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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

Soviet Expenditures for Defense and Space Programs, 1962-71

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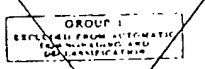

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
30 March 1971

INTELLIGENCE MEMORANDUM

Soviet Expenditures for Defense and Space Programs, 1962-71

Introduction

In December 1970 Soviet Minister of Finance Garbuzov announced a planned defense budget for 1971 of 17.9 billion rubles, the same amount as had been planned for 1970. This marks the first time since the 1965 budget that the Soviets have not announced an increase in the defense budget.

The announced defense budget is not accepted as a reliable indicator either of the amount of total Soviet spending for military-related activities or of changes in the level of effort from year to year. The annual announcement does stimulate a broad range of questions relating to the economic aspects of the Soviet defense and space effort, however, and provides an occasion for addressing many of these questions.

The decade of the Sixties was marked by the Soviet drive to achieve a position of overall strategic equality with the US. This memorandum presents intelligence est nates of the expenditures incurred in this effort, focusing upon costs rather than military capabilities. Dollar valuations of the Soviet

Note: This memorandum was prepared by the Office of Strategic Research and coordinated within the Directorate of Intelligence.

defense and space programs are compared with US spending for the years 1962-70 and the similarities and differences in the patterns of spending for the two countries are highlighted.

The spending levels and trends are also analyzed from the Soviet point of view--that is, in ruble terms. This analysis provides the basis for the final section of the memorandum, which places the military effort of the USSR in the perspective of the overall economic context that confronts the Soviet planners and leaders.

A summary begins on page 26.

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The Soviet Defense Budget

The single figure announced each year that constitutes the Soviet "defense" budget has both a political and an economic function. It serves to inform the Soviet public, the party, and government cadres of the leadership's intentions with regard to the allocation of resources. The changes in the size of the announced defense budget from year to year are probably also intended to communicate to the world at large the stance the leadership wishes to emphasize in its conduct of foreign affairs at the time.

Holding the line in their recent defense budget announcement, for example, is consistent with the image of moderation that the Soviets have attempted to project at the strategic arms limitation talks. This interpretation of Moscow's intent is borne out by Minister of Finance Garbuzov's claim that the 1971 budget is one "of peaceful economic and cultural development."

The Soviets do not publish an official defense posture statement nor do they provide a detailed explanation of what the published budget figure covers. Analysis of the available evidence indicates that it covers most direct expenditures for military weapons procurement and for the operation and maintenance of the forces in the field. It may also include some expenditures for military aid to other nations, for stockpiling military commodities, and for some aspects of the military research and development and space effort.

On the other hand, most of the large and growing costs of military-related research and development and both military and civil space are covered by the announced expenditures for "science." This is probably a peculiarity of the Soviet accounting system rather than an attempt to disguise these expenditures.

It is not clear how seriously the Soviet leaders themselves regard the announced defense budget. In

every year since 1963 the Soviets have said that actual expenditures were exactly the same as those which had been planned and announced for the year. Given the extraordinary complexity of budget planning in large, modern military establishments, it is hard to believe that the planners of the Soviet Union could arrange such a perfect match between planned and actual expenditures year after year. Accordingly, the announced defense budget is not accepted as a reliable indicator either of the amount of total Soviet spending for military-related activities or of changes in the level of effort from year to year.

Methodology

The estimates of Soviet defense and space spending contained in this memorandum are developed for the most part on the basis of a direct costing methodology. Judgments as to the numbers of weapons and forces are based chiefly on what is observed by means of US national intelligence. These numbers are then multiplied by estimates of what the weapons and forces would cost in rubles and in dollars.* Finally, the results are aggregated into expenditure categories similar to those used by the US Department of Defense.**

To estimate total Soviet spending for military research, development, test, and evaluation, and all space (RDTE&S), however, direct costing cannot be used. Although some programs--notably space--can be directly costed, there is not enough information on all individual R&D programs to permit a program-by-program accumulation of expenditures which

* *Detailed estimates in rubles and dollars for the period 1962-71 are contained in the Annex.*

** *A fuller description of this methodology is presented in SR IM* The 1970 Soviet Defense Budget in Perspective: Trends in Spending for Defense and Space Since 1960, *January 1970 (Secret*

would yield a reliable total. Fortunately, the Soviets have published a substantial amount of information--both statistical data and descriptive literature--on their spending for scientific activities. This provides the basis for estimates of Soviet spending for RDTE&S that correspond quite closely in concept to US spending by the National Aeronautics and Space Administration (NASA) as well as RDT&E funding by the Department of Defense (DoD) and the Atomic Energy Commission (AEC).

The validity of the estimates of Soviet military costs depends on the reliability of the underlying physical data base, and the accuracy of the prices applied to that base. The physical data base on forces and weapons reflects the combined collection and analytical efforts of the Intelligence Community. The available intelligence information has made it possible to develop a comprehensive and highly detailed understanding of the numbers and kinds of weapons and units that make up the Soviet armed forces. This extensive physical data base is used for costing purposes and includes such information as the deployment levels of the Soviet strategic attack, strategic defense, and general purpose forces, the production of major weapons and equipment, and the manning requirements of the forces.

The price and cost factors are known with less certainty. The information on Soviet costs is good for some types of spending--for example, personnel costs, which account for roughly a fourth of total spending. On the other hand, many other prices and cost factors must necessarily be derived from analogous US data and experience. On balance, the price and cost factor data base is believed to be reasonably accurate.

Naturally, the degree of confidence in the validity of the estimates decreases the further they extend into the future. Unforeseen developments in either strategic or general purpose forces during the present year could have a substantial impact on the projection of Soviet expenditures in 1971.

US and USSR Comparisons

The purpose of costing observed and estimated Soviet defense programs in dollar terms is to provide an appreciation of the physical size of the program by showing the level of effort--measured in dollars--that would be required to reproduce the Soviet programs in the US. In general, the dollar values show what it would cost in the US to purchase and operate the Soviet forces. Dollar values derived in this way provide a basis for comparing US and Soviet programs.

In reviewing US and Soviet comparisons, it is important to bear in mind that dollar valuations of Soviet programs should be viewed as approximations rather than precise measures. It is important to note also that relative levels of effort of the two countries as measured in money terms are only rough guides to relative levels of military capabilities. Equal levels of effort for comparable programs do not necessarily result in equal force effectiveness.

The monetary values developed for the comparisons are expressed in constant 1968 dollar terms. The use of a constant price base ensures that all changes from year to year are a result of changes in the forces and programs themselves rather than changes in prices.

Further, the DoD data used for the US in the comparisons have been adjusted to include NASA and AEC spending and to exclude military assistance. These adjustments have been made in order to obtain conceptual comparability with the dollar values of Soviet programs.

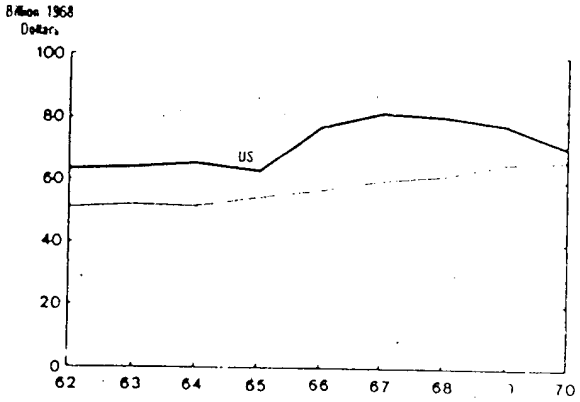
Total Spending

Comparisons of the total efforts by the US and USSR for defense and space programs in the period

1962-70 show US expenditures to be consistently higher than the dollar valuations of Soviet spending (see the chart below). For the period as a whole, Soviet programs amounted to about 80 percent of the US total. The growth patterns, however, differ substantially for the two countries.

US expenditures were stable in 1962-65, increased sharply in 1966 and 1967 during the Vietnam buildup, and tapered off in 1969 and 1970. Soviet expenditures, on the other hand, demonstrated a steady upward trend throughout the entire period. As a result the dollar value of Soviet programs, about 80 percent of the US level in 1962, declined to less than 75 percent in 1966-67, then increased to more than 90 percent in 1970.

Comparison of US Expenditures with Dollar Valuations of USSR Expenditures for Total Defense and Space, 1962-70



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The structure of defense and space expenditures by major military missions is also different for the two countries. The dominant factor in US spending in the second half of the decade has been the involvement in Vietnam. Spending for general purpose forces and for command and general support--the missions most affected by Vietnam--has accounted for all the growth in spending since 1965. In fact it offsets declines for each of the other missions. The spending allocated to general purpose forces and command and general support accounted for about 65 percent of the US total in 1962 and grew to over 75 percent by 1970.

During this period the share of total US spending allocated to strategic attack forces dropped from slightly less than 15 percent in 1962 to about 5 percent in 1970. This resulted from a decline in expenditures as programed force levels were reached in the mid-Sixties. The share going to strategic defense forces remained fairly constant at less than 5 percent for the entire period.

The RDTE&S share of spending increased from about 15 percent in 1962 to nearly 25 percent in 1965, then in 1970 returned to about the 1962 share as outlays for RDTE&S declined slightly during a period of growth in total spending.

The pattern of Soviet expenditures is quite different, with RDTE&S accounting for the largest part of the growth. The shares of total Soviet spending--calculated on the ruble basis to present the shares as the Soviets see them--declined slightly for general purpose forces, strategic attack forces, and command and general support from 1962 to 1970. The share allocated to strategic defense forces remained nearly constant. RDTE&S experienced the greatest change--its share increasing from about 20 percent in 1962 to over 30 percent of the total in 1970.

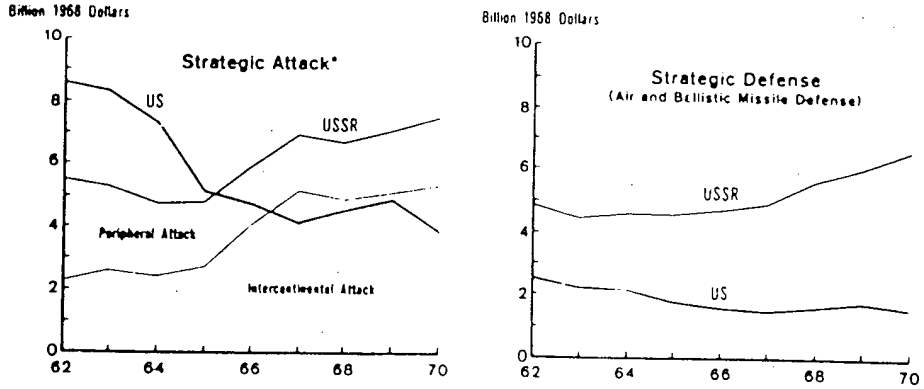
Strategic Attack Forces

Over the past decade cumulative total outlays for strategic attack forces for the US have been

roughly the same as the dollar valuation of Soviet expenditures (see the chart below). Only about two-thirds of Soviet expenditures--on the ruble basis--for strategic attack have been for intercontinental forces, however, while all US spending was for intercontinental attack systems. The remainder of Soviet spending has been for systems with a peripheral attack capability--MRBMs and IRBMs as well as medium bombers and conventionally powered ballistic missile submarines. The US has no counterpart for these systems.

On the ruble basis, as the Soviets see the allocations, roughly 80 percent of their expenditures for intercontinental attack during 1962-70 was devoted to ICBMs. About 10 percent each went to submarine launched ballistic missiles and heavy bombers. During this period the US spent approximately 30 percent for ICBMs, 20 percent for SLBMs, and 50 percent for heavy bombers.

Comparison of US Expenditures with Dollar Valuations of USSR Expenditures for Strategic Attack and Defense Forces, 1962-70



*All US spending is for intercontinental attack systems

Note: These mission comparisons exclude the cost of nuclear weapons.

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In absolute terms the dollar valuations of Soviet expenditures for ICBMs are almost twice those of the US. The higher Soviet level is partially the result of deploying more launchers than the US. In addition, the Soviets have deployed a sizable force of SS-9 ICBMs which are large, liquid-fueled weapons and are very expensive. The US force, on the other hand, is made up primarily of the small, solid-fueled Minuteman, a much less costly system.

The reverse is true for submarine launched ballistic missiles--US spending was about twice the dollar valuation of the Soviet outlays--and for intercontinental bombers--US spending was about seven times as high as the Soviet dollar valuations. Soviet spending on the submarine ballistic missile force increased rapidly toward the end of the decade, however, with the beginning of construction of the Y class in 1967. Prior to that time Soviet expenditures for all submarines--both intercontinental and peripheral attack--had been equivalent to about 200 million dollars per year. The US has maintained a large intercontinental bomber force throughout the period while the Soviet bomber force has been very small with no new aircraft introduced since the early Sixties.

Distinctive in the comparison of outlays for strategic offensive forces is the timing of programs. Large-scale deployment of ballistic missile systems in the US preceded such deployment in the USSR by several years. In the first half of the decade US spending for the Titan, Minuteman, and Polaris systems led to unusually high investment outlays. Soviet counterparts to these systems were in early stages of development at this time. In the last half of the decade, as US expenditures declined and ballistic missile deployment increased in the USSR, the dollar valuations of total Soviet strategic attack expenditures surpassed those of the US. Dollar valuations of annual Soviet spending for intercontinental attack surpassed annual US spending in 1967 (see the chart on page 11).

Strategic Defense Forces

Historically the USSR has spent more heavily for strategic defense forces than has the US. Valued in dollars, these expenditures in the years 1962-70 were nearly three times those of the US (see the chart on page 11). Within this mission, emphasis on the three basic elements--ground-based missiles (SAMs and ABMs), fighter aircraft, and control and warning systems--has also differed.

Soviet dollar valuations and US expenditures for control and warning systems are about equal for the period 1962-70 as a whole.* The Soviet effort has been about one-third more than that of the US over the past five years, however. The emphasis on ground-based missiles (almost entirely SAMs) combined with fighter-interceptors in the two countries is quite different. The dollar valuations of Soviet spending for these systems over the decade are about four times the US expenditures--reflecting for the most part the magnitude of the intercontinental bomber threat faced by each nation.

General Purpose Forces

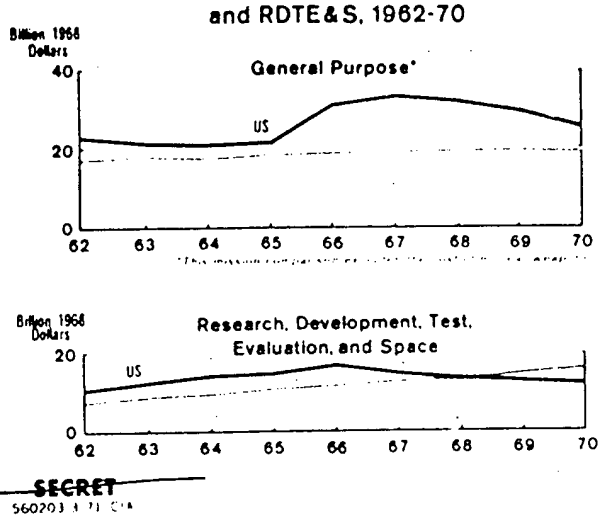
Soviet spending for general purpose forces grew steadily throughout the period 1962-70. Prior to the large-scale commitment of US forces in Vietnam, the dollar value of Soviet expenditures for general purpose forces was about 80 percent of that of the US. From 1966 through 1970, however, the costs of Soviet programs averaged only about 60 percent of those of the US (see the chart on page 14). A similar pattern exists for command and general support.

Research, Development, Test, Evaluation, and Space

Cumulative US spending during 1962-70 for RDTE&S was about 20 percent higher than the dollar valuation

* *US expenditures for the ballistic missile early warning system are counted under control and warning. In addition, US data include some spending in the early to mid Sixties for radar ships.*

Comparison of US Expenditures with Dollar Valuations of USSR Expenditures for General Purpose Forces and RDTE&S, 1962-70



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of the Soviet effort for the same period.* Recent reductions in US spending accompanied by a steadily increasing Soviet effort have resulted in dollar values of Soviet spending that are higher than the US levels for the past two years. More than half the difference in the last two years, however, is attributable to Soviet civil space programs.

* *As noted earlier, the Soviet outlays for RDTE&S are estimated in the aggregate and conceptually include all expenditures for military RDT&E (including those for all nuclear programs and all expenditures for space programs. To obtain comparability, the US data include all DoD expenditures for RDTE&S, all NASA expenditures, and AEC expenditures for R&D.*

The Soviet View

Trends in Defense Expenditures

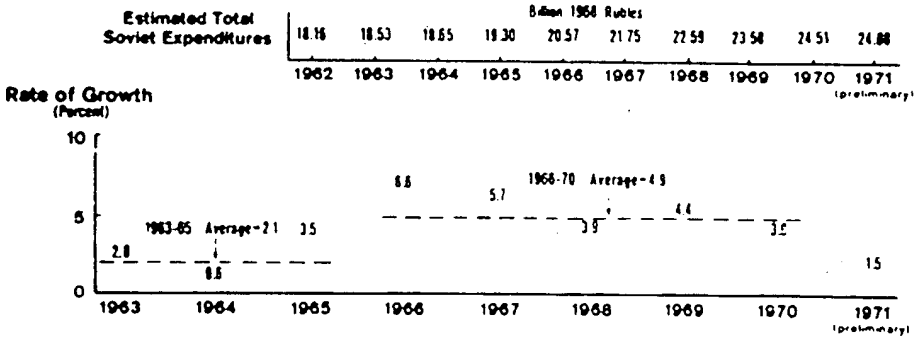
Although dollar valuations reflecting US production costs are necessary to provide a basis for comparing the relative magnitudes of Soviet and US spending for defense and space, the Soviets of course spend rubles--not dollars--on their military programs. It is the ruble valuation--together with its underlying cost structure--that is of concern to the Soviet leaders. The ruble measure is, therefore, more appropriate for examining the military claim upon the resources of the USSR and for assessing the economic implications of the defense and space effort.

The ruble expenditure data are presented in 1968 prices, the first full year which reflected the comprehensive Soviet price revision initiated in mid-1967.* Until recently, CIA estimates of Soviet military and space expenditures used a 1955 price base, reflecting the last previous major revision of prices in the Soviet Union. The major consequence of the latest price revision was to raise the overall ruble valuations by about 9 percent.

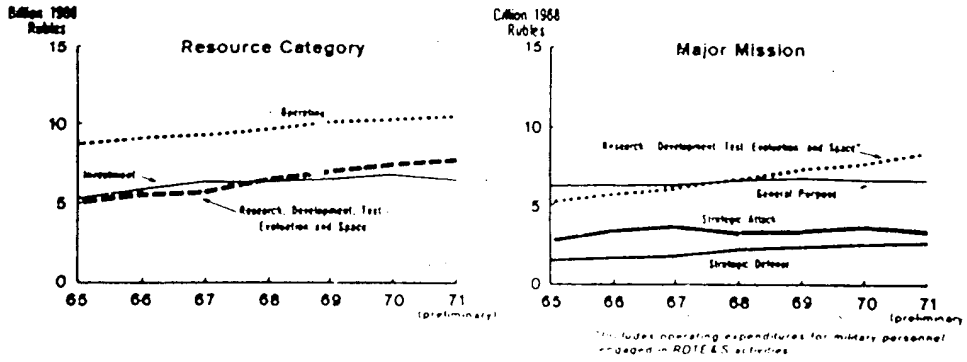
To a large extent, the magnitude and pattern of defense spending by the Soviets in the Sixties have been shaped by their drive for equality with the US in strategic arms. Continuing improvements in the US strategic posture--the rapid deployment of ICBMs and Polaris submarines in the early and middle Sixties and the development of MIRVs--together with uncertainty regarding US plans for deployment of ABMs in the late Sixties have made this a difficult and costly task. The burden of the strategic buildup could not be offset by cutbacks in allocations to other missions, as had been the case in the previous decade when annual spending for general purpose forces fell from over 10 billion rubles in 1952 to about 5 billion rubles by 1960. Rather, the drive for strategic parity in the Sixties was accompanied by moderate increases in outlays for conventional forces.

* *The conversion of military expenditures to 1968 prices is preliminary and subject to future revision.*

Estimated Total Soviet Expenditures and Rate of Growth for Defense and Space, 1962-71



Estimated Soviet Expenditures for Defense and Space, by Resource Category and Major Mission, 1965-71



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Total spending for defense and space in the USSR grew each year during the period 1963-70. Over the period 1966-70 total spending increased rapidly, growing at an average annual rate of 5 percent (see the chart on page 16). The average annual rate of growth for the previous three years, in contrast, was only 2 percent.

The rapid growth of total spending in the latter half of the Sixties resulted largely from the deployment of strategic weapons systems and increased allocations to military research and development and all space (RDTE&S), reflecting the need--as seen by the Soviets--to narrow the strategic arms gap between the US and the USSR. Annual spending for RDTE&S increased at an average rate of 8 percent and for strategic forces at 7.5 percent in the years 1966-70.

In 1971 total Soviet spending for defense and space is projected to reach a record level of almost 25 billion rubles (68 billion dollars), which would be an increase of less than 2 percent over 1970. Continued increases in spending for strategic defense forces and RDTE&S programs are responsible for most of the moderate rise in total expenditures. Outlays for the other missions are expected to remain near their 1970 levels.

Expenditures for each of the major resource categories rose during the period of most rapid growth, 1966-70 (see the chart on page 16). Spending for RDTE&S increased by the largest amount--more than 8 percent per year--as the Soviets vigorously pursued the development of future systems. Operating costs, while accounting for the largest share of the total, grew steadily but at an annual rate of only 3 percent.

Outlays for investment--procurement of new equipment and construction of facilities--grew at an average rate of 5 percent per year for the period 1966-70 with the continued deployment of new weapons. Expenditures for procurement accounted for over 90 percent of investment, and nearly all of the growth in procurement outlays represented increased expenditures for new missile systems--primarily SAMs and ICBMs.

Systems designed to improve Soviet antisubmarine warfare capabilities received increased outlays also. Spending for procurement of hardware of a higher degree of complexity and sophistication--missiles, electronic equipment, and nuclear weapons--continued to comprise more than half of total procurement.

Strategic Forces

Expenditures for strategic forces--offense and defense combined--averaged about one-fourth of total Soviet defense and space spending in the late Sixties. More resources have been devoted to strategic attack than to strategic defense systems. Outlays for strategic defense, however, have grown more rapidly than those for the attack forces. Preliminary projections of 1971 spending for strategic forces indicate a slight decline in spending for attack and a slight rise in spending for defense.

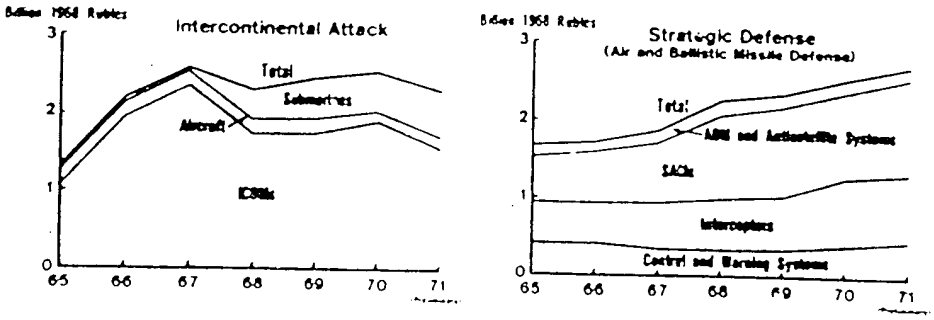
Within the totals for the strategic attack mission, expenditures for intercontinental systems increased sharply in 1966 and have averaged about 2.5 billion rubles (5.5 billion dollars) since then. Spending in 1971 is projected to be slightly less than this level. Spending for these systems consistently exceeded spending on the peripheral forces during the middle and late Sixties in contrast to the earlier years. A leveling off of outlays for ICBMs, which now are accounting for about 75 percent of the total intercontinental attack expenditures, occurred during the last three years (1968-70). This trend, accompanied by reduced spending for heavy bombers and mounting expenditures for the deployment of Y class ballistic missile submarines, has served to stabilize spending for intercontinental attack (see the chart on page 19).

Annual outlays for the peripheral attack systems also remained relatively stable and amounted to about 1 billion rubles (2 billion dollars) from 1965 through 1970 as reduced outlays for medium bombers

and peripheral submarines were roughly offset by increases in spending for MRBM and IRBM forces. This level probably will be maintained in 1971.

Estimated expenditures for strategic defense forces rose during the late Sixties when the Soviets deployed new surface-to-air missile systems and interceptor aircraft. Total air and missile defense expenditures increased from 1.6 billion rubles (4.6 billion dollars) in 1965 to 2.5 billion rubles (6.7 billion dollars) in 1970 (see the chart below). A slight increase is expected in 1971 as a result of additional spending for SAMs. These outlays also supported an extensive control and warning network as well as deployment of a Soviet ABM system surrounding Moscow. Spending for ABM deployment, however, accounted for little more than 5 percent of strategic defense outlays or only about a half a percent of total Soviet military spending during the period.

Estimated Soviet Expenditures for Intercontinental Attack and Strategic Defense Forces, by Element, 1965-71



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General Purpose Forces

Despite the high priority the Soviets have placed on developing strategic capabilities, expenditures for their large general purpose forces have remained higher than for any other major force element (see the chart on page 16). The relatively stable level of spending of about 6 billion to 7 billion rubles (18 billion to 19 billion dollars) averaged about one-third of total spending for the period 1965-70 and no substantial change in 1971 is expected.

Ground forces generally accounted for about 50 percent of total spending for this mission, naval forces for about 30 percent, and tactical aviation and military transport aviation each for about 10 percent.

The most noteworthy trend within the spending for general purpose forces has been the growth in expenditures for ASW systems.* Spending for naval forces remained stable during 1965-70 (and is expected to remain so in 1971) at about 2 billion rubles (6 billion dollars). The share allocated to ASW, however, has grown from less than 25 percent of expenditures for general purpose naval forces in 1965 to a projected share of over 40 percent in 1971.

The leveling off of expenditures for ground forces in 1970-71 is caused by a slight decline in the procurement of nuclear and conventional weapons resulting from a gap in timing between the completion of current programs and the initiation of new ones. This does not indicate a decline in the forces; instead, their steady buildup seems to be continuing.

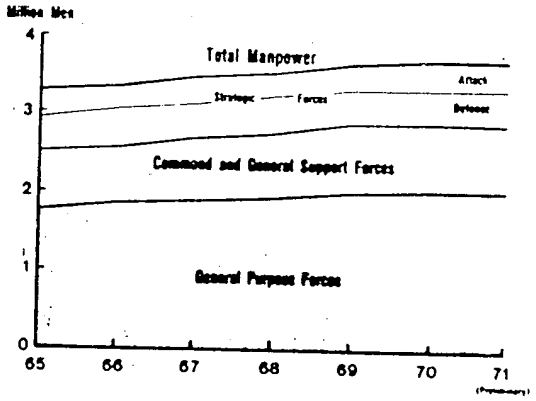
* *The definition of antisubmarine warfare systems used in this memorandum is the same as that used in NIE 11-3-71,* Soviet Strategic Defenses, *which states that ASW systems are considered to include all Soviet forces with a potential for use in an ASW role, although most of these forces in fact have multipurpose capabilities.*

The substantial level of funding for the general purpose forces has been directed toward developing more balanced forces capable of responding to a broader range of military contingencies. Particular emphasis during recent years has been placed on achieving an improved ASW capability, on augmenting forces along the Sino-Soviet border, and on extending the Soviet military presence into areas not contiguous to the USSR.

Military Manpower

The importance of general purpose forces in the total Soviet military establishment appears even greater when viewed in manpower terms. The chart below shows trends in total military manpower and in the distribution by major mission. From 1965 to 1970 total Soviet military manpower increased from about 3.2 million to about 3.7 million men and is expected to remain at about this level in 1971. Throughout this period, the general purpose forces account for about 55 percent of manpower resources.

Estimated Soviet Military Manpower, by Major Mission, 1965-71



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The Economic Setting

The USSR has the second largest economy in the world. Measured in terms of gross national product, the overall magnitude of the Soviet economy has grown to a point where it is for the first time slightly more than half that of the US.

The structure of production in the two economies, however, is quite different. The USSR is unique among industrialized countries in having a highly developed industrial sector side by side with a backward agricultural sector and a relatively primitive trade and service network. This imbalance stems from an overriding priority long given to rapid economic growth and defense, calling for the development of heavy industry, particularly producer and military goods, at the expense of agriculture and goods and services for the population.

The Soviet economy also differs from the US in that all of the major resource allocation decisions are made at the center. Each year the Soviet leaders must make very specific decisions about how the available resources will be allotted to claimants for consumer satisfaction, for economic growth, and for defense and space programs. Two of the principal Soviet objectives--military strength and economic growth--are especially competitive for the same resources. The leadership must consider the fact that military strength is obtained in part at the expense of economic growth and, therefore, that large military programs today could reduce the total amount of resources available in the future.

The Burden of Defense and Space Programs

One common measure of the burden of defense and space spending upon the Soviet economy is the size of these expenditures relative to GNP. When valued in ruble prices, as the Soviets would view it, the current defense and space share of GNP is about 7 percent. This is roughly the same share of GNP that the US devotes to comparable programs.

The lopsided development of the Soviet economy, however, has caused an apparent anomaly that arises when the economic burden of its military effort is viewed in this way. Given that US GNP is about twice as large as Soviet GNP, it would be logical to expect that Soviet defense and space programs must be about one-half the size of US programs--which they are not. The USSR supports defense and space programs almost as large as those of the US but with about the same share of a much smaller GNP.

This does not mean that the USSR is more efficient than the US in the production of military goods and services. The apparent paradox results rather from differences in the price structures of the two economies. The Soviet economy is essentially a dual economy, consisting of a modern and efficient industrial sector alongside of backward agricultural and consumer-oriented sectors. Because of these wide disparities in efficiency, the costs of military output are low relative to costs in the backward sectors.

Military Programs--The Competition for Resources

A further appreciation of the burden of the Soviet defense effort is gained by considering it in the context of economic growth, which remains a major objective of the Soviet leadership. It is clear that the persistent escalation of the military competition with the West has impeded economic growth in the USSR. Many Soviet leaders agree with this view as indicated by a number of statements by Soviet officials over the past several years. The most recent was by a Gosplan official who cited "defense costs" as one of the major factors complicating economic development in the forthcoming five-year plan.

To some extent defense and space spending impacts upon Soviet industry by diverting the most modern machinery and equipment from civilian investment

programs. More important from the standpoint of economic growth, however, is the fact that the defense effort preempts a large share of the finest scientific, engineering, and managerial talents of the economy--assets needed to stem the declining productivity of the civilian sector.

Over the past decade defense and space needs have siphoned off about one-third of all machinery and equipment potentially available for investment in the economy--about half actually went to civilian investment and the remainder was directed to consumer durables. An even greater share of total research and development resources--about 75 percent--is devoted to the military effort, tying up resources that might otherwise enhance the technology and managerial capability of the civilian economy. The denial of these resources to the civilian economy almost certainly has contributed to the Soviet failure to maintain during the Sixties the rates of growth of industrial productivity that were achieved in the Fifties.

Future Outlook

The question of what resource allocation policies the Soviets are likely to adopt over the remainder of the Seventies is a difficult one.

The traditional Soviet strategy would be to attempt to secure rapid growth by maintaining high rates of investment in the capital goods sector of the economy. It appears unlikely that this would prove a fruitful strategy in the long run unless it were complemented by effective measures to stem the persistent trend of diminishing returns to new investment. This, in turn, would require the rapid diffusion of new technology throughout the economy by directing capital investment into modernization of the production facilities.

Accordingly, Soviet growth strategies will probably focus on both technological innovation and rates of investment. A relaxation of the military burden

could be of significant benefit, freeing high quality physical and human resources for the modernization of the economy.

At the same time, care should be taken not to overstate the economic importance of military expenditures. The fundamental problem facing the Soviets is implementation of effective managerial reform--better planning and better incentives--to facilitate the adoption of new technology in the civilian economy. Despite the efforts launched by Kosygin and Brezhnev in 1965, prospects for fundamental reorganization of the economy remain dim.

The resource situation in the USSR will probably remain taut over the next several years, as the Soviets attempt to shore up the industrial sectors and at the same time find resources needed to improve housing and other consumer services and modernize agriculture. As a result, there will continue to be considerable incentive to hold military spending down, particularly among those leaders harboring the traditional view calling for high rates of investment.

The Soviet economy is now so large, however, that even low rates of growth mean a substantial increase in resources. Thus, it is unlikely that the USSR will be deflected, by purely economic considerations, from undertaking those future military programs that it believes are required for its security. Moreover, the present level of Soviet military expenditures is such that the Soviets could continue increasing their military capabilities in the future without increasing their spending for this purpose or even with some reduction in spending.

Summary

Soviet defense spending in the Sixties was highlighted by a drive for overall equality with the US in modern strategic arms. Expenditures for defense and space grew by over one-third from 1962 through 1970--from 18 billion rubles to 24.5 billion rubles. Annual spending increased at an average rate of 2 percent per year in 1963-65, but the rate of growth accelerated to about 5 percent per year in the years 1966-70.

The principal elements contributing to the rapid growth in the latter half of the decade were military research, development, test, and evaluation, and all space, which grew at an annual rate of more than 8 percent, and strategic forces which grew at 7.5 percent per year in the years 1966-70.

Projections for 1971 indicate that Soviet spending for defense and space will reach a record level of almost 25 billion rubles (68 billion dollars), an increase of less than 2 percent over 1970. Continued increases in spending for strategic defense forces and RDTE&S are responsible for most of the moderate rise in total expenditures. Outlays for the other missions are expected to remain near their 1970 levels.

Soviet defense and space efforts can be compared with those of the US by estimating what it would cost to reproduce the Soviet programs in the US. Comparison of the total efforts shows that the dollar valuation of Soviet spending amounted to about 80 percent of US spending over the 1962-70 period as a whole, and ranged from a low of 75 percent of the US level in 1966-67 to more than 90 percent in 1970.

Significant differences appear when US and Soviet expenditures over the past decade are compared on a mission by mission basis. Outlays for strategic attack forces by the US have been roughly the same as those of the USSR over this period. Only about two-thirds of Soviet expenditures for strategic attack have been for intercontinental attack, however, while all US spending was for intercontinental systems. The US and Soviet efforts also differ with

regard to the timing of programs in the two countries. Large-scale deployment of ICBM systems in the US preceded similar deployment in the USSR by several years.

Historically the Soviets have invested heavily in strategic defense forces. This has led them to spend nearly three times as much as the US for strategic defense over the period 1962-70.

Cumulative US spending for RDTE&S during 1962-70 was about 20 percent higher than the Soviet effort for the same period. Recent reductions in the US effort, accompanied by steadily increasing Soviet outlays, have resulted in Soviet spending for RDTE&S which exceeded that of the US for the past two years.

Soviet spending for general purpose forces grew steadily throughout the period 1962-70. Prior to the large-scale US commitment in Vietnam, Soviet expenditures were about 80 percent of those of the US. During 1966-70, however, Soviet spending for general purpose forces has averaged only about 60 percent of that of the US.

The drive to acquire strategic equality with the US was not carried out without cost to the economy of the USSR. In addition to diverting the most modern machinery and equipment from civilian investment programs, the defense effort preempted a large share of the finest scientific, engineering, and managerial talents of the economy--assets needed to stem the declining productivity of the civilian economy and promote economic growth.

The resource situation in the USSR is expected to remain taut over the next several years, and debate within the Soviet leadership indicates that there will continue to be pressure to limit military spending.

The Soviet economy is now so large, however, that even low rates of growth provide a substantial increase in resources. For this reason it is unlikely that the USSR will be deflected by purely economic considerations from undertaking those future military programs it believes are required for its security.

Statistical Annex

These expenditure data are based upon a detailed single-valued statement of the Soviet forces which was specified solely for costing purposes. The same level of confidence should not be attached to a series derived in this fashion as to the ranged series which at times are used to describe the degree of uncertainty associated with the estimates of the force structure.

The expenditure data in these tables are expressed in billions to two decimal places. This level of detail makes it possible to follow small movements in the underlying physical data. The uncertainties are such, however, that no other significance should be attached to the second decimal place.

The ruble expenditure data are presented in 1968 prices, the first full year which reflected the comprehensive Soviet price revision initiated in mid-1967. Some further selected readjustments in Soviet prices have been made since then to implement the revision and are reflected in these estimates. As the Soviets publish more information on the implementation of the reform we will continue to review our estimates and make adjustments where necessary.

Table 1

Estimated Soviet Defense and Space Expenditures, by Mission
1962-71

Billion 1968 Rubles

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
Major missions	11.14	11.04	10.60	10.53	11.25	11.85	12.00	12.49	12.80	13.21
Strategic attack	3.50	3.49	3.01	2.67	3.26	3.64	3.28	3.43	3.64	3.86
Strategic defense	1.82	1.65	1.66	1.63	1.72	1.86	2.24	2.35	2.54	2.72
General purpose	5.82	5.90	5.93	6.23	6.27	6.35	6.48	6.71	6.62	6.63
Command and general support	3.30	3.34	3.41	3.49	3.56	3.69	3.91	3.87	3.92	3.94
RDTE&S**	3.72	4.16	4.62	5.27	5.77	6.21	6.69	7.20	7.78	8.11
Total	18.16	18.53	18.65	19.30	20.57	21.75	22.59	23.58	24.51	25.26

Note: The expenditures shown for the major missions and command and general support include all outlays for personnel and other operating costs, procurement of all hardware (including nuclear warheads), and construction of facilities. They do not include any expenditures for research, development, test, and evaluation (RDT&E). Because of rounding, components may not add to the totals shown.

* Preliminary

** Includes Soviet expenditures for all space programs and for all military RDT&E. Operating expenditures for the military personnel on active duty who are engaged in RDTE&S activities have also been included.

Table 2

Dollar Valuation of Estimated Soviet Defense and Space Expenditures, by Mission
1962-71

Billion 1968 Dollars

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
Major missions	28.90	28.57	27.96	28.16	29.55	31.14	31.82	33.14	34.06	34.14
Strategic attack	6.48	6.40	5.80	5.50	6.65	7.59	7.27	7.65	8.07	7.73
Strategic defense	4.85	4.49	4.62	4.58	4.75	5.01	5.79	6.12	6.69	7.04
General purpose	17.57	17.68	17.54	18.08	18.15	18.54	18.76	19.37	19.30	19.37
Command and general support	14.61	14.82	15.23	15.57	15.75	16.26	17.05	17.09	17.32	17.45
RDTE&S	7.42	8.30	9.23	10.54	11.54	12.41	13.38	14.40	15.56	16.44
Total	50.95	51.69	52.42	54.28	56.85	59.80	62.26	64.63	66.93	67.92

Note: These dollar valuations are designed to indicate the general size of the Soviet forces and programs by showing what they would cost if purchased and operated in the US. For a description of the activities covered by these data see the note to Table 1. Because of rounding, components may not add to the totals shown.

* *Preliminary*

Table 3

Estimated Soviet Defense and Space Expenditures, by Resource Category
1962-71

Billion 1968 Rubles

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
RDTE&S**	3.51	3.95	4.42	5.05	5.55	5.97	6.45	6.96	7.54	7.98
Investment expenditures	6.62	6.24	5.59	5.36	5.98	6.41	6.34	6.56	6.73	6.47
Procurement	5.77	5.59	5.15	5.01	5.48	5.85	5.86	6.04	6.18	6.01
Land armaments and ammunition	0.31	0.32	0.34	0.35	0.38	0.41	0.40	0.42	0.39	0.3.
Naval ships and boats	0.68	0.63	0.58	0.63	0.55	0.66	0.73	0.81	0.88	0.93
Aircraft	0.92	0.78	0.84	0.89	0.81	0.80	0.84	0.74	0.77	0.79
Missile systems	1.80	1.54	1.07	1.01	1.61	1.91	1.82	1.94	2.10	2.00
Electronic equipment	0.36	0.33	0.31	0.29	0.29	0.27	0.27	0.31	0.36	0.43
Nuclear weapons	1.10	1.36	1.39	1.21	1.17	1.11	1.07	1.11	0.95	0.78
Other	0.61	0.62	0.63	0.64	0.66	0.68	0.72	0.72	0.73	0.74
Facilities	0.85	0.65	0.43	0.35	0.50	0.55	0.49	0.52	0.55	0.47
Operating expenditures	8.03	8.34	8.65	8.88	9.05	9.38	9.80	10.06	10.25	10.42
Personnel	4.75	4.86	4.95	5.05	5.16	5.33	5.55	5.62	5.69	5.74
Operation and maintenance	3.28	3.49	3.70	3.83	3.89	4.05	4.25	4.44	4.56	4.68
Total	18.16	18.53	18.65	19.30	20.57	21.75	22.59	23.58	24.51	24.88

Note: Because of rounding, components may not add to the totals shown.

* *Preliminary*

** *Excludes expenditures relating to military personnel on active duty who are engaged in RDTE&S, which are included under operating expenditures.*

Table 4

Dollar Valuation of Estimated Soviet Defense and Space Expenditures, by Resource Category
1962-71

Billion 1968 Dollars

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
RDTE&S**	7.02	7.90	8.81	10.11	11.09	11.93	12.90	13.92	15.08	*15.96*
Investment expenditures	13.55	12.47	11.[illegible]	11.05	12.12	13.16	13.20	13.66	14.18	*13.86*
Procurement	11.88	11.19	10.35	10.36	11.13	12.07	12.24	12.63	13.10	*12.94*
Land armaments and ammunition	0.94	1.01	1.04	1.06	1.15	1.24	1.23	1.25	1.19	*1.03*
Naval ships and boats	2.19	2.04	1.87	2.02	1.79	2.14	2.34	2.63	2.83	*2.99*
Aircraft	2.35	2.01	2.15	2.28	2.07	2.05	2.15	1.90	1.97	*2.03*
Missile systems	3.40	2.93	2.06	1.96	3.08	3.63	3.46	3.69	4.01	*3.82*
Electronic equipment	0.62	0.54	0.51	0.47	0.48	0.45	0.47	0.53	0.61	*0.73*
Nuclear weapons	1.10	1.36	1.39	1.21	1.17	1.11	1.07	1.11	0.95	*0.79*
Other	1.29	1.31	1.33	1.36	1.39	1.44	1.52	1.53	1.54	*1.55*
Facilities	1.67	1.28	0.85	0.69	0.99	1.08	0.95	1.02	1.08	*0.92*
Operating expenditures	30.38	31.32	32.39	33.12	33.64	34.72	36.16	37.06	37.67	*38.10*
Personnel	18.97	19.46	19.88	20.23	20.64	21.30	22.24	22.50	22.75	*22.95*
Operation and maintenance	11.41	11.86	12.51	12.89	13.00	13.42	13.92	14.56	14.92	*15.15*
Total	50.95	51.69	52.42	54.28	56.85	59.80	62.26	64.63	66.93	*67.92*

Note: These dollar valuations are designed to indicate the general level of the Soviet military effort by showing the magnitude of the resources required if purchased in the US. Because of rounding, components may not add to the totals shown.

** Preliminary*

*** Excludes the dollar valuation of expenditures relating to military personnel on active duty who are engaged in RDTE&S, which are included under operating expenditures.*

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Table 5

Estimated Soviet Expenditures for Strategic Attack Forces, by Element
1962-71

Billion 1968 Rubles

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
Intercontinental attack	1.45	1.62	1.42	1.30	2.20	2.71	2.30	2.43	2.56	2.32
LRA heavy bombers	0.31	0.25	0.25	0.21	0.18	0.18	0.17	0.16	0.14	0.14
Ballistic missile submarines**	Negl.	0.01	0.02	0.04	0.04	0.17	0.37	0.51	0.53	0.60
ICBMs	1.14	1.36	1.15	1.05	1.98	2.36	1.76	1.76	1.89	1.58
Peripheral attack	1.97	1.81	1.56	1.31	1.00	0.87	0.92	0.96	1.03	1.00
LRA medium bombers	0.56	0.73	0.84	0.82	0.67	0.54	0.52	0.40	0.30	0.26
MRBMs and IRBMs	1.32	1.00	0.66	0.45	0.29	0.28	0.35	0.52	0.70	0.71
Ballistic missile submarines**	0.09	0.08	0.06	0.04	0.04	0.05	0.05	0.04	0.03	0.03
Joint support	0.07	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total	3.50	3.49	3.01	2.67	3.26	3.64	3.28	3.43	3.64	3.36

Note: The expenditures for strategic attack forces include all outlays for personnel and other operating costs, procurement of all hardware (including nuclear warheads), and construction of facilities for long range attack weapon systems. This mission encompasses surface-to-surface missiles with a range of 600 nautical miles and more ballistic missile submarine systems, and all heavy and medium bombers and tankers assigned to Long Range Aviation. No expenditures for RDT&E are included. Because of rounding, components may not add to the totals shown.

* *Preliminary*

** *Allocation of expenditures for ballistic missile submarines between intercontinental and peripheral attack forces is in accordance with NIE 11-8-70,* **Soviet Forces for Intercontinental Attack.** *Expenditures for all nuclear powered ballistic missile submarines as well as the G-III submarine are included in intercontinental attack spending; expenditures for all other ballistic missile submarines are included in peripheral attack spending.*

Table 6

Dollar Valuation of Estimated Soviet Expenditures for Strategic Attack Forces, by Element
1962-71

	Billion 1968 Dollars									
	1962	1963	1964	1965	1966	1967	1968	1969	1970	*1971**
Intercontinental attack	2.65	3.02	2.87	2.86	4.42	5.51	5.14	5.45	5.75	*5.47*
LRA heavy bombers	0.60	0.47	0.47	0.42	0.40	0.39	0.39	0.37	0.33	*0.33*
Ballistic missile submarines**	Negl.	0.02	0.03	0.11	0.11	0.48	1.02	1.34	1.40	*1.68*
ICBMs	2.05	2.53	2.37	2.33	3.91	4.64	3.73	3.74	4.02	*3.56*
Peripheral attack	3.72	3.27	2.85	2.55	2.14	1.98	2.05	2.12	2.24	*2.18*
LRA medium bombers	1.06	1.22	1.36	1.36	1.19	1.04	1.01	0.78	0.61	*0.55*
MRBMs and IRBMs	2.46	1.87	1.35	1.07	0.83	0.81	0.92	1.24	1.55	*1.55*
Ballistic missile submarines**	0.20	0.18	0.14	0.12	0.12	0.13	0.12	0.10	0.08	*0.08*
Joint support	.12	0.10	0.09	0.09	0.09	0.09	0.09	0.08	0.08	*0.09*
Total	6.48	6.40	5.80	5.50	6.65	7.59	7.27	7.65	8.07	*7.73*

Note: These dollar valuations are designed to indicate the general size of the Soviet strategic attack forces by showing what they would cost if purchased and operated in the US. For a description of the activities covered by these data see the note to Table 5. Because of rounding, components may not add to the totals shown.

** Preliminary*

*** Allocation of expenditures for ballistic missile submarines between intercontinental and peripheral attack forces is in accordance NIE 11-8-70,* Soviet Forces for Intercontinental Attack. *Expenditures for all nuclear powered ballistic missile submarines as well as the G-III submarine are included in intercontinental attack spending; expenditures for all other ballistic missile submarines are included in peripheral attack spending.*

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Table 7

Estimated Soviet Expenditures for Strategic Defense Forces, by Element
1962-71

Billion 1968 Rubles

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
Control and warning systems	0.42	0.43	0.44	0.41	0.40	0.36	0.35	0.37	0.40	*0.46*
Interceptor aircraft	0.53	0.43	0.53	0.55	0.54	0.58	0.65	0.68	0.87	*0.88*
SAMs	0.78	0.66	0.64	0.59	0.66	0.76	1.07	1.14	1.11	*1.22*
ABM systems	0.09	0.13	0.05	0.07	0.12	0.15	0.16	0.15	0.15	*0.13*
Antisatellite systems	0	Negl.	Negl.	0.01	0.01	0.01	0.01	0.02	0.01	*0.01*
Total	1.82	1.65	1.66	1.63	1.72	1.86	2.24	2.35	2.54	*2.70*

Note: The expenditures for strategic defense forces include all outlays for personnel and other operating costs, procurement of all hardware (including nuclear warheads), and construction of facilities for systems assigned to the defense of the USSR against air, missile, and space attack, except the antisubmarine warfare forces, which are included in naval expenditures. This mission encompasses the control and warning network and all SAMs, ABMs, antisatellite systems, and aircraft assigned to PVO Strany (Air Defense of the Homeland). No expenditures for RDT&E are included. Because of rounding, components may not add to the totals shown.

* *Preliminary*

Table 8

Dollar Valuation of Estimated Soviet Expenditures for Strategic Defense Forces, by Element
1962-71

	Billion 1968 Dollars									
	1962	1963	1964	1965	1966	1967	1968	1969	1970	*1971*[a]
Control and warning systems	0.98	0.94	0.97	0.93	0.91	0.84	0.81	0.83	0.89	*1.00*
Interceptor aircraft	1.49	1.21	1.47	1.50	1.47	1.56	1.74	1.81	2.31	*2.32*
SAMs	2.21	2.09	2.08	2.00	2.14	2.31	2.94	3.16	3.16	*3.41*
ABM systems	0.17	0.24	0.09	0.14	0.22	0.27	0.27	0.28	0.31	*0.29*
Antisatellite systems	0	Negl.	0.01	0.02	0.02	0.03	0.03	0.04	0.03	*0.03*
Total	4.85	4.49	4.62	4.58	4.75	5.01	5.79	6.12	6.69	*7.04*

Note: These dollar valuations are designed to indicate the general size of the Soviet strategic defense force by showing what they would cost if purchased and operated in the US. For a description of the activities covered by these data see the note to Table 7. Because of rounding, components may not add to the totals shown.

[a] *Preliminary*

Table 9

Estimated Soviet Expenditures for General Purpose Forces, by Element
1962-71

	Billion 1968 Rubles									
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971*
Ground forces	2.55	2.59	2.66	2.82	3.01	3.14	3.32	3.50	3.45	3.43
Tactical air forces	0.62	0.68	0.74	0.77	0.68	0.63	0.57	0.59	0.53	0.58
Military transport aviation	0.76	0.73	0.66	0.65	0.62	0.60	0.64	0.63	0.62	0.64
Naval forces	1.89	1.90	1.87	1.99	1.95	1.98	1.96	1.99	2.02	2.00
Of which: ASW**	0.37	0.33	0.36	0.46	0.50	0.59	0.62	0.69	0.76	0.81
Total	5.82	5.90	5.93	6.23	6.27	6.35	6.48	6.71	6.62	6.65

Note: The expenditures for general purpose forces include all outlays for personnel and other operating costs, procurement of all hardware (including nuclear warheads), and construction of facilities for systems assigned to Soviet ground, tactical air, military air transport, and naval forces. No expenditures for RDT&E or ballistic missile submarines (which have a strategic mission) are included. Because of rounding, components may not add to the totals shown.

* *Preliminary*

** *Includes all expenditures for systems--surface craft, submarines, and air systems--with a potential for use in an antisubmarine warfare role.*

Table 10

Dollar Valuation of Estimated Soviet Expenditures for General Purpose Forces, by Element
1962-71

	Billion 1968 Dollars									
	1962	1963	1964	1965	1966	1967	1968	1969	1970	*1971**
Ground forces	8.29	8.37	8.42	8.68	9.15	9.54	9.88	10.30	10.28	*10.22*
Tactical air forces	1.57	1.70	1.81	1.86	1.68	1.61	1.48	1.54	1.36	*1.48*
Military transport aviation	1.99	1.92	1.75	1.70	1.63	1.56	1.66	1.65	1.63	*1.67*
Naval forces	5.72	5.70	5.57	5.84	5.69	5.84	5.75	5.88	6.03	*6.00*
Of which: ASW**	1.11	1.02	1.10	1.41	1.56	1.85	1.94	2.17	2.39	*2.47*
Total	17.57	17.68	17.54	18.08	18.15	18.54	18.76	19.37	19.30	*19.37*

Note: These dollar valuations are designed to indicate the general size of Soviet general purpose forces by showing what they would cost if purchased and operated in the US. For a description of the activities covered by these data see the note to Table 9. Because of rounding, components may not add to the totals shown.

* *Preliminary*

** *Includes all expenditures for systems--surface craft, submarines, and air systems--with a potential for use in an antisubmarine warfare role.*