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VOLUME 1

National Security Study Memorandum

Number 50

A REVIEW OF U. S. NAVAL FORCES (U)

Summary of Part I

September 1969

NAVY review(s) completed.

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A REVIEW OF U.S. NAVAL FORCES (U)

PART I

SUMMARY OF PART I COMPARATIVE ANALYSIS OF THE NAVAL FORCES OF U.S./NATO AND SOVIET/WARSAW PACT SINCE 1961 (U)

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DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20350

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NSSM-50/EXEC
17 September 1969

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MEMORANDUM FOR DISTRIBUTION LIST

Subj: National Security Study Memorandum Number 50 -
"A Review of U.S. Naval Forces," forwarding of

Forwarded herewith is Volume 1 of 8 volumes comprising the NSSM-50 Study, "A Review of U.S. Naval Forces".

Volumes 1 through 3 contain the final, revised edition of Part I of NSSM-50. Volumes 4 through 8 contain Part II and its Annexes. Volume 6 was forwarded separately on September 5, 1969.

ROBERT A. FROSCH
ASSISTANT SECRETARY OF THE NAVY

Attachments

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A REVIEW OF U.S. NAVAL FORCES
(PART I)

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The NSSM-50 report consists of 8 volumes:

PART I:

Volume 1 Summary of Part I
Comparative Analysis of the Naval Forces of U.S./NATO and Soviet/Warsaw Pact Since 1961

Volume 2 Appendix A: Strategic Forces

Volume 3 Appendix B: General-Purpose Forces

PART II:

Volume 4 Summary of Part II
Analysis of U.S. Requirements for Naval Forces in the 1970's

Volume 5 Appendix 1: Naval Strategic Forces

Volume 6 Annex A: Naval Strategic Forces

Volume 7 Annex B: Regional Analyses
Annex C: Soviet Forward Posture Potentials
Annex D: Comparison of U.S./USSR Naval Procurement Trends
Annex E: U.S. Bases Overseas
Annex F: Allied Defense Expenditures and Military Forces
Annex G: Amounts and Costs of Airlift/Sealift in 1974 Scenario
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NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

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April 26, 1969

National Security Study Memorandum 50

TO: The Secretary of Defense

SUBJECT: A Review of U.S. Naval Forces

The President has directed that a study be undertaken of U.S. Naval Forces. The study should be conducted in two parts:

Part I will be a comparative analysis of U.S., Soviet, other NATO, and other Warsaw Pact naval forces from 1961 to the present. This analysis should include a comparison, to the extent possible, of numbers, types, capabilities, ages, unit costs (for those built since 1961 in U.S. dollars), and deployments of naval forces by major mission, including strategic forces. Projections of this information into the foreseeable future should be made to the extent possible. Part I should be completed and forwarded to the President by June 1, 1969.

Part II will consist of an analysis of U.S. requirements for naval forces in the 1970s, including the overseas bases necessary to support them. This analysis should be related to the extent appropriate to the results of the U.S. military posture review being conducted under NSSM 3 and should reflect decisions that may result from NSC discussion of the NSSM 3 study. Part II should be completed and forwarded to the President by October 1, 1969.

NSC discussion of the results of the overall study effort will be scheduled at a later date.

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This study will be conducted under the direction of the Secretary of Defense. He will be assisted as appropriate by the Secretary of State, the Director of Central Intelligence, the Director of the Bureau of the Budget, and other agencies whose assistance he may need. Close liaison should be maintained in all phases of the study with the office of the Assistant to the President for National Security Affairs.

Henry A. Kissinger

cc: The Secretary of State
The Director of Central Intelligence
The Director of the Bureau of the Budget

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DATA SOURCES

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NATIONAL SECURITY STUDY MEMORANDUM 50

REVIEW OF U.S. NAVAL FORCES - PART I

INTRODUCTION

This Part I study, comprising the initial review of U.S. naval forces and other nations' navies, provides a factual background for the further investigation of requirements in the Part II study. While the most pertinent data on naval forces as we now see it is presented in this study, the Part II analysis will undoubtedly highlight additional areas appropriate for the comparative analysis of navies. Thus, as we learn more during the course of the analysis of requirements, the relative significance of the data presented herein may be reordered and, in effect, the Part II study will provide an expansion of this Part I effort.

The review and analysis of U.S. Naval Forces, and any comparison with another nation's naval forces must necessarily examine at the outset the mission of the U.S. naval forces and the mission of other naval forces. In any such examination a unique feature of the U.S. Navy's missions stands out - it is and has been since the decline of the British fleet the only navy in the world which has as a basic portion of its mission the projection of military power overseas.

It should be emphasized that, while the basic mission of Soviet naval forces is referred to in this study as being strategically "defensive" in nature, they currently possess the capability to conduct tactically offensive operations in far reaching areas, and particularly against third countries. If they so desired, the Soviets could make it extremely difficult for the free world to operate surface forces in large ocean areas of the world. The Soviet Union has been, and is now, embarked on the development of a modern, far-ranging, first-rate maritime force, which is being used to political and commercial advantage around the world. Their awareness of the importance of sea power is clearly evident.

GEOPOLITICAL, POLITICO-MILITARY AND ECONOMIC ASYMMETRIES

A comparison of the U.S./NATO and USSR/Warsaw Pact naval powers leads one to consider the asymmetry of geography, political goals, and economic factors.

The Warsaw Pact is basically a continental alliance. That alliance is almost self-sufficient economically and not dependent upon use of the seas for alliance support. On the other hand, as a maritime power, the U.S. is critically dependent upon free use of the seas to sustain its own economic well-being at home and to support its alliances abroad. This is illustrated by the following summary of

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international seaborne trade, indicating the general magnitude of relative dependence on sea lines of communication.

SEABORNE TRADE (MILLION LONG TONS)

	1958	1965
U.S.	274	395
USSR	26	90

The major Soviet political objective has been expansion of Soviet control and influence into strategically important areas of the world, primarily through the use of the communist political apparatus of their merchant marine supported by the Soviet Navy. The U.S. objective has been the containment of this expansion in areas where the expansion does not represent the free choice of the people concerned. In consonance with this objective the U.S. has bilateral and multilateral defense agreements with 42 free world nations. Among these, the NATO alliance, with 12 of the 15 signatory nations comprising the western boundary of the Warsaw Pact nations, presents the most immediate obstacle to Communist aggression in Europe.

The politico-military alliance asymmetries between the U.S. and USSR are highlighted by the following summary representing U.S. defense agreements and what appear to be analogous Soviet alliances.

ALLIANCE SUMMARY 1/

	With Contiguous Nations	With Non-Contiguous Nations
U.S.	2	43
USSR	7	4

The lines of communications between the various members of the Pact are internal and not subject to interdiction at sea. In this context, there is little that the U.S./NATO alliance can accomplish by denying free use of the seas to the Soviet/Warsaw Pact. In contrast, in peacetime the European members of NATO are dependent upon the sea lanes for importing POL, food and other raw materials; in wartime, with increased POL and material requirements and decreased manpower, the need would be greater.

1/ The summary includes only formal collective defense treaties for the U.S. Soviet alliances shown are estimates only, and include appropriate Warsaw Pact nations plus China, Mongolia, and North Korea in the contiguous category and East Germany, Bulgaria, Cuba, and North Vietnam in the non-contiguous category. The chart is intended only to show the order of magnitude differences between the U.S. and USSR.

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U.S. AND USSR NAVY MISSIONS

The U.S. Navy missions stem from those requirements assigned to the Department of Defense by Congress in support of U.S. national security objectives encompassing multilateral and bilateral foreign policy commitments worldwide. Both U.S. and USSR naval missions are summarized here.

Basically, U.S. Navy and Marine Corps missions are:

(1) Utilize the seas to contribute, in concert with the other armed forces, to the preservation of the U.S. and its territories by deterring attack, and to retaliate if deterrance fails.

(2) Protect sea lines of communication essential to U.S. interests at home and abroad, and, if necessary, deny enemy sea lines of communication.

(3) Project military power overseas through the use of strike forces including air strike and amphibious assault forces.

The Soviet Navy has missions similar to (1) above, as evidenced by their defensive forces and their growing ballistic missile submarine force. However, Soviet naval missions for what we would term general purpose forces have been principally oriented toward interdicting U.S./Allied sea lines of communication and countering the effective projection of U.S. military power overseas.

Somewhat in contrast with the strictly military mission context above, it is evident, in the total maritime context, that the Soviet Union's rapidly expanding use of the seas in the politico-military and economic arena indicates a commitment to project power overseas in one fashion or another.

Historically, navies have been used for denying the sea to the enemy and for insuring freedom to use the seas, in essence controlling the seas. Advancing technology has now permitted use of the seas as a far greater base for strategic and tactical offensive operations against an enemy and for the support of ground forces. The most important areas of the world's land masses are accessible to sea based weapons systems. Development of sea based air and strategic missile forces represents recognition of this fact. The structure of U.S. sea based general purpose forces also reflects this fact and highlights the basic dissimilarity between the navies of the U.S. and the USSR. In recognition of the most likely areas of conflict, and the vital dependence of various alliance partners on sea lines of communications, the U.S. has designed its naval general purpose forces primarily to control the seas and to

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exploit this control in the conduct of land action overseas. The difference in allocation of general purpose naval forces to the basic missions of denying, controlling, and exploiting control of the seas is shown in Table 1.

TABLE 1

RELATIVE ALLOCATION OF GENERAL PURPOSE FORCES TO NAVAL MISSIONS

	Deny Use of Sea to Enemy	Control Sea For Own Use	Exploit Control of Sea/Support Land Ops
U.S.	Low	Medium	High
USSR	High	Medium	Low

STRATEGIC FORCES

The assessment of U.S. Naval strategic force posture versus that of the Soviet Union is best made by the comparison of respective force potentials for achieving respective national objectives. A direct comparison including only the number of ships in the forces, their weapons, etc., would be incomplete since the forces do not interact, their missions may be different, and neither the U.S. nor the Soviet naval strategic forces are employed alone, that is, independently of land-based missile or strategic bomber forces.

The following geographic and demographic comparisons apply specifically to naval strategic systems.

		USSR	U.S.
a.	Land Area Ratio	2.5	1
b.	Population Density Ratio	1	2
c.	Location of Population Center with respect to Land-based Strategic Missile Complex	Upwind	Downwind
d.	Sea Access	Limited	Open
e.	Location of urban/ industrial centers with respect to sea coasts	Extensive land buffer areas in all directions	Many U/I centers directly on sea coast

These comparisons lend relative value to land-based strategic forces for the Soviet Union.

The overriding purpose of U.S. strategic posture is to insure insure the security of the United States, its possessions and

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areas vital to its interests, and to prevent other countries from imposing their will on the United States or its Allies. We want to prevent others from credibly threatening to use strategic nuclear weapons and even from creating the presumption that such threats would be successful. We want to insure that a potential aggressor knows that nuclear attack, nuclear blackmail, and acts which could escalate to strategic nuclear war involve unacceptable risks.

In military terms, the primary purposes of our strategic forces are:

- to reduce the likelihood of nuclear attack on the U.S. and its Allies,

- to protect ourselves and our Allies from the destructive consequences of nuclear wars, insofar as we can, and

- to be capable of controlling strategic nuclear conflicts so that the possible outcome leaves the United States and its Allies in a relatively advantageous position.

The specific action objective for the U.S. Fleet Ballistic Missile Force, which constitutes the Navy's basic strategic force, is to be ready under all circumstances and with high reliability to commence the launch of an accurate Polaris missile strike against the USSR within 15 minutes of the receipt of a valid order. Our attack aircraft carriers (CVA's) also have a role in support of our strategic plans. In this role, we now have alert and non-alert aircraft scheduled on four CVA's in the Pacific, two in the Atlantic and two in the Mediterranean. The CVA force is capable of generating additional alert aircraft and carriers on short notice. Since the primary function of the CVA force is in support of the general purpose force mission, it will be described and compared with Soviet forces under that category.

Of the total FBM force of 41 submarines, about 50 percent is on alert patrol continuously within missile range of their assigned targets. Another 25 is are in refit, between patrols, at advance sites and are ready for deployment to patrol areas on short notice. The Soviet sea-based strategic force is not now kept in a similar posture of readiness. Soviet submarines do not routinely make patrols within missile range of the U.S., although some patrols are made to mid-ocean locations. However, in a surge deployment Soviet submarines would be highly survivable and, given a period for transit into missile range, could become an alert force. As the 16 tube Yankee class submarine enters inventory in some numbers, the Soviets are expected to establish a continuous on-station alert pattern for their strategic submarine force, probably within range of CONUS.

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There are many ways to compare U.S. and Soviet strategic forces. One method is to compare the number of ships. As seen in Figure 1, the 41 Polaris nuclear submarines were all delivered in the 60's. They all have the capability to launch 16 ballistic missiles while submerged. The Soviets have produced two classes of diesel and two classes of nuclear ballistic missile submarines. The numbers of ballistic missile submarines each country has built is about equal today and all these submarines are relatively new. However, a more significant comparison is the total number of deployable (i.e., not in overhaul) sea-based ballistic missiles for each country (Figure 2).

The U.S. has a total of 512 deployable missiles at this time while the USSR has an estimated 164. The Soviets are continuing to build their Yankee class ballistic missile submarines which will carry 16 ballistic missiles per submarine. The Soviets will achieve the same number of deployable ballistic missiles we have between 1971 and 1976 if the Soviets build at the projected rates.

Another comparison of strategic capability is the number of strategic warheads available. Today the U.S. is able to deploy 512 warheads while the Soviets have the capability to deploy less than 200. By 1976 when the Poseidon conversion program is completed, the U.S. will be able to deploy about 3800 warheads, most of which will be of low yield. If the

FIGURE 1: TOTAL BALLISTIC MISSILE SUBMARINES

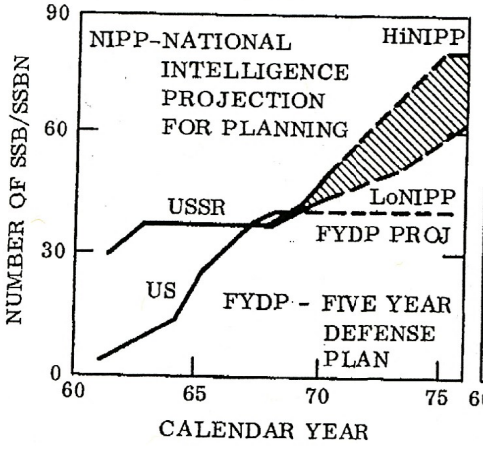
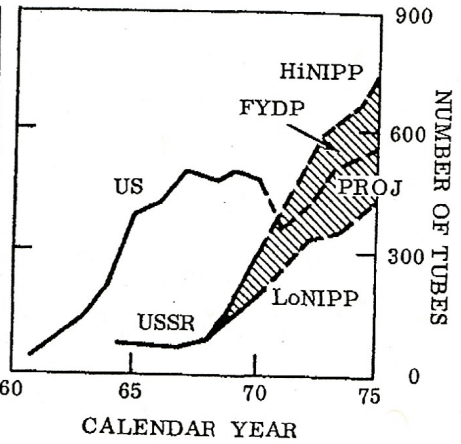


FIGURE 2: DEPLOYABLE SUBMARINE BALLISTIC MISSILE LAUNCH TUBES



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Soviets do not deploy MIRV in their SLBM's, they would have between 526 and 750 deployable warheads by 1976, but these would be of larger yield than U.S. warheads. However, the Soviet testing program is not incompatible with achieving a MIRV capability.

The trend indicates that the Soviets are making major efforts to build up their sea-based strategic forces. It is believed that the Soviets are building toward a ballistic missile submarine force that will confront the continental U.S. with a threat roughly comparable to that which the Polaris force presents to the USSR.

An extensive ABM system and a large ASW effort are the only known methods for countering sea-based systems. Poseidon with MIRV, now in development, will counter Soviet ABM improvements. MIRV will increase manyfold the number of warheads against which the ABM would have to operate. With respect to the ASW threat, geography, experience and weight of effort, have given the U.S. a lead in ASW capability and there is little likelihood that the Soviets could achieve a near term superiority or technological surprise in this field. As a result of the U.S. technological lead in strategic missile submarines and ASW development, it is concluded that our submerged ballistic missile submarines are secure until at least the late 1970's. This date is not set by any specific projection of a known threat, but rather by the general uncertainties in intelligence projections. Furthermore, there is no evidence that the Soviets now have the technical capability to trail U.S. ballistic missile submarines, or that they will achieve such capability in the foreseeable future. Through U.S. tactical exercises, it has been found that U.S. SSBN's are secure from detection and trailing by nuclear attack submarines of the U.S. 594/637 class, our latest and best SSN's. Intelligence estimates indicate that the newest classes of Soviet SSN's are no better than the U.S. 585 class SSN's. The U.S. 585 class SSN's are markedly inferior to the 594/637 class SSN's in the capabilities required for detecting and trailing SSBN's. The first of a new, follow-on class of Soviet submarines is not expected until 1972 or 1973. We do not project that this Soviet class will be able to successfully challenge our SSBN's. Based upon the possibility that a threat to the presently configured SSBN's may develop by the 1980's, the U.S. has in advanced development an improved follow-on SSBN: the Undersea Long-Range Missile System (ULMS).

U.S. ASW forces have a limited capability to detect and trail Soviet ballistic missile submarines. As these submarines transit at medium to high speeds, they can be detected and trailed by U.S. units using a combination of SOSUS, aircraft, and nuclear attack submarines. The U.S. does not presently have the technical capability to continuously and

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covertly trail Soviet ballistic submarines which are conducting quiet, slow speed patrols.

The U.S. and Soviet forces are compared in Figure 3 with respect to their capability for accomplishing an assured destruction mission. At the present time, the U.S. sea-based strategic forces alone can inflict fatalities on the USSR of 30 percent of their population. In comparison, the Soviets sea-based strategic forces can presently inflict fatalities amounting to approximately 10 percent of the U.S. population. The Soviet sea-based force is expected to attain an assured destruction capability of 30 percent between 1971 and 1975. Based on projected USSR ABM levels, the U.S. strategic ballistic submarine force with Poseidon will maintain a capability of 30 percent or higher through 1976. The decline in U.S. capability after 1973 is the result of projected Soviet ABM levels. Since the U.S. does not have a programmed ABM system to protect urban/industrial centers from ballistic missile attack, there is no similar decline for Soviet capabilities.

The Soviet sea-based strategic force capabilities are growing rapidly and it is not known how large they will become. The U.S. sea-based strategic force capability is growing at a rate which is considered adequate to maintain its present assured destruction capability but not adequate to either increase that capability or to assume additional strategic missions. At the present time, neither the U.S. nor Soviet navies have an effective defensive capability against the other's strategic sea-based force. The rapid growth of Soviet strategic capability focuses attention on the need to further develop the technological capability to effectively counter the increasing Soviet threat and thereby protect both the U.S. population centers and vital CONUS based military systems from sea-based nuclear attack.

More detailed information on the strategic naval forces of the U.S. and USSR is contained in Appendix A.

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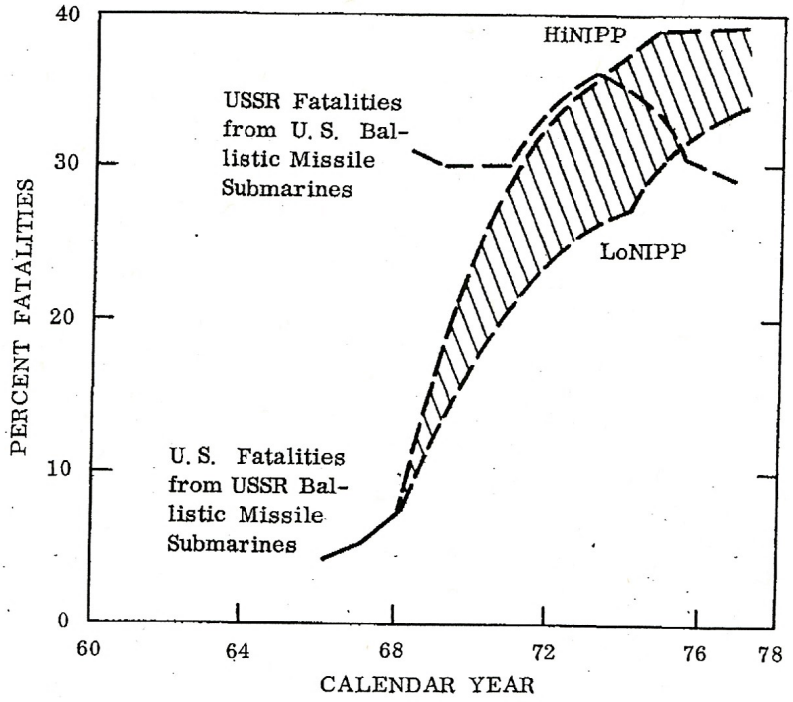
FIGURE 3: NAVAL STRATEGIC CAPABILITY



GENERAL PURPOSE FORCES

The comparison between General Purpose Forces of the U.S. and Soviet navies must also take into account the asymmetries of their respective missions. As noted previously, these mission differences stem from basic geographic, economic, and politico-military considerations.

In view of this wide disparity between the requirements of the U.S. and the USSR for naval forces, it is not surprising that the structures of the two navies are dissimilar and that the size and costs are not an accurate reflection of comparative strength and effectiveness. Appendix B hereto presents data on the general purpose forces of the two navies. While various graphs of numbers, ages, costs, etc. of the two navies can and have been drawn up, it must be noted that the purpose of such graphs is primarily to present trends and to provide indices of progress of the U.S. Navy as measured against its mission and progress of the Soviet Navy against its different mission. An analysis of the adequacy of forces indicated by

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such trends for the U.S. Navy in support of its mission and for the Soviet Navy in support of its distinctly different mission is not attempted in Part I. Such an analysis would involve a close examination of the concepts for employment of forces to support a strategic concept and the projected threat environment which would exist. It is anticipated that the requirements analysis to be included with Part II of this review will contain such an examination.

A summary of the significant aspects of the data presented in Appendix B follows:

(1) Soviet naval forces are larger in number, but lighter in tonnage relative to U.S. forces. They appear well suited for their historically defensive mission, and have been increasing in both numbers and tonnage over the past decade.

U.S. general purpose naval forces are smaller in numbers and heavier in tonnage than Soviet naval forces. U.S. naval forces have been decreasing in numbers and slightly increasing in tonnage over the past decade. Increases in tonnage relate directly to a mission requiring extended deployments in overseas areas. Figures 4 and 5 indicate these trends graphically and indicate future projections. Table 2 outlines the U.S. and USSR order of battle for 1969, and includes strategic forces for comparison purposes.

FIGURE 4: TOTAL NUMBER OF SHIPS

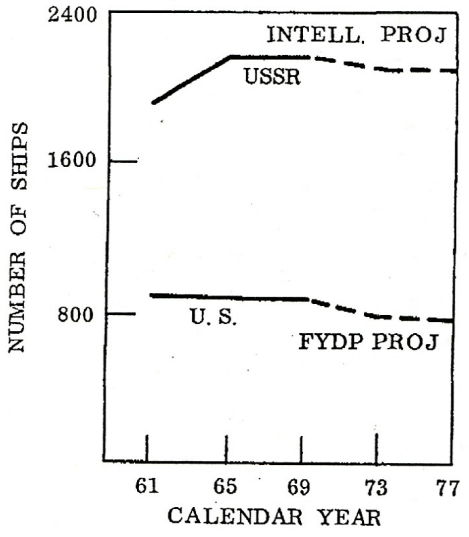

FIGURE 5: TOTAL TONNAGES

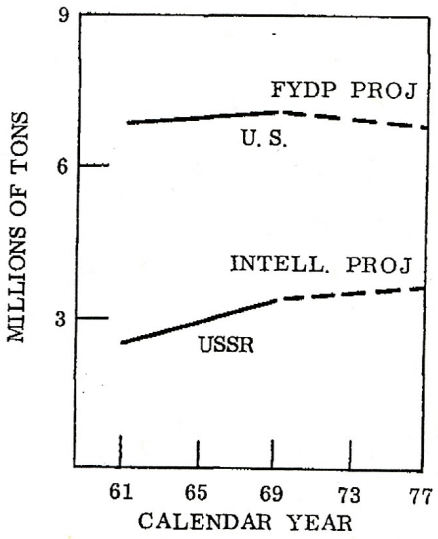

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TABLE 2

U.S. AND SOVIET NAVAL ORDER OF BATTLE

ALL FLEETS - MID-1969[1/]

ACTIVE SHIPS	#U.S.	#USSR
Major Combatants		
Attack Carriers (CVA/CVAN)	15	0
ASW Carriers (CVS)/Helicopter Ships (CHG)	7	2
Missile Cruisers (CLG/CLGM/CG)	9	11
Cruisers (CA/CC/CL/OCA)	6	8
Missile Destroyers (DLG/DDG/DDGS)	55	34
Destroyers (DD/DL)	169	47
Other Major Escorts (DE/PCE)	45	102
	306	204
Submarines		
Nuclear, Ballistic Missile (SSBN)	41	14
Diesel, Ballistic Missile (SSB)	0	28
Nuclear, Cruise (SSM) Missile (SSGN)	0	33
Diesel, Cruise Missile (SSG)	0	28
Nuclear, Torpedo Attack (SSN)	40	22
Diesel, Torpedo Attack (SS)	62	247
	143	372
Patrol		
Submarine Chasers (PC/SC/PTC)	0	320
Missile Boats (PTG/PTFG)	0	160
Other Major Patrol (PG)	14	0
	14	480
Mine Warfare		
Ocean Minesweepers (MSO/MCS/MSM/MSF)	65	252
Inshore Minesweepers (MSC/MHC/MMF/MSI)	9	69
	74	321
Amphibious		
Command Ships (LCC)	5	0
Helicopter Carriers (LPH)	9	0
Assault Ships (LKA/LPA/LPD/LSD/LPR/LSM/LSV)	143	109
Fire Support Ships (BB/LFR)	5	0
	162	109

1/ Excluding riverine assault craft, harbor service craft, and minor torpedo-gun boats.

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TABLE 2

ACTIVE SHIPS

Auxiliary	#U.S.	#USSR
Repair Ships (AD/AR/ARL/AS)	37	32
Fleet Oilers (AO/AOE/AOR/AOG/AOL)	48	52
Ammunition Ships (AE/AEM)	22	6
Stores Ships (ASL/AF/AFS/AK/AKL)	18	97
Salvage & Rescue Ships ARS/ASR/ATF/ATA/ ARSD/ATR)	55	175
Research & Survey Ships (AGF/AG/AGS/AGSS)	18	199
Other Support Types (AH/AGMR/AVB/ARC/ADG/ ANL/ARG/AVM/AOS/APB/AN/APC/AW/EAG)	13	97
	211	658

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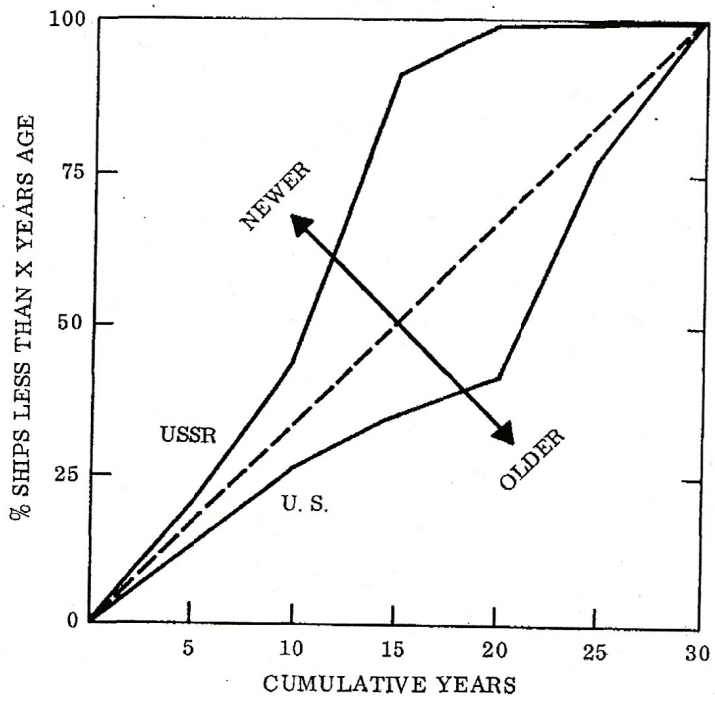
(2) The average age of the major combatant forces of the USSR has increased from 6 years old in 1961 to 10 years old in 1969, with intelligence projections indicating a slightly increasing average age. Major combatant forces of the U.S. have increased in age over the past decade to average 15.4 years old in 1969, with FYDP projections indicating a decrease in average age by 1977. The age distribution of U.S. and Soviet submarines and major combatant ships as of the present time (1969) is shown graphically in Figure 6. Given an arbitrary ship life of 30 years, the diagonal (dotted) line would represent a uniform distribution of ships in each age category. It can be noted on this graph that 90% of the Soviet ships in this category are less than 15 years old and only 35% of the U.S. ships are less than 15 years old. Just as chronological age is one factor in assessing overall capabilities of naval forces, so also are such factors as technological ages, the tempo of operations to which ships have been subjected and, in turn, the material condition of the ships. Most of the U.S. naval forces in the over-20-years-old category have participated in the Korean and/or Vietnam

FIGURE 6: AGE DISTRIBUTION OF MAJOR COMBATANTS AND SUBMARINES



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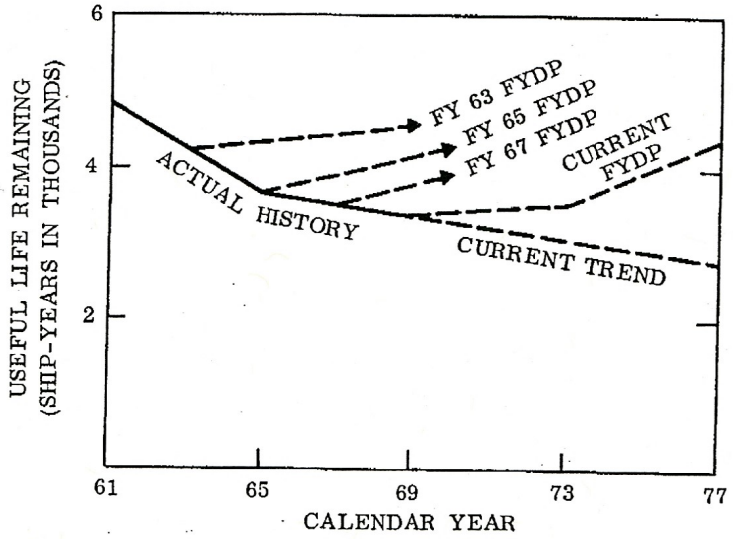
wars and in one or more of those numerous lesser contingencies (e.g. Lebanon, Suez, Cuban, Dominican Republic) which have occurred during the past two decades. The three-fold increase in the ship maintenance requirements for WestPac repair facilities (from 468,000 man days/year in 1965 to 1,475,000 man days/year in 1967) for an approximately equal number of ships in the Western Pacific in each of those years is indicative of the effect of the tempo of operations on material readiness.

(3) The average age of a force can be decreased by replacing older ships with new construction ships or by just retiring older ships. The average age of U.S. submarines and combatants is projected by the FYDP to decrease from the 15.4 average in 1969 to a 13.2 average in 1977. This is based on new construction of a number of ships, retirement of older ships, and a reduction in the total number of ships in inventory. However, projections may be somewhat misleading in that FYDP projections have seldom, if ever, been matched by the actual U.S. ship construction program. Figure 7 shows an example, for U.S. cruiser-destroyer forces, of how FYDP projections have been optimistic in the past. The graph shows actual useful ship life remaining (based again on an arbitrary 30 year life span) from year to year as opposed to past FYDP projections.

FIGURE 7: U.S. CRUISER-DESTROYER FORCE USEFUL SHIP LIFE REMAINING



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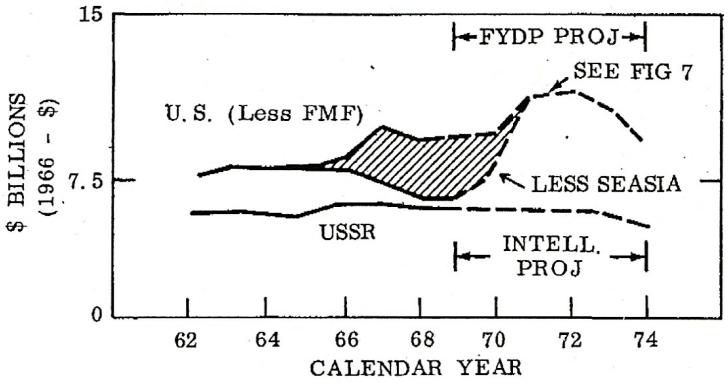
(4) Figures 8 and 9 present two comparisons of total direct expenditures in support of Naval General Purpose Forces.1/ The projected rise in U.S. expenditures shown in Figure 8 is based on FYDP programs, and is subject to the uncertainties of actual funding noted in paragraph (3) above. Figure 9 indicates that portion of the total expenditures considered ship related, which can be summarized as follows for the 8 year period 1962 - 69.

	TOTAL	SHIP RELATED
U.S.	$80B	$41B
USSR	$41B	$36B

FIGURE 8: ESTABLISHED ANNUAL EXPENDITURES FOR GENERAL PURPOSE NAVAL FORCES
(U. S. : FYDP Program II; USSR: Program II Equivalent)



1/ Intelligence estimates of Soviet defense costs are deliberately structured to be comparable with the U.S. FYDP Program breakdown. For this reason, U.S. General Purpose Force costs above are only those contained in FYDP Program II, so as to be most nearly comparable to Soviet GPF costs. Soviet costs are presented in dollars so as to have meaning to U.S. users and to provide a common base for comparisons with U.S. costs. The Soviet costs are the estimated cost of procuring, maintaining and operating the Soviet force in the U.S. at U.S. prices. This methodology is considered reasonably valid for comparisons of U.S. and USSR military expenditures in totality, and for such categories as ship procurement, general purpose forces, etc. The controlled Soviet economy, and the very different price relationships which apply in the U.S. and USSR, make any comparisons involving the two economies tenuous at best and there is no consensus among economists as to the ideal method of making such comparisons.

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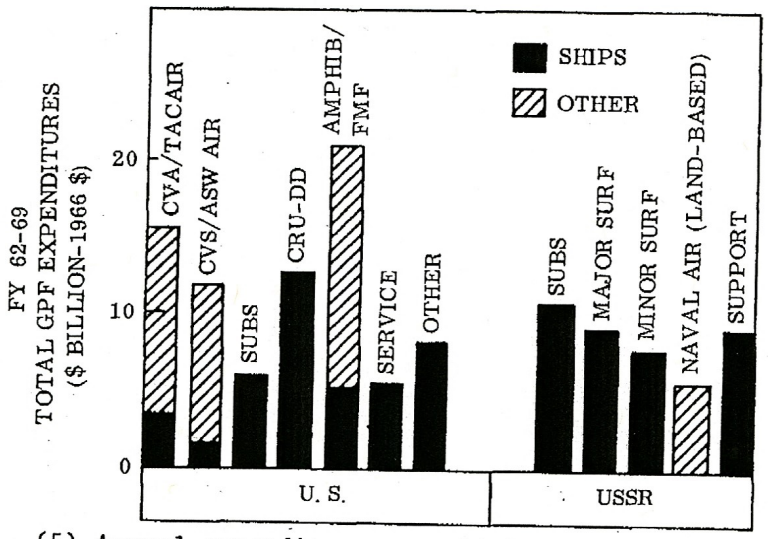
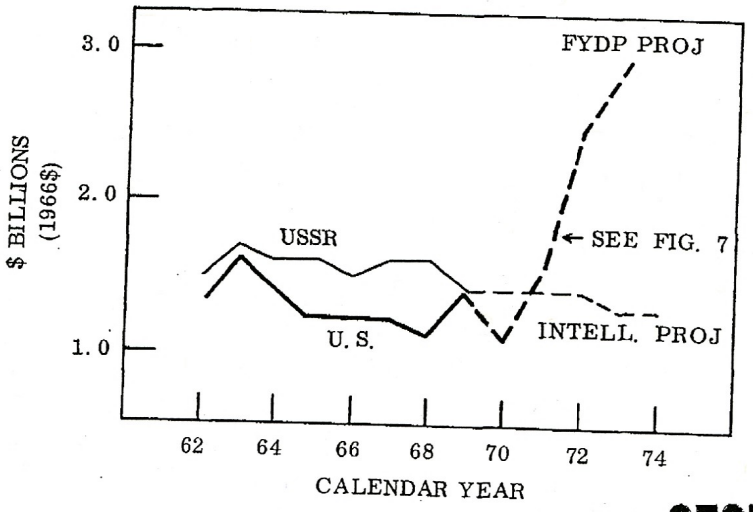
FIGURE 9: TOTAL (1962-69) EXPENDITURES FOR GENERAL PURPOSE NAVAL FORCES (U.S.: FYDP Program II; USSR: Program II Equivalent)



(5) Annual expenditures on shipbuilding and major conversions for General Purpose Forces are shown in Figure 10. U.S. projection is based on FYDP programs. Again, Soviet dollar costs are based on estimates of the cost of constructing the Soviet ship in the United States, at U.S. prices.

FIGURE 10: SHIPBUILDING & CONVERSION ANNUAL EXPENDITURES: GENERAL PURPOSE NAVAL FORCES



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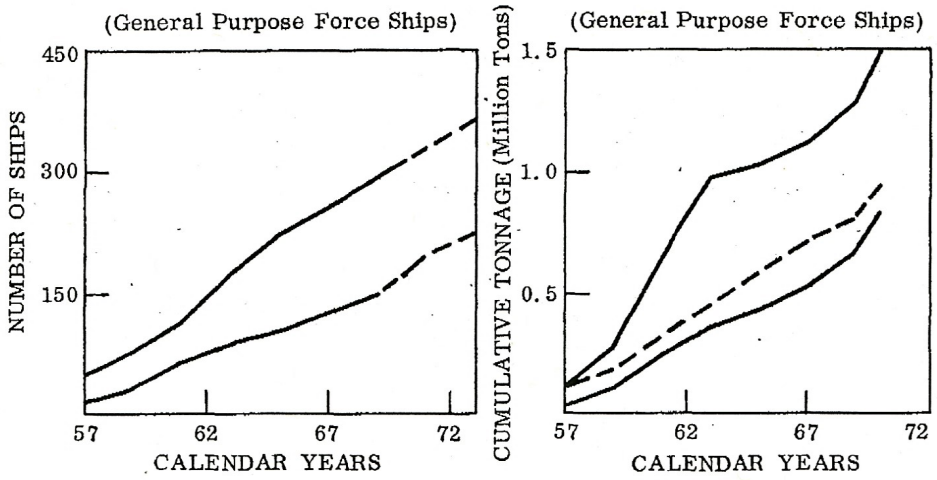
(6) Figures 11 and 12, depicting major combatant (DE/SS and larger) shipbuilding deliveries since 1957, shows the Soviets as having averaged 19 ships per year. Their cumulative displacement tonnage over this period was 958,000 tons. U.S. combatant shipbuilding over this same period has averaged 13 ships per year with a cumulative tonnage of 1,550,000 tons. U.S. CVAs account for 44% of this tonnage total. Less CVAs, construction of U.S. combatants was slightly less than 90% of that of the Soviet Union based on comparative tonnages and much less based on numbers of individual units.

FIGURE 11: MAJOR NAVAL COMBATANT CUMULATIVE DELIVERIES

FIGURE 12: MAJOR NAVAL COMBATANT NEW CONSTRUCTION TONNAGE



Combatant ship deliveries and projected deliveries during the 1957-1973 period are subdivided by types as shown below.

Type	U.S.	USSR
Submarines (less strategic)	73	192-202
ASW	82	116
ASW/AAW	61	49-55
CVA/CVAN/CHG	8	2-3
Total	224	359-376

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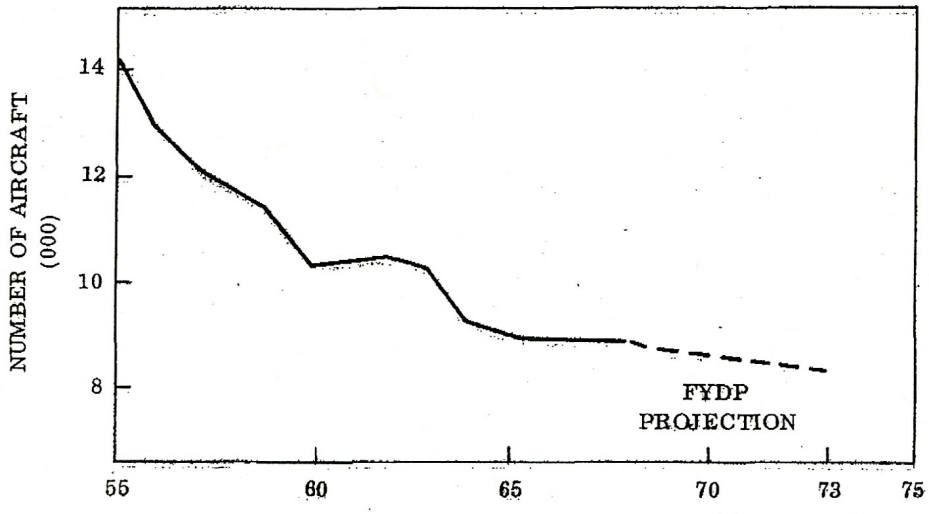
(7) The total U.S. Navy aircraft inventory, including helicopters and USMC aircraft, is displayed in Figure 13. The increasing average age of U.S. Navy aircraft is summarized in Figure 14. By 1972, the average aircraft age will be over 9 years, almost double the 1959 average. The most economical age, based on service life, rework times/costs and operational loss rates is considered to be 4.35 years. In the case of fighter and attack aircraft, technological obsolescence also is a factor and is becoming an increasing problem as shown by Figure 15. The effectiveness of these aircraft is quite sensitive to age; it can be seen that their 1972 average age is also double the 1959 average.

FIGURE 13: TOTAL USN AIRCRAFT INVENTORY



During World War II Soviet Naval Aviation was dominated by fighter aircraft. Today it is primarily a medium bomber force. Approximately 60 percent of these 500 bombers are equipped to carry air-to-surface anti-shipping missiles--most, the AS-2, and some, the new AS-5. The latter weapon, which includes a greater range among its advances, will prolong the service life of its carrier, the BADGER B, which already is more than twelve years old. A number of faster BLINDER

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FIGURE 14: AVERAGE AGE OF ALL USN AIRCRAFT

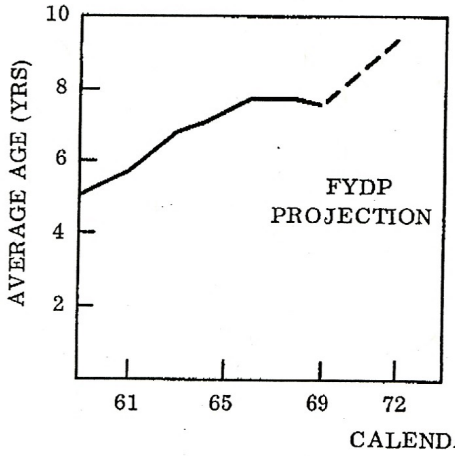
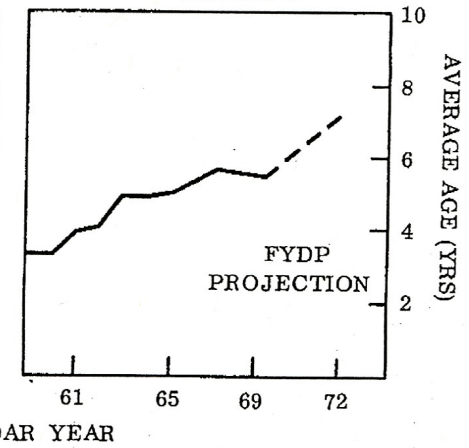


FIGURE 15: AVERAGE AGE OF USN FIGHTER/ATTACK AIRCRAFT



CALENDAR YEAR

bombers have entered service, but not yet as missile carriers--although this appears to be in the offing. The force's principal mission is the location and countering of Western strike carriers in conjunction with the cruise missile submarines. Soviet naval air is completely land based and relatively small in numbers as compared with the U.S. inventory. However, it poses a very significant threat to those forces which approach within the radius of their land bases. The Soviet tactical air inventory has almost doubled since 1961 with intelligence projections indicating a slight decrease in the future due primarily to the phasing out of the few remaining light bombers.

(8) During the first half of the 1960's, sustained deployments of U.S. general purpose naval forces remained fairly constant, with an average of 53 ships continuously deployed with the U.S. SIXTHFLEET in the Mediterranean and an average of 120 ships with the U.S. SEVENTHFLEET in the Western Pacific. From 1965 to the present, U.S. deployments have decreased slightly in the Mediterranean to a 46 ship average and, as expected due to the Vietnam war, increased considerably in the Western Pacific to average some 195 ships. On the other hand, Soviet out-of-homeport-area deployments have increased steadily during this decade. From 1964 to 1968 there was a 123% increase in Soviet submarine deployments and a 380% increase in surface ship deployments. The most striking and publicized increase has been that in the Mediterranean as shown below in Figure 16.

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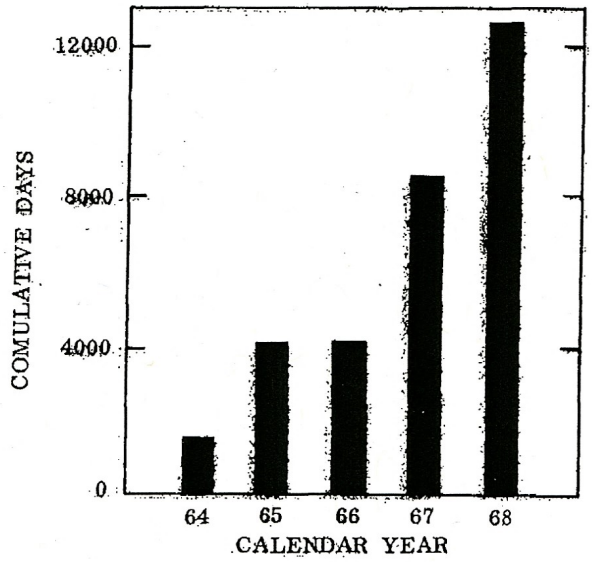
FIGURE 16: SOVIET OPERATIONS IN THE MEDITERRANEAN



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(9) Table 3 shows the inventories of NATO and PACT (non-U.S., non-USSR) navies. The numerical superiority of the NATO forces is obvious and expected in view of these nations' proximity to and historical dependence upon the seas. With the exception of the U.S., UK, Canada and possibly France in the NATO alliance, whose force structures reflect a mission to protect sea lines of communication, the naval missions of other NATO nations and all of the non-USSR PACT nations center on coastal defense. Historical and projected trends indicate increasing PACT naval assets and decreasing NATO naval forces. The superiority shown in numbers of NATO ships must be viewed in the light of the fact that these forces are concentrated mainly in European waters, that they are generally less effective than U.S. counterparts, and that they can be counted on for assistance only in situations in which their governments' interests and actions coincide with those of the U.S. (e.g. Norwegian naval participation in an Arab-Israeli environment?). NATO and PACT naval forces are addressed in more detail in Appendix B.

TABLE 3 - NATO/PACT FORCE LEVELS (LESS US/USSR)

NATO

	CVA	CVS	DD	SS	AMPHIB	MINE	PATROL	AUX	TOTAL
1961	3	7	277	114	94	737	360	302	1894
1965	3	7	245	114	58	635	311	416	1789
1969	2	6	250	128	42	527	284	409	1648
1973	0	4	222	124	45	494	307	428	1624
1977	0	1	234	130	46	472	331	418	1632

PACT

	CVA	CVS	DD	SS	AMPHIB	MINE	PATROL	AUX	TOTAL
1961	N	N	12	13	0	138	248	(99)*	510
1965	0	0	9	9	14	142	242	(99)*	515
1969	N	N	8	9	30	158	298	99	602
1973	E	E	11	10	(30)*	159	327	(99)*	636
1977			3	12	(30)*	155	346	(99)*	645

*Estimates

Total NATO (including U.S.) and total Warsaw Pact (including USSR) force levels present a somewhat different picture, when compared, than do the totals shown in Table 3. These totals, for selected years 1961-77, are shown in Figure 17 which depicts both the total number of naval ships for each alliance and the proportion of each total classified as major combatants and submarines.

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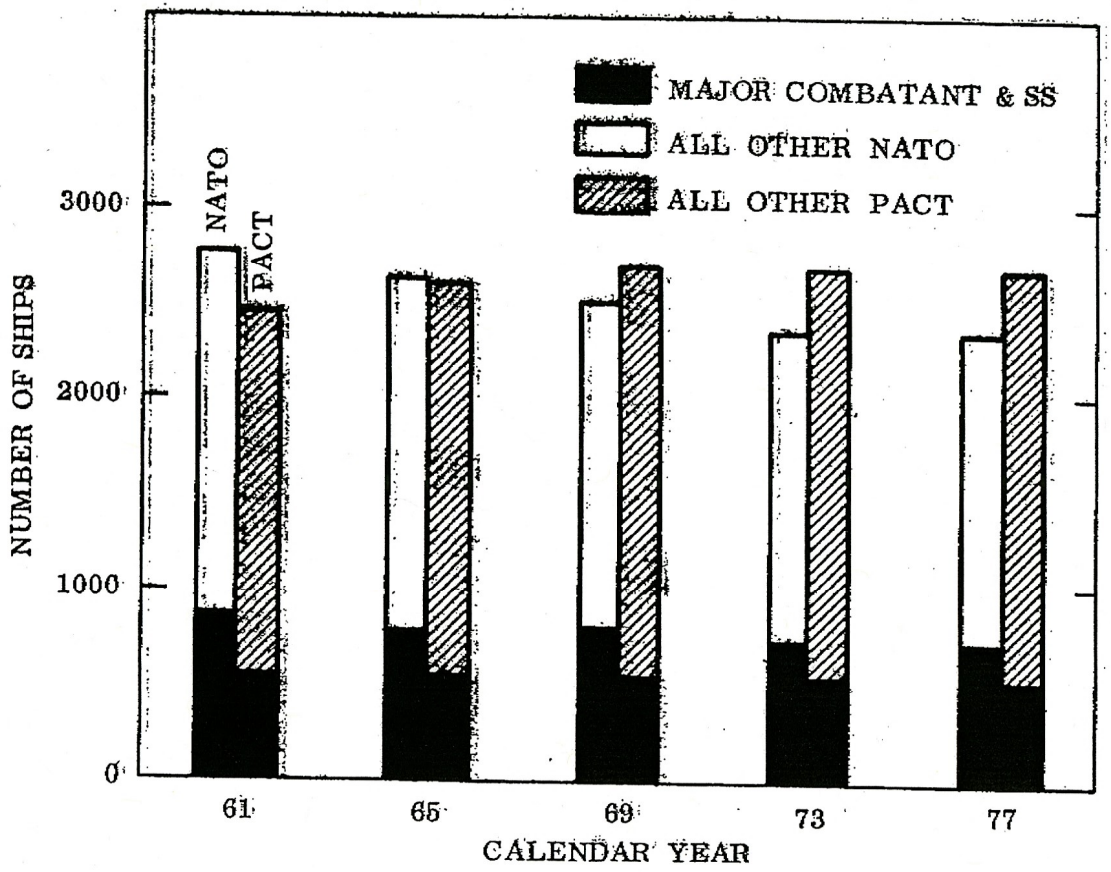
FIGURE 17: NATO/PACT FORCE LEVELS
(INCLUDING U. S. & USSR)



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MANPOWER/PERSONNEL STATUS

Manpower utilization in the U.S. Navy has put emphasis on proportionately large numbers of highly skilled personnel who require a high degree of mental ability and long technical training. Generally, the Navy has requirements for skilled petty officers (E4 to E9) on the order of about 60% of the total enlisted force. All officers are desired to be either college graduates or highly trained technicians. This emphasis puts a premium on the capability to attract and retain high quality people. Rapidly increasing requirements for skilled personnel, which are not available within existing resources without dilution of experience level, and low retention rates among both officer and enlisted personnel have reduced the Navy's capability to man its ships and to operate sophisticated equipment to its designed level. Degradations in fleet operational capability can be directly inferred from percentages of ships and squadrons reporting either marginally or not ready as a consequence of personnel deficiencies (Table 4) and inability to meet needs in many highly technical skills. These problems, along with retention and manpower summaries, are elaborated on in Tab M to Appendix B.

MERCHANT MARINE FLEETS

Any assessment of naval forces must take into account the strength and flexibility derived from an active Merchant Marine Fleet. Whereas the U.S. is heavily dependent upon a capable Merchant Marine for the import of resources during peacetime and export of materials in support of allies during wartime, the USSR is practically self-sufficient and only requires the limited assistance of her continental allies to sustain herself. While the total active U.S. Fleet has declined in numbers and increased in age over the past decade, the Soviet Merchant Marine has enjoyed an unparalled period of expansion and modernization. The USSR Merchant Fleet is now the seventh largest in the world in terms of dead weight tonnage (DWT), with over 80% of its units less than ten years old. Centralized control over merchantile operations gives the Soviets the potential to execute national policies as they wish by utilizing their shipping in direct competition with Free World Nations. Moreover, the Soviet Merchant Fleet possesses an inherent capability to support military operations for which an estimated 650 cargo, tanker, and passenger ships are physically well-suited. A summary of active inventories and tonnages of the U.S. and USSR Merchant Fleets is contained in Figures 18 and 19.

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TABLE 4: PERCENTAGE NAVAL UNITS REPORTING READINESS DEFICIENCIES 1/ IN PERSONNEL

		AVERAGE %			CURRENT %
	1st HALF FY68	2nd HALF FY68	1st HALF FY69	2nd HALF FY69	3/69
Active Ships 2/					
LANT	59	62	65	56	57
PAC	39	41	40	41	38
Active Squadrons					
LANT		83	82	75	72
PAC		48	53	47	43

1/ "Marginally Ready" or Not Ready for reasons of personnel deficiencies.
2/ Excludes ships in overhaul.

Rough comparisons can be made between Soviet and U.S. naval manpower on a basis of total numbers (Table 5). Expanded comparisons and additional Soviet data are included in Appendix B, Tab M

TABLE 5: TOTAL NAVAL MANPOWER (Thousands)

	1965	1969	1973
SOVIET (DIA data)	450	474	UNK
U.S. (FYDP)	671	759 1/	683

1/ Includes SEA Augment.

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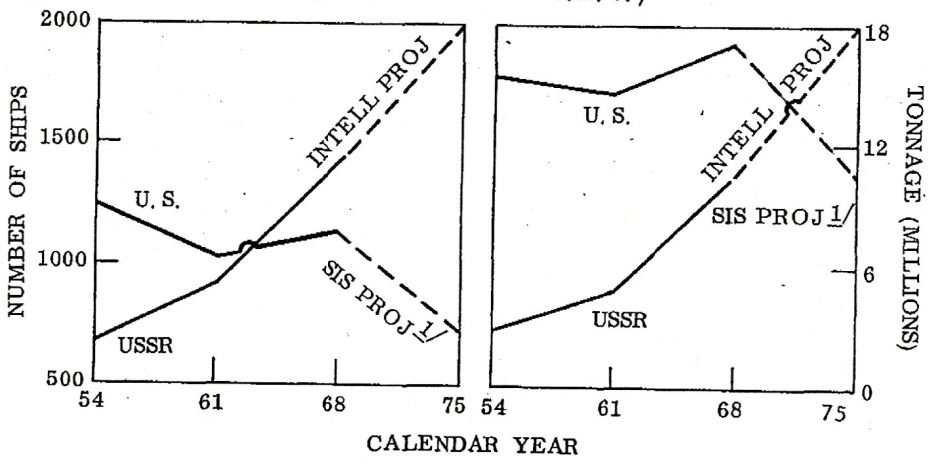
FIGURES 18 AND 19: INVENTORY AND TONNAGE U. S. AND SOVIET FLAG MERCHANT FLEETS

(SHIPS OVER 1000 G. R. T.)



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attack without warning. In this case the issue would be in doubt. The primary threat against our CVA's remains the submarine-launched or air-launched missile.

The Soviet Navy has no capability which corresponds to that of U.S. attack carriers in providing tactical aircraft to support U.S. or Allied sea, ground and air forces overseas (e.g., Korea, Vietnam, Taiwan, Lebanon, etc.).

The relatively small Soviet amphibious force (about 3 battalion (U.S. equiv.) Soviet lift vs 15 battalion U.S. lift) can conduct assault landing operations within radius of their own or friendly land based fighter aircraft, or where there is no opposing air power. Its small size restricts its use to assaults against small powers, or as a tactical maneuver element of their Army. Since our amphibious force can be protected and supported by carrier based aircraft wherever it can go, it is useable on almost any coastline.

The Soviet Navy now has 153 fast patrol craft equipped with 2 to 4 short range (15-20 miles) surface-to-surface missiles. They are deployed in four different areas: (Northern Fleet (Murmansk Area) 16, Baltic 53, Black Sea 24, Sea of Japan (Vladivostok Area) 60. In these coastal waters and protected inland seas they are a threat to U.S. and Allied navies particularly if they are permitted the first shot. They are highly vulnerable, however, to aircraft attack, and should consequently be capable of being tactically contained.

The Soviets have provided small numbers of these missile-equipped patrol craft to certain foreign countries, among which are: Cuba, Egypt, Algeria, Syria, North Korea, Chicoms and Indonesia. Against neighboring small nations' navies, these are a major threat. Because of their limited open sea operating capability, relatively short surface-to-surface missile range, and vulnerability to aircraft, they present a limited threat to U.S. Navy task forces which have air cover if we have strategic or tactical warning. The Soviets have also provided their shore-launched, short-range (45NM) anti-ship missile to various countries.

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COMPARISON OF THE GROSS CAPABILITIES OF THE U.S. AND USSR NAVIES

The growing Soviet SLBM force presents us with the most difficult problem of any of their naval forces. The reverse is probably also true. Since the ballistic missile submarine's only mission prior to hostilities is to avoid detection and its post hostilities' mission can be completed in a few minutes, it presents the most difficult ASW problem. Since its missiles are launched from an unpredictable direction and have a relatively short time of flight, it also presents the most difficult ABM problem.

The Soviet attack submarine force armed with anti-ship missiles as well as torpedoes has a formidable capability to inflict damage on any navy and to probably overwhelm any but that of the United States. It also gives the Soviets the capability to greatly reduce the capacity of any sea line of supply. In the case of the U.S., there is no assurance at present, that the outcome of an anti-submarine campaign against the Soviets could quickly be resolved in our favor. Against any other nation, the Soviet Submarine force could probably achieve virtually complete interdiction of their sea lines of communication. The anti-ship missile is the most formidable weapon our ships will have to face, especially when and if a submerged launch capability is attained.

The Soviet naval air arm utilizes anti-ship missiles as its primary weapon. Most overflights of our transitting forces appear to be rehearsals of coordinated missile attacks. In addition, as the Soviet strategic bombers are replaced by ICBM's and SLBM's, it is to be expected that at least some of these aircraft will be provided to increase the Navy air arm's tactical missile striking ability. One fifth of the 100 Soviet cruisers and destroyers are equipped with long range (100-plus miles) surface-to-surface missiles. When our cruisers and/or destroyers (which are not so equipped) face such ships and are out of range of either friendly carrier based or land based air, the U.S. force is in a difficult situation. This potential occurred in the Indian Ocean this spring. Our two destroyers of the Middle East Force (which operate from the Persian Gulf) were faced with a Soviet squadron of one surface-to-surface missile cruiser plus three comparably equipped destroyers. Neither side had air support.

Soviet naval surface forces can out-match any naval force in the world other than the U.S. Navy. This gives their presence in any area of the world significant political implications without any overt conflict.

Because of superior firepower and striking range, a 2 CVA Task Force (i.e., any one of our 4 numbered fleets) can probably manage the threat presented by any possible Soviet assemblage of surface forces unless the Soviet forces

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VOLUME 3

National Security Study Memorandum

Number 50: PART I

A REVIEW OF U. S. NAVAL FORCES (U)

Appendix B: General-Purpose Forces (u)

September 1969

DECLASSIFIED
E.O. 13526, Section 3.5
NLN10-H-19/2267/per sec. 3.3(b)(1)(5)(6) Ltr. 11-14-2013
By RJ MLL NARA, Date 4-12-2016
NLN 10-H-19/22671 [p. 1 of 144]

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A REVIEW OF U.S. NAVAL FORCES (U)

APPENDIX B

GENERAL - PURPOSE FORCES (U)

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DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON, D. C. 20350

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NSSM-50/EXEC
17 September 1969

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Subj: National Security Study Memorandum Number 50 -
"A Review of U.S. Naval Forces," forwarding of

Forwarded herewith is Volume 3 of 8 volumes comprising the NSSM-50 Study, "A Review of U.S. Naval Forces".

Volumes 1 through 3 contain the final, revised edition of Part I of NSSM-50. Volumes 4 through 8 contain Part II and its Annexes. Volume 6 was forwarded separately on September 5, 1969.

ROBERT A. FROSCH
ASSISTANT SECRETARY OF THE NAVY

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REVIEW OF NAVAL GENERAL PURPOSE FORCES

APPENDIX B

TABLE OF CONTENTS

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The NSSM-50 report consists of 8 volumes:

PART I:

Volume 1	Summary of Part I Comparative Analysis of the Naval Forces of U.S./NATO and Soviet/Warsaw Pact Since 1961	
Volume 2	Appendix A:	Strategic Forces
Volume 3	Appendix B:	General-Purpose Forces

PART II:

Volume 4	Summary of Part II Analysis of U. S. Requirements for Naval Forces in the 1970's	
Volume 5	Appendix 1:	Naval Strategic Forces
Volume 6	Annex A:	Naval Strategic Forces
Volume 7	Annex B:	Regional Analyses
	Annex C:	Soviet Forward Posture Potentials
	Annex D:	Comparison of U.S./USSR Naval Procurement Trends
	Annex E:	U.S. Bases Overseas
	Annex F:	Allied Defense Expenditures and Military Forces
	Annex G:	Amounts and Costs of Airlift/ Sealift in 1974 Scenario
	Annex H:	Comparative Costs of Land-based/ Sea-based Tactical Air
Volume 8	Annex I:	Northeast Asia Case
	Annex J:	General-Purpose Naval Force Levels
	Annex K:	Navy Budget Implications
	Annex L:	Survivability of Naval Surface Ships
	Annex M:	Technical Implications
	Annex N:	Amphibious Warfare Forces
	Annex O:	Sizing of Ships
	Annex P:	Attack Submarines

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NATIONAL SECURITY COUNCIL
WASHINGTON, D.C. 20506

April 26, 1969

National Security Study Memorandum 50

TO: The Secretary of Defense

SUBJECT: A Review of U.S. Naval Forces

The President has directed that a study be undertaken of U.S. Naval Forces. The study should be conducted in two parts:

Part I will be a comparative analysis of U.S., Soviet, other NATO, and other Warsaw Pact naval forces from 1961 to the present. This analysis should include a comparison, to the extent possible, of numbers, types, capabilities, ages, unit costs (for those built since 1961 in U.S. dollars), and deployments of naval forces by major mission, including strategic forces. Projections of this information into the foreseeable future should be made to the extent possible. Part I should be completed and forwarded to the President by June 1, 1969.

Part II will consist of an analysis of U.S. requirements for naval forces in the 1970s, including the overseas bases necessary to support them. This analysis should be related to the extent appropriate to the results of the U.S. military posture review being conducted under NSSM 3 and should reflect decisions that may result from NSC discussion of the NSSM 3 study. Part II should be completed and forwarded to the President by October 1, 1969.

NSC discussion of the results of the overall study effort will be scheduled at a later date.

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This study will be conducted under the direction of the Secretary of Defense. He will be assisted as appropriate by the Secretary of State, the Director of Central Intelligence, the Director of the Bureau of the Budget, and other agencies whose assistance he may need. Close liaison should be maintained in all phases of the study with the office of the Assistant to the President for National Security Affairs.

Henry A. Kissinger

cc: The Secretary of State
The Director of Central Intelligence
The Director of the Bureau of the Budget

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APPENDIX B

REVIEW OF NAVAL GENERAL PURPOSE FORCES

SITUATION

A comparison of U.S. (and other NATO) and Soviet (and other Pact) naval forces necessarily requires consideration of the assymetry of the geography and the different goals of the two powers. The USSR and her Pact allies are a continental power that is almost a self sufficient unit. On the other hand, the U.S. and its allies are critically dependent upon sea lines of communication. This basic difference, and the resulting assessment of the requirements for naval forces, leads to navies that are very different - different in numbers, types of ships, and costs.

Part II of the Review of Naval Forces will include analyses of the requirements for naval forces in the 1970s. Part I is not intended to prejudge the results of these analyses; rather Part I presents data on past, present and projected structures, order of battle, ship characteristics, trends and costs which are the logical starting point for analyses of naval force capabilities and requirements. In assessing this data, it is important to do so in the context of questions such as:

- Why are the structures as they are?
- Are the missions of the opposing navies properly in conflict, i.e., does our defense counter their offensive and vice versa?
- How do geography and broader National Policy and Purpose influence the structure of the opposing navies?
- To what extent does a stable equilibrium not exist?

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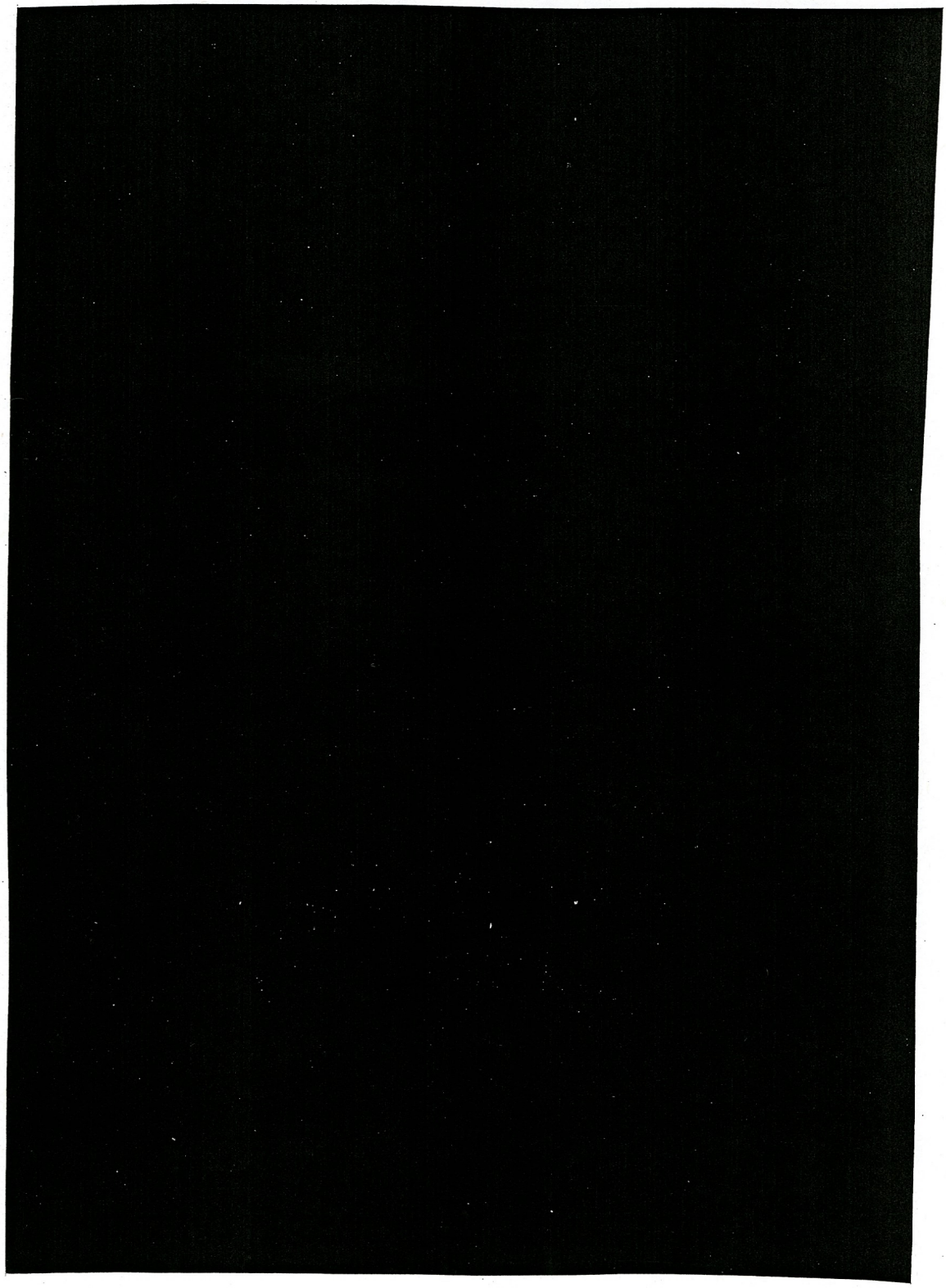

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It is difficult to determine whether there is a stable

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to predict or measure the outcome of a hypothetical confrontation. Indeed, it is difficult to predict the nature of the confrontation. A behaviorist might say that there is equilibrium, and that it is stable, because through the Korean War, Berlin Blockade, Cuba Crisis, Southeast Aisa War, there has been no major naval combat between the U.S. and the Soviets despite extensive use of the sea by the U.S. However, there are some destabilizing factors at work. The age of U.S. ships is increasing, while the Soviets are building and converting ships that increasingly threaten our use of the sea. Both sides are improving the unit capability of their combatant forces, new escort types are being built or are contemplated by both sides, the U.S. is developing a new sea based ASW aircraft, the VFX, etc.

Because the Soviets do not have a counterpart to our military and civilian transport, amphibious assault and attack carrier forces (e.g., they do not have forces with

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them. We have, however, developed and employed forces to interdict the local coastal and inland waterway traffic in South Vietnam. There is an element of instability in this regard. The Soviet fishing and merchant fleets are growing

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SUMMARY

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TABS

The differing structure of U.S./NATO and USSR/PACT naval forces is shown in the various TABS to this Appendix, which contain data on orders of battle, ship characteristics, fleet age and tonnage, shipbuilding trends, and costs. These TABS are:

A. U.S. Navy Ship Characteristics
B. USSR Naval Ship Characteristics
C. U.S. Navy Aircraft Characteristics
D. USSR Naval Aircraft Characteristics
E. U.S. Navy Order of Battle
F. USSR Naval Order of Battle
G. NATO (non U.S.) Navies Order of Battle
H. Warsaw Pact (non USSR) Navies Order of Battle
I. Age, Tonnage, and Shipbuilding Trends
J. Cost Data
K. Soviet Navy Deployment Trends
L. Other Maritime Forces
M. U.S. and USSR Navy Personnel
N. U.S. and USSR Active Fleet Reserve

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TAB A TO APPENDIX B

U.S. NAVY SHIP CHARACTERISTICS

The following tables highlight the basic characteristics of U.S. Naval ships. Excluded are riverine assault craft, harbor service craft, and minor torpedo gun boats.

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TAB A TO APPENDIX B

TABLE OF SHIPS - U.S. MAJOR COMBATANTS

Type	Class	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rq	Econ Spd/Rq	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASROC	Torp	D.C.
							U.S. ATTACK CARRIERS									
CVAN	65	1	89,600	8	8	8	32.2	20/ 350000					X			
CVA	67	1	87,000	1	1	1	31	20/ 12000					X			
CVA	63	3	80,800	4	8	6	31.3/ 3800	12/ 10000					X			
CVA	59	5	78,000	10	14	12	31.2/ 3800	12/ 12200	X			X				
CVA	41	3	64,000	22	24	23	30/ 4500	20/ 8000	X			X				
CVA	19	4	44,700	19	25	23	28.9/ 4600	12/ 10000	X			X				
							U.S. ASW CARRIERS									
CVS	11	2	42,000	26	26	26	28.2/ 3400	13.7/ 11200	X			X				
CVS	10	4	40,600	23	26	25	30.2/ 4600	13.4/ 14000	X			X				

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TABLE OF SHIPS - U.S. MAJOR COMBATANTS

Type	Class	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASROC	Torp	D.C.
							U.S. CRUISERS									
CGN	9	1	16,247	8	8	8	30/ 90000	20/ 325000	X			X	X	X	X	
CG	10	3	18,950	23	24	23	30.4/ 2400	12/ 7100	X			X	X	X	X	
CLG	3/6	5	15,200	23	25	24	30.6/ 2940	9.5/ 9850	X			X	X			
CA	68	1	17,350	24	24	24	31/ 2820	12/ 9160	X			X				
CA	69	2	17,820	26	26	26	32/ 2300	13/ 8500	X			X	X			
CA	139	1	20,950	20	20	20	32/ 2785	12/ 11290	X			X				
BB	62	1	57,950	27	27	27			X			X				
CC	1	1	17,204	16	16	16	32/ 2700	12/ 10200	X			X				
CC	2	1	19,570	22	22	22	30.8/ 3480	14/ 9000				X				
							U.S. ESCORTS/PATROL									

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TABLE OF SHIPS - U.S. MAJOR COMBATANTS

Type	Class	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASROC	Torp	D.C.
DLGN	25/35	2	9,000	2	7	4.5	29	20/ 450000	X			X	X	X	X	
DLG	9	8	5,800	7	9	8	33/ 1200	20/ 4100	X			X	X	X	X	
DLG	16/26	16	7,850	2	7	4	32.5/ 2100	20/ 7500	X			X	X	X	X	
DDG	31/35	6	4150/ 5155	10	14	12	31/ 1800	15/ 3052	X			X	X	X	X	
DDG	2	23	4,500	5	16	8	30/ 1880	12/ 5500	X			X	X	X	X	
DD	Fram I	79	3,500	23	24	23	30.6/ 1400	12/ 5800	X			X		X	X	
DD	Fram II	52	3,500	23	27	25	30/ 1221	11.5/ 4348	X			X			X	X
DD	931/ 945	14	4,050	10	14	12	32/ 1212	15/ 3052	X			X			X	X
DD	Non-Fram	21	3,234	23	27	25	31/ 1240	11/ 5930	X			X			X	
DL	1/4	3	5,500	15	16	15	31.5/ 1900	14/ 3500	X			X		X	X	
DE	1006/ 1021	12	1,900	11	15	13	26.5/ 1600	12/ 4500	X			X			X 1/	X
DE	1033	4	1,750	9	10	10	22/ 3434	13/ 7957	X			X			X	X

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TABLE OF SHIPS - U.S. MAJOR COMBATANTS

Type	Class	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASROC	Torp	D.C.
DE	1037/ 1040	10	3,400	2	7	4	27.5	20/ 4000	X			X		X	X 1/	
DE	1052	1	4,100	1	1	1	27	20/ 4500	X			X		X	X 1/	
DEG	1	6	3,400	1	3	2	27.2	20/ 4000	X			X	X	X	X 1/	
DER	386	12	1,745	25	26	26	19/ 4643	10.5/ 8435	X			X			X	X
							U.S. PATROL CRAFT									
PG	84	14	245	0	3	1	37.5/ 490	10/ 3090	X			X				

1/ Dash equipped

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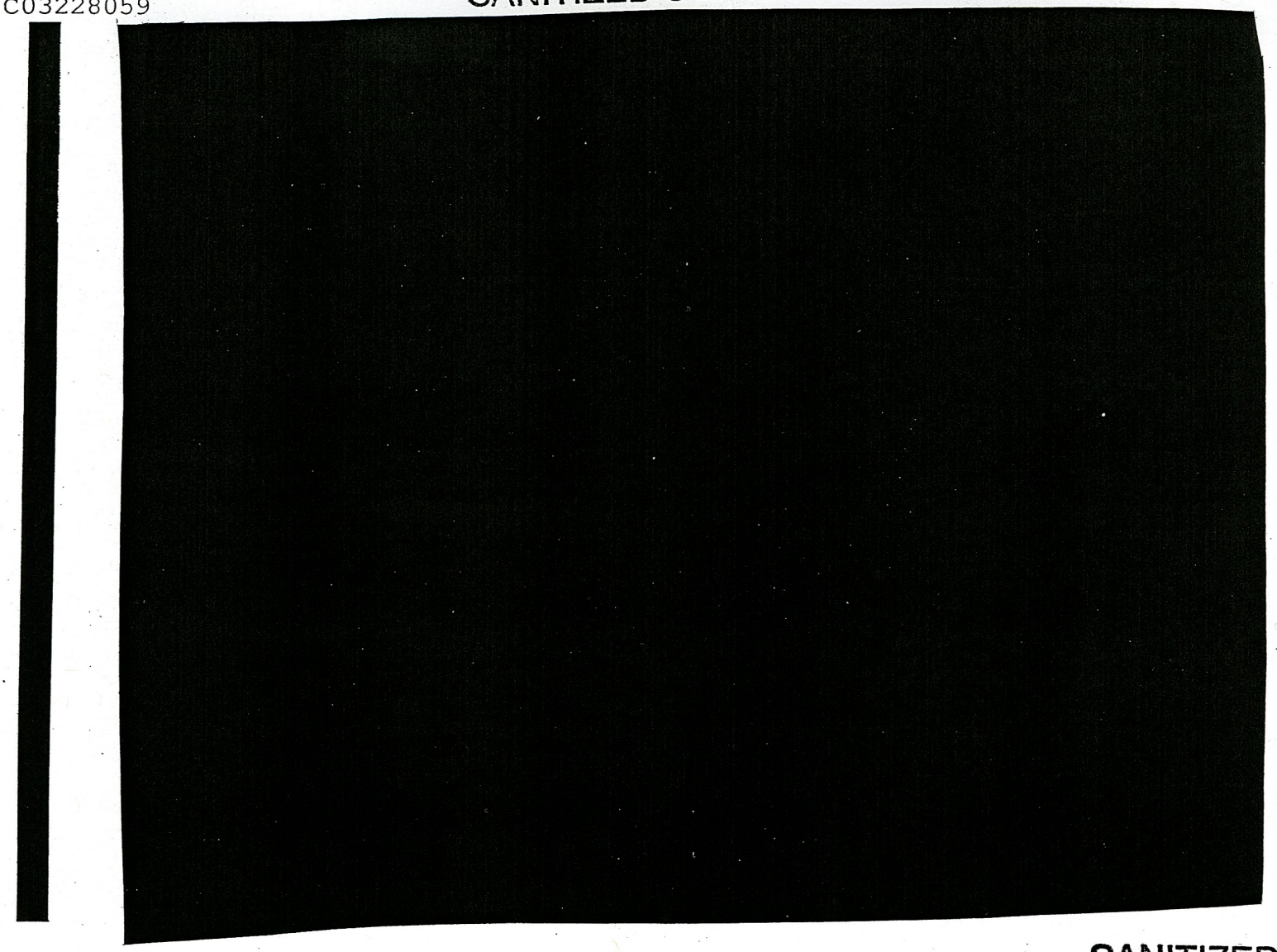

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TABLE OF SHIPS - U.S. AMPHIBIOUS

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Lift Capacity Troop	Cargo(ft^2)	Helo Platform	Landing Craft 1/
LCC	15	2	12560	24	24	24	14.6/ 21000	12/ 25600	X	X	150	600	1	0
LCC	7	3	12667	26	26	26	15/ 21602	11/ 31656	X	X	150	600	0	0
LFR		4	1280	14	26	21	12.5/ 3500	6/ 7000	X	X	0	0	0	0
LKA	113	2	20700	1	1	1	20/ 10000	13/ 17000	X	X	220	4500	1	9
LKA	112	1	16818	13	13	13	22/ 12800	10.5/ 22600	X	X	100	17000	1	9
LKA	103	6	10664	25	25	25	15/ 13770	10/ 16219	X	X	100	17000	0	7
LKA	88/94	4	13500	24	25	25	15.5/ 12000	12.5/ 15000	X	X	100	17000	0	8
LKA	53/54/56	4	13000	25	25	25	14/ 14000	12/ 16000	X	X	100	17000	0	8
LPA	249/248	2	16838	15	16	15	22/ 10500	13/ 16700	X	X	1300	7000	1	7
LPA	117	8	10679	24	25	25	17/ 6000	12/ 10150		X	1300	7000	0	2
LPA	33	3	13267	26	27	26	16.6/ 7768	10.5/ 9887	X	X	1450	7000	0	4

1/ Number of LCM(6)

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TABLE OF SHIPS - U.S. AMPHIBIOUS

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	AGE (YRS) Oldest	AGE (YRS) Avg.	Endurance Max. Spd/Rg	Endurance Econ. Spd/Rg	Gun Systems Surf	Gun Systems Air	Lift Capacity Troop	Lift Capacity Cargo(ft^2)	Lift Capacity Helo Platform	Lift Capacity Landing Craft 1/
LPD	4	8	16900	1	4	2	20/ 8640	--	X	X	900	13000	2	9
LPD	1	3	15400	5	7	6	20/ 8891	10/ 9550	X	X	900	11900	2	9
LPH	4	3	38000	23	24	24	32/ 5100	13/ 18000	X	X	1800	5800	12 1/	0
LPH	2	6	18000	1	8	4	23/ 12000	15/ 19000	X	X	1800	5000	7 2/	0
LPR	87/101	5	2130	24	26	25	23/ 1862	12/ 4434	X	X	121	0	0	0
LPSS	315/574	2	1659	25	25	25	13.8/ 7700	8.5/ 3/ 4.2			72	0	0	0
LSD	28	8	11525	13	15	14	22.5/ 5655	16/ 10460	X	X	320	8300	1	18
LSD	16/22	13	9078	24	25	24	15/ 7000	12/ 11000		X	180	7700	1	18
LSD	1/5	5	9300	26	27	26	14.5/ 8000	9/ 9500		X	180	7700	1	18

1/ Number of LCM(6)

2/ Normal Stowage 24 CH-46's

3/ Normal Stowage 20 CH-46's

4/ ENDURANCE AT MAX. SPEED SUBMERGED

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TABLE OF SHIPS - U.S. AMPHIBIOUS

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Lift Capacity Troop	Cargo(ft^2)	Helo Platform	Landing Craft 1/
LST	1179	2	8400	1	1	1	20/ 6000	-----	X	X	430	16000	1	-----
LST	1173	7	7804	12	13	12	16.5/ 8250	10/ 16000	X	X	540	14500	1	20 5/
LST	1156	15	5777	16	17	16	13.5/ 10000	11/ 17300	X	X	360	11000	1	17 5/
LST	1153	1	6000	22	22	22	13/ 5900	10/ 7800	X	X	173	8640	1	15 5/
LST	542	36	4080	----	----	25	10/ 11250	7/ 20000		X	125	8300	1	15 5/
LST	1/491	5	3640	----	----	25	10/ 19850	7/ 24850		X	125	8300	1	15 5/

1/ Number of LCM (6)
5/ Number of LVT's

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TABLE OF SHIPS - U.S MINE WARFARE

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	AGE (YRS) Oldest	AGE (YRS) Avg.	Endurance Max. Spd/Rg	Endurance Econ. Spd/Rg	Weapons Systems Guns	Weapons Systems Mines	Weapons Systems Torp/DC	Countermeasures Moored	Countermeasures Acoustic	Countermeasures Mag	Countermeasures Hunt
MCS 1/	1	2	9000	25	25	25	19	15/ 8000	X			X	X	X	
MSC	190	2	362	16	16	16	12/ 3041	6/ 4472	X			X	X	X	X
MSC	200/289	7	412	5	14	10	12.8/ 1300	6.8/ 2650	X			X	X	X	X
MSO	519	3	934	10	10	10	15	10/ 3200	X			X	X	X	X
MSO	508	4	750	11	13	12	14.9/ 1400	10/ 3300	X			X	X	X	X
MSO	422/428	56	775	13	17	15	14	10/ 2500	X			X	X	X	X

1/ Transport and Operate 20 MSL and 2 MCM Helos

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TABLE OF SHIPS - U.S. AUXILIARY

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
AD	14	5	18000	26	30	28	18.2/ 8540	10.7/ 14800	x	x		317,000	0	20
AD	16/23/ 26	8	15300	23	26	24	17/ 10000	11/ 1500	x	x		211,000	0	30
AD	37	2	20700	1	2	1	18/ 7300	12/ 9400	x	x		7,900 1/	0	30
ADG	383	1	1178	25	25	25	16/ 5100	10/ 9100	o	o		Degaussing Ship		
AE	21/23	5	15623	10	13	11	18.8/ 10300	13/ 15700	x	x		788,600	0	10
AE	12	7	14400	24	25	24	15/ 15170	9/ 22000	x	x		231,000	0	10
AE	3	7	13876	26	29	27	13/ 17098	9/ 21711	x	x		818,000	0	10
AE	26	3	18530	0	1	1	20/ 10000	-	x	x		-	-	-
AF	58	2	15500	14	14	14	18.5/ 11400	10/ 16650	x	x	x	344,250	0	10
AF	56	2	11948	15	15	15	16/ 12800	12/ 14078	x	x	x	222,000	0	10
AF	55	1	12891	24	24	24	15/ 12900	8.5/ 16200	x	x		200,000		10

1/ Dead Weight Tons

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TABLE OF SHIPS - U.S. AUXILIARY

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
AF	48	5	14190	23	24	23	15.5/ 13400	12.8/ 16000	x	x	x	263,000	0	10
AFS	1	6	16500	2	6	4	20/ 6500	18.5/ 10000	x	x	x	625,000	37000	10
AGDE	1	1	3575	4	4	4	27	20/ 40000	Escort Research (ASROC, DASH, TORP)					
AGF	1	1	2800	23	23	23	17/ 4000	10/ 9300		x		30,000	0	10
AGMR	1	1	23850	24	24	24	19/ 10750	12/ 15450	x	x	Communications Relay Ship			
AGMR	21	1	19800	24	24	24	325/ 2770	14/ 11700	x	x	Communications Relay Ship			
AGS 2/	15-30	5	2720	24	27	24	18/ 7490	12/ 14800	Hydrographic Survey Ship					
AGSS 2/	318/ 555/559	12	1850	4	28	21	-	-	Auxiliary Submarine Research Ship					
AH	12	2	15100	24	24	24	18.3/ 10600	13.5/ 12350	Hospital Ship					
AK	258	1	12100	25	25	25	10/ 17800	10/ 31000		x		394,000	0	10
ANL	6	1	760	28	28	28	11.5/ 5440	10/ 11340		x	(Net Layer)			

2/ Average for Class

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TABLE OF SHIPS - U.S. AUXILIARY

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom/?
AO	143	6	40171	14	16	15	19/ 14350	12/ 34000	x	x	x	0	155,000	10
AO	105	5	34350	23	24	24	16/ 10470	11/ 17200	x	x	x	0	149,000	
AO	41	3	22447	27	28	27	16/ 8233	8/ 11238	x	x		0	106,000	
AO	36	2	21500	28	29	29	15.5/ 4600	12/ 5600	x	x		0	102,000	
AO	22	20	25500	24	30	26	18/ 10100	13/ 14200	x	x		0	112,000	
AOE	1	3	52200	1	5	2	26	17/ 10000	x	x	x	3377 3/	174,000	20
AOG	1	8	4570	23	25	24	14/ 5000	11/ 8200	x	x		21,000	1,500	3
AOR	1	1	38100	1	1	1	20/ 6500		x	x	x	745 3/	150,000	10
AR	5	4	16330	26	29	28	15.4/ 19800	12/ 21900	x	x		200,000	0	20
AR	9	1	13690	28	28	28	16/ 14500	12/ 18500	x	x		150,000	0	20
AR	13/23	3	14490	24	29	26	15.5/ 12960	11.5/ 13950	x	x		119,000	0	30

3/ Dead Weight Tons

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TABLE OF SHIPS - U.S. AUXILIARY

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
ARC 4/	2/3	3	7200	23	23	23	15/ 8750	11/ 10650			CABLE REPAIR SHIP			10
ARG	2	1	9620	25	25	25	11.5/ 27000	9/ 29000	X	X		70000		23
ARL	1	2	3640	24	24	24	10.6/ 10600	7.3/ 11200		X		40000		25
ARS	6	6	1970	26	27	26	14.3/ 8500	10/ 13000		X	SALVAGE SHIP			
ARS	38	6	2040	24	25	24	14/ 7656	11/ 11600		X	SALVAGE SHIP			
AS	33	2	21000	4	5	4.5	18	12/ 10000	X	X	X	-----		-----
AS	31	2	16500	6	7	6	18	12/ 10000	X	X	X	-----		-----
AS	19	1	18500	27	27	27	16	12/ 10000	X	X		-----		-----
AS	11	6	16050	24	29	26	17/ 23000	14/ 28000	X	X	X	187000		20
ASR	12	2	1740	23	26	24	14/ 12900	10/ 14450			SUBMARINE RESCUE			10
ASR	7	8	2290	23	26	24	14/ 9100	10/ 14000			SUBMARINE RESCUE			12,5

4/ Average For Class

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TABLE OF SHIPS - U.S. AUXILIARY

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
ATA	174	2	860	24	24	24	12.5/ 4500	8/ 12300						5
ATF	148	29	1640	23	26	25	15/ 7350	10/ 15570	x	x				10
ATS	1	1	2950	0	0	0	16/ 6000	13/ 10000		x	-	-	-	-
AVB	2	1	5400	20	20	20	13.2/ 5700	12.5/ 8000	x	x			3000	30
AVM	1	1	15170	24	24	24	17.3/ 22300	11.5/ 28900	Missile Test Ship					

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TAB B TO APPENDIX B

USSR NAVY SHIP CHARACTERISTICS

The following tables highlight the basic characteristics of Soviet Naval Ships. Excluded are riverine assault craft, harbor service craft, and minor torpedo gun boats.

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TAB B TO APPENDIX B

TABLE OF SHIPS - USSR MAJOR COMBATANTS - 1969

TYPE		No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASWROC	Torp	D.C.
							USSR HELICOPTER SHIPS									
CHG 1/		2	17,500	0	1		32/ 4800	15/ 11000		UNK	X	X	X	X	X	
							USSR CRUISERS									
CLG	SVERDLOV	2	17,200	13	17	15	32/ 2470	18/ 8700	X			X	X			
CLGM	KRESTA	6	6,700	0	4	3.5	34/ 1700	15/ 8000		X	X	X	X	X	X	
CLGM	KYNDA	4	5,600	4	7	5	34/ 2050	14.5/ 7000	X	X	X	X	X	X	X	
CL	SVERDLOV	6	17,200	--	18	15	32/ 2470	18/ 8700	X			X				X
CL	CHAPAYEV	1	15,000	20	20	20	32/ 1000	15/ 5000	X			X				X
CA	KIROV	1	9,060	27	27	27	35/ 850	18/ 3000	X			X				X
							USSR ESCORTS									
DLG	KASHLN	16	4,450	0	6	3	35/ 1240	10/ 7000	X		X	X	X	X	X	

1/ Characteristics estimated

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TABLE OF SHIPS - USSR MAJOR COMBATANTS - 1969

TYPE		No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASWROC	Torp	D.C.
DDGs	KRUPNYY	6	4,500	--	10	8	35/ 1400	15/ 4700		X	X	X		X	X	
DDGs	KILDIN	4	3,500	--	11	9	34/ 1050	11/ 4700		X	X	X		X	X	
DDG	KANIN 1/	2	4,500	0 1/	1 1/	1	35/ 1400	15/ 4700			X	X	X	X	X	
DDG	KOTLIN 2/	6	3,500	0	7	--	34/ 1050	11/ 4700	X		X	X	X	X	X	
DD	KOTLIN	20	3,500	12	15	13	34/ 1050	11/ 4700	X		X	X				X
DD	SKORYY	26	3,050	--	20	--	33.5/ 1050	14/ 3500	X		X	X				X
DE	RIGA	35	1,320	--	17	--	28/ 700	9/ 2450	X		X	X				X
DE	KOLA	6	1,500	--	19	--	30/ 950	12/ 3500	X		X	X				X
PCE	PETYA II	19	1,100	0	2	1	34/ 450	10/ 4900	X		X	X			X	
PCE	PETYA I	24	1,100	3	9	6	34/ 450	10/ 4900	X		X	X			X	
DD	TALLINN	1	4300	--	--	--	----	----	X		X	X		X	X	

1/ KRUPNYY conversion. Age represents years since conversion.
2/ SAM conversion of general purpose KOTLIN (DD)

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TABLE OF SHIPS - USSR MAJOR COMBATANTS - 1969

TYPE		No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max Spd/Rg	Econ Spd/Rg	Major Weapons: Anti-Surface Guns	SSM	Torp.	Anti-Air Guns	SAM	Anti-Sub ASROC	Torp	D.C.
PCE	MIRKA	18	1,150	2	6	4	34/ 450	10/ 6100	X		X	X		X	X	
PTC	MO-VI	40	66.5	--	13	--	40/ 505	.5/ 590				X				
PC	POTI	84	580	0	8	4	35/ UNK	UNK/ UNK	X		X	X		X		X
PC	KRONSH-TADT	80	380	13	21	--	18.5/ 1350	12/ 3100	X			X		X		X
SC	STENKA	17	205	0	2	--	34/ 1100	14/ 3000			X	X			X	X
SC	S.O.1	98	200	3	13	--	29/ 570	7.5/ 1920			X	X		X	X	X
PTFG	OSA	110	205	0	10	5	34/ 1100	14/ 3000		X		X				
PTG	KOMAR	50	81.5	4	9	--	36/ 445	22/ 610		X		X				

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TABLE OF SHIPS-USSR GENERAL PURPOSE SUBMARINES - 1969

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TYPE	CLASS	No.	Tonnage		Age (yrs)			Depth (ft)		Max Speed		Avg. Submerged Patrol Endurance		Weapons Systems	
			Surf.	Subm.	Newest	Oldest	Avg.	Oper.	Collapse	Surf.	Subm.	NM6/	Days	Torp 3/	Missl
SSN	N	12-15	4000	4800	5	11	8	1000	1500	16	28	NUC	60	32	---
SSN	C	3	4400	5200	0	1	0.5	1300	2000	16	30	NUC	60	18	1/
SSN	V	3-4	4300	5100	0	1	0.5	1300	2000	16	30	NUC	60	32	---
SS 2/	B	3-4	2400	2900	0	1	0.5	1300	2000	UNK	if Diesel: 22/if nuclear:30	UNK	UNK	18	---
SS	F	45	2100	2500	2	11	7	900	1400	18	17.5	7200	60	22	---
SS	Z	20	2100	2500	14	17	15	750	1100	18	15	7200	60	22	---
SS	R	14	1100	1400	7	11	9	900	1400	18	15.5	4800	40	18	---
SS	W	150	1055	1355	12	19	15	656	984	18	13.5	4800	40	12	---
SS	Q	15	420	510	12	15	13	450	725	16	8	4/	4/	8	---
SSGN	E-1	5	4000	5000	7	9	8	1000	1500	20	24	NUC	60	22	6
SSGN	E-11	28	4200	5200	2	7	5	1300	2000	20	23	NUC	60	22	8

1/ The C Class appears to be equipped with an unidentified weapon system, possibly a short-ranged, submerged-launch cruise missile or perhaps a parallel to the SUBROC concept.

2/ The B Class propulsion system is undetermined.

3/ Torpedo Capabilities are maximum. A combination of torpedoes and mines could be carried.

4/ The Q Class is considered to be for coastal or inland sea deployment.

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TYPE	CLASS	No.	Tonnage Surf.	Tonnage Subm.	Age (yrs) Newest	Age (yrs) Oldest	Age (yrs) Avg.	Depth (ft) Oper.	Depth (ft) Collapse	Max Speed Surf.	Max Speed Subm.	Avg. Submerged Patrol Endurance NM	Avg. Submerged Patrol Endurance Days	Weapons Systems Torp 3/	Weapons Systems Miss
SSG	J	16	2700	3500	0	8	4	1300	2000	16	14	7200	60	22	4
SSG	W Long Bin	7	1200	1500	12	19	15 5/	656	984	18	12	4800	40	10	4
SSG	W Twin CYL	5	1100	1400	12	19	15 5/	656	984	18	12	4800	40	12	2

5/ W Class conversions were accomplished between 1960 and 1963.
6/ Total distance of which the class is capable on a patrol of the duration indicated under "days".

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TABLE OF SHIPS - USSR AMPHIBIOUS

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	AGE (YRS) Oldest	AGE (YRS) Avg.	Endurance Max. Spd/Rg	Endurance Econ. Spd/Rg	Gun Systems Surf	Gun Systems Air	Lift Capacity Troop	Lift Capacity Cargo(ft^2)	Lift Capacity Helo Platform	Lift Capacity Landing Craft
LSIL	MP-2	10	750	10	14	12	12/ 5400	--		X	210	--		5
LSV	MP-4	20	760	--	13	--	10.5/ 5100	--		X	270	--		7
LSV	MP-6	8	2,100	9	10	10	12/ 7300	--			480	--		14
LSM	MP-8	18	1,000	--	10	--	12.5/ 9200	--		X	380	--		9
LSM	POLNOCNY	46	772	0	6	--	19/ UNK	15/ 1500	X	X	--	--		9
LST	ALLIGATOR	7	4,000	0	3	1-2	16/ 6400	12/ 9100		X	--	--		42

1/ Number of medium landing tanks

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TABLE OF SHIPS - USSR MINE WARFARE

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Weapons Systems Guns	Mines	Torp/DC	Countermeasures Moored	Acoustic	Mag	
MHC	VANYA	61	244	0	--	--	18/ UNK	--	X	X		X	X	X	X
MMF	ALESHA	2	3,500	0	2	1	16/ 5000	15/ 7500	X	X					
MSF	YURKA	46	460	0	7	3-4	18/ UNK	--	X	X		X	X	X	X
MSF 1/	T-58	20	900	--	10	--	20/ 2200	14.5/ 3400	X	X	X	X	X	X	X
MSF 1/	T-43	120	560	11	20	--	14/ 2000	10/ 3200	X	X	X	X	X	X	X
MSM 1/	T-301	40	170	12	22	17	17/UNK	--	X	X		X	--	--	--
MSM 1/	SASHA	26	300	--	--	--	18/UNK	--	X	X		X	--	--	--
MSI	New Class	6	--	--	--	--	--	--	--	--	--	--	--	--	--

1/ Steel hulled

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TABLE OF SHIPS - USSR AUXILIARY-1969

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
AD		35	3000	Tender										
AEM		6	7000	Missile Support										
AG		51	1000	Miscellaneous										
AGCL		19	800	Small Communication										
AGB		2	9500	Icebreaker										
AGI		40	900	Intelligence Collection										
AGS		30	5700	Survey										
AGOR		13	5700	Ocean Research										
AGL		5	400	Buoy Tender										
AGM		6	5300	Missile Range Instrumentation										

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TABLE OF SHIPS - USSR AUXILIARY-1969

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
AGSC		33	1200	Coastal Survey										
AK		13	3500	Cargo										
AKL		67	1500	Light Cargo										
AO		17	4500	Oiler										
AOL		35	1700	Small Oiler										
AN		2	700	Netlayer										
AOS		7	1000	Special Liquid Carrier										
APB		3	500	Barracks Ship										
APC		5	800	Small Coastal Transport										
AP		1	1800	Transport										

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TABLE OF SHIPS - USSR AUXILIARY-1969

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
AR		20	4500	Repair										
ARC		11	700	Cable Layer										
ARS		11	2000	Salvage										
ARSD		25	3000	Salvage Lifting										
AS		17	6700	Submarine Tender										
ASL		12	4800	Small Submarine Tender										
ASR		17	2000	Submarine Rescue										
ATA		23	800	Auxiliary Tug										
ATR		41	800	Research Ocean Tug										
AW		69	200	Distilling										

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TABLE OF SHIPS - USSR AUXILIARY-1969

TYPE	CLASS	No.	Tonnage	AGE (YRS) Newest	Oldest	Avg.	Endurance Max. Spd/Rg	Econ. Spd/Rg	Gun Systems Surf	Air	Cargo Capacity Vertrep	Bulk(ft^3)	POL(bbls)	Boom(T)
EAG		16	1500	Experimental		Auxiliary								

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NAVAL SHIP TYPE CLASSIFICATION USED

PRINCIPAL COMBATANT

CVA	Attack Aircraft Carrier
#CVH	Helicopter Carrier
CVHE	Escort Helicopter Aircraft Carrier
CVL	Small Aircraft Carrier
CVS	ASW Support Aircraft Carrier
#CHG	Guided Missile Helicopter Carrier
CA	Heavy Cruiser
CL	Light Cruiser
CLAA	Antiaircraft Light Cruiser
CLG	Guided Missile Light Cruiser
#CLGM	Guided Missile Light Cruiser (mixed SAM and SSM systems)
DL	Frigate
DLG	Guided Missile Frigate
#DLGM	Guided Missile Frigate (mixed SAM and SSM systems)
DD	Destroyer
DDG	Guided Missile Destroyer
#DDGS	Guided Missile Destroyer (SSM only)
DDR	Radar Picket Destroyer
DE	Destroyer Escort
DEG	Guided Missile Destroyer Escort
DER	Radar Picket Destroyer Escort
SS	Submarine
SSB	Fleet Ballistic Missile Submarine
SSBN	Nuclear Power Fleet Ballistic Missile Submarine
SSG	Guided Missile Submarine
SSGN	Nuclear Power Guided Missile Submarine
SSK	Antisubmarine Submarine
SSN	Nuclear Power Submarine
SSR	Radar Picket Submarine
AGSS	Auxiliary Submarine
X	Submersible Craft

PATROL

BM	Monitor
#BMR	River Monitor
#BMRL	Small River Monitor
PC	Large Submarine Chaser
PCH	Hydrofoil Submarine Chaser
PCE	Escort
PCER	Rescue Escort
PCS	Submarine Chaser Sweeper*
PF	Patrol Escort
PFR	Radar Picket Patrol Escort
PGH	Hydrofoil Gunboat

PATROL (Cont'd)

PGM	Motor Gunboat
#PGMG	Guided Missile Motor Gunboat
PR	River Gunboat
PT	Motor Torpedo Boat
PTC	Motor Boat Submarine Chaser
PTF	Fast Patrol Boat
#PTFG	Large Guided Missile Patrol Boat
#PTG	Small Guided Missile Patrol Boat
PY	Yacht
PYC	Coastal Yacht
SC	Submarine Chaser

MINE WARFARE

DM	Destroyer Minelayer
DMS	Destroyer Minesweeper
MCS	Mine Countermeasures Support Ship
#MCSL	Small Mine Countermeasures Support
MHC	Coastal Minehunter
MMA	Auxiliary Minelayer
MMC	Coastal Minelayer
#MMR	River Minelayer
MMF	Fleet Minelayer
MSA	Auxiliary Minesweeper
MSB	Minesweeping Boat
MSC	Coastal Minesweeper (nonmagnetic)
MSCO	Old Coastal Minesweeper
MSF	Fleet Minesweeper (steel hulled)
MSI	Inshore Minesweeper
MSL	Minesweeping Launch
#MSM	Medium Minesweeper (steel hulled)
MSO	Ocean Minesweeper (non-magnetic)
#MSR	River Minesweeper
MSS	Special Minesweeper
YMP	Mine Planter

AMPHIBIOUS WARFARE SHIPS

AGC	Amphibious Force Flagship
AKA	Attack Cargo Ship
APA	Attack Transport
APD	High Speed Transport
IFS	Inshore Fire Support Ship
LPD	Amphibious Transport Dock

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NAVAL SHIP TYPE CLASSIFICATION USED

AMPHIBIOUS WARFARE SHIPS (Cont'd)

LPH	Amphibious Assault Ship
LSD	Dock Landing Ship
LSIL	Large Infantry Landing Ship
LSM	Medium Landing Ship
#LSMH	Medium Landing Ship Hospital
LSMR	Rocket Medium Landing Ship
LSS	Support Landing Ship
LSSL	Large Support Landing Ship
LST	Tank Landing Ship
LSV	Vehicle Landing Ship

AMPHIBIOUS WARFARE CRAFT

LCC	Control Landing Craft
LCM	Mechanized Landing Craft
#LCMM	Mechanized Landing Craft Minesweeper
LCP	Personnel Landing Craft
LCPL	Personnel Landing Craft (Large)
LCPR	Personnel Landing Craft (Ramped)
LCS	Support Landing Craft
LCU	Utility Landing Craft
LCVP	Vehicle, Personnel Landing Craft

AUXILIARY

AC	Collier
AD	Destroyer Tender
ADG	Degaussing Ship
AE	Ammunition Ship
#AEL	Small Ammunition Ship
#AEM	Missile Support Ship
AF	Store Ship
#AFL	Small Store Ship
AG	Miscellaneous Auxiliary
AGB	Icebreaker
#AGBL	Small Icebreaker
#AGBN	Nuclear Power Icebreaker
#AGCL	Small Communication Ship
AGEH	Hydrofoil Research Ship
AGF	Flagship
#AGI	Intelligence Collector
AGL	Buoy Tender
AGM	Missile Range Instrumentation Ship
AGOR	Oceanographic Research Ship
AGP	Motor Torpedo Boat Tender
AGR	Radar Picket Ship

AUXILIARY (Cont'd)

#AGRL	Small Radar Picket Ship
AGS	Surveying Ship
AGSC	Coastal Surveying Ship
AGSL	Satellite Launching Ship
#AGT	Target Service Ship
AH	Hospital Ship
AK	Cargo Ship
AKL	Light Cargo Ship
AKN	Net Cargo Ship
AKS	Stores Issue Ship
#AKSL	Small Stores Issue Ship
AKV	Cargo Ship and Aircraft Ferry
AN	Netlaying Ship
AO	Oiler
AOE	Fast Combat Support Ship
AOG	Gasoline Tanker
#AOL	Small Oiler
AOR	Replenishment Fleet Tanker
#AORL	Small Replenishment Fleet Tanker
#AOS	Special Liquid Carrier
#AOSR	Radiological Liquid Carrier
AP	Transport
APB	Self-propelled Barracks Ship
APC	Small Coastal Transport
APH	Wounded Evacuation Transport
AR	Repair Ship
ARB	Battle Damage Repair Ship
ARC	Cable Repairing or Laying Ship
ARH	Heavy Hull Repair Ship
ARL	Landing Craft Repair Ship
ARS	Salvage Ship
ARSD	Salvage Lifting Ship
ARST	Salvage Craft Tender
AS	Submarine Tender
#ASL	Small Submarine Tender
ASR	Submarine Rescue Ship
AT	Tug
ATA	Auxiliary Ocean Tug
ATF	Fleet Ocean Tug
ATO	Old Ocean Tug
ATR	Rescue Ocean Tug
ATS	Salvage Tug
AV	Seaplane Tender
AVB	Advanced Aviation Base Ship
AVM	Guided Missile Ship
AVP	Small Seaplane Tender
AVR	Aircraft Rescue Vessel
AVS	Aviation Supply Ship
AW	Distilling Ship
AWK	Water Carrier
#EAG	Experimental Auxiliary (vice AGX)
IX	Unclassified Miscellaneous (Sail Training Ships; Relics)

Type designation devised to cover foreign ship categories which have no counterpart in the U.S. Navy.

* Include trawlers armed for ASW.

Single letter prefixes "E" and "O" to any type of designator signify: E - Experimental; O - Overage (of reduced effectiveness due to age).

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TAB C TO APPENDIX B

U.S. NAVY AIRCRAFT CHARACTERISTICS

The following tables reflect the characteristics of U.S. Navy aircraft together with age and cost estimates.

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Table of Naval Aircraft (July 1968) 1/

Type	Number: Tactically Assigned 2/	Number: Total Inventory 3/	Age (yrs): Newest	Age (yrs): Oldest	Age (yrs): Average	Combat Radius	Weapons: Anti-Surface	Weapons: Anti-Air	Weapons: Anti-Sub	Unit Cost (Millions): Investment 4/	Unit Cost (Millions): Operating 5/ (Annual)
Carrier-based											
Attack											
A-4	392	744	1	12	6.9	320	2 Walleye			.70	.390
A-6	90	141	1	6	2.5	480	18-500#			4.62	1.117
A-7	182	270	1	3	1.4	750	2 Walleye			1.61	.581
TA-4		66	1	3	1.7	320	2 Walleye			.97	.395
A-3		13	11	15	11.7	1100	3-2000#			2.55	1.018
Fighter											
F-4	228	373	1	8	3.5	350	10-500#	4 Sparrow		2.95	.776
F-8	120	360	4	12	8.4	350	2-1000#	4 Sidewinder		1.14	.427
Other											
RA-3	18	23	9	10	9.3	1100				2.43	1.018
RA-5	44	62	4	10	6.1	1100				6.22	1.370
RF-8	23	38	9	12	9.7	640				1.46	.388
E-1	20	23	7	11	8.4					2.02	.638
E-2	40	55	2	7	4.1					11.8	1.337
EA-1	18	24	13	15	14.0					.54	.427
EKA-3	27	31	8	12	9.3	1100				3.55	1.236
KA-3	31	48	10	12	11.3	1100				2.52	1.064
ASW											
SH-3A	128	183	3	9	5.8				2-MK46	1.43	.523
S-2	160	299	1	9	4.8	400			2-MK46	1.07	.434
Land-based ASW											
P-3	180	246	1	8	3.9	1400	2 Bullpup		8-MK46	4.48	1.143
P-2	120	284	10	12	11.3	1050			4-MK46	2.19	.800

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1 / 1969 Draft Presidential Memorandums on Tactical Air Forces and ASW Forces with associated back-up tables.

2 / Unit equipment

3 / Includes pipeline and training aircraft

4 / Aircraft investment costs are average flyaway costs adjusted to 1968 dollars through use of the BLS Wholesale Price Index (Machinery and Equipment). Flyaway costs do not include spares or special support equipment.

5 / Navy Program Factors, OPNAV-90P-02 (Revised 1 March 1969)

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U.S. NAVAL AIRCRAFT ORDER OF BATTLE1/

TYPE	1961	1965	1969	1973
Fighter/Attack Recce	4478	3475	2827	3013
ASW Land Based	739	667	594	632
ASW Carrier Based	643	458	354	263
Helicopters	1032	1285	1506	1286
Training Aircraft	2710	2305	2487	2099
Other Aircraft	900	998	1199	1117
TOTAL	10502	9188	8967	8410

1/ Includes both USN and USMC inventories

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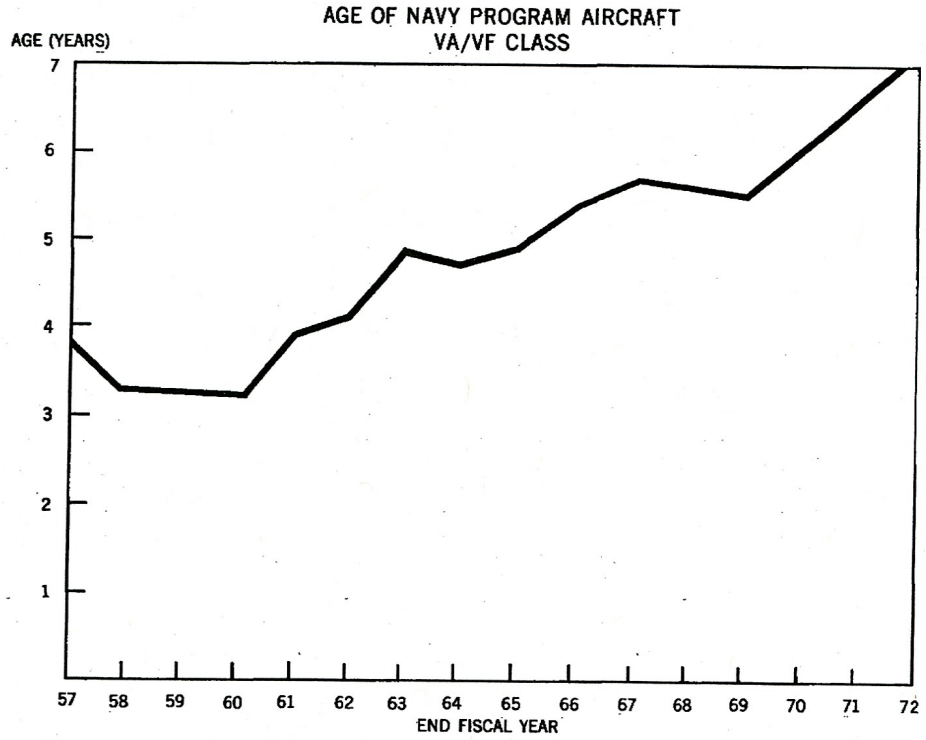

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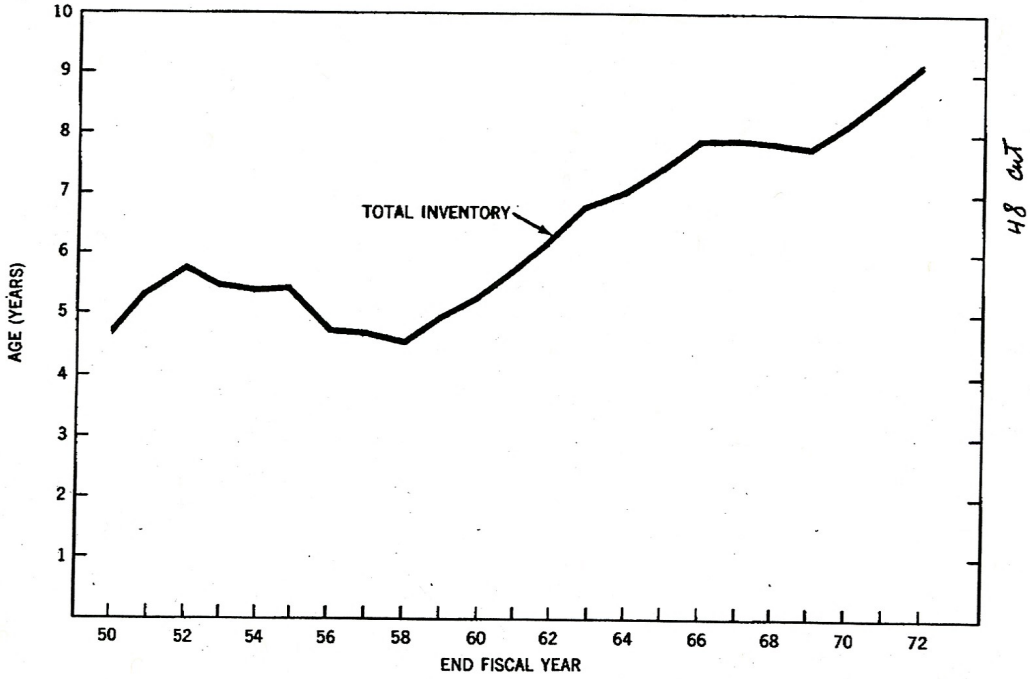
B-C-6

AGE OF NAVY PROGRAM AIRCRAFT
TOTAL INVENTORY



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TAB D TO APPENDIX B

USSR NAVY AIRCRAFT CHARACTERISTICS

The following tables highlight the basic characteristics and order of battle of Soviet Naval aircraft.

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Soviet Naval Aviation

During World War II Soviet Naval Aviation was dominated by fighter aircraft. Today it is primarily a medium bomber force. Some 60 percent of these 500 bombers are equipped to carry air-to-surface anti-shipping missiles--most, the AS-2, and some, the newer AS-5. The latter weapon, which includes a greater range among its advances, will prolong the service life of its carrier, the BADGER B, which already is more than twelve years old. A number of faster BLINDER bombers have entered service, but not yet as missile carriers--although this appears to be in the offing. The force's principal mission is the location and countering of Western strike carriers in conjunction with the cruise missile submarines.

Naval Aviation has gained new capabilities with the advent of the helicopter carriers. Progression in this area could result in greater use of the helicopter throughout the Soviet Navy in much the same manner as it is employed by the U. S. Navy. The Soviets probably could develop and deploy VTOL aircraft on the helicopter carriers, despite design limitations of the present flight deck, but by their very nature these planes will continue to be limited in range and weapon loads. The possible Soviet introduction of aircraft carriers would add the new dimension of seaborne strike and interceptor aircraft. Despite the revolutionary aspects of Soviet Naval Aviation's future, it is expected to retain its anti-carrier mission, and consequently, will continue to include large numbers of long-range ASM-equipped aircraft.

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INVENTORY AND AVERAGE AGE OF SOVIET NAVAL AIRCRAFT MID YEAR 1969

TYPE	NUMBER	AVERAGE AGE
Heavy Reconnaissance		
Bear D	40-50	2
Medium Bombers		
Badger A	175-195	13
Badger B	75-95	13
Badger C	190-210	13
Blinder A	30-40	5
Blinder B	30-40	5
Light Bombers		
Beagle	40-60	16
Patrol/ASW Aircraft		
Madge	25-40	15
Mail	40-60	2
May	10-15	1/2
Helicopters		
Hook	10-20	4
Hound	125-150	8
Hormone	50-70	1

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SOVIET NAVAL AVIATION 1/

Type	Number	Combat Radius	Weapons
Badger A	175-195	1550	10,000 LB
Badger B	75-95	1300	2 AS-5
Badger C	190-210	1450	1 AS-2
Blinder A	30-40	1700	10,000 LB
Blinder B	30-40	1500	1 AS-4
Bear D (Recon)	40-50	4600	---
Beagle	40-60	550	6,600 LB
Patrol			
Madge	25-40	1150	8,800 LB
Mail	40-60	1150	10,000 LB
May	10-15	1210	18,000 LB
Helicopters			
Hook (Heavy)	10-20	210	9700 LB
Hound (Medium)	125-150	140	1000 LB
Hormone (Medium)	50-70	200	2900 LB

SOVIET LONG RANGE AVIATION 1/

Type	Number	Combat Radius	Weapons
Badger A	275-210	1550	10,000 LB
Badger B	200-300	1300	2 AS-5
Blinder A	100-110	1700	10,000 LB
Blinder B	75-90	1500	1 AS-4
Bear A	40-35	4150/4500	25,000/10,000 LB
Bear B/C	70-80	3950	1 AS-3
Bison	35	2800	25,000 LB

1/ NIPP-69

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SOVIET NAVAL AVIATION

A/C	TYPE	1961 AA[2]	1963 AA	1965 AA	1967 AA	1969 AA	1971 AA	1973 AA
BEAR D	Heavy Recon	0 N/A	0 N/A	5-10 1/2	25-35 1	40-50 2	40-50 4	40-50 6
BADGER A	MED BMR	55-65 5	75-90 7	145-165 9	180-200 11	175-195 13	155-175 15	135-155 17
B	" "(ASM)	100-120 5	95-100 7	60-70 9	60-70 11	75-95 13	75-100 15	75-100 17
C	" "(ASM)	145-165 5	150-185 7	190-210 9	190-215 11	190-210 13	170-195 15	150-175 17
BLINDER A[1]	" "	0 N/A	10-20 1	45-55 2	50-60 3	30-40 5	30-65 7	30-65 9
B	" "(ASM)	0 N/A	0 N/A	0 N/A	0 N/A	30-40 5	30-60 7	30-60 9
BEAGLE	LT BMR	35-70 8	70-120 10	100-115 12	50-75 14	40-60 16	20-40 18	0-20 20
MADGLE	Patrol/ASW	70-80 7	70-80 9	55-65 11	50-60 13	25-40 15	10-15 17	0 N/A
MALLOW	" "	5-25 1	5-25 2	5-25 4	0 N/A	0 N/A	0 N/A	0 N/A
MAIL	" "	0 N/A	0 N/A	0 N/A	10-25 1	40-60 2	80-100 3	80-100 5
MAY	" "	0 N/A	0 N/A	0 N/A	0 N/A	10-15 1/2	30-45 2	40-60 4
HOOK	HELO (Heavy)	0-5 1/2	0-5 1	5-10 2	10-15 3	10-20 4	10-20 5	10-20 7
HOUND	" (Med.)	90-110 3	90-110 4	100-120 6	115-140 7	125-150 8	125-150 10	125-150 12
HORMONE	" (Med.)	0 N/A	0 N/A	0 N/A	0-10 1/2	50-70 1	70-120 2	90-150 4
MEAN TOTAL AIRCRAFT AND AVERAGE AGE		500-640 (570) 5.0	565-735 (651) 6.9	710-845 (778) 8.3	740-905 (821) 9.5	840-1045 (942) 9.7	845-1135 (991) 10.2	805-1105 (954) 11.3

1/ BLINDER B Included in A totals until 1969

2/ AVERAGE AGE (YEARS)

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TAB E TO APPENDIX B

U.S. NAVY ORDER OF BATTLE

The following tables catalog the U.S. Navy active ships by type. Included in these tables are the pertinent age data used in the Main Body assessment of age of the U.S. fleet. All ages are calculated to the nearest month (i.e., they are actual ages.) Detailed information on ships by individual class is contained in Tab A.

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TABLE 1: U.S. NAVY ACTIVE INVENTORY AND AGES
1961

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL/AVG.
SHIP TYPE								
ATTACK CARRIER	5	2	2	8				17/10.8
ASW CARRIER				9				9/17.6
CRUISER	1	1	1	11				14/15.0
DESTROYER TYPES	29	12	4	192	3			240/14.8
ESCORT	8	9		53				70/14.6
SUBMARINE	19	8	8	75				110/13.2
AMPHIBIOUS	8	26	1	96	1			132/14.5
MINE	10	72		2				84/6.8
AUXILIARY	3	12	1	175	26			217/16.9
PATROL								
TOTAL	83	142	17	621	30			893/14.3

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TABLE 2 : U.S. NAVY ACTIVE INVENTORY AND AGES
1965

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL/AVG.
SHIP TYPE								
ATTACK CARRIER	4	3	1	3	4			15/12.2
ASW CARRIER				1	8			9/12.2
CRUISER	1		1	4	10			16/18.3
DESTROYER TYPES	41	20	5	70	98			234/16.0
ESCORT	6	14	3		13			36/12.5
SUBMARINE	13	15	8	16	53			105/15.8
AMPHIBIOUS	10	12	21	6	86			135/16.6
MINE	2	16	64		2			84/10.0
AUXILIARY	8	4	11	30	153	10		216/21.0
PATROL								
TOTAL	85	84	114	130	427	10		850/14.9

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TABLE 3: U.S. NAVY ACTIVE INVENTORY AND AGES
1969

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL/AVG.
SHIP TYPE								
ATTACK CARRIER	2	3	4	1	2	3		15/14.3
ASW CARRIER					1	6		7/25.4
CRUISER		1		1	7	2		11/21.7
DESTROYER TYPES	9	39	15	5	103	53		224/19.3
ESCORT	17	4	10	2		12		45/11.2
SUBMARINE	20	13	12	8	27	22		102/15.4
AMPHIBIOUS	17	6	16	19	51	53		162/19.1
MINE		2	37	33		2		74/14.8
AUXILLARY	16	6	12	3	71	102	1	211/22.0
PATROL	14							14/ .5
TOTAL	95	74	106	72	262	255	1	865/18.3

1/ Includes 4 CA which are listed under major combatants in Table to allow more direct comparison with Soviet order of battle.

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TABLE 4: U.S. NAVY ACTIVE INVENTORY AND AGES
1973

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL/AVG.
SHIP TYPE								
ATTACK CARRIER	1	2	4	3	1	4		15/16.3
ASW CARRIER						4	2	6/29.5
CRUISER					1	8		10/25.1
DESTROYER TYPES	4	16	39	15	7	86		167/20.8
ESCORT	46	16	6	9				77/5.2
SUBMARINE	26	18	15	8	9	28	1	105/14.7
AMPHIBIOUS	42	11	6	18	7	17	3	104/12.3
MINE	4			57	6	2		69/17.4
AUXILIARY	26	14	6	10	3	97	25	181/22.0
PATROL	14	7						21/3.3
TOTAL	163	84	77	120	34	246	31	755/16.8

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TABLE 5: U.S. NAVY ACTIVE INVENTORY AND AGES
1977

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	30+	TOTAL/AVG.
SHIP TYPE								
ATTACK CARRIER	2	2	1	4	3		3	15/16.4
ASW CARRIER						1	5	6/32.1
CRUISER				1	1		1	3/23.4
DESTROYER TYPES	58		26	35	15		26	160/13.2
ESCORT		50	14	4	9			77/9.7
SUBMARINE	19	27	14	15	5	11	14	105/14.3
AMPHIBIOUS	24	41	10	4	11	1	6	97/10.5
MINE	18			6	57		2	83/18.1
AUXILIARY	54	30	10	4	11	2	58	169/16.2
PATROL	8	13	4					25/6.0
TOTAL	183	163	79	73	112	15	115	740/13.4

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TAB F TO APPENDIX B

USSR NAVY ORDER OF BATTLE

The following tables catalog the USSR Navy active ships by type. Included in these tables are the pertinent age data used in the Main Body assessment of age of the USSR fleet. Detailed information on ships by individual class is contained in Tab B.

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TABLE 1: USSR NAVY ACTIVE INVENTORY AND AGES
1961

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	TOTAL/AVG.
SHIP TYPE							
HELO CARRIER							
CRUISER	4	5	4		2	2	17/7
DESTROYER TYPES	49	40	12				101/6
ESCORT	20	37	10				67/7
SUBMARINE	76	219	45				340/7
AMPHIBIOUS							72/-
MINE							320/-
AUXILIARY							591/-
PATROL							380/-
PATROL (SSM)							66/-
TOTAL							1954/7

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TABLE 2: USSR NAVY ACTIVE INVENTORY AND AGES
1965

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	TOTAL/AVG.
SHIP TYPE							
HELO CARRIER							
CRUISER	4	5	3	1	1	2	16/5
DESTROYER TYPES	13	22	47	6			88/9
ESCORT	27	24	34	2			87/8
SUBMARINE	87	191	53				331/
AMPHIBIOUS							94/-
MINE							311/-
AUXILIARY							700/-
PATROL							360/-
PATROL (SSM)							128/-
TOTAL							2125

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TABLE 3: USSR NAVY ACTIVE INVENTORY AND AGES
1969

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	TOTAL/AVG.
SHIP TYPES							
HELO CARRIER	2						2/1
CRUISER	8	2	4	4	1	1	20/10
DESTROYER TYPES	12	13	31	23	2		81/11
ESCORT	39	22	20	21			102/8
SUBMARINE	49	87	195				331/10
AMPHIBIOUS							109/-
MINE							321/-
AUXILIARY							658/-
PATROL							320/-
PATROL (SSM)							160/-
TOTAL							2104

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TABLE 4 : USSR NAVY ACTIVE INVENTORY AND AGES
1973

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	TOTAL/AVG.
SHIP TYPES							
HELO CARRIER	1	1					2/5
CRUISER	12	6	2	4	3		27/8
DESTROYER TYPES	31	11	17	13	1		73/12
ESCORT	30	35	20	19	4		108/8
SUBMARINE	34	59	67	148			308/13
AMPHIBIOUS							119/-
MINE							292/-
AUXILIARY							658/-
PATROL							300/-
PATROL (SSM)							180/-
TOTAL							2067

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TABLE 5: USSR NAVY ACTIVE INVENTORY AND AGES
1977

AGE BY YEARS	0-4	5-9	10-14	15-19	20-24	25-29	TOTAL/AVG.
SHIP TYPES							
HELO CARRIER	2	1	1				4/6
CRUISER	10	11	5	1	4	3	34/7
DESTROYER TYPES	22	32	12	9	4		79/11
ESCORT	30	32	33	14			109/7
SUBMARINE	46	36	65	52	82		281/14
AMPHIBIOUS							129/-
MINE							270/-
AUXILIARY							658/-
PATROL							315/-
PATROL (SSM)							180/-
TOTAL							2059

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TAB G TO APPENDIX B

NATO (NON-U.S.) NAVIES

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[redacted]

Belgium
Canada
Denmark
France
Greece
Italy
Netherlands
Norway
Portugal
Turkey
United Kingdom
West Germany

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15 May 1969

*Estimates

BELGIUM

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Patrol	1	0	2	0	0
AMPH Craft	0	0	0	0	0
AMPH Ships	0	0	0	0	0
Mine Warfare	52	52	49	29	20
Auxiliary	1	3	1	2	2

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5 May 1969

NAVAL ORDER OF BATTLE - CANADA

* Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973 *	1977 *
ASW Support Aircraft Carrier	1	1	1	1	0
Destroyer	0	0	0	0	0
Destroyer Escort	25	24	22	24	24
Submarines	1	2	5	4	4
Patrol	23	20	3	3	3
Amphib Ships	0	0	0	0	0
Amphib Craft	0	0	0	0	0
Mine Warfare	10	10	6	6	6
Auxiliaries	16	30	27	30	30

AIR ORDER OF BATTLE - CANADA

	RCN Air Arm (Pre-Unification)		Maritime Command (Post Unification)		
ALL WX FTR					
F2H-3 Banshee	29	-	-	-	-
ASW Carrier					
CS2F-1 Tracker	35	18	13	-	-
CS2F-2 Tracker	49	53	28	6	-
CS2F-3 Tracker	-	-	28	45	41
ASW LD/SEA					
P-2H Neptune	-	-	24	-	-
CP-107 Argus	-	-	32	22	-
P-3 Type Follow-on	-	-	-	16	30
ASW HEL					
HO4S-3	10	7	7	-	-
CHSS-2 Sea King	-	12	36	41	35

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5 May 1969

*Estimates

NAVAL ORDER OF BATTLE - DENMARK

TYPE	FISCAL YEARS 1961	1965	1969	1973 *	1977*
Coastal Destroyers	2	2	-	-	-
Destroyer Escorts	-	-	2	2	2
Submarines	3	4	4	6	6
Patrol Types	30	32	33	35	39
Patrol	30	32	33	35	39
Mine Warfare	28	22	20	20	20
AMPH Ships	0	0	0	0	0
AMPH Craft	0	10	0	0	0
Auxiliaries	7	13	6	6	6

AIR ORDER OF BATTLE - DENMARK

ASW Aircraft	0	0	0	0	0

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5 May 1969

*Estimates

NAVAL ORDER OF BATTLE - FRANCE

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
ASW Support Aircraft Carrier	1	2	2	2	1
Small Aircraft Carrier	2	1	1	1	-
Helicopter Carrier	-	1	1	1	1
Destroyer Types	18	18	19	20	16
Cruisers	2	2	2	2	2
Submarines	20	21	19	22	24
Destroyer Escorts	29	28	28	28	34
				15 May	1969
Patrol	43	27	15	15	20
Minesweeps	124	102	101	104	90
AMPH Ships	10	9	8	8	8
AMPH Craft	11	9	12	13	10
Auxiliaries	34	45	63	65	50

AIR ORDER OF BATTLE - FRANCE — 5 May 1969

Fighters					
Aquilon	54	28	-	-	-
F4U-7	106	-	-	-	-
F-8	-	13	39	35	-
Mirage G	-	-	-	-	10
Fighter Bomber					
Etendard IV-M	6	55	51	35	-
Jaguar	-	-	-	10	48
Lt Bomber					
Lancaster	35	-	-	-	-
Recon					
Etendard IV-P	-	16	20	17	-
Jaguar	-	-	-	-	15
ASW					
Brequet Atlantic	-	-	33	38	37

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AIR ORDER OF BATTLE - FRANCE

*Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
ASW (con't)					
TBM	72	15	-	-	-
P-2V 6/7	52	58	29	21	-
P5M-2	10	-	-	-	-
HSS-1	45	52	51	-	-
Brequet Alize	47	73	67	50	40
Super Frelon	-	-	8	17	14

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5 May 1969

*Estimates

GREECE

TYPE	1961	1965	FISCAL YEARS 1969	1973*	1977*
DD	6	8	8	8	8
DE	4	4	4	0	0
SS	2	3	2	5	5
				15 May 1969	
Patrol	15	9	19	19	19
Mine Warfare	18	28	26	19	15
AMPHIB Ships	21	19	16	16	16
AMPHIB Craft	39	44	44	44	44
Auxiliaries	13	17	15	15	15

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5 May 1969

*Estimates

NAVAL ORDER OF BATTLE - ITALY

TYPE	1961	1965	FISCAL YEARS 1969	1973*	1977*
Guided Missile Lt Cruiser	1	1	1	1	1
Light Cruiser	2	0	0	0	0
Guided Missile Frigate	0	2	3	3	3
Guided Missile Destroyer	0	2	2	2	4
Frigate	2	2	2	2	2
Destroyer	6	4	4	4	4
Destroyer Escort	7	11	13	13	13
Submarine	6	5	6	6	7
Anti Submarine Submarine	0	0	4	4	6
Patrol	46	45	39	40	43
AMPH Craft	46	42	49	49	49
AMPH Ships	6	8	9	9	10
Mine Warfare	96	94	61	61	61
Auxiliary	41	53	48	48	48

AIR ORDER OF BATTLE - ITALY 5 May 1969

ASW					
S-2A	19	43	39	36	25
Atlantique	0	-	-	18	36

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5 May 1969

NAVAL ORDER OF BATTLE - NETHERLANDS

*Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973 *	1977*
ASW Support Aircraft Carrier	1	1	0	0	0
Cruisers	2	2	2	1	1
Destroyers	15	12	12	14	14
Submarines	6	5	6	6	6
Destroyer Escorts	6	6	6	6	6
Patrol Types	12	12	11	11	11
				15 May 1969	
Patrol	14	12	11	11	11
AMPH Ships	1	0	0	0	0
AMPH Craft	44	14	13	13	13
Mine Warfare	59	68	63	63	63
Auxiliaries	17	15	14	14	14

AIR ORDER OF BATTLE - NETHERLANDS

5 May 1969

Fighters					
Ftr-bmr-Sea Hawk MK-4	19	-	-	-	-
ASW					
Carrier-type					
Firefly AS6	13	-	-	-	-
TBM-3W2 (3E)	8	-	-	-	-
S-2A	43	39	42	-	-
Land-Based P-2H	5	13	16	-	-
Brequet Atlantiques	-	-	-	9	9

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5 May 1969

NAVAL ORDER OF BATTLE - NORWAY

*Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Destroyers	3	2	0	0	0
Destroyer Escorts	5	2	5	5	5
Submarines	8	7	15	15	15
Patrol Types	21	34	48	48	48
				15 May 1969	
Patrol	21	34	48	48	48
Mine Warfare	18	14	15	17	18
AMPH Ships	0	0	0	0	0
AMPH Craft	0	1	3	3	3
Auxiliaries	5	4	7	8	9

AIR ORDER OF BATTLE - NORWAY

5 May 1969

HU-16B	1/9	2/18	2/18	-	-
Orions	-	-	1/5	1/5	1/5

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5 May 1969

NAVAL ORDER OF BATTLE - PORTUGAL

*Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Destroyers	3	2	-	-	-
Submarines	3	3	4	4	4
Destroyer Escorts	3	3	7	8	8
				15 May 1969	
Patrol	21	31	29	40	40
Minesweeps	16	16	16	15	14
AMPH Ships	0	0	0	0	0
AMPH Craft	0	26	36	40	40
Auxiliaries	9	10	8	9	10

AIR ORDER OF BATTLE - PORTUGAL

5 May 1969

Aircraft (Fixed Wing) P2V-5	1/7	1/12	1/12	1/8	1/8

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5 May 1969

TURKEY

*Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
DD	9	9	9	7	7
DE	0	0	0	2	2
SS	10	10	10	9	5
				15 May 1969	
Patrol	18	19	32	30	30
Mine Warfare	35	23	20	20	20
AMPH Ships	0	0	0	0	0
AMPH Craft	0	10	70	74	72
Auxiliaries	32	34	40	39	39

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NAVAL ORDER OF BATTLE - UNITED KINGDOM *Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Attack Aircraft Carriers	3	3	2	0	0
CVS Support Aircraft Carriers	2	2	2	0	0
Cruisers	10	4	4	3	3
Destroyers	47	24	17	9	13
Submarines	52	43	40	27	30
Destroyer Escorts	65	62	65	44	45
Amphibious Assault Ships	2	2	2	3	3
				15 May 1969	
Patrol	77	22	6	11	18
AMPHIB Ships 1/	50	16	5	8	8
AMPHIB Craft	0	0	0	0	0
Mine Warfare	221	139	73	60	50
Auxiliaries	110	137	131	135	135

AIR ORDER OF BATTLE - U.K. (ROYAL NAVY FLEET AIR ARM) 5 May 1969

All WX ftr					
Sea Venom F (AW)21	21	-	-	-	-
Sea Venom F (AW)22	100	47	40	-	-
Sea Vixen F(AW)1	83	79	14	-	-
Sea Vixen F(AW)2	-	38	85	-	-
F-4K Phantom II	-	-	13	-	-
Day Ftrs					
Scimitar F-1	61	46	23	-	-
Attack					
Sea Fury FB-11	8	1	-	-	-
Sea Hawk FB-5	36	-	-	-	-
Sea Hawk F(GA)6	126	56	8	-	-
Hunter GA-11	8	38	36	-	-

1/ The Royal Navy's 2 LPH were included in inventory of ships previously submitted.

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AIR ORDER OF BATTLE - U.K. (ROYAL NAVY FLEET AIR ARM) *Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Attack (Con't)					
Buccaneer S-1	-	34	26	-	-
Buccaneer S-2	-	24	72	-	-
ASW Carrier					
Avenger AS-6	1	-	-	-	-
Gannet AS-1	1	-	-	-	-
Gannet AS-4	30	5	1	-	-
Gannet AS-6	8	5	3	-	-
ASW Hel					
Whirlwind HAS-7	89	69	48	5	-
Whirlwind HAS-22	5	5	4	-	-
Wessex HAS-1	16	87	58	33	-
Wessex HAS-3	-	-	36	40	35
Wasp HAS-1	-	55	84	77	55
SH-3D Sea King	-	-	16	60	60

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NAVAL ORDER OF BATTLE - WEST GERMANY *Estimates

TYPE	FISCAL YEARS 1961	1965	1969	1973*	1977*
Destroyers	6	8	9	12	11
Submarines	3	11	12	16	18
Destroyer Escorts	1	6	6	6	10
				15 May 1969	
Patrol	51	60	47	55	60
Minesweeps	60	67	77	80	95
AMPH Ships	6	6	4	4	4
AMPH Craft	N.A.	9	17	25	30
Auxiliaries	17	55	49	57	60

AIR ORDER OF BATTLE - WEST GERMANY 5 May 1969

Fighter-bomber					
Seahawk	62	51	-	-	-
F-104G	-	45	68	75	-**
Recon					
RF-104G	-	-	27	25	-**
ASW					
Gannet	16	15	-	-	-
Atlantic	-	-	19	21	20

** Plans for Naval Air not known for post-1975 either will be absorbed by Air Force or F-104G will be replaced by new type such as MRCA-75 or F-4.

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AVERAGE AGE (IN 1969) OF MAJOR COMBATANT SHIPS

NATO NAVIES (NON U.S.)

CANADA Type Class	Average Age (Years)
CVS	
BONAVENTURE (1)	12
DE	
ST. LAURENT (7)	13
RESTIGOUCHE (7)	10
MACKENZIE (4)	6
ANNAPOLIS (2)	5
ALGONQUIN (2)	25
SS	
FLEET SNORKEL (2)	26
OBERON (3)	2
DENMARK Type Class	
DE	
PEDER SKRAM (2)	3
SS	
DELFINEN (4)	4

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FRANCE

Type Class	Average Age (Years)
CVS	
CLEMENCEAU (2)	7
CVL	
Br. COLOSSUS (1)	25
CVH	
JEANNE D'ARC (1)	4
CLAA	
COLBERT	10
CL	
DE GRASSE	15
DLG	
SUFFREN (2)	(New/building)
DDG	
SURCOUF (4)	13
DL	
SURCOUF (3)	13
DDR	
DUPERRE (SURCOUF) (5)	11
DD	
SURCOUF (5)	13
LA GALISSONNIERE (1)	9
DE	
ACONIT (1)	(Building)
"C67" (2)	(Building)
CDT. RIVIERE (9)	6
LE NORMAND (14)	12
LE CORSE (4)	14
US "DET" (1)	26
SSBN (3)	(Building)
ESSB	
GYMNOTE (1)	3

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FRANCE (Cont'd) Type Class	Average Age (Years)
SS	
NARVAL (6)	12
SSK	
DAPHNE (8)	5 (2 others building)
ARGONAUTE (4)	10
GREECE Type Class	
DD	
FLETCHER (6)	27
GLEAVES (2)	29
DE	
DET (4)	26
SS	
FLEET SNORKEL (2)	27
ITALY Type Class	
CLGM	
GARIBALDI	32
DLG	
DORIA (3)	4
DDG	
MOD INDOMITO (2)	6
DL	
SAN GIORGIO (2)	20
DD	
INDOMITO (2)	11
U.S. BENSON-LIVERMORE	28

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ITALY (Cont'd) Type Class	Average Age (Years)
DE	
MOD CIRCE (ALPINO) (2)	1
GIGNO (4)	12
BERGAMINI (4)	7
U.S. "DET" (3)	27
SS	
U.S. BALAO (3)	25
U.S. "GUPPY 1B" (2)	28
FLUTTO (1)	20
SSK	
TOTI (4)	(new)

NETHERLANDS Type Class	
CLG 080	
DE ZEVEN PROVINCIEN (1)	12
CL 192	
HOLLAND (4)	16
FRIESLAND (8)	12
DE 220	
British LEANDER (6)	3
SS 265, 282	
U.S. BALAO (GUPPY 1B) (2)	24
DOLFIJN	8
POTVIS (1)	3

NORWAY Type Class	
DE	
DEALEY (5)	3
SS	
German KOBBEN Class (15)	4

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	Average Age (Years)
PORTUGAL	
Type	
Class	
DE	
FR. CDT. RIVIERE (3)	1
U.S. DEALEY (3)	1
PERO ESCOBAR (1)	12
SS	
FR. DAPHNE (3)	1 (1 Building)
U.K. "S" (1)	24
TURKEY	
Type	
Class	
DD	
GLEAVES (4)	27
MILNE (4)	27
FLETCHER (1)	25
SS	
FLEET SNORKEL (10)	26
UNITED KINGDOM	
Type	
Class	
CVA	
EAGLE (1)	17
ARK ROYAL (1)	14
CVS	
"Modernized HERMES" (1)	10
HERMES (1)	16
CL	
TIGER (3)	10
"Improved SOUTHAMPTON" (1)	30
DLG	
"Country" (6)	6
DD	
DARING (6)	16
EMERGENCY (4)	25
DDR	
"Battle" (1)	22

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UNITED KINGDOM (Cont'd)

Type Class	Average Age (Years)
DE	
LEANDER (17)	6
ROTHESAY (9)	9
WHITBY (5)	12
DE	
"Tribal" (7)	7
LEOPARD (4)	12
BLACKWOOD (11)	12
ROCKET (8)	26
DER	
SALISBURY (4)	11
SSBN	
RESOLUTION (3)	1
SSN	
DREADNOUGHT (1)	6
VALIANT (2)	3
SS	
OBERON (13)	7
PORPOISE (8)	11
"A" (11)	22
"T - Conversion" (2)	25
LPH	
HERMES (2)	15

WEST GERMANY

Type Class	
DDG	
U.S. CHAS. F. ADAMS (3)	(Building)
DD	
HAMBURG (4)	4
U.S. FLETCHER (5)	27
DEG	
"Frigate 70"	(Building)

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WEST GERMANY (Cont'd)

Type Class	Average Age (Years)
DE	
KOELIN (6)	7
SS	
U-13	(Building)
U-4 (10)	4
SST	
"Type XXI" (1)	25

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TAB H TO APPENDIX B

WARSAW PACT (NON-USSR) NAVIES

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[redacted]

The tables that follow show the numbers of ships, by type (1961-77) and the average age (in 1969) of the navies of:

Bulgaria
East Germany
Poland
Rumania

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BULGARIAN NAVAL SHIPS
(OPERATIONAL NUMBERS AT MID-YEAR)

TYPE	1961	1965	1969	1973	1977
Destroyers	-	-	-	-	-
Destroyer Escorts	2	2	2	2	2
Submarines	3	2	2	2	2
Fast Patrol Boats	20	8	8	8	8
Guided Missile FPBs	-	-	-	4	6
Coastal Escorts	4	8	8	6	6
Fleet Minesweepers	2	2	2	2	2
Small Minesweepers	22	18	18	18	18
Amphibious Types	11	11	11	16	20

EAST GERMAN NAVAL SHIPS
(OPERATIONAL NUMBERS AT MID-YEAR)

Destroyers	-	-	-	-	-
Destroyer Escorts	4	4	3	4	4
Submarines	-	-	-	-	-
Fast Patrol Boats	31	50	67	75	85
Guided Missile FPBs	-	6	12	12	12
Coastal Escorts	66	69	85	95	85
Fleet Minesweepers	16	20	19	18	14
Small Minesweepers	37	36	28	30	30
Amphibious Types	-	18	18	22	30

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POLISH NAVAL SHIPS
(OPERATIONAL NUMBERS AT MID-YEAR)

TYPE	1961	1965	1969	1973	1977
Destroyers	3	3	3	2	3
Destroyer Escorts	-	-	-	3	4
Submarines	7	7	7	8	10
Fast Patrol Boats	33	19	28	36	44
Guided Missile FPBs	-	5	12	15	21
Coastal Escorts 1/	62	62	54	56	60
Fleet Minesweepers	12	17	24	24	24
Small Minesweepers	19	19	35	35	35
Amphibious Types	18	22	48	48	54

1/ Includes Coast Guard coastal cutters now being used to augment naval strength

RUMANIAN NAVAL SHIPS
(OPERATIONAL NUMBERS AT MID-YEAR)

Destroyers	3	-	-	-	-
Destroyer Escorts	-	-	-	-	-
Submarines	3	-	-	-	-
Fast Patrol Boats	18	8	13	11	10
Guided Missile FPBs	-	-	5	6	6
Coastal Escorts	14	7	6	3	3
Fleet Minesweepers	4	4	4	4	4
Small Minesweepers	26	26	28	28	28
Amphibious Types		8	8	8	8

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NON-SOVIET WARSAW PACT NAVAL AVIATION
POLISH NAVAL AIR FORCES
(OPERATIONAL NUMBERS BY TYPE AT MID-YEAR)

TYPE	1961	1965	1969	1973	1977
BEAGLE	0	10	10	-	-
FAGOT/FRESCO	20	72	36	30	25
FLASHLIGHT	-	-	-	-	-
MANGROVE	-	4	-	-	-
FITTER	-	-	-	-	5
FISHBED D/F	-	-	-	5	10

NOTES:

1. While it is unknown if any helicopters are actually assigned to the Polish Naval Air Force, some 18-22 HARE/HOUND helicopters are believed to be operating under the Polish Maritime Frontier Guard.

2. The Bulgarian and East German Navies have a limited number of helicopters assigned which probably function in an air-sea rescue role as well as ASW.

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AVERAGE AGE (IN 1969) OF NON-SOVIET WARSAW PACT NAVAL SHIPS BY CLASS

BULGARIA Type/Class	Average Age (Years)
Destroyer Escorts	
DE RIGA (2)	16
Submarines	
SS W (2)	19
Fast Patrol Boats	
PT P-4 (8)	17
Coastal Escorts	
PC KRONSHTADT (2)	21
SC S.O.1 (6)	13
Fleet Minesweepers	
MSF T-43 (2)	20
Small Minesweepers	
MSM T-301 (4)	26
MSB PO-2 (14)	11
Amphibious Types	
LCU MFP (11)	15

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EAST GERMANY Type/Class	Average Age (Years)
Destroyer Escorts	
DE RIGA (3)	17
Fast Patrol Boats	
PT P-6 (18)	16
PT ILTIS (48)	4
PTF SHERSHEN (1)	3
Guided Missile FPBs	
PTFG OSA (12)	6
Coastal Escorts	
SC S.O.1 (12)	10
PGM KS-1 (6)	18
PGM DELPHIN (11)	16
PGM FORELLE (3)	9
PGM TUEMMLER (11)	14
SC/PGM KS-2 (20)	16
PGM SCHWALBE II (8)	14
PC HAI (14)	4
Fleet Minesweepers	
MSF HABICHT I (3)	16
MSF HABICHT II (6)	14
MSF KRAKE (10)	12
Small Minesweepers	
MSM SCHWALBE II (26)	12
MSM KONDOR (2)	1
Amphibious Types	
LSM ROBBE (6)	5
LCU LABO-100 (12)	7

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POLAND

Type/Class	Average Age (Years)
Destroyers	
DD GROM (1)	32
DD SKORYY (2)	20
Submarines	
OSS ORZEL (1)	30
OSS MV (2)	23
SS W (4)	19
Fast Patrol Boats	
PT MO-V (8)	23
PT P-6 (19)	18
PT WISLA (1)	3
Guided Missile FPBs	
PTFG OSA (12)	9
Coastal Escorts	
PC KRONSHTADT (8)	13
SC GDANSK (9)	9
SC OKSYWIE (4)	11
SC OBLUZE (5)	2
PGM K-8 (28)	12
Fleet Minesweepers	
MSF T-43 (12)	11
MSF KROGULEC (12)	4
Small Minesweepers	
MSB K-8 (28)	11
MSB TR-40 (7)	13
Amphibious Types	
LSM POLNOCNY (24)	5
LCP EICHSTADEN (24)	5

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RUMANIA Type/Class	Average Age (Years)
Fast Patrol Boats	
PT P-4 (13)	18
Guided Missile FPBs	
PTFG OSA (5)	10
Coastal Escorts	
PC KRONSHTADT (3)	14
BMR BUCOVINA (1)	54
BMR ARDEAL (1)	65
BMR BASARABIA (1)	54
Fleet Minesweepers	
MSF M-40 (4)	18
Small Minesweepers	
MSM T-301 (18)	23
MSB TR-40 (8)	12
Amphibious Types	
LCM BRAILA (8)	4

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TAB I TO APPENDIX B

U.S. AND USSR NAVY AGE AND SHIPBUILDING TRENDS

The following tables, figures and descriptions concern U.S. and USSR Navy trends with respect to numbers, tonnages, ages, and rate of replacement of U.S. and Soviet ships.

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Numbers and Tonnage. Table 1 shows a comparison of the number of active fleet units (less strategic forces) in the U.S. and Soviet fleets from 1961 to 1969 and a projection to 1977. The chart is arranged cumulatively so that it shows that in 1961, for example, the U.S. had about 960 of all class of general purpose force ships--made up of CVA/CVS's, major escorts, submarines, amphibious and patrol, mine warfare and auxiliary. The USSR at the same time had about 2000 ships of all types. From 1961 to 1969 the U.S. fleet has decreased to about 850 while the Soviet fleet has increased slightly. Current FYDP and intelligence projections indicate that the U.S. fleet will decline to fewer than 800 while the Soviet fleet remains about the same. (The basic characteristics of U.S. and USSR general purpose naval forces are outlined respectively in Tabs A and B.)

Table 2 shows the total tonnage of the two navies for the same time period as shown in Table 1. This chart illustrates the fact that the two navies are configured very differently. The U.S. has a navy structured primarily to keep sea lines of communication open worldwide and to project power overseas while the USSR has a navy structured primarily to prevent our successful execution of these missions. The former is made up of large ships with great endurance while the latter smaller ships with less endurance. Note that the total tonnage of USSR ships is projected to increase after 1969 while U.S. tonnage will decline.

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TABLE 1

ACTIVE NUMBER OF SHIPS[1/]

U.S.

	61	65	69	73	77
CVA	17	15	15	15	15
CVS	9	9	7	6	6
CRUISE	14	16	11	10	3
DES	310	270	269	244	247
SUBS	110	105	102	105	105
PATROL	0	0	14	21	25
AMPHIBS	132	135	162	104	97
MINE	84	84	74	69	83
AUX	217	216	204	181	169
	893	850	858	755	750

USSR

CHG	0	0	2	2	4
CRUISE	17	16	20	27	34
DES	168	175	183	181	188
SUBS	340	331	331	308	281
PATROL	446	488	480	480	495
AMPHIBS	72	94	109	119	129
MINE	320	311	321	292	270
AUX	591	700	658	658[2/]	658[2/]
	1954	2115	2104	2067	2059

1/ Excludes strategic forces (SSBN, SSB) and landing craft (LCU), minor patrol (PT, SWIFT), minesweep boats (MSB), harbor service craft (YO), riverine gun-ships, and misc auxiliaries under 100 tons.

2/ No projection past CY 69 available.

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TABLE 2

ACTIVE SHIP TONNAGE[1/]
(thousands)

U.S.

	61	69	77
CVA	935.0	1019.8	1475.2
CVS	360.0	243.6	243.6
CRU-DES	1120.9	1299.7	1227.0
SUBS	257.6	279.3	325.5
AMPHIB & PAT	1301.1	1403.9	1093.0
MINE	71.0	67.1	107.2
AUX	2869.1	2940.5	2613.2
	6914.7	7253.9	7084.7

USSR

CHG	0	48.0	96.0
CRU-DES	530.4	648.6	737.7
SUBS	356.5	644.4	748.8
PATROL	234.0	190.0	185.7
AMPHIB	90.0	122.0	162.0
MINE	140.0	148.0	99.3
AUX[2/]	1300.2	1439.3	1439.3
	2651.1	3240.3	3468.8

1/ Excludes strategic forces (SSBN, SSB) and landing craft (LCU), minor patrol (PT, SWIFT), minesweep boats (MSB), harbor craft (YO), riverine gun ships and misc auxiliaries under 100 tons.

2/ Averaged estimate.

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Shipbuilding Trends. The previous two tables, showing total inventory and tonnages, do not, of themselves, adequately portray trends of the two navies over the past years. Figures 3 through 6 give some insight into these trends. Figure 1 indicates the number of major naval combatant ships delivered per year during the past decade and a half. Figure 2 shows these same ships in cumulative numbers of ships delivered during this same period--U.S. construction of major naval combatants has averaged about 13 ships per year as compared to the Soviet average of about 19 per year. Here again the tonnage comparison is significant. Figure 3 indicates the annual tonnage delivered by the U.S. and USSR over this period and Figure 4 indicates the cumulative tonnage--the U.S. delivered some 1,550,000 tons of major naval combatants and the USSR delivered 958,000 tons. Whereas the Soviets constructed a greater number of major combatants during this period, their delivery tonnage totals only 62% of that of the U.S. Of the total U.S. tonnage, however, it will be noticed that approximately 44% was for U.S. carrier forces--that portion of the construction inventory which permits the U.S. the capability to project its power overseas with integral air support. When the CVA's are omitted, construction of U.S. surface combatants and attack submarines (that portion of the U.S. naval ship inventory which, inter alia, protects U.S. strike forces and LOC against the Soviet attack forces) was less than 90% of that of the Soviet Union based on comparative tonnage much less based on numbers of individual units.

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FIGURE 1
COMPARISON OF MAJOR COMBATANT
SHIP CONSTRUCTION - USSR VS. U.S.

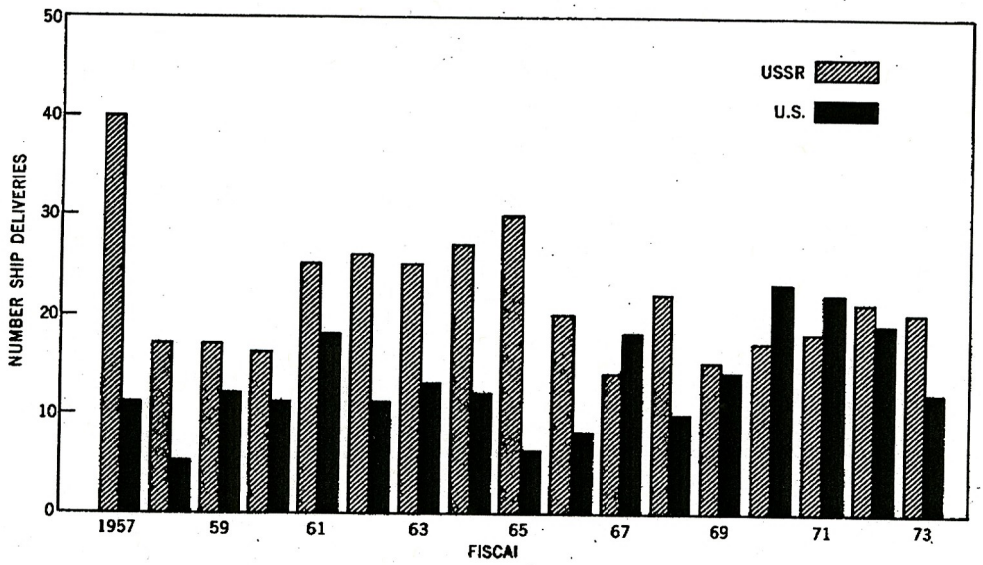

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FIGURE 2
COMPARISON OF MAJOR NAVAL COMBATANT
SHIP CONSTRUCTION - USSR VS. U.S.

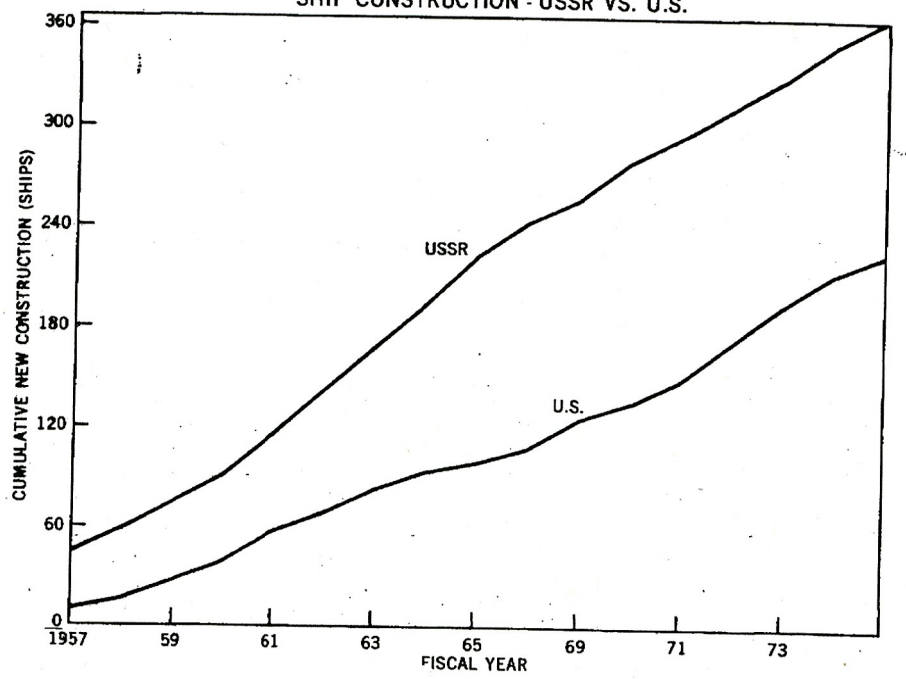

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FIGURE 3

COMPARISON OF MAJOR NAVAL COMBATANT SHIP CONSTRUCTION - USSR VS. U.S.

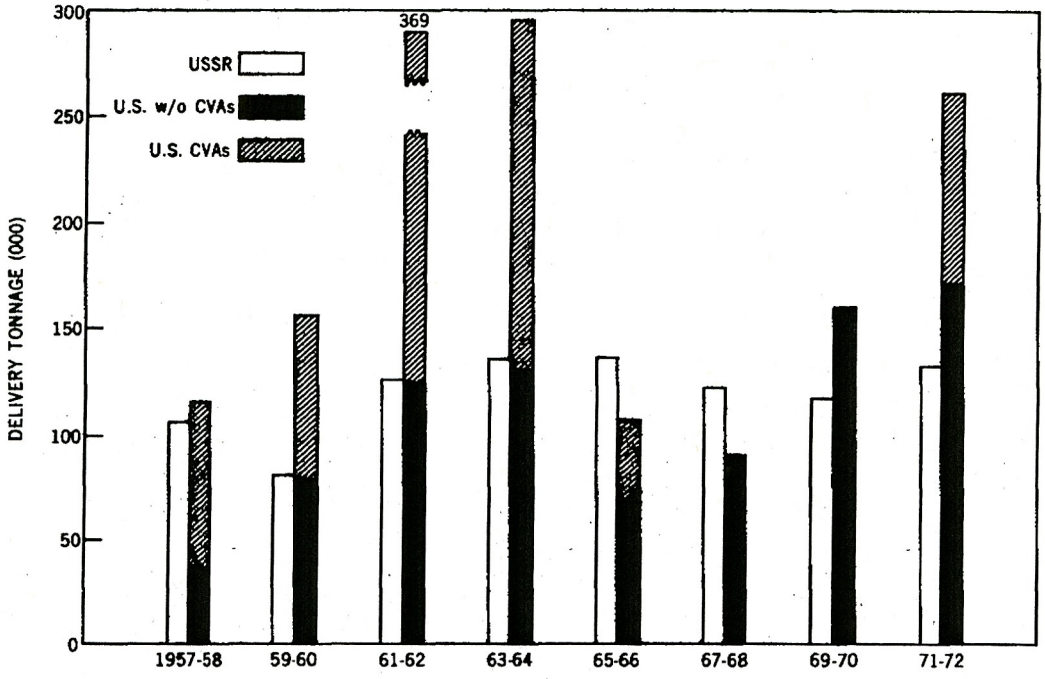

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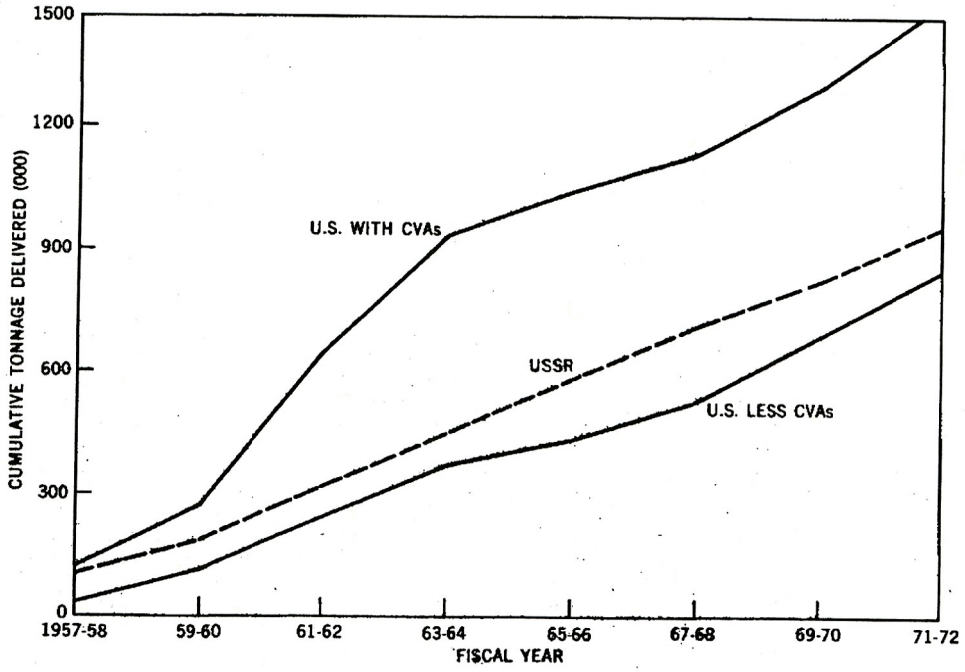
FIGURE 4

MAJOR NAVAL COMBATANT CONSTRUCTION



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Age Trends. It has been pointed out that a type-by-type comparison of U.S. versus USSR ships may not be particularly meaningful in assessing the relative capabilities of both navies due to the dissimilarity in missions. For instance, there is nothing in the Soviet force that compares with those U.S. forces which make it possible to project power overseas, i.e., U.S. carrier strike and amphibious assault forces. Perhaps one appropriate comparison would be Soviet ships designed to prevent our strike forces from carrying out their mission versus U.S. forces designed to protect our strike forces and thus permit them to carry out their mission. In this manner one might compare the Soviet submarine force versus some U.S. ASW forces--surface combatants and attack submarines. One method for looking at this comparison in graphic form, considering both the inventory and ages of these ships, is to compute "useful life remaining" (hereinafter abbreviated ULR) as a function of time. The attached tables have been so constructed based on an arbitrary 30 year useful life for naval ships.1/ Figure 5 then indicates the percentage of ULR for the total U.S. attack submarine and surface combatant forces and the percentage for the total attack submarine and surface combatant forces of the USSR. It can be seen that in 1961 the U.S. surface combatant and submarine force averaged 56% ULR. At the same time Soviet submarines averaged 77% ULR. By 1965 U.S. ULR had dropped to 49% and Soviet ULR to 74%. By 1969 U.S. useful life remaining continued to decrease to 40% and the Soviet force (mainly due to submarines) to 67%. The slope of the U.S. and Soviet lines indicates that U.S. ULR decreased over this period at a slightly faster rate than did the Soviets. Projections beyond this current year are based on the 5 Year Defense Plan for the U.S. and intellignece estimates for the Soviets. It can now be seen that, based on these projections, U.S. useful life remaining begins to climb, indicating a trend which would bring U.S. ULR back up over 50% by the late 1970's. However, it should be noted that a large portion of the percent gain in ULR is accomplished by retiring a large number of over age ships and not replacing them. For instance, in 1961, percentage useful life remaining is figured on a base of some 530 ships--in 1977, the same percentage applies to only 360 ships. At the same time, Soviet useful life remaining shows a continuing slight decline which would reach the 50% line in the 1980's. The projections for U.S. forces may be somewhat misleading in that FYDP projections in the past have never been matched by the actual U.S. ship construction program.

1/ The selection of 30 years as the basis for "useful ship life" has no significance in this comparison except as a common reference point. The 30-year span includes almost all the ships apparently considered useful (at any rate, they are active ships) by either Navy. Selection of another common reference point would not significantly affect the comparison.

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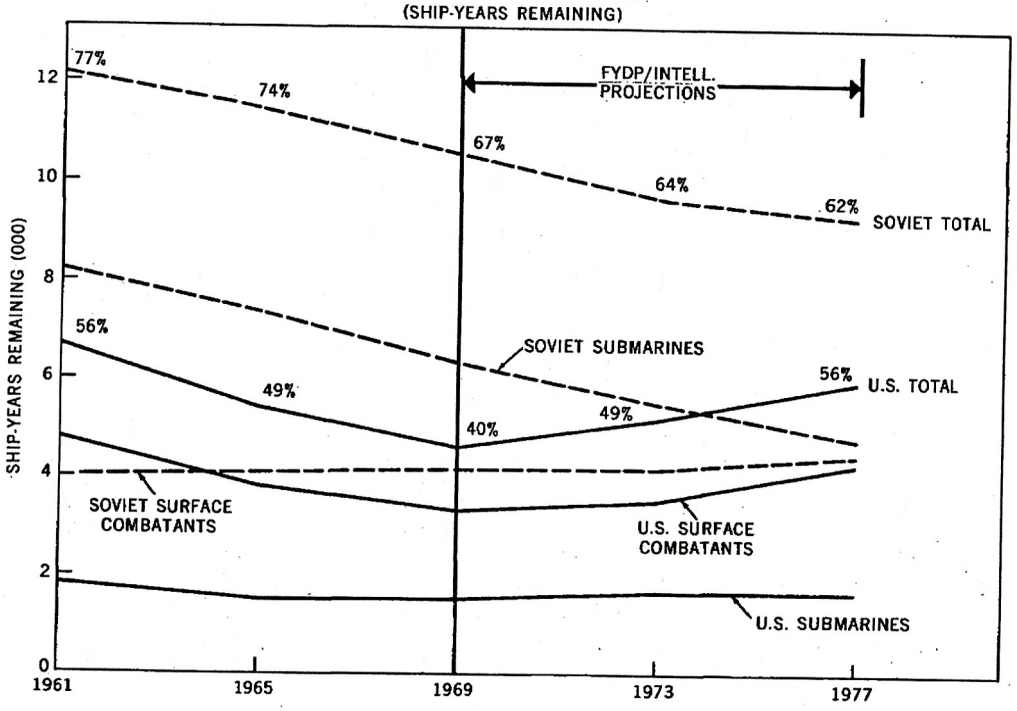
FIGURE 5
U.S. VS. SOVIET NAVIES
(SHIP-YEARS REMAINING)



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The next graph, Figure 6, indicates the effect of various annual ship construction levels over the next two decades. It indicates in round numbers what 1 billion, 2 billion, 3 billion, and 4 billion dollar annual ship construction programs would accomplish for the U.S. fleet. Essentially, both $1 billion and $2 billion annual programs would continue the downward trend in the U.S. useful life remaining assuming a constant number of ships in the inventory. The $3 billion annual program would probably permit a sustaining or slow rise in useful life remaining for U.S. forces. The $4 billion annual program would permit a faster buildup in useful life remaining.

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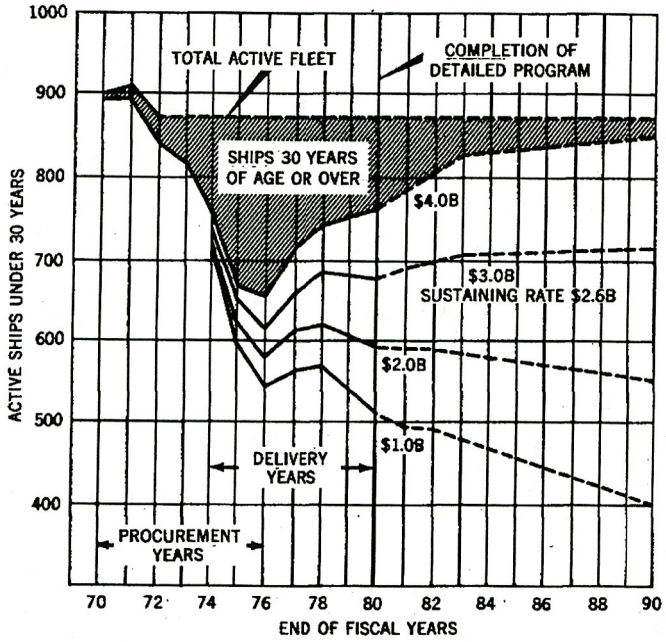
FIGURE 6

EFFECT OF VARIOUS ANNUAL SCN PROGRAMS BEGINNING IN FY-70



ASSUMPTIONS:

1. GOAL IS A BALANCED FLEET OF ABOUT 850 ACTIVE SHIPS WITH NOMINAL SHIP RETIREMENT AT 30 YEARS
2. AFTER FY 69 4 YEARS INTERVAL BETWEEN AUTHORIZATION AND ENTRY INTO THE ACTIVE FLEET
3. FY 66-68 AUTHORIZED SHIPS THAT HAVE BEEN CANCELLED WILL NOT BE BUILT. ALL SHIPS IN FY 69 AS ADJUSTED AND THE RIVERS BILL FOR FY 70 WILL BE BUILT
4. FLEET MAY BE MAINTAINED AT THE FY 80 ATTAINED AGE BY CONTINUED EXPENDITURE AT SUSTAINING RATE FROM FY 76 ON

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TAB J TO APPENDIX B

COST DATA

CONTENTS

Cost data, for both the U.S. Navy and the Soviet Navy, is presented in a form intended to allow at least limited comparisons between programs of the two navies. This TAB contains the following tables.

1. U.S. Navy Expenditures, FY 1962-74
2. Soviet Naval Expenditures, 1961-74
3. General Purpose Force Expenditure Totals, 1962-69
4. U.S. Navy Expenditures, Shipbuilding and Conversion, FY 1962-74
5. Soviet Naval Expenditures, Shipbuilding 1961-74
6. General Purpose Force Shipbuilding Expenditure Totals 1962-69
7. Summary Comparison Table, 1962-74

U.S. NAVY COSTS

U.S. costs, in all cases, are estimates of actual (or projected) expenditures for any given year and not the Total Obligational Authority (TOA) figure. Expenditures, rather than TOA, are used so as to most nearly correspond to intelligence estimates of Soviet costs (expenditures). FY 1962-68 actual total expenditures, for total USN and for shipbuilding (SCN), were statistically distributed to the individual programs or program elements, based on the known pattern of expenditures for any appropriation category. For projected FY 1969-74 expenditures, the same methodology was used based on the Five Year Defense Plan (FYDP). All U.S. Navy expenditure estimates are presented in 1966 dollars so as to be comparable with the base used in estimating Soviet costs.

SOVIET NAVY COSTS

Estimated Soviet expenditures are expressed in 1966 U.S. dollars. These estimates are the estimated cost if the force/program in question had been purchased, maintained and operated in the U.S. at U.S. prices. For example:

-Ship procurement (SCN) costs are estimated by analogy with the cost of constructing a U.S. ship with similar characteristics. Using the characteristics of a Soviet ship, a U.S. ship having the most similar characteristics is determined. The known cost of that U.S. ship provides the base for estimating the cost of the Soviet ship. Deductions or additions are then made to this figure to account for known differences in the characteristics of the two ships.

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-Personnel costs are estimated by multiplying the estimated number of Soviet military (naval) personnel by the dollar cost of personnel at U.S. pay scales.

The resulting "dollar equivalent" costs are considered reasonably valid for use in order-of-magnitude comparisons of the level of effort for such categories as ship procurement, strategic attack forces, general purpose forces and the like, provided it is recognized that the estimates reflect U.S. terms of reference.

SUITABILITY FOR COMPARISONS

As noted above, Soviet dollar equivalent expenditure estimates are considered appropriate for comparison with U.S. expenditures for similar forces/programs. Soviet costs are presented in dollars so as to have meaning to U.S. users and to provide a common base for comparison with U.S. costs. Dollar costs for Soviet programs could also be computed by conversion to dollars from estimated ruble costs. This method, however, could compound the margin for error already present when attempting ruble estimates 1/, since no one ruble-dollar conversion factor meaningfully applies.

IMPACT ON THE ECONOMY

While appropriate for comparisons of the relative level of effort in the two countries, Soviet dollar costs, based on U.S. prices, have little or no relationship to the actual impact on the controlled Soviet economy and, thus, do not reflect real resources allocation in the USSR. If the desired comparison is of major end uses of Gross National Product (GNP) in the two countries, there is the problem of valuing two very different assortments of output in a common set of prices. The international currency exchange rate cannot be used for the U.S. and USSR because the exchange rate is set arbitrarily, foreign trade is a tightly controlled monopoly in the USSR, and the exchange rate only reflects (imperfectly) the prices of goods and services that are traded internationally.

To illustrate, U.S. defense expenditures are about 10% of U.S. GNP. Measured in dollar equivalents, Soviet defense expenditures (1967) are about 11.5% of the Soviet GNP; measured in rubles, Soviet defense expenditures are only about 7.5% of GNP. (Soviet expenditures on naval forces, strategic and general purpose, are 10-15% of the defense total.)

1/ In some cases, particularly procurement of advanced weapons systems, ruble cost estimates are made by estimating the dollar cost at U.S. prices and then applying a dollar-ruble conversion factor.

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COSTS NOT INCLUDED

Intelligence estimates of total defense costs are deliberately structured to be comparable with U.S. FYDP Programs. Thus, estimates of Soviet Navy Strategic Force (SSN/SSBN) costs are comparable to U.S. Navy Program I expenditures; Soviet Navy General Purpose Force costs are comparable to U.S. Navy Program II costs. The total of the two programs is, of course, not the total Department of the Navy budget in the U.S. case. Similarly, the total of the two Soviet programs is not, conceptually, comparable to the total U.S. Navy budget.

Excluded in both cases, are costs included in FYDP Programs 0 and III-IX. These programs are:

0	Support of Other Nations
III	Intelligence and Command
IV	Airlift and Sealift
V	Guard and Reserve Forces
VI	Research and Development
VII	Central Supply and Maintenance
VIII	Training, Medical and Other General Personnel Activities
IX	Administration and Associated Activities

Estimates of total Soviet Defense expenditures treat the above categories as defense establishment-wide expenses; they are not broken out by service. For example, RDT&E is estimated as a single total for all services, as is a category "Command and General Support." Thus, for comparison purposes, it is necessary to limit attention to U.S. Programs I and II and their Soviet equivalents.

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TABLE 1

U.S. NAVY EXPENDITURES[1/]
($ Billions - 1966 $)

	FY 62	63	64	65	66	67	68	69	70	71	72	73	74
STRATEGIC FORCES[2/]	2.3	1.9	1.7	0.8	0.6	1.0	1.5	1.7	1.6	1.7	1.4	1.2	1.3
GENERAL PURPOSE FORCES 3/	8.7	8.9	9.1	8.7	10.3	11.9	11.3	11.2	11.4	12.4	12.6	11.8	9.9
Attack Air	1.7	1.9	1.6	1.5	1.8	2.7	2.1	2.4	2.3	2.6	2.4	2.1	1.6
ASW Air	1.4	1.3	1.4	1.5	1.4	1.6	1.7	1.5	1.6	2.0	2.1	2.0	1.8
Submarines	0.5	1.0	0.8	0.7	0.7	0.8	0.7	0.6	0.9	1.3	1.2	1.2	1.1
Cruiser-Destroyer	1.9	1.4	1.7	1.4	1.4	1.8	1.4	1.4	1.6	2.3	2.3	2.0	1.5
Amphibious	0.5	0.5	0.5	0.7	0.8	0.7	0.6	0.8	0.9	0.9	0.9	0.9	0.5
Mine	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.3	0.2	0.1
Service	0.4	0.5	0.5	0.6	0.7	0.9	0.9	0.9	0.8	0.5	0.9	1.0	1.0
FMF	1.5	1.4	1.6	1.5	2.5	2.4	2.7	2.5	2.3	1.6	1.6	1.6	1.4
Other	0.6	0.8	0.9	0.7	0.9	1.0	1.0	0.8	0.9	0.9	0.8	0.7	0.8
ALL OTHER PROGRAMS	3.9	4.6	4.6	4.3	5.1	6.0	6.8	7.1	7.7	7.0	7.5	7.3	7.6
TOTAL NAVY & MC	14.9	15.4	15.4	13.8	16.0	18.9	19.6	20.0	20.7	21.2	21.5	20.3	18.8

1/ Expenditure Estimates: Total Actual (FY 62-68) and FYDP (FY 69-74); statistically distributed to Programs and Program Elements
2/ FYDP Program I
3/ FYDP Program II
4/ FYDP Programs 0, III-IX

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

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TABLE 2

SOVIET NAVAL EXPENDITURES

(Billion 1966 Dollars) 1/

	61	62	63	64	65	66	67	68	69	70	71	72	73	74
STRATEGIC FORCES	0.5	0.4	0.2	0.2	0.2	0.2	0.5	1.0	1.3	1.2	1.2	1.2	1.2	1.2
GENERAL PURPOSE FORCES	4.7	5.0	5.0	5.0	5.1	5.3	5.5	5.4	5.2	5.1	5.1	5.0	4.9	4.8
Submarines	1.2	1.4	1.4	1.4	1.3	1.3	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5
Major Surface	1.1	1.1	1.0	1.0	1.1	1.2	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.0
Minor Surface	0.9	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.8	0.7	0.7	0.7
Naval Air	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.7	0.6	0.6	0.6	0.5	0.4
Joint Support	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1
TOTAL SOVIET NAVY	5.2	5.4	5.3	5.2	5.3	5.5	6.0	6.3	6.5	6.3	6.3	6.2	6.1	6.0

1/ Dollar values reflect the general size of the Soviet forces as if they had been purchased and maintained in the U.S.

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

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TABLE 3

GENERAL PURPOSE FORCES
TOTAL DIRECT EXPENDITURES
1962-69 (8 Years)
($Billions-1966 $)

	U.S.	USSR
Attack Air Total	15.7	5.5[1/]
(CVA/CVAN Only)	(3.2)	---
ASW Air	11.8	---
(CVS Only)	(1.0)	---
Submarines	5.8	10.3
Cruiser-Destroyer	12.4	9.1[2/]
Amphibious + FMF	21.2	7.5[3/]
(Amphibious Ships Only)	(5.1)	
Mine	1.0	
Service	5.4	9.1
Other	6.8	
Total	80.1	41.5

1/ Almost all land based.
2/ Major Surface category.
3/ Minor Surface category.

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TABLE 4

U.S. NAVY EXPENDITURES
SHIPBUILDING & CONVERSION (SCN)[1/]
($ Billions - 1966 $)

	FY 62	63	64	65	66	67	68	69	70	71	72	73	74
STRATEGIC FORCES	0.7	1.0	0.8	0.5	0.3	0.1	2/	0.1	0.2	0.2	0.2	0.3	0.7
GENERAL PURPOSE FORCES	1.3	1.6	1.4	1.2	1.2	1.2	1.1	1.4	1.1	1.6	2.4	2.9	2.5
Carriers (CVA/CVAN)	2/	0.3	--	2/	0.1	0.3	0.1	0.2	0.2	0.2	---	---	---
Submarines	0.2	0.6	0.4	0.3	0.3	0.2	0.4	0.3	0.3	0.3	0.6	0.6	1.0
Cruiser-Destroyer	0.8	0.4	0.7	0.3	0.3	0.4	0.4	0.3	0.4	0.6	1.0	1.1	0.7
Amphibious	0.2	0.2	0.1	0.3	0.3	0.2	2/	0.4	0.2	0.2	0.3	0.4	---
Service	2/	0.1	0.1	0.2	0.2	0.1	0.2	---	---	2/	0.4	0.6	0.7
Other	2/	2/	0.1	2/	2/	2/	0.1	0.2	2/	0.1	0.2	0.1	0.1
OTHER PROGRAMS	0.1	0.1	2/	0.1	2/	2/	0.2	0.1	2/	2/	2/	2/	0.1
TOTAL NAVY	2.1	2.7	2.2	1.8	1.5	1.4	1.3	1.5	1.5	2.0	3.0	3.5	3.3

1/ Total Expenditure Estimates: Total SCN FY 62-68 and FYDP FY 69-74, statistically distributed to Programs and Program Elements.
2/ Less than $50 Million.

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

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TABLE 5

SOVIET NAVAL EXPENDITURES
SHIPBUILDING

(Billion 1966 Dollars) 1/

	61	62	63	64	65	66	67	68	69	70	71	72	73	74
STRATEGIC FORCES	0.3	0.2	2/	2/	0.1	0.1	0.4	0.7	0.9	0.7	0.7	0.7	0.6	0.6
GENERAL PURPOSE FORCES	1.5	1.7	1.6	1.6	1.5	1.6	1.6	1.4	1.4	1.4	1.4	1.4	1.3	1.3
Submarines	0.8	0.9	0.9	0.8	0.7	0.6	0.5	0.5	0.6	0.6	0.7	0.8	0.7	0.7
Major Surface	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3
Minor Surface	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Joint Support	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2
TOTAL SOVIET NAVY	1.8	1.9	1.7	1.6	1.6	1.6	2.0	2.2	2.3	2.1	2.1	2.1	1.9	1.9

1/ Dollar values reflect the general size of the Soviet forces as if they had been purchased in the U.S.
2/ Less than 50 million

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

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TABLE 6

GENERAL PURPOSE FORCES
TOTAL SHIPBUILDING EXPENDITURES
1962-69 (8 Years)
($Billions-1966$)

	U.S.	USSR
Attack Air	1.0	---
Submarines	2.8	5.5
Cruiser-Destroyer	3.5	2.7 1/
Amphibious	1.6	1.5 2/
Service	1.0	2.7
Other	0.4	---
Total	10.3	12.4

1/ Major Surface category.
2/ Minor Surface category.

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TABLE 7

SUMMARY COMPARISON TABLE
(Costs in $ Billion - 1966 $)

	62	63	64	65	66	67	68	69	70	71	72	73	74
U.S.													
Strategic (Prog. I)	2.3	1.9	1.7	0.8	0.6	1.0	1.5	1.7	1.6	1.7	1.4	1.2	1.3
General Purp (Prog. II)	8.7	8.9	9.1	8.7	10.3	11.9	11.3	11.2	11.4	12.4	12.6	11.8	9.9
Total Prog.I/Prog. II	11.0	10.8	10.8	9.5	10.9	12.9	12.8	12.9	13.0	14.1	14.0	13.0	11.2
GPF % of Total	79	82	84	92	94	92	88	87	88	88	90	91	88
Shipbldg. % of Total	19	25	20	19	14	11	10	12	12	14	21	27	29
USSR													
Strategic	0.4	0.2	0.2	0.2	0.2	0.5	1.0	1.3	1.2	1.2	1.2	1.2	1.2
General Purpose	5.0	5.0	5.0	5.1	5.3	5.5	5.4	5.2	5.1	5.1	5.0	4.9	4.8
Total	5.4	5.2	5.2	5.3	5.5	6.0	6.4	6.5	6.3	6.3	6.2	6.1	6.0
GPF % of Total	93	96	96	96	96	92	84	80	81	81	81	80	80
Shipbldg. % of Total	35	33	31	30	29	33	34	35	33	33	34	31	32

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TAB K TO APPENDIX B

SOVIET DEPLOYMENT TRENDS

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Soviet Operations and Deployment. An illustration of the degree of maturity being acquired by the Soviet Navy can be seen in the comparison of two major Soviet Fleet exercises separated by but six years in time.

The Soviet naval exercise conducted in the North Atlantic and Norwegian Sea in July 1962 included but four surface warships (none missile configured), approximately 20 submarines of the WHISKEY, ROMEO, ZULU, and FOXTROT diesel classes, and a number of BEAR and BADGER aircraft. The scenario simulated Allied strike forces running the gauntlet of submarine homeland. The exercise -- large for its time -- was nevertheless limited in both number of forces, scope, and versatility.

In contract to that unsophisticated operation, the Soviet fleet exercise in the summer of 1968, nicknamed "SEVER" or "NORTH", involved the participation of naval headquarters, ships, aircraft and naval infantry. Joint Warsaw Treaty Organization participation -- specifically the Soviet Union, Poland and the German Democratic Republic -- was highly publicized, with emphasis on the overall direction by the Soviet Navy's Commander in Chief, Fleet Admiral of the Soviet Union Gorshkov. A separete joint amphibious and air defense exercise was carried out in the Baltic, while a major exercise simultaneously unfolded from the North Atlantic up into the Barents Sea. In addition to the traditional anti-surface strike force scenario, the exercise incorporated an amphibious warfare operation on the Murman Coast in the northern area. In general terms of numbers of ships and aircraft sorties involved, "SEVER" was the largest out-of-area operation in the annals of Soviet high seas naval exercises. At a minimum, there were 82 surface ships, at least 160 individual aircraft sorties, and possibly as many as 25 submarines, including both diesel and nuclear units. Of the 28 prinicpal surface combatant ships, 7 were missile configured, 10 were amphibious warfare ships, the remainder auxiliaries and minor surface combatants. Soviet air activity involved both Naval Air Force and Long Range Aviation BEARs and BADGERs employed in such roles as long and short range maritime reconnaissance, coordinated air/surface search, simulated tactical air-to-surface missile and bomb strikes, video data link coordination with surface-to-surface missile-equipped ships, and active and passive electronic countermeasures. Compared to the 1962 operation, "SEVER" demonstrated a significant rise in both inherent capability and exhibited expertise.

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FIGURE 1

SOVIET SUBMARINE OUT-OF-AREA DEPLOYMENTS, 1963-8

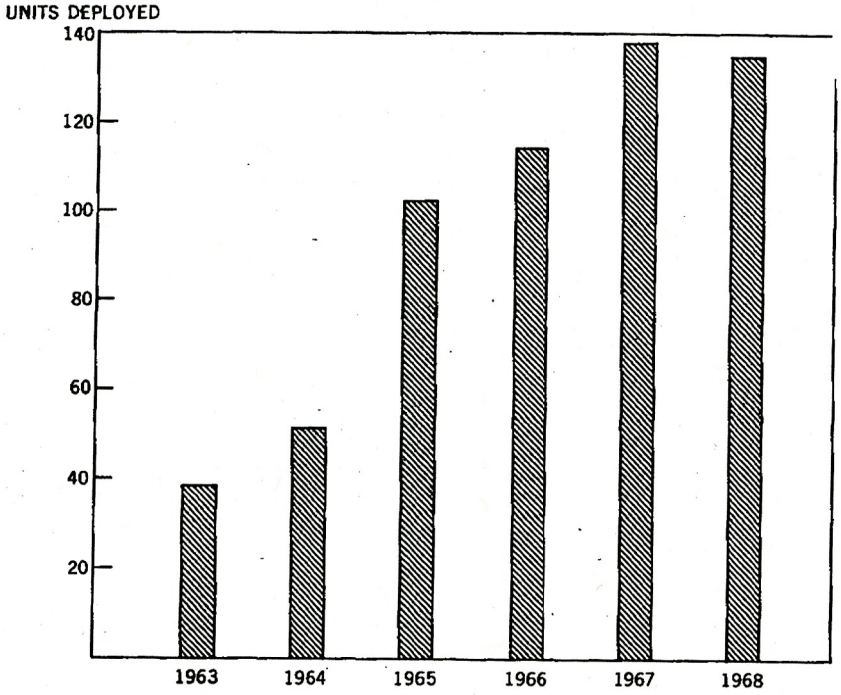

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FIGURE 2

SOVIET OPERATIONS IN MEDITERRANEAN 1964-1968

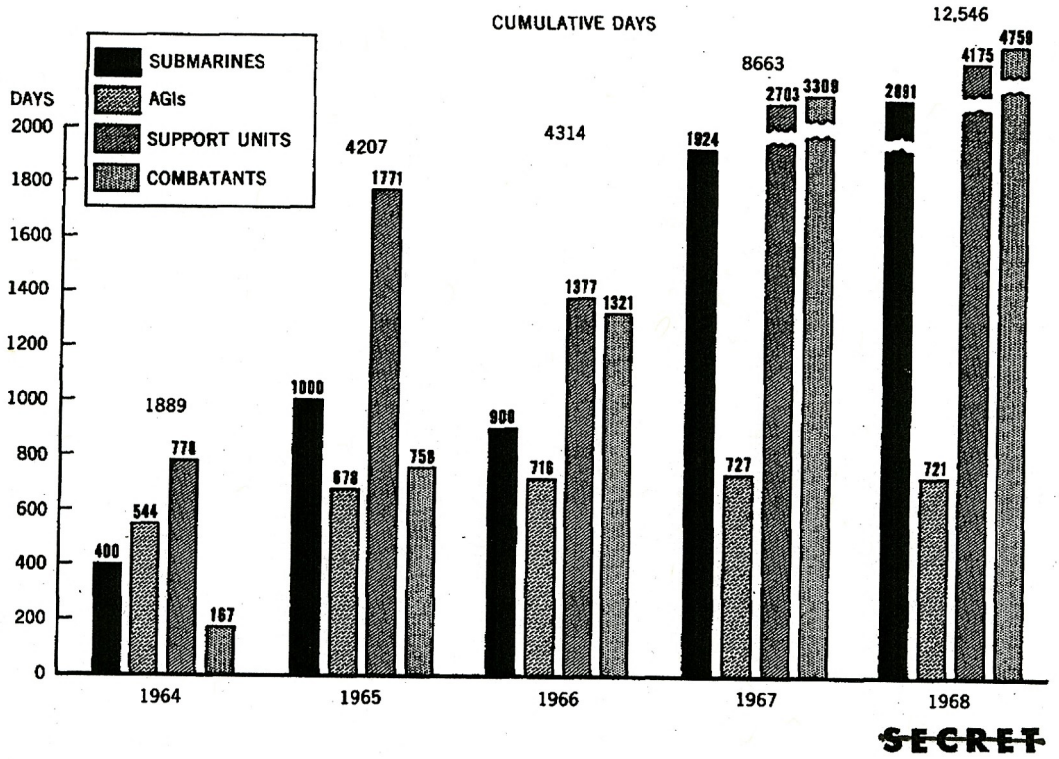

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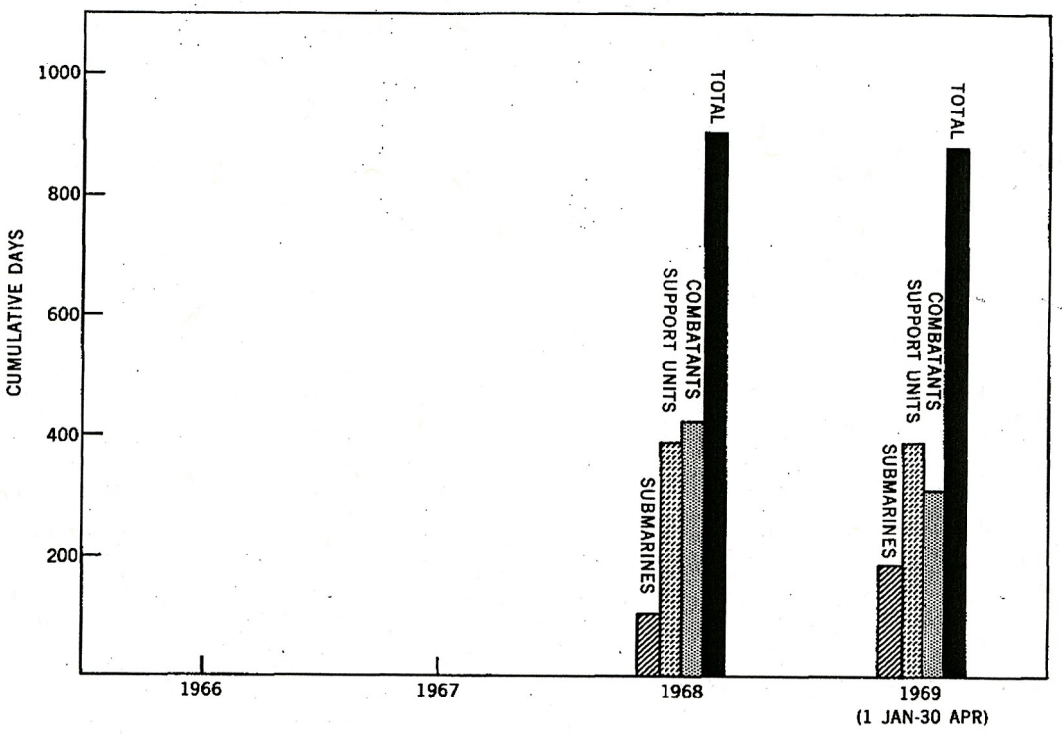
FIGURE 3
SOVIET OPERATIONS IN INDIAN OCEAN (CUMULATIVE DAYS)



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The table below indicates the average number of ships annually deploying to the Mediterranean (6th Fleet) and Western Pacific (7th Fleet).

TABLE 1

YEAR	NUMBER UNITS 6th Fleet	7th Fleet
1961	54	113
1962	54	121
1963	54	112
1964	56	125
1965	48	156
1966	49	198
1967	47	202
1968	45	203
1969*	43	186

*through April 1969

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TAB L TO APPENDIX B

OTHER MARITIME FORCES

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ELEMENTS OF SEAPOWER OTHER THAN COMBATANT NAVAL FORCES

The USSR is steadily and impressively burgeoning in every aspect of seapower other than its strategic and general purpose naval forces, discussed elsewhere.

As we briefly look at their on-going efforts in growth, development and sophistication of a merchant marine, fishing fleet, intelligence and oceanographic research vessels, plus their specially configured space and missile support ships, it can be readily ascertained that they fully understand the role of all elements of seapower in expanding Soviet power and influence throughout the world in furtherance of their national objectives. Unlike the U.S., centralized control and planning over their merchant, fishing and naval forces enable the Soviets to closely coordinate all elements of seapower in pursuance of these national objectives. The Minister of Shipbuilding, for example, centrally controls R&D, design, and production of all ships, equipments, and sensors for both the Merchant Marine and the Soviet Navy.

MERCHANT FLEET. In contrast to the role of the U.S. merchant fleet, elements of the Soviet merchant marine are used in direct support of world-wide Soviet naval operations. Subsidized, and frequently operating at an economic loss, it furthers Soviet influence by transporting Soviet goods and aid to the ports of some 100 nations of the world - 65% of which are those of developing nations. Of major interest is the fact that some 300 ships of the merchant fleet are particularly well-suited for supporting administrative sealift operations. These are large units of post-war construction having heavy lift booms and capable of speeds in excess of 14 knots. Of these, about 130 are large hatch ships having at least one hold 50 ft. in length, plus 60 ton booms. It is estimated that these some 300 ships are capable of transporting the weapons and equipment for 13 motorized rifle divisions or 14 medium tank divisions.

The growth of the Soviet merchant fleet over the past 20 years has been truly remarkable. It has increased by 8 1/2 million DWT and about 900 units (1000 gross register tons and over) since 1948. The U.S. merchant fleet on the other hand, has remained about the same size in total tonnage and has decreased by about 400 units (1000 gross register tons and over). In numbers, with over 1,400 units (1000 GRT and over), the Soviets have moved up to fourth position among the merchant fleets of the world. In tonnage, with almost 11 mil DWT, they now rank seventh. The U.S., on the

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other hand, with its 1,135 (1000 GRT and over) ships of U.S. registry, has moved down from second to sixth in number of units (1000 GRT and over) and from second to fifth in tonnage with its current 17 mil DWT. By 1980, the Soviet merchant fleet is estimated to grow to some 2,500 units totaling 20-25 mil DWT. Where the U.S. flag merchant fleet, e.g., ships of U.S. registry, now has declined from 23.5% in 1955 to the present 5.5% of the total U.S. ocean commerce carried, 50% of all Soviet seaborne commerce is carried in Soviet bottoms. By 1980, they plan to increase this to 75%. In terms of ships ages, the Soviet merchant fleet is a much more modern fleet. Of its more than 1400 ships, 80% are less than 10 years old. The U.S. merchant fleet, on the other hand, has only 17% which are less than 10 years old.

FISHING FLEET. The Soviets possess the world's largest and most modern fishing fleet. On any given day of the year there are an average of 1500 Soviet fishing vessels deployed throughout the world. They now have 3,583 vessels (100 GRT and over) of 4 1/2 mil GRT - 75% of which are less than 10 years old. By 1980 the fleet is estimated to comprise about 4,500 units totaling 10 mil GRT. In addition, they have modern fishing research ships which precede the fishing fleet into various areas of the world to seek out the most productive fishing grounds.

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[redacted] The U.S., on the other hand, has only 7 units specifically configured for intelligence collection (AGER's).

SCIENTIFIC RESEARCH SHIPS. The USSR has a large modern and thus the most impressive scientific research fleet in the world. Of their 131 units, 65% (52 Navy, 33 civilian) are 10 years old or less. The U.S. has 142 research ships, some 30 of which belong to the Navy. Of the total U.S. fleet, 40% are less than 10 years of age.

Wartime employment of the Soviet research ships would be limited as would those of the fishing and AGI fleets. The Soviet scientific research ship threat is therefore confined to a massive peacetime effort to obtain a worldwide oceanographic data base, all of which has application to undersea warfare.

SPACE AND MISSILE RELATED SHIPS. Soviet seapower also includes some 22 modern space and missile related ships. Of the 22, 6 are missile instrumentation ships which serve as extensions of mainland tracking facilities. Space event support vessels, of which there are 8, deploy as water-borne tracking stations. And finally, 8 other units are specially configured for space vehicle recovery.

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ACTIVE MERCHANT FLEET INVENTORY[1/]

CARGO SHIPS

	1955		1960		1964		1967	
	Number	Thou GRT	Number	Thou GRT	Number	Thou GRT	Number	Thou GRT
U.S.[2/]	817	5,755	732	5,803	692	6,041	879	7,641
Other NATO	5,407	28,454	6,094	36,127	5,962	39,427	5,855	43,357
Total NATO	6,224	34,209	6,826	41,930	6,654	45,468	6,734	50,998
USSR	595	1,850	720	2,600	942	4,008	994	4,700
Other Pact	91	361	189	932	312	1,528	464	2,760
Total Pact	686	2,211	909	3,532	1,254	5,536	1,458	7,460

TANKERS

	1955		1960		1964		1967	
	Number	Thou GRT	Number	Thou GRT	Number	Thou GRT	Number	Thou GRT
U.S.[2/]	365	3,788	341	4,269	298	4,200	280	4,215
Other NATO	1,486	14,137	1,714	21,076	1,603	25,356	1,570	29,403
Total NATO	1,851	17,925	2,055	25,345	1,901	29,556	1,850	33,618
USSR	70	340	121	790	205	1,925	268	2,800
Other PACT	3	21	12	103	25	242	35	363
Total Pact	73	361	133	893	230	2,167	303	3,163

1/ Active ships of 1,000 Gross Register Tons (GRT) or more
2/ U.S. figures do not include National Defense Reserve Fleet (NDRF) ships

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TAB M TO APPENDIX B

U.S. AND USSR NAVY PERSONNEL

U.S.

The impact of petty officer deficiencies can most easily be seen in fleet readiness reports. Table I shows the number and percentage of Navy units reporting C1 (fully ready) and C2 (substantially ready). In addition, the number and percentage units reporting Personnel readiness of C3 (Marginally ready) and C4 (not ready) is shown. As can be seen, 46% of all Navy ships available, and 55% of all Navy aircraft squadrons reported (as of 25 March 1969) that they had personnel deficiencies, serious enough to warrant a status of marginally ready or worse.

Table 2 shows the same data, in a slightly different and more condensed format, showing the percentage of ships and aircraft which were able to report: C1 (fully ready) and C2 (substantially ready) in personnel readiness.

In the last two years (FY 68 and FY 69) the following were the highest percentages obtained: Active Ships (Excl. Ovhl/OD); LANT, 44%; PAC 62%: Active Navy Squadrons; LANT, 28%, PAC, 57%.

Table 3 indicates, as of June 1969, those enlisted ratings in which petty officer (E4-E9) shortages will continue to exist. Except for the period Apr-Jun 1968, and 1969, the Navy has had from 10 to 29 ratings (out of 67 total) with petty officer inventories less than 85% of requirements (top limit of category C3). Among the ten most understaffed ratings (exclusive of Aviation ASW Operator, a new rating), staffing in June 1969 is expected to be as low as 60.8% of requirements for Boiler Repairmen, to 84% of requirements for Shipfitter.

In addition, the percentage of Leader (E5-E9) Petty Officers on board is an even more significant indication of the difficulties encountered in meeting Navy skill requirements. As of June 1969, the Navy expects to have on board about 97% of the required petty officer leaders (E5-E9). This overall percentage obscures such extreme percentages as Aviation Fire Control Technician, 76% of requirements, and Shipfitter, 78% of requirements.

Table 4 indicates the Navy Manpower End Strength Requirements from FY 61 and projected through FY 74. Figures 1 and 2 show the reenlistment rates for both

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officers and enlisted personnel from FY 66 projected through the end of FY 69.

Since personnel readiness posture is a controlling factor in fleet readiness, personnel retention has become one of the Navy's most serious problems. Of particular concern is the low retention rate among those skills requiring a high degree of technical training. This includes submarine officers trained in nuclear power and pilots in the officer ranks and enlisted personnel in ratings associated with electronic and engineering skills.

As shown in Figure 1, Navy pilot's retention rate has been dropping over the past several years. Also, an acute retention problem exists at present in the submarine officer category.

Using NIPP estimates, rough comparisons can be made between the utilization of Soviet naval and US naval manpower in, as nearly as possible, comparable programs as shown in Table 5.

U.S. versus USSR

It should be noted that head counts of personnel should be interpreted with extreme caution. In order to approach a valid comparison, it would be necessary to account for at least the following factors on a comparable basis: level of training, average lengths of service in Navy, ratio of careerists to noncareerists, motivation, draft/volunteer source, maintenance philosophy, support policies, and labor/ equipment intensiveness. Little is known of Soviet Navy manpower/personnel practices from which such parameters could be inferred.

Table 6 shows manpower allocation to various types of forces based on DIA estimates. It should be noted that Table 5 includes only US Programs while Table 6 shows total Soviet navy military manpower categorized by the Soviet practice. Comparisons can most validly be made using Table 5.

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TABLE 1

SHIPS AND SQUADRONS WITH PERSONNEL RESOURCE PROBLEMS (MARCH 1969)

UNITS	TOTAL	TOTAL AVAIL	C1 & C2 NO.	C1 & C2 %	C3 & C4 FOR PERSONNEL NO.	C3 & C4 FOR PERSONNEL %
NAVY SHIPS						
TOTAL	876	793	235	30	368	46
BB	1	1	1	100	0	0
CVA/CVAN	16	14	5	36	6	43
CVS	7	5	0	0	4	80
CRUISERS	16	14	3	21	9	64
DD	175	158	44	28	74	47
DDG	28	26	8	31	7	27
DLG/DLGN	27	26	8	31	9	35
OTHER DESTROYERS	4	2	1	50	1	50
DE	29	27	3	11	18	67
DEG	6	6	0	0	1	17
OTHER PATROL	20	20	5	25	8	40
SS	69	56	27	48	10	18
SSN	39	33	8	24	5	15
SSBN	41	34	30	88	0	0
MINE	76	64	27	42	7	11
AMPHIBIOUS	150	143	9	6	122	85
AUXILIARY	172	164	56	34	87	53
NAVY SQUADRONS						
TOTAL		208	57	27	115	55
TACTICAL		122	45	37	49	40
HELO		15	2	13	9	60
PATROL		31	0	0	31	100
ASW		16	4	25	10	62
ALL OTHER		24	6	25	16	67

NOTE: The total of columns 3 and 4 do not add up to the column 2 totals because units reporting C3 and C4 for reasons other than personnel are not included in column 4. Column 2 includes statistics reporting total unit readiness, including categories for Personnel, Supply, Equipment and Training.

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TABLE 2

% UNITS C1 & C2 IN PERSONNEL

	AVERAGE %				CURRENT %
	1st HALF FY68	2nd HALF FY68	1st HALF FY69	2nd HALF FY69	3/69
ACTIVE SHIPS 1/					
LANT	41	38	35	44	43
PAC	61	59	60	59	62
ACTIVE SQUADRONS					
LANT		17	18	25	28
PAC		52	47	53	57

1/ Excludes Ships in Overhaul

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TABLE 3

ENLISTED SKILLS SUMMARY

PAY GRADES E-4 THRU E-9

NUMBER OF UNSATISFACTORY RATINGS: (Inventory less than 85% of requirements)

SEP 1967	DEC 1967	APR 1968	JUN 1968	NOV 1968	APR 1969	JUN 1969
29	19	4*	4	18	4*	3

* The apparent major improvement is due to the large number of April promotions from the February exams. Time in grade criteria for advancements to pay grades E-4 and E-5 have been reduced to help meet the Petty Officer authorized strengths.

TEN MOST UNDERSTAFFED RATINGS:

RATING	% of Requirements SEP 67	DEC 67	APR 68	JUN 68	NOV 68	APR 69	JUN 69
AVI ASW Operator (AW)	(Rating newly established - 1 Sep 68)				39.0	44.2	44.4
Boiler Repairman (BR)	69.9	69.4	68.0	70.0	68.1	62.3	60.8
Opticalman (OM)	80.7	85.6	91.2	90.2	73.4	86.4	87.3
Shipfitter (SF)	80.9	79.5	91.7	90.0	78.0	83.7	84.2
Avi Fire Control Tech (AQ)	61.7	64.1	77.6	73.9	79.5	94.0	88.9
Boilerman (BT)	78.4	83.7	89.7	88.4	84.6	89.4	88.8
Data Systems Technician (DS)	77.5	78.5	81.3	84.2	90.5	92.1	89.2
Fire Control Technician (FT)	94.3	93.9	104.0	101.3	86.8	90.2	88.1
Instrumentman (IM)	96.6	92.1	79.2	81.4	81.8	84.0	87.0
Radioman (RM)	81.3	86.4	91.4	86.7	82.4	88.2	87.5

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TABLE 4

Navy Manpower Summary End Strength
(in Units)

Data as of January 10, 1969

	FY 61	FY 62	FY 63	FY 64	FY 65	FY 66	FY 67
Navy Military - Officers	69,981	75,302	75,549	76,400	77,866	79,580	81,677
Enlisted	553,128	586,287	584,346	586,327	588,792	660,518	665,226
ACAD MID/AVN CADETS	3,980	4,839	4,752	4,869	4,936	4,882	4,491
Total Military*	627,089	666,428	664,647	667,596	671,594	744,980	751,394

	FY 68	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74
Navy Military - Officers	85,200	84,860	86,419	79,475	79,242	79,480	79,495
Enlisted	675,441	681,697	680,838	601,317	593,136	592,659	595,281
ACAD MID/AVN CADETS	4,591	4,243	4,243	4,243	4,243	4,243	4,243
Total Military*	765,232	770,800	771,500	685,035	676,621	676,382	679,019

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FIGURE 1

NAVY OFFICER RETENTION ACTUAL/PROJECTED
MINIMUM SERVICE REQUIREMENT PLUS 2 YEARS

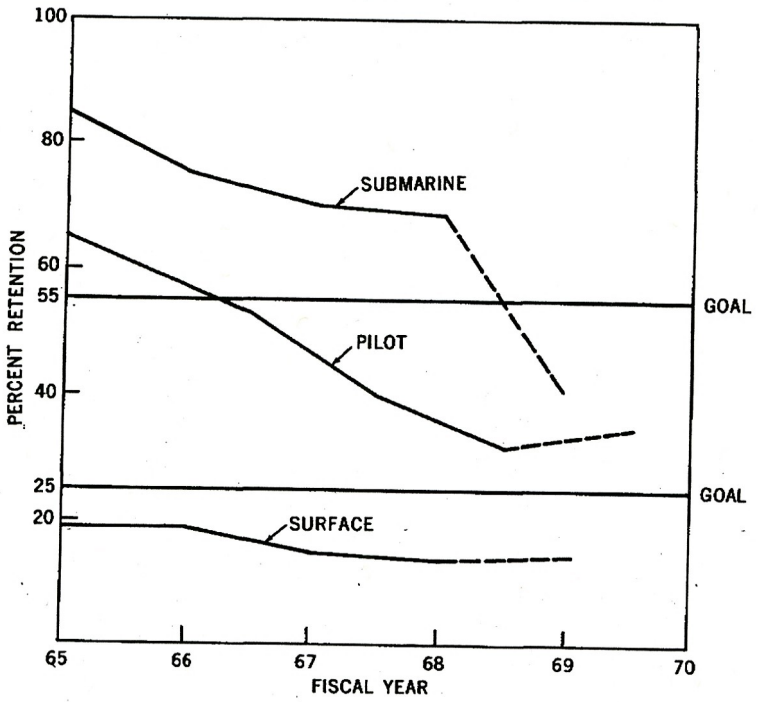

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FIGURE 2

NAVY ENLISTED
REENLISTMENT RATE

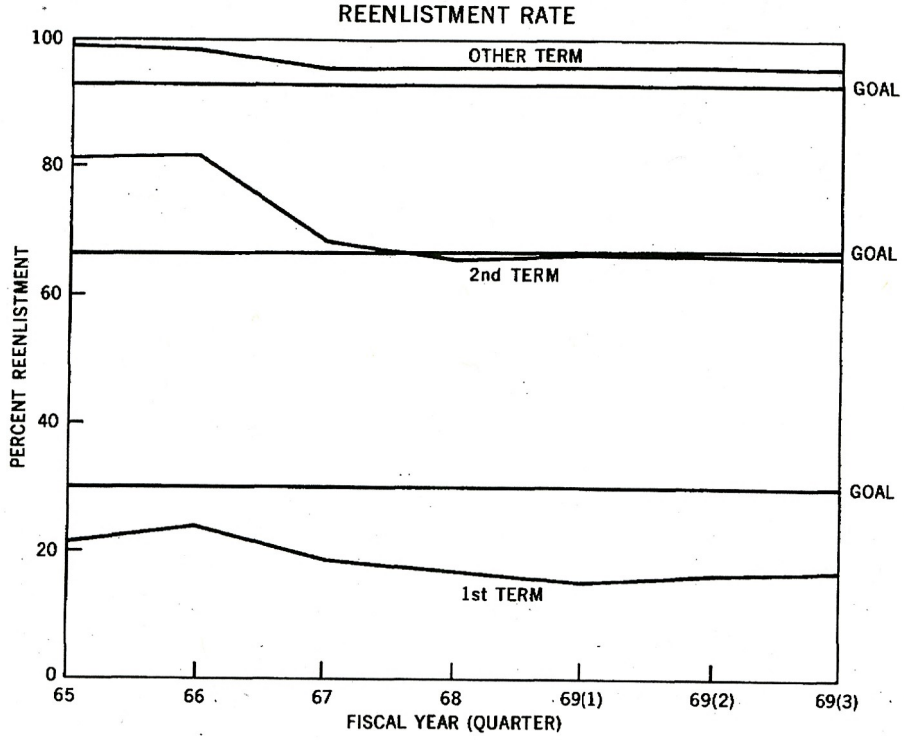

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TABLE 5

SOVIET MILITARY NAVAL MANPOWER (Thousands)[1/]

	FY65	FY69	FY73	FY77
Navy Strategic Attacks (SLBM)	6-8	6-9	9-13	12-20
Navy GP Forces	300-400	300-420	290-410	270-390
Total	310-410	310-430	300-420	280-410

US MILITARY NAVAL MANPOWER (Thousands)

	FY65	FY69	FY73	FY77
Navy Prog I (FYDP)	23	22	25	--
Navy Prog 2 (FYDP)	399	479	395	--
Total	422	501	420	--

1/ The NIPP convention of rounding to two significant digits is used here.

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TABLE 6

TOTAL SOVIET MILITARY NAVAL MANPOWER (Thousands)
By Categories of Utilization

	FY65	FY69
AFLOAT		
Subs	25	25
SurfCombat	63	53
Patrol	22	27
Mine	19	17
Amphib	7	8
Auxiliary	37	45
TOTAL	173	175
ASHORE SUPPORT	173	175
NAVAIR	30	40
COAST DEFENSE 1/	30	22
INFANTRY 1/	4	12
TRAINING	40	50
TOTAL	450	474

1/ The changes seen in this categories may be due to functional transfer of units or may actually represent changing force emphasis.

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TAB N TO APPENDIX B

U.S. AND USSR ACTIVE FLEET RESERVE

The following Table summarizes the reserve fleets of the U.S. and USSR by ship types. Totals are shown for selected fiscal years from 1961 to 1977.

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U.S. AND USSR ACTIVE RESERVE SHIPS

U.S.

Type	1961	1965	1969	1973	1977
DD/DER	13	14	26	36	36
DE	27	25	9	1	1
MSC/MSCO	11	12	14	22	22
PC/PCER	14	9	7	7	7
SS/AGSS	23	23	21	21	21
AH	--	--	--	1	1
Total	88	83	77	88	88

USSR

Type	1961	1965	1969	1973	1977
CL	NOT	6	7	7	7
DD	AVAIL	8	18	15	10
DE		3	13	15	15
Total		17	38	37	32

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