Secret

Intelligence Report

A Dollar Cost Comparison of Soviet and US Defense Activities, 1965-1975

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A Dollar Cost Comparison of Soviet and US Defense Activities, 1965-1975

Key Findings

The reader is cautioned that the dollar cost estimates presented in this report must be viewed in terms of various limitations, adjustments, reliability factors, and conceptual problems which are explained in the "Note to the Reader" on pages 3 and 4.

Total Defense Programs

The estimated dollar costs of Soviet defense programs in 1975 are some $114 billion (1974 prices), more than 40 percent higher than US authorizations.

- If the costs of personnel retirement programs are removed from both sides, the 1975 figure for the Soviets exceeds the US total by nearly 50 percent.
- If all costs for military personnel are subtracted from both sides, estimated dollar costs for Soviet defense programs are more than 25 percent higher than comparable US authorizations in 1975.

For the 1965-1975 period as a whole, the total dollar costs of Soviet programs are roughly equal to US authorizations. They exceed those of the US for every year of the seventies, however, and average 20 percent higher for 1970-1975.

- The estimated dollar costs of Soviet programs (in constant dollars) grow at an average annual rate of about 3 percent over the period.
- US defense authorizations (in constant dollars) decline after 1968 and from 1973 onward are lower than they were in 1965.

Resource Category Comparisons

For 1975, estimated dollar costs of Soviet programs exceed US defense authorizations in all three major resource categories—investment, operating, and RDT&E (research, development, testing, and evaluation).

- In investment, the figure for Soviet forces, almost $35 billion, exceeds that for the US by nearly 85 percent.

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— Estimated dollar costs for operating the Soviet forces in 1975 are more than $65 billion, almost 25 percent higher than comparable US authorizations. In the area of personnel, the larger component of operating costs, the estimate for Soviet programs exceeds US authorizations by more than 70 percent, reflecting the larger Soviet manpower base.

— In RDT&E, dollar costs of Soviet programs are about two-thirds higher in 1975.

The trends in the distribution of US authorizations and estimated dollar costs of Soviet programs among the resource categories over the 1965-1975 period are quite different. The proportions are relatively stable for the Soviet forces. The US authorizations, however, shift considerably, with the proportion for investment and RDT&E declining from more than 40 percent of the total in 1965 to about one-third in 1975.

Military Mission Comparisons

Strategic Attack Forces. Estimated dollar costs of Soviet intercontinental attack programs, excluding RDT&E, exceed US authorizations in every year beginning in 1966 and—at $8.5 billion—are more than twice the US level in 1975.

— Dollar costs of Soviet ICBM programs are more than four times US authorizations over the period 1965-1975 as a whole and almost seven times the US level in 1975, reflecting the new wave of ICBM deployments.

— Dollar costs of Soviet SLBM programs exceed US SLBM authorizations beginning in 1968 and are 30 percent greater in 1975.

— US intercontinental bomber authorizations amount to about five times the dollar costs of Soviet intercontinental bomber programs over the period as a whole.

The Soviet Union maintains a large peripheral strategic attack force for which the US has no direct counterpart. The estimated dollar costs for this mission in 1975 are $3.8 billion—about half those for intercontinental attack.

Strategic Defense Programs. The USSR has traditionally maintained much larger strategic defense forces than the US. For 1975, the estimated dollar costs of Soviet strategic defense programs are $6 billion, some nine times the level of US authorizations. For the period 1965-1975 as a whole, the Soviet level is four times greater.

General Purpose Forces. The estimated dollar costs of Soviet general purpose forces increase continuously over the 1965-1975 period, passing the level of US authorizations in 1970. In 1975 they are $30.7 billion, exceeding US authorizations by 70 percent.

Note to the Reader

The military establishments of the Soviet Union and the US are difficult to compare because they differ considerably in missions, structure, and characteristics. The common denominator used here for comparative sizing is dollar cost. The approach is to estimate how much it would cost in dollars to reproduce individual Soviet military programs in the US, and then to compare these estimates year by year with US Department of Defense authorizations for similar programs. Such an approach can provide a general appreciation of the overall sizes of the defense programs in the two countries. The dollar cost data also provide a means for aggregating dissimilar elements of each country's military programs into comparable categories and thus can reveal trends and relationships between the two defense establishments that are difficult to discern and measure in other ways.

Limitations. The reader is cautioned, however, that any conclusions drawn from this analysis must be tempered by an appreciation of what it does *not* do:

- It *cannot be used alone* to draw inferences about the relative military effectiveness or capabilities of US and Soviet forces. Other data, such as the size and technical characteristics of the forces, doctrine and tactical concepts, morale, and command and control capabilities, must also be considered for such judgments.
- It *does not* measure actual Soviet defense expenditures or their burden on the Soviet economy. These questions are addressed by different analytical techniques yielding estimates of the ruble costs of Soviet military programs.*

US Data. The basis for the US financial data presented is the Total Obligational Authority (TOA) series in *The Five-Year Defense Program* issued by the Department of Defense in January 1976. The US authorization data have been converted to constant prices and have been adjusted to achieve accounting coverage comparable with the dollar estimates made for the USSR. The US figures in this report, therefore, do not match actual budget authorizations or appropriations. The major accounting adjustments are as follows:

- Nonpersonnel authorizations for military aid and civil defense are excluded.
- Nonpersonnel authorizations for military research, development, testing, and evaluation (RDT&E) are aggregated into one account.
- Energy Research and Development Administration (ERDA) authorizations related to nuclear weapons and naval reactors are included.

Price Base. The dollar data presented here are expressed in average calendar year 1974 US resource prices. A constant price base is used so that changes in monetary levels from year to year reflect changes in forces and programs rather than the effects of inflation. The US authorization data are for fiscal years, whereas the dollar cost data for the Soviet forces are for calendar years.

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* See SR 76-10121, *Estimated Soviet Defense Spending in Rubles, 1970-1975,* May 1976

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Reliability. The estimates presented in this report should be viewed as having a margin of error which, for some items, could be substantial. Our confidence is highest in the aggregate totals but is considerably less at lower levels of aggregation. Moreover, the reliability of our dollar cost estimates varies from category to category, depending on the reliability of our estimates of the size and characteristics of Soviet military forces and on the accuracy of the cost factors applied to that base.

We place our greatest confidence in the investment category—procuring equipment and constructing facilities—which makes up about 30 percent of total estimated dollar costs of Soviet defense programs in 1975. Our information on the deployment levels of major units and weapon systems is good, and our confidence in the dollar costs applied to these major elements is reasonably high.

Manpower costs, comprising more than 40 percent of the total estimated dollar costs of Soviet programs in 1975, represent the largest and most reliable component in the operating category. For other operating costs, however, neither the quantity nor the quality of information is as good as that for data about the weapons and manpower in the forces. Estimates of these operating costs, some 15 percent of the 1975 total, are based principally on US analogy, adjusted when possible to reflect differences in US and Soviet operating practices.

The estimated dollar costs for Soviet RDT&E programs should be regarded as significantly less reliable than those for either investment or operating. There is considerable uncertainty about the basic data, most of which come from Soviet publications. There are, moreover, serious difficulties both in the estimation of the distribution of Soviet RDT&E costs between the military and civilian sectors and in the conversion of these estimates from rubles to dollars.

On balance, our best judgment is that the overall dollar cost estimate for Soviet defense programs is unlikely to be in error by more than about 15 percent. This judgment, while informed, is nonetheless subjective and not the result of statistical measurement.

Comparisons. The reader should bear these uncertainties in mind when considering the dollar cost comparisons made in this paper. Because of the problems of comparing such disparate activities, the limitations of the Soviet data, and the organization of the US data, these comparisons should not be considered precise measurements. This is particularly true in areas where the difference between US and Soviet levels is estimated to be small or where the comparisons are made at a low level of aggregation.

The Index Number Problem. Finally, dollar cost calculations tend to overstate Soviet programs relative to the US because of a basic measurement problem common to all international economic comparisons and known to economists as the index number problem. If Soviet decisionmakers were confronted with the US dollar price structure that is used for our dollar cost analysis, rather than the ruble prices they in fact have to pay, they undoubtedly would choose a different and cheaper (in dollar terms) mix of manpower and equipment inputs. While it is not possible to quantify the degree of overstatement that this consideration introduces, it is clearly not large enough to alter the basic conclusion that the Soviet military program overall is currently significantly larger than that of the US.

CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
July 1976

INTELLIGENCE REPORT

A Dollar Cost Comparison of Soviet and US Defense Activities, 1965-1975

Preface

This report presents the latest estimates of the dollar costs of Soviet defense programs and compares them with US defense authorizations. The dollar cost data for Soviet programs reflect the cost of reproducing those programs in the US, using US cost factors and pay rates.

The Soviets, however, would view the distribution of their total defense effort quite differently from the way it is shown in this report. Neither the system of accounts nor the structuring of expenditures by military mission is the same for the Soviet Ministry of Defense and the US Department of Defense. Most importantly, the price structures in the two countries are substantially different. The Soviet view, of course, would influence program choices in the USSR. *(See "Note to the Reader" on the preceding pages.)*

This report compares data for Soviet and US programs for the period 1965 through 1975, and it provides a detailed supplement to the unclassified study issued in February of this year entitled *A Dollar Comparison of Soviet and US Defense Activities, 1965-1975* (SR 76-10053). It supersedes a study issued in December 1974 entitled *Soviet Spending for Defense: A Dollar Cost Comparison of Soviet and US Defense Activity* (SR IR 74-7), which covered the period 1964 through 1974.

Comments and queries regarding this publication are welcome. They may be directed to [redacted] *of the Programs Analysis Division, Office of Strategic Research,* [redacted] *extension* [redacted] *or* [redacted]

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The report contains three major sections and four annexes. The first section summarizes the overall trends in US and Soviet defense programs as measured in dollars. The second compares them by resource categories--investment, operating, and RDT&E. The third section discusses the cost data and trends according to the major military missions--intercontinental and peripheral attack, strategic defense, and general purpose forces--and includes under a separate entity called "command, support, and other" all data for forces and programs which cannot be related directly to a combat mission.

Annex A examines US and Soviet production data for selected military weapon systems, showing the emphasis each country has placed on its various military programs over time. An explanation of the methodology used to cost Soviet programs and to structure the cost estimates to achieve comparability with US authorizations follows in Annex B. Annex C discusses changes that have occurred since the last paper (SR IR 74-7) in the data base that underlies these figures. Statistical details on the costs of programs and forces are contained in Annex D.

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Approved For Release 2004/11/03 : CIA-RDP83M00171R001100010002-3

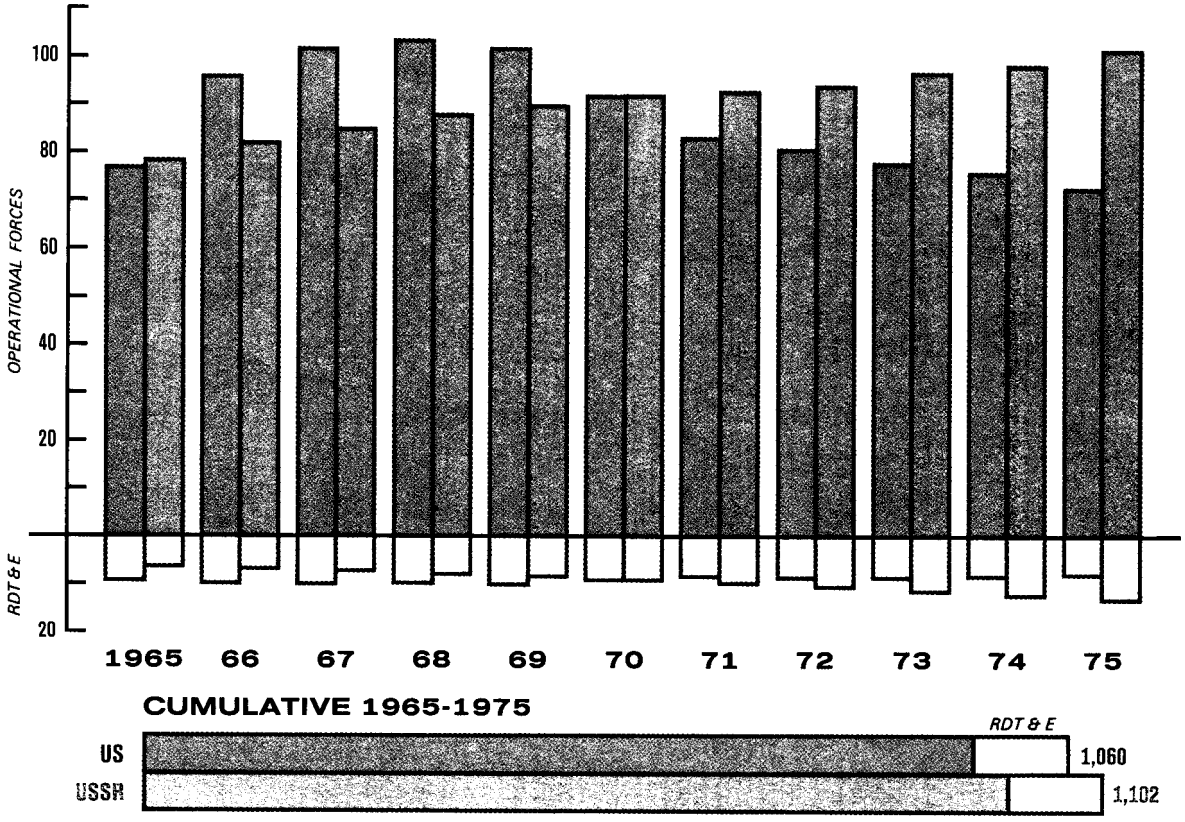
Charts

FIGURE 1

TOTAL US and SOVIET DEFENSE PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US

BILLION 1974 DOLLARS



NOTE: The dollar figures for the USSR are estimates of what the Soviet forces and programs would cost if developed, purchased, and operated in the US. For operational forces the figures are obtained by directly costing individual Soviet forces and programs. The estimated dollar costs of Soviet RDT&E are derived in the aggregate using a less certain methodology and should be viewed only as rough measures. For this reason they are shown separate from the dollar costs of operational forces. The US defense expenditure series is based on Total Obligational Authority (TOA) data from *The Five-Year Defense Program*, January 1976 (Department of Defense). The US data are in fiscal year terms and the estimated dollar costs of Soviet programs are in calendar year terms.

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Total Defense Programs

For 1975 the estimated total dollar cost of Soviet defense programs, about $114 billion expressed in 1974 prices, is more than 40 percent higher than the US total defense authorization of $80 billion. If the costs of pensions for retired personnel are excluded from both sides, the dollar cost for Soviet programs is 50 percent greater than that for the US programs. For the 1965-1975 period as a whole, the total dollar costs of the Soviet programs are roughly equal to cumulative US authorizations; in the seventies, however, the Soviet total exceeds that of the US by 20 percent. *(See Figure 1.)*

The trend shown in the dollar costs of Soviet defense programs is one of continuous growth, averaging about 3 percent a year--from an estimated $85 billion in 1965 to $114 billion in 1975. This growth trend for the period is evident in nearly all major components of the Soviet defense establishment.

Quite a different picture is seen for the US, however. Despite increases in the *current dollar costs* of US defense programs, defense authorizations expressed in *constant dollar terms* decline continuously after the peak of 1968, and from 1973 on are below the 1965 level.

Resources

For 1975, estimated dollar costs of Soviet programs exceed US defense authorizations in all three major resource categories: in investment, the category in which we have the highest confidence, they are nearly 85 percent greater than the US figure; in operating costs, nearly 25 percent greater; and in RDT&E, about two-thirds higher. This contrasts with the Vietnam-era peak US spending year of 1968, for which US authorizations exceed estimated dollar costs of Soviet programs in all three categories by 15 to 25 percent.

For the period 1965-1975 as a whole, the composition of the dollar costs for the two countries is

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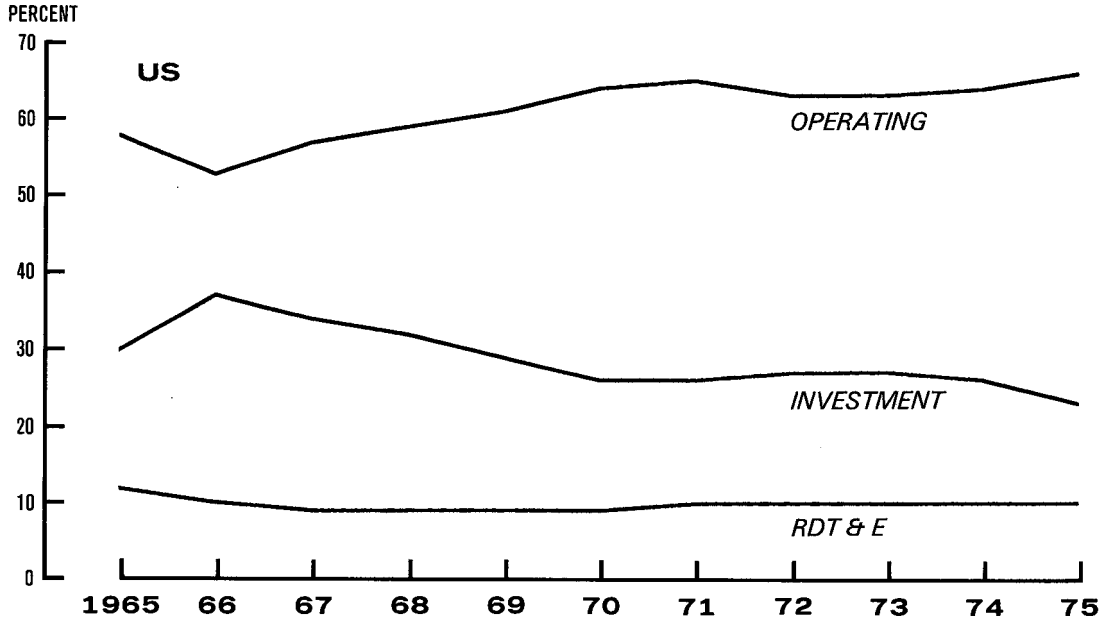
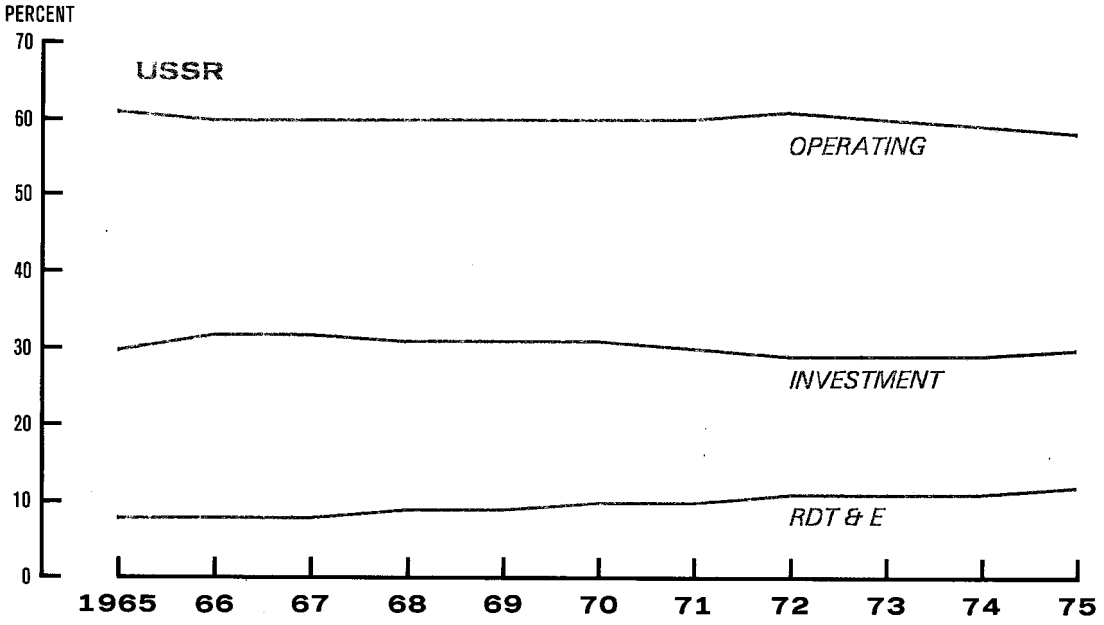
FIGURE 2

DISTRIBUTION by RESOURCE CATEGORY of US and SOVIET DEFENSE PROGRAMS, 1965-1975

A Percentage Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US





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similar: about 60 percent for operating, 30 percent for investment, and 10 percent for RDT&E. The distribution for Soviet programs shows little change throughout the period. *(See Figure 2.)* The US share for investment and RDT&E, however, declines from more than 40 percent of the total in 1965 to about one-third in 1975.

Military Missions

For 1975, estimated dollar costs of Soviet programs exceed US authorizations for all major military missions. The estimated dollar costs of Soviet intercontinental attack programs are more than twice US authorizations. For general purpose forces they are 70 percent greater, and in the area of strategic defense they are more than nine times the US level.

Over the 1965-1975 period, the bulk of total costs for both countries falls under what is labeled "command, support, and other"--about 45 percent of estimated Soviet dollar costs and almost 60 percent of US authorizations. The largest combat mission--the general purpose forces--comprises about one-fourth of the total for both countries. The remainder is spread among the strategic forces missions and RDT&E.

The distribution of dollar costs among the major Soviet missions does not change appreciably over the period. There are moderate increases in the portion of the total devoted to intercontinental attack and small decreases in that for strategic defense and peripheral attack. "Command, support, and other" declines from about 50 to 45 percent of total estimated costs. The absolute level of dollar costs for all missions, however, is higher at the end of the period than at the beginning.

For the US, the proportion of authorizations for the various missions also is relatively unchanged over the period, although the share of authorizations for the strategic forces missions decreases slightly while the "command, support, and other" portion varies between less than 55 and more than 60 percent. In absolute terms, US authorizations in 1975 are lower for all combat missions and RDT&E than in 1965.

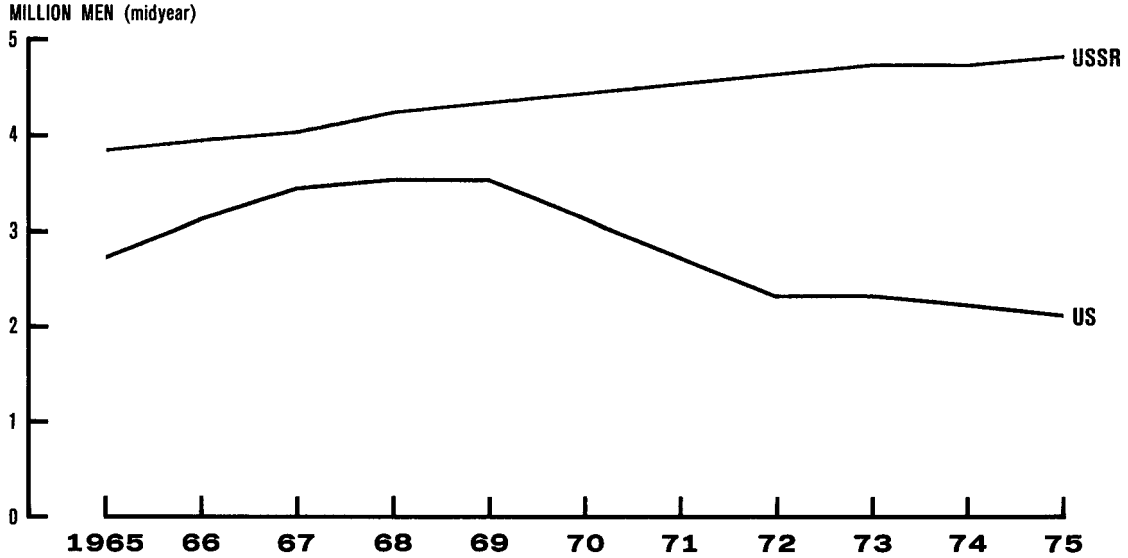
"Command, support, and other" is at approximately the same level as it was in 1965.

Manpower

The Soviets have historically maintained a large military force and given it a broader range of responsibilities than that of the military force in the US. Predictably, then, the estimated level of Soviet military manpower exceeds that of the US throughout the period 1965 to 1975. *(See Figure 3.)* The trend over the period for the Soviets is one of gradual but continuous growth--a total increase of about one million men, most of it in the ground forces. US active military manpower peaks in the late sixties and declines in every year thereafter, to a 1975 total lower than that of 1965. The Soviet military manpower total of 4.8 million in 1975 includes several categories of personnel for which the US has no counterparts and which do not

FIGURE 3

US and ESTIMATED SOVIET ACTIVE MILITARY MANPOWER, 1965-1975



NOTE: The manpower totals for the USSR include border guards, internal security troops, and railroad and construction troops, for which the US Armed Forces have no counterpart.

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have a strictly military function. These include the border guards, internal security troops, and railroad and construction troops. If these are removed from the Soviet military manpower calculations, the total is just over 4 million--still nearly twice US military manpower in 1975.

Effect of Manpower Costs. In estimating the dollar costs of Soviet military manpower, the pay rates for the US all-volunteer force have been used for the entire 1965-1975 period. Because of the high level of Soviet military manpower, this results in large dollar costs for military manpower, which in 1975 are more than 70 percent higher than US authorizations. The estimated dollar costs of the overall Soviet defense effort are still higher than US authorizations from 1972 on if the effect of those pay rates is removed.

-- If all costs for military personnel are subtracted from both sides, total estimated dollar costs for Soviet defense programs are more than 25 percent higher than total US authorizations in 1975.

-- If the cost of Soviet military manpower is calculated at prevolunteer 1970 US pay rates (converted to 1974 dollars), total estimated costs for the Soviet programs are one-third greater than 1975 US authorizations. Under this calculation, the dollar costs for Soviet military manpower still exceed US military manpower authorizations by about 45 percent.

Impact of Pension Costs. The Soviet and US military pension systems differ considerably in structure and in their dollar costs. The estimated dollar cost of Soviet pensions is a very small share of total dollar costs and remains relatively constant over the period 1965-1975. US military retirement programs are broader in coverage and since about 1970 have been growing at an accelerating rate. Between 1969 and 1975 the share of US authorizations devoted to retirement more than doubled and for 1975 constitutes more than 5 percent of the total.

If these retirement costs are subtracted from the totals for both countries, the effect is insignificant

until the late sixties. From 1970 onward, eliminating retirement costs has the effect of increasing in each year the proportion by which the dollar cost of Soviet defense programs exceeds that of the US. In 1975, if pension costs are subtracted from the totals for both countries, the Soviet total becomes nearly 50 percent higher than US defense authorizations--as opposed to about 40 percent higher when these costs are included.

Resource Categories

The comparisons of estimated dollar costs for Soviet defense programs and US defense authorizations are presented in this section by resource category--investment, operating, and RDT&E.

-- The investment category covers the dollar costs of programs to modernize or expand forces through the procurement of equipment, including major spare parts, and construction of facilities.

-- Operating costs are those associated with maintaining current forces, including personnel costs.

-- Dollar costs for RDT&E are those for programs devoted to exploring new technologies, developing advanced weapon systems, and improving existing systems.

Investment

For 1975, the estimated dollar costs of Soviet investment programs are nearly $35 billion, almost 85 percent greater than US authorizations for investment. Weapon system procurement is the driving component for both countries, accounting for about 90 percent of the investment totals for each throughout the 1965-1975 period. *(See Figure 4.)*

FIGURE 4

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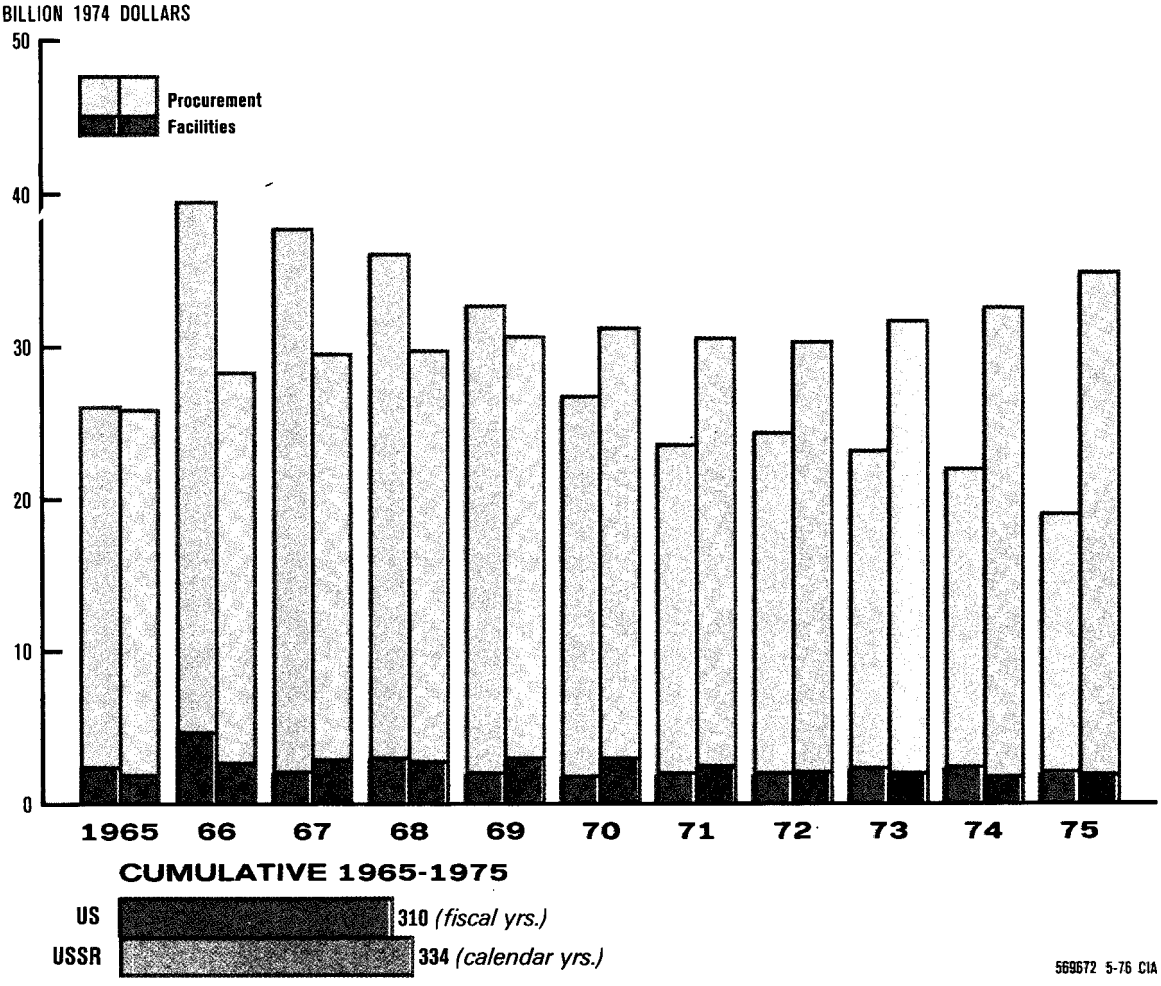
US and SOVIET MILITARY INVESTMENT, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



The estimated total costs of Soviet investment for the entire period are less than 10 percent greater than US authorizations, but for the last five years are more than 40 percent greater. Soviet investment programs between 1965 and 1975 reflect an increase of 22 divisions in the ground forces and the acquisition of almost 90 major naval surface combatant ships, over 50 nuclear-powered ballistic missile submarines (SSBNs), over 2,700 ICBMs, almost 300 heavy and medium bomber-type aircraft, and more than 6,250 fighter aircraft.*

The estimated dollar costs of Soviet investment generally grow throughout the 1965-1975 period, surpassing US authorizations in 1970. They continue at levels higher than those of the US through 1975, dipping only slightly in 1971 and 1972 during a hiatus in strategic weapon deployment. Estimated dollar costs of Soviet investment programs rise by almost $9 billion from 1965 to 1975, an average increase of 3 percent a year. This 10-year rise takes on particular significance when viewed as the continuation of an active military investment program already under way in 1965, including the procurement of the SA-2 surface-to-air missile (SAM) and SS-7 ICBM, as well as a new generation of weapon systems such as the SS-9 and SS-11 ICBMs.

US authorizations for investment during this period reach their peak in 1966 and fall by 1975 to about $19 billion, less than half the 1966 level. US forces underwent a general reduction after the Southeast Asia involvement. By 1975 the US intercontinental bomber force and the number of major surface combatant ships in the US Navy were about half their 1965 levels. Strategic defense interceptors were about one-third and total active manpower about three-quarters of their 1965 levels. As a share of the total, US investment declines from more than a third of total authorizations in 1966 to less than a quarter in 1975. On the other hand, the estimated dollar cost of Soviet investment remains at about 30 percent of the total throughout the period.

* For a more detailed discussion of Soviet production of weapons, see Annex A.

Operating

Personnel costs--including those associated with pay and benefits to military retirees as well as active and reserve personnel--make up the major portion of this resource category. The remaining portion covers the operation and maintenance (O&M) of the military forces. *(See Figure 5.)*

For 1975, the total estimated dollar cost of operating Soviet defense programs is $65 billion, almost 25 percent greater than comparable US authorizations. For the 1965-1975 period as a whole, estimated operating costs for the Soviets are less than 5 percent higher than US authorizations, but are more than 10 percent greater for the seventies.

Estimated dollar costs for operating Soviet forces increase by more than one quarter between 1965 and 1975. They constitute a nearly constant 60 percent of the defense costs, reflecting an increase in manpower as well as the increasing technological sophistication of the forces.

After peaking in 1969, US authorizations for operating fall by almost one-fourth through 1975. US operating authorizations account for almost two-thirds of the total in 1975.

Dollar cost estimates for Soviet military personnel show sustained growth between 1965 and 1975. Through 1969, US personnel authorizations rise, reflecting the involvement in Southeast Asia, but they decline by 1975 to approximately 5 percent below the 1965 level. Estimated dollar costs for Soviet personnel account for almost three-quarters of operating costs for the period as a whole, while US personnel authorizations account for just over half. Estimated dollar costs for Soviet personnel account for a larger portion of operating costs because the Soviet forces are more manpower intensive.

Contrary to trends in the other resource categories, US authorizations for O&M are larger every year than the estimated cost of Soviet programs. In the sixties this is largely a result of the involvement in Southeast Asia. There also is a difference in operating

FIGURE 5

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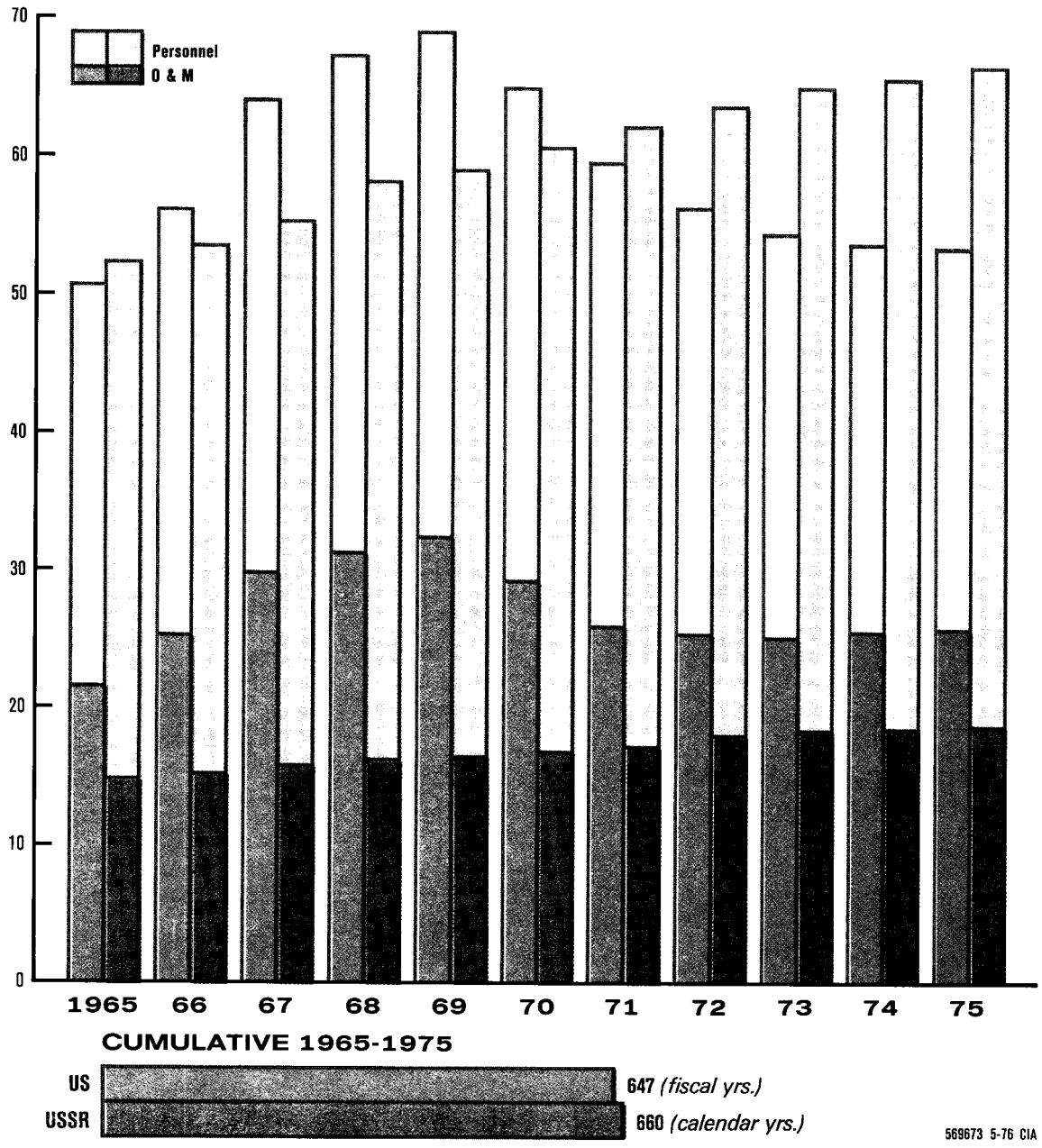
OPERATING COSTS for US and SOVIET FORCES, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



concepts that has an effect throughout the period--in general, the US tends to operate its equipment more than the Soviets, while the Soviets use more simulation in training. US authorizations for O&M in 1975 are almost 40 percent greater than comparable estimated dollar costs for the Soviets.

RDT&E

The dollar costs of Soviet military RDT&E are estimated in the aggregate and include RDT&E programs for military uses of nuclear energy. These costs grow throughout the 1965-1975 period and exceed comparable US authorizations by increasing amounts in the seventies. To achieve comparability, the US data include all Department of Defense authorizations for RDT&E and defense-related RDT&E authorizations of the Energy Research and Development Administration (ERDA).

Estimates of dollar costs for Soviet RDT&E programs are based on analysis of published Soviet data and are considerably less certain than any other body of data in this report *(see Annex B)*.

Our understanding of the level of activity in Soviet RDT&E programs is, in fact, much better than our ability to estimate their dollar costs. In general, the Soviet level is high relative to that of the US. This is especially true in the area of strategic offensive systems. For instance, during the period covered by this report there was observable development activity by the Soviets on seven entirely new ICBMs and two new SLBMs, as well as several modifications to deployed strategic missile systems. The US, during the same period, developed two modifications to the Minuteman ICBM, a new version of the Polaris SLBM, and the new Poseidon SLBM. Thus, in spite of the uncertainties associated with our cost estimates in this area, we are confident that the *level* of Soviet military RDT&E *activity* is high, and that the long-term trend is one of growth.

Military Missions

In this section the investment and operating data for the US and USSR are separated and discussed according to combat mission--intercontinental attack, peripheral attack, strategic defense, and general purpose forces. This is not the way the Soviets themselves organize their military missions, nor does it represent the way they would view the allocation of their resources for defense. Mission data are organized along the lines of the Department of Defense Five-Year Defense Program, the basic source for the US data. The purpose of this categorization is to present the estimated dollar costs of Soviet programs in a format that permits comparison by categories often used in US defense analysis.

Only combat units and operational defense units are included in the force missions *(see Annex B)*. All costs for command and support activities involving force missions are aggregated under "command, support, and other." "Other" costs include those for reserve, retired, and civilian personnel; costs of nuclear weapons;* and all costs (except RDT&E) which, because of present data limitations, cannot be ascribed to other missions.

Intercontinental Attack

This mission includes the strategic weapon systems and manpower which are designated for an intercontinental attack role. Cumulatively over the 1965-1975 period, the Soviet intercontinental attack forces account for about 7 percent of total estimated dollar costs of Soviet defense programs. Only the strategic defense and peripheral attack missions represent smaller percentages of the Soviet total in dollar terms.

Land-based ICBM systems, ballistic missile submarines for intercontinental attack, and intercontinental bombers are the components of the intercontinental

* Nuclear weapons costs cannot be allocated among the combat missions because the US data are based on ERDA authorizations which are not broken down into weapon categories.

attack mission. For 1975, ICBM programs generate almost two-thirds of the estimated dollar costs for this mission, and missile submarine programs account for about 30 percent.

At $8.5 billion, the estimated dollar cost of programs allotted to the Soviet intercontinental attack mission in 1975 is more than twice the authorization for comparable US programs. Measured in dollar terms, Soviet ICBM programs are nearly seven times the level of US programs in 1975. The estimated dollar costs of Soviet ballistic missile submarine programs for intercontinental attack are 30 percent higher than US authorizations. On the other hand, US authorizations for intercontinental bomber programs are about three times the estimated dollar cost of the comparable Soviet programs. *(See Figure 6.)*

Over the period as a whole, estimated dollar costs for Soviet intercontinental attack forces amount to one and one-half times US authorizations. This is primarily the result of heavy Soviet investment in both ballistic missile submarines and land-based ICBMs during the period, while much US investment in comparable programs occurred prior to 1965. Also, the larger size of Soviet missiles and shorter production runs caused by the multiplicity of systems have contributed to making the estimated dollar costs of Soviet ICBM programs higher than those of comparable US programs. The estimate of Soviet forces reflects two periods of major ICBM deployment: that for the SS-9, SS-11, and SS-13 missiles in the late sixties and early seventies, and the current heavy investment in the new, MIRVed ICBMs--the SS-17, SS-18, and SS-19.

Estimated dollar costs for Soviet ballistic missile submarine programs show an upward trend through the decade and reflect the procurement of submarines and missiles for the entire Y class fleet and, beginning in the seventies, for the D class. No new heavy bombers have been added to the Soviet force over the period (Backfire costs are included in peripheral attack).

US intercontinental attack authorizations are somewhat lower in 1975 than in 1965. Costs associated with US bombers decreased as use of the bomber fleet in

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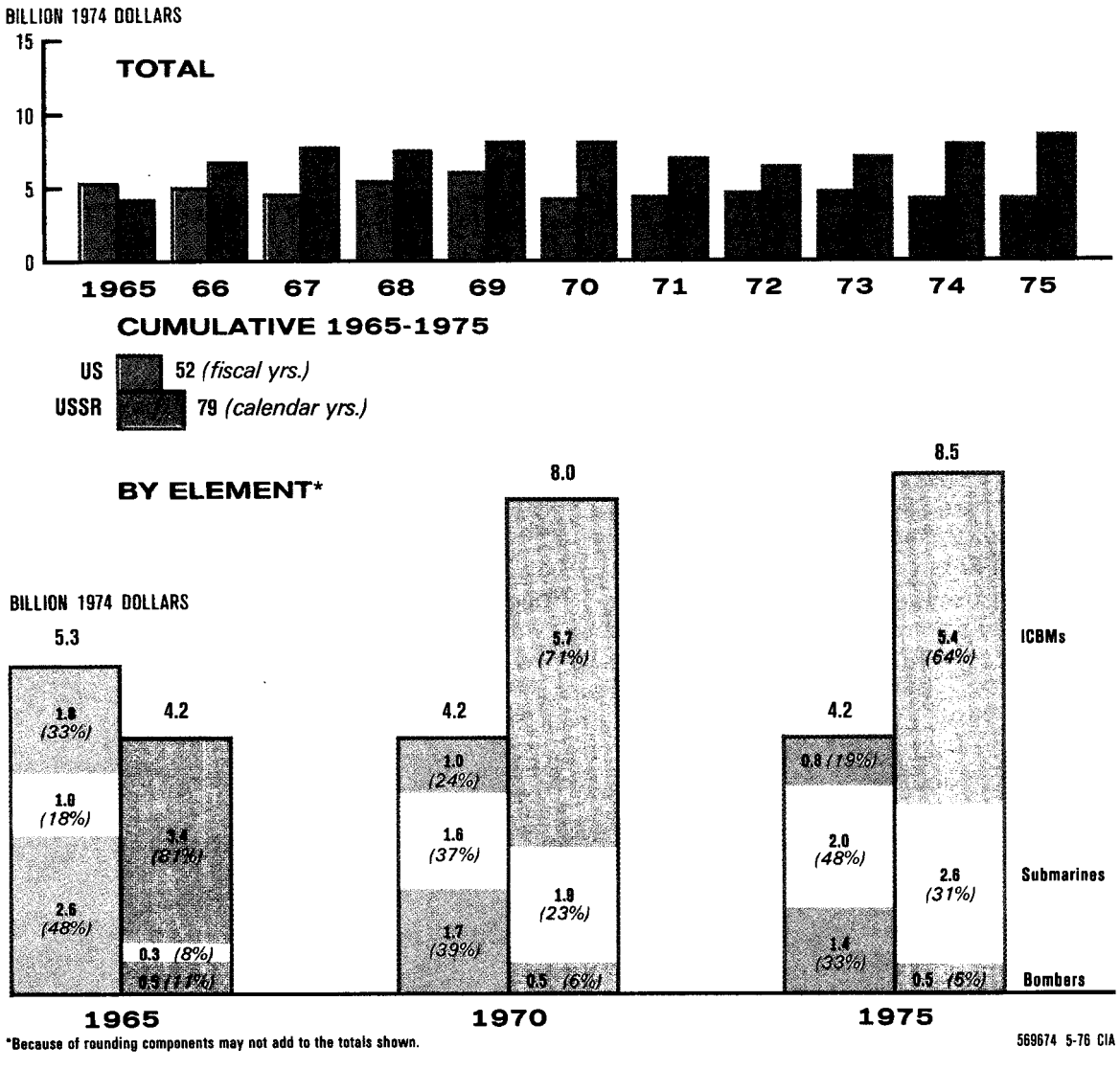
FIGURE 6

TOTAL US and SOVIET INTERCONTINENTAL ATTACK PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



*Because of rounding components may not add to the totals shown.

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Southeast Asia was discontinued* and FB-111 production was completed. Authorizations for ballistic missile submarines rose over the period. The last Polaris SSBN was completed, Polaris and then Poseidon missile costs were incurred, and the first Trident authorizations appeared in 1973. US land-based intercontinental ballistic missile costs during the 1965-1975 period were largely those associated with upgrading the Minuteman force.

ICBMs. The estimated dollar cost of Soviet land-based ICBM programs in 1975 is about $5.4 billion, as compared with about $0.8 billion in US authorizations for ICBMs. Estimated dollar costs of Soviet ICBM programs over the entire 1965-1975 period are almost four and one-half times US authorizations for ICBMs. During the period the Soviets began to deploy the SS-9, SS-11, and SS-13, and estimated dollar costs--which peak in 1967 at about $6.5 billion--reflect this buildup occurring between 1966 and 1971. These programs were completed by 1972, when estimated dollar costs for Soviet ICBMs drop. In 1973, early efforts for the new generation of ICBMs--the SS-17, SS-18, and SS-19--cause an upturn in estimated dollar costs which continues through the rest of the period. *(See Figure 7.)*

On the other hand, by 1965 the US had already deployed its large liquid-fueled Atlas and Titan missiles, and deployment of its smaller, solid-fueled Minuteman was rapidly being completed. US authorizations, which remain relatively steady at close to $1 billion after 1965, reflect the upgrading of the Minuteman force and operating costs.

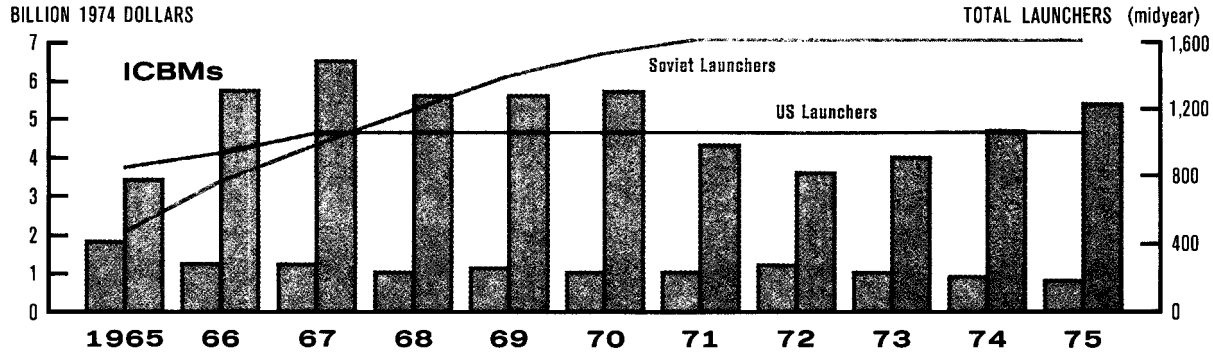
Ballistic Missile Submarines for Intercontinental Attack. This element includes all US ballistic missile submarine systems and the Soviet ballistic missile submarines which have an intercontinental attack role. Soviet ballistic missile submarines which have a peripheral attack function are included in the strategic peripheral mission. For both countries, non-strategic or attack submarines are included with general purpose naval forces.

* The Department of Defense includes all costs of US heavy bomber operations in this mission.

FIGURE 7

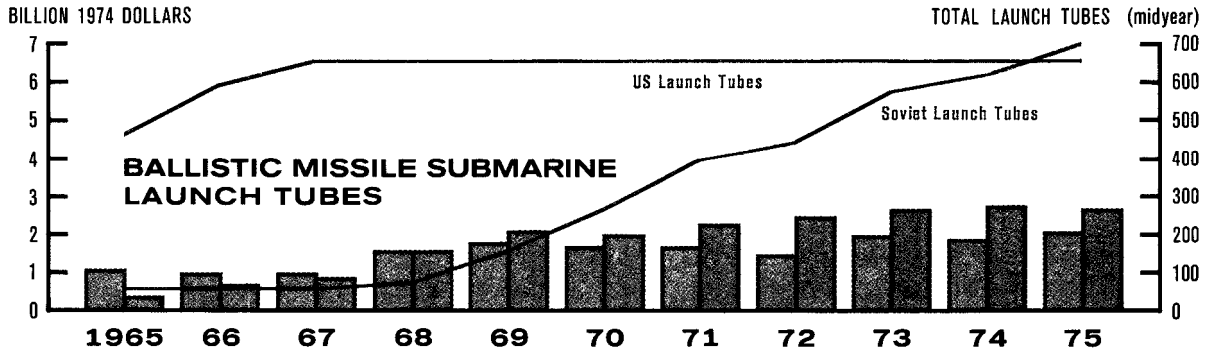
ELEMENTS of US and SOVIET INTERCONTINENTAL ATTACK PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



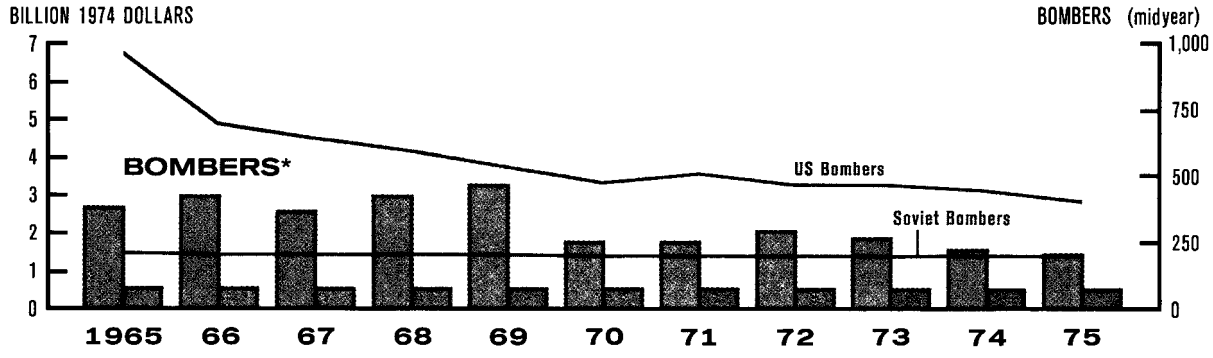
CUMULATIVE 1965-1975

US 12 *(fiscal yrs.)*
USSR 54 *(calendar yrs.)*



CUMULATIVE 1965-1975

US 16 *(fiscal yrs.)*
USSR 18 *(calendar yrs.)*



CUMULATIVE 1965-1975

US 24 *(fiscal yrs.)*
USSR 5 *(calendar yrs.)*

*Includes tankers and reconnaissance aircraft assigned to the intercontinental bomber mission.

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At $2.6 billion, the estimated dollar costs of Soviet ballistic missile submarine programs for 1975 are 30 percent higher than US authorizations. For the entire 1965-1975 period, the estimated dollar costs for Soviet programs exceed those of the US by about 20 percent.

Rising dollar costs for Soviet programs between 1965 and 1969 are caused by production of the Y class submarine with the SS-N-6 missile. In the early seventies another upward trend begins, reflecting the D class program with its longer range missile, the SS-N-8.

The US, in contrast, completed production of its Polaris ballistic missile submarine force in the early sixties. Operating expenditures and costs associated with the upgrading of the Polaris system and the shift from Polaris to Poseidon missiles determine the trend through 1972, with expenditures for the Trident program beginning in 1973.

Intercontinental Bombers. This category includes the heavy bomber systems and other aircraft which have an intercontinental attack role as their primary mission. Costs of heavy bomber operations are included here even though the operations may have been non-strategic in nature--for example, the use of the US bomber fleet in Southeast Asia. Estimated dollar costs of the Soviet Badger, Blinder, and Backfire strategic bombers are included under strategic peripheral attack.*

In 1975, the estimated dollar costs of Soviet intercontinental bomber programs are about one-third as large as authorizations for US heavy bombers. Over the 1965-1975 period, estimated costs for Soviet programs are about one-fifth of US authorizations for comparable programs.

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* All intelligence agencies except DIA, Air Force, and Army believe it unlikely that the Backfire bomber will be specifically assigned to intercontinental attack missions. DIA and Army believe that it is premature to judge Soviet intentions for future employment of the Backfire force, and Air Force believes that some portion of the force would be used for missions against the continental US. See NIE 11-3/8-75, *Soviet Forces for Intercontinental Attack Through the Mid-1980s*, 17 November 1975.

The relatively low level of estimated dollar costs for the Soviet intercontinental bomber program reflect the static nature of the force. As no new heavy bombers are procured over the 1965-1975 period, only operating costs of the existing Bear and Bison bomber fleet are incurred.

Costs associated with US bombers decreased as use of the bomber fleet in Southeast Asia ceased, production of the FB-111 was completed, the B-58 was phased out, and some older B-52s were retired. US bomber authorizations remain at a level more than three times the estimated dollar costs of the Soviet program, reflecting the larger size of the US force, heavier US operating and training schedules, and the B-52 modernization program.

Strategic Peripheral Attack

Included in peripheral attack are the Soviet forces--MRBMs, IRBMs, medium bombers, and some ballistic missile submarines--whose mission is largely confined to attacking targets along the periphery of the USSR.* The US has no direct counterpart to this peripheral attack mission.**

In 1975 total estimated dollar costs for this mission are $3.8 billion, about 45 percent of the intercontinental attack effort (this relationship is true for the period 1965-1975 as a whole). The estimated dollar costs of Soviet peripheral attack programs rise somewhat after 1971 as a result of the procurement of the Backfire bomber and the SS-X-20 IRBM program. This upward trend follows a period of decline during the latter half of the sixties, when there is relatively little investment in new peripheral attack systems and operating costs dominate the total.

* A portion of the G and H class ballistic missile submarine force was assigned intercontinental attack missions until the early seventies, and the dollar costs associated with these submarines are included in the intercontinental mission until that time.

** US forward-based attack aircraft are included in the tactical air portion of the general purpose force mission.

Land-based missiles and peripheral bombers account for nearly all the dollar costs during the period. The SS-4 MRBM, whose deployment reached its peak in 1965 with some 600 launchers, has substantial dollar operating costs. Dollar costs of operating over 600 medium bombers are another significant part of the peripheral attack total. Dollar costs for the G and H class ballistic missile submarines--which are largely for operating but also include costs for conversion and procurement of SLBMs--constitute a relatively modest share of peripheral attack.

Strategic Defense

The strategic defense mission includes all US and Soviet elements assigned the role of defense against strategic air or missile attack. It does not include those systems whose purpose is to provide protection in a tactical role; these are accounted for within the general purpose mission.

The Soviet surface-to-air missile element accounts for about 40 percent of total estimated dollar costs for strategic defense in 1975. Interceptors account for more than 30 percent, control and warning for over 20 percent, and the ABM program for about 5 percent.

US and Soviet strategic defense programs exhibit considerably different patterns during the 1965-1975 period. *(See Figure 8.)* Cumulatively, estimated dollar costs for Soviet strategic defense are about 6 percent of total estimated costs for all defense programs. This contrasts with US authorizations for strategic defense, which are less than 2 percent of the total. In 1975, estimated dollar costs for Soviet programs are $6 billion, nine times the level of US authorizations, although for the period as a whole they are only about four times as great.

The estimated dollar costs of Soviet forces show a change in allocation over the period, with both surface-to-air missile and control and warning costs gradually accounting for more of the total, while interceptor programs decline. The ABM effort continues to account for only a small portion of the total.

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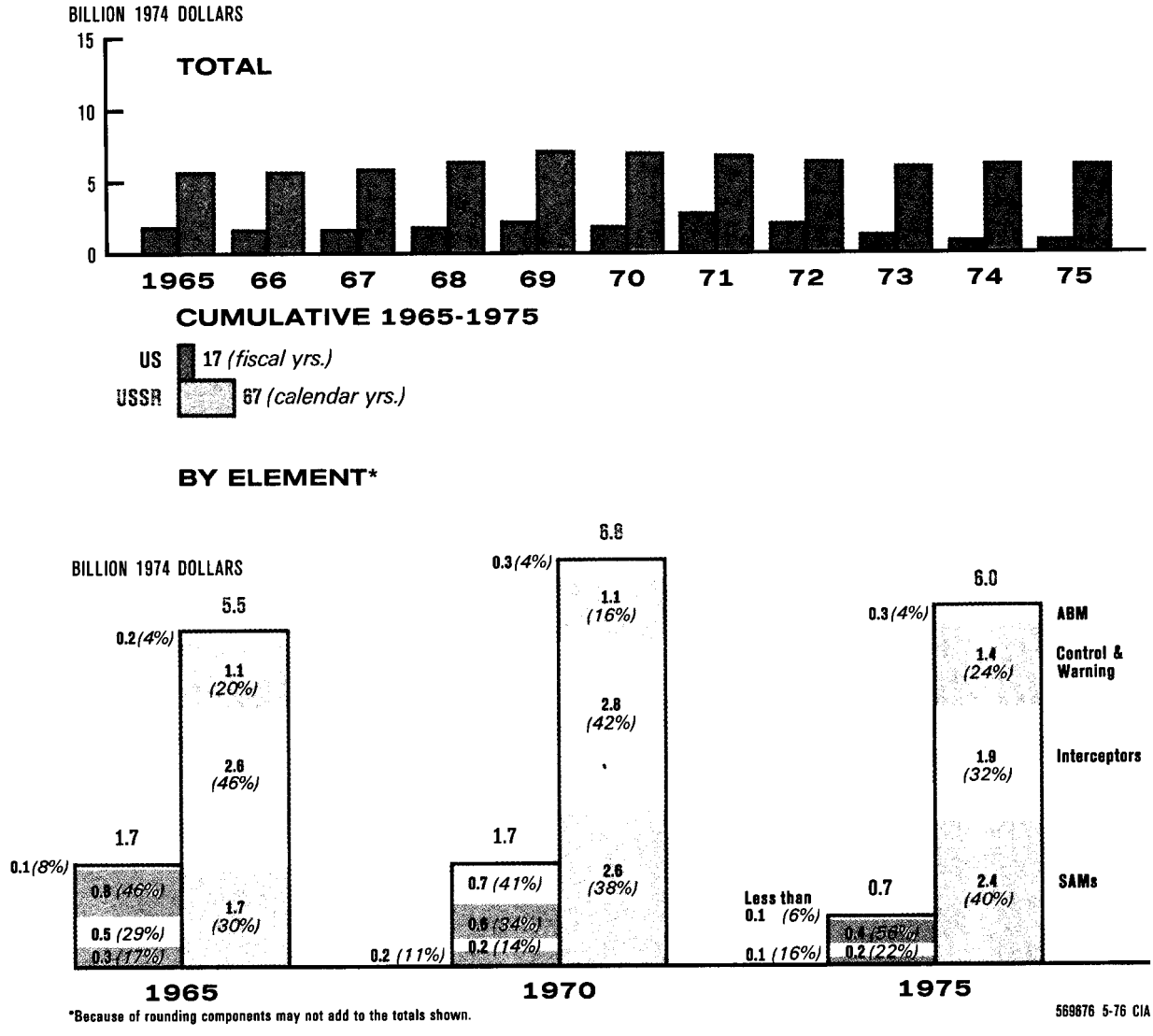
FIGURE 8

TOTAL US and SOVIET STRATEGIC DEFENSE PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



A marked increase in estimated dollar costs for Soviet strategic defense in the late sixties reflects the deployment of new SAM and interceptor systems.

Authorizations for US strategic defense programs, with the exception of the ABM program, generally decline from 1965 to 1975. The high levels of authorizations for ABM in 1969 and 1971 are largely responsible for the higher totals in those years, but after 1971 there is a decrease in all US strategic defense programs. By 1975, US authorizations drop to about 25 percent of those for the peak year of 1971.

SAMs. This element includes only strategic defense SAMs. Tactical SAM systems are accounted for in the ground forces element of the general purpose forces mission.

Estimated dollar cost trends for Soviet strategic defense SAM systems during the 1965-1975 period reflect an intensive effort by the Soviets to improve both low-altitude and long-range defense capabilities against US bomber attack. Dollar costs for SAM systems rise sharply after 1967 and remain high through the rest of the period. High dollar costs for operation and maintenance of the SAM network, coupled with continuing SA-3 and SA-5 deployment and the modernization and improvement of other systems, are responsible for keeping the level high through 1975. *(See Figure 9.)*

The US SAM programs are markedly different from those of the Soviets--both in magnitude and in trend--reflecting the differing bomber threats perceived by the two nations. Cumulatively, over the 1965-1975 period, estimated dollar costs for Soviet SAM systems are 12 times the level of US authorizations for SAMs. US authorizations exhibit a steady decline throughout the period, and by 1975 the dollar costs of the Soviet SAM programs are more than 20 times the US level.

Interceptor Aircraft. Only strategic defense interceptor aircraft are included in this category. Aircraft of similar types assigned to a tactical role are included in the tactical air forces element of the general purpose forces mission.

Estimated dollar costs of Soviet interceptor programs are $1.9 billion in 1975, about one-third of the

FIGURE 9

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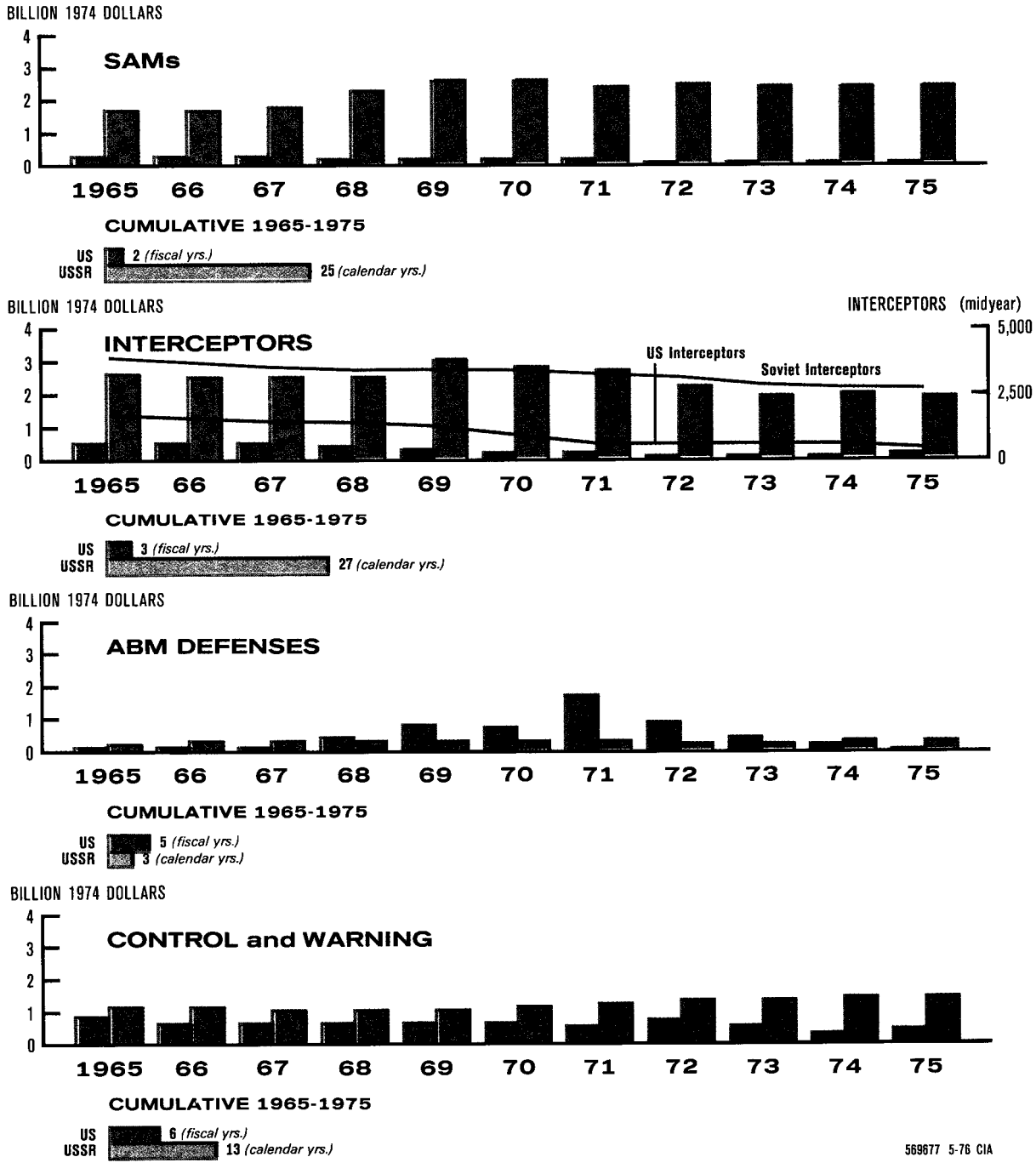
ELEMENTS of US and SOVIET STRATEGIC DEFENSE PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



total for the strategic defense mission and almost 13 times the comparable US authorizations. Over the 1965-1975 period, the dollar costs for Soviet interceptor programs are about $26.6 billion, more than eight times the US total. Estimated dollar costs for Soviet interceptors decline after 1969, reflecting a decrease in the interceptor inventory, with more aircraft being phased out of the active force than added to it. An upturn in the late sixties and immediately following is due almost entirely to the procurement of the SU-15 Flagon, the MIG-25 Foxbat, and, to a lesser extent, the TU-128 Fiddler aircraft. As the assimilation of new aircraft into active units is completed, estimated dollar costs for the element decrease, as they increasingly reflect operating costs more than procurement of new aircraft.

US authorizations for interceptor forces decline throughout the period as a result of a deemphasis of active military interceptor programs and a shift of responsibility for the operations of most of these forces to the reserve and air national guard. In 1975 the active US interceptor force is about one-fifth its 1965 level; of the total 1975 force, however, two-thirds of the aircraft are in reserve and guard units. Under Department of Defense accounting procedures, the personnel costs associated with these units are included under "command, support, and other" along with all other reserve and guard costs. However, the units stand alert and their aircraft are operational.

ABM. This element includes not only personnel and equipment located at ABM sites, but also early warning radar systems directly related to ballistic missile defense. Other early warning systems, including satellites which support strategic defense systems, are accounted for within the control and warning element.

In the late sixties the Soviets began deploying an ABM system around Moscow using technology which lagged that of the US. Only 64 launchers were deployed with the system, although evidence at the time indicated that more had been planned. The US undertook development of a system using advanced technology. The higher level of dollar costs for the US ABM system relative

to that of the Soviets in the late sixties and early seventies largely reflects the technological difference between the US and Soviet ABM systems.

ABM defenses are the only element under strategic defense for which US authorizations over the period as a whole exceed estimated Soviet dollar costs. Cumulatively, over the 1965-1975 period, US ABM authorizations are nearly twice the estimated dollar costs for Soviet ABM defenses, and account for almost one-third of total US authorizations for strategic defense.

Dollar costs for Soviet ABM programs during the period, on the other hand, account for less than 5 percent of estimated dollar costs for strategic defense. Estimated dollar costs for the Soviet ABM program remain relatively steady after the mid-sixties. There is a slight lull in activity after 1971, but early-stage procurement for additional early warning and regional acquisition and tracking radars, which are expected to become operational in the late seventies, causes a slight increase in estimated dollar costs in 1974 and 1975.

US ABM authorizations rise rapidly to a peak in 1971 due to the construction of sites at Malmstrom and Grand Forks. After 1971 the site at Malmstrom was canceled and activity at Grand Forks declined as the site neared completion. US ABM authorizations for 1974 and 1975 are lower than estimated dollar costs for Soviet ABM programs for the first time since 1967.

Control & Warning. The control and warning element includes personnel, radars, and communications equipment associated with the early warning, detection, and tracking of an enemy air attack and the regional coordination of strategic defense forces.

In 1975, at about $1.4 billion, the estimated dollar cost for Soviet control and warning amounts to about 25 percent of strategic defense and is nearly four times US authorizations. Over the 1965-1975 period as a whole, however, the Soviet level is about twice that of US authorizations for control and warning.

Estimated dollar costs for Soviet control and warning rise steadily after the late sixties with the expansion and improvement of the extensive air surveillance radar and air defense communications network. Included in this expansion was the addition of an over-the-horizon radar system.

US authorizations for control and warning exhibit a general decline through the period. An increase in the early seventies is related primarily to the addition of an over-the-horizon detection system.

General Purpose Forces

The general purpose mission includes the ground forces, tactical air forces, and those naval forces that do not have a strategic or peripheral attack mission. This mission accounts for a greater portion of dollar costs than any other combat mission, and throughout the 1965-1975 period comprises for both sides roughly one-fourth of the total.

In 1975, the estimated dollar costs of $30.7 billion for Soviet general purpose forces exceed the US level by slightly more than 70 percent. For the seventies as a whole these costs are 40 percent greater than US authorizations. The estimate of dollar costs of Soviet general purpose forces increases continuously from 1965 through 1975 at an average annual rate of just over 3 percent. The US level grows rapidly during the Vietnam involvement, then declines, and by 1971 is lower than at the beginning of the period. *(See Figure 10.)*

Within the general purpose forces mission, nearly 60 percent of the total Soviet programs measured in dollars for the 1965-1975 period is for ground forces, 25 percent for naval general purpose forces, and 15 percent for tactical air forces. Of US authorizations for the period, 40 percent is for tactical air forces, 35 percent for ground forces, and 25 percent for naval general purpose forces.

Ground Forces. The ground forces element for which costs are estimated includes the Soviet ground troops, naval infantry brigades, coastal defense forces, and

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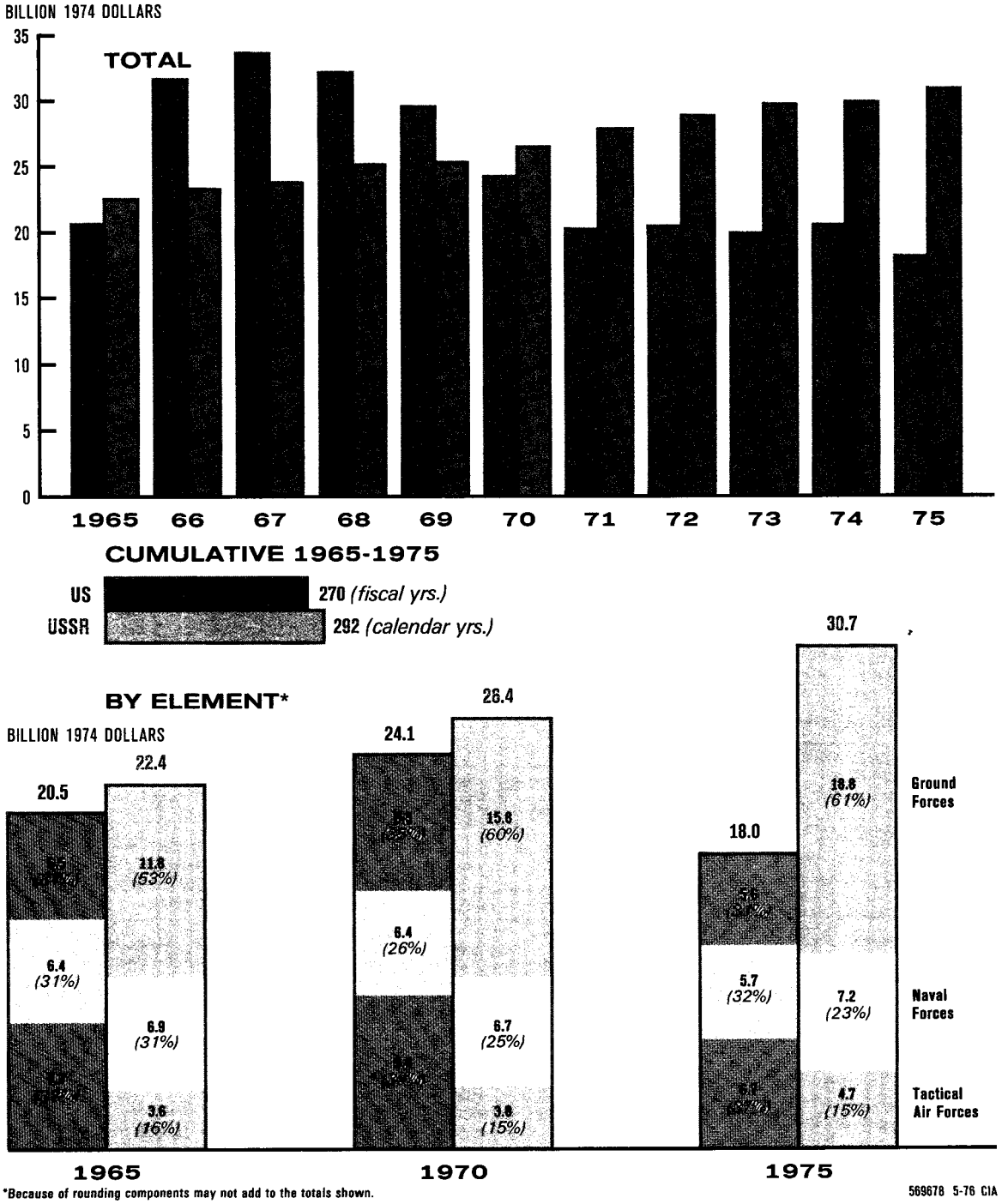
FIGURE 10

TOTAL US and SOVIET GENERAL PURPOSE FORCES PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



*Because of rounding components may not add to the totals shown.

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helicopters assigned to Soviet ground forces. The equivalent US figure comprises the US Army and Marine Corps and their equipment except tactical fixed-wing aircraft.

The estimated Soviet dollar costs are about 20 percent greater than US authorizations for the period 1965-1969, nearly three times as great for the period 1970-1975 and more than three times as much for 1975. The dollar costs of the Soviet ground forces rise throughout the 1965-1975 period with an average annual increase of about 5 percent. The bulk of the increase is caused by the growth in manpower, with military personnel accounting for more than half of the total. Other increases reflect the procurement of new ground forces weapon systems such as new armored personnel carriers and several new tactical surface-to-air missile systems. An overall increase in the size of Soviet ground divisions plus the forming of new divisions, many to reinforce the Chinese border, during the period created a requirement for additional equipment and personnel. *(See Figure 11.)*

US ground forces authorizations during the period fluctuate widely because of the effect of the Vietnam involvement. For example, in 1966 and 1967 US authorizations are only slightly less than estimated dollar costs for the Soviet forces, while in 1971 US authorizations decline to about 35 percent of estimated dollar costs of Soviet forces.

Tactical Air Forces. These forces include land- and sea-based fixed-wing aircraft that are assigned a combat support role. The Soviets currently have well over 4,000 fixed-wing aircraft in their tactical forces. Of these, almost 45 percent are assigned to units with a primary air defense mission. Another 40 percent are assigned to units which have a primary ground attack mission. The remainder of the force consists of reconnaissance and other support aircraft. In accordance with US definitions, US Navy aircraft carriers and their attack aircraft are included in the tactical air forces; the Soviets have no counterpart to these forces. US attack aircraft based in Europe are also included in this category.

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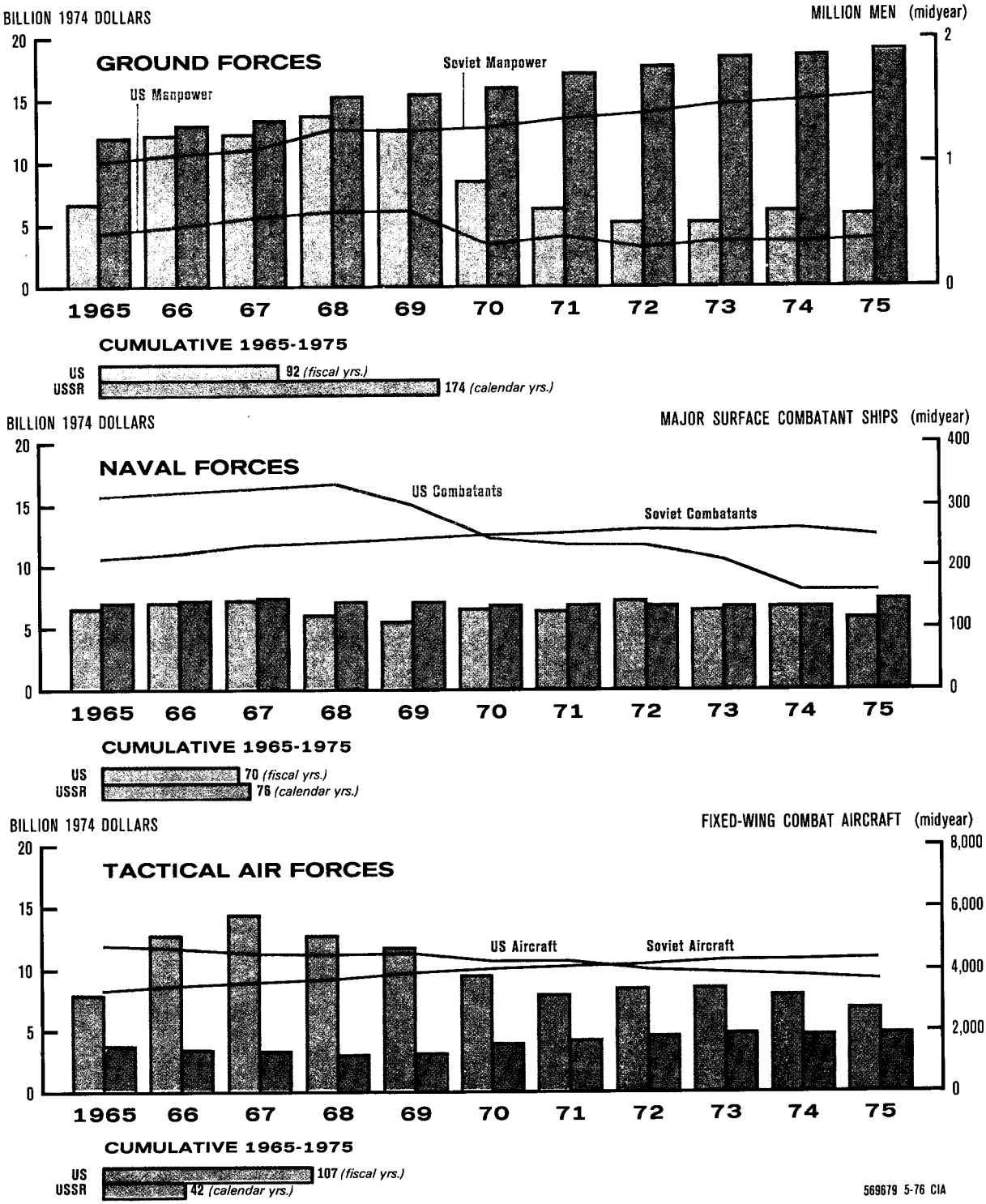
FIGURE 11

ELEMENTS of US and SOVIET GENERAL PURPOSE FORCES PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US



The 1975 estimated dollar costs of Soviet tactical air forces are some 60 percent higher than in 1968, when they begin to increase following a period of decline. The 1975 figure of $4.7 billion, however, still amounts to only 70 percent of total US authorizations for this mission. The increase from 1970 on results from the introduction of several new aircraft, including the SU-17 Fitter B and C, MIG-23 Flogger, MIG-25 Foxbat, and, more recently, the SU-19 Fencer.

Despite the retirement of older aircraft, the Soviet tactical air force shows some growth throughout the period, and operating costs rise even faster as the proportion of more complex and sophisticated aircraft rises. The Soviets also are developing a variety of new air weapons, including improved air-to-air missiles, tactical air-to-surface missiles, and new types of bombs.

US authorizations for tactical air forces during the period 1965-1975 mirror the Vietnam involvement. They peak at $14.3 billion in 1967, drop thereafter, and are less than half that level in 1975. The decrease primarily reflects a decline in new aircraft procurement--by 1974 the number of new aircraft procured annually was about half the pre-Vietnam level.

General Purpose Naval Forces. The general purpose naval forces include all major and minor surface combatants, attack submarines, antisubmarine warfare (ASW) aircraft carriers and aircraft, land-based naval air forces, and amphibious warfare ships. Under Department of Defense accounting procedures, all ballistic missile submarines are included in the strategic attack category. US attack aircraft carriers and their attack aircraft are included in the tactical air forces category. Support ships, including underway replenishment ships, are included in the "command, support, and other" category.

In both the USSR and the US the dollar costs of the general purpose naval forces represent slightly more than 5 percent of total defense costs throughout the 1965-1975 period. Estimated dollar costs for Soviet programs in 1975 are $7.2 billion, about one-

fourth greater than US authorizations.* Cumulatively over the period, dollar costs for Soviet general purpose naval programs are close to 10 percent greater than US outlays, and exceed the US level in every year except 1972 and 1974.

In the late sixties, the Moskva class guided missile helicopter ships and a number of guided missile cruisers and frigates entered the Soviet force. Leading programs among the major surface combatants during the seventies include the Kara and Kresta II guided-missile cruisers and Krivak guided-missile destroyer. The first Soviet ASW carrier, the Kiev, was completed in 1975. Production of C and V class submarines--both the original and improved versions--were the principal general purpose attack submarine programs in the seventies.

In the Soviet naval air force, which accounts for about one-fourth of the total estimated dollar costs of the general purpose naval forces, the introduction of the Backfire bomber accounts for most of the recent increase in costs. The vertical and short take-off and landing aircraft carried aboard the Kiev also contribute to the increase.

US authorizations for general purpose naval forces do not vary appreciably over the 1965-1975 period, averaging about $6.4 billion per year, with authorizations dropping to $5.7 billion in 1975. The major US authorizations during the period are for frigates, destroyers, amphibious assault ships, and nuclear-powered attack submarines and cruisers.

* Comparison of the estimated dollar costs of Soviet naval ship procurement with comparable US authorizations is more difficult than for other programs. Because shipbuilding programs usually extend over long periods, adjustments are often made over time in the allocation of funds for shipbuilding and conversion (SCN). Thus, the US authorization data for SCN have a less direct relationship to actual outlays than US data for other programs.

Command, Support, and Other

All organizational entities not included in the individual force missions are covered under "command, support, and other," which also includes costs for other functions such as civilian pay, reserve and retired manpower, procurement and storage of nuclear weapons, and any programs which because of present data limitations cannot be assigned to specific missions. Not included are RDT&E programs, which were discussed earlier in the section on resource categories.

"Command, support, and other" represents the largest part of total defense costs in dollars for both the US and the USSR, largely because of the inclusion of programs which cannot be specifically allocated to combat missions. In 1975, these programs account for more than 45 percent of total estimated dollar costs of Soviet defense and over 60 percent of US authorizations.

For both countries, trends in dollar costs for this category parallel those of the combat missions. Whereas the dollar costs for Soviet programs rise steadily--at a rate of 2 percent a year--over the 1965-1975 period, US authorizations decline appreciably after the Vietnam peak in the late sixties. The Soviet level exceeds that of the US for the first time in 1974, and in 1975 is 5 percent greater. *(See Figure 12.)*

Soviet "command, support, and other" programs as measured in dollars have grown with Soviet efforts to modernize forces and improve military capabilities. For example, during the period the Soviets have introduced new types of heavy transport aircraft into Military Transport Aviation, have added considerable numbers of support helicopters, and have increased the personnel and facilities necessary to operate these aircraft.

The Soviets have also undertaken several major programs to upgrade their command and control capabilities, particularly for multiforce operations. These programs include construction of several hundred bunkered command and control facilities, more than a threefold increase in the number of buried communica-

FIGURE 12

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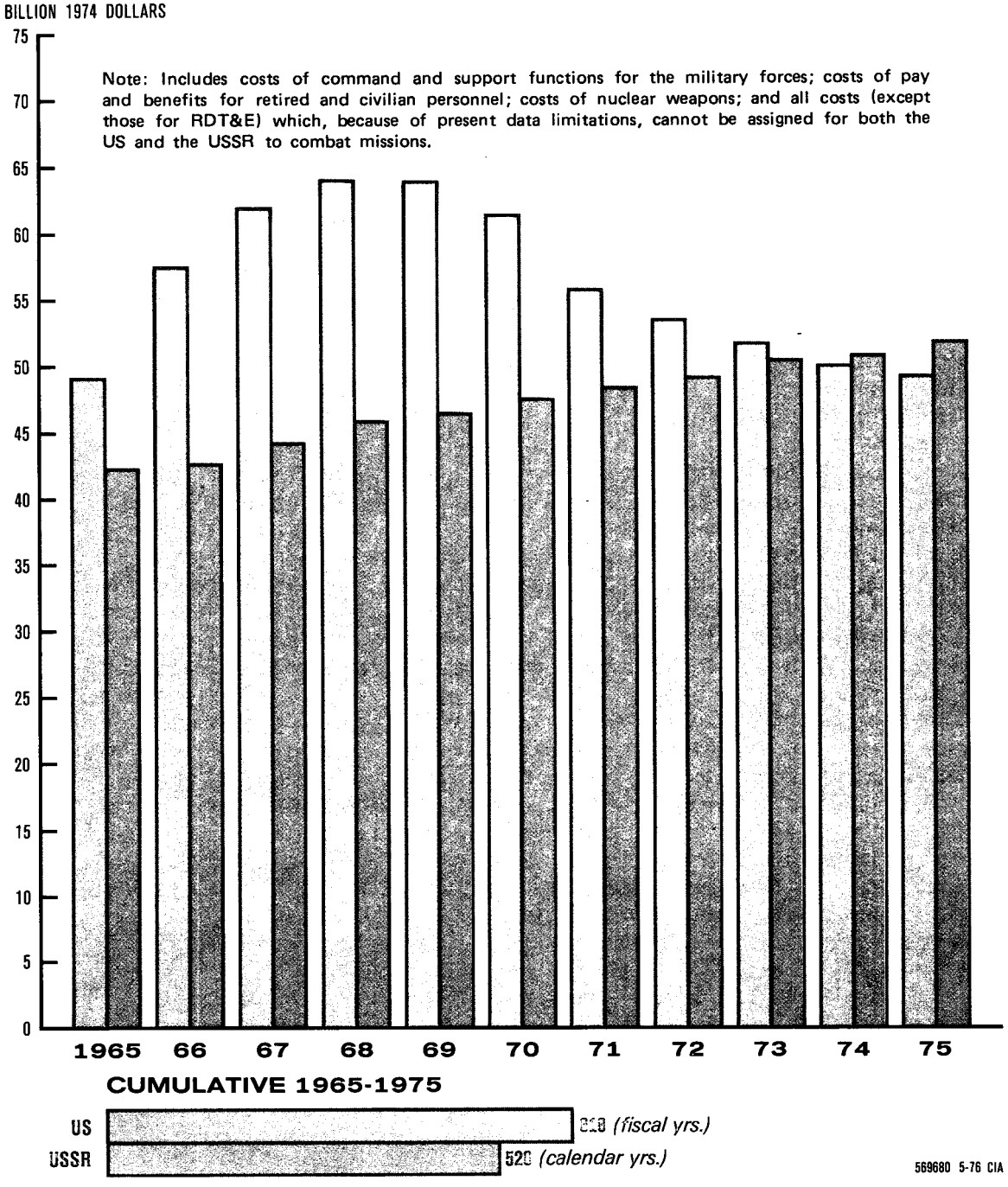
US and SOVIET "COMMAND, SUPPORT, and OTHER" DEFENSE PROGRAMS, 1965-1975

A Comparison of US Authorizations and Estimated Dollar Costs of the Soviet Programs if Duplicated in the US

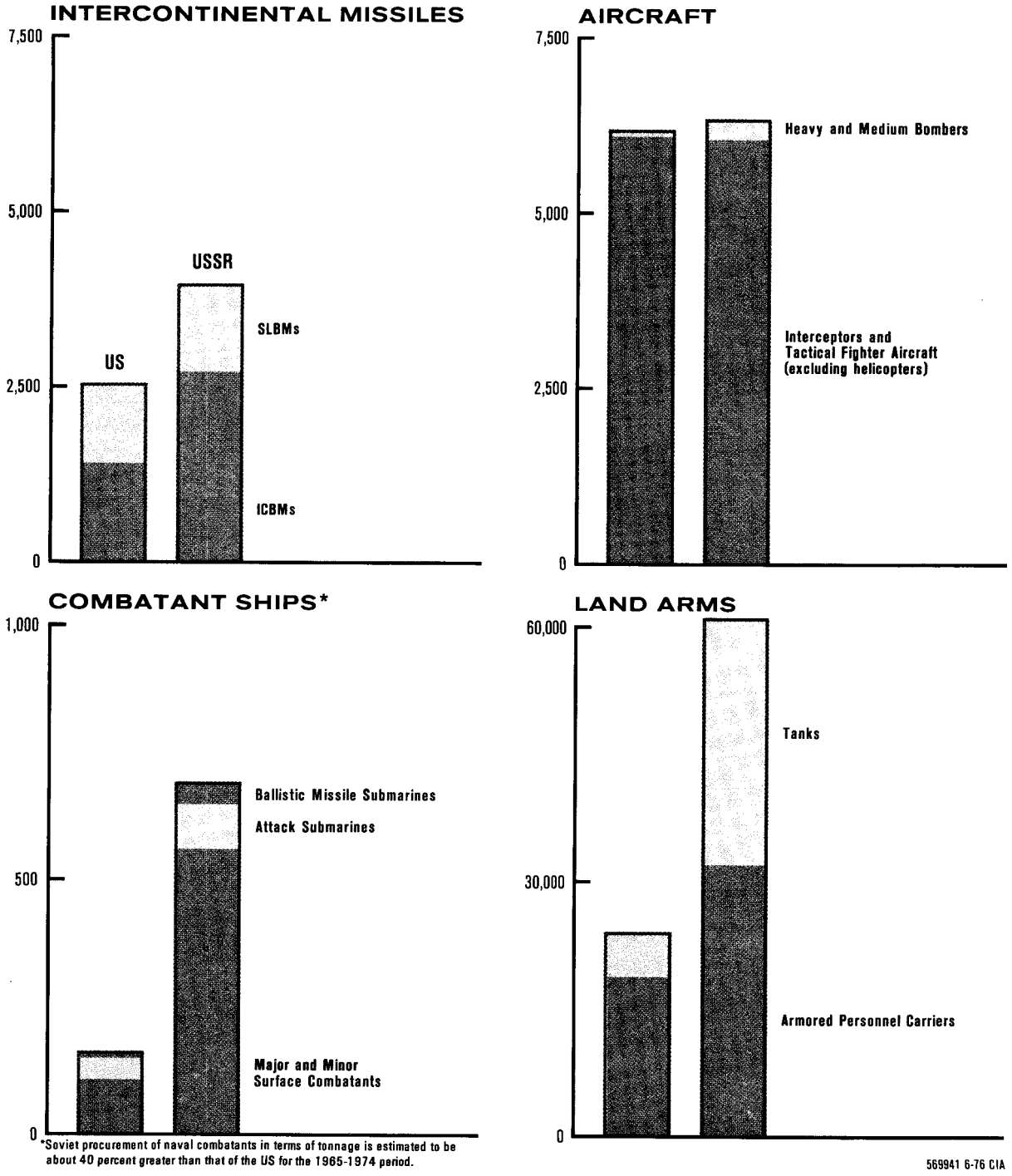


tions antennas, formation of new mobile signal units, and initial deployment of a force-wide airborne command post system.

Service support functions such as nonmilitary education programs, medical care for dependents, and commissaries also fall under this general heading because they are not easily broken out for comparative purposes. Such activities tend to involve large numbers of people (and thus are expensive in dollar terms) but contribute only indirectly to military capabilities. The magnitude of such activities in the Soviet forces is difficult to estimate, and our confidence in the estimates for support forces is therefore less than for the combat forces.

FIGURE 13

US and ESTIMATED SOVIET PRODUCTION of SELECTED WEAPONS SYSTEMS for the 1965-1974 PERIOD



*Soviet procurement of naval combatants in terms of tonnage is estimated to be about 40 percent greater than that of the US for the 1965-1974 period.

Annex A

Production Data

Introduction

Comparing US and Soviet production of military weapon systems is useful in relating the size of each country's military programs over time. This information, taken with other measures, can increase our understanding of Soviet defense programs. These production comparisons, however, cannot be used by themselves as measures of capability. No *net assessment* of US and Soviet programs can be drawn exclusively from these data and none is intended.

Production comparisons can complement dollar cost comparisons, but caution must be exercised in relating the two bodies of data. Production and estimated dollar costs for Soviet forces are more closely related than are those for the US. This is because estimates of military production are the basis for the detailed estimate of the dollar costs of Soviet military programs. The US defense costs presented in this paper, on the other hand, represent not outlays, but total obligational authority (TOA), which is not as directly related to the actual production of weapon systems.

The following comparisons of production for US and Soviet military weapon programs and systems are far from comprehensive. An attempt has been made, however, to address those systems which were most prominent and dynamic. The production data discussed in this Annex represent only the production of weapon systems by the US and the USSR for the direct use of their own military forces. Production for RDT&E and for military aid to other countries has been excluded. Finally, the production data described here are limited to the period 1965-1974, because 1975 US data for such a comparison were not available when this report was in preparation.

Missiles

The Soviets produced about 50 percent more missiles than the US over the 1965-1974 period. This section describes the major programs within this category.

ICBMs. The Soviets produced about 2,700 intercontinental ballistic missiles during 1965-1974, almost twice US ICBM production for the period. During the late sixties, the Soviets were building up their sizable SS-9 and SS-11 forces and introducing a small force of SS-13s. While these programs were under way, estimated Soviet production of ICBMs averaged between 350 and 400 missiles per year. In the early seventies, production dropped sharply as deployment of the SS-9 and SS-13 ended, but rose again near the end of the period with the introduction of new-generation ICBMs.

The US, on the other hand, was nearing the completion of its planned ICBM deployment by the beginning of the period. Although the US deployed no new ICBM launchers after 1967, more than 1,400 missiles were produced for deployment during the period as the US upgraded the Minuteman system.

MR/IRBMs. In addition to their ICBM forces the Soviets maintain an extensive force of medium- and intermediate-range ballistic missiles. The US currently has no counterpart for these weapons. Since there was virtually no new deployment of MR/IRBM systems during the 1965-1974 period, their production dropped from about 100 each year at the beginning of the period to only a few each year by the late sixties. There was a marked increase in 1973 and 1974, however, as the SS-X-20 IRBM neared deployment, and by 1974 the annual level of production had again reached 100.

SLBMs. Total production of submarine-launched ballistic missiles is estimated to have been roughly comparable in the US and the USSR during the 1965-1974 period, although the patterns of production were considerably different. Estimated annual Soviet SLBM production, driven largely by the introduction of the SS-N-6, rose steadily from just over 20 in 1967 to over 200 in 1971. At that time, production of the SS-N-6 began to decline, although the decrease was largely offset by the introduction of an improved

SLBM system with a considerably longer range, the SS-N-8. Production remained relatively steady at about 200 per year from 1971 to 1973, then declined slightly in 1974.

The pattern of US SLBM production is a function of the two major programs under way during the 1965-1974 period. Production of the Polaris, which marked the early part of the period, was essentially completed in 1968. The Poseidon system entered production in 1971 and, though down somewhat in 1974, averaged more than 100 missiles a year for the seventies.

ASMs. US production of air-to-surface missiles during the 1965-1974 period is about three times that estimated for the Soviets. The highest US rates occurred in the late sixties, reflecting the heavy use of ASMs in Vietnam. The level dropped sharply from more than 7,000 in 1968 to less than 500 in 1971 and 1972, but increased again by 1974 to about 4,500 with the introduction of the short-range attack missile (SRAM) and Maverick.

Soviet production of ASMs rose steadily from just over 500 at the beginning of the period to almost 3,000 in 1974. Emphasis in the seventies has been on new tactical air-to-surface missile systems, the AS-7, AS-8, AS-X-9, and AS-10.

SAMs. Estimated Soviet production of surface-to-air missiles is slightly less than four times that of the US during 1965-1974. Annual production of SAMs for the Soviets has steadily increased from about 4,000 in 1965 to almost 25,000 in 1974. In recent years, added emphasis has been placed on tactical SAMs, notably the SA-7 and SA-9, and they are the largest contributors to the high levels of production in the mid-seventies.

SAMs for strategic defense, which accounted for more than 75 percent of total Soviet SAM production in 1965, made up just over 15 percent of the total in 1974.

The US has also emphasized tactical SAM systems. This is reflected in the production of the Redeye and Chaparral missiles, which exceeded 11,000 in 1969 and

totaled over 35,000 for the period. Unlike the Soviets, however, the US has not devoted much attention to its strategic SAM systems, and production of these missiles virtually ended in 1970.

ASW Missiles. US production of missiles for anti-submarine warfare--over 7,000--is four times that estimated for the Soviets during the period.

US production of ASW missiles, the ASROC and SUBROC, reached over 1,700 in 1967 but declined thereafter, and by 1973 had ended entirely. The pattern of Soviet production of ASW missiles is the opposite of the US; Soviet production began in 1967 and increased each year to nearly 500 annually in 1974.

Aircraft

Comparison of US and Soviet aircraft production is especially difficult because of the extensive qualitative differences in the aircraft produced by each country. In the body of this report, dollar cost comparisons are based on the role or mission of the aircraft for consistency with the other mission comparisons. Given the characteristics of US and Soviet aircraft, comparisons of production are more appropriately based on similarity of operational capabilities. Some of the comparisons drawn here, therefore, are on a basis slightly different from that used earlier in this report.

Heavy and Medium Bombers. The Soviets produced nearly 300 heavy and medium bomber-type aircraft (including reconnaissance and support models) during the 1965-1974 period. At the beginning of the period, they were producing the Blinder at an estimated rate of between 30 and 40 a year. Blinder production declined sharply in 1969 and ended in 1970. Between 10 and 15 reconnaissance and ASW variants of the Bear bomber were produced from 1965 through 1970. Subsequently, production gradually declined and ended entirely in 1974. Annual production of the Backfire, which began in 1971, has steadily increased to about 20 per year. The Backfire is the only bomber currently being produced by the Soviets.

The only US aircraft in this category produced during this period was the FB-111, with fewer than 80 produced between 1968 and 1971.

Fighters and Tactical Attack Aircraft. In this category, US and Soviet aircraft production was nearly equal at about 6,000 during the 1965-1974 period. There has been a change in both countries, however, in the types of aircraft produced. During the sixties, the Soviets concentrated on producing aircraft designed for a specific mission, introducing several new interceptors--including the Flagon, Fiddler, and Firebar--to enhance their air defense capabilities. During the seventies, they began to produce more multipurpose aircraft. They brought out the Flogger and the later variants of the Fishbed--the J, K, and L--which have both interceptor and ground attack roles.

For the US the trend was exactly the reverse. Large numbers of the F-4 multipurpose fighter were produced during the sixties, but beginning in the seventies the production of aircraft designed for a specific role, such as the F-14 all-weather high-performance interceptor, became more predominant.

Helicopters. Annual Soviet production of helicopters rose steadily from less than 100 in 1965 to more than 900 in 1974. The increase has been caused primarily by high production levels for the Hip, running between 500 and 600 per year near the end of the period.

Once again, the trend for US production is the reverse of that estimated for the Soviets. US production of helicopters, as with the fighters and attack aircraft, strongly reflects the requirements of the Vietnam conflict. Annual production reached a peak of over 2,500 in 1968 but declined rapidly in subsequent years, and by 1974 had fallen to below 300. Despite the decreasing trend, however, US production of helicopters over the 1965-1974 period was more than four times that estimated for the Soviets.

Land Arms

Because of the limitations of the data available at this time, comparison of US and Soviet production of land arms is limited to tanks and armored personnel carriers (APCs). Of the slightly more than 60,000 armored vehicles delivered in the USSR between 1965 and 1974, almost half were tanks. There were nearly 25,000 US armored vehicles produced, of which just over 5,000 were tanks.

Tanks. The Soviets produced more than five and one-half times as many tanks as the US during the period. Most of the Soviet deliveries were medium tanks (approximately 40 tons)--the T-55 with a 100mm gun, T-62 with a 115mm smoothbore gun, and T-72 with a large-caliber, smoothbore weapon. On the US side, most of the deliveries were the 16-ton Sheridan M551 armored reconnaissance vehicle with a 152mm gun, and the 52-ton M60A1 tank with a 105mm gun.

Armored Personnel Carriers. At nearly 32,000, Soviet deliveries of APCs exceeded US deliveries by almost 70 percent. Among the Soviet programs were the BTR-50 and BTR-60 series, which carry about a squad of infantry troops; BRDM wheeled amphibious armored reconnaissance vehicles, which carry four to five troops; and BMP tracked amphibious armored infantry combat vehicles, which carry a squad. The US programs were dominated by deliveries of the 11-ton tracked M113 vehicle, which can carry about a squad of troops.

Naval Combatant Ships

Both the US and the Soviet Union had active naval shipbuilding programs during the period. In both countries, new surface combatants, submarines, and amphibious warfare and support ships were added to the fleets. This section discusses highlights of US and Soviet programs which contribute most directly to naval warfare capabilities.

In total, the US built about 160 surface combatant ships* and submarines between 1965 and 1974, while the

* Includes major and minor surface combatants and assualt helicopter carriers but excludes amphibious warfare ships--other than assault helicopter carriers--and some 60 Coast Guard cutters and patrol craft.

Soviets built about 690. The US combatant ship production amounted to some 800,000 tons; Soviet production was about 1,100,000 tons.

Surface Combatants.* The US added two new attack carriers during the period, and built four helicopter-carrying amphibious assault ships. The Soviets have no equivalent for either of these ship types. The Soviets built two Moskva class ASW helicopter ships in the late sixties and in 1975 completed the first Kiev class ASW carrier, which has a complement of fixed-wing V/STOL aircraft.

The Soviets built 14 guided-missile cruisers during the 1965-1974 period--three of the Kara class, four of the Kresta I, and seven of the Kresta II. US guided-missile cruiser programs during the same period consisted of eight ships of the conventionally powered Belknap class, and one ship each of the nuclear-powered Truxtun and California classes.

Only the USSR added destroyers to its deployed forces during the period. Fifteen ships of the Kashin class and 10 of the Krivak class were built. The Soviets had two active frigate programs--Petya and Mirka--with total production of 42 ships. The US had three programs--the Knox, Garcia, and Brooke classes--totaling 61 ships.

The Soviets added nine Nanuchka class guided-missile patrol gunboats, 22 Grisha class guided-missile escorts, nearly 50 Osa class guided-missile boats, and a number of other minor combatants to their inventory. Seventeen patrol gunboats and 10 fast patrol boats were added to US naval forces during the period.

Attack Submarines. During the period, the USSR built 88 attack submarines--47 of which were nuclear powered. The USSR pursued both nuclear and diesel submarine programs, but the US built only nuclear submarines. The E-II, C, and V nuclear classes and the F and T diesel classes accounted for most of the attack submarines produced in the USSR. The US built 43 nuclear-powered attack submarines, all of the Permit and Sturgeon classes.

* A new system of ship classifications which was adopted by the US Navy in 1975 in order to bring the designators for US and foreign warships into closer agreement is used in this section.

Ballistic Missile Submarines. The USSR built more than three times as many nuclear-powered ballistic missile submarines as the US. During the period 1965-1974 the Soviets completed 43 submarines of the Y and D classes (9 more were completed in 1975). The 12 nuclear-powered ballistic missile submarines of the Benjamin Franklin class accounted for the US deliveries.

Annex B

Costing Methodology

Definition of Dollar Estimates

Estimated dollar costs of the Soviet defense effort are estimates of what it would cost the US to purchase the same military equipment and supplies, pay the same number of people, carry on the same types of RDT&E, and pursue the same operations and maintenance programs as the Soviets. Conceptually, the Soviet defense program in this context can be considered as an alternative US defense program.

Constant and Current Prices

The dollar cost data presented in this report are expressed in terms of average 1974 US resource prices, including 1974 military payments. A constant price base is used so that all changes in spending from year to year reflect changes in the forces and programs themselves, rather than price changes resulting from inflationary forces. For tracing the size of the defense effort over time, or for analyzing the real shifts of resources within that effort, a constant price series is the appropriate measure. Dollar costs expressed in current prices show trends that are quite different. A current price series would reflect, for example, the increase in US military pay authorizations related to the transition to the all-volunteer army, as well as the marked inflation that has affected the US economy.

Estimating the Dollar Costs of Soviet Programs

The dollar costs of Soviet defense activity are developed for the most part on the basis of a detailed identification and listing of Soviet forces. The force components so listed are multiplied by estimates of what they would cost in the US in dollars. The results are then aggregated both by military mission and by resource category.

The reliability of the estimates depends on the precision and accuracy of our estimate of the Soviet programs and of the cost factors applied to that data base. The data base on forces and weapons reflects the combined collection and analytical efforts of the intelligence community. Available intelligence information has made it possible to develop a detailed inventory of the numbers and kinds of weapons and units that make up the Soviet armed forces. This extensive data base includes information on such items as physical and performance characteristics of Soviet weapons and equipment and their production; deployment levels of Soviet strategic attack, strategic defense, and general purpose forces; and the manning requirements for these forces as well as for all command and support activities. (See also the "Note to the Reader" on page 4 under the heading "Reliability.")

Investment. Investment costs are those for procurement of equipment and spare parts and for construction of facilities. While the specific technique varies according to the information available, the procurement costs of most weapons--aircraft, missiles, and ships--are derived through the use of cost estimating relationships (CERs). These CERs--equations which relate US weapon characteristics (for example, weight, thrust, or speed) to costs--are applied to Soviet weapon characteristics

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The lack of necessary data on some systems makes it impossible to use either of the two approaches described above. In these cases, direct analogy--using the cost of similar US equipment--or some other gross approximation of cost, such as estimating total cost as a function of total weight, is used. Some ammunition items, for example, are costed using these less refined methods.

Construction cost estimates are based on a good knowledge of Soviet construction practices and ruble construction costs. These estimated costs are transformed into dollars by the use of a ruble-to-dollar ratio based on the cost of similar construction in the US.

Operating. Operating costs are the sum of personnel costs--pay, subsistence and other allowances--and operations and maintenance (O&M) costs. O&M costs include those which support the functioning of the defense establishment, and cover such diverse items as fuel consumption and maintenance of facilities.

Dollar costs for Soviet military personnel are estimated by applying US factors for pay and allowances to estimates of Soviet military manpower. Average factors are derived for each US service by dividing total pay and allowances for each service by total manpower in that service. The appropriate factor is then applied to the manpower estimated for each Soviet military unit.

Some O&M cost estimates are based on US analogy. The costs of overhauls for land arms, for example, are related to the original procurement costs of the equipment, using percentage factors based on US experience. Adjustments are made, however, to reflect Soviet operating rates when they are known to differ from US practices. The cost of petroleum, oils, and lubricants (POL) is based on estimated Soviet consumption rates for each weapon system. For example, the estimated fuel consumption rate of a particular model of aircraft is applied to the average number of flying hours for that type of aircraft. The resulting quantities of POL are then costed at US prices. In general, the information on operating rates is not as complete in quantity or quality as the physical data--manpower and equipment--on the forces.

Facility maintenance costs are based on the assumed life of the facility and are a function of the cost of constructing it. US and Soviet experience is believed to be similar in this area.

RDT&E. The direct costing approach described above is not used to estimate the dollar cost of Soviet mili-

tary RDT&E because the type of data needed for direct costing of observed programs is not available. Instead, published Soviet statistical data and descriptive material about scientific activities are used as a basis for estimating military RDT&E and space activities in rubles. The dollar costs of these activities are obtained by converting the ruble estimate into dollars with a ruble-to-dollar ratio. The estimate corresponds in coverage to the categories of US RDT&E activity funded by the Department of Defense and the defense-related portion of the Energy Research and Development Administration (ERDA) research program.

For several reasons, the estimated dollar costs presented for Soviet RDT&E should be regarded as less reliable than the dollar costs estimated for investment and operating. First, because the basic information comes from Soviet publications, there is an element of uncertainty about its reliability and about our understanding of it. Second, the distribution of Soviet RDT&E expenditures between military and civil applications continues to be a difficult problem. Finally, the conversion from rubles to dollars presents a number of theoretical complexities as well as practical problems.

Organization of the US and Soviet Data

The US authorizations data presented in this report were developed from the Department of Defense Five-Year Defense Program (FYDP), the US Budget, and related DoD expenditure data. Nonpersonnel authorizations for military aid and civil defense have been excluded from the US data, and defense-related ERDA authorizations have been included. For comparability, the US and Soviet data bases were adjusted into a common data format that is in close accord with the FYDP accounting system. Because of the problems of comparing such disparate activities, the limitations of the Soviet data, and the organization of US data, these comparisons should not be considered as precise measurements. This is particularly true in areas where the difference between US and Soviet levels is estimated to be smaller or where the comparisons are made at a low level of aggregation.

Only combat and operational defense units are included in the force missions--intercontinental attack, peripheral attack, strategic defense, and general purpose forces. A combat unit is defined as a military unit that would actively engage in combat. The same criteria apply to an item of materiel designated for use in combat. Motorized rifle divisions, bomber units, and naval surface combatant ships are examples of combat units in these terms. Operational defense units are military units and equipment assigned warning, direction, or other functions. Reconnaissance units, early warning radar sites, combat engineer battalions, and electronic warfare units are typical operational defense units.

All entities not accounted for within the force missions (except RDT&E) are aggregated in the mission called "command, support, and other." This procedure eliminates the problem of allocating the cost of a supply unit (a supply depot, for example) or command unit to more than one element or mission. "Other" costs included in this mission are costs of reserve, retired, and civilian personnel; costs of nuclear weapons; and all costs which because of present data limitations cannot be assigned, for either country, to other missions.

This report also presents comparisons of US and Soviet defense efforts on a resource category basis. These data were structured in accordance with current FYDP and budget resource accounting definitions. Because resource accounting definitions have varied over time, adjustments were required to achieve conformity of resource category definitions throughout the period of analysis.

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Annex C

Revisions in the Data Base

The data on Soviet defense expenditures presented in this study differ from those presented in its predecessor *Soviet Spending for Defense: A Dollar Cost Comparison of Soviet and US Defense Activity* (SR IR 74-7), December 1974. The revisions made each year in the estimates of dollar costs of Soviet defense programs are attributable to three sources:

-- changes in the assessments of the size, composition, and technical characteristics of forces and programs,

-- changes in the estimates of the costs of the weapon systems and programs,

-- a change in the price base used to express the series.

Roughly half of the difference between this series and that of the earlier report occurs because of changes in our estimate of forces and programs, coupled with estimates of the dollar costs of utilities and premilitary training--activities not covered explicitly in the past. About a third of the difference results from the change in the dollar price base--from 1973 to 1974 dollars--and the remainder from improvements in our estimates of the dollar costs of Soviet programs.

The US data used in these comparisons differ from those in the earlier report primarily because they are now expressed in 1974 prices. In addition, the January 1976 edition of *The Five-Year Defense Program* was used, providing data for the recent years which had been preliminary in the edition used for the earlier report.

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Annex D

Statistical Data

The financial data in this Annex are based on a detailed single-valued statement of the Soviet forces which was specified solely for costing purposes. Key elements of the forces used for costing are shown in summary form in Tables 11 and 12.

Figures for all programs are expressed in constant 1974 resource prices. Figures for the USSR are for calendar years and those for the US are for fiscal years.

The estimated dollar costs do not include costs for Soviet civil space programs.

Tables

Table 1
Estimated Costs of Soviet Defense Programs
if Duplicated in the US, By Mission
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Strategic intercontinental attack	4.1	6.7	7.7	7.5	8.0	8.0	6.9	6.4	7.0	7.8	8.5
Strategic peripheral attack	3.8	3.5	3.3	3.1	2.8	2.7	2.7	3.2	3.3	3.4	3.8
Strategic defense	5.5	5.5	5.7	6.2	6.9	6.8	6.6	6.2	5.9	6.0	6.0
General purpose forces	22.4	23.2	23.7	25.0	25.2	26.4	27.7	28.7	29.5	29.7	30.7
RDT&E	6.8	7.3	7.8	8.4	9.0	9.6	10.3	11.0	11.8	12.7	13.6
Command, support, and other	42.3	42.7	44.3	45.9	46.5	47.6	48.4	49.2	50.5	50.8	51.8
Total	85.0	89.0	92.5	96.1	98.4	101.1	102.6	104.6	108.0	110.5	114.5

These estimated dollar costs 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. The costs shown for the major force missions and for "command, support, and other" include costs for personnel, other operating costs, procurement of hardware, and construction of facilities. Estimated dollar costs for military RDT&E have been aggregated and are included in the RDT&E mission (excluding military personnel costs). All costs for civil space, nonpersonnel military assistance programs, and civil defense activities have been excluded. Costs for strategic intercontinental and peripheral attack, strategic defense, and general purpose forces include only those costs associated with combat or direct offensive and defensive combat support units. Those costs not associated with combat or direct combat support units (except RDT&E) have been aggregated within "command, support, and other." This mission also includes all costs for nuclear weapons and for civilian, reserve, and retired personnel as well as costs which, because of present data limitations, cannot be assigned for both countries to other missions.

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

Data are expressed in calendar year terms.

Table 2
US Defense Authorizations, By Mission
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Strategic attack [a]	5.3	5.0	4.5	5.3	6.0	4.2	4.3	4.6	4.7	4.2	4.2
Strategic defense	1.7	1.5	1.5	1.6	2.0	1.7	2.6	1.9	1.1	0.7	0.7
General purpose forces	20.5	31.5	33.5	32.1	29.4	24.1	20.1	20.3	19.7	20.4	18.0
RDT&E	10.0	10.4	10.5	10.3	10.5	9.6	8.8	8.9	9.1	8.6	8.2
Command, support, and other	49.1	57.5	61.9	64.1	63.9	61.4	55.8	53.5	51.7	50.0	49.2
Total	86.6	105.8	111.9	113.3	111.8	101.0	91.6	89.3	86.3	83.9	80.3

The authorizations shown are developed from appropriate editions of DoD's The Five-Year Defense Program *(FYDP), the* Budget of the United States, *and related data. To achieve as high a degree of comparability as possible, US program data have been reaggregated and converted to constant calendar 1974 dollars.*

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

Data are in total obligational authority terms for fiscal years.

a. Because the US has no force with an assigned mission comparable to the Soviet strategic peripheral attack mission, US authorizations for strategic attack are more comparable in coverage to the dollar estimates for Soviet strategic intercontinental attack forces.

Table 3
Estimated Costs of Soviet Intercontinental and Peripheral Attack Programs if Duplicated in the US, By Element
1965-1975

Billion 1974 Dollars

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Strategic Intercontinental Attack:											
ICBMs	3.4	5.7	6.5	5.5	5.6	5.7	4.3	3.5	4.0	4.7	5.4
Submarines	0.3	0.6	0.8	1.5	2.0	1.9	2.2	2.4	2.6	2.7	2.6
Bombers	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Total	4.1	6.7	7.7	7.5	8.0	8.0	6.9	6.4	7.0	7.8	8.5
Strategic Peripheral Attack:											
MR/IRBMs	2.2	2.0	1.9	1.7	1.6	1.6	1.5	1.5	1.8	2.1	2.4
Submarines	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2
Bombers	1.5	1.4	1.3	1.3	1.1	1.0	1.1	1.4	1.3	1.2	1.3
Total	3.8	3.5	3.3	3.1	2.8	2.7	2.7	3.2	3.3	3.4	3.8

These estimated dollar costs are designed to indicate the general size of the Soviet strategic intercontinental and peripheral attack forces by showing what they would cost if purchased and operated in the US. The estimated costs shown include costs for military personnel, other operating costs, procurement of hardware (excluding nuclear warheads), and construction of facilities for long-range attack weapon systems. No RDT&E costs are included. The US has no force with an assigned mission comparable to the Soviet strategic peripheral attack mission. For this reason, the intercontinental and peripheral attack missions have not been totaled together to obtain a single dollar cost estimate for strategic attack.

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

Data are expressed in calendar year terms.

Table 4
US Strategic Attack Authorizations, By Element
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
ICBMs	1.8	1.2	1.2	1.0	1.1	1.0	1.0	1.2	1.0	0.9	0.8
Submarines	1.0	0.9	0.9	1.5	1.7	1.6	1.6	1.4	1.9	1.8	2.0
Bombers	2.6	2.9	2.5	2.9	3.2	1.7	1.7	2.0	1.8	1.5	1.4
Total	5.3	5.0	4.5	5.3	6.0	4.2	4.3	4.6	4.7	4.2	4.2

The authorizations shown are developed from appropriate editions of DoD's The Five-Year Defense Program *(FYDP). To achieve as high a degree of comparability as possible, US program data have been reaggregated and converted to constant calendar 1974 dollars. The US has no force with a mission comparable to the Soviet strategic peripheral attack mission.*

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

Data are in total obligational authority terms for fiscal years.

Table 5
Estimated Costs of Soviet Strategic Defense
Programs if Duplicated in the US, By Element
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
SAMs [a]	1.7	1.7	1.8	2.3	2.6	2.6	2.4	2.5	2.4	2.4	2.4
Interceptors [b]	2.5	2.5	2.5	2.5	3.0	2.8	2.7	2.2	1.9	2.0	1.9
Control & warning [c]	1.1	1.1	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.4
ABM	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3
Total	5.5	5.5	5.7	6.2	6.9	6.8	6.6	6.2	5.9	6.0	6.0

These estimated dollar costs are designed to indicate the general size of the Soviet strategic defense forces by showing what they would cost if purchased and operated in the US. The estimated costs shown include costs for military personnel, other operating costs, procurement of hardware (excluding 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 general purpose naval forces. This mission encompasses the regional control and warning network and all SAMs, ABMs, antisatellite systems, and aircraft assigned to PVO Strany (the Soviet Air Defense Forces). No RDT&E costs are included.

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

Data are expressed in calendar year terms.

a. Strategic defense SAM systems only.
b. Strategic defense aircraft only.
c. Activities associated with the early warning, detection, and tracking of an enemy air attack and the regional coordination of strategic defense forces.

Table 6
US Strategic Defense Authorizations, By Element
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
SAMs[a]	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Interceptors[b]	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.2
Control & warning[c]	0.8	0.6	0.6	0.6	0.6	0.6	0.5	0.7	0.5	0.3	0.4
ABM	0.1	0.1	0.1	0.4	0.8	0.7	1.7	0.9	0.4	0.2	0.0[d]
Total	1.7	1.5	1.5	1.6	2.0	1.7	2.6	1.9	1.1	0.7	0.7

The authorizations shown are developed from appropriate editions of DoD's The Five-Year Defense Program *(FYDP). To achieve as high a degree of comparability as possible, US program data have been reaggregated and converted to constant calendar 1974 dollars.*

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

Data are in total obligational authority terms for the fiscal years as designated.

a. Strategic defense SAM systems only.
b. Strategic defense aircraft only.
c. Activities associated with the early warning, detection, and tracking of an enemy air attack and the regional coordination of strategic defense forces.
d. US authorizations for ABM in 1975 are negligible at this level of rounding.

Table 7
Estimated Costs of Soviet General Purpose Forces if Duplicated in the US, By Element 1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Ground forces	11.8	12.8	13.2	15.1	15.3	15.8	16.9	17.5	18.2	18.4	18.8
Naval forces [a]	6.9	7.1	7.3	7.0	7.0	6.7	6.7	6.7	6.6	6.6	7.2
Tactical air forces [b]	3.6	3.3	3.2	2.9	2.9	3.8	4.1	4.5	4.7	4.6	4.7
Total	22.4	23.2	23.7	25.0	25.2	26.4	27.7	28.7	29.5	29.7	30.7

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These estimated dollar costs 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. These estimated dollar costs include costs for military personnel, other operating costs, procurement of hardware (excluding nuclear warheads), and construction of facilities for systems assigned to Soviet general purpose forces. No RDT&E costs are included.

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

Data are expressed in calendar years.

a. These costs are for surface combatants, naval aircraft, and general purpose submarines. The estimated dollar costs for ballistic missile submarines are included within the strategic intercontinental or peripheral attack missions.

b. These costs are for fixed-wing aircraft that are assigned a tactical combat support role. ASW aircraft and ASW carrier costs are allocated to the general purpose naval forces in accordance with the US DoD fiscal guidance category allocation.

Table 8
US General Purpose Force Authorizations, By Element
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Ground forces	6.5	12.0	12.1	13.6	12.4	8.3	6.1	5.0	5.0	5.9	5.6
Naval forces [a]	6.4	6.9	7.1	5.9	5.4	6.3	6.2	7.1	6.3	6.6	5.7
Tactical air forces [b]	7.7	12.6	14.3	12.5	11.6	9.4	7.8	8.3	8.4	7.8	6.7
Total	20.5	31.5	33.5	32.1	29.4	24.1	20.1	20.3	19.7	20.4	18.0

The authorizations shown are developed from appropriate editions of DoD's The Five-Year Defense Program *(FYDP). To achieve as high a degree of comparability as possible, US program data have been reaggregated and converted to constant calendar 1974 dollars.*

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

Data are in total obligational authority terms for fiscal years.

a. *These authorizations are for surface combatants, aircraft, and general purpose submarines. Authorizations for attack carriers and their aircraft are considered as part of tactical air forces authorizations. Authorizations for ballistic missile submarines are included in the strategic attack mission authorizations.*
b. *These authorizations are for land- and sea-based fixed-wing aircraft that are assigned a tactical combat support role. In accordance with DoD's fiscal guidance category structure, authorizations related to attack carriers are included in tactical air forces authorizations. ASW carrier and ASW aircraft authorizations are included in general purpose naval forces.*

Table 9
Estimated Costs of Soviet Defense Programs
if Duplicated in the US, By Resource Category
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
RDT&E	6.8	7.3	7.8	8.4	9.0	9.6	10.3	11.0	11.8	12.7	13.6
Investment	25.9	28.3	29.5	29.7	30.6	31.1	30.4	30.2	31.5	32.4	34.7
Procurement	24.1	25.7	26.7	27.0	27.7	28.2	27.9	28.2	29.6	30.7	32.9
Facilities	1.8	2.6	2.8	2.7	2.9	2.9	2.4	2.0	1.9	1.7	1.8
Operating	52.2	53.4	55.2	58.0	58.8	60.4	61.9	63.4	64.7	65.4	66.2
Personnel	37.5	38.3	39.5	42.0	42.5	43.7	44.8	45.5	46.4	47.0	47.6
Active & reserve military	35.9	36.6	37.7	40.2	40.6	41.7	42.7	43.4	44.3	44.7	45.3
Retired military	1.6	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.2	2.2	2.3
Operations & maintenance	14.7	15.1	15.7	16.1	16.3	16.7	17.1	17.9	18.3	18.4	18.6
Total	85.0	89.0	92.5	96.1	98.4	101.1	102.6	104.6	108.0	110.5	114.5

These estimated dollar costs are designed to indicate the general size and overall trends in Soviet defense programs by showing what they would cost if purchased and operated in the US. They do not represent precise resource allocations as the Soviets would see them. To achieve as high a degree of comparability as possible, adjustments have been made to the basic data available for both the US and USSR. All estimated costs for RDT&E activities (excluding military personnel pay and allowances) associated with military programs have been aggregated and are included under RDT&E. All costs for nuclear weapons (excluding RDT&E) have been accounted for in procurement. All costs for civil space, nonpersonnel military assistance programs, and civil defense programs have been excluded.

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

Data are expressed in calendar year terms.

Table 10
US Defense Authorizations, By Resource Category
1965-1975

	Billion 1974 Dollars										
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
RDT&E	10.0	10.4	10.5	10.3	10.5	9.6	8.8	8.9	9.1	8.6	8.2
Investment	26.0	39.4	37.6	36.0	32.5	26.7	23.5	24.3	23.1	21.9	18.9
Procurement	23.7	34.8	35.6	33.1	30.7	25.1	21.6	22.3	20.9	19.6	16.9
Facilities	2.3	4.6	2.0	2.9	1.9	1.7	1.9	1.9	2.2	2.3	1.9
Operating	50.6	56.0	63.8	67.0	68.7	64.7	59.3	56.1	54.2	53.5	53.2
Personnel	29.2	30.9	34.3	35.9	36.5	35.6	33.5	30.8	29.2	28.1	27.6
Active & reserve military	26.8	28.4	31.4	32.8	33.0	31.9	29.4	26.4	24.6	23.2	22.4
Retired military	2.3	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2
Operations & maintenance	21.4	25.1	29.6	31.1	32.3	29.1	25.8	25.3	25.0	25.4	25.6
Total	86.6	105.8	111.9	113.3	111.8	101.0	91.6	89.3	86.3	83.9	80.3

The authorizations shown were developed by amalgamating data from DoD's The Five-Year Defense Program *(FYDP), the* Budget of the United States, *and related data. To achieve as high a degree of comparability as possible, adjustments have been made to the basic data available for both the US and USSR, and both are in terms of calendar year 1974 dollars. All authorizations for RDT&E activities (excluding military personnel pay and allowances associated with military programs) have been aggregated and are included under RDT&E. Defense-related ERDA authorizations for RDT&E are also included in RDT&E. All other defense related ERDA authorizations have been accounted for in procurement. All authorizations for civil space, military assistance, and civil defense programs have been excluded.*

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

Data are in total obligational authority terms for fiscal years.

Table 11
Deployment of Major Soviet Strategic Weapon Systems
Midyear 1965-1975

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Strategic intercontinental attack:											
ICBM launchers[a]	224	239	514	796	1,018	1,291	1,489	1,527	1,461	1,393	1,385
Ballistic missile submarines	18	18	18	19	24	30	38	35[b]	44	48	48[b]
Ballistic missile submarine launch tubes	54	54	54	70	150	259	387	443	573	621	700
LRA heavy bombers and tankers	205	200	200	200	195	195	195	195	195	195	195
Strategic peripheral attack:											
MRBM and IRBM launchers[a]	709	693	677	673	653	633	594	587	583	583	583
Ballistic missile submarines	19	19	19	18	17	15	15	23[b]	23	21	28[b]
Ballistic missile submarine launch tubes	51	51	51	48	46	42	42	66	67	63	85
LRA medium bombers and tankers	800	760	740	735	730	725	710	675	675	650	665
Strategic defense:											
SAM launchers	8,430	8,460	8,550	8,820	9,100	9,460	9,820	9,950	9,840	9,660	9,620
Interceptors	3,785	3,610	3,450	3,355	3,370	3,310	3,205	3,075	2,820	2,655	2,620
ABM launchers	--	--	--	24	43	64	64	64	64	64	64

These single-valued estimates have been developed for costing purposes and are consistent with the appropriate National Intelligence Estimates. Although they fall within the ranges of likely alternative force structures presented in the National Intelligence Estimates, they do not necessarily match any particular force.

a. Does not include systems under construction, being dismantled, or off line for conversion or retrofit.

b. Reflects transfer of ballistic missile submarines from intercontinental to peripheral attack.

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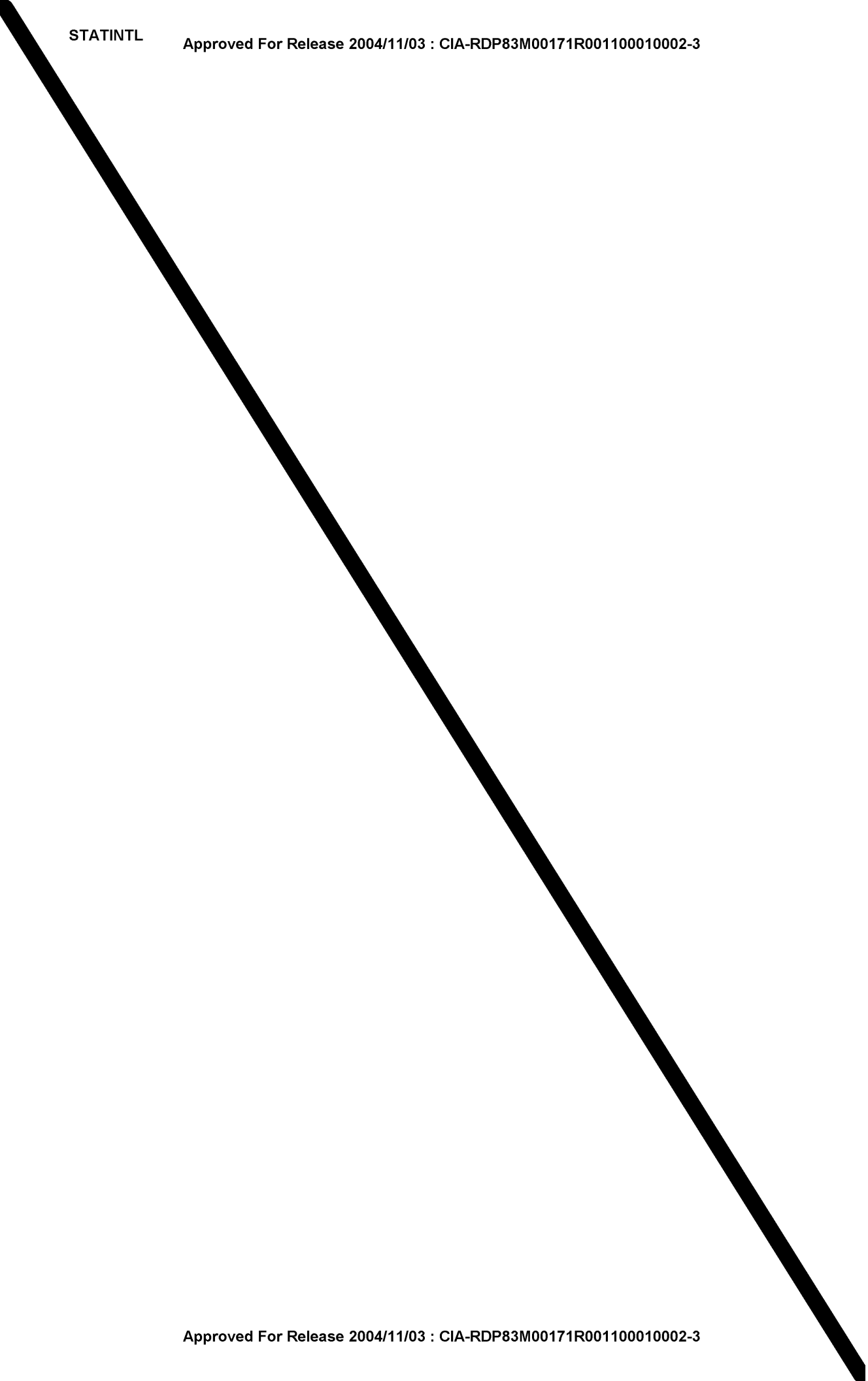
Table 12
Numbers of Soviet Ground Force Units and
Selected Items of Equipment for General Purpose Forces
Midyear 1965-1975

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Ground forces:											
Combat ready divisions[a]	34	34	34	55	48	48	49	51	53	57	62
Reduced strength divisions[b]	56	56	56	42	49	52	56	57	58	55	53
Developing divisions[c]	2	8	15	16	15	13	8	3	-	-	-
Cadre divisions[d]	54	52	52	47	51	51	52	54	54	55	53
Total divisions	146	150	157	160	163	164	165	165	165	167	168
Naval forces:											
Aircraft	755	790	800	865	905	958	998	1,005	1,030	1,051	1,070
Major surface combatants[e]	207	215	229	235	242	247	250	257	255	259	249
Minor surface combatants[e]	1,627	1,639	1,628	1,578	1,530	1,522	1,493	1,402	1,335	1,291	1,283
General purpose[e] submarines	350	347	353	355	361	348	336	342	351	352	355
Tactical aircraft[f]	3,195	3,335	3,460	3,585	3,810	3,955	4,035	4,150	4,285	4,300	4,360

These single-valued estimates have been developed for costing purposes from the appropriate National Intelligence Estimates. Although they fall within the ranges of likely alternative force structures presented in the National Intelligence Estimates, they do not necessarily match any particular force.

a. Divisions at or near full manpower and equipment strength. No mobilization planned or required.
b. Divisions that are 50 to 75 percent manned (two-thirds of company-level units active), missing some armored personnel carriers and substantial numbers of general purpose trucks and other equipment.
c. The category of developing divisions was used during the buildup of forces along the Sino-Soviet border. It referred to those units that were between cadre and reduced-strength status but in which available equipment was concentrated in one or two maneuver units to provide some immediate combat capability.
d. Divisions that are 10 to 30 percent manned (one-third of company-level units active), missing substantial numbers of armored personnel carriers, general purpose trucks, and other equipment.
e. Includes ships in reserve.
f. Tactical aircraft total does not include the YAK-27 Mangrove. To achieve comparability with US accounting, cost data for this aircraft, configured exclusively for reconnaissance, are carried under "command, support, and other."



STATINTL

MEMORANDUM FOR: Principal Deputy, Assistant Secretary Defense (Intelligence/ Director, Defense Intelligence)

This report provides a detailed classified supplement to the unclassified study issued in February of this year entitled *A Dollar Comparison of Soviet and US Defense Activities, 1965-1975* (SR 76-10053). The comparisons presented here were derived from the same data base used in the February study, the only difference being the detail in which they are presented in this report.

STATINTL

Acting Director
Strategic Research

Date 29 JUL 1976