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ESTIMATE OF CONSTRUCTION AND VALUE OF NAVAL SHIPS
PRODUCED BY THE SINO-SOVIET BLOC

1961

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FOREWORD

This report provides data on construction of naval ships in the Sino-Soviet Bloc for the period 1957-61 in terms of the number of ships completed each year and the value of these ships expressed in 1960 US dollars. The detailed nature of the information in the report, which would have involved numerous source references for each of many estimates, makes the inclusion of source references infeasible, but source documentation for estimates is available in the files of this Office.

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ESTIMATES OF CONSTRUCTION AND VALUE OF NAVAL SHIPS
PRODUCED BY THE SINO-SOVIET BLOC*

1961

Summary and Conclusions

During 1961 the Sino-Soviet Bloc completed about 256 naval ships** valued at more than \$1.4 billion, *** as follows:

Country	Number	Completions			Value (Million US \$)	
		All Ships†		Percent of Total		
		Number	Value (Million US \$)			
USSR	186	1,404.3	97.4	23	917.9	
Communist China	43	26.4	1.8	1	12.5	
Poland	23	6.7	0.5	0	0	
East Germany	4	4.2	0.3	0	0	
Total	256	1,441.6	100.0	24	930.4	

Ships completed by the USSR dropped from 192 in 1960 to 186 in 1961, whereas the value of completions rose from about \$1.2 billion to \$1.4 billion, an increase of about 17 percent. A comparison of the value of the ships produced annually and of the estimated expenditures for construction of naval ships by principal types for the period 1950-61 is shown in the chart. Figure 1.††

* The estimates and conclusions in this report represent the best judgment of this Office as of 1 September 1962.

** The term completed as used in this report refers to the status of a ship as having been delivered by a shipyard, complete and ready for service, although the ship may not yet have been commissioned by the navy.

*** Dollar values are given in 1960 US dollars throughout this report. Estimated annual construction and value for 1957-61 are given in Appendix A.

† Including submarines.

†† Following p. 2.

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Construct-

tion of the N-class nuclear-powered attack submarine (SSN) and the H-class nuclear-powered ballistic-missile submarine (SSBN) continued during 1961. It is estimated that one of the N class and four of the H class were completed in 1961. A new class of nuclear-powered submarine (designated the E class), equipped with six cruise-missile launching tubes each, was identified in

P ____ a in the spring of 1962. Four submarines of this class were completed by the end of 1961, and all four of these submarines were estimated to be operational in the spring of 1962. It is estimated that the cruise missile has a range of at least 300 nautical miles (nm).

Production of both classes of conventionally powered submarines, the G and F classes,* continued in 1961 without any indication of cessation. It is estimated that nine submarines of the G class and six of the F class were completed in 1961. A highly important development in 1961 was the completion of a conventionally powered submarine, possibly a modified G class, capable of firing a ballistic missile while in a submerged position. A number of missiles fired from this submarine in 1962 had a range of at least 650 nm and possibly as far as 2,000 nm.

There was little change in production of major surface ships in 1961 from that in 1960. Three guided-missile destroyers of the Krupnyy class were completed in each year. Probably the most significant development for surface ships in 1961 was the launching of a new guided-missile destroyer designated the Kynda class. This guided-missile destroyer is armed with a new type of surface-to-surface cruise-missile launcher and a surface-to-air missile launcher.

Believed that the projects are destroyers which will incorporate advanced types of antisubmarine warfare (ASW) and guided-missile weapons. In addition to the major surface units noted above, a new class of escort ship was under construction in 1961. Although little information is available on this class, it also is believed to incorporate advanced types of ASW weapons.

Production of patrol craft and mine warfare ships continues to be important in the development of the Soviet naval fleets, accounting for about 24 percent of the total value of all naval ships produced in 1961 and about 26 percent of the total for the period 1957-61. The continued production in 1961 of the Osa-class guided-missile motor gunboat and of the production/conversion of the Komar-class guided-missile patrol boat emphasizes the Soviet effort to improve the offensive capability of minor surface ships by materially extending the range of their firepower.

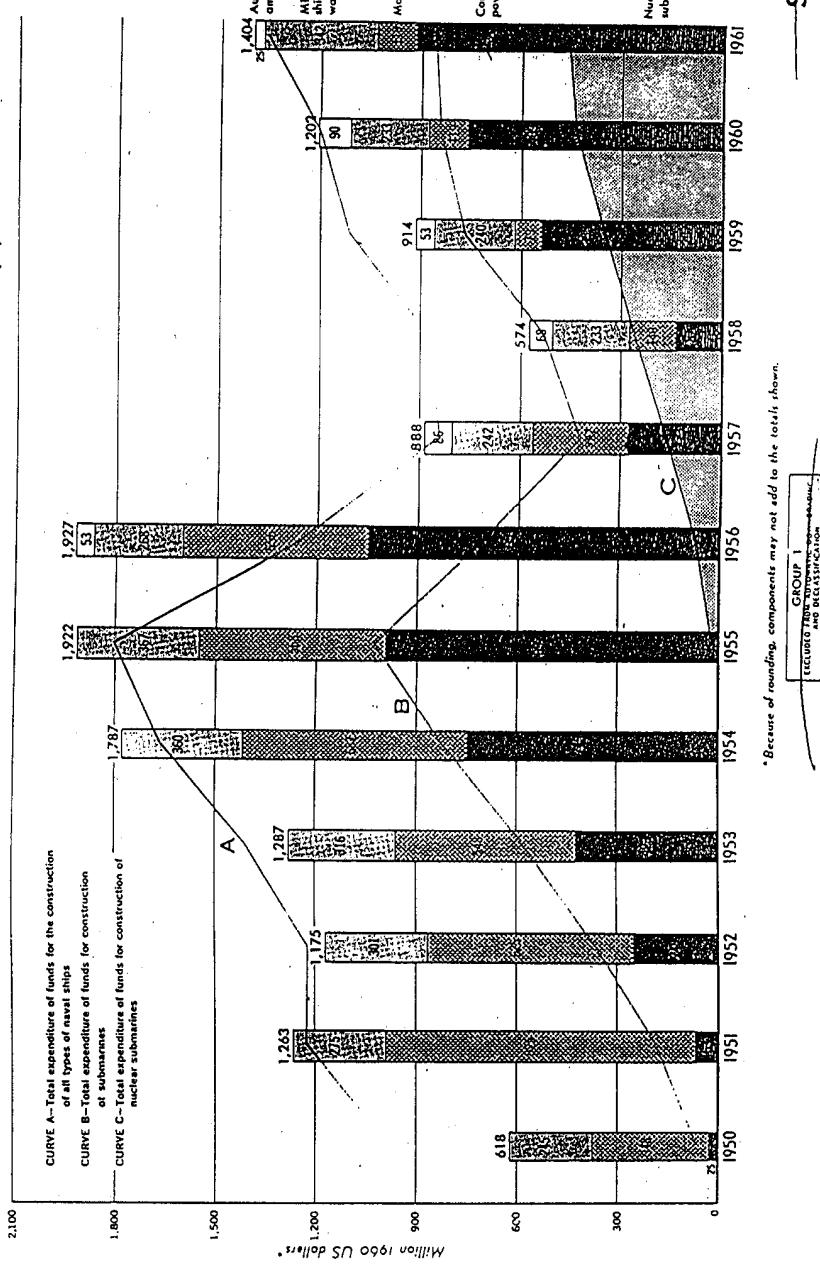
The most significant development in minor surface ships was the identification of two new improved antisubmarine ships. Although very little is known about the characteristics of these ships, their appearance characterizes the continued effort to develop ships with an ASW capability.

* The G-class is a ballistic-missile submarine, and the F-class is an attack submarine.

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Figure 1

USSR: Estimated Value of Completed Naval Ships and Expenditure of Funds for Construction of Naval Ships, 1950-61

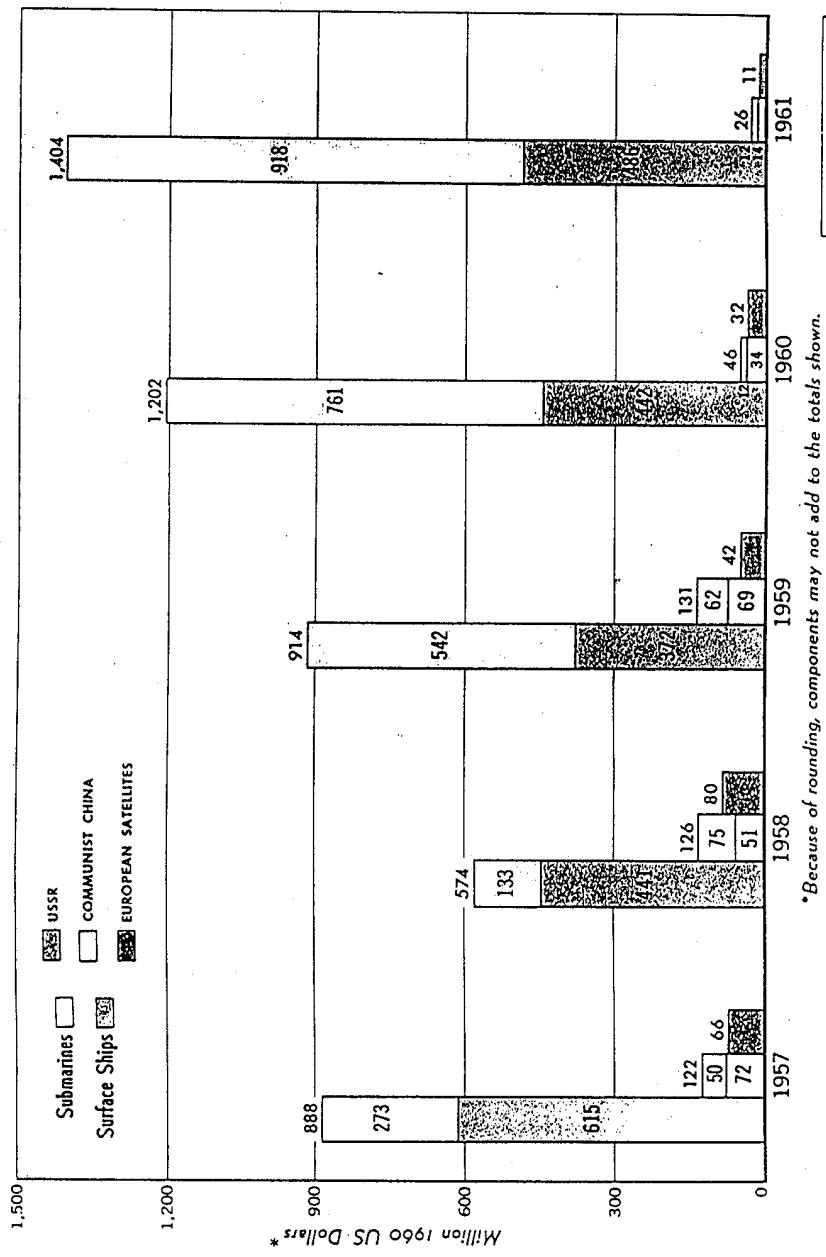


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Figure 2

Sino-Soviet Bloc: Estimated Value of Naval Ships Completed, by Year, 1957-61



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

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The construction of auxiliary and amphibious ships decreased sharply from 1960. A significant development in this area was the identification of the construction of a nuclear submarine support ship at Komsomol'sk. The completion of this ship in 1960 apparently was coordinated with the completion of the first nuclear-powered submarine at Komsomol'sk.

A comparison of the value of naval ships produced in the Sino-Soviet Bloc for the years 1957-61 is shown in the chart, Figure 2.* Production of ships in the USSR rose from a low of \$570 million in 1958 to about \$1.4 billion in 1961 -- an increase of 145 percent. Production of submarines rose from about \$130 million in 1958 to about \$920 million in 1961 -- an increase of almost 600 percent.

Construction of naval ships in Communist China was sharply curtailed in 1961 because of domestic industrial difficulties and a reduction in Soviet technical and material aid. Construction in the European Satellites in 1961 remained low and was confined to minor types of ships.

* Following p. 4.

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I. Construction of Naval Ships in the USSR*

A. Submarines

The USSR is estimated to have produced 7 nuclear and 16 conventional submarines in 1961, an increase of 1 nuclear and 3 conventional submarines above production in 1960. Production of submarines in 1961 is valued at almost \$920 million, or 65 percent of the total value of all naval ships produced in the USSR in 1961. The percentage of the total in 1959 and 1960 was 59 and 63 percent, respectively. This pattern of growth, although still numerically small, is indicative of the growing importance of submarines in the USSR and serves to emphasize the public statements made by many Soviet political and military leaders that the submarine is and will be the backbone of the Soviet fleet.

1. Nuclear

A reevaluation of intelligence on the Soviet program for construction of nuclear-powered submarines followed a collateral identification in the fall of 1961 of a submarine similar in configuration to the one observed in the Barents Sea in September 1959. This submarine tentatively has been evaluated as belonging to a class of nuclear-powered torpedo attack submarines (SSN), which has been designated the N class. It is estimated that four submarines of this class had been completed by the end of 1961, having been built at Severodvinsk Shipyard.

A new class of nuclear-powered submarine, equipped with six cruise-missile launching tubes each, was identified in the spring of 1962. Four units of this class, designated the E class, were observed in an operational status. A reevaluation of the construction program at Komsomol'sk Shipyard now suggests that two submarines of this class were completed in 1960 and two in 1961. The length of this class of submarine is tentatively estimated at about 350 feet. The launchers are faired horizontally into the superstructure deck and are elevated about 20 degrees when positioned for firing missiles. It is now believed that the leading unit of this class probably fired its first cruise missile in January 1961.

Currently it is estimated that, by the end of 1961, 18 nuclear-powered submarines were completed. Of this total, 10 submarines were H class (SSBN), 4 were E class (SSGN), and 4 were N class (SSN).

2. Conventional

Conventionally powered submarines of both the G class (SSB) and the F class (SS) continued to be constructed in 1961. The program for construction of the G class has involved both Severodvinsk Shipyard and Komsomol'sk Shipyard. By the end of 1961 a total of 24 G-class submarines had been completed, and 9 of this total were completed in 1961.

* For data on construction and value for the years 1957-61 and on current activities in Soviet shipyards, see Tables 1, 4, 5, and 8, Appendix A, pp. 13, 22, 23, and 29, respectively, below. For photographs of Soviet naval ships, see Appendix B.

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Sudomekh Shipyard in Leningrad, the only shipyard constructing the F class, completed 6 units in 1961 for a cumulative total of 20 units as of the end of 1961.

A very important development in ballistic-missile submarines was the completion in 1961 of . It is estimated that this submarine carries three missiles that can be launched from a submerged position. Although the submarine may be a modified G class, it is believed to be the first Soviet submarine with this capability. A number of missiles fired from this submarine in 1962 had a range of at least 650 nm and possibly as far as 2,000 nm.

The observation of a midget submarine in Leningrad in July 1960 may indicate possible interest in development of this type. There is insufficient evidence to construct a quantitative estimate, and it is believed that production may not have advanced beyond the experimental stage.

B. Major Surface Ships

In 1961, three guided-missile destroyers (DDG) were completed by the USSR. The value of these destroyers is estimated at about \$120 million, or about 8.5 percent of the total value of all Soviet naval ships completed in 1961. There was little change in the value of completed major surface ships for 1961 from that for 1960.

1. Guided-Missile Destroyers

The program for construction of the Krupnyy-class guided missile destroyer (DDG) is believed to be drawing to a close. Construction at Zhdanov Shipyard in Leningrad, and probably at Nikolayev Shipyard is believed to have been terminated in 1961. The last ship in the program, believed to be under construction at Komsomol'sk Shipyard , is expected to be completed in 1962.

The Krupnyy class is being replaced by a new class of guided-missile destroyer designated the Kynda class (DDG). Construction of the Kynda class was underway at Zhdanov Shipyard in Leningrad in mid-1960, and two hulls had reached the outfitting stage by the end of 1961. The general hull configuration and mast structure differs somewhat from that of the Krupnyy class and has different armament. On Kynda-class destroyers, forward of the bridge and aft of the after superstructure is a battery of four cylinders, with hemispheric-shaped closures mounted horizontally, believed to be capable of launching cruise types of missiles of much greater range than those launched from the Krupnyy-class destroyers. In addition, a surface-to-air missile launcher is mounted on the bow, and there are two conventional gun mounts on the stern.

programs for construction of three new classes of destroyers are underway. The first of these new projects, appears to equate with the new Kynda class, believed to be another new type of destroyer, at Komsomol'sk Shipyard . There are no indications of the characteristics of this latter class, although it is possible that the project represents a destroyer with increased ASW capability. In addition, there is some evidence that a program for construction of a new destroyer.

It is believed that these new projects will include advanced types of ASW and guided-missile weapons.

2. Escort Ships

is believed to be a new class of escort ship (DE) under construction at Kaliningrad Shipyard It was first noted early in 1960. Although there are few indications of the characteristics, it is believed that the class will have advanced types of ASW weapons.

C. Patrol Craft and Mine Warfare Ships

Construction of patrol craft and mine warfare ships in the USSR showed a slight increase in 1961 compared with 1960. A total of 131 ships valued at about \$230 million was built in 1960, whereas in 1961 a total of 140 ships valued at about \$340 million was built -- an increase of 47 percent in value above 1960. In 1960 and 1961 the amount spent for construction of patrol craft and mine warfare ships represented about 19 and 24 percent, respectively, of the total value of naval construction.

in 1961 the Osa-class guided-missile motor gunboats (PGMG) were active

The Komar class (PGMG) was active

These PGMG's, although largely representing a conversion of P6-class motor torpedo boats (PT), are believed to include some new units. the new Komar-class PGMG. It is estimated that at the end of 1961 a total of 110 ships of the Osa and Komar classes was deployed in all four fleet areas, 56 ships being of the Osa class and 54 ships of the Komar class.

Construction of the Osa class, began in the Baltic area in 1959 at Leningrad Shipyard Late in 1961 a probable modified version of the Osa class, was noted as probably being built at Zelenodol'sk Shipyard The Bystryy Shipyard in Vladivostok also probably is building ships of this class.

Conversion of PT's to the Komar class began in the Baltic area in 1960 at Leningrad Shipyard It is estimated that Komar-class conversions and possibly some new construction also were underway at the Bystryy Shipyard in Vladivostok and at the Yuzhnaya Tochka Shipyard in Feodosiya.

A new class of antisubmarine ship designated the Poti class (PCE) appeared in an operational status in 1961 in This class of ship is believed to be under construction at Kaliningrad Shipyard Kerch Shipyard and Khabarovsk Shipyard A total of nine ships of this class possibly was built during the year. This class of ship is estimated to be about 270 feet in length and probably is equipped with improved sonar.

Another new class of antisubmarine ship appeared to be operational during 1961 and is believed to be under construction at Zelenodol'sk Shipyard and Khabarovsk Shipyard This new ship has not yet been observed, and consequently little is known of its characteristics.

Construction of the SO-1-class submarine chaser (SC) probably was terminated late in 1960 after about 84 ships of this class had been built. During 1961, construction of motorboat submarine chasers (PTC) of the MO-VI class probably continued at Sosnovka Shipyard No. 640. About 30 ships are estimated to have been built during the year, and about 160 ships of this class have been constructed since 1957.

Leningrad Shipyard has been constructing T-58 class minesweepers since 1958. A total of 40 ships has been built, with 10 ships of this class being built each year in 1959 and 1960. In 1961, however, 10 hulls were completed as minesweepers, while 7 additional hulls of the TT-58 class were completed as submarine rescue ships (ASR). This construction represents a noteworthy increase in construction of the ASR type of ship. In 1960 in the Black Sea area, two newly built ASR ships, designated the Prut class, were observed.

In 1961 a newly built coastal minesweeper with a wood hull, designated the Vanya class (MSC), appeared in the Baltic. Undoubtedly this ship has less magnetic signature* than other Soviet built minesweepers (excluding the wood-hulled harbor minesweeping boats) and is the first minesweeper with a wood hull to be constructed in the USSR since World War II. No building rate has been established for this class, and the place of its construction is unknown.

Construction of inshore minesweepers of the Sasha class, continued at the Rybinsk (Shcherbakov) Shipyard, where a total of 50 units was completed during 1961. A total of 50 ships of this class had been built by the end of 1961.

D. Auxiliary and Amphibious Ships

A total of 20 units of various types and classes of auxiliary and amphibious ships was completed in the USSR in 1961 compared with 39 units in 1960. The estimated value of the units completed in 1961 is \$25 million, representing a decrease of about 72 percent from 1960. These ships constitute only a small percentage of the total value of ships completed annually in the USSR. During the period 1957-61, production of these ships averaged about 6 percent of the total annual output of naval ships.

The construction of auxiliary and amphibious ships is on a small scale and follows no set pattern. Because Soviet cargo ships and tankers are generally available for normal transportation requirements, some auxiliaries appear to have been constructed to meet specialized requirements. In 1960 and in 1961 the auxiliaries that were completed provided specialized support for the Soviet submarine forces and included submarine tenders (AS), a nuclear-submarine support ship (AS), and submarine rescue ships (ASR).

Probably the most significant of the ships in the auxiliary category is the nuclear submarine support ship. This ship, which was built at Komsomol'sk and transferred to Vladivostok for outfit during 1960. The ship is self-propelled and has a laboratory and storage facilities for the servicing of nuclear reactors for the Soviet nuclear submarine forces in the Pacific. Similar units may have been constructed to serve submarine forces in the Northern Fleet area.

* The variation over the length of the ship of the vertical component of the magnetic field associated with a steel hull as measured on a magnetic range.

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II. Construction of Naval Ships in Communist China*

Construction of naval ships in Communist China came to a virtual standstill in 1961. Probably the final unit in the program for construction of W-class submarines was launched in 1960. By the end of 1961, only 17 units had been completed, and 4 still were in the fitting-out stage. There was no information in 1961 regarding the progress of construction of previously reported submarine ... or destroyer These new programs most likely reached an advanced stage of planning in 1960 but undoubtedly came to a halt as a result of the general economic disruption caused by the "leap forward" program, the withdrawal of Soviet technicians and Soviet material aid, and the shortage of shipbuilding materials. The low level of shipbuilding activity currently evident in Chinese shipyards and the general economic difficulties presage little construction of naval ships in 1962.

III. Construction in the European Satellites**

Contributions to the strength of the naval forces of the Sino-Soviet Bloc since World War II by construction in the European Satellites have been negligible. There are no indications that this condition will change in the immediate future. Construction in 1961 was relatively insignificant, consisting largely of small patrol craft for coastal and harbor patrol use.

IV. Current Activities of Shipyards Engaged in Construction of Naval Ships

The estimated construction of naval ships in the Sino-Soviet Bloc for 1961 is shown by shipyard in Table 8.*** For those shipyards located in the USSR and in Communist China that are constructing naval ships, see the maps, Figures 3 and 4.†

* For construction and value of naval ships produced in Communist China for 1957-61, see Tables 2, 4, 6, and 8, Appendix A, pp. 18, 22, 26, and 29, respectively, below.

** For construction and value of naval ships produced in the European Satellites for 1957-61, see Tables 3, 4, 7, and 8, Appendix A, pp. 20, 22, 27, and 29, respectively, below.

*** Appendix A, p. 29, below.

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APPENDIX A

STATISTICAL TABLES

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Table 1

Estimated Construction of Naval Ships in the USSR, by Shipyard and by Number
1957-61

Type	Class	Shipyard	Number	1957	1958	1959	1960	1961	Cumulative Total	Through 1961	Remarks
<u>Nuclear-Powered Submarines</u>											
Nuclear ballistic-missile submarine (SSBN) ^{a/}	H	Severodvinsk		2	4	4	10		The H class is believed to be a nuclear-powered submarine equipped with a ballistic-missile system consisting of three launching tubes capable of firing missiles at least 300 nautical miles (nm). It may be possible that a few unidentified nuclear-powered submarines are included.		
Nuclear guided-missile submarine (SSGN) ^{a/}	E	Komsomol'sk		2	2	4			The E class is a nuclear-powered submarine equipped with a cruise-missile system consisting of six launchers capable of firing missiles at least 300 nm. All the launchers are faired horizontally into the superstructure deck and are elevated about 20 degrees in the firing position.		
Nuclear submarine (SSN) ^{a/}	N	Severodvinsk		1	2	1	4				
Total nuclear-powered submarines				1	4	6	7	18			
<u>Conventionally Powered Submarines</u>											
Ballistic-missile submarine (SSB) ^{a/}		Severodvinsk		1	1	1			A class of submarine, possibly a modified G class, equipped to fire ballistic missiles from a submerged position. The range of the missile is believed to be in excess of 650 nm and possibly as far as 2,000 nm.		
	G	Severodvinsk Komsomol'sk		2	1	3	6	7	The G-class submarine is equipped with a ballistic-missile system consisting of three launching tubes capable of firing missiles at least 300 nm.		
Submarine (SS)	P	Leningrad, Sudomekh		2	6	6	6	20	A long-range fleet attack submarine with improved detection capability. Construction is continuing.		

a. Production of these classes of submarines is believed to be of the order of magnitude shown in this table.

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Table 2

Estimated Construction of Naval Ships in the USSR, by Shipyard and by Number
 1957-61
 (Continued)

Type	Class	Shipyard	Number	1957	1958	1959	1960	1961	Cumulative Total	Through 1961	Remarks
<u>Conventionally Powered Submarines (Continued)</u>											
Submarine (SS)	2	Severodvinsk Leningrad, Sudomekh	4						8		Construction was terminated at Leningrad in 1956 and at Severodvinsk in 1957. Units of this class were converted to ballistic-missile submarines (SSB) -- six units with two tubes each and one unit with one tube.
Submarine (SS)	4	Gor'kiy Nikolayev, Nosenko Komsomol'sk Leningrad, Baltic	2						146		Construction was terminated at Komsomol'sk in 1970 and at other shipyards in 1957. Thirty or more units of this class have been either sold or converted. Conversion included improved sonar and radar capability and guided-missile capability.
Submarine (SS)	Q	Leningrad, Sudomekh	5						30		Construction was terminated in 1957. Some units have closed-cycle diesel propulsion.
Total conventionally powered submarines				17	3	11	13	16	333		The cumulative total includes a total of 273 Z-class (SS), W-class (SS), and Q-class submarines (SS) completed before 1957.
<u>Destroyers</u>											
Guided-missile destroyer (DDG)	Krupyy	Leningrad, Tadanov Nikolayev Komsomol'sk		1	1	2	4				surface-to-surface missile launchers on the bow and the stern. Construction was terminated in 1961 at Leningrad and probably at Nikolayev. Construction probably will be terminated at Komsomol'sk in 1962.
Guided-missile destroyer (DDG)	Kildin	Leningrad, Tadanov Nikolayev Komsomol'sk		1	1	1	1	1	2		surface-to-surface missile launcher on the stern. Construction was terminated in 1958, and this class was succeeded by the Krivitsky class (DDG).
Destroyers (DD)	Kotlin	Leningrad, Tadanov Nikolayev Komsomol'sk		2	3	3	2	12	8		Construction was terminated in 1957 at all three shipyards.
Total destroyers				8	6	2	2	14	7		The cumulative total includes 19 Kotlin-class destroyers (DD)
Total ships											Completed before 1957.

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Table 1

Estimated Construction of Naval Ships in the USSR, by Shipyard and by Number
1957-61
(Continued)

Type	Class	Shipyard	Number						Remarks
			1957	1958	1959	1960	1961	Cumulative Total through 1961	
<u>Escort Ships</u>									
Escort ship (DE)	Riga	Kaliningrad Nikolayev Komsomo'l'sk	5	2				37	Construction was terminated at Komsomo'l'sk in 1954, at Nikolayev in 1956, and at Kaliningrad in 1958.
Total escort ships			2	2				7	
<u>Patrol Craft</u>									
Escort (PCE)		Kaliningrad Kerch Khabarovsk						5	A new class of antisubmarine ship sighted in the vicinity of Kerch in 1961.
Antisubmarine ship	N.A.	Zelendol'sk Khabarovsk						3	
Submarine chaser (SC)	S0-1	Zelendol'sk Khabarovsk	10	24	24	12		1	
Guided-missile motor gunboat (PGMG)	Osa	Leningrad, Petrovskiy Vladivostok, Bystriy Zelendol'ski		2	8	16		1	
Guided-missile motor gunboat (PGMG)	Komar	Leningrad, Petrovskiy Vladivostok, Bystriy Feodosiya, Yuzhnaya Tochka			5	10	15	14	Construction of the S0-1 class (SC) was terminated late in 1960.
Motor torpedo boat (PT)	P-4	Feodosiya, Yuzhnaya Tochka Sosnovka	20					26	Construction is continuing. This class is fitted with four missile launchers.
Motor torpedo boat (PT)	P-6	Leningrad, Petrovskiy Vladivostok, Bystriy Feodosiya, Yuzhnaya Tochka	25					70	a modified version incorporating two missile launchers. The data in this table are believed to include both new construction and converted P6-class (PT) units.
								140	Construction of the P4 class (PT) was terminated in 1957.
								123	
								206	
								161	Construction of the P6 class (PT) probably was terminated in 1960.
								15	

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Table 1

Estimated Construction of Naval Ships in the USSR, by Shipyard and by Number
1957-61
(Continued)

Type	Class	Shipyard	Number				Cumulative Total Through 1961	Remarks
			1957	1958	1959	1960		
<u>Patrol Craft (Continued)</u>								
Motor torpedo boat (PT)	P-10	Leningrad, Petrovskiy	-	10	10	10	30	Construction was terminated in 1960.
Motor boat, submarine chaser (PTC)	MO-VI	Leningrad, Petrovskiy Sosnovka	5	25	20	30	50	Construction was terminated at Leningrad in 1959 but is continuing at Sosnovka.
Total patrol craft			25	25	30	30	110	
<u>mine Ships</u>								
Fleet minesweeper (MSF)	T-58	Leningrad, Ust'-Izhora	10	10	10	10	40	Construction is continuing. The T-58-class
Fleet minesweeper (MSF)	T-43	Leningrad, Ust'-Izhora Ket'	16	-	-	-	149	-> a successor to the T-43 class (MSF).
Inshore minesweeper (NSI)	Sasha	Rybinsk (Shcherbakov)	8	-	-	-	60	Construction was terminated in 1957.
Coastal minesweeper (MSC)	Vanya	Baltic area	10	10	10	10	50	Construction is continuing.
Total mine warfare ships			34	20	20	21	300	First wood-hulled minesweeper known to be built in the USSR since World War II.
<u>Auxiliaries and Amphibious Ships</u>								
Auxiliary communication ship (ACS)	Litau	Zelenodolsk	12	-	-	-	23	Modified Kronshtadt class (PC). Construction was terminated in 1957.
Repair ship (AR)	Dnepr	Black Sea area	-	-	1	1	2	
Nuclear submarine support ship (AS)	N.A.	Komsomol'sk	-	-	1	1	-	There is tenuous evidence to support delivery in 1960.
			-	-	16	-	-	

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Table I

Estimated Construction of Naval Ships in the USSR, by Shipyard and by Number
 1957-61
 (Continued)

Type	Class	Shipyard	Number						Remarks
			1957	1958	1959	1960	1961	Cumulative Total	
<u>Auxiliaries and Amphibious Ships (Continued)</u>									
Submarine tender (AS)	Don	Mikolayev	1	2	1	2	6	6	Construction was terminated.
Submarine rescue ship (ASR)	(Ex-T-28)	Leningrad, Iist'-Izhora					7	7	T58-class (MSF) hulls completed as submarine rescue ships.
Submarine rescue ship (ASR)	Prut	Black Sea area			2			2	
Infantry landing ship (LSI)	MP-2	Vyborg	6	6	6			24	Construction was terminated.
Logistic support craft (LSC)	MP-4	Leningrad, Sudomekh Khabarovsk	6	5				16	Construction was terminated in Leningrad and in Khabarovsk.
Medium landing ship (LSM)	MP-8	Vyborg			9	9		16	
Landing craft, utility (LCU)	MP-10	Black Sea area	12	12	12			36	
Landing craft, utility (LCU)	MP-SKB-1	Niapsie			12	12	12	36	
Total auxiliaries and amphibious ships			31	30	10	22	20	187	The cumulative total includes 27 units completed before 1957.
Total USSR			215	204	218	192	186	2,021	

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Table 2

Estimated Construction of Naval Ships in Communist China, by Shipyard and by Number
1957-61

Type	Class	Shipyard	Number						Remarks
			1957	1958	1959	1960	1961	Cumulative Total	
<u>Conventionally Powered Submarines</u>									
Submarine (SS)	W	Shanghai, Chiang-nan Wu-ch'ang, Wu-ch'ang	4	4	3	1	1	13	Twenty-one units had been launched by the end of 1960.
Total conventionally powered submarines			4	6	5	1	1	17	
<u>Escort Ships</u>									
Escort ship (DE)	Riga	Shanghai, Hu-tung	3	—	—	—	4	4	Construction was terminated. One unit was completed before 1957.
<u>Patrol Craft</u>									
Large submarine chaser (PC)	Kronshtadt	Shanghai, Chiu-Hsin Canton, Whampoa	4	—	—	—	—	12	Construction was terminated in Shanghai and in Canton.
Fast patrol boat (PTF)	Shanghai	Shanghai, International	2	—	—	—	—	6	
Motor gunboat (PGM)	Swtow	Shanghai, International Canton, Whampoa Dairen, Dairen	—	4	4	4	4	12	Construction is continuing at the rate of four units per year.
Motor torpedo boat (PT)	P-6	Shanghai, International Canton, Whampoa	8	8	8	8	8	48	Construction is continuing at Shanghai at the rate of eight units per year.
Total patrol craft			22	16	20	22	12	180	The cumulative total includes 12 ships of the <u>Kronshmidt</u> class (PC) and 16 of the P6 class (PT) completed before 1957.
<u>Mine Warfare Ships</u>									
Fleet minesweeper (MSF)	T-43	Wu-ch'ang, Wu-ch'ang Canton, Whampoa	2	2	2	1	1	9	Construction probably was terminated in 1960 in Wu-ch'ang and in Canton.
Total mine warfare ships			2	2	—	—	2	12	The cumulative total includes two T43-class (MSF) completed before 1957.

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Table 2

Estimated Construction of Naval Ships in Communist China, by Shipyard and by Number
 1957-61
 (Continued)

Type	Class	Shipyard	1957	1958	1959	1960	1961	Cumulative Total Through 1961	Remarks
Number									
<u>Amphibious Ships and Service Craft</u>									
Landing craft, mechanized (LCM)	Mk-6	Various	30	30	30	30	200	Construction probably is continuing. The program began in about 1955.	
District patrol craft (YP)	Miscellaneous armed motor launches	Various					125	Probably being constructed on a replacement basis.	
District patrol craft (YP)	Whampoa	Various	10				50	The program probably began in 1953 and was terminated in 1957.	
District patrol craft (YP)	Miscellaneous armed motor junks	Various					150	Probably being constructed on a replacement basis.	
Total amphibious ships and service craft			40	30	30	30	225		
Total Communist China			71	84	82	55	43	<u>738</u>	The cumulative total includes 365 units completed before 1957

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Table 3

Estimated Construction of Naval Ships in East Germany and Poland, by Shipyard and by Number
1957-61

Type	Class	Shipyard	1957	1958	1959	1960	1961	Cumulative Total	Through 1961	Remarks
East Germany										
<u>Patrol Craft</u>										
Large submarine chaser (PC)	Hai	Peenewerft, Wolgast				1	1	2	2	Construction is continuing.
Motor torpedo boat (PT)	Iltis	Peenewerft, Wolgast Schiffswerft, Berlin Schiffswerft, Rosslau Schiffswerft, Greifswald		1	2		3	3	3	Construction is continuing. Experimental prototype. Experimental prototype.
Motor torpedo boat (PT)	Forelle	Schiffswerft, Rosslau			1	1		1	1	Experimental prototype.
Total patrol craft					3	3	3	3	3	Construction was terminated.
<u>Mine Warfare Ships</u>										
Fleet minesweeper (MSF)	Krake	Peenewerft, Wolgast	3	7				10	10	Construction was terminated.
Inshore minesweeper (MSI)	Schnalle	Schiffswerft, Berlin II	18				42	42	42	Construction was terminated.
Total mine warfare ships			21	7				22	22	The cumulative total includes 24 ships of the Schwalbe II class (MSI) completed before 1957.
<u>Amphibious Ships</u>										
Landing craft, utility (LCU)	Labo	Peenewerft, Wolgast			1	1		2	2	Construction is continuing.
Total East Germany			21	7	2	4	6	6	6	

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Table 3

Estimated Construction of Naval Ships in East Germany and Poland, by Shipyard and by Number
 1957-61
 (Continued)

Type	Class	Shipyard	1957	1958	1959	1960	1961	Cumulative Total Through 1961	Remarks
Number									
<u>Poland</u>									
<u>Patrol Craft</u>									
Coast guard patrol craft (NSC)	OP-200	Gdynia, Oksywie	1	2	2	2	3	11	Construction was terminated.
<u>Mine Warfare Ships</u>									
Fleet minesweeper (MSF)	T-43	Gdansk, Paris Commune	3	3	5	2	13	Construction was terminated.	
Minesweeping boat (MSB)	TR-10	Gdansk, Stogi	12	12	12	10	53	Construction was terminated.	
Total mine warfare ships			15	15	17	12	66	The cumulative total includes seven TR40-class ships (MSB) completed before 1957.	
<u>Service Craft</u>									
District patrol craft (YP)	K-4	N.A.	2	3			7	Construction was terminated.	
District patrol craft (YP)	K-8	Gdansk, North	20	20	20	20	140	Construction was terminated.	
Total service craft			22	23	20	20	147	The cumulative total includes 40 K8-class (YP) and 2 K4-class craft (YP) completed before 1957.	
Total Poland			38	40	39	35	224		

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Table 4

Estimated Construction of Naval Ships in the Sino-Soviet Bloc
by Tonnage
1957-61

Country and Type	Thousand Light Ship Displacement Tons				
	1957	1958	1959	1960	1961
<u>USSR</u>					
Nuclear-powered submarines		2.8	11.8	19.6	22.4
Conventionally powered submarines	16.2	5.0	19.3	23.5	29.8
Destroyers and escort ships	23.1	11.1	5.9	8.9	8.9
Patrol craft	6.7	11.3	12.0	11.4	19.8
Mine warfare ships	13.9	8.5	8.5	8.5	8.8
Auxiliaries and amphibious ships	19.9	23.1	23.1	33.6	11.2
Total USSR	<u>79.8</u>	<u>61.8</u>	<u>80.6</u>	<u>105.5</u>	<u>100.9</u>
<u>Communist China</u>					
Conventionally powered submarines	3.0	4.5	3.8	0.8	0.8
Escort ships	2.6				
Patrol craft	2.8	3.1	3.6	1.7	1.0
Mine warfare ships	1.0	1.0	2.0	1.0	
Amphibious ships and service craft	1.1	1.1	1.1	1.1	1.1
Total Communist China	<u>10.5</u>	<u>9.7</u>	<u>10.5</u>	<u>4.6</u>	<u>2.9</u>
<u>East Germany</u>					
Patrol craft				0.5	0.3
Mine warfare ships	3.4	4.2			
Amphibious ships				0.1	0.1
Total East Germany	<u>3.4</u>	<u>4.2</u>		<u>0.6</u>	<u>0.4</u>
<u>Poland</u>					
Patrol craft	0.1	0.3	0.3	0.4	0.4
Mine warfare ships	2.3	2.3	3.6	1.7	
Service craft	1.0	1.0	0.9	0.9	0.9
Total Poland	<u>3.4</u>	<u>3.6</u>	<u>4.8</u>	<u>3.0</u>	<u>1.3</u>
Total Sino-Soviet Bloc	<u>97.1</u>	<u>79.3</u>	<u>95.9</u>	<u>113.7</u>	<u>105.5</u>

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Table 5

Estimated Value of Naval Ships Constructed in the USSR
1957-61

Type	Class	1957	1958	1959	1960	1961	Total	Percent of Total
<u>Nuclear-Powered Submarines</u>								
Nuclear ballistic-missile submarine (SSBN)	H			115.0	230.0	230.0	575.0	11.5
Nuclear guided-missile submarine (SSGN)	E			46.0	92.0	122.0	244.0	4.9
Nuclear submarine (SSN)	N					46.0	184.0	3.7
Total nuclear-powered submarines		46.0	207.0	352.0	398.0	1,003.0	20.1	
<u>Conventionally Powered Submarines</u>								
Ballistic-missile submarine (SSB)	(PL-777)						37.0	0.7
Ballistic-missile submarine (SSB)	G	74.0	37.0	185.0	259.0	333.0	888.0	17.9
Ballistic-missile submarine (SSB)	F		50.0	149.9	149.9	149.9	499.7	10.0
Submarine (SS)	Z	98.0					98.0	2.0
Submarine (SS)	W	75.0					75.0	1.5
Submarine (SS)	Q	25.9					25.9	0.5
Total conventionally powered submarines		272.9	87.0	334.9	408.9	519.9	1,623.6	32.6
<u>Destroyers and Escort Ships</u>								
Guided-missile destroyer (DDG)	Krupyy							
Guided-missile destroyer (DDG)	Kildin	125.8					125.8	6.4
Destroyer (DD)	Kotlin	251.5					251.5	2.5
Escort ship (DE)	Riga	35.4	14.2				49.6	5.0
Total destroyers and escort ships		286.9	140.0	79.2	118.8	118.8	743.7	14.9
<u>Patrol Craft</u>								
Escort (PCE)	Poti						63.2	1.3
Anti-submarine minesweeping	N.A.						42.1	0.8

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Table 5

Estimated Value of Naval Ships Constructed in the USSR
1957-61
(Continued)

<u>Type</u>	<u>Class</u>	<u>Million 1960 US \$</u>					<u>Percent of Total</u>
		<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	
<u>Patrol Craft (Continued)</u>							
Submarine chaser (SC)	S0-1	15.8	37.9	53.7	25.3	64.8	132.7
Guided-missile motor gunboat (PGMG)	Osa			3.6	32.4	48.6	100.8
Guided-missile motor gunboat (PGMG)	Komar				33.4		82.0
Motor torpedo boat (PT)	P-4	12.6					12.6
Motor torpedo boat (PT)	P-6	49.2	49.2	41.0	12.3		151.7
Motor torpedo boat (PT)	P-10		8.2	8.2	8.2		24.6
Motorboat, submarine chaser (PTC)	MO-VI	4.1	41.0	36.9	24.6		131.2
Total value of patrol craft		<u>81.7</u>	<u>136.3</u>	<u>142.4</u>	<u>136.2</u>	<u>243.3</u>	<u>740.9</u>
<u>Mine Warfare Ships</u>							
Fleet minesweeper (MSF)	T-58		77.8	77.8	77.8	77.8	311.2
Fleet minesweeper (MSF)	T-43	111.6					111.6
Inshore minesweeper (MSI)	Sasha	18.8	18.8	18.8	18.8	94.0	2.8
Coastal minesweeper (MSC)	Vanya				2.5	2.5	1.9
Total value of mine warfare ships		<u>160.4</u>	<u>26.6</u>	<u>26.6</u>	<u>26.6</u>	<u>99.1</u>	<u>549.3</u>
<u>Auxiliaries and Amphibious Ships</u>							
Auxiliary communication ship (ACS)	Libau	40.7					40.7
Repair ship (AR)	Dnepr				10.0	10.0	20.0
Nuclear submarine support ship (AS)	N.A.				3.5		3.5
Submarine tender (AS)	Don	24.0	48.0	24.0	48.0	11.6	144.0
(Ex-T-58)	(Ex-T-58)					11.6	11.6
Submarine rescue ship (ASR)	Prut						7.0
Submarine rescue ship (ASR)	MP-2	7.2	7.2	7.2	7.0		0.1
Infantry landing ship (LSI)							0.4
							21.6

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Table 5

Estimated Value of Naval Ships Constructed in the USSR
 1957-61
 (Continued)

Type	Class	Million 1960 US \$				Percent of Total
		1957	1958	1959	1960	
<u>Auxiliaries and Amphibious Ships (Continued)</u>						
Logistic support craft (LSC)	MP-4	13.7	11.4	16.2	16.2	25.1
Medium landing ship (LSM)	MP-8		1.7	1.7	1.7	32.4
Landing craft, utility (LCU)	MP-10			3.6	3.6	5.1
Landing craft, utility (LCU)	MP-SMB-1					10.8
Total auxiliaries and amphibious ships		85.6	68.3	52.7	20.0	3.6
Total all classes of naval ships		887.5	574.2	913.8	1,202.5	25.2
						321.8
						6.5
						1,404.3
						4,982.3
						100.0

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Table 6

Estimated Value of Naval Ships Constructed in Communist China
1957-61

Type	Class	Million 1960 US \$					
		1957	1958	1959	1960	Total	Percent of Total
<u>Conventionally Powered Submarines</u>							
Submarine (SS)	W	<u>50.0</u>	<u>75.0</u>	<u>62.5</u>	<u>12.5</u>	<u>212.5</u>	<u>47.0</u>
<u>Escort Ships</u>							
Escort ship (DE)	Riga	<u>21.2</u>				<u>21.2</u>	<u>4.7</u>
<u>Patrol Craft</u>							
Large submarine chaser (PC)	Kronshtadt	20.3					
Fast patrol boat (PTF)	Shanghai		5.8			20.3	4.5
Motor gunboat (PGM)	Swatow	24.6		5.8		17.4	3.9
Motor torpedo boat (PT)	P-6	13.1	13.1	8.2		57.4	12.7
Total patrol craft		<u>33.4</u>	<u>37.7</u>	<u>43.5</u>	<u>20.6</u>	<u>6.6</u>	<u>52.5</u>
<u>Mine Warfare Ships</u>							
Fleet minesweeper (MSF)	T-43	<u>11.8</u>	<u>11.8</u>	<u>23.6</u>	<u>11.8</u>	<u>59.0</u>	<u>13.1</u>
<u>Amphibious Ships and Service Craft</u>							
Landing craft, mechanized (LCM)	MK-6	1.5		1.5		1.5	1.7
District patrol craft (YP)	Whampoa	3.8				3.8	0.8
Total landing craft and service craft		<u>5.3</u>	<u>1.5</u>	<u>1.5</u>	<u>1.5</u>	<u>11.3</u>	<u>2.5</u>
Total Communist China		<u>121.7</u>	<u>126.0</u>	<u>131.1</u>	<u>46.4</u>	<u>451.6</u>	<u>100.0</u>

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Table 7

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Estimated Value of Naval Ships Constructed in East Germany and Poland
1957-61

Type	Class	Million 1960 US \$				Percent of Total
		1957	1958	1959	1960	
East Germany						
<u>Patrol Craft</u>						
Large submarine chaser (PC)	Hai		2.8	2.8	5.6	5.7
Motor torpedo boat (PT)	Iltis		1.0	0.5	1.5	1.5
Motor torpedo boat (PT)	Forelle		2.4		2.4	2.5
Total patrol craft		6.2	3.3		2.5	9.7
<u>Mine Warfare Ships</u>						
Fleet minesweeper (MSF)	Krake	21.2	49.5		70.7	72.2
Inshore minesweeper (MSI)	Schwalbe III	16.0			16.0	16.3
Total mine warfare ships		37.2	49.5		86.7	88.5
<u>Amphibious Ships</u>						
Landing craft, utility (LCU)	Labo					
Total East Germany		37.2	49.5	7.1	4.2	98.0
Poland						
<u>Patrol Craft</u>						
Coast guard patrol craft (WSC)	OP-200	1.6	3.3	3.3	4.9	18.0
						13.5

Table 7

Estimated Value of Naval Ships Constructed in East Germany and Poland
1957-61
(Continued)

<u>Type</u>	<u>Class</u>	Million 1960 US \$						<u>Percent of Total</u>
		<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>Total</u>	
<u>Poland (Continued)</u>								
<u>Mine Warfare Ships</u>								
Fleet minesweeper (MSF) Minesweeping boat (MSB)	T-43 TR-40	17.7 7.7	17.7 7.7	29.5 7.7	11.8 6.4		76.7 29.5	57.5 22.1
Total mine warfare ships		<u>25.4</u>	<u>25.4</u>	<u>37.2</u>	<u>18.2</u>		<u>106.2</u>	<u>79.6</u>
<u>Service Craft</u>								
District patrol craft District patrol craft	K-4 K-8	0.1 1.8	0.2 1.8	1.8	1.8	1.8	0.3 9.0	0.2 6.7
Total service craft		<u>1.9</u>	<u>2.0</u>	<u>1.8</u>	<u>1.8</u>	<u>1.8</u>	<u>2.3</u>	<u>6.9</u>
Total Poland		<u>28.9</u>	<u>30.7</u>	<u>42.3</u>	<u>24.9</u>	<u>6.7</u>	<u>133.5</u>	<u>100.0</u>

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Table 8

Types and Classes of Naval Ships Under Construction in the Sino-Soviet Bloc
by Shipyard
1961

Location	Shipyard	Type	Class	Remarks
USSR				
Baltic area	N.A.	Coastal minesweeper (MSC)	Vanya	A new class of wood-hulled minesweeper
Black Sea area	N.A.	Repair ship (AR)	Dnepr	
Feodosiya	Yuzhnaya Tochka	Guided-missile motor gunboat (PGMG)	Komar	
Kaliningrad	No. 820	Escort ship (DE)	N.A.	A new class, A new class of antisubmarine ship
		Escort (SCE)	Poti	A new class of antisubmarine ship
		Escort (PCE)	Poti	A new class of antisubmarine ship
Kerch	No. 532	Antisubmarine ship	N.A.	A new class of antisubmarine ship
Khabarovsk	No. 368	Escort (PCE)	Poti	A new class of antisubmarine ship
	No. 876	Nuclear-powered submarine	(H?)	A new class of antisubmarine ship
Komsomolsk	No. 199	Nuclear-powered submarine	N.A.	
		Ballistic-missile submarine (SSB)	G	
		Submarine	N.A.	
Leningrad	Petrovskiy No. 5	Probable destroyer	N.A.	
	Sudomekh No. 196	Guided-missile destroyer (DDG)	Krupnyy	
	Ust'-Izhora No. 363	Guided-missile motor gunboat (PGMG)	Osa	
		Guided-missile motor gunboat (PGMG)	Komar	
		Submarine (SS)	F	
		Fleet minesweeper (MSF)	T-58	T-58-class hulls completed as submarine
		Submarine rescue ship (ASR)	(EX T-58)	rescue ships
	Zhdanov No. 190	Guided-missile destroyer (DDG)	Kynda	
		Guided-missile destroyer (DDG)	Krupnyy	
Nikolayev	No. 445	Guided-missile destroyer (DDG)	Krupnyy	
Tuapse	Tuapse	Landing craft, utility (LCU)	MP-SMB	
Severodvinsk	No. 402	Nuclear ballistic-missile submarine (SSBN)	H	
		Nuclear-powered submarine (SSN)	N.A.	
		Ballistic-missile submarine (SSB)	N	
Shcherbakov	No. 341	Inshore minesweeper (MSI)	G	
Sosnovka	No. 640	Motorboat, submarine chaser (PTC)	Sasha	
			MO-VI	

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Table 8

Types and Classes of Naval Ships Under Construction in the Sino-Soviet Bloc
by Shipyard
1961
(Continued)

<u>USSR (Continued)</u>	<u>Shipyard</u>	<u>Type</u>	<u>Class</u>	<u>Remarks</u>
Vladivostok	Bystryy	Guided-missile motor gunboat (PGMG) Guided-missile motor gunboat (PGMG) Anti-submarine ship	Osa Komar N.A. Osa	A new class of antisubmarine ship
Zelenodol'sk	No. 340	Guided-missile motor gunboat		
<u>Communist China</u>				
Shanghai	International	Fast patrol boat (PTF) Motor torpedo boat (PT)	Shanghai P-6	
	Chiang-nan	Submarine (SS)	W	Units probably launched in 1960
	Wu-ch'ang	Submarine (SS)	W	Units probably launched in 1960
<u>East Germany</u>				
Wolgast	Peenewerft	Large submarine chaser (PC) Motor torpedo boat (PT) Landing craft, utility (LCU)	Hai Doris Labo	
<u>Poland</u>	Gdynia	Coast guard patrol craft (WSC)	OP-200	

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APPENDIX B

PHOTOGRAPHS OF SOVIET NAVAL SHIPS

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NUCLEAR SUBMARINES

H-Class

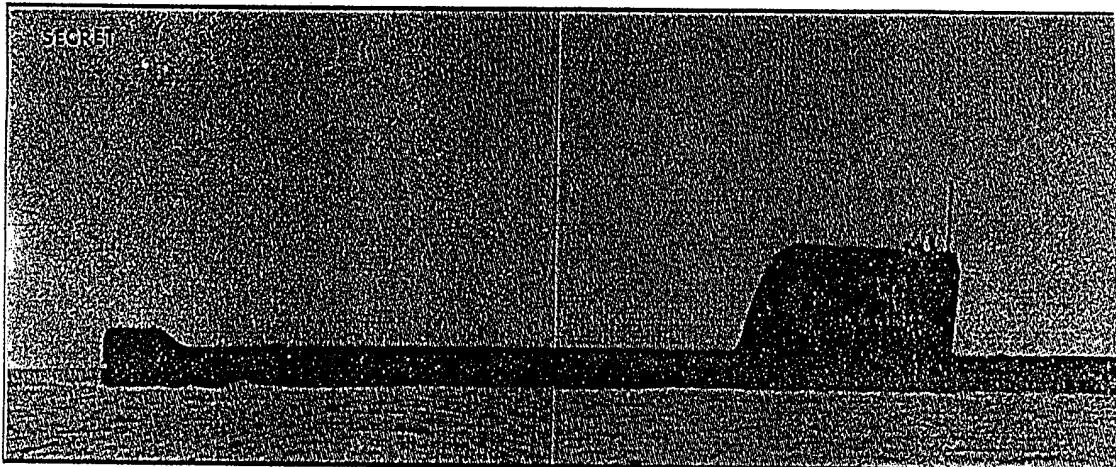


Figure 5. USSR: H-Class Nuclear Ballistic-Missile Submarine (SSBN)

N-Class

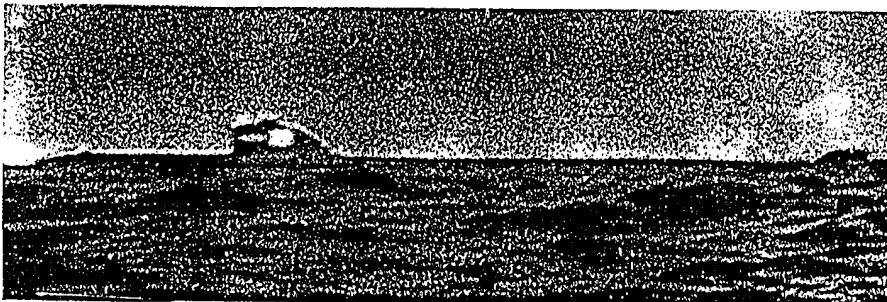


Figure 6. USSR: N-Class Nuclear Submarine (SSN)

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CONVENTIONAL SUBMARINES

G-Class

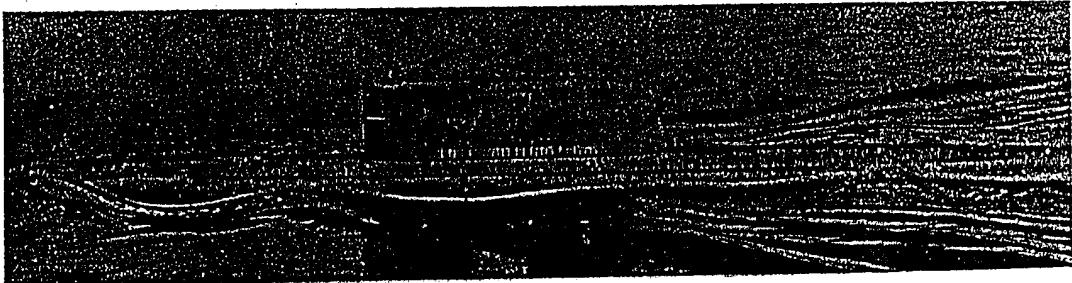


Figure 7. USSR: G-Class Ballistic-Missile Submarine (SSB)

F-Class

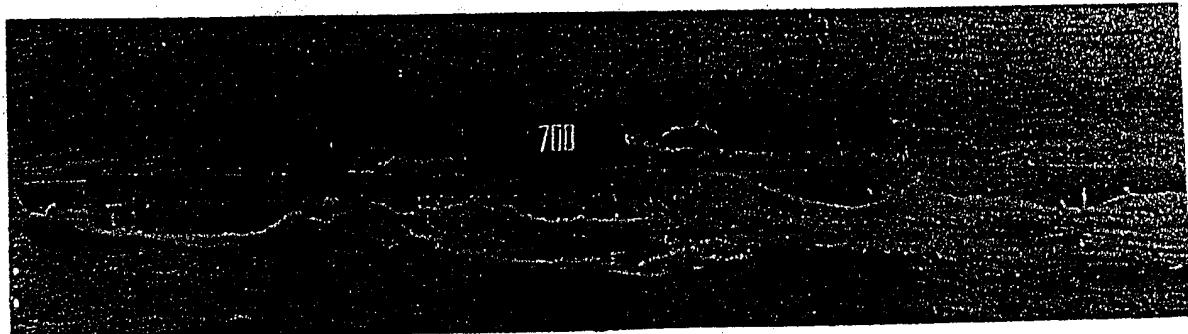


Figure 8 USSR: F-Class Submarine (SS)

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DESTROYERS

"Krupnyy"-Class

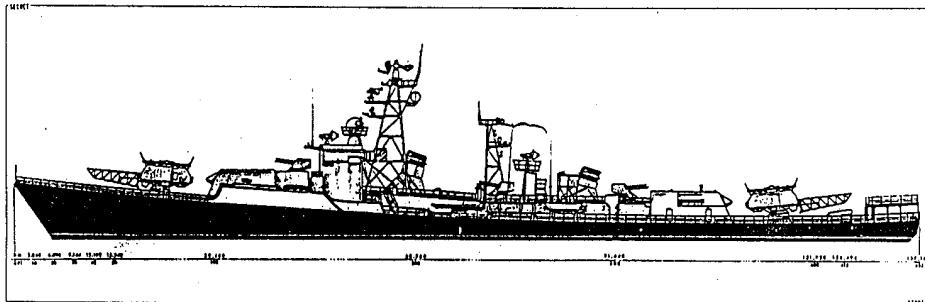


Figure 9. USSR: Krupnyy-Class Guided-Missile Destroyer (DDG)

"Kildin"-Class

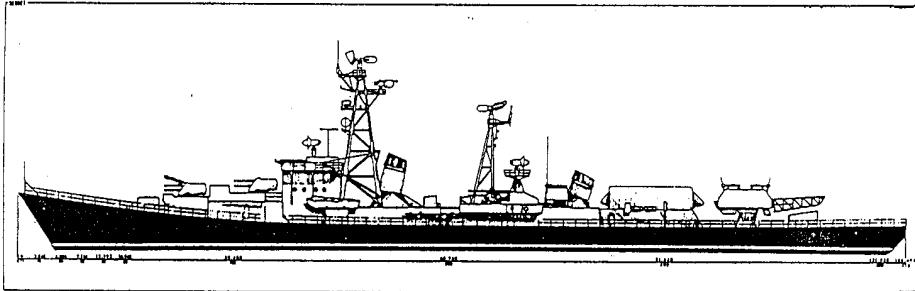


Figure 10. USSR: Kildin-Class Guided-Missile Destroyer (DDG)

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GUNBOATS

"Osa"-Class

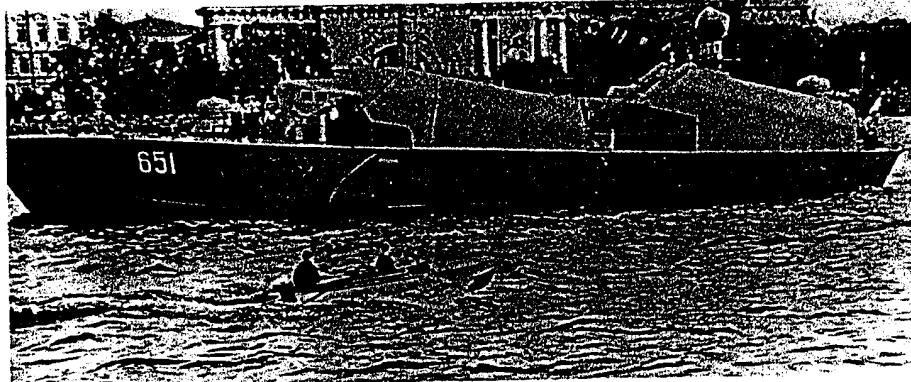


Figure 11. USSR: Osa-Class Guided-Missile Motor Gunboat (PGMG)

"Komar"-Class

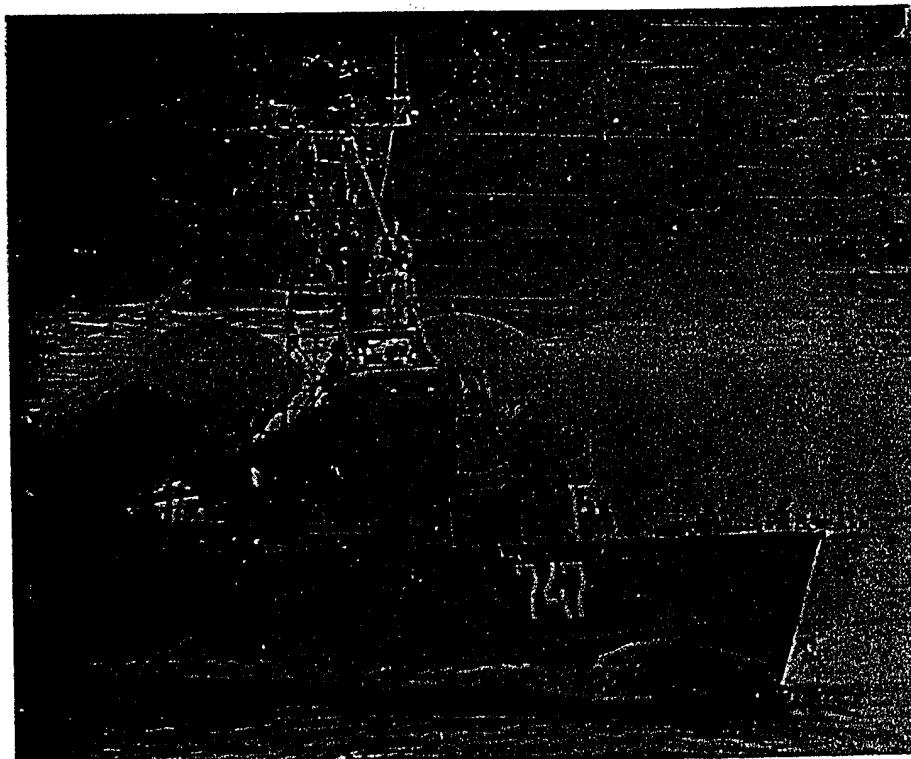
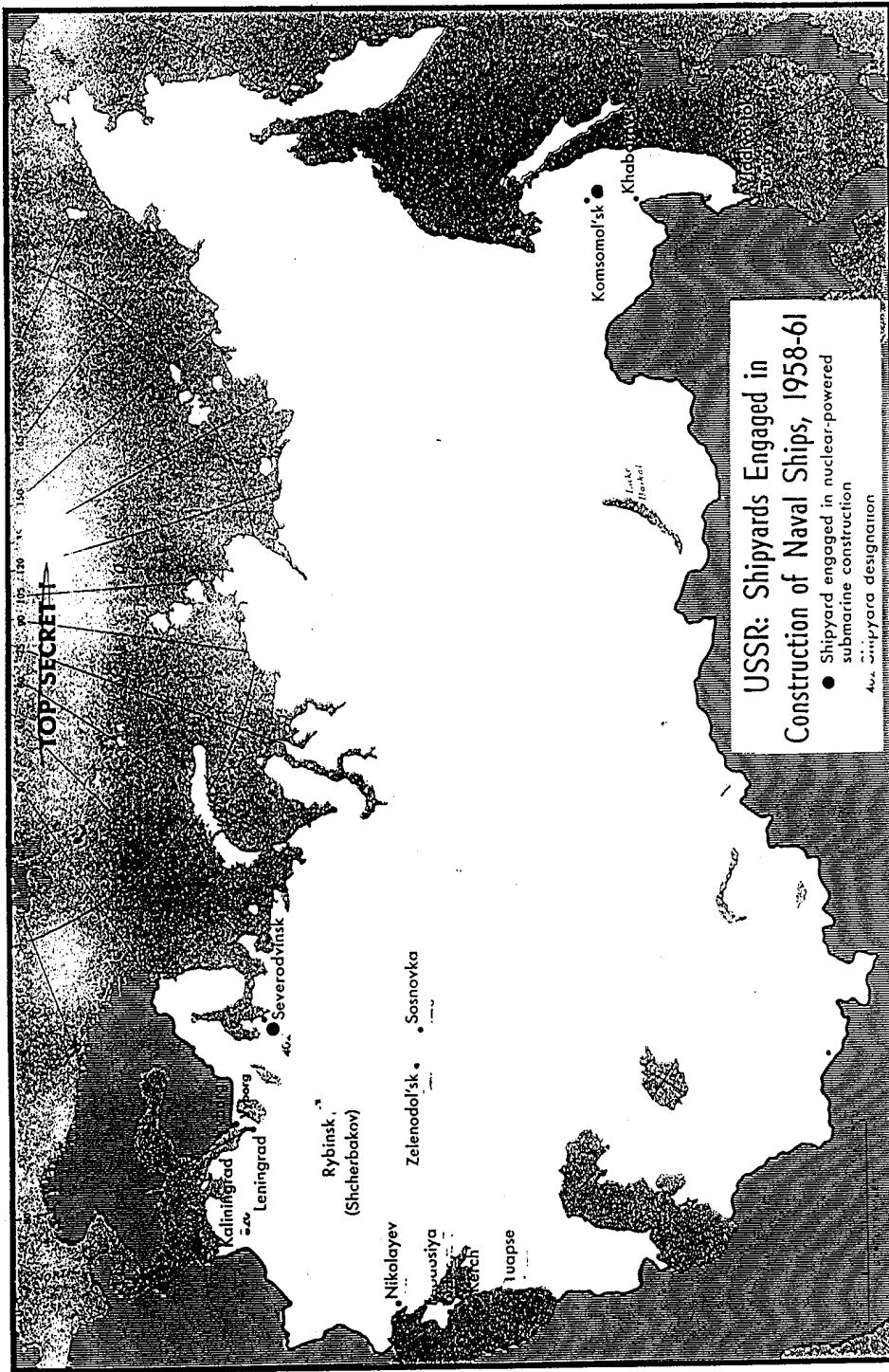


Figure 12. USSR: Komar-Class Guided-Missile Motor Gunboat (PGMG)

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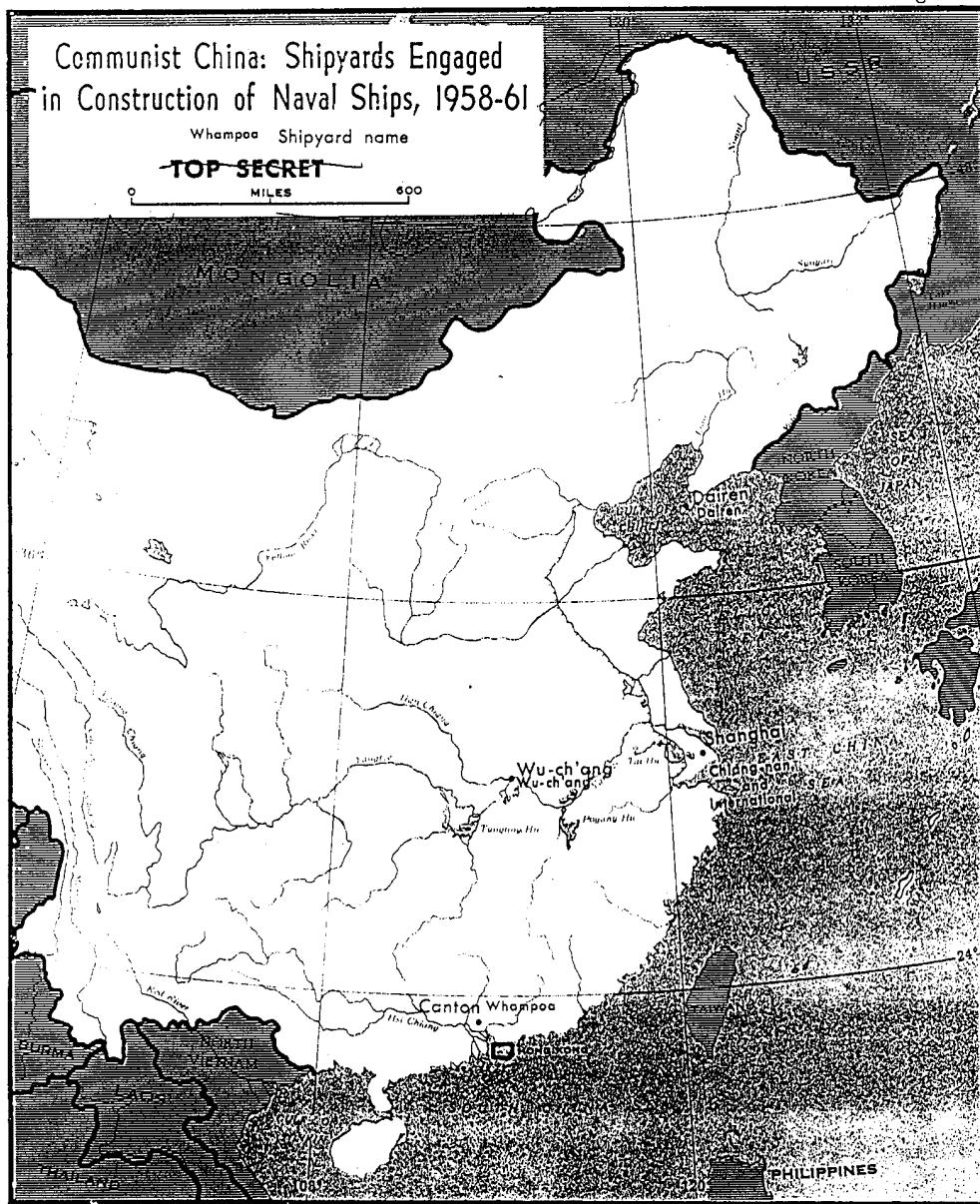
Figure 3



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Figure 4



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