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Soviet Military Capabilities and Policies, 1962-1967

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Submitted by the
DIRECTOR OF CENTRAL INTELLIGENCE
Concurred in by the
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As indicated overleaf
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The following intelligence organizations participated in the preparation of this estimate:

The Central Intelligence Agency and the intelligence organizations of the Departments of State, Defense, the Army, the Navy, the Air Force, AEC, and NSA.

Concurring:

Director of Intelligence and Research, Department of State
Director, Defense Intelligence Agency
Assistant Chief of Staff for Intelligence, Department of the Army
Assistant Chief of Naval Operations (Intelligence), Department of the Navy
Assistant Chief of Staff, Intelligence, USAF
Director for Intelligence, Joint Staff
The Atomic Energy Commission Representative to the USIB
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Abstaining:

The Assistant Director, Federal Bureau of Investigation, the subject being outside of his jurisdiction.

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SOVIET MILITARY CAPABILITIES AND POLICIES, 1962–1967

THE PROBLEM

To review significant developments in Soviet military thinking, policy, and programs, to assess the current Soviet military posture, and to estimate main trends in Soviet military capabilities and policies over the next five years.

SCOPE NOTE

This estimate presents our main conclusions on the broad range of major Soviet military problems. It includes, *inter alia,* summary versions of recent National Intelligence Estimates, updated as appropriate, devoted to individual military missions and other related questions.

SUMMARY AND CONCLUSIONS

Basic Views on War

A. The Soviets see military power as serving two basic purposes: defense of their system and support for its expansion. Thus, one of the most important objectives of Soviet military policy is to deter general war while the USSR prosecutes its foreign policies by means short of actual hostilities involving Soviet forces. The Soviets recognize that their deterrent must be credible in the sense that it rests upon powerful military forces. They also recognize that deterrence may fail in some key confrontation in which either they or their opponents come to feel that vital interests are under challenge. Against this contingency they wish to have a combination of offensive and defensive capabilities which will enable them to seize the initiative if possible, to survive enemy nuclear attack, and to go on to prosecute the war. We do not believe, however, that the Soviets base their military planning or their general policy upon the expectation that they

will be able to achieve, within the foreseeable future, a military posture which would make rational the deliberate initiation of general war or conscious acceptance of grave risks of such a war. *(Paras. 1–3)*

B. A number of Soviet statements in recent years have expressed the view that limited war involving the major nuclear powers would inevitably escalate into general war. While such statements are intended in part to deter the West from local use of force, this official view also reflects a genuine Soviet fear of the consequences of becoming directly engaged in limited war involving Soviet and US forces. This probably also extends to involvement of Soviet forces with certain Allied forces in highly critical areas, notably Western forces in the European area. Nevertheless, they might employ their own forces to achieve local gains in some area adjacent to Bloc territory if they judged that the West, either because it was deterred by Soviet nuclear power or for some other reason, would not make an effective military response. They would probably employ Soviet forces as necessary if some Western military action on the periphery of the Bloc threatened the integrity of the Bloc itself. Should the USSR become directly involved in a limited war with US or Allied forces, we believe that the Soviets would not necessarily expand it immediately into general war, but that they would probably employ only that force which they thought necessary to achieve their local objectives. They would also seek to prevent escalation by political means. *(Paras. 4–5)*

C. The Soviets recognize another type of limited military conflict, termed a "war of national liberation," in which pro-Soviet or anti-Western forces challenge colonial or pro-Western regimes in a primarily internal struggle. The Soviets have rendered active assistance in some such conflicts, and little or none in others, depending upon such practical factors as accessibility, the risk of defeat, and the attitude of other powers involved. In addition, the USSR has given military assistance to friendly, non-Bloc regimes. As new and favorable opportunities arise, the Soviets will continue to offer these various kinds of assistance. We believe, however, that they will remain chary of any great commitment of prestige to the support of belligerents over whom

they do not exercise substantial control or in circumstances in which they feel that winning is unlikely, and they will seek to avoid risk of widened hostilities which might result from "wars of national liberation." *(Paras. 6–8)*

General Trends in Military Doctrine and Policy

D. Current Soviet military policy stems from Khrushchev's plan, announced in January 1960, to cut back the size of the armed forces and to place main reliance on nuclear and missile forces. The plan reflected his view that a general war is almost certain to be short, with victory decided in the strategic nuclear exchange, and with conventional arms playing a quite secondary role. Khrushchev's plan was accepted only reluctantly by the military leadership; both the plan and its strategic justification have since undergone substantial modification. Present Soviet military doctrine holds that a general war will inevitably involve the massive use of nuclear weapons; it will begin with a strategic exchange, and its course and outcome may well be decided in its initial phase. Hence, doctrinal discussion emphasizes the importance of seizing the initiative by pre-emptive attack if, in the Soviet view, general war becomes imminent and unavoidable. However, the current doctrine holds that such a conflict will not necessarily be short, and it supports both the building of strategic attack and defense capabilities and the maintenance of large theater and naval forces. *(Paras. 13–16)*

E. The Soviet leaders evidently believe that the present overall military relationship, in which each side can exert a strong deterrent upon the other, will probably continue for some time to come. However, they almost certainly regard the present strategic posture of the USSR as inferior to that of the US, and they are aware of the continuing buildup of US forces for intercontinental attack programmed for the next few years. In this situation, they probably do not expect to be able to obtain a clear strategic superiority over the US, but we believe that the Soviets are far from willing to accept a position of strategic inferiority. Our evidence does not indicate that the Soviets are attempting to outstrip or even match the US in numbers of weapons for in-

tercontinental attack; we believe, however, that they will attempt to offset US superiority by other means.[1] *(Paras. 21–26)*

F. The Soviets may see a possible solution to their strategic confrontation with the US in a combination of antimissile defenses plus very effective though numerically inferior intercontinental striking forces. We believe that deployment of antimissile defenses may be the largest new Soviet military program in the period of this estimate. Hardened ICBM's and submerged-launch submarine missiles will contribute to Soviet strategic capabilities. In addition, over the next few years the Soviet arsenal will probably come to include new large ICBMs, armed with very high-yield warheads or capable of global ranges. Moreover, the USSR is almost certainly investigating the feasibility of space systems for military support and offensive and defensive weapons. *(Paras. 27–28)*

G. Official statements and military writings suggest that the Soviet leaders see in technological achievements the means by which they may improve their total strategic position relative to that of the US. They have made scientific military research and the development of new weapons matters of high urgency, and they have a demonstrated ability to concentrate human and material resources on priority objectives. If they develop new concepts or new weapons which give promise of military and political advantages, they will seek to add them rapidly to their arsenal and to gain maximum benefit from them. Thus, during the next five years, we expect the Soviets to be working on even more advanced weapons with which they may hope to enhance their strategic capabilities at a later date.[2] *(Para. 30)*

H. The USSR's military programs and space efforts impose costly demands upon Soviet resources. The effort to modernize and strengthen all arms of the Soviet forces simultaneously squeezes hard on resources available for investment and consump-

[1] The Assistant Chief of Staff, Intelligence, USAF, agrees that the Soviets probably do not expect to be able to achieve a position of clear strategic superiority over the US during the time period of this estimate and that they are far from willing to accept a position of strategic inferiority. However, he believes that the USSR is pursuing an intensive research and development effort in the hope of attaining technological breakthroughs which, when translated into weapon systems, will result in a clear strategic superiority at a later date.

[2] See the Assistant Chief of Staff, Intelligence, USAF, footnote to Conclusion E.

tion goals to which the leadership is strongly committed. Thus, Khrushchev may once again seek a reduction in resources devoted to theater forces on the grounds that growing nuclear capabilities will permit this cutback without endangering Soviet security. But while such a reduction would reduce expenditures for military pay and release manpower to the economy, it would not significantly reduce the demands of the defense establishment on critically scarce, high quality resources and highly skilled manpower. *(Paras. 40–46)*

I. Despite the possibility of a future reduction in theater forces, Khrushchev's 27 February speech indicates that the Soviet leadership has recently taken economic decisions which reaffirm military priorities at the expense of consumer aspirations; beyond this it may reflect a decision to increase military spending above previously planned levels. The Soviet economy is capable of bearing a heavier military burden, but not without sacrifices in the program to raise living standards and perhaps also reductions in the future rate of industrial growth. For the present, the Soviets appear to have chosen to risk these consequences, but we believe that the problem of resource allocation will continue to plague the Soviet leadership. *(Para. 47)*

J. Soviet military policy will continue to be shaped, not only by a variety of strategic, technical, economic, and political factors, but also by differing views about the relative importance of these factors, and shifting compromises among these views. As a result, we believe that the numerous aspects of this policy will not always be wholly consistent with each other, and that force structure and future programming will reflect neither a fully-integrated strategic doctrine nor a firm timetable for achieving specific force levels. We do not believe that the Soviets conceive of existing weapon systems as the answer to their military problem, or that they have fixed and inflexible plans for their force structure in the period five to 10 years from now. Barring some major technical advance in weaponry, we believe that Soviet military policy is likely to continue along current lines, and that for at least the next few years large standing forces of all types will be maintained. Even in the absence of such an advance, however, we cannot exclude the possibility of new departures in military policy, perhaps resulting in major changes in the composi-

tion of the Soviet military establishment and in the relative emphasis given to forces designed to accomplish the major military missions. *(Paras. 29–30)*

Forces for Long Range Attack

K. Although missile forces for attack on Eurasia continue to grow, major emphasis in the building of long-range striking forces has evidently shifted to forces for intercontinental attack, primarily ICBMs. We estimate Soviet ICBM strength at the end of 1962 at 80–85 operational launchers, including a few silo-type hardened launchers. By mid-1964, the force will probably have reached 250–325, including 75–100 silos. The Soviet ICBM force estimated for the next two years will consist primarily of missiles equipped with warheads in the low megaton range; it could include a few missiles with very high-yield warheads. We believe that the major trends in this force to 1967 will be: growth of the force to some hundreds of launchers; hardening of a significant portion of the force; and availability of some missiles capable of delivering very high-yield warheads[ ].[3 4] *(Paras. 48–57)*

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[3] The Assistant Chief of Staff for Intelligence, Department of the Army, dissents to this projection of force levels. Since the Soviet ICBM launcher construction program for second generation systems has been under way for nearly three years and has resulted in only some 80 operational launchers, it appears most unrealistic to him to estimate that from 175 to 250 operational launchers will become operational during the next 16 to 17 months. He therefore estimates as follows:

	END-1962	MID-1963	MID-1964
Approximate Totals	80–85	120–140	175–225
Including Hard Launchers	(a few)	(10–25)	(30–50)

[4] The Assistant Chief of Staff, Intelligence, USAF, believes that available intelligence, collected over a long period of time, provides a basis for differing interpretations of the magnitude of the Soviet ICBM program and the approximate time required for site construction. Experience has shown that even with the best available intelligence, and where evidence appeared to be complete, continuing analysis has indicated that ICBM launch sites exist which were not initially identified. Because of the history of expanding ICBM locations and the absence of complete, up-to-date intelligence, he believes that undetected launchers in varying degrees of construction, now exist at the confirmed complexes. Further, he also believes there are additional complexes mostly under construction at yet unidentified locations. He would therefore estimate the number of operational ICBM launchers, including those at the Tyuratam test range, through mid-1964 as follows:

	END-1962	MID-1963	MID-1964
Totals	110–160	175–250	300–450
Including Hard Launchers	(10–20)	(25–50)	(100–150)

L. The Soviets now have operational about 45 ballistic missile submarines—nine of them nuclear-powered—which carry a combined total of about 125 short-range (350 n.m.) missiles designed for surfaced launching. The USSR is developing longer range missiles for launching from submerged submarines. In addition, the Soviets have developed submarine-launched cruise missiles, which are probably designed primarily for use against ships but could be employed against land targets. In mid-1967, the Soviets will probably have more than two dozen nuclear-powered ballistic missile submarines, and about 20 nuclear-powered cruise missile submarines. By that time, they will probably have initiated routine submarine patrols within missile range of the US. *(Paras. 64–68)*

M. Soviet Long Range Aviation, by reason of its equipment, basing and deployment, is much better suited for Eurasian operations than for intercontinental attack. However, the Soviets have given considerable emphasis to aerial refueling and to Arctic training. Excluding combat attrition, we estimate that the Soviets could put about 200 aircraft over North America on two-way missions; of these, about half would be heavy bombers. Long Range Aviation now comprises about 170–200 heavy bombers and tankers and about 950 jet medium bombers and tankers. We continue to estimate a gradual decline in numerical strength. A portion of the BADGER medium bomber force will be replaced by the new supersonic BLINDER, already in units, but our evidence does not indicate that any new heavy bomber is being developed for operational use. By mid-1967, Long Range Aviation will probably comprise some 110–140 heavy bombers and about 750 mediums.[5] *(Paras. 69–75)*

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[5] The Assistant Chief of Staff, Intelligence, USAF, does not consider that this paragraph accurately reflects the capability of the USSR to put aircraft over North America on two-way missions. He believes that with due consideration of all relevant factors, such as number of aircraft in Long Range Aviation, numbers of aircraft tanker configured and peak availability rate, the Soviets could commit about 750 aircraft to initial two-way attacks on North America. From this number committed, about 300 bombers could reach North American targets.

The Assistant Chief of Staff, Intelligence, USAF, further estimates that a follow-on heavy bomber will probably be introduced in about 1964. The continued development of large aircraft capable of supersonic speed, and research

(Footnote continued on following page.)

N. We estimate that the Soviet MRBM and IRBM force now comprises about 600 completed launch positions, deployed for the most part in western USSR within range of NATO targets in Europe. The bulk of these launch positions are soft, but a few silo-type hardened sites are probably operational. We believe that deployment of soft sites will have been virtually completed early this year, leveling off at about 600 launch positions; the hardened component of the force will continue to grow, probably reaching about 100–150 launchers in mid-1964. It is possible that as many as half of the soft launch positions are alternates, in which case the first salvo capability of the force would be considerably smaller, although still large enough to devastate Western Europe. *(Paras. 58–63)*

O. In the event of general war in the period of this estimate, the USSR would almost certainly employ against the US a mixed force of ICBMs, missile submarines, and bomber aircraft. By the mid-1960's the USSR will have acquired a substantially increased ICBM and submarine-launched missile capability to deliver nuclear weapons against the US, in addition to its already formidable forces for strikes in Eurasia. Significant portions of these forces will be relatively invulnerable to attack. The Soviets will be in a position to strike pre-emptively at the fixed bases of an important segment of the US nuclear delivery force, and they will have some prospect that a portion of their own force could survive an initial US attack and retaliate with high-yield weapons. With the forces which we estimate, however, the Soviets could still not expect to destroy the growing force of US hardened, airborne, seaborne, and fast reaction nuclear delivery vehicles. *(Paras. 78–81)*

(Footnote continued from preceding page.)
in applicable materials, structures, and other components substantiate the Soviets interest in large supersonic vehicles and suggest an intent to increase their strategic attack capability by such means. The BOUNDER probably has served a most useful purpose as a test bed for many components, aerodynamic advancements, and a structural design which are directly applicable to a follow-on heavy bomber capable of supersonic speeds. He estimates the total Soviet heavy bomber and tanker strength will remain at approximately 200 aircraft throughout the period of this estimate, present strength levels being maintained by the introduction of modest numbers of a new heavy bomber.

Air and Missile Defense Forces

P. The significant improvements in the Soviet air defense system noted during recent years will be extended during the next few years, and successful penetration by manned bombers will therefore require increasingly sophisticated forms of attack. The Soviet air defense capability can be degraded by the increasingly complex forms of attack which the West will be able to employ, including air-launched missiles of present and more advanced types, penetration tactics, and electronic countermeasures. Even in such circumstances, the Soviets would probably expect to destroy a number of the attackers. We doubt, however, that they would be confident that they could reduce the weight of attack to a point where the resulting damage to the USSR would be acceptable. Unless and until the USSR is able to deploy a substantial number of advanced ABM defenses, the USSR's air and missile defense deficiencies and uncertainties will sharply increase as ballistic missiles assume a larger proportion of the West's total nuclear delivery capability. *(Paras. 82, 89–105)*

Q. The major development which we foresee in Soviet defense is the advent of a capability against ballistic missiles. For more than five years, the Soviets have been conducting a high priority and extensive program to develop antimissile defenses, and we estimate that several different ABM systems are under development. We believe that in 1963 the Soviets will achieve some operational capability with an ABM system now being deployed around Leningrad. We have no basis for determining its effectiveness, but doubt that it would be effective against missiles employing decoys or other countermeasures. The USSR is probably also developing an antisatellite system. *(Paras. 83–84, 88)*

R. To counter the more complex long-range ballistic missile threat of the mid-1960's, the Soviets may seek to improve the Leningrad system, or may develop a more advanced system, or both. In any case, the USSR is likely to defer additional ABM deployment until a better system is available. If the Soviets develop an ABM system which they regard as reasonably effective against long-range missiles, a vigorous deployment program will probably be undertaken. We believe that such a program would contemplate the defense of some 20–25 principal Soviet cities and

would require some five or six years to complete. We have no basis for judging whether or when the Soviets would consider their ABM system effective enough to warrant the initiation of such a program. *(Paras. 85–86)*

Theater Forces

S. The longstanding Soviet concern with concepts and forces for campaigns in adjoining theaters, especially in Europe, has resulted in a formidable theater force, strong in armor, battlefield mobility, and units in being. The tactical nuclear delivery capabilities of these forces are still limited, but they have been improved markedly over the past few years. In offensive operations, rapidly advancing theater forces would be in constant danger of outrunning their logistical tail, which is heavily dependent on railroads. Finally, the Soviets have traditionally exercised very strict supervision over the actions of their subordinates, but existing command and control systems do not permit this strict supervision over the widely extended deployment required on the nuclear battlefield or under the threat of use of nuclear weapons. *(Paras. 106–124)*

Naval Forces

T. The USSR's capabilities to conduct naval warfare in the open seas rest primarily upon the submarine force, which is capable of mounting a large-scale torpedo attack and mining campaign against Allied naval targets and sea communications in the eastern North Atlantic and northwestern Pacific. Its capabilities for operations near the continental US are more limited, but are growing. Capabilities against carrier task forces have been improved by the conversion of jet bombers to employ antiship missiles, by the introduction of submarines equipped with cruise-type missiles, and by increased air reconnaissance of open ocean areas by Long Range and Naval Aviation. The Soviets have also placed increasing emphasis on improvement of ASW forces in coastal areas and in the open seas. We believe the Soviet Navy is capable of carrying out fairly effective ASW operations in coastal areas, but that it has a negligible ASW capability in the open seas. Despite the effort which they almost certainly are devoting to this problem, we believe that over the next five

years, the USSR will be able to achieve only a limited capability to detect, identify, localize, and maintain surveillance on submarines operating in the open seas.[6] *(Paras. 125–147)*

[6] The Assistant Chief of Staff, Intelligence, USAF, would delete the last sentence and substitute the following:

While over the next five years, it is probable that the USSR will have only a limited ASW capability in the open seas, it must be recognized that the effort being applied by the USSR toward solution of the ASW problem will reduce current deficiencies and possibly could result in marked improvement in Soviet open seas capabilities.

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DISCUSSION

I. SOVIET MILITARY POLICY

A. Basic Views on War and Military Policy

1. The Soviets see military power as serving two basic purposes: defense of their system and support for its expansion. Thus, one of the most important objectives of Soviet military policy is to deter general war while the USSR prosecutes its foreign policies by means short of actual hostilities involving Soviet forces. Military power is constantly brought into play in direct support of these policies, through the threats which give force to Soviet political demands, through the stress on growing power which is intended to gain respect for the Soviet state and its Communist system, and through the military aid and support rendered to allies, friendly but neutral regimes, and anti-Western movements.

2. The Soviet leaders realize that their deterrent must be credible in the sense that it rests upon powerful military forces. Moreover, they recognize that deterrence may fail in some key confrontation in which, despite their best efforts to retain control over risks, either they or their opponents come to feel that vital interests are under challenge. Against this contingency they wish to have a combination of offensive and defensive capabilities which will enable them to seize the initiative if possible, to survive enemy nuclear attack, and to go on to prosecute the war.

3. The Soviets evidently believe that the present overall military relationship, in which each side can exert a strong deterrent upon the other, will probably continue for some time to come. The Soviets are vigorously pursuing programs of research and development in advanced weapons, hoping if possible to create a strategic balance favorable to them. It is possible that some future technological breakthrough or advance would persuade them that they had acquired a decisive advantage which permitted them to take a different view of the risks of general war. We do not believe, however, that the Soviets base their military planning or their general policy upon the expectation that they will be able to achieve, within the foreseeable future, a military posture which would make rational the deliberate initiation of general war or conscious acceptance of grave risks of such a war.

4. A number of Soviet statements in recent years have expressed the view that limited war involving the major nuclear powers would inevitably escalate into general war. While such statements are intended in part to deter the West from local use of force, this official view also reflects a genuine Soviet fear of the consequences of becoming directly engaged in limited war involving Soviet and US forces. This probably

also extends to involvement of Soviet forces with certain Allied forces in highly critical areas, notably Western forces in the European area. Nevertheless, they might employ their own forces to achieve local gains in some area adjacent to Bloc territory if they judged that the West, either because it was deterred by Soviet nuclear power or for some other reason, would not make an effective military response. They would probably employ Soviet forces as necessary if some Western military action on the periphery of the Bloc threatened the integrity of the Bloc itself. Should the USSR become directly involved in a limited war with US or Allied forces, we believe that the Soviets would not necessarily expand it immediately into general war, but that they would probably employ only that force which they thought necessary to achieve their local objectives. They would also seek to prevent escalation by political means.

5. Recent Soviet military writings call for professional study of the problems of nonnuclear combat, which could lead to some modification of the official view on limited war. However, we believe that the attention now being devoted to this problem is primarily responsive to indications of US interest in building NATO's capabilities for nonnuclear combat. In our view, it does not reflect any new Soviet conclusion that the USSR can now launch such wars without great dangers of subsequent escalation.

6. The USSR has regularly recognized the importance of the "war of national liberation," in which pro-Soviet or anti-Western forces challenge colonial or pro-Western regimes in a primarily internal conflict. In practice, Soviet behavior has followed neither the course of full support to all these wars, as Soviet propaganda often alleges, nor the course alleged by Khrushchev's Chinese critics, who claim that he withholds support entirely because of exaggerated fears that such a conflict might spark a general war. The USSR has rendered active assistance in some cases, such as Laos and Yemen, and little or none in others, such as Algeria and Angola, depending upon such practical factors as accessibility, the risk of defeat, and the attitude of other powers involved.

7. The USSR has also shown a recent willingness to provide some non-Bloc recipients of its military aid with more advanced equipment than heretofore. In some cases, notably Cuba and Indonesia, Soviet personnel have been employed to man this equipment, and are training indigenous specialists to operate it. This represents a significant departure from previous Soviet practice, which may be extended to other areas in the future.

8. As new and favorable opportunities arise, the Soviets will continue to offer these various kinds of assistance, and they may do this more frequently and aggressively in the future if their efforts to expand

Soviet influence by political and economic means encounter continued frustration. We believe, however, that the Soviets will remain chary of any great commitment of prestige to the support of belligerents over whom they do not exercise substantial control or in circumstances in which they feel that winning is unlikely, and they will seek to avoid risk of widened hostilities which might result from "wars of national liberation." In particular, we believe that the Soviets will be very reluctant to commit their own forces openly in conflicts where they would risk a direct confrontation with US forces.

B. Soviet Military Policymaking

9. The application of these basic attitudes to particular situations and to the allocation of resources does, of course, pose serious policy problems. A number of additional factors have long affected the character of Soviet military policy. Geography and the traditions bound up with historical experience have inclined the Soviets toward a military preoccupation with Western Europe and a stress on large-scale ground combat. The capabilities and structure of US and other opposing forces influence directly both the size and shape of Soviet forces and exert a general upward pressure upon requirements in all fields. Perhaps most important is the technological and economic base of the nation, which constantly offers prospects for more effective weapons but also determines the extent to which these opportunities can be exploited without too great a sacrifice in other programs.

10. These factors, pointing in many contradictory directions, do not make for easy or unanimous decisions. Indeed, we have clear evidence of disagreement, compromise, and even reversal in the formulation of military policy in the last three years. This process of policymaking in the USSR appears in large part to involve the same problems familiar to US decision-makers. In addition, however, certain special features stand out. Fully informed Soviet military discussion, for example, seems to involve a smaller circle than in the US. Beyond the political leadership, some military officers, and a limited number of scientists and engineers, we know of no body of civilian advisers or publicists in the USSR comparable to the social scientists involved in the evolution of US military thinking. This is in part due to the great Soviet emphasis on security, which has the additional effect of reducing the flow of information within the officer corps. As a result, the Soviet military appear to experience special difficulty in adjusting their doctrine and concepts to the rapid changes characteristic of the postwar period. The continuing major influence of World War II commanders and the vivid memories of the Soviet experience in that war also contribute to a resistance to new concepts which is evident in professional discourse.

11. Military programs have become more complex and expensive, and the professional recommendations of the military leadership on military problems have a greater impact on economic and foreign policy decisions. Furthermore, the political climate which has developed under Khrushchev is one which permits continuing discussion on a variety of problems, and the military leaders have used this opportunity to expound their views. With military and economic debates proceeding simultaneously and in close dependence on each other, it seems likely that the arguments of the marshals have been supported by those political leaders who did not wish to permit programs for consumer goods to impinge upon allocations to heavy industry.

12. We do not believe that the military aspires to an independent political role within the political system, and if it were to, party traditions and controls appear strong enough to defeat any efforts in this direction. But if, as we expect, the military and economic choices facing the USSR become more acute, the senior officers will probably find themselves more deeply involved in matters of general policy.

C. *The Recent Course of Military Policy*

13. The most important viewpoints in the controversy over military policy of the last few years have been those represented by Khrushchev and a few military theorists, on the one hand, and the majority of the senior military leaders, on the other. Three major differences have distinguished Khrushchev's approach to defense policy from that of the military leaders. First, Khrushchev is heavily concerned with the political uses of military power, whereas the professional responsibilities of the marshals require them to look in the first instance to actual war-fighting capabilities. Second, Khrushchev has asserted that a general war is almost certain to be short, with victory decided in the strategic nuclear exchange and with conventional arms, particularly theater forces, playing a quite secondary role. Most military leaders, on the other hand, appear to believe that general war would probably, but not certainly, be short but that, in any event, its conduct would require high force levels for most of the traditional service arms, including a multi-million man army. Third, Khrushchev is far more concerned than the marshals to keep military expenditures in check in order to meet what he regards as pressing needs in the civilian economy.

14. All these considerations were involved in the reorganization of the armed forces which Khrushchev inaugurated in January 1960. The essence of his plan was to place main reliance on nuclear missile forces and, on this basis, to reduce military manpower substantially and to accelerate the retirement of older weapons. This, he asserted, was the force structure best suited both to deter war and to fight one if necessary; moreover, it would release men and money for the civilian economy.

15. From Khrushchev himself we know that this plan and its strategic justification were accepted only reluctantly by the military leadership. A controversial discussion ensued, encouraged by the regime, in which high officers debated, polemicized, and explored the military implications of modern warfare in a far more systematic fashion than previously. Several schools of thought became apparent, but a predominant view soon emerged which accepted the likelihood that the initial phase of a general war would be decisive, but went on to argue that even a relatively short war would require large forces of all types capable of defeating comparable enemy forces, overrunning base areas, and occupying territory in Eurasia. This discussion also focused attention on the enormous difficulties of mounting major military operations after receiving the full weight of a Western first strike, and the resulting importance, if in the Soviet view war became imminent and unavoidable, of seizing the strategic initiative by a pre-emptive attack.

16. At present, official military doctrine holds that a general war will inevitably involve the massive use of nuclear weapons, will begin with a strategic exchange, and will develop almost simultaneously along fronts of engagement as well. Strategic missile forces will play the primary role. The course and outcome of the war may well be decided in its initial phase by strategic nuclear weapons. However, the Soviets hold that such a conflict will not necessarily be short, and envisage the possibility of a long war involving protracted operations in Eurasia. Therefore, while current doctrine emphasizes a military policy of building strategic attack and defense capabilities, it supports as well the maintenance of large theater and naval forces, for use both in the initial and the possible subsequent phases of a general war.

17. We believe that debate continues in the USSR, not only over subsidiary propositions, but perhaps over some of the central tenets of this doctrine. The course of the debate was heavily influenced by external events in 1960–1961 which, intruding upon the discussion, undermined some of Khrushchev's contentions and permitted the military to retrieve some concepts which he had discarded. Thus the U–2 affair cast doubt on the adequacy of Soviet air defenses, on the efficacy of Soviet security, and on the wisdom of Khrushchev's efforts to relax tensions in relations with the US. In the following year, the US took decisions to step up both its strategic attack and general purpose forces. In Vienna, Khrushchev determined that the US did not regard the relationship of military power as requiring it to make major concessions on the Berlin question. All these developments called into question the adequacy of the Soviet military posture, both for supporting foreign policy and for conducting general war if necessary. In these circumstances, Khrushchev made such demonstrative military moves as the public suspension of the manpower reductions and the resumption of nuclear tests.

18. At about the same time, another burden was laid on Soviet military policymaking. For some months, US public disclosures had hinted that Soviet ICBM strength might be much smaller than had previously been believed. Beginning in the fall of 1961, the US began to assert this conclusion with great conviction, and to assert more strongly that the US was the strategic superior of the Soviet Union. From US statements and behavior, the Soviets could almost certainly judge that their security had been penetrated in an important way, probably one which, by permitting the US to locate Soviet targets, had a tangible effect upon the military balance. Their fears that no major Western concessions on Berlin would be forthcoming must have been strengthened. And the image of Soviet superiority, which they had heavily exploited to document their claims of the inevitable triumph of their system, was badly damaged.

19. It was against this background that the USSR took its decision to deploy strategic missiles to Cuba. This move involved a host of policy considerations and judgments which are not yet fully clear. In its military terms, however, it appears to have been a response to the question of how to create new opportunities for Soviet foreign policy by improving the strategic position of the USSR vis-a-vis the US, at some acceptable cost and at some early date. Even deployment at the levels detected promised a significant increase in first-strike capabilities for general nuclear war, and the Soviets may have intended to follow this up by establishing a larger missile force as well as a submarine base.

20. Khrushchev, however, probably considered its main impact to be psychological. At one level, the deployment and its acceptance by the US was intended to demonstrate Soviet might and US inability to contain it, thereby reversing the tendency of world opinion to regard the West as strategically superior. At another, however, it was intended to increase the deterrence laid upon the US in cold war confrontations. Khrushchev evidently felt that, despite all the military problems involved in making effective strategic use of Cuba in wartime, the deployment would have a powerful impact on US opinion which would reduce resistance to his political demands, in the first instance those concerning Berlin.

D. Problems of Future Military Policy

21. The Cuban adventure and its outcome both highlighted and heightened the dilemma of the Soviet leaders. Both the deployment and its reversal constituted a tacit public admission that the USSR was in a position of strategic inferiority. Among its other results, the Cuban fiasco has almost certainly thrown the Soviets back onto a further re-evaluation of their strategic posture.

22. Programs already under way will largely govern the size and composition of Soviet strategic forces through about mid-1964, but new decisions taken this year could significantly affect force levels thereafter. We are unlikely to learn directly of such decisions. Moreover, the physical activities which might reveal their nature will probably not be apparent for another year or more. In considering future Soviet force levels, it is therefore necessary to explore the various alternatives now open to the USSR.

23. Confronted with the continuing buildup of US forces for intercontinental attack programmed for the next few years, Soviet planners may be considering a wide range of alternatives. At one extreme would be an attempt to achieve such a clear superiority over the US in strategic offensive weapons that they would have a high assurance of destroying US nuclear striking forces prior to launch. At the other extreme would be the acceptance of continued strategic inferiority, perhaps coupled with genuine efforts to reach agreement with the West on arms control.

24. The first of these extreme alternatives is probably now regarded as unattainable. Thousands of Soviet missiles would be required to give the Soviet leaders a high assurance of destroying even the fixed bases of US nuclear forces programmed for the mid-1960's. We do not believe that the Soviet leaders would be prepared to impose a strain of this magnitude upon the Soviet economy. In addition, the Soviets would almost certainly expect the US to detect such an effort, and thereupon to step up its own program so as to raise Soviet requirements still higher. Moreover, US warning capabilities, fast reaction times, and mobile forces (airborne bombers and missile submarines) already have reduced Soviet capabilities, against US retaliatory forces. We believe that the Soviets will continue to estimate that, throughout the period of this estimate, the US will retain retaliatory capabilities which could not be eliminated by such striking forces as the USSR could acquire.

25. The second of these extreme alternatives might be considered by the Soviet leaders. Even if current strategic weapons programs were allowed to level off after 1964, the Soviets would possess a powerful deterrent force. Moreover, they might hope to reduce US superiority by means of disarmament agreements. But the main appeal of this alternative would be economic; resources would in time be made available to reverse the current slowdown in economic growth. However, we have seen as yet no persuasive indications that the USSR is prepared to move very far in this direction. The Cuban venture has indicated that, at least to date, the Soviet leaders are far from willing to accept a position of strategic inferiority.

26. Between these extreme alternatives, we believe that the Soviets have almost certainly considered an effort to attain rough parity with the US in intercontinental weapon systems. Soviet military leaders almost certainly have urged enlarged and improved forces of ICBMs and missile submarines. However, a major Soviet effort to attain parity in the near term would require either a substantial increase in the Soviet military budget or sharp cuts in other types of forces. Moreover, the Soviets would almost certainly reason that the US would detect an effort of such magnitude, and that they could have no assurance of winning the intensified race which would ensue. Our evidence does not indicate that the Soviets are attempting to match the US in numbers of weapons for intercontinental attack; we believe, however, that they will attempt to offset US superiority by other means.

27. Soviet statements and military writings suggest that the Soviet leaders see in technological achievements the means by which they may improve their total strategic position relative to that of the US. This consideration may lie behind the testing of very high-yield weapons, the claimed development of a global missile, the high priority given to the antimissile program, and the Soviet interest in military space programs. By such means, the Soviets may attempt to attain rough parity or even superiority in the total strategic context, although they remain numerically inferior in delivery vehicles. Hardened ICBMs and submerged-launch submarine missiles will contribute to Soviet strategic capabilities. In addition, over the next few years the ICBM force will probably come to include new large missiles, armed with very high-yield warheads or capable of global ranges. Moreover, the USSR is almost certainly investigating the feasibility of space systems for military support and offensive and defensive weapons.

28. In defense against strategic attack, the major new element is the antimissile program, where deployment of one system has already begun at one location, and research and development toward a more advanced capability is continuing. The Soviets may see a possible solution to their strategic confrontation with the US in a combination of antimissile defense plus very effective though numerically inferior intercontinental striking forces. The technical difficulties as well as the great expense of any extensive antimissile deployment will be restraining influences. Nevertheless, we believe that deployment of antimissile defenses may be the largest new Soviet military program in the period of this estimate.

29. Although we believe that Soviet military policy is most likely to continue along current lines, we cannot exclude the possibility of new departures in military policy, perhaps resulting in major changes in the composition of the Soviet military establishment and in the relative emphasis given to forces designed to accomplish the major military missions. Drastic cuts in the theater field forces remain a possibility;

while Khrushchev's proposals for manpower reductions have been shelved for the present, economic pressures and developments in military technology almost certainly will cause this subject to be reconsidered. It is also possible that the increasing involvement of the USSR in the more remote areas of the world will lead to the development of new capabilities for distant, limited military action. In this connection, the Soviets may attempt to acquire base and logistical support rights in key non-Bloc countries, but we have no evidence that the USSR has raised this question with these countries.[7]

30. In general, Soviet military policy will continue to be shaped, not only by a variety of strategic, historical, technical, economic and political factors, but also by differing views about the relative importance of these factors, and shifting compromises among these views. As a result, we believe that the numerous aspects of this policy will not always be wholly consistent with each other, and that force structure and future programming will reflect neither a fully-integrated strategic doctrine nor a firm timetable for achieving specified force levels. In any case, we do not believe that the Soviets conceive of existing weapons systems as the answer to their military problem or that they have fixed and inflexible plans for their force structure in the period five to 10 years from now. They have debated and revised some of their ideas, and they will probably do so again. They have made scientific military research and the development of new weapons matters of high urgency, and they have a demonstrated capability to concentrate human and material resources on priority objectives. If they develop new concepts or new weapons which give promise of military and political advantage, they will seek to add them rapidly to their arsenal and to gain maximum benefit from them. Thus, during the next five years, we expect the Soviets to be working on even more advanced weapons with which they may hope to enhance their capabilities at a later date.[8]

II. SOVIET HIGH COMMAND STRUCTURE

31. We believe that during the past two or three years the Soviet military high command structure has been modified to speed the process of initiating or responding to strategic nuclear attack. The growth of nuclear and missile forces on both sides has almost certainly persuaded the Soviets to establish the command and control channels necessary for the swift initiation of military operations upon the decision of the political leadership.

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[7] For a discussion of the limitations imposed on such Soviet overtures by the receptivity of other countries, see NIE 10-63, "Bloc Economic and Military Assistance Programs," dated 10 January 1963.

[8] With reference to paragraphs 23-30, see the Assistant Chief of Staff, Intelligence, USAF, footnote to Conclusion E.

32. We have information, some of it from classified documents and some from public statements, about both a Supreme Military Council and a Supreme High Command. Khrushchev is chairman of the Council and Supreme High Commander. The Council, a body of high-level party, government, and military officials, has existed since before World War II to provide a forum for discussion and decision on major issues of military policy. The Supreme High Command directed military operations during World War II with Stalin at its head, but was disbanded thereafter. Such information as we have suggests that steps have been taken in recent years to designate membership in the Supreme High Command and to develop procedures to permit the quick assumption by this body of top level control of military operations under Khrushchev should events so dictate.

33. Adjustments in the structure of the Soviet high command have apparently been closely related to the growth of the USSR's strategic defense and long-range missile forces. A new rocket command was established in 1960 and designated a main component of the Soviet armed forces. This change followed by about five years the elevation of the Soviet air defense component to similar status. At present, there are five major force components administered by main directorates or equivalent headquarters within the Ministry of Defense: ground, naval, air, air defense, and rocket.

34. Highly centralized civilian control over the Soviet military establishment is exercised through the Council of Ministers, which includes the Minister of Defense. The Minister is assisted by the unified General Staff of the armed forces, which formulates the overall military program and would probably constitute the principal headquarters element of the Supreme High Command in time of war. Party and government leaders reportedly participate regularly in the deliberations of the Supreme Military Council. Additional channels for exercising party control over the military include the Main Political Directorate of the armed forces and the numerous party officials who are assigned to all levels of the military establishment.

35. The flow of operational orders from the Minister of Defense to the Soviet armed forces follows no rigid or consistent pattern. Commanders in Chief of the Strategic Rocket Forces, Long Range Aviation, the Air Defense Forces, and the Navy are believed to have direct operational control over the forces assigned to them. On the other hand, ground force components are operationally controlled by the commanders of the Military Districts and the Groups of Forces. The Commander in Chief of the Air Force similarly has no direct operational control over air components. The operations of other than Long Range Aviation air elements are controlled by the commands or forces to which they are assigned, i.e., commanders of Groups of Forces, Military Districts, Air Defense Districts, Fleets, and Airborne Forces.

III. SIZE AND COMPOSITION OF THE SOVIET ARMED FORCES

36. The urgent need for additional manpower in the economy and the rising cost of maintaining a large military establishment have brought about substantial reductions in Soviet military manpower since the Korean War. We estimate that by 1959 these reductions had lowered the number of men under arms from about 5.75 to about 3.6 million men. In January 1960, Khrushchev announced a program aimed at further reducing military manpower to 2.4 million men. In mid-1961, after approximately half of the projected reduction of 1.2 million men had been made, the program was suspended, allegedly in response to the US military buildup prompted by Soviet pressures in Berlin. We believe that the force level now stands at about 3⅓ million men, of which nearly 2 million are in the theater ground forces.[9]

37. The early reductions were achieved without overt signs of objection by military leaders, who were apparently persuaded that postwar modernization and re-equipment programs had provided sufficient increases in firepower to offset the cuts in personnel. However, the military leadership raised strenuous objections to Khrushchev's 1960 proposals. These objections were elaborated during an extended debate among senior officers over the nature of modern war and the role and doctrine of theater warfare.

38. As of 1962, both political and military leaders acknowledge that new and costly demands for advanced weapon systems are imposed upon Soviet resources without easing the burden of maintaining large theater forces. The effort to modernize and strengthen all arms of the Soviet forces simultaneously squeezes hard on resources available for investment and consumption goals to which the leadership is strongly committed. Moreover, it produces a constant upward pressure on the size of the military establishment. This is to a large extent because Soviet missile forces for strategic offense and defense appear to require large numbers of operating, maintenance, and supporting personnel.[10] Although there will probably be some reduction in the size of other types of forces as older weapon systems are retired, there is no present evidence that normal reductions of this sort will free enough military manpower to operate the growing missile forces. Therefore, unless the Soviets decide on a deliberate program for compensating reductions in other forces, the continued expansion of missile forces along present lines will tend to push military manpower strength back up toward pre-1960 levels, and will require increasing numbers of trained specialists as well.

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[9] For estimated personnel strength of the Soviet Armed Forces by mission, see Annex A, Table 1.

[10] We estimate that 350,000–400,000 personnel are now in the missile components of long-range striking and air defense forces; on the basis of present trends, this total may be over 550,000 by mid-1964. See Annex A, Table 1, footnote c.

39. Thus, Khrushchev may once again seek a reduction in resources devoted to theater forces on the grounds that growing nuclear capabilities will permit this cutback without endangering Soviet security. If this occurs, the main candidate for reductions will still be the ground forces, with their very large numbers of units and men. The program of accelerated retirement of older equipment of other force components, such as obsolescent aircraft and surface naval ships might also be reinstated. We believe, however, that for at least the next few years large standing forces of all types will be maintained, although probably with some change in the distribution of manpower among the various components.

IV. TRENDS IN MILITARY EXPENDITURES

40. Soviet defense expenditures, after a decline in 1956–1957, have increased steadily in the past five years. (Our estimates of Soviet defense expenditures include the costs of the military establishment, nuclear weapons, and all space programs.) The main impetus for growth has been provided by operational programs for strategic attack and air defense forces and by the program of research and development, each of which has doubled in estimated cost during the past five years. The costs of the ground and naval missions, which together accounted for almost 45 percent of total expenditures in 1958, have changed much less over the same period and in 1962 accounted for approximately one-third of the total. The shift in the shares of total defense expenditures between the various missions between 1958 and 1962 is indicated in the following table.

ESTIMATED DISTRIBUTION OF SOVIET DEFENSE EXPENDITURES, BY PERCENT

	1958	1962
Strategic Attack Mission	10	17
Air Defense Mission	11	17
Naval Mission	12	10
Ground Mission	32	22
Expenditures not Allocable to Missions *	35	34

* Includes expenditures for reserve and security forces, research and development, command and support, and space programs. No research and development expenditures have been allocated to the missions.

41. Our calculations of both Soviet military expenditures and GNP are subject to considerable margins of error, but on the basis of all available information on Soviet programs and costs, we estimate that in 1962, total Soviet defense expenditures were about 18 billion rubles. This is one-third higher than the level estimated for 1958. Because GNP has also been expanding, this level of defense expenditures con-

tinues to represent on the order of one-tenth of estimated Soviet GNP in ruble prices. This share is roughly the same as that devoted to defense in the US, and represents in terms of US prices and production costs the equivalent of some $45 billion, or about four-fifths of comparable US expenditures.

42. However, the real impact of defense expenditures on the Soviet economy is greater than this comparison implies. The growth in defense expenditures during the past five years has been accompanied by a change in the structure of these expenditures. The development, procurement, and maintenance of defense hardware including nuclear weapons represented about half of these expenditures in 1958, and nearly two-thirds in 1962. In 1962 defense consumed about 15 percent of nonagricultural production in the USSR, whereas it consumed about 10 percent of such production in the US. Similarly, defense consumed more than 35 percent of total Soviet production of durable goods in 1962, as compared with about 25 percent in the US. Moreover, although we cannot measure the effect, Soviet advanced weapons and space programs probably absorb a much higher proportion of critically scarce, high quality resources and highly skilled manpower than is the case in the US.

43. Evidence from Soviet discussions indicates an increasing concern with the impact of military requirements on the national economy. The defense burden not only impedes the industrial investment program which underlies general economic growth, but it stands in the way of Khrushchev's repeated attempts to make larger allocations to agriculture, on which his promises of higher living standards primarily depend. Khrushchev clearly had these problems in mind in January 1960, when he proposed a military reorganization with important economizing effects.

44. Even this 1960 proposal offered only a partial solution to the problem of rising defense costs. It promised ultimately to reduce annual expenditures by about two billion rubles; these savings would have resulted primarily from a lower bill for military pay and subsistence. The main benefit to the economy would have been the release of military manpower. However, the competition between military and civilian programs is most acute in the machinery industry, which must supply hardware to the armed forces and investment goods to industry and agriculture. Military deliveries from this industry rose by about 60 percent from 1958 to 1962, while production for the civilian economy grew at a substantially slower rate. Perhaps more important, the quality of Soviet advanced weapons in comparison with other goods clearly reveals that the defense establishment enjoys first call on the high-grade resources of industry—special materials and components, highly trained technicians, leading scientists and design engineers.

This priority has significantly hampered the effort to modernize and automate Soviet industry on which the USSR's program for higher labor productivity and future growth heavily depends.

45. The future military programs of the Soviet leaders depend on their view of the requirements both for deterring a war while they push for political gains in the East-West competition and for fighting a war if one should nonetheless occur. To date, however, they have found their military power insufficient to enable them to accomplish their political objectives, notably in the case of Berlin. Moreover, the tenor of recent statements suggests that, as the Soviets observe the programmed growth of Western power, the question of the USSR's ability to survive a general war is being posed more sharply than ever. For both these reasons, the Soviets evidently feel themselves under heavy pressure to make further increases in their military allocations. This, however, would require them to stretch out, probably quite substantially, the time periods over which they hope to achieve other national goals.

46. There are a number of ways in which the Soviets, faced with these difficult choices, might ease the prospective military burden on the economy. Khrushchev might revert to the force structure which he advocated in 1960 and try again to put through a sizable reduction of ground forces. The USSR might trim its space program by choosing, for example, not to compete with the US in a manned lunar landing. It might confine itself to tactics which carried less dangers of military confrontation, meanwhile settling on a military strategy which stressed deterrence rather than a full war-fighting capability. Or, it might try to promote a protracted relaxation of tensions in hopes of inducing a reduction in Western defense efforts, and perhaps even improving the relative Soviet military position. It is conceivable, although contrary to most present indications, that the pressures for higher military spending could cause the USSR to be more forthcoming in disarmament negotiations.

47. The November plenum of the Central Committee singled out administrative reorganization as the means to stimulate economic growth, and thereby demonstrated an unwillingness to make major changes in the pattern of resource allocations. Khrushchev confirmed this unwillingness in his speech of 27 February, in which he warned consumers against early hopes of high living standards because of the growing needs of defense. His speech indicates that the leadership has recently taken economic decisions which reaffirm military priorities at the expense of consumer aspirations; beyond this it may reflect a decision to increase military spending above previously planned levels. The Soviet economy is capable of bearing a heavier military burden, but not without sacrifices in the program to raise living standards and perhaps also reductions in the future rate of industrial growth. For

the present, the Soviets appear to have chosen to risk these consequences, but we believe that the problem of resource allocation will continue to plague the Soviet leadership.

V. FORCES FOR LONG RANGE ATTACK

A. Soviet Policy Toward Long Range Striking Forces

48. The Soviets regard forces for long range attack as essential for supporting an aggressive political posture, deterring the West from resort to military action, and fighting a war as effectively as possible should one occur. In our view, they are attempting to build forces which they regard as appropriate to these objectives, rather than attempting to achieve the very high degree of superiority required to launch a deliberate attack on the West. In building these forces, the Soviets put initial stress on creating a massive capability against Eurasia and its periphery. Intercontinental capabilities were not neglected, but deployment of medium range delivery systems occurred earlier and in much larger numbers. Although MRBM and IRBM forces continue to grow, major emphasis has evidently shifted to the buildup of forces for intercontinental attack, primarily ICBMs. Other major recent developments are the introduction of hardening for ground-launched ballistic missiles, efforts to improve missile reaction times, and the development of submarine ballistic missiles suitable for submerged launching. By these means, the Soviets are attempting to gear their long range striking forces better for either pre-emptive or retaliatory operations.

B. Intercontinental Ballistic Missiles [11]

49. In the past two years, the pace of ICBM development and deployment has quickened noticeably. At the Tyuratam test range two new ICBM systems—designated SS–7 and SS–8—have been under development. The more successful program has been the development of the second-generation SS–7 which probably became operational in the first half of 1962. Testing of the SS–8 has been conducted at a slower pace. The SS–8's relatively poor success record in the first half of 1962 and the lack of any test-firings for six months suggest that the Soviets have encountered technical difficulties with this system.

50. Construction of deployment complexes for second-generation ICBMs has proceeded concurrently with development testing. This method, aimed at early achievement of an initial operational capability, almost certainly relates to a Soviet decision to deploy the first-generation SS–6 system in only limited numbers; from the history of

[11] For characteristics and performance of Soviet ICBMs, see Annex B, Table 1.

the SS–6 program, we judge that this decision was taken in about 1958 or 1959, when the second-generation systems were probably being designed. The SS–6 ICBM is a very large vehicle of about 500,000 lbs. gross takeoff weight, with nonstorable liquid propellants and radio-inertial guidance. Ground control and support facilities are correspondingly large and complex, and include rail service direct to launchers. The second-generation SS–7 system is simpler and considerably less bulky than the SS–6; the missile has a gross takeoff weight of about 280,000 lbs. and employs storable liquid propellants. Of the known Soviet ICBM systems, the SS–7 is by far the most widely deployed.

51. We have located some 17 ICBM complexes in the USSR, and, considering the nature of the evidence, we believe that no more than a few others exist. Most of these complexes—more than a dozen—are of a type clearly associated with the SS–7 system. A typical SS–7 complex consists of a rail-served support area and as many as 16 launchers which are deployed in pairs and are road-served. The system was first deployed in a soft configuration, but is now also being deployed in silo-type hardened sites, a few of which are probably already operational.

52. In addition to SS–7 complexes, the Soviets have deployed a few complexes of a somewhat different type. Launch sites are soft, road-served, and probably for a relatively small ICBM—i.e. about the size of SS–7. We have not definitely associated this type of complex with a particular missile system. If the SS–8 missile is relatively small, the new type complexes are probably designed for that system. However, if SS–8 is very large, they are probably intended for the SS–7.

53. We are unable at this time to resolve the question of whether the SS–8 ICBM is relatively small or even larger than SS–6. If the SS–8 is small, the USSR may have undertaken its development along with SS–7 to insure the availability of at least one successful second-generation system. If the SS–8 is large, it is probably being developed as a delivery vehicle for very high-yield warheads, and presumably for space launchings as well. We have no evidence of new deployment complexes suitable for such a large ICBM.

54. *Estimated Force Levels to Mid-1964.* Our estimates of Soviet ICBM strength are derived primarily from the known magnitude of the program and the estimated lead times involved in new site construction. The range of the estimates allows for the possibility of additional sites and other unknowns, such as the present status of the SS–8 program. Evidence on second-generation deployment has led to an upward revision in our previous estimate of operational launchers for mid-1964. We now estimate a somewhat faster rate of deployment activity and a higher number of launchers per complex than were em-

ployed in previous calculations. Our revised estimates of numbers and types of operational ICBM launchers to mid-1964 is as follows:

OPERATIONAL ICBM LAUNCHERS[12]

	END-1962	MID-1963	MID-1964
Approximate totals	80–85	125–175	250–325
(Including hard launchers)	(a few)	(10–25)	(75–100)

NOTE: Soft launchers probably have two missiles each to provide a refire capability after some hours. We have no evidence as to whether hard launchers have a refire capability. The totals estimated in this table include launchers at the Tyuratam test range.

55. The Soviet ICBM force estimated for the next two years will consist primarily of second-generation ICBMs equipped with warheads in the low megaton range. We continue to believe, however, that the Soviets have a requirement for a very large ICBM, capable of delivering very high-yield warheads—[ ] The SS–6 ICBM could be retrofitted with warheads having yields in the lower portion of this range, but further tests would probably be required to develop a new nosecone.

56. Apart from this possibility, the time at which the USSR could have operational missiles capable of delivering warheads with yields [ ] depends upon whether or not the SS–8 is a very large ICBM:

a. If SS–8 is in fact very large, we believe it could deliver such warheads. In this case, we estimate that a few suitable launchers could be operational by mid-1964; an earlier capability could be achieved by deployment of SS–8 at the four SS–6 launchers in the field and at two or three test range launchers.

b. If, on the other hand, SS–8 is relatively small, a new, very large ICBM [ ] is probably under development; we estimate that it could become operational in late 1964, or more likely in 1965 or thereafter. In either event, we conclude that only a few large ICBMs with very high-yield warheads could be deployed in the USSR in the next year or so.[13]

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[12] The Assistant Chief of Staff for Intelligence, Department of the Army, and the Assistant Chief of Staff, Intelligence, USAF, dissent to these projected force levels. See their footnotes to Conclusion K, page 6.

[13] The Assistant Chief of Staff, Intelligence, USAF, continues to estimate that the SS–8 could be ready for operational use in 1963. Further, he believes that, in consideration of the large cost expended on the SS–6 research and development program, including site development, and other pertinent factors, the operational deployment of the SS–6 to only the four known SS–6 launchers in the field, does not appear realistic. It is quite likely in his opinion that other sites have been constructed and remain undetected because of deficiencies in available intelligence. Therefore, he concludes that more than a few large ICBM's with very high-yield warheads will be operational by mid-1964.

57. *Implications for 1965–1967.* We continue to estimate an ICBM force level for mid-1967 of 300–600 operational launchers, although, if the Soviet goal is the lower side of this range, it will evidently be reached considerably earlier than mid-1967.[14] [15] Events of 1962, including the Cuban crisis, probably caused the Soviet leaders to re-evaluate their strategic weapon programs, and may have led to new decisions which could importantly affect the ICBM force in the mid-1960's. We have no information as to the nature of such decisions, and are unlikely to obtain indications of resultant changes for a year or more. However, on the basis of present evidence, we believe that the major trends to 1967 will be: growth of the force to some hundreds of launchers; hardening of a significant portion of the force; and availability of some missiles capable of delivering very large warheads with yields of up to 100 MT.

C. *Medium and Intermediate Range Ballistic Missiles*

58. We estimate that the Soviet MRBM and IRBM force now comprises about 600 completed launch positions. The 1,100 n.m. (SS–4) MRBMs probably constitute the bulk of the force, but some 700 n.m. (SS–3) MRBMs may still be operational, and some 2,200 n.m. (SS–5) IRBMs are in service.[16] More than 90 percent of the force is deployed in a broad belt in western USSR stretching from the Baltic to the Black Sea, with a lesser concentration of sites in the Soviet Far East. From present deployment areas, MRBMs can cover targets in Norway, most of Western Europe, Turkey, Japan, Korea, Okinawa, Alaska, and northern Canada. IRBMs can extend this target coverage to include all of Spain, North Africa, Thule, Taiwan, and the northern Philippines.

59. Most of the MRBM and IRBM sites are soft, fixed, and road-served; each site consists of four launch positions. A program to construct hardened sites is underway; we believe that a few silo-type sites are already operational, and that this program is continuing.

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[14] The Assistant Chief of Staff for Intelligence, Department of the Army, believes that the force level is likely to be towards the low side of the estimate presented in this sentence. He believes the upper limit (600) too high for a purely deterrent force, and much too low for a counterforce concept.

[15] The Assistant Chief of Staff, Intelligence, USAF, continues to estimate for the long term a force level of 700–800 ICBM launchers. He would estimate that operational ICBM launchers for the period mid-1965 to mid-1967 to be as follows:

	MID-1965	MID-1966	MID-1967
Approximate totals	450–550	550–650	700–800
(Including hard launchers)	(175–225)	(225–275)	(350–400)

[16] For the precise calculated maximum ranges and other characteristics of these missile systems, see Annex B, Table 1.

60. We believe that all hard sites and soft IRBM sites are normally manned and equipped with launchers so that each launch position is capable of participating in an initial salvo. We are uncertain, however, that this is true of all the soft MRBM positions. Soviet doctrine calls for alternate launch positions to which MRBM units could move for subsequent firing of additional missiles. It may be that only about half of the soft MRBM positions are manned and equipped for a first salvo, and that for subsequent firings their launchers and crews could move to other soft positions. On the other hand, it may be that all of the soft MRBM launch positions are equipped with launchers and crews for a first salvo, and the units may be intended subsequently to move to unimproved alternate positions similar to the installations constructed in Cuba. Bearing these possibilities in mind, we believe that the present MRBM/IRBM force—estimated at 580 soft launch positions and 20 hard silos—may have a first salvo capability as large as 600 or as low as 325.

61. There is clear evidence that the Soviets intend to provide a substantial refire capability for this force. We believe that most if not all firing units using soft launch positions have a second missile available for a second salvo, and that some further reserve may exist. We have no evidence as to whether hardened launchers are provided with additional missiles.

62. We believe that the Soviet deployment of soft MRBM and IRBM sites will be virtually completed early this year, leveling off at about 600 launch positions. The hardened component of the force will continue to grow, probably reaching about 100–150 launchers in mid-1964. Thus, we estimate that at that time the Soviet MRBM and IRBM force will comprise about 700–750 launch positions. Considering the possibility that as many as half of the soft launch positions may be alternates, we believe this force may have a first salvo capability as high as 750 or as low as 425.

63. In the 1965–1967 period, the size of the MRBM and IRBM force may level off, as we have previously estimated, or it may continue to rise. We are unable at this time to project a Soviet force goal for these weapons, which have already been made available in numbers considerably exceeding those predicted in earlier estimates. In order to have a larger force of protected MRBMs and IRBMs, the Soviets may continue to build new hard launchers throughout the mid-1960's. It is also possible that some soft sites will be deactivated. Finally, improved MRBM and IRBM models may be introduced in the mid-1960's; these could include road mobile systems designed for greater flexibility of operations.

D. Missile Launching Submarines [17]

64. Since the second half of the 1950's the USSR has been developing and producing ballistic missile submarine systems capable of attacking land targets. The Soviets now have operational about 45 ballistic missile submarines; nine of these are of the "H" class nuclear-powered type and the rest are "Z" conversion and "G" class diesel-powered submarines. This force can carry a combined total of about 125 short-range (350 n.m.) missiles. The effectiveness of these submarines is limited by their capacity to carry only two or three missiles each, the short range of the missiles, and the requirement for submarines to surface for launching.

65. The USSR is developing longer range ballistic missiles for launching from submerged submarines. Our evidence is inadequate to determine whether the system under development has a range of 650 or 2,000 n.m.; it is possible that two separate systems of different ranges are being developed. If a 650 n.m. system becomes available, it will probably be retrofitted into some portion of the existing force of "G" and "H" class submarines; we believe that such a retrofit program could begin soon. Such missiles will probably also be incorporated into newly-constructed "H" class submarines.

66. If a 2,000 n.m. submerged launch system is under development—either instead of or in addition to a 650 n.m. system—it is almost certainly intended for use in a new, nuclear-powered class. In any case, new classes of nuclear-powered ballistic missile submarines will almost certainly carry submerged-launch missiles with a range of at least 650 n.m., and possibly as much as 2,000 n.m. There is evidence that the Soviets are constructing nuclear submarines of new classes whose characteristics are as yet unknown to us.

67. The Soviets have also developed a supersonic, 300 n.m. submarine-launched cruise missile system (SS–N–3), which is now carried by a number of converted "W" class submarines and six nuclear-powered "E" class ships. There is evidence that a longer range (450 n.m.) naval cruise missile is also under development. We do not know definitely what missions the Soviets contemplate for submarine cruise missile systems of these ranges. From Soviet discussions of naval missile systems and other evidence it appears that these systems are designed primarily for use against ships, but their effective use at extended range would require a forward observer within sonar or radar range of the target to provide target data. On the other hand, these missiles could also be employed—probably without a forward observer—to conduct low level attacks on land targets, and their employment would greatly complicate defensive problems.

[17] For estimated characteristics and performance of Soviet submarines, see Annex A, Table 11; for characteristics and performance of naval-launched missiles, see Annex B, Table 3.

68. Taking into account estimated Soviet capacity to construct nuclear-powered submarines, and with allowance for estimated construction of torpedo attack types, we believe that a gradual buildup of nuclear-powered missile launching ships will occur over the next five years. By 1967, the USSR will probably have more than two dozen nuclear-powered ballistic missile submarines, and about 20 equipped with cruise missiles. Construction of diesel-powered ballistic missile submarines will probably continue for the next year or so, building up to a total of more than 40. We estimate Soviet operational strength in missile-launching submarines over the next few years as follows:

SOVIET MISSILE SUBMARINES

	END-1962	MID-1963	MID-1964	MID-1967
Ballistic				
Nuclear ("H" and/or successor)	9	11	14	26
Diesel ("G" and "Z" class)	36*	40	43	43
Cruise				
Nuclear ("E" class)	6	7	9	20
Diesel ("W" class)	12	14	18	22

* We have previously estimated that construction of "G" class submarines would terminate by the end of 1962. Recent evidence has indicated, however, that this construction has continued. While we are unable to predict the future numbers of this class with certainty, our estimate reflects both the recent evidence and the possibility that construction will continue for about another year. The size of the "G" class construction program will be influenced by Soviet decisions regarding construction of nuclear-powered missile submarines.

E. Long Range Aviation

69. Soviet Long Range Aviation, by reason of its equipment, basing, and deployment, is much better suited for Eurasian operations than for intercontinental attack. We believe that as of December 1962, Long Range Aviation comprised 170–200 heavy bombers and tankers and about 950 jet medium bombers and tankers. The heavy bomber force includes 100–120 BISON jet bombers and 70–80 BEAR turboprops. Virtually all of the medium bombers are BADGERs; at least 25 new, supersonic BLINDERs have been delivered to Long Range Aviation units, and their introduction is continuing.

70. We continue to estimate a gradual decline in the numerical strength of Long Range Aviation. BLINDER, the only bomber in current production for Long Range Aviation, is being produced at a rate which is probably insufficient to offset the expected decline in BADGER numbers. Although research and development on heavy aircraft has continued and could be applicable to military purposes, our evidence does not indicate that any new heavy bomber is being developed for operational use. Although it remains possible that an advanced inter-

continental aircraft could enter operational service in the next five years, this now appears highly unlikely. We therefore estimate the probable composition of Long Range Aviation through mid-1967 as follows: [18]

	END-1962	MID-1963	MID-1964	MID-1967
Heavy Bombers/Tankers				
BISON	100–120	100–120	95–115	70–90
BEAR	70–80	70–80	65–75	40–50
	170–200	170–200	160–190	110–140
	END-1962	MID-1963	MID-1964	MID-1967
Medium Bombers/Tankers				
BADGER	925	900	800	500
BLINDER	25	50	100	250
	950	950	900	750

F. Air-to-Surface Missiles [19]

71. Although no large-scale bomber replacement program appears to be under way, the USSR has sought to extend the service life of its long-range aircraft and to improve their effectiveness by the deployment of air-to-surface missiles. A 350 n.m. supersonic missile, the AS–3, was developed to provide a standoff capability in attacks against land targets. Only the BEAR appears capable of delivering this large missile. More than half of the BEARs have been equipped to deliver these weapons rather than bombs, and there are indications that the modification program is continuing. A new air-to-surface missile, the AS–4, carried by a BLINDER in the 1961 air show, is now being tested and could probably be operational in 1964. It appears to be designed for high supersonic speed and a range of several hundred miles.

G. Intercontinental Operations

72. A major obstacle to the development of capabilities for intercontinental attack by Long Range Aviation has been the limited range of the aircraft which make up the bulk of the force. Consequently the Soviets have given considerable emphasis to aerial refueling and to Arctic training. The USSR has not developed an aircraft specifically for use as a tanker. Instead, BISONs and BADGERs are converted for use as tankers with their bomber counterparts. BLINDERs could possibly also refuel from these tankers. There is evidence that all Soviet BISON regiments and some aircraft from about half of the BADGER regiments have trained in aerial refueling. The recent sighting of a

[18] The Assistant Chief of Staff, Intelligence, USAF, dissents to the estimates on havey bombers in this paragraph. See his footnote to Conclusion M, pages 7 and 8.

[19] For estimated characteristics and performance of Soviet air-to-surface missile systems, see Annex B, Table 5.

BEAR equipped with a nose probe indicates the possible development of an in-flight refueling capability for this aircraft, but we have no evidence as to how many BEARs have been so modified.

73. Even with aerial refueling, the range capabilities of Long Range Aviation for intercontinental attack remain limited. Refueled BADGERs on two-way missions from Arctic bases could cover many targets in Alaska, Canada and Greenland, but could reach only the northwestern portion of the continental US. The BLINDER is even more limited as to range. The BISON would require both Arctic staging and in-flight refueling for extensive coverage of US targets on two-way missions, and many of these targets would be at extreme ranges. BEARs could cover virtually all US targets on two-way missions from Arctic bases. They could reach targets in northeastern US directly from their home bases, but would have to stage through the Arctic for extensive coverage of US targets when carrying AS-3 missiles or bomb-loads of 25,000-30,000 lbs. The recently observed BEAR with a nose probe was also configured to carry air-to-surface missiles; modification of BEAR for in-flight refueling would obviate the necessity for Arctic staging.

74. We believe that the Soviets would plan to commit their entire heavy bomber force and a portion of their medium bomber force to initial attacks on North America. In the past two years, the numbers of heavy bombers engaged in Arctic training have increased, while participation by medium bomber units has declined. Analysis of this training activity suggests that the Soviets might plan to commit as many as 350-500 aircraft through relatively few Arctic bases in initial attacks on North America. Considering a variety of operational factors but excluding combat attrition, we estimate that the Soviets could put about 200 bombers over North America on two-way missions; of these, about half would be heavy bombers.[20]

75. The Soviets have a larger potential for bomber attacks against the US, but to exercise it they would need to employ BADGERs on one-way missions and to use crews which had not participated in Arctic training. As Soviet ICBM forces grow, such use of the medium bomber force becomes increasingly unlikely.[21]

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[20] The Assistant Chief of Staff, Intelligence, USAF, disagrees with judgments expressed in this paragraph. See his footnote to Conclusion M, pages 7 and 8.

[21] The Assistant Chief of Staff, Intelligence, USAF, agrees that the need for the medium bomber force will diminish at sometime in the future because of the increasing size of the ICBM force. Further, in the immediate future, he considers that the need for these bombers in attacks against Eurasia is decreasing because of the growing MRBM/IRBM strength. He also notes that the Soviets are retaining large numbers of medium bombers and training them extensively. He believes, therefore, that medium bombers will be used on one-way missions in any attack on the US but that the number so utilized will diminish in time.

H. Space Systems

76. On the basis of evidence presently available, we are unable to determine the existence of Soviet plans or programs for the military use of space. The limitations of this evidence, however, are such that our chances of identifying military programs are poor. We believe that the USSR almost certainly is investigating the feasibility of space systems for military support and offensive and defensive weapons. Soviet decisions to develop military space systems will depend on their expected cost and effectiveness as compared with alternative systems, the political and military advantages which could be gained, and the Soviet estimate of US intentions and capabilities in comparable fields. We believe that the USSR will produce and deploy those military space systems which it finds to be feasible and advantageous in comparison with other types of weapons and military equipment.

77. Within this decade, the basic factors of reaction time, targeting flexibility, accuracy, vulnerability, average life, and positive control for an orbital bombardment system almost certainly will not compare favorably with ICBMs. We believe that a Soviet decision to develop and deploy an orbital bombardment system would depend in large part upon the extent to which these drawbacks can be overcome. A demonstration of an orbital bombardment satellite could occur at any time, but we believe that in the near term its military effectiveness would be minimal. If the Soviets decide to develop an orbital bombardment force, it would be preceded by a developmental system of limited military effectiveness which could appear as early as 1965.

I. Implications of Capabilities

78. The capabilities of Soviet long-range striking forces will be only in part a function of the numbers of weapons available, their performance, and the adequacy of supporting elements. Equally critical will be the way in which the Soviets employ their striking forces, their ability to maximize the effects of these forces under the various circumstances in which war could begin, and their assessment of Western capabilities and plans.

79. Should the Soviets conclude that the West was irrevocably committed to an imminent nuclear attack on the USSR, they would launch their available ready forces in a pre-emptive attack designed to blunt the expected Western blow. The mixed forces which they have available for such operations would permit flexibility of tactics and complicate Western defensive problems, but would pose severe difficulties of coordination. Initial missile and bomber attacks against the US would probably extend over a period of many hours, and those against Eurasia over at least a few hours.

80. The Soviets would almost certainly wish to assign US targets to attack by submarine-launched missiles in the event of general war. Considering the absence to date of patrols in US waters and the long time of transit from Soviet base areas, we believe that at present the Soviets would plan to employ few if any missile submarines in initial attacks against the US. Initiation of routine submarine patrols within missile range of the US could change this situation, and we believe that some such patrolling activity will have been instituted by the mid-1960's.

81. By the mid-1960's, the USSR will have acquired a substantially increased ICBM and submarine-launched missile capability to deliver nuclear weapons against the US, in addition to its already formidable forces for strikes in Eurasia. Significant portions of these forces will be relatively invulnerable to attack. Reaction times will probably have been further reduced, and techniques for control and coordination improved. The Soviets will be in a position to strike pre-emptively at the fixed bases of an important segment of the US nuclear delivery force, and they will have some prospect that a portion of their own force could survive an initial US attack and retaliate with high-yield nuclear weapons. With the long-range striking forces we estimate that they will have in the mid-1960's, however, the Soviets could still not expect to destroy the growing numbers of US hardened, airborne, seaborne, and fast reaction nuclear delivery vehicles.

VI. AIR AND MISSILE DEFENSE FORCES [22]

82. The USSR has continued to devote large-scale efforts to improving and modernizing its air defense system.[23] Defenses against hostile aircraft, especially against medium and high altitude bombers, continue to be strengthened by the widespread deployment of surface-to-air missile systems, improved interceptors with air-to-air missiles, and advanced equipment for air defense warning and control. Antiaircraft capabilities will be further improved and extended, but the major future development which we foresee is the advent of a capability against ballistic missiles.

A. Antimissile Program

83. For more than five years, the Soviets have been conducting a high priority and extensive program to develop defenses against ballistic missiles. We believe that they are developing several different ABM systems to defend against missiles of various ranges, but our evidence is inadequate to support an estimate of the characteristics or effectiveness of any of these systems. Despite the intensity of Soviet R&D and re-

[22] For a fuller treatment of this subject, see NIE 11-3-62, "Soviet Air and Missile Defense Capabilities through Mid-1967," dated 31 October 1962, TOP SECRET.

[23] For estimated strength and deployment of Soviet air defense equipment, see Annex A, Table 4.

peated official claims, we are not aware of any Soviet breakthrough in ABM technology.

84. *Defense Against Long-Range Missiles.* We believe that the Soviets are deploying an ABM system around Leningrad which will achieve some operational capability in 1963. We have no basis for determining its effectiveness, but we think it unlikely that a system deployed at the current stage of Soviet R&D would be effective against missiles employing decoys or other countermeasures.

85. To counter the more complex long-range ballistic missile threat of the mid-1960's, the Soviets may seek to improve the Leningrad system, or may develop a different and more advanced system, or both. Should they follow the first course, deployment of the Leningrad system at additional locations would probably begin in the near future if it has not already begun. If sites are under construction now, initial operational capabilities could be achieved at one or more additional locations in about two years, and subsequent improvements would progressively increase the capabilities. We regard it as more likely, however, that the USSR will defer deployment at locations other than Leningrad until a new and better antimissile system is available. In this case, the requirement for further R&D would probably delay the beginning of deployment for another year or so. Initial operational capabilities would probably be achieved at one or more locations in 1965–1966.

86. If technical achievements enable the Soviets to develop an ABM system which they regard as reasonably effective against long-range missiles, a vigorous deployment program will probably be undertaken. Considering the vast effort required for a large program and the relative importance of the various urban-industrial areas in the USSR, we believe that a vigorous Soviet deployment program would contemplate the defense of some 20–25 principal Soviet cities. A program of this scope almost certainly would require some five or six years from its initiation to its completion. We have no basis for judging whether or when the Soviets would consider their ABM system effective enough to warrant the initiation of such a program.

87. *Defense Against Short-Range Missiles.* There are indications that the Soviets have been developing a modification of their standard antiaircraft SA–2 missile system for use against short-range ballistic missiles such as the Honest John, Corporal, and Sergeant. We have no evidence of Soviet progress, but we estimate that an improved SA–2 system having some effectiveness against tactical ballistic missiles could now be available. It is also possible that the Soviets have chosen to develop a completely new system; if so, it could also be available this year. We believe that whatever system is developed will be intended primarily for the protection of field forces and for this use will be mobile. It will probably also be deployed at fixed sites in border areas vulnerable to short-range missile attack.

88. *Antisatellite Systems.* We believe that the Soviet leaders almost certainly intend to acquire an antisatellite capability. Although we lack evidence, we think it probable that a development program exists. If the Soviets are utilizing components from existing systems, they might be able to intercept current models of US satellites now, and they would almost certainly be able to do so within the next year or so; in this instance, the intercept problem could be solved by determining the orbits of the target satellites after a few passes.

B. Surface-to-Air Missiles

89. For defense against aircraft, the Soviets now rely primarily on SAMs emplaced near fixed targets, and upon fighters deployed to cover approach routes as well as gaps between missile defended locations. The Soviets now have operational three types of SAM systems. Two of these, SA–1 and SA–2 are designed primarily for defense against medium and high altitude attacks; the third, SA–3, is probably designed to provide improved capabilities at low altitudes. The SA–1 system is deployed only around Moscow, while SA–2's have been extensively deployed throughout the USSR. The newest system, SA–3, is in the early stages of deployment.[24]

90. Deployment of SA–2, the basic Soviet missile defense system, has been on a massive scale. More than 650 SA–2 sites have been confirmed in the USSR; each site has six launchers, together with additional missiles to provide a refire capability. Most of these have been deployed in defense of population centers, industrial complexes, and government control centers. They also defend long-range missile sites, airfields of Long Range Aviation, nuclear production and weapon storage installations, missile test ranges, and industrial facilities. Several sites in border areas suggest that the Soviets are also deploying peripheral defenses, which may eventually extend from the Kola Peninsula along the western and southern borders of the USSR into central Asia. Considering the pattern of deployment, the length of time the program has been under way and the extent of our intelligence coverage, we estimate that more than 800 SA–2 sites are operational in defense of more than 250 target areas in the USSR and that the Soviets will deploy a total of some 1,000–1,200 sites. This SA–2 deployment program will probably be largely completed within the next two years.

91. The SA–2 system is also being deployed to defend principal cities and major installations of theater field forces in the European Satellites. Nearly 100 sites have been observed to date, and we estimate that about 175–200 SA–2 sites will be deployed in the European Satellites during the next two or three years, including sites manned by Soviet field forces.

[24] For estimated characteristics and performance of these systems, see Annex B, Table 4.

92. *Low Altitude Defense.* The USSR in 1961 began deployment of the SA–3 system. However, we have insufficient evidence to estimate characteristics for this system. A typical SA–3 site consists of four launch pads. We have identified more than 40 such sites, located in the Moscow and Leningrad areas and in certain coastal regions, particularly the Baltic and Black Sea areas. We believe that the Soviets will continue to deploy SA–3's to supplement existing SAM defenses, giving priority to those coastal areas which they regard as particularly vulnerable to low level attack. A mobile version of the SA–3 system will probably also be provided to field forces. The present limited deployment, however, does not provide sufficient basis for estimating the extent or pattern of future SA–3 deployment.

C. *Fighter Aircraft*

93. Although the Soviets are clearly placing heavy reliance on surface-to-air missiles, they continue to maintain large numbers of fighter aircraft in service. As of December 1962, we estimate that there were about 11,900 fighters in operational units throughout the Bloc, with about 6,800 of these in Soviet units.[25] About 4,400 of the Soviet fighters are in Fighter Aviation of Air Defense (IA–PVO) with air defense as their primary mission. The remainder, which are in Tactical Aviation, are trained in air defense as well as ground support operations. The Soviet fighter force has been reduced by about one-third over the past few years, and we estimate a further reduction on the order of 40 percent over the next five years.[26] The more advanced performance characteristics of new model fighters and improvements in their weapons and control systems should more than offset reductions in numbers.

94. Day fighters—primarily the subsonic FRESCO (MIG–17)—make up over three-quarters of the Soviet force. However, since about 1955, the Soviets have been working to improve the all-weather capability of the force, bringing into service about 350 FLASHLIGHT A (YAK–25) all-weather interceptors and about 600 day fighters (FRESCOs and FARMERs) modified by the addition of airborne intercept (AI) radar. Under nonvisual conditions, the effectiveness of most of these aircraft is limited by the relatively short range of the AI radar, by the continued reliance on gun armament, and by the restriction to a lead pursuit attack.

95. In the past few years, a new generation of supersonic, missile-equipped Soviet fighter has appeared in peripheral areas of the USSR and Eastern Europe. The delta-wing FISHPOT, probably the best

[25] For a detailed estimate of Soviet fighter strength, see Annex A, Tables 4–5. For a similar estimate on the European Satellites and Asian Communist nations, see Annex A, Table 6.

[26] The Assistant Chief of Staff, Intelligence, USAF, notes that Soviet fighter strength has remained nearly the same since mid-1961, and considers it may well be that a plateau has been reached.

operational AW fighter, has been phased into PVO units; the swept wing FITTER and the delta-wing FISHBED C, which have a clear-air-mass capability, have gone largely to units of Tactical Aviation; the FISHBED D all-weather fighter has been identified in East Germany. In armament, fire control, and speed, these aircraft represent significant advances over the bulk of Soviet interceptors now in service.

96. Three new interceptor prototypes, all equipped with improved AI radar and AAM's, were displayed in the 1961 Aviation Day show: FIREBAR B, FLIPPER, and FIDDLER. FIREBAR B is an interceptor version of the tactical strike/reconnaissance aircraft, FIREBAR A. FLIPPER, a delta-wing type with a relatively short combat radius, is capable of speeds in excess of Mach 2 at 35,000–40,000 feet. FIDDLER has sufficient range and endurance to perform a loiter mission 500 n.m. or more from base. It may be intended for use against air-to-surface missile (ASM) carriers, but its potential for such missions is currently limited by the shorter ranges of Soviet early warning radars.

97. We believe that all three of these new fighters could start entering units in 1964–1965; we have limited evidence that FIDDLER and possibly FLIPPER may be in production now. Soviet production of fighter aircraft has dropped sharply in recent years, from a peak of about 5,000 in the early 1950's to about 400 in 1959. The annual rate for the period 1960–1962 was on the order of 600 to 800.

98. *Air-to-Air Missiles.*[27] We have firm evidence on the deployment of AAMs in the Soviet fighter force and in several of the Satellite forces as well. We believe that three types are now operational, a radar beam-rider (AA–1), an infrared homing missile (AA–2), and a missile which may be either an infrared homing missile or an all-weather semiactive radar homing missile (AA–3). Two prototype AAM's were displayed in 1961 (the AA–4 on FIDDLER and the AA–5 on FLIPPER) and we estimate that one or both could become operational during 1963–1965. It is probable that these missiles have improved semiactive radar homing systems and that they carry substantially heavier warheads, some of which could be nuclear. Soviet development of improved AAMs over the next few years will depend primarily upon the development of interceptors equipped with suitable AI radar and fire control systems.

D. Antiaircraft Guns

99. The Soviets continue to employ large numbers of antiaircraft guns for defense of field forces and fixed targets, primarily for defense at low altitudes where fighter and missile effectiveness is poor. The number of antiaircraft guns deployed with the Soviet forces, now about

[27] For characteristics and performance of Soviet air-to-air missile systems, see Annex B, Table 6.

12,000 has declined over the past few years and this trend is continuing. Because of the widespread deployment of SAMs, we believe that most of the remaining medium and heavy guns used in the defense of fixed targets in the USSR will be phased out over the next few years. However, a large number of these probably will be held in reserve status near major target areas, and some will be retained to defend field forces. Continued transfer of some of this equipment to other Bloc countries is probable.

E. Supporting Equipment

100. We believe that about 1,800 heavy prime radars and about 5,400 auxiliary radars are deployed in various combinations at some 2,400 sites in the Sino-Soviet Bloc. Radar coverage now extends over the entire USSR and virtually all the remainder of the Bloc. Under optimum conditions the Soviet system of early warning (EW) radars can detect and track aircraft at high and medium altitudes more than 200 n.m. from Bloc territory; under virtually all conditions the system can detect and track such aircraft within about 135 n.m. Maximum effective range of Soviet ground controlled intercept (GCI) radars is about 100–200 n.m. Future Soviet radar development will seek to improve present limited capabilities against low altitude targets and air-to-surface missiles. With the wider deployment of improved radars and automated control systems, the total number of radar sites will probably decline.

101. The most important advance in Soviet air defense communications and control over the last few years has been the development and deployment of semiautomatic systems with data-handling equipment for rapid processing of air defense information and data link equipment for vectoring interceptors. A system similar in concept to the US SAGE system, but less complex, is widely deployed in Western USSR. We believe that its original ground element has been replaced by a second generation system, and that an improved semiautomatic fighter control system is being introduced. These new systems will probably also be widely deployed in the USSR and possibly in Eastern Europe within the next few years.

F. Warning

102. EW radar could now give Moscow and many other targets in the interior more than one hour's warning of medium and high altitude attacks made with Western bombers of the B–52 type. Soviet assurance of such detection would be reduced by low level penetrations. The supersonic bombers and ASMs now being added to Western inventories could reduce this warning time by as much as 50 percent. Moreover, the more limited EW time available in Bloc border areas would reduce the effectiveness of the defenses of even heavily defended targets in

such areas. As the speeds of Western aerodynamic vehicles increase, and as Western ballistic missiles become a greater part of the threat, the problem of providing warning time will become more critical.

G. Current Capabilities and Future Trends

103. The extensive deployment of SAMs over the past four years has significantly improved Soviet air defense capabilities. These capabilities are greatest against penetrations by subsonic bombers in daylight and clear weather at altitudes between about 3,000 and about 45,000 feet. Under such conditions, virtually all types of Bloc air defense weapons could be brought to bear against attacking aircraft. Most Soviet fighters can operate at altitudes up to about 50,000 feet; the FLIPPER will probably be able to execute attacks at about 65,000 feet.[28] The capabilities of the fighter force, composed largely of day fighters, would be reduced considerably during periods of darkness or poor visibility. In the increasingly widespread areas defended by SAMs, air defense capabilities are virtually unimpaired by weather conditions and extend to altitudes of about 80,000 feet.

104. Despite its recent and considerable improvements, however, the Soviet air defense system would still have great difficulty in coping with a large-scale air attack employing varied and sophisticated tactics, even in daylight and within the foregoing altitudes. In addition, the Soviet defense problem would be complicated by the variety of delivery systems which might be employed, including air and surface-launched cruise missiles and fighter-bombers. At altitudes below about 3,000 feet, the capabilities of the system would be progressively reduced; below about 1,000 feet, the system would lose most of its effectiveness. The Soviets will attempt to correct these deficiencies during the next few years by improving the capabilities of surface-to-air missile and fighter defenses for low altitude operations. Total system effectiveness will be increased by further application of automated command and control.

105. The significant improvements in the Soviet air defense system during recent years will be extended during the next few years, and successful penetration by manned bombers will therefore require increasingly sophisticated forms of attack. The Soviet air defense capability can be degraded by the increasingly complex forms of attack which the West will be able to employ, including air-launched missiles of present and more advanced types, penetration tactics, and electronic countermeasures. Even in such circumstances, the Soviets would prob-

[28] Current operational Mach 2 interceptors (FISHBED, FITTER, FISHPOT) are capable of performing a dynamic climb and reaching altitudes of around 65,000–70,000 feet. In such a climb, the aircraft would be at these altitudes for a short period of time (perhaps one to three minutes), during which it would have little maneuverability. The precision with which the climb must be planned and executed limits its effectiveness as an intercept tactic.

ably expect to destroy a number of the attackers. We doubt, however, that they would be confident that they could reduce the weight of attack to a point where the resulting damage to the USSR would be acceptable. Unless and until the USSR is able to deploy a substantial number of advanced ABM defenses, the USSR's air and missile defense deficiencies and uncertainties will sharply increase as ballistic missiles assume a larger proportion of the West's total nuclear delivery capability.

VII. THEATER FIELD FORCES [29]

A. Ground Forces

106. The Soviet ground forces, which represent the largest part of the military establishment, are well-trained and equipped with excellent materiel. Combat troops are distributed among 15 military districts in the USSR and three groups of forces in the European Satellites. The strongest concentrations are in East Germany and the western and southern border regions of the USSR; a lesser concentration is in the maritime area of the Soviet Far East. Most Soviet ground forces are organized into field armies with combat and service support for the line motorized rifle and tank divisions. Combat and service support is generally stretched thin, and there is a low ratio of nondivisional support to the present divisional force. However, there are large numbers of artillery, missile, and antiaircraft artillery brigades and regiments which are either allocated to field armies or retained under higher command headquarters. Combat air support is provided by units of Tactical Aviation, organized into tactical air armies under the operational control of the military district or group-of-forces commander.

107. Of the nearly two million men in the Soviet theater ground forces, about half are in line divisions and the remainder are in combat and service support elements. We estimate that there are about 145 line divisions, of which approximately 80 are considered to be combat ready (at 70 percent of authorized personnel strength or greater), and the remaining 65 are at low and cadre strength (estimated to range between 60 and 20 percent of authorized strength and hence requiring substantial augmentation before commitment to combat).[30] At present,

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[29] For a more detailed treatment of this subject see NIE 11-14-62, "Capabilities of Soviet Theater Forces," dated 5 December 1962, includes sections on the European Satellites, forces facing NATO, gross capabilities for theater campaigns, and capabilities for distant military action.

[30] The number of divisions confirmed since January 1961 is 119; most of the additional divisions included in our estimate are understrength units located in areas from which information is received only sporadically. Taking account of this and other factors, we conclude that the current total of divisions could lie within a range of 120 to 150, with the most probable figure being about 145. For a detailed estimate of ground divisions by location and type, and their estimated strength, see Annex A, Tables 6-7.

there are an estimated 34 tank divisions, 7 airborne divisions, and 104 motorized rifle divisions. The present force level represents a cut of about 20 combat ready line divisions and 5 low strength divisions since Khrushchev's announcement of force reductions in January 1960. The large number of cadre and understrength divisions retained indicates a continuing Soviet preference for maintaining a very large and partly skeletal ground force capable of being rapidly fleshed out with mobilization.

108. *Weapons and Equipment.* The program of modernization and reorganization has involved the introduction over the last several years of more advanced designs of practically all types of equipment, including surface-to-surface ballistic missiles of 150 n.m. range, tanks, armored personnel carriers, nuclear-capable free rockets with ranges up to 26 n.m., antiaircraft guided missiles, artillery and antiaircraft guns, recoilless antitank weapons, and a wide variety of transport vehicles. In some instances, there have been two successive generations of equipment since World War II. The increasing number of tracked and wheeled amphibians and amphibious tanks has greatly improved Soviet river-crossing capabilities, and we expect extensive equipping with the new amphibious armored personnel carrier.

109. Present trends in the ground weapons development program point to a continuing emphasis on firepower and mobility. Specific areas of concentration probably will include light gun and missile weapons to defend against low flying aircraft, a field antimissile system, air-transportable weapons and equipment, weight reduction of existing equipment, and improved reconnaissance and communications. Surface-to-air missiles (SAMs) are replacing medium and heavy antiaircraft guns; guided antitank missiles are being introduced and will probably replace some antitank guns.

B. Tactical Missile and Air Support

110. In their doctrine for theater operations in general nuclear war, the Soviets continue to employ the combined arms concept, but they have come to consider nuclear and missile weapons as the basic element of firepower. Soviet development of tactical guided missiles has greatly improved the fire support available to field forces.[31] Although nuclear warheads are probably the primary armament of these missiles, operational considerations might prescribe the use of chemical (CW) and high explosive (HE) warheads. Road mobile surface-to-surface ballistic missiles with maximum ranges of 150 n.m. (SS–1 and SS–1A) and 350 n.m. (SS–2) have been available for several years. The SS–1 and SS–2 missiles are intended primarily for a ground support role, and missile units are assigned to direct operational control of field commanders.

[31] For estimated characteristics and performance of Soviet short-range missile systems, see Annex B, Table 2.

111. Although there is little direct evidence on the deployment of these missiles, we estimate that about 35 SS–1 brigades (with 6 launchers each) and 30 SS–2 battalions (with 2 launchers each) are now operational. These missile units are believed to be in the artillery support structure of major Soviet theater force commands, although none have been firmly identified. We believe that the numbers of SS–1 and SS–2 units will remain fairly stable. However, the Soviets probably will soon begin replacing the SS–2 with an improved follow-on system of similar range, as they have done with the SS–1.

112. The number of aircraft in Tactical Aviation was reduced by half in 1960 and 1961. Since that time, it has been generally stabilized in overall strength, with phasing in of new model aircraft and continuing reductions in older models. As a result of reductions and transfers, Soviet Tactical Aviation is now mainly located in the areas adjoining major potential land theaters of combat. About half its total strength is with Soviet forces in Eastern Europe, and most of the remainder is in western and southern USSR. Tactical Aviation will continue to receive new models and to decline in numbers of aircraft—probably from about 3,100 to about 2,500 by mid-1964.[32] The estimated current and future numbers of Soviet tactical aircraft appear low in relation to estimated total ground forces and their likely missions in the event of general war.

113. A prime current deficiency of Soviet Tactical Aviation is the lack of modern aircraft, particularly fighter bombers. For offensive tactical air support, the Soviets still rely heavily on the obsolescent BEAGLE subsonic light bomber, but it is now being replaced by the FIREBAR A, a supersonic tactical fighter bomber. In addition, the FITTER and FISHBED C, while primarily interceptors, could also be employed for tactical support missions. The older types of Soviet tactical fighters, FAGOTs, FRESCOs, and FARMERs, were designed primarily as interceptors and have limited load-carrying and range capabilities when used in the ground support role. They can perform a variety of missions in support of ground forces and can be equipped to deliver nuclear weapons, but the newer types of tactical aircraft mentioned above appear better suited to these purposes. At present, about three-fourths of the fighters in Tactical Aviation are older types, mainly obsolescent, but the introduction of modern supersonic fighters has been accelerated, and these types now comprise about one-fourth of total estimated strength.

[32] The Assistant Chief of Staff, Intelligence, USAF, notes that combat elements of Soviet Tactical Aviation have not declined in total numbers since mid-1961 and he does not agree there will necessarily be the future decline forecast here. If the Soviet Union markedly reduces the ground element of Theater Field Forces over the next few years, Tactical Aviation may reflect a comparable reduction, but probably not otherwise.

114. Some of the Soviet tactical fighter units have been equipped and trained only for the interceptor mission. Despite the limitations of the older aircraft, however, most units observed have also been trained and equipped to perform ground attack missions and could therefore be used for any one of several purposes depending on operational requirements: defending against air attack, providing close support to ground forces, or assisting ground operations by striking targets in the enemy's rear. The Soviets have conducted some training in fighter delivery of nuclear weapons. In addition, Tactical Aviation now has some 150 n.m. surface-to-surface cruise missiles (SHADDOCK, SSC–1).

C. Military Air Transport

115. Approximately 200 light transports of the CAB, COACH, and CRATE types, about 60 converted BULL piston medium bombers, and about 385 medium turboprop transports of the CAT, CAMP, and CUB types, are assigned by Military Transport Aviation to support of airborne troops. The assigned transports of the airborne troops are sufficient to airlift simultaneously a single airborne division or the assault echelons of two airborne divisions. Each divisional assault echelon would be limited to about 6,000 troops, including headquarters elements, nine rifle battalions, and light regimental support elements. Divisional combat and service support as well as transport vehicles of the infantry would not be included. The mobility of these echelons, once landed, would therefore be restricted, but a second sortie of the entire fleet could deliver the balance of the two divisions. Radii of the transport aircraft would permit operations of this type to be conducted to a distance of some 500–700 n.m.

116. The probable addition in the near future of more transports will enhance Soviet capabilities to lift large numbers of troops or cargo to peripheral areas; in several years, the present lift capacity may be doubled. Soviet airlift capabilities also could be augmented by about 375 jet and turboprop transports now in civil aviation; these aircraft have an airlift capability of nearly two additional divisional assault echelons.

D. Amphibious Capabilities

117. Soviet amphibious capabilities remain quite limited. They vary from one battalion in the Northern or Pacific Fleet area, to one regiment in the Black Sea, and two regiments in the Baltic. The USSR has a total merchant ship lift in all seas which is theoretically sufficient to transport approximately 20 motorized rifle divisions; however, such a lift would require port or other extensive off-loading facilities in the landing area. The Soviets may seek to further develop their amphibious lift capability, but significant improvement will depend upon their ac-

quisition of additional amphibious craft, extensive training, and development of a reliable logistic support system. There are no indications of such an improvement in the near future.

E. Tactical Nuclear Weapons

118. Tactical nuclear capabilities are still limited, but they have been improved markedly over the past few years. Soviet military planners are now in a position to think in terms of committing up to a few hundred nuclear weapons, virtually all with yields in the kiloton range, to a typical *front* operation. Limitations on the quantity and variety of nuclear weapons available to theater forces will have eased by the mid-1960's. The Soviets are probably developing subkiloton weapons, but we have no present evidence of work on delivery systems designed specifically for such weapons.

119. The Soviets evidently consider CW munitions as a standard and integral part of the Soviet arsenal for general war, to be used extensively in conjunction with nuclear and conventional weapons in support of *front* operations. Military forces of the USSR and Satellites regularly conduct training exercises involving the offensive use of toxic chemical agents as well as defense against them. We believe, however, that authorization from Moscow would be required before operational commanders could initiate the use of chemical weapons.

120. Although tactical nuclear delivery systems are integral to Soviet theater forces, the nuclear weapons themselves do not appear to be in their custody. In peacetime, such weapons are stored in depots operated by the Ministry of Defense and located within the USSR. Soviet procedures for controlling these weapons ensure the national leadership that they will not be used without authorization. Existing procedures, together with deficiencies in logistical support, appear to penalize the Soviets in terms of operational readiness and rapid response for tactical nuclear weapons employment. There is evidence that the Soviets are considering steps to overcome these deficiencies; such steps could include preparations to deploy tactical nuclear weapons to theater forces during periods of heightened tension.

F. Capabilities for Theater Operations

121. The longstanding Soviet concern with concepts and forces for campaigns in adjoining theaters, especially in Europe, has resulted in a formidable theater force strong in armor, battlefield mobility, and units in being. The tactical nuclear delivery capabilities of these forces, although improving, are still limited. In offensive operations, rapidly advancing theater forces are in constant danger of out-running their logistical tail, which is heavily dependent on railroads. Finally, the Soviets have traditionally exercised very strict supervision over the ac-

tions of their subordinates, but existing command and control systems do not permit the strict supervision over the widely extended deployment required on the nuclear battlefield or under the threat of use of nuclear weapons.

122. The statements of Soviet leaders, as well as the deployment and training of Soviet theater forces, make it clear that the principal operations of these forces in general war would be directed against NATO in Europe. The Soviets plan in the initial days of a general war to move massive theater forces rapidly toward the Channel coast, and to secure the exit of the Baltic. This campaign would probably be augmented by operations in the Scandinavian area to acquire advance bases for the Northern Fleet. The Soviets evidently also contemplate operations toward the Mediterranean, and to secure the exit of the Black Sea. Other peripheral areas, such as the Middle and Far East, are apparently regarded as having lesser priority for theater force operations. Soviet capabilities to conduct theater operations against North America are limited to minor airborne and amphibious attacks against Alaska and Arctic bases elsewhere.

123. The adjustments in Soviet theater forces in the past few years have not materially impaired their capabilities to conduct nonnuclear operations. The USSR's highly mechanized forces have favorable characteristics for the dispersed operations required because of the constant possibility of escalation to nuclear warfare. Over the past two years, the nonnuclear firepower of ground units has not been significantly altered, but the supporting nonnuclear firepower which can be delivered by tactical aircraft has decreased. There are indications that the Soviets have recently given recognition to the possibility of nonnuclear war with NATO forces in Europe. They probably intend to retain capabilities for conventional warfare against NATO, but they do not appear to have revised their expectation that any major conflict with NATO would be nuclear from the start or would probably escalate.[33]

124. The Soviets have evidently not elaborated any doctrine for limited nuclear warfare by theater forces, involving the use of tactical weapons only. We think they would be severely handicapped in any attempts to conduct such warfare at present. Moreover, thus far the Soviets appear to think that limited nuclear conflict in the NATO area would almost certainly escalate to general war.

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[33] The Assistant Chief of Staff, Intelligence, USAF, believes that the material reduction in the size of Tactical Aviation in 1960 and early 1961 markedly reduced Soviet capabilities for nonnuclear air support for ground operations. Since then, modernization of tactical air equipment for nuclear warfare has not impaired the residual quality or totality of nonnuclear capabilities for theater air support. Further, he notes the possibility of limited warfare involving Soviet forces has been no more than mentioned in Soviet writing. There is no evidence that any limited war doctrine, whether nuclear or nonnuclear, involving a direct confrontation of Soviet and US or NATO forces, has been discussed.

VIII. NAVAL FORCES

125. Until recent years, the Soviet Navy has been equipped and trained for a primarily defensive role. An intensive postwar shipbuilding program, concluded in 1957, produced a surface fleet, including cruisers, destroyers, and escort ships, which was limited for effective operations to the range of shore-based aircraft. Even the Soviet submarine force, largest ever assembled by a nation in peacetime, was composed for the most part of types capable of infesting the North Atlantic and the sea approaches to the USSR, but lacking the range for such extended operations as patrols off the US coasts. However, in the past few years, the Soviets have developed an increasingly diversified naval force with a new emphasis on weapons and equipment of greater range and effectiveness.

126. Much of the impetus for technological change in the Soviet Navy has come from the USSR's concern over the threat posed by US missile submarines and carrier task forces. To counter these forces at sea, the Soviets have introduced medium bombers equipped with air-to-surface missiles, submarines equipped with cruise missiles, and new classes of antisubmarine warfare (ASW) ships. They have also introduced ballistic missile submarines which can carry the attack to the homelands of opposing naval forces; and improved types of attack submarines, both nuclear and diesel, for interdiction of sea communications and enemy naval forces. Soviet surface forces have also been greatly strengthened by the addition of missile armament to cruisers, destroyers, and patrol craft, and by the introduction of new minewarfare ships.

A. Submarine Force

127. Soviet capabilities for conducting operations at long distances from the Soviet coast rest primarily upon the submarine force. The numerical strength of this force has changed little in the past few years, and we believe that for the period of this estimate it will remain stable at 375–400 first line ships. However, with the continued introduction of missile armament and nuclear propulsion, the capabilities of this force are changing significantly. For example, in 1958, the USSR had only about 20 submarines capable of conducting extended patrols off US coasts all of them diesel-powered, torpedo-attack types. The USSR now has more than 100 submarines with this endurance, including nuclear-powered ships, about half of them armed with missiles.

128. *Nuclear Submarines.* We estimate that the Soviet Navy now has about 25 nuclear-powered submarines operational. To date, we have identified three classes of Soviet nuclear-powered ships: the "H" class ballistic missile submarine; the "N" class torpedo attack submarine; and the "E" class which is equipped with cruise-type missiles. We believe that within the next few years other classes of Soviet nuclear-powered submarines will be in service, including both torpedo attack and missile-launching types.

129. Two Soviet shipyards are currently engaged in nuclear submarines production: Severodvinsk in the northern USSR, and Komsomolsk in the Soviet Far East. Considering the construction of nuclear-powered submarines to date, our estimate of the USSR's capacity to produce and install nuclear propulsion systems, and our estimate of the existing level of effort, we believe that the USSR is likely to build about 8–10 nuclear-powered submarines of all types per year. It is primarily on this basis that we estimate a buildup in the Soviet nuclear-powered submarine force to a total of 65 in mid-1967. Considering Soviet requirements, it is possible that they will seek to increase their production of nuclear propulsion systems and build a larger force. On the other hand, operational difficulties which they have apparently encountered with their nuclear power plants may retard the program somewhat.

130. *Torpedo Attack Submarines.* The Soviet force of attack submarines is capable of mounting a large-scale torpedo attack and mining campaign against Allied naval targets and sea communications in the eastern North Atlantic and northwestern Pacific. Its capabilities for operations near the continental US are more limited, but are growing. The bulk of the Soviet submarine force consists of diesel-powered, torpedo attack submarines, built for the most part in the early and mid-1950's. These include some 177 "W" class, 19 "Z" class, 20 "R" class, and 30 "Q" class submarines. Of these older ships, only the "Z" class submarines are believed capable of conducting patrols off of US coasts from bases in the USSR. However, since 1958 the Soviets have produced about 25 diesel-powered "F" class submarines and 10 "N" class nuclear-powered submarines, both of which have sufficient endurance to perform such missions.

131. Soviet construction of diesel-powered, torpedo attack submarines may continue for another year or so, but future emphasis probably will be placed on nuclear-powered types. In view of the expressed Soviet concern with US missile submarines, we believe that the USSR has a strong requirement for attack submarines designed primarily for anti-submarine warfare. The "N" class, with its nuclear propulsion and improved sonar equipment, appears better suited to this role than any other class. If the "N" class is not intended for such use, we believe that a new class of Soviet nuclear-powered attack submarines, specifically designed for ASW, will appear within the next few years.

132. *Missile Submarines.* Soviet leaders have repeatedly stated that nuclear-powered submarines armed with various types of missiles represent the main power of their navy. We estimate that the USSR now has operational about 45 ballistic missile submarines, including both nuclear and diesel-powered types. These ships, their characteristics, and capabilities have been considered above (paragraphs 64–66) in terms of their contribution to Soviet long-range striking forces. In addition, it has become apparent within the past year that the Soviets are giving

considerable emphasis to the development and deployment of submarines equipped with cruise-type missiles. We have now identified 6 units of the nuclear-powered "E" class, each equipped with six 300 n.m. cruise missiles designed for low altitude flight at supersonic speed. In addition, the Soviets have converted 12 "W" class submarines to carry two or four such missiles each, suggesting a desire to achieve an early operational capability. The Soviets are now developing a submarine-launched cruise missile of longer range—about 450 n.m. For the possible employment of submarine-launched cruise missiles see paragraph 67.

B. Surface Forces

133. Naval surface forces, which are heavily dependent upon land-based logistic and air support, appear suited primarily for defensive operations in waters adjacent to the USSR. Conventionally armed major surface units now comprise 14 cruisers, 88 destroyers, and 62 escort ships. In recent years, however, the Soviet Navy has considerably increased the firepower of its surface forces by the addition of missile armament, including surface-to-air missiles, which has extended the potential scope of effective operations. The only known major surface combatant ships now being built in the USSR are guided missile destroyers. The "Kynda" class, armed with both surface-to-surface and surface-to-air missiles, is being built at Leningrad, and a new destroyer class, believed to be equipped with missiles of an unidentified type, is probably in production at Nikolaev on the Black Sea. The Soviets have also converted a few older ships to missile armament.

134. The Soviets now have operational 14 destroyers, armed with cruise-type missiles for use against surface targets. These include 2 ships of the new "Kynda" class, 8 of the "Krupnyy" class, and 4 of the earlier "Kildin" class. The "Kildin" and "Krupnyy" classes employ SS–N–1 surface-to-surface missiles, which have a speed near Mach 1 and an effective range of 20–30 n.m. With the use of forward observers, maximum range can be extended to 80–100 n.m. We believe that the "Kynda" class employs the 300 n.m. SS–N–3. In addition to their missile armament, ships of these three classes also carry ASW gear. They are probably intended primarily for operations against both surface ships and submarines in coastal areas, either in defense of the sea approaches to the USSR or in support of theater field forces.

135. Other new construction during the past few years has involved small specialized craft for use in antisubmarine warfare, amphibious operations, minewarfare, coastal defense, and logistic support. Two classes of patrol boats equipped with surface-to-surface cruise-type missiles are now operational.

136. We believe that the numerical strength of Soviet surface naval forces will remain fairly stable over the next five years. Soviet production of guided missile destroyers and of smaller specialized craft will prob-

ably continue at about present levels. Modernization of destroyer types will also continue, and additional surface ships will be retrofitted with missile armament. We estimate that by mid-1967, Soviet first line surface strength will consist of 30 missile destroyers, 16 cruisers (2 with missiles), 83 conventionally-armed destroyers, and 58 escort ships as well as more than 200 missile patrol craft.

137. The Soviet auxiliary fleet, composed primarily of older ships, is being augmented by newer tanker and cargo ships, and submarine support is being reinforced by the addition of submarine tenders, rescue ships, and repair ships. Additional logistic support could be provided by the growing Soviet merchant marine. In terms of net tonnage, additions to the Soviet merchant fleet during 1961 fell about 30 percent below the record-breaking 1960 increase, but were still well above any other previous year. The decline during 1961 was apparently a temporary phenomenon, reflecting a shift in production to more modern cargo ships and to super tankers (i.e., with a capacity of 25,000 tons or more). Our evidence indicates that the increase in 1962 approximately doubled the 1961 increment. The widespread Soviet fishing fleets can provide limited logistic support to submarines, and they have considerable utility for training, minewarfare, and collection of electronic intelligence.

C. *Naval Aviation*

138. Soviet Naval Aviation underwent a drastic reduction and reorganization in 1960 with the deactivation or transfer of all naval fighter units. Naval Aviation is composed largely of jet medium bombers; it also includes jet light bombers, patrol aircraft, and helicopters. Its capabilities are focused primarily on reconnaissance and strike missions against maritime targets and on antisubmarine warfare. Air cover for naval operations would have to be provided either by shipborne SAMs or by fighters not subordinate to Naval Aviation.

139. Nearly 300 of Naval Aviation's 350 BADGER jet medium bombers are equipped to deliver antiship air-to-surface missiles. These missiles are of two types; the subsonic AS–1, which has a range of 55 n.m., and the supersonic 100 n.m. AS–2. Both are estimated to have a CEP of 150 feet against ships, and some of these missiles probably carry nuclear warheads. BADGERs can carry either two AS–1's or one AS–2. The majority of the missile-equipped BADGERs are configured for AS–2 delivery, and we believe that eventually all but a few of these aircraft will be so equipped.

140. Naval medium bomber strength will probably increase slightly over the next five years. We believe that Naval Aviation has received a few BLINDER supersonic medium bombers, and they will probably

appear in greater strength within the next few years. Some of these may be equipped with a new air-to-surface missile, the AS–4, if it is suitable for antishipping use; this system could become operational in 1964.

141. Most of the naval BADGERs which are not equipped with missiles are assigned to reconnaissance units. Recent evidence indicates that medium and heavy bombers of Long Range Aviation have also carried out naval reconnaissance missions; recent overflights of US carrier task forces also suggest an attack training mission for these aircraft. We believe that the naval requirement for long-range aerial reconnaissance is growing, and that it will be met either by increased numbers of aircraft in Naval Aviation, or by selective use of Long Range Aviation aircraft in this role.

D. Capabilities for Naval Warfare

142. In recent years, the missions of the Soviet Navy have been expanded to encompass strategic missile attack against foreign territory and operations against Western naval forces, while retaining the more traditional roles of interdicting Western sealines of communication, defending the littoral of the Soviet Bloc, and providing support for the seaward flanks of ground field forces. In waters adjacent to the USSR, all types of Soviet naval weapons could be brought to bear against opposing naval forces. In the next few years, the Soviets almost certainly will give the greatest emphasis to strengthening naval capabilities for long-range attack (paragraphs 64–68) and for defense against Western carrier task forces and missile submarines.

143. *Against Carrier Task Forces.* The Soviets evidently regard the carrier task force as a major strategic threat. Their capabilities against such forces have been improved by continued conversion of jet medium bombers to carry antiship missiles and by the introduction of submarines equipped with cruise-type missiles. In the European area, BADGERs with antiship missiles could operate against surface ships in the eastern North Atlantic, the Norwegian and Barents Seas, and much of the Mediterranean. These capabilities are, of course, subject to problems of detection and identification. In the past year or so, reconnaissance of open ocean areas by Long Range and Naval Aviation has increased. Submarine operations against carrier task forces could extend to US coastal waters.

144. *Against Sealines of Communications.* The threat of the Soviet submarine fleet to the vital sealines of communication of the Free World is greatest in the northeast Atlantic and northwest Pacific. The capability of Soviet submarines to interdict these supply lines would depend on a number of factors: endurance of the submarines, transit time to station, repair and overhaul requirements, logistic support, and the extent of opposition. Interdiction operations against North At-

lantic supply routes would be undertaken largely by submarines of the Northern Fleet; this force includes about 85 submarines with insufficient endurance to operate in US coastal areas but which could operate in the Norwegian Sea and eastern Atlantic. Included in these are six "W-Conversion" class SSG which carry 300 n.m. antishipping cruise missiles. Not considering combat attrition, about 24 Northern Fleet submarines could be maintained on station continuously in the eastern Atlantic approaches to the UK and Europe. This force might be augmented by submarines deployed from the Baltic prior to hostilities. Some coverage of the approaches to the Mediterranean could also be achieved. The Soviets could also maintain some 5–10 nuclear-powered and long-range diesel-powered, torpedo-attack submarines on more distant stations for operations against shipping in the western Atlantic. This number could be more than doubled if the Soviets were able to provide logistic support during the patrol from a forward base such as Cuba.

145. In the Pacific, the Soviets have some 75 submarines which they could use in an effort to sever the US sealines of communications. While only one-third of this force has sufficient endurance to operate off the US west coast, the remainder can operate in those areas through which US sealines of communications must pass to support our Pacific island bases and Asiatic allies. Included in these 75 submarines in the Pacific, the Soviets now have six nuclear and three diesel-powered cruise-missile-launching submarines. We believe the Soviets intend to employ these submarines in an antishipping role but they could be employed against land targets. Considering the limitations of endurance, transit time to station, repair and overhaul requirements and logistic support, the Soviets could now maintain some 13–20 submarines in the ocean area between Hawaii and Japan and about five off the US Pacific Coast.

146. *ASW Capabilities.* Since the mid-1950's the Soviets have placed increasing emphasis on the improvement of ASW forces. They have made a major effort in the construction of ASW ships, particularly small coastal types, and are testing new ASW seaplanes and helicopters. A new ASW aircraft may be introduced within the next few years. An ASW role may have been assigned to Soviet "F" and "R" class submarines, which feature improved sonar gear, as well as to the nuclear-powered "N" class. Detection equipment and weapons now in service include air-launched passive sonobuoys, airborne magnetic anomaly detection (MAD) equipment, multiple tube ASW rocket launchers, and passive homing torpedoes. ASW exercises have expanded in scope, and training doctrine has become more sophisticated. We believe that the Soviet Navy is capable of carrying out fairly effective ASW operations in coastal areas.

147. Soviet military writings reflect great concern with the threat posed by US missile submarines, and we believe that in recent years the Soviets have emphasized improvement of their ASW capabilities in the open seas. Much of the new and improved ASW equipment which is in service or under development is probably designed for such employment. However, several years of intensive training emphasizing coordinated operations by submarines, surface ships, and aircraft will be required before the Soviets can effectively employ any new ASW systems they may develop. Moreover, although the Soviets may be developing a long-range hydroacoustic detection system, the USSR's geographic situation would make it most difficult to maintain continuous surveillance by this means over large ocean areas except in the northwestern Pacific and in the Arctic. We believe that at present the Soviet Navy has a negligible ASW capability in the open seas. Despite the effort which they almost certainly are devoting to this problem, we believe that over the next five years, the Soviets will be able to achieve only a limited capability to detect, identify, localize, and maintain surveillance on submarines operating in the open seas.[34]

IX. SPECIAL WEAPONS

A. Chemical and Biological Warfare

148. The Soviets have developed spray devices for disseminating chemical agents from aircraft; they are estimated to have CW-filled artillery shells, short range rockets, and warheads for tactical cruise and ballistic missiles. Chemical munitions might be used in areas of enemy contact in ground combat, and against enemy troop concentrations, command posts, missile launch sites, and other key targets. Using air and missile delivery systems, CW agents might also be used against naval concentrations.

149. Based largely on the capacity of CW storage sites, we estimate that the USSR possesses an inventory of at least 200,000 tons of toxic agents in bulk and in filled munitions. At least half of this stockpile probably consists of nerve agents, principally tabun (GA), and the remaining half of various older standard agents. We believe that further development could produce only small increases in the toxicity of known agents and that some research is being directed toward development of new, lethal agents. The Soviets may develop nonlethal, incapacitating agents, and at least one could be available for use by 1965.

150. We believe that the Soviet Union has an active BW research effort which is suitable to support a complete BW program, but there is insufficient evidence on which to base a firm assessment of Soviet BW offensive activities. However, the USSR has a comprehensive biological

[34] The Assistant Chief of Staff, Intelligence, USAF, disagrees with judgments expressed in this sentence. See his footnote to Conclusion T, page 11.

warfare defensive program which could lead to an offensive capability. The Soviets have conducted research on antipersonnel, antilivestock, and possibly anticrop BW agents. Although we have identified no mass production facility for BW agents and have no evidence of Soviet stockpiling of such agents, research laboratories and existing plants for the production of vaccines could provide these agents in quantity.

B. Electronic Warfare

151. The Soviets have developed a wide range of active and passive ECM equipment, including improved chaff, radar, and communications jammers, and various deception devices to counter Western electronic systems. Soviet military ECM capabilities are complemented by the unique Soviet experience in extensive, centrally controlled, selective jamming of Western broadcasts. At present, the USSR has an appreciable capability for jamming at those frequencies normally used by Western radars and long range radio communications systems. Within the period of this estimate, we believe that the various types of Soviet equipment, taken together will be able to produce signals for jamming all frequencies likely to be employed by Western communications, radar, and navigation equipment.

152. Thus Soviet capabilities to interfere with Western strategic and tactical communications appear formidable. The Soviet ground-based jamming capability is most effective within about 500 miles of Soviet territory. In addition, the cutting of trans-Atlantic cables by Soviet trawlers has demonstrated the vulnerability of this Western communications system. The Soviets are aware of at least some of the effects of high altitude nuclear bursts on radar and communications, and have continued their program for investigation of these effects in 1962.

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ANNEX A

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TABLE 1

ESTIMATED PERSONNEL STRENGTH OF THE SOVIET ARMED FORCES
DECEMBER 1962 [a]

	DECEMBER 1962	
Ministry of Defense		70,000
Headquarters	30,000	
Research and Development [b]	40,000	
Theater Field Forces		2,035,000
Ground Forces, Field	1,950,000	
Tactical Aviation	85,000	
Air Defense Forces		410,000
Surface-to-Air Missiles	200,000	
Antiaircraft Artillery (Gun)	15,000	
Fighter Aviation of Air Defense	105,000	
Warning and Control	90,000	
Long-Range Attack Forces		255,000
Long-Range Aviation	70,000	
Surface-to-Surface Missiles (SS–3, 4, 5, 6, and 7)	[c] 185,000	
Naval Forces (excluding personnel counted elsewhere)		440,000
Forces Afloat	175,000	
Shore Establishment	210,000	
Coastal Defense	30,000	
Naval Aviation	25,000	
Military Transport Aviation		45,000
Helicopters, Liaison, and Utility Aircraft		20,000
Preoperational Aviation Training		50,000
TOTAL		3,325,000
Security Forces (Not included in the above total)		
Border Troops	150,000	
Internal Troops	75,000	

[a] The estimates presented in this table are general approximations. The figures are derived from estimates on order of battle and manning which vary markedly in adequacy. The evidence is normally best for combat units and those elements immediately supporting them; it tends to become much poorer for logistical and administrative elements. We cannot assign a definite margin of error to each individual figure, but in some cases this error is likely to be measured in tens of thousands. We think that the estimated total of 3,325,000 is likely to be within a few percent of the total number of uniformed personnel actually in the Soviet military establishment at present. In addition, there are at present a substantial but unknown number of civilians working for the Soviet military establishment.

[b] Military scientific research and development in the USSR is largely conducted by civilian agencies, in particular the Academy of Sciences, the State Committees for Defense Technology, Aviation Technology, Scientific-Technical Matters, Radio-Electronics, and Shipbuilding, and by the Ministry of Medium Machine Building (nuclear weapons). The numbers of active duty military personnel estimated here are those primarily subordinate to the Ministry of Defense and at missile test ranges, in electronics, nuclear development, and aviation technology. Other military personnel in Research and Development and allied functions are counted in other categories.

[c] This figure is based on the assumption that all soft MRBM launching positions are manned. If as many as half of these are alternates (see paragraph *60*), this figure would be about 130,000.

TABLE 2

ESTIMATED STRENGTH OF EUROPEAN SATELLITE AND ASIAN COMMUNIST ARMED FORCES DECEMBER 1962

	Ground Forces	Air Forces (Including Naval Aviation)	Naval Forces	Totals (Excluding Security Forces)	Security Forces
EE Satellites (Rounded Totals)	970,000	92,500	50,000	1,110,000	282,000
Albania	30,000	2,000	3,000	36,000	12,500
Bulgaria	125,000	13,000	8,000	144,000	20,000
Czechoslovakia	200,000	20,000	..	222,000	40,000
East Germany	90,000	13,000	11,000	109,000	69,500
Hungary	100,000	5,500	..	103,500	35,000
Poland	225,000	30,000	18,000	249,500	45,000
Rumania	200,000	9,000	11,000	221,000	60,000
Communist Asia (Rounded Totals)	3,230,000	100,000	75,500	3,415,500	125,000
Communist China	2,620,000	82,000	66,000	2,780,000	..
North Korea	330,000	18,000	7,000	353,000	25,000
North Vietnam	280,000	500	2,500	282,000	100,000

TABLE 3

ESTIMATED SOVIET AIRCRAFT STRENGTH BY ROLE WITHIN MAJOR COMPONENTS, 1962–1967

Type Aircraft	Long Range Aviation	Components, Air Defense Forces	Tactical Aviation	Naval Aviation	Military Transport	Total December 1962	Mid-1963	Mid-1964	Mid-1967
Fighters [a]									
Jet	.....	4,385	2,215	.....	.....	6,600	6,350	5,775	3,750
Light Bombers									
Jet	.....	.....	370	70	.....	440	350	200	...
Medium Bombers									
Jet	950	.....	.....	280	.....	1,230	1,230	1,200	1,050
Heavy Bombers [a]									
Jet	100–120	.....	.....	.....	.....	100–120	100–120	95–115	70–90
Prop	70–80	.....	.....	.....	.....	70–80	70–80	65–75	40–50
Transport [b]									
Jet (medium)	.....	.....	.....	10	.....	10	10	20	30
Prop (light)	(185)	(255)	(230)	95	960	[c] 1,245	900	700	400
Turboprop (light)	.....	.....	.....	.....	.....	.....	.....	.....	50
Prop and Turboprop (medium)	(55)	.....	.....	5	525	530	580	715	1,050
Turboprop (heavy)	(5)	.....	.....	.....	5	5	5	5	20
Helicopter [b]									
Light	.....	.....	(295)	80	295	375	420	490	570
Medium	.....	.....	(30)	.....	30	30	30	15	0
Heavy	.....	.....	(40)	.....	40	40	90	135	155
Reconnaissance [a]									
Jet Fighter	.....	.....	255	.....	.....	255	250	250	250
Jet Light Bomber	.....	.....	265	.....	.....	265	250	200	0
Jet Medium Bomber	.....	.....	.....	70	.....	70	70	70	70
ASW	.....	.....	.....	70	.....	70	70	80	130
TOTALS (Rounded)	1,150	4,375	3,100	675	1,850	11,350	10,800	10,050	7,700

[a] The Assistant Chief of Staff, Intelligence, USAF, believes that a follow-on heavy bomber will probably be introduced in about 1964 and would therefore estimate that heavy bomber strength will remain at about 200 throughout the period of this estimate. See his footnote to page 7, paragraph M, SUMMARY AND CONCLUSIONS. Further, the Assistant Chief of Staff, Intelligence, USAF, believes that fighter strengths are likely to remain at or near present levels; see his footnote to page 40, paragraph 93. Finally, he does not consider that the Soviet requirement for reconnaissance aircraft will diminish as indicated in this table. If the light bomber reconnaissance aircraft phase out, he believes this would be compensated by assignment of additional fighters to reconnaissance roles.

[b] The transport and helicopter figures in parentheses are not included in the totals of the component under which they are listed; they are, however, included in the military transport aviation figures.

[c] Includes 180 light transports assigned to administrative functions; not shown elsewhere in these tables.

TABLE 4

ESTIMATED STRENGTH AND DEPLOYMENT OF SINO-SOVIET BLOC AIR DEFENSE EQUIPMENT
1 JANUARY 1963

Area	Interceptors [a]				EW–GCI Radar Sites		Antiaircraft Gun		SAM Sites [e]
	All-weather		Day						
	Late Model [b]	Other [c]	Late Model [d]	Other [e]	Primary	Secondary	Light	Medium/ Heavy	
Northwestern USSR	65	160	..	385	85	120	470	130	More than 900
Western USSR	75	150	115	1,070	110	160	3,200	1,010	
West-Central USSR	140	75	35	840	120	140	910	330	
Caucasus USSR	80	85	10	815	80	120	410	470	
East Central USSR	70	75	..	505	120	140	400	330	
Far East USSR	40	190	10	615	140	200	1,225	810	
Eastern Europe Soviet Forces	30	195	380	510	30	75	1,295	220	90
Eastern Europe Satellite Forces	..	520	130	2,015	110	220	2,085	2,230	
Asiatic Communists	..	210	..	2,175	100	420	2,520	1,735	10
Moscow Air Defense [f]	(90)	(45)	(30)	(475)	(70)	(80)	(50)	(100)	(70)
Transbaikal (Incl. in Far East)	(30)	(15)	..	(65)	(40)	(45)	(240)	(180)	(30)
TOTALS	500	1,660	680	8,930	895	1,595	12,515	7,265	1,000+

[a] In operational units excluding trainers, FIREBAR A, and FLASHLIGHT D.

[b] FISHPOT, FISHBED D.

[c] FRESCO D, FARMER B and E, FLASHLIGHT A.

[d] FISHBED C, FITTER.

[e] FAGOT, FRESCO, FARMER.

[f] Fighters and EW and GCI radars within 250 n.m. of Moscow, SAM sites within 45 n.m., and AA guns within 20 n.m., all of which are included above in the figures for western, northwestern, and west-central USSR.

[g] Figures are for SA–1, SA–2, and SA–3.

TABLE 5

ESTIMATED TACTICAL AND PVO FIGHTER STRENGTHS [a] [b] MID-1963–MID-1967

	MID-1963	MID-1964	MID-1965	MID-1966	MID-1967
FRESCO A–C	3,365	2,700	1,850	1,350	700
FRESCO D/E	410	350	250	100	50
FARMER	900	750	600	450	300
FLASHLIGHT A	350	250	150	75	..
FISHBED C	400	400	375	350	325
FISHBED D/FLIPPER [c]	75	100	150–200	225–375	375–575
FITTER	275	375	425	425	400
FISHPOT	500–600	550–650	550–650	500–600	450–550
FIREBAR B	..	50	150	250	350
FIDDLER	..	..	50–80	150–200	225–325
FOLLOW-ON AIRCRAFT	..	..	..	..	[d] 50–100
TOTALS	6,275–6,375	5,525–5,625	4,600–4,800	4,050–4,175	3,425–3,675

ESTIMATED STRIKE/RECCE AIRCRAFT STRENGTHS MID-1963–MID-1967

	MID-1963	MID-1964	MID-1965	MID-1966	MID-1967
FLASHLIGHT D	125	125	100	75	50
FIREBAR A	75–100	125–250	175–400	225–400	250–375
BEAGLE	600	400	150	..	..
TOTALS	800–825	650–775	425–650	300–475	300–425

[a] The estimates in these tables take account of current trends in order-of-battle, evidence on aircraft production and research and development, estimates of Soviet technical capabilities in design and development, and considerations regarding future Soviet requirements for numbers and types of air defense and tactical aircraft in general. The total estimated numbers of aircraft are higher throughout the period than in previous estimates because our current evidence shows that the USSR is not retiring older fighters and light bombers as rapidly as we had anticipated. We do not exclude the possibility that in the next few years the Soviets will return to a policy of sweeping reductions in older models; these tables, however, are based on the assumption that during the period under consideration there will be no drastic modifications in the trends now observable.*

[b] Most tactical fighter units have been trained and equipped to perform both an interceptor and a ground attack mission.

[c] We believe that FISHBED D and FLIPPER were designed to perform a roughly comparable mission, that of point intercept. The spread figures in this category reflect our uncertainty as to the current status of FLIPPER. The higher figures reflect the possibility that FLIPPER is in production now and will enter units in 1965; the lower figures are based on the assumption that FLIPPER production does not begin before late 1963 and that the aircraft does not enter units until 1966. However, if FLIPPER is not produced, we would expect the number of FISHBED D's to fall within the range of this estimate.

[d] Follow-on aircraft which could appear toward the end of the period of this estimate include an advanced all-weather interceptor and a multipurpose fighter. Both of these aircraft types are within Soviet capabilities, but there is as yet no evidence of their development.

* The Assistant Chief of Staff, Intelligence, USAF, believes that a continuation of Soviet fighter strength at about present levels is somewhat more likely, at least in the near term, than the downward trend presented in this table. With substitution of new models for older aircraft, the total number of Soviet operational Tactical and PVO fighters has held quite level, and may even be up slightly, over the past 18 months.

TABLE 6

ESTIMATED STRENGTH AND DEPLOYMENT OF SOVIET GROUND DIVISIONS AND TACTICAL AIRCRAFT, DECEMBER 1962

Area	Ground Divisions								Tactical Aviation					
	Motorized Rifle			Tank			Airborne							
	No.	Combat Ready	Low Strength	No.	Combat Ready	Low Strength	No.	Combat Ready	Total	Percent of Total	Fighters	Percent of Total	Light Bombers	Percent of Total
Eastern Europe	12	12	..	14	14	..	..	..	26	18	1,175	48	225	35
Northwest USSR	6	3	3	1	..	1	1	1	8	6	100	4	35	5
West USSR	28	12	16	13	8	5	3	3	44	30	550	23	250	39
Southwest USSR	13	6	7	1	1	..	..	..	14	9	250	10	20	3
Southern USSR	21	8	13	2	2	..	2	2	25	17	260	10	60	10
(Subtotal) [a]	(80)	(41)	(39)	(31)	(25)	(6)	(6)	(6)	(117)	(80)	(2,340)	(95)	(590)	(92)
Central USSR	11	..	11	..	..	..	..	..	11	8	..	..	..	..
FE USSR	13	5	8	3	1	2	1	1	17	12	135	5	50	8
TOTALS	104	46	58	34	26	8	7	7	[b] 145	100	2,475	100	640	100

[a] This subtotal comprises those Soviet ground and tactical air strengths in areas from which units could be employed against NATO.

[b] The number of divisions firmly identified since January 1961 is 119; most of the additional divisions which are included in our estimate are understrength units located in areas from which information is received only sporadically. Taking account of this and other factors, we conclude that the current total of divisions could be within a range of 120 to 150, with the most probable figure being about 145.

TABLE 7

ESTIMATED STRENGTH OF SOVIET GROUND FORCE [a]
LINE DIVISIONS, JANUARY 1963

Manning Level	Motorized Rifle Divs.		Tank Divs.		Airborne Divs.	
	TO&E [b]	Actual [c]	TO&E [b]	Actual [c]	TO&E	Actual [c]
Combat Ready	13,760	9,650	[b] 10,984	7,600	9,107	6,400
Low Strength	.....	4,125	.....	3,250	.....	.....
Principal Equip. [d]						
Tanks						
Light	22		22		.....	
Medium	222		256		.....	
Heavy	.....		95		.....	
Assault Guns	10		51		.....	
Wheeled Vehicles	1,978		1,730		1,352	
Tracked Vehicles	269		124		.....	
Combat Support						
Rocket Launchers	20		2		.....	
Artillery (less mortars)	54		54		12	
Antitank Guns	45		15		24	

[a] For estimated numbers of divisions of the several types, see Table 6 Annex A.

[b] The TO&E's of Soviet motorized rifle and tank divisions are currently being re-examined. Preliminary information indicates that a downward revision in the estimated authorized personnel strength of each of these types of divisions is likely to result from this re-examination. No significant change in estimated actual strength is indicated, however.

[c] The figures given are estimated averages.

[d] These are TO&E equipment figures. Combat ready divisions maintain approximately these quantities in working order at all times. Low strength divisions are believed to have full TOE equipment readily available

TABLE 8

ESTIMATED SOVIET NAVAL STRENGTH AND DEPLOYMENT 1962–1967 [a] [b]

Type of Ship	By Fleets, December 1962				Total December 1962	Mid-1963	Mid-1964	Mid-1967
	North	Baltic	Black Sea	Pacific				
FIRST LINE SUBMARINES								
Nuclear [c]								
Ballistic missile (H)	9	..	..	..	9	11	14	26
Cruise missile (E)	..	..	..	6	6	7	9	20
Torpedo attack (N)	10	..	..	..	10	11	13	19
Diesel								
Ballistic missile (G and Z-conv.) [d]	26	..	..	10	36	40	43	43
Cruise missile (W conv.)	6	2	1	3	12	14	18	22
L.R. torpedo (Z, F)	25	8	..	11	44	46	51	55
L.R. torpedo (W, R) [e]	85	35	31	46	197	195	191	187
M.R. torpedo (Q)	..	26	4	..	30	30	30	30
S.R. torpedo (M)	..	13	9	19	41	38	24	..
SECOND LINE SUBMARINES								
S.R. torpedo (M)	..	2	3	..	5	8	22	24
TOTALS	164	84	48	95	393	400	415	426
FIRST LINE SURFACE SHIPS								
Missile cruisers	..	..	2	..	2	2	2	2
Cruisers	4	4	2	4	14	14	14	14
Missile destroyer	3	4	5	3	15	18	21	30
Destroyer	27	19	13	27	86	86	85	83
Destroyer escort	22	11	10	19	62	62	58	58
SECOND LINE SURFACE SHIPS								
Cruisers	..	1	1	2	4	3	1	0
Destroyers	1	..	1	..	2	2	2	2

[a] First line submarines are those of modern construction. The second line category lists units from 14 to 20 years old which, by virtue of age and design are considered useful only for training or perhaps coastal defense. Some of the second line ships will probably be retired from service earlier than on an age criterion.

[b] Surface ships which are at least 20 years old are carried in a second line status until there is evidence of their removal from the fleet or until they are finally considered removed (in the absence of contrary evidence) when 25 years old.

[c] Designations of classes of nuclear submarines identified to date appear in parenthesis. Totals for future years include submarines of follow-on classes which may be built during the period.

[d] We have previously estimated that construction of "G" class submarines would terminate by the end of 1962. Recent evidence has indicated, however, that this construction has continued. While we are unable to predict the future numbers of this class with certainty, our estimate reflects both the recent evidence and the possibility that construction will continue for about another year. The size of the "G" class construction program will be influenced by Soviet decisions regarding construction of nuclear-powered missile submarines.

[e] Fifteen "R" class are in the Northern Fleet and five in the Black Sea.

TABLE 9

ESTIMATED STRENGTH OF GROUND AND AIR FORCES OF EUROPEAN SATELLITES AND ASIAN COMMUNIST NATIONS, DECEMBER 1962

Country	Ground Divisions [a] [b]				Total	Air Forces										Total
						Fighters			Lt. Bmbrs.		Transports		Helicopters (Lt.)	Reconnaissance		
	Rifle	Motorized Rifle and Mechanized	Tank	Airborne		Jet	Jet Attack	Prop	Jet	Prop	Prop (Lt.)	Turboprop (Med.)		Jet Ftr.	Jet Bmbr. (Lt.)	
East Germany	..	4	2	..	6	380	..	..	..	..	25	..	10	..	..	415
Poland [c]	1	9	4	1	15	655	135	..	65	..	30	5	15	40	40	985
Czechoslovakia	..	12	2	..	14	525	..	..	35	..	40	..	15	45	10	670
Hungary	..	4	..	..	4	180	..	..	..	..	10	..	..	..	..	190
Bulgaria	2	5	3	..	10	360	..	..	..	..	25	..	30	25	20	460
Rumania	9	3	1	..	13	260	..	..	15	..	10	..	..	..	..	285
Albania	..	..	..	..	..	70	..	..	..	..	5	..	..	..	..	70
TOTALS	12	37	12	1	62	2,430	135	..	115	..	145	5	70	110	70	3,080
Communist China [d]	107	..	4	3	114	1,920	30	40	325	105	165	..	..	..	..	2,585
North Korea	18	..	1	..	19	330	105	..	100	..	25	..	20	..	..	580
North Vietnam [e]	14	..	..	..	14	..	..	..	..	..	..	..	..	..	..	..
TOTALS	139	..	5	3	147	2,250	135	40	425	105	190	..	20	..	..	3,165

[a] Of the 62 European Satellite ground divisions, 36 are combat ready and the remainder could be brought to readiness by M+30.

[b] Generally high manning levels are maintained in Asian Communist ground forces, but combat effectiveness is reduced by the low standards of material and logistic support.

[c] Aircraft totals for Poland include Naval Air Forces which consist of 58 jet fighters, and 15 reconnaissance aircraft.

[d] Aircraft totals for Communist China include Naval Air Forces which consist of 270 jet fighters, 150 jet light bombers, 5 prop light bombers, 15 prop light transports, and 10 prop ASW reconnaissance aircraft. Helicopters have not been observed in Communist China, but it is possible that some have been assigned to military forces. In addition, Communist China is estimated to have as many as 15 piston medium bombers.

[e] Under civil auspices to satisfy Geneva Convention limitations.

TABLE 10

ESTIMATED STRENGTH OF EUROPEAN SATELLITE AND ASIAN COMMUNIST NAVAL FORCES, DECEMBER 1962

Country	Types of Ships					
	Destroyers	Submarines	Amphibious Warfare	Mine-Warfare	Patrol	Auxiliary
EE SATELLITES						
East Germany	..	..	6	53	47	30
Poland	3	7	14	31	45	12
Bulgaria	1	3	16	30	26	4
Rumania	3	2	5	30	24	11
Albania	..	4	..	11	13	4
TOTALS	7	16	39	155	155	61
COMMUNIST ASIA						
Communist China	4	28	60	38	248	57
North Korea	..	..	..	24	38	..
North Vietnam	..	..	..	4	49	..
TOTALS	4	28	60	66	335	57

TABLE 11

ESTIMATED CHARACTERISTICS AND PERFORMANCE OF SOVIET POSTWAR SUBMARINES

Type/Class	Dimensions				Speed			Armament		Patrol Capabilities [b] [c]			
	Length/ Beam (feet)	Displacement (Tons) Surfaced/ Submerged		Maximum Operating Depth (ft)	Surfaced	Snorkel	Submerged Speed/ Endurance (nm)	Torpedo [a]	Missiles	Days on Station	Radii (nm)	Patrol Duration (Days)	Endurance Factors
Ballistic Missile													
Nuclear-Power "H"	315/32	3,500	4,000	750	Max 20	..	20/–	16	3	20	5,300	60	Sea
					Cruise 12–14	..	12–14/–			10	6,600		
										1	7,800		
Diesel-Power "G"	320/28	2,350	2,800	900	Max 17.5	10.5	16/12	24	3	20	4,400	60	Sea
					Cruise 8.3	6.0	2/100			10	4,700	53	Fuel
										1	4,850	46	Fuel
"Z-Conversion"	295/27	1,950	2,400	650	Max 18.4	7.0	15/15	24	2	20	4,300	60	Sea
					Cruise 8.5	7.0	2.5/125			10	5,450	60	Sea
										1	6,150	58	Fuel
Cruise Missile													
Nuclear-Power "E"	385/33	5,600	6,700	750	Max 20	..	18/–	16	6	20	5,300	60	Sea
					Cruise 12–14	..	12–14/–			10	6,600		
										1	7,800		
Diesel-Power													
"W-Conversion" [d]	249/21	1,030	1,350	650	Max 18.5	6.8	13.5/13.5	12	1–2	20	1,800	40	Sea
"W-Conversion" (LONG BIN)	275/21			650	Cruise 10	6.8	2/100	10	4	10	2,600	39	Fuel
										1	3,000	34	Fuel
Torpedo Attack													
Nuclear "N"	330/32	3,800	4,300	750	Max 20	..	20/–	24	..	20	5,300	60	Sea
					Cruise 12–14	..	12–14/–			10	6,600		
										1	7,800		
Diesel "F"	300/27	1,950	2,400	750	Max 18.4	9.5	17.5/13	24	..	20	4,400	60	Sea
					Cruise 8.5	7	2.5/125			10	5,400	60	Sea
										1	6,150	58	Fuel
"Z"	295/27	1,950	2,400	650	Max 18.4	7.0	15/15	24	..	20	4,300	60	Sea
					Cruise 8.5	7.0	2.5/125			10	5,450	60	Sea
										1	6,150	58	Fuel
"R"	249/21	1,030	1,350	650	Max 18.5	9.0	15.5/12	12	..	20	1,850	40	Sea
					Cruise 10.0	7.0	2/100			10	2,800	40	Sea
										1	3,300	37	Fuel
"W"	249/21	1,030	1,350	650	Max 18.5	7.0	13.5/13.5	12	..	20	1,800	40	Sea
					Cruise 10	7.0	2/100			10	2,600	39	Fuel
										1	3,000	34	Fuel
"Q"	185/18	420	510	450	Max 17.6	8.0	16/16 [e]	8	..	10	850	18	Fuel
					Cruise 12	8.0	2.5/125 [e]			1	1,150	12	Fuel

TOP SECRET

[a] Torpedo capacities are the maximum numbers which can be carried. Any combination of torpedoes/mines could be carried, substituting two mines for each torpedo.

[b] The time on station and radii (distance to station) have been computed on the basis of various operational factors, principally those relating to "Sea endurance" and "Fuel endurance."

Sea endurance is defined as the total length of time that a submarine can remain at sea without replenishment under combat conditions and is estimated on the basis of personnel endurance, general habitability, food, spare parts, and consumables other than fuel. The "H," "E," and "N" classes of nuclear propelled submarines are estimated to have a "Sea endurance" of 60 days. The "G," "F," "Z," and "Z-Con." classes of diesel powered submarines are estimated to have a "Sea endurance" of 60 days, while the "W," "W-Con.," and "R" classes are estimated to have a "Sea endurance" of 40 days.

"Fuel endurance" is defined as the total length of time that a submarine can remain on patrol under combat operational conditions without refueling. For diesel-powered submarines, it is computed on the basis of fuel consumption resulting from an arbitrarily assumed average transit routine of 8 hours surface, 8 hours snorkel, and 8 hours submerged operations daily; fuel consumption on station is computed on the basis of a few hours of snorkel operations daily, sufficient only to maintain the state of charge of the main storage battery for submerged operation the remainder of the day.

The endurance and maximum operating radii of nuclear-powered submarines are limited by factors other than fuel. For the purposes of this table it has been arbitrarily assumed that Soviet nuclear-powered submarines would transit to station using the following criteria:

Speed of 7 kts in area where ASW opposition is anticipated (assumed to be about 1/3 of the time).

Speed of 13 kts in areas where ASW opposition is not expected (about 2/3 of the transit time).

[c] Selected distances from Soviet ports:

From— to	Iceland	North West British Isles	Halifax	Bermuda or New York	Norfolk	Gibraltar	Panama
Kola Inlet	1,500	1,600	3,350	3,950	4,000	2,950	5,600

From— to	Seattle	Honolulu	Manila	Los Angeles	San Francisco	Singapore	Panama
Petropavlovsk	3,200	2,750	3,100	3,600	3,400	4,200	6,500
Vladivostok	4,400	3,700	1,900	5,000	4,550	3,000	7,750

[d] Three different conversions have been observed on "W" class cruise missile launching submarines, enabling 6 to carry 4 missiles each, 5 to carry 2 each and 1 to carry 1 missile.

[e] About 10 units of the "Q" class are believed to have been modified for closed-cycle operations of their diesels while submerged with liquid oxygen employed as the oxidizing agent. These modified units have an estimated submerged endurance of 75 n.m. at a maximum speed of 16 kts or an endurance of 160 n.m. at a cruising speed of 10 kts. This endurance is in addition to that listed on the above table.

TABLE 12

ESTIMATED PERFORMANCE OF LIGHT BOMBERS, STRIKE-RECONNAISSANCE AIRCRAFT, AND SEAPLANES

Designation	Year into Operation	Bomb-load (Lbs.)	Takeoff Weight (Lbs.)	Range/ Radius (N.M.)	Speed at Target/ Max. (Kts./ Kts.)	Alt. at Target (Ft.)
BEAGLE/IL-28 [a]	1950	4,400	51,100	1,050/560	410/490	34,800
BEAGLE/IL-28R [b]	1950	0	49,900	1,350/670	410/490	35,400
FLASHLIGHT D [c]	1960	0	25,000	820/380	525/620	41,800
FIREBAR A [d]	1961	2,200	28,400	.../460	655/870	sea level
MADGE [e]	1952	8,800	66,000	2,100/1,150	195/...	1,000
MAIL [e]	1963	10,000	70,400	2,150/1,050	300/350	sea level
MALLOW [e]	1961	10,000	[f] 143,000	1,420/600	300/490	sea level

[a] High level bombing mission. The BEAGLE can carry a 6,600 lb. bombload with a range/radius of about 1,000/550 n.m. A small part of the Soviet BEAGLE force is equipped with tip tanks. Range/radius of tip tank-equipped aircraft would be 1,350/700 n.m. with a reduced bombload of 2,200 lbs.

[b] Reconnaissance mission carrying tip tanks throughout mission.

[c] Reconnaissance mission.

[d] Ground attack mission.

[e] Minelaying mission with 10 AMD-1,000 mines.

[f] There is some evidence that take-off weight may be less.

TABLE 13

ESTIMATED PERFORMANCE OF SOVIET TRANSPORT AIRCRAFT
(Calculated in accordance with US MIL C-5011A, Basic Mission)

Aircraft	Operational Date	Soviet Designation	Power Plant Nr. Type	Cargo (lbs.) [a]	Passenger Paratroop Capacity	Combat Radius/ Range (nm)	Average Cruise Speed (kts.)	Initial Cruise Altitude (ft.)	Service Ceiling (ft.) [e]
CAB	1937	LI-2	2 Piston	3,300	25/20 [b]	530/1215	130	13,000	16,600
COLT	1949	AN-2	1 Piston	1,650	10/12 [a b]	450/945	110	5,000	16,400
BULL	1954	Mod TU-4	4 Piston	23,000	33/42	1800/3320	200	10,000	39,500
CRATE	1954	IL-14	2 Piston	4,750	24/21 [b]	720/1600	165	11,500	24,400
CRATE [c]	1956	IL-14M	2 Piston	6,350	36/21 [b]	720/1600	165	11,500	24,400
CAMEL A	1957	TU-104A	2 Turbojet	20,500	70/70	960/2000	450	34,500	46,900
CAMEL B	1957	TU-104B	2 Turbojet	22,500	74-100/90	920/1900	455	33,300	46,100
COOT	1958	IL-18	4 Turboprop	23,000	84-110/90-100	1550/2600	340	26,800	39,000
CAMP	1959	AN-8	2 Turboprop	19,000	-/60 [b]	740/1400	270	24,400	38,200
CAT	1959	AN-10	4 Turboprop	20,600	84-100/91 [b]	710/1450	335	30,800	39,700
CLEAT	1959	TU-114	4 Turboprop	29,000	170-220/-	2700/5400	410	32,200	40,800
CUB	1959	AN-12	4 Turboprop	21,000	-/91 [b]	710/1450	335	30,800	39,800
COKE	1961	AN-24	2 Turboprop	6,730	32-42/40	530/1000	245	25,000	32,000
COOKPOT	1961	TU-124	2 Turbofan	10,000	44/40	.../1000	450	..	..
CLASSIC [d]	1964	IL-62	4 Turbofan	30,000	182/-	.../4000	485		

[a] Performance shown is for cargo load; Passenger/Paratroop Capacity is shown as alternate load, but performance would differ for this load.

[b] Aircraft most suited for paratroop operations.

[c] COACH/IL-12 is not shown since performance is similar to CRATE.

[d] 1962 is year of first flight.

[e] Calculated at combat weight.

TABLE 14

ESTIMATED PERFORMANCE OF SOVIET HELICOPTERS [a]

Characteristic	Hare	Hound	Horse	Hen	Hog	Hook	Harp [b]	Hip [b]	Harke [b]	Hoop [b]	Hoplite
Operational Date	1951	1953	1958	1958	1959	1960	..	..	..	..	..
Soviet Designation	Mi-1	Mi-4	Yak-24	Ka-15	Ka-18	Mi-6	Ka-20 (?)	Mi-8	Mi-10 (?)	Ka-22	Mi-2
Power Plant											
Number	1	1	2	1	1	2	2	2	2	2	2
Type	Piston	Piston	Piston	Piston	Piston	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Radius/Range (nm)	85/210	120/240	65/135	120/260	110/240	120/250	100/250	150/350	100/180	200/400	100/250
Nr. of Crew	1	3	4	1	1	5	2	3	5	4	2
Payload (plus crew)											
Troops	3	11–15	40–55	1	3	80 [c]	3	24	70–120	70	6–8
Or Cargo (lbs) (normal)	350	2,640	8,800	200	350	20,000	1,000	4,400	20,000	20,000	1,500
Or Cargo (lbs) (max)	600	3,500	12,000	400	550	28,600	2,000	..	33,000 [d]	25,000	..
Max speed (kts at sea level)	100	110	110	80	85	175	90	130	100	200	120
Cruise speed at 5,000 ft. (kts)	75	75	85	65	65	110	70	90	80	160	80
Service Ceiling (ft)	16,400	18,000	13,500	9,800	11,500	16,000	12,000	20,000	7,500	15,000	17,000

[a] Performance quoted is for normal cargo load; alternate loads are shown to indicate capacity, but performance would differ from that shown.

[b] Seen only in prototype version; operational date undetermined.

[c] There is evidence that a passenger version may have 120 seats.

[d] An FAI record lift.

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ANNEX B

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ANNEX B

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ANNEX B

GLOSSARY OF MISSILE TERMS

Initial Operational Capability (IOC) — Date the first operational unit is trained and equipped with a few missiles and launchers.

Maximum Operational Range (n.m.)

Surface-to-Surface Systems — Maximum range under operational conditions with warhead weight indicated. For long-range ballistic missiles, the maximum range figures disregard the effect of the earth's rotation. In general, ballistic missiles can be fired to ranges as short as approximately one-third the maximum operational range without serious increase in CEP and to even shorter ranges with degraded accuracy.

Surface-to-Air Systems — Slant ranges are indicated in the tables. For practical purposes, the slant range can be used as the horizontal radius of the defended area. Range will vary with the direction of approach, the altitude, and the size of the attacking aircraft. Maximum altitude is not necessarily achieved at maximum range.

Air-to-Surface Systems — Slant range between launching aircraft and target at the instant of missile launch.

Air-to-Air Systems — Slant range between launching aircraft and target at the instant of missile launch.

Circular Error Probable (CEP) — The radius of a circle in which, statistically, one-half of the impacts will occur. Inherent missile accuracies are somewhat better than the accuracies specified in the tables, which take into consideration average operational factors. For naval systems firing on coastal targets, an accurate determination of the launching ship's position is necessary to achieve CEP's of the order indicated in the tables.

Warhead Weight — The weight of the explosive device and its associated fuzing and firing mechanism.

Ready Missile Rate — A ready missile is an in-commission missile with warhead mated, mounted on an in-commission launcher in a trained unit which is considered ready to be committed to launch. Ready missile rate is the percentage of missiles on launcher which are "ready missiles."

Reliability, on Launcher — The percentage of ready missiles which will successfully complete countdowns and leave their launchers at scheduled times or within 15–30 minutes thereafter.

Reliability, in Flight — The percentage of missiles launched which detonate as planned in the target area (i.e. within three CEP's of the aiming point).

Readiness Conditions — The following conditions of readiness apply to all ground launched ballistic missiles having ranges greater than 350 n.m.

Condition 4: Launch crews not on alert. Nosecone and missile checked but not mated. Missile guidance system not adjusted for particular target and missile not erected or fueled.

Condition 3: Launch crews in launch area and on alert. Missile and nosecone mated and checked but in prelaunch storage building.

Condition 2: Launch crews on station. Missile with nosecone erected on launch pad. Propellant facilities in position, attached, and ready to start propellent loading. Guidance system set.

Condition 1: Launch crew on station, missile propellent loading completed. Guidance rechecked.

Reaction Time — Time required to proceed from a readiness condition to firing.

Refire Time — Time required to refire from the same pad or launcher.

TABLE 1

LONG-RANGE GROUND-LAUNCHED SURFACE-TO-SURFACE MISSILE SYSTEMS ESTIMATED CHARACTERISTICS AND PERFORMANCE

Characteristics and Performance	Designation						
	Shyster SS–3	Sandal SS–4 [a]	SS–5 [a]	Cat A SS–6	Cat B SS–7 [a]	Cat C–SS–8	
						If Small	If Large
Initial Operational Capability	1956	late 1958	late 1961	1960	First half 1962	1963	1963 1964
Max. Operational Range (n.m.)	630	1,020	2,200	6,000 [b]	6,000	6,000	6,000
Guidance	Radio-inertial	All-inertial	All-inertial	Radio-inertial	Inertial Poss. with radio assist [c]	Radio-inertial	Radio-inertial
Accuracy (CEP) nm	1	1.0–1.5	1.0	2	1–2	About 1	About 1
Warhead Weight (lbs)	2,600 (+200 to −400)	2,500 (±500)	2,500–5,000	6,000 [b] (±1,000)	2,500–5,000	3,500 (±1,500)	17,500 (±2,500)
Gross Takeoff Weight (lbs.)	66,000	88,000	150,000	500,000	280,000	160,000	660,000
Configuration	Single stage	Single stage	Single stage	Partial or Parallel	Tandem	Tandem	Tandem
Propellants	Nonstor. liquid	Stor. liquid	Stor. liquid	Nonstor. liquid	Stor. liquid	Non-liquid	Nonstor. liquid
Ready Missile Rate	80%	80% [d]	80% [d]	80%	80% [d]	80%	80%
Reliability, on Launcher	90%	90% [d]	80% [d]	85%	80% [d]	80%	80%
Reliability, in Flight	80%	85%	85%	85%	85%	70%	70%
Reaction Time 4:	8 hrs.	8 hrs.	8 hrs.	16 hrs.	10 hrs.	10 hrs.	16 hrs.
From 3:	2½–5 hrs.	2½–5 hrs.	2½–5 hrs.	12 hrs.	6–10 hrs.	4 hrs.	10 hrs.
Readiness 2:	¾–2 hrs.	¾–2 hrs.	½–1 hr. [e]	1–2 hrs.	½–1 hrs. [e]	½–¾ hr.	½–1 hr.
Condition 1:	20–40 mins.	20–40 mins.	5–15 mins.	5–15 mins.	5–15 mins.	5–15 mins.	5–15 mins.
Hold Time, Condition 1:	1 hr.	many hrs.	many hrs.	1 hr.	many hrs.	1 hr.	1 hr.
Refire Time	4–6 hrs.	4–6 hrs. [f]	6–8 hrs. [f]	16 hrs.	10 hrs. [f]	6 hrs.	16 hrs.

[a] The SS–5, the SS–7, and possibly the SS–4 are deployed in both soft and hard configurations.

[b] Early tests of the SS–6 indicated that a heavy nosecone weighing 13,000–15,000 lbs. was delivered to a range of 4,500 n.m. Based on heat transfer techniques available at that time, the warhead for this nosecone was estimated to weigh 6,000–10,000 lbs. Based on present technology, the SS–6 probably can deliver a 10,000–12,000 lb. warhead to the same distance of 4,500 n.m., provided that a new nosecone were developed and flight tested.

[c] A radio beam may be used to establish direction reference. The error sensing and correction would be carried out in flight on board the missile.

[d] Probably some what higher for missiles in the hard configuration.

[e] Would probably be the normal readiness condition for hard configuration.

[f] For the soft configuration of these missiles.

TABLE 2

SHORT-RANGE GROUND-LAUNCHED SURFACE-TO-SURFACE MISSILE SYSTEMS
ESTIMATED CHARACTERISTICS AND PERFORMANCE

Characteristics and Performance	Designation				
	(Soviet V-2) SS-1A	SCUD SS-1B	SS-1C [a]	SS-2	SSC-1 [b]
Initial Operational Capability	prior to 1954	1957	1963	1954	1960
Max. Operational Range (n.m.)	150	150 (CW or HE) 75 nuclear [c]		350	300 (may be guidance limited to 150)
Trajectory	ballistic	ballistic		ballistic	aerodynamic, low altitude, low supersonic
Propulsion	LOX-Alcohol	stor. liquid		nonstor. liquid	turbo-jet JP fuel, atmospheric oxygen
Guidance	radio-inertial, possibly all-inertial	all-inertial		radio-inertial	unknown, possible radio link
Accuracy (CEP) n.m.	0.75	about 0.50		about 0.75	0.50 against known fixed targets at 150 n.m.
Warhead (lbs.)	1,720 (±20) (CW, HE, nuclear)	1,170 (±20) (CW or HE) 2,300 (+100 to −400) (nuclear)		2,200 (±200) (CW, HE, nuclear)	1,500 (±500) (CW, HE, or nuclear)
Reliability					
On launcher	90%	90%		90%	unknown
In flight	80%	80%		80%	...
Reaction Time	2–4 hrs. after arrival at presurveyed site, can be held at X–1 hr. for extended periods and for limited periods at X–15 minutes.	2 hrs. after arrival at presurveyed site, can be held at X–10 mins. for extended periods.		2–4 hrs. after arrival at presurveyed site, can be held at X–1 hr. for extended periods, and for limited periods at X–15 mins.	1 hr. after arrival at presurveyed site.
Refire Time	4–6 hours	3–4 hours		4–6 hours	unknown

[a] Characteristics of the SS–1C other than range are unknown, but they will probably be similar to, or improvements of those of the SS–1B.

[b] We estimate that the USSR has developed a vehicle-mounted, tactical cruise missile (SSC–2) with a range of 15 to 25 n.m. for delivery of HE or nuclear payloads. Other characteristics are unknown, but they may be similar to those of the SS–N–2 carried by Soviet guided missile patrol craft.

[c] Maximum range with a nuclear warhead (1,200 ± 200 lbs.) will probably be increased to 150 n.m. as a result of the 1961 nuclear tests.

TABLE 3

NAVAL-LAUNCHED SURFACE-TO-SURFACE MISSILE SYSTEMS
ESTIMATED CHARACTERISTICS AND PERFORMANCE

Characteristics and Performance	Designation			
	SS–N–1	SS–N–2	SS–N–3	SS–N–4
Initial Operational Capability	1958	1960	1961	1958
Type	cruise	cruise	cruise	ballistic
Maximum Operational Range (n.m.)	unassisted—20 to 30; with forward observer—up to 130	10–15	300	350 *
Speed	high subsonic	about Mach 1	low supersonic	..
Cruise Altitude (ft.)	1,000 to 10,000	?	1,000–2,000	..
Guidance	programmed, with radio command correction and terminal homing	terminal homing	inertial with active terminal homing	inertial
Accuracy (CEP)	150 ft. against ships; against coastal targets about ½ nm at less than 30 nm range to as much as 5 nm at maximum range	about 100 ft	150 ft. with terminal homing against ships; 2 nm against land targets	1–2 nm
Warhead Weight (lbs.)	500–2,000 (HE or nuclear)	500–2,000 (HE)	500–2,000 (HE or nuclear)	1,500 to 3,500 (nuclear)
Propulsion	turbojet	stor. liquid fueled rocket	turbojet	stor. liquid
Reliability on launcher	95%	85%	75%	70–90%
Reliability in Flight	85% to 30 nm			
	75% to more than 30 nm	80%	80%	80%
Reaction Time	alerted—1 min routine—5 mins.	alerted—5 mins routine—5 mins.	5–10 mins	5 mins. to launch 1 missile

* The USSR is developing longer range ballistic missiles for launching from submerged submarines. Our evidence is inadequate to determine whether the system under development has a range of 650 or 2,000 n.m.; it is possible that two separate systems of different ranges are being developed.

TABLE 4

SURFACE-TO-AIR MISSILE SYSTEMS [a]
ESTIMATED CHARACTERISTICS AND PERFORMANCE

DESIGNATION	SA–1 [b]	SA–2	SA–3
Initial Op Capability	1954	1957	1961
Max. Operational Range (n.m.) [c]	20–25	about 25	[d]
Max. Eff. Altitude (ft.) [c]	60,000 [c]	80,000 [f]	[d]
Min. Eff. Altitude (ft.)	3,000	3,000 [e]	[d]
Guidance	track-while scan/radio command	track-while scan/radio command [h]	[d]
Accuracy (CEP in ft.)	200	150–200	[d]
Warhead Weight (lbs.)	465 fragmentation [i]	420 fragmentation [i]	[d]

[a] A ship-borne surface-to-air missile system, designated SA–N–1, has been observed on the KYNDA/KOTLIN conversion class destroyers. We have insufficient evidence to estimate characteristics.

[b] Characteristics are based on original SA–1 missile. For those SA–1 sites modified for the SA–2's GUIDELINE missile, characteristics will approach those of the SA–2 system.

[c] Maximum altitude is not necessarily achieved at maximum range. Range will vary with the size, direction of approach, and altitude of the attacking aircraft.

[d] We have insufficient evidence to estimate characteristics. This system is probably being deployed for low-altitude defense.

[e] Would have some effectiveness up to 80,000 feet especially if equipped with a nuclear warhead.

[f] This system probably has a high degree of effectiveness up to altitudes of 60,000 feet, with limited effectiveness up to 80,000 feet. Its capabilities would decrease rapidly at higher altitudes, but there is some evidence that it might be able to engage nonmaneuvering targets at altitudes as high as 100,000 feet.

[g] Variations in such factors as siting conditions and target speeds will influence low-altitude capabilities. Soviet doctrine suggests allocation of targets below 3,000 feet to AAA fire.

[h] Although the original system was equipped with S-band FAN SONG (formerly FRUITSET) radars, C-band FAN SONG radars appeared in 1960. These new radars have improved somewhat the accuracy and low-altitude capability of the system.

[i] Nuclear warheads are possible, although specific evidence of their use is lacking.

TABLE 5

AIR-TO-SURFACE MISSILE SYSTEMS
ESTIMATED CHARACTERISTICS AND PERFORMANCE [a]

	KENNEL AS–1	KIPPER AS–2	KANGAROO AS–3
IOC	1956–1957	1960–1961	1960–1961
Maximum Range (nm)	55	100	350
Guidance Against			
Ships	beam-riding with semi-active homing	midcourse inertial with active radar terminal homing	not applicable
Against well-defined targets on land	beam-riding	midcourse only	inertial
Accuracy (CEP at max. range)			
Against ships	150 feet	150 feet	not applicable
Against land targets	1 n.m	1–2 n.m	1–2 n.m.
Warhead Weight (lbs.)	3,000 (±100) (HE or nuclear)	2,200 (+100 to 200) (He or nuclear)	5,000 (±500) (nuclear)
Speed (Mach)	0.8 to 0.9	1.6	1.5 to 2.0
Reliability on Launcher	90%	80%	80%
Reliability in Flight	80%	70%	70%
Employment	primarily antiship; could be used against land targets		land targets
Carrier	BADGER: [b]	BADGER:	BEAR:
Number of missiles	2 missiles	1 missile	1 missile
Combat radius	1,400	1,600	3,900
one refuel	1,950	2,250	..

[a] A new air-to-surface missile (AS–4) carried by a BLINDER "B" medium bomber, was displayed in the 1961 Soviet air show. We believe that this was a prototype of a missile which could become operational in 1964.

[b] To launch AS–1, BADGER must be at an altitude under 20,000 feet, and at a speed below 215 knots.

TABLE 6

AIR-TO-AIR MISSILE SYSTEMS
ESTIMATED CHARACTERISTICS AND PERFORMANCE

Type	Year into Operation	Guidance	Operational Accuracy (CEP–feet)	Warhead [a] (lbs.)	Total Weight (lbs.)	Aircraft		Remarks
						Compatible Carrier [b]	Range n.m. [c]	
AA–1 ALKALI	1957	Radar beam rider..	20	42	205	FISHPOT B FARMER E	3–4 tail [d]	All-weather Soviet designation "ShM".
						FISHBED D		
AA–2 ATOLL	1959	Infrared homing...	10–15	25	200	FISHBED C	6–tail [d]	Limited to clear air mass conditions.[•] Range is less at low altitude and varies with the target determination capability of fighter.
						All fighters		
AA–3 ANAB	1961	Either semiactive radar homing or infrared.	15–20	110	580	FIREBAR B FISHPOT B	7—tail 13—nose	All-weather.
						FISHBED D FLIPPER FIDDLER		
AA–4 AWL	1963	probable semiactive radar homing	50	110	770	FLIPPER	9—tail	All-weather.
						FIDDLER	11—nose	
AA–5 ASH	1963	probable semiactive radar homing	50	150	900	FIDDLER	6—tail	All-weather.
						FLIPPER	16—nose	

[a] Warheads are estimated as HE blast fragmentation. We believe that the AA–4 and the AA–5 missiles are capable of carrying nuclear warheads.

[b] The missile has been observed on the fighters listed above the line; it is believed to be compatible with those listed below the line. All of the fighters in this column are limited to lead pursuit attack with the exception of FIDDLER, which is estimated to have airborne radar and fire control permitting universal attack.

[c] The range will vary with the size, direction of approach, and altitude of the target aircraft. The indicated ranges are nominal system ranges for the indicated direction of approach.

[d] Limited to tail cone attack.

[•] Clear air mass is here defined as absence of clouds and precipitation between missile and target. The term is equally applicable to day or night operations. In addition an infrared system is degraded by a bright background such as white clouds or attack angles close to the sun.

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S-E-C-R-E-T

CENTRAL INTELLIGENCE AGENCY

12 April 1963

MEMORANDUM TO HOLDERS OF NIE 11-4-63, "SOVIET MILITARY CAPABILITIES AND POLICIES, 1962-1967," dated 22 March 1963, TOP SECRET

The attached map was inadvertently omitted from the printed estimate. It is to be inserted at the end of the document.

S-E-C-R-E-T

GROUP 1
Excluded from automatic downgrading and declassification

SECRET

GROUND FORCE AND TACTICAL AVIATION AREAS

EASTERN EUROPE
Group of Soviet Forces, Germany
Northern Group of Forces, Poland
Southern Group of Forces, Hungary

NORTHWESTERN USSR
Leningrad MD (Military District)

WESTERN USSR
Baltic, Belorussian, Carpathian & Moscow MDs

SOUTHWESTERN USSR
Kiev & Odessa MDs

Southern USSR
North Caucasus, Transcaucasus & Turkestan MDs

CENTRAL USSR
Siberian, Ural & Volga MDs

FAR EASTERN USSR
Far East & Transbaikal MDs

AIR DEFENSE AREAS

EASTERN EUROPE

NORTHWESTERN USSR
Leningrad & Northern ADDs (Air Defense Districts)

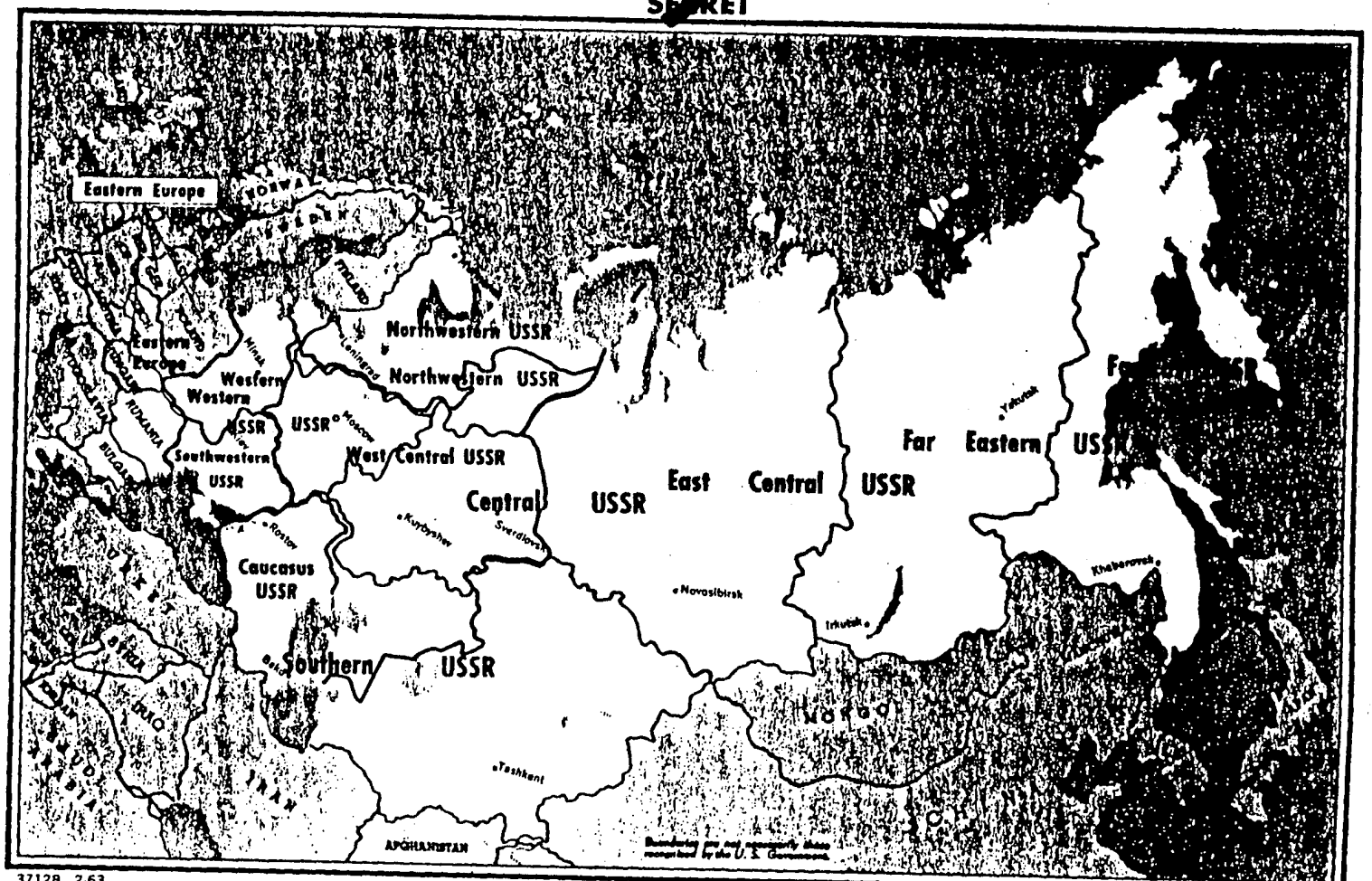
WESTERN USSR
Belorussian, Baltic, Lvov, Kiev & Odessa ADDs

WEST CENTRAL USSR
Moscow, Volga & Sverdlovsk ADDs

CAUCASUS USSR
Baku, Tbilisi & North Caucasus ADDs

EAST CENTRAL USSR
Tashkent, Novosibirsk & Chita ADDs

FAR EAST USSR
Chukotsk, Kamchatka, Sakhalin, Khabarovsk & Vladivostok ADDs



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General Areas of Soviet Military Deployment

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