or to represent the actual results of a nuclear exchange between the US and the USSR.

159. Figure 21a displays the calculated results of hypothetical attacks on US missile silos by the five projected Soviet ICBM forces. Figure 21b illustrates the degree to which the calculations are influenced by uncertainty about Soviet ICBM accuracy and yield. The two figures together illustrate that qualitative factors—missile accuracy, warhead yield, and whether one or two weapons can be effectively delivered by different missiles to each target—dominate calculations of Soviet countersilo capabilities. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the Soviets would conclude that two-RV attacks by different missiles to compound damage are not operationally feasible, because of the nuclear environment and attack timing requirements. He believes that the possible damage the Soviets could expect to achieve against US missile silos lies between the one-RV and two-RV cases shown in Figures 21a and 21b.* Given the large number of ICBM warheads projected in all of our alternative Soviet force projections, the differences in ICBM launcher levels are of little significance to the calculations.

160. The countersilo capabilities of all the projected Soviet forces increase with the deployment of the existing new ICBMs, and especially with the modifications and follow-on missiles that are expected. As displayed in Figure 21a, our calculations show that:

— The High-SAL and High-No-SAL Forces could pose a major threat [12] to US missile silos in the next year or two.[13]

— The Best-SAL and Moderate-No-SAL Forces could pose a major threat to US missile silos in the mid-1980s, or by about 1980 assuming effective two-RV attacks.

— The Low-SAL Force could not pose a major threat to US missile silos at any time during the period of this Estimate, even if two-RV attacks were effective.

Figure 21b shows that if the most threatening extremes of our uncertainty about accuracy and yield are combined with the number of ICBMs projected in our Force 1 (Best-SAL), then a major threat to Minuteman silos could be achieved by that force in the next year or so, assuming effective two-RV attacks.

[12] For the purposes of these calculations, we assume that the capability to destroy more than 600 US ICBM silos constitutes a major threat.

[13] Note that Forces 1 and 3, constrained by the SAL agreement, possess slightly greater hard-target kill capabilities in a one-RV attack than the corresponding No-SAL forces, because more single-RV ICBMs, with higher yields than MIRVs, are projected in the SAL forces to conform with the limit on the number of MIRVed delivery vehicles.

Figure 21 a

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Figure 21b

Soviet Silo Survivability

161. A possible Soviet view of the USSR's own silo survival problem is illustrated in Figure 22. It shows the estimated number of Soviet silos and ICBM warheads which might survive if the Soviet Best-SAL Force were subjected to hypothetical attacks by the programed US ICBM force. This US force contains the accuracy improvements programed for the late 1970s for the Minuteman III, as well as the deployment of the M-X ICBM system about 1983. A conservative Soviet planner could judge that, even with the improvements in Soviet silo hardness now in progress, his silo-based force could be in severe jeopardy by the mid-1980s. Figure 22, however, also shows that, because of their silo-hardening and MIRV programs, the Soviets could expect a generally upward trend in the number of warheads surviving such an attack until the US deploys the M-X ICBM. It should be noted that we assume Soviet planners would be concerned about the possibility of US two-RV attacks in the future.

Effects of Uncertainty

162. As indicated above, we are uncertain of Soviet capabilities against US silos and of the extent to which Soviet silos could withstand a US ICBM attack. The Soviets face similar, but probably somewhat less, uncertainty. They will reduce their uncertainties about the actual CEPs of their own missiles through further R&D and operational testing. Nevertheless, this will not eliminate the problems Soviet planners would have to contend with in attempting to plan an attack against US silos. Among other things, the variations in operational performance likely to occur in a large-scale attack, especially if multiple-RV tactics are employed, would lead to considerable Soviet uncertainty about the results of a strike against the Minuteman force. Soviet planners would also have to consider the possibility that the US would launch its ICBMs prior to the impact of Soviet RVs. We expect uncertainty to influence both US and Soviet views of ICBM survivability throughout the period of this Estimate.

C. Threat to Bombers and SSBNs

163. US SSBNs in port (about half of the total force) and nonalert bombers (about two-thirds of the force) would be vulnerable to a surprise Soviet attack. With the warning time provided by US sensors, the alert US bomber force could be airborne and well dispersed before the arrival of Soviet ICBM warheads. Current Soviet SLBMs fired from present Soviet SSBN patrol areas would be only slightly more effective against the bomber force than ICBMs, assuming US missile detection systems provided timely warning. If launched from close to US coastlines, Soviet SLBMs could present a more serious threat to the alert bomber force. In deciding whether to rely on SLBMs for this purpose, the Soviets would have to consider US ASW capabilities, the measures available to the US to reduce the vulnerability of its existing bomber force, and the greater survivability of the US B-1.

164. We believe the Soviets would conclude that most US alert bombers would survive a surprise SLBM attack throughout the period of this Estimate. As noted earlier, we also conclude that Soviet ASW capabilities will fall short of being able to prevent most US submarines on station from launching their missiles. Moreover, because of the longer flight times of ICBMs targeted against US missile silos, Soviet planners could not rely on maximizing the prelaunch destruction of both bombers and ICBMs.

165. Most Soviet ballistic missile submarines are kept in port. Soviet intercontinental bombers are deployed at a few main bases and are not kept in a high state of alert. These submarines and bombers are vulnerable to a surprise US attack. With a period of strategic warning, which the Soviets apparently expect, they could put roughly 80 percent of their submarines to sea and could alert and disperse their bombers.

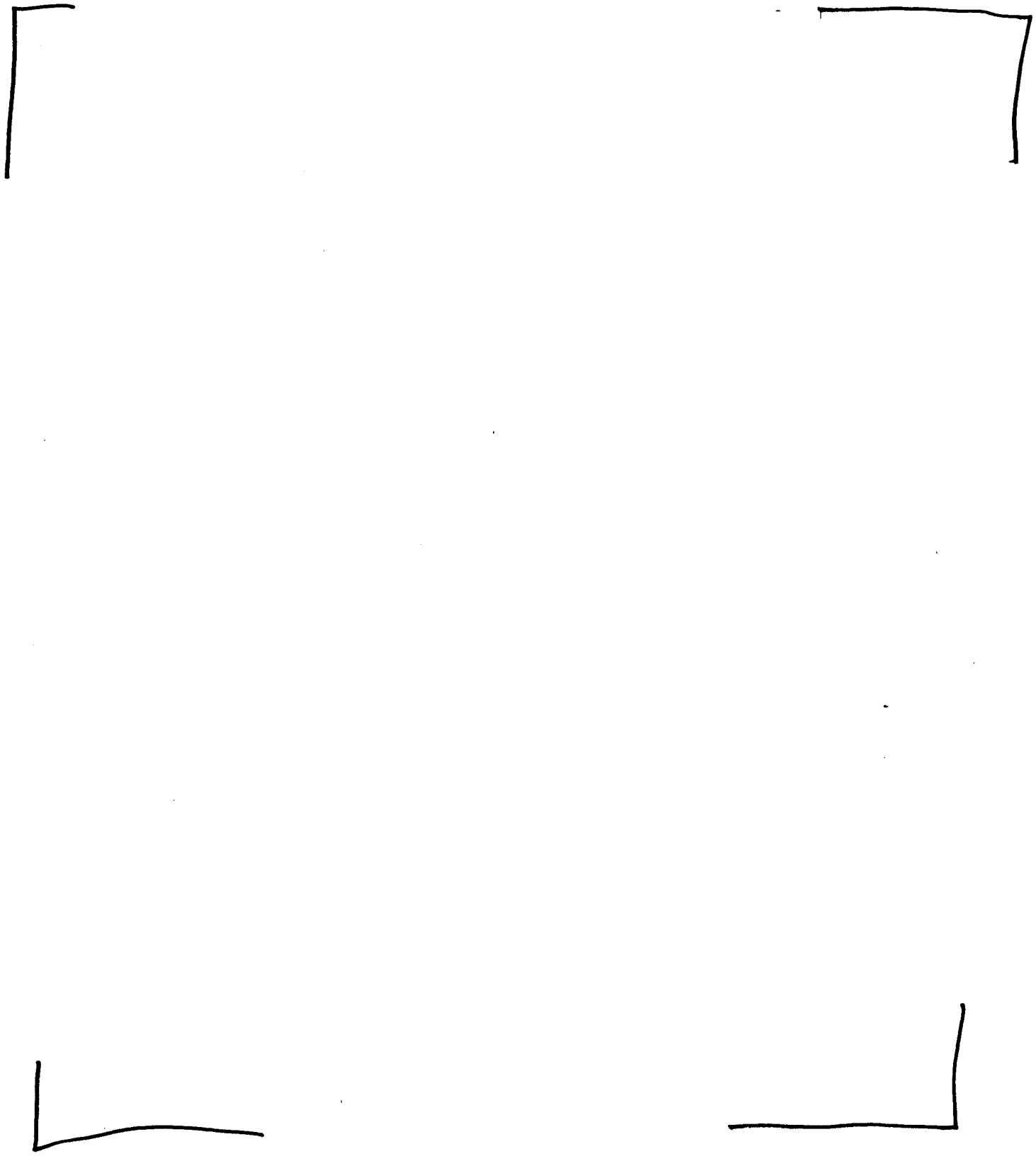
D. Residual Offensive Forces After a Surprise Counterforce Attack

166. The US FYDP force and the Soviet Best-SAL and High-No-SAL force projections are compared in Figure 23 in terms of residual missile warheads and bomber weapons available for immediate employment after hypothetical surprise attacks on ICBM silos and submarine and bomber bases. (Residual weapons are those remaining to the attacker and those surviving on the side attacked.) There is some evidence of Soviet interest in residual EMT as a measure of relative capabilities. Residual EMT calculations are presented in Chapter V, Volume II.

167. For these calculations, it is assumed that neither side launches on warning, that ICBMs survive

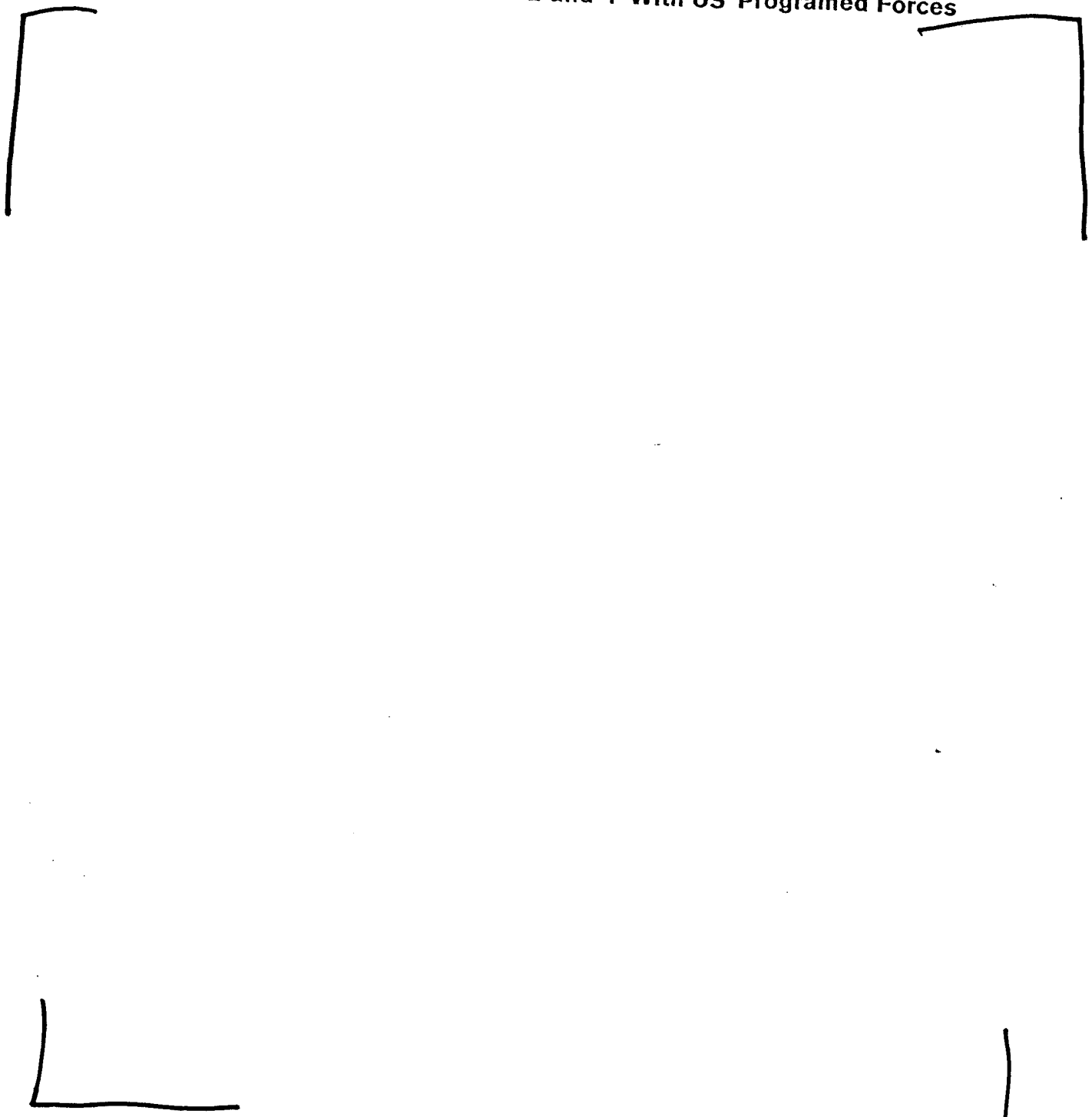
Potential US Threat to Soviet Silo-Based Force

Figure 22



Residual Missile Warheads and Bomber Weapons: Comparison of Soviet Forces 1 and 4 With US Programed Forces

Figure 23



in the numbers shown earlier, that all alert bombers and SSBNs at sea survive, and that command and control systems survive to permit these residuals to be used. Because the details of alternative basing modes for the M-X system have not been finalized, we have assumed that the M-X was deployed in silos. These calculations do not take operational factors into consideration and are intended only to illustrate trends, not to predict the actual outcome of a war.

168. *The Energy Research and Development Administration and the Assistant Chief of Staff, Intelligence, Department of the Air Force, agree that the number and capabilities of residual forces are significant measures of merit. However, they believe that the analysis described in this section and reflected in Figure 23 is incomplete, can be misleading, and does not belong in a National Intelligence Estimate. The analysis is based on what they consider to be an unrealistic scenario, i.e., a one-round ICBM attack. Analysis was not performed to ascertain the relative strength of each force after a full exchange (ICBMs, SLBMs, and bombers), an analysis which they believe is essential in order to determine the strategic balance. They believe that when this type of analysis is accomplished it must be dynamic, use the best target bases available, and be based on US SIOP planning, along with a range of Soviet attack options.*

169. The calculations show that, after a hypothetical Soviet surprise ICBM attack, the Soviets would have to expect the US to retain about 4,500 surviving missile RVs and bomber weapons through the early 1980s, after which US surviving weapons would increase to around 6,300 to 7,300 in 1986, depending upon whether it is assumed that one or two weapons are targeted against each silo. At present, the Soviets could retain some 1,500 to 1,700 weapons. As more MIRVed missiles become available, however, Soviet residual weapons would rise rapidly. The Soviet Best-SAL Force would retain about 6,000 to 7,000 weapons. The highest Soviet force, not limited by SALT, would have about 17,000 weapons left.

170. After a hypothetical US surprise ICBM attack, the Soviet Best-SAL Force would have about 900 to 1,200 surviving weapons at present. The number of weapons surviving would rise to 2,000 to 3,200 in the early 1980s, but fall back to 900 to 2,100 in 1986. In the High-No-SAL Force, surviving weapons would grow to 4,500 to 5,900 in 1982, but would then decline again to 2,500 to 4,700 at the end of the period. The number of US weapons remaining would grow from 6,000-7,000 today to more than 13,500 weapons by 1986.

171. The Soviets apparently do not believe that intercontinental conflict will take them by surprise; they operate their forces accordingly. Under circumstances in which their forces were alerted, more Soviet weapons would survive. If, for example, the US attacked the forces contained in the Best-SAL Force after they were alerted, and if the Soviets did not launch their ICBMs upon receiving tactical warning, about 1,700 to 1,900 Soviet weapons would survive at present and about 2,800 to 4,200 would survive in 1986.

172. The calculations presented above do not account for the effects of Soviet air defenses upon US residual bomber forces. Analysis of the alternatives and uncertainties about the effects of future Soviet air defenses would require full-scale, two-sided wargaming. Figure 24 illustrates these potential effects of air defenses by comparing surviving US missile capability with surviving missile plus bomber capability after a hypothetical Soviet surprise attack by the Soviet Best-SAL Force. It shows that, while surviving US weapons and EMT increase considerably in the early and mid-1980s, most of this increase is in bomber weapons subject to attrition by Soviet air defenses.

E. Other Factors Affecting the Strategic Environment

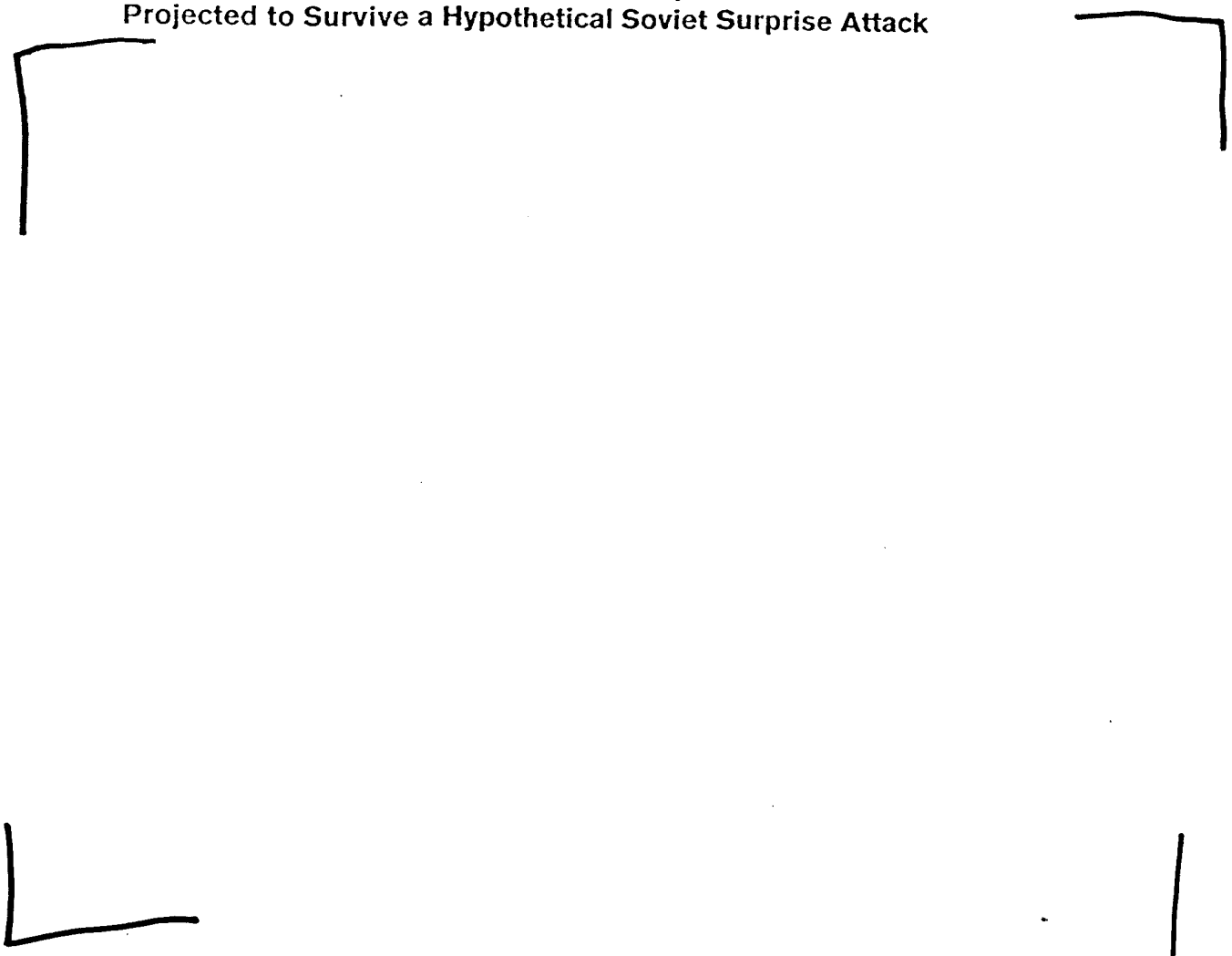
173. Our alternative projections of future Soviet forces represent a wide range of possible implications, both in capabilities for waging intercontinental conflict and in perceptions of power which could be significant in crises or confrontations short of such a conflict. In all of the projections in this Estimate, the raw power of Soviet forces will grow—in most of the projections, substantially. The extent to which this growth confers greater war-fighting capabilities upon the USSR will, however, depend in considerable measure on what the US does. Further, we recognize that the resolve of each side in a crisis or local conflict would depend on a host of factors in addition to the perceived strengths and weaknesses of opposing capabilities for intercontinental conflict.

Impact of Uncertainties

174. There are a number of critical uncertainties about the future strategic environment. In addition to

Figure 24

US Missile Warheads and Bomber Weapons Projected to Survive a Hypothetical Soviet Surprise Attack



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the range of possible Soviet levels of effort and achievement, which we believe we have approximated in our alternative force projections, there are a number of alternative US force postures under consideration which would significantly affect relative capabilities and vulnerabilities in the mid-1980s. Actual force capabilities, today and especially in the future, would be affected by operational factors on both sides which we cannot take fully into account. Important among these are the efficiency and vulnerability of Soviet and US systems for warning, command, control, and communications; the degree to which the Soviets could degrade US capabilities by concealment and deception and by interference with US space systems; and the effectiveness of air attack and defense forces in an electronic warfare environment. Finally, the significance of Soviet civil defense preparations, both to war-survival capabilities and to perceptions of power, will depend in considerable measure on the pace and extent of the Soviet program, which we cannot presently determine with confidence.

175. Some present Soviet programs reflect Soviet concern that US programs will affect the USSR's own

strategic position adversely. Examples are ICBM silo hardening and the deployment of long-range SLBMs. We are uncertain about the implications of others. The Soviet mobile IRBM and ICBM programs, for example, would enable the Soviets to place more of their missiles on launchers less vulnerable to US attack. Another such program is the ABM system on which testing has recently resumed. This system can be deployed more rapidly than the Moscow system, although widespread deployment would take several years. By continuing to improve technology related to this system, the Soviets could put themselves in a position to deploy additional ABM defenses in the event the ABM Treaty is abrogated. Such programs probably constitute Soviet hedges against possible future US threats as well as deterrents to US withdrawal from strategic arms limitation agreements. They could also represent efforts to give the Soviet leaders the future option to break out of such limitations if they conclude that the situation warrants it.

176. The Soviets have not yet made all of the decisions about force mixes, weapon characteristics, and supporting elements which will affect their capabilities for intercontinental conflict in the mid-1980s. Choices already made will be subject to adjustment. The strategic environment 10 years hence will be affected importantly by Soviet decisions about how to respond to perceived US challenges, by the negotiated limitations on strategic arms the Soviet leadership is willing to accept, and by the degree of success the Soviet R&D establishment achieves in pursuing advanced technology applicable to strategic forces.

177. The Soviet leaders will continue to regard strategic nuclear power as central to their security and national aspirations. Aspects of their programs will continue to threaten elements of US deterrent capabilities. At the same time, the Soviets tend to assess US developments, including certain features of the US programed force, as threatening to their own strategic position.

Effects of a SALT TWO Agreement

178. A SALT TWO agreement based on the Vladivostok accord would cause a small initial reduction in total Soviet intercontinental delivery vehicles. It would confront the Soviets thereafter with difficult choices and trade-offs between new and existing systems within an aggregate ceiling on delivery vehicles. Such an agreement would also limit the more extreme possibilities for growth in Soviet missile throw weight and numbers of missile RVs. From the point of view of US intelligence, agreed limitations would reduce some uncertainties, mostly quantitative, about future Soviet forces. A SALT TWO agreement, however, would not prevent Soviet ICBMs from becoming a major threat to Minuteman silos or prevent the USSR from acquiring more missile RVs than the numbers programed by the US.

179. In the absence of a SALT TWO agreement, the Soviets would probably increase their intercontinental strike forces moderately, and it is possible that they would increase them considerably. The Soviets, however, would not expect quantitative competition alone to alter the strategic balance significantly. They have evidently come to recognize that the strategic environment in the 1980s will be most significantly affected by the quality of the forces deployed by the two sides, including possible major technological advances in strategic weapons and supporting elements. Their progress in this area will be largely independent of SALT TWO.

Prospects for Technological Advance

180. Soviet R&D programs are consistent with a desire both to avoid slipping behind the US and to gain the lead in the technology of strategic offensive and defensive forces, particularly if US programs falter. During the next 10 years, the Soviets will have a growing potential for significant and perhaps novel developments in weapons and supporting systems. Soviet programs in R&D related to strategic weapon systems are both broad and intensive. The Soviet base of applied technology is growing, although the USSR still experiences difficulty in translating technological advances effectively into deployed hardware. Our knowledge about Soviet R&D projects in the early stages is improving, but it is still heavily dependent on fragmentary information from sources which can be and often are denied to us by Soviet security measures. We are uncertain about when we would detect and identify an advanced or novel weapon program, and about whether we could give sufficient warning for the US to adopt countermeasures.

181. We continue to examine Soviet R&D programs and prospects for major advances in fields having strategic offensive and defensive applications that

might seriously erode US deterrent capabilities. We give particular attention to research and development applicable to directed-energy weapons for use in air and missile defense and to systems for detecting and tracking 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 such technological advance in the next 10 years. Nevertheless, the scope and vigor of Soviet R&D, particularly in strategic defensive systems, bear especially close watching in the years ahead. *The Assistant Chief of Staff, Intelligence, Department of the Air Force, believes that the Soviets are significantly ahead of the West in the technologies applicable to particle-beam-weapons research, and calls attention to his alternative text in paragraph 117.*

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