Directorate of
Intelligence

S8B Secret

CIASOV 84-10145

The Soviet General Purpose Submarine Force: Preparing for the 1990s

An Intelligence Assessment

~~Secret~~

SOV 84-10145
September 1984

Copy

17

Warning Notice	Intelligence Sources or Methods Involved (WNINTEL)
National Security Information	Unauthorized Disclosure Subject to Criminal Sanctions

Dissemination Control Abbreviations	NOFORN (NF)	Not releasable to foreign nationals
	NOCONTRACT (NC)	Not releasable to contractors or contractor/consultants
	PROPIN (PR)	Caution—proprietary information involved
	ORCON (OC)	Dissemination and extraction of information controlled by originator
	REL...	This information has been authorized for release to...
	FGI	Foreign government information
	WN	WNINTEL—Intelligence sources or methods involved
	A microfiche copy of this document is available from OCR/DLB (351-7177); printed copies from CPAS/IMC (351-5203). Regular receipt of DDI reports in either microfiche or printed form can also be arranged through CPAS/IMC.	Classified by Declassify: Derived from multiple sources
	All material on this page is Unclassified.	

Directorate of
Intelligence

~~Secret~~

The Soviet General Purpose Submarine Force: Preparing for the 1990s

An Intelligence Assessment

This paper was prepared by
Office of Soviet Analysis. Comments and queries are welcome and may be directed to
, SOVA, on

~~Secret~~
SOV 84-10145
September 1984

The Soviet General Purpose Submarine Force: Preparing for the 1990s

Key Judgments

Information available as of 1 September 1984 was used in this report.

The Soviets have begun to build the third generation of nuclear-powered torpedo attack (SSN) and cruise missile (SSGN) submarines that will form the nucleus of their general purpose submarine force in the 1990s. During the last two years they have launched an unprecedented number and variety of general purpose submarines, and we expect them to build about 40 percent more in the next decade than they have since the mid-1970s.

We believe that this accelerated effort will result in:

- A general purpose submarine force that is more diverse in composition and capabilities than the present force.
- An increase in the percentage of general purpose submarines that are nuclear powered—from about 43 percent today to more than 60 percent by 1994.
- A net reduction in the general purpose submarine force—from nearly 270 to about 240—due to a slow rate of diesel submarine production and the retirement of older units.
- Improvements in the capabilities to fight large-scale, prolonged, short-range submarine engagements, especially those involving the protection of ballistic missile submarines (SSBNs).
- Greater flexibility in submarine operations, including the combination of traditional SSN missions with long-range, land attack, sea-launched cruise missile (SLCM) patrols

BLANK PAGE

Contents

The Soviet General Purpose Submarine Force: Preparing for the 1990s

Introduction

Moscow continues to pursue a dual strategy of submarine production, in which experimental or high-technology designs are produced in small numbers while mainstay designs are produced in series. This relatively costly strategy allows the Soviets to simultaneously build up their inventory of general purpose submarines while testing new technology for use in future production.

Recent Trends in Submarine Production

Soviet production of nuclear-powered ballistic missile submarines (SSBNs) has leveled off in recent years as a result of limitations imposed by the SALT agreements. The large Typhoon-class SSBN is being built at a rate of one unit every one and a half years, and we expect only three or four D-IV SSBNs to be built. Production of diesel-electric submarines has likewise remained slow—about two or three units a year—one of which, through 1983, was only for export. As a result, Soviet shipyards are increasingly free for production of new classes of nuclear-powered general purpose submarines

Since 1981 the number of nuclear-powered general purpose submarines produced each year has remained fairly steady at four to five, while the number of classes under construction has risen from three to six. Four of these six classes now being built (the V-III, the M, the Y, and the S) are nuclear-powered torpedo attack submarines (SSNs). (For the first time, the Soviets are simultaneously building both their current mainstay SSN—the V-III—and its likely successor—the S.

As many as three additional general purpose submarine classes may also be under construction and could be launched between 1984 and 1986. These include a large SSGN designed to carry the SS-NX-24 SLCM, another SSN class, and a smaller SSGN class—possibly equipped with the SS-N-22 or another new antiship cruise missile—designed as a follow-on to the C-II.

Current and Future Force Requirements

SSNs. The recent surge in the Soviets' general purpose submarine production has been spurred by the immediate need for more submarines to help protect the Navy's D's and Typhoons, as well as by the requirement for additional submarine platforms to carry a new family of long-range, land attack cruise missiles. Two of the largest new design —the M and the Y—represent what may be a new type of multipurpose submarine that combines the roles of an SSN and a long-range, land attack SLCM platform.

About half of the Soviets' current SSN force is made up of obsolescent E's and N's and aging V-Is, which have been increasingly plagued with maintenance problems (see table 1). Of the 47 modern Soviet SSNs now operational (18 V-IIIs, seven V-IIs, 16 V-Is, and six A's), the V-IIIs are most capable of fulfilling all types of SSN missions. These include anti-SSBN operations, SSBN support, and surveillance and reconnaissance

We believe that the primary mission of the Soviet SSN force is protection of Moscow's sea-based strategic strike force. There are 64 Soviet SSNs—about 50 of which are available at any one time—which could be used to support the Soviet Navy's 63 modern SSBNs. The United States, by comparison, maintains a force of about 90 SSNs to support its 35 fully operational SSBNs. Because US SSBNs operate in broad ocean areas and are quieter than their Soviet counterparts, SSNs are not required for their protection. Although the Soviets can also call upon their large force of diesel-powered attack submarines to aid in the defense of SSBN *bastions*,[1] such units are unable to operate under ice where the Soviet SSBNs increasingly are. As a result, the percentage of the Soviet SSN force committed to SSBN support is rising, while the Soviet Navy faces a growing shortage of SSNs available for other missions

[1] *Bastions* are SSBN wartime operating areas located in Soviet coastal waters, adjacent seas, and under and along the edge of the Arctic icecap. They are defended by echeloned forces composed of ASW surface ships, submarines, and naval aircraft

Table 1
Soviet Nuclear-Powered General Purpose Submarines: Summary of Order of Battle, January 1984

SSNs	
V-III	18
V-II	7
V-I	16
A	6
Total modern units	47
E-I	5
N	12
Total older units	17
Total SSNs	64
SSGNs	
C-II	6
C-I	11
O	2
P	1
Total modern units	20
E-II	20
Mod E-II	7
Total older units	27
Total SSGNs	47
Total nuclear-powered general purpose submarines	111

Technological advances have also driven the Soviets' need for additional SSNs. Long-term efforts at noise reduction and improvement of both active and passive sonar systems have gradually resulted in submarines such as the V-III that are quieter and more capable of detecting Western submarines. These developments have led to use of the V-III for long-range reconnaissance and surveillance operations especially in the vicinity of Western SSBN bases

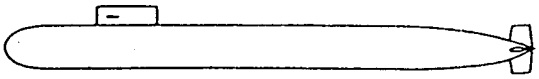
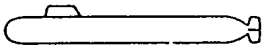
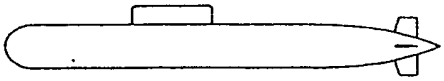
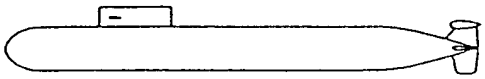
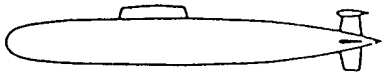
SSGNs. We believe that the Soviets need more SSGNs for both anticarrier warfare and for SLCM attacks against distant land targets. Nearly 60 percent of their present force of 47 SSGNs is composed of old E-IIs, although a few of these have been modernized to carry the longer range SS-N-12 antiship missile. Production of the C-II ceased in 1980, and construction of the 14,000-ton O-class has been slow (one every two and a half years). We believe that a follow-on to the C-II—possibly armed with 12 to 16 SS-N-22s or some other antiship missile—may now be under development and could be launched within the next two years. It is also possible that C-Is and C-IIs may be modified to carry the SS-N-22, which is currently deployed aboard two surface ship classes.

[redacted]

General Purpose Submarines and SLCMs. Partly in response to the US Tomahawk, Pershing II, and ground-launched cruise missile programs, the Soviets have developed two new types of long-range, land attack SLCMs. Most recently constructed Soviet general purpose submarines have torpedo launch tubes from which the [redacted] may be fired. A larger SLCM, [redacted] also under development and probably operational by 1987, is too big to be launched from torpedo tubes and will require a new SSGN platform dedicated to that missile. We believe that the Soviets will need one or more new classes of large submarines to carry SLCMs in sufficient numbers to constitute an effective strike force. When enough of these submarines have been built, we expect that they will conduct SLCM patrols off the coasts of Western Europe, China, and possibly the United States.

Two of the recently launched SSN classes—the M and the Y—are big enough to carry many [redacted] SLCMs in addition to torpedoes, ASW missiles, or mines. Although likely to be produced in small numbers—perhaps four units by 1990—the M-class is the Soviets' best candidate for a multipurpose submarine capable of combining the roles of an SSN and an SLCM platform for theater or strategic strikes. At least two more dismantled Y-Is are presently undergoing conversion to SSNs, and we believe that as many as six such Y's may eventually be produced.

Figure 1
USSR: Recently Launched General Purpose Submarine Classes

	Launch Date/	Length	Beam
Y-Class SSGN	October, 1982	150 meters	15 meters
			
U-Class SSAN	November, 1982		
			
M-Class SSN	June, 1983		
			
Y-Class SSN	July, 1983		
			
S-Class SSN	August, 1983		
			
SSAN	October, 1983		N/A
No drawing available			

Displacement	Special Characteristics	Missions
12,000 tons	3 meters wider in beam and 19 meters longer than a Y-I SSBN	Test platform
2,000 tons	Possible titanium hull; 3 meters narrower and about 11 meters shorter than the A-class SSN	Possible research or special-purpose unit
11,000 tons	Probable titanium hull; possible liquid metal reactor	Long-range SLCM carrier; SSBN support
10,000 tons	Has towed-array sonar pod atop rudder	SSBN support; long-range SLCM carrier
7,500 tons	Possible titanium hull, has towed-array sonar pod atop rudder; 3 meters shorter but 1 meter wider than the V-III	Anti-SSBN operations, SSBN support, surveillance and reconnaissance
N/A	N/A	Another possible research or special-purpose unit

BLANK PAGE

The Y-class SSGN launched in October 1982 is clearly designed to serve as a test platform [ ] Although the O-class SSGN could possibly be modified to carry it instead of the SS-N-19 antiship cruise missile, we believe it is more likely that the Soviets are building a new class of large SSGN especially designed as a platform [ ] We expect both this submarine and its missile to achieve IOC by 1987.

The New Generation of General Purpose Submarines

New Designs. Although Soviet submarine production has traditionally been more diverse than that of the United States, the variety of newly designed submarines being launched is impressive (see figure 1). They include:

- The Y-class SSGN test platform and the Y-class SSGN, both conversions of dismantled Y-I SSBNs.
- The U-class nuclear-powered auxiliary submarine (SSAN) and the 196E SSAN, both small—with lengths of 70 meters and about 60 meters, respectively—nuclear-powered submarines that, although not large enough to be SSNs, are probably intended for special-purpose or research use.
- The M-class SSN, an unusually large—11,000 tons displacement—SSN.
- The S-class SSN—likely follow-on to the V-III [ ] [ ]

These new designs have several features in common. Most of them are relatively large (7,500 to 12,000 tons). At least two of the SSNs have pods on their vertical stabilizers for towed-array sonar systems, and there is circumstantial but inconclusive evidence that three of them may be built of titanium. The larger displacement of the new SSNs suggests that they will carry a greater quantity and variety of ASW weapons and will be capable of performing multiple missions. If the M- and S-classes are equipped with advanced nuclear propulsion systems, they will be capable of speeds of 35 to 40 knots. Titanium hulls would permit these classes to operate at depths of 600 to 1,000 meters [ ] [ ]

[ ]

Long-Term Objectives. By combining a drive for greater numbers of nuclear-powered general purpose submarines with a more broadly based research and development effort, the Soviets are continuing to pursue the submarine production philosophy they adopted during the 1960s and 1970s. This philosophy stressed the isolated production of a few high-technology units together with the series production of four or five less advanced submarine designs, which changed only slightly during their production histories. Although relatively more expensive and wasteful of production facilities, this approach has the advantage of maximizing both long- and short-term gains. We believe, for example, that much of the technology tested aboard experimental submarines, such as the A- and the P-classes, has been incorporated into some of the recently launched general purpose submarines—such as the M- and S-classes—scheduled for series production.

Operational Implications

The diversity—including both multipurpose and highly specialized designs—of the latest generation of Soviet general purpose submarines will increase the operational flexibility of the Soviet Navy's submarine force. Several of the new designs will help the Soviets acquire a credible SLCM capability with which to pose an "analogous response" to US INF deployments and reach additional theater targets in Europe and Asia. Designed to meet the requirements imposed by the prospect of large-scale and protracted SSN combat scenarios, the new submarine classes will be particularly effective in guarding Soviet SSBNs deployed in *bastions* near the Soviet coasts, along the ice edge, and under the Arctic icecap

Nuclear-armed [redacted] carried by the M- and the Y-class SSNs, as well as [redacted] aboard the Y-class SSGN and its probable successor, could be used against land targets in Western Europe, China, and the United States. Some SLCM platforms with land attack missions would probably be deployed in the Norwegian and Greenland Seas, as well as the Sea of Japan, where they could receive optimum support from other Soviet naval forces [redacted] Other SLCM carriers may conduct peacetime patrols off the US coasts in response to US INF deployments in Europe. The missiles aboard these submarines would probably be directed against command and control facilities, submarine and strategic bomber bases, and missile-related installations

The implications of the Soviets' efforts to increase both the size and the quality of their general purpose submarine force are potentially serious for the United States. If attack submarine combat scenarios in the 1990s turn into an undersea version of the WW II aerial dogfight, it follows that:

- The number of combat units available and the force ratios involved would be even more important in determining the outcome of submarine engagements, especially in SSBN support operations.
- Slight advantages in speed, stealth, operational depth, leadership, and crew proficiency would have a much greater impact.
- Unpredictable peacetime advances in weapons and sensors could easily tip the balance in combat

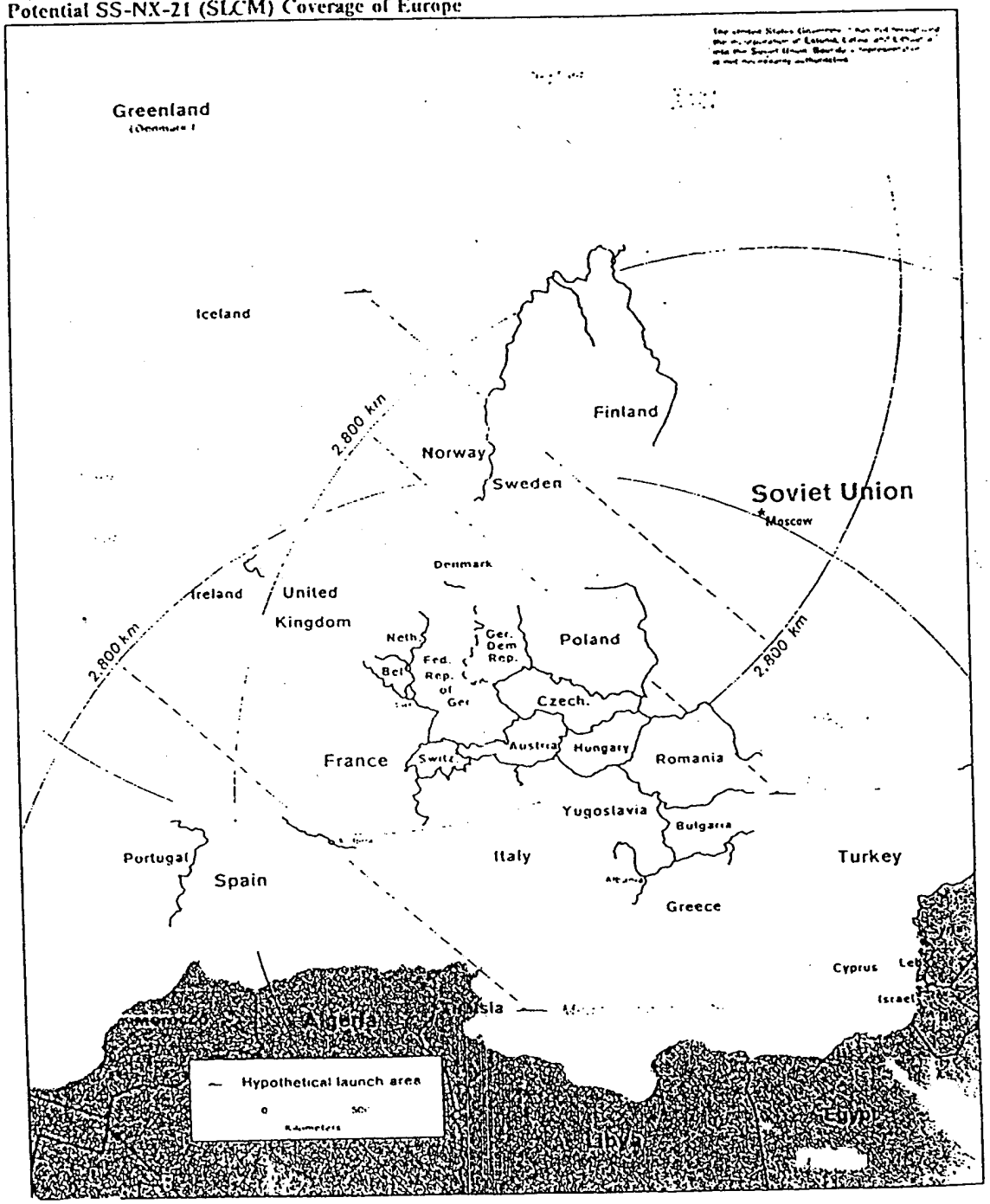
[redacted]

[redacted]

[1] Localization is the progressive refinement of a target submarine's position following its initial detection so as to facilitate either tracking or attack procedures

~~Secret~~

Figure 3
Potential SS-NX-21 (SLCM) Coverage of Europe



~~Secret~~

Figure 4
Potential SS-NX-21 (SLCM) Targets in the United States

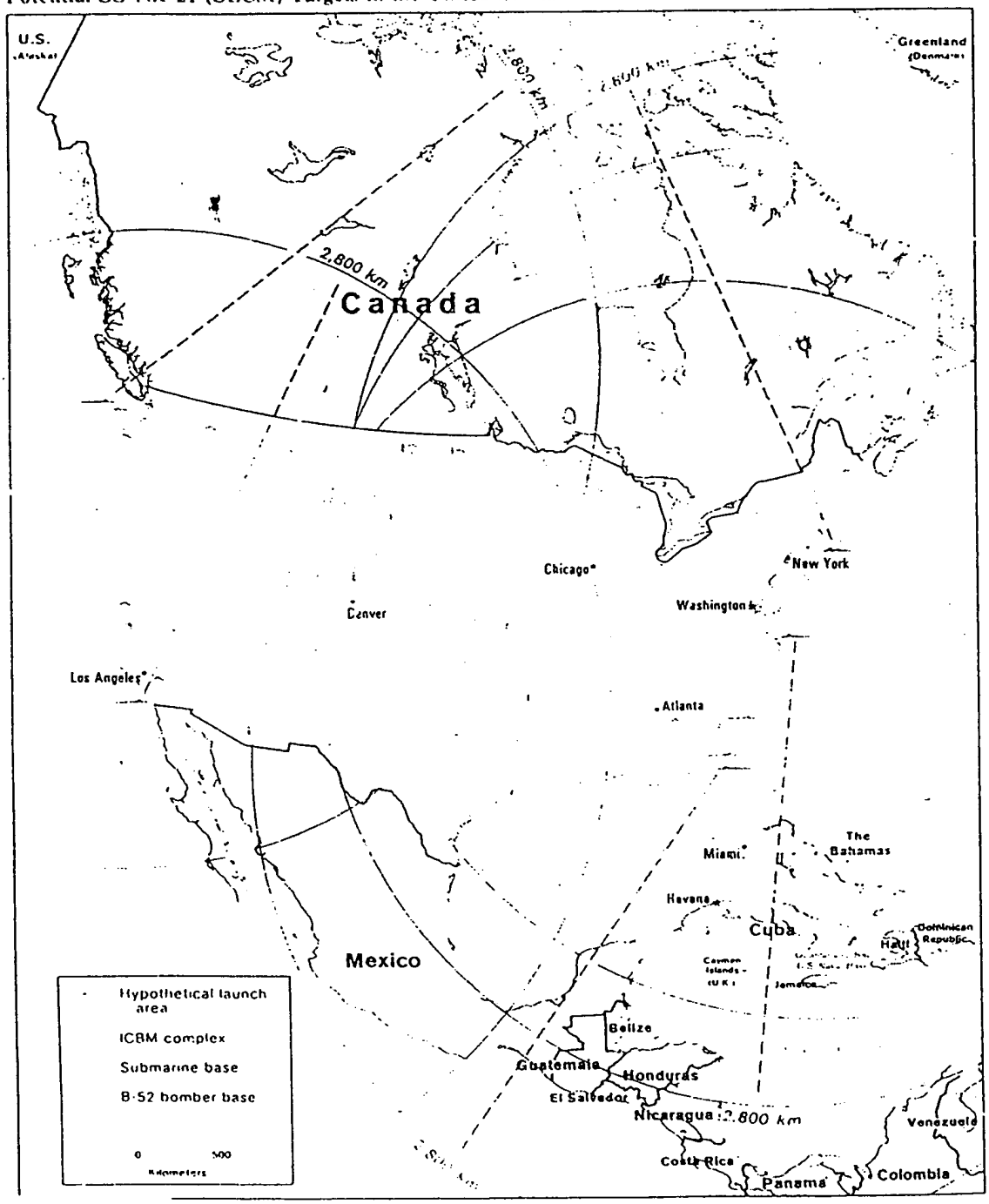


Table 2
Projected Soviet Submarine Production, 1984-94

Type and Class	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
SSBN											
D-IV	1	1	1								
Typhoon	1		1	1		1	1				
New class SSBN									1	1	1
SSGN											
O		1		1		1		1		1	
C-II follow-on				1	1	2	2	2	2	2	2
Long-range SLCM carrier			1		1		1		1		1
SSN											
V-III	2										
M		1		1		1		1		1	
Y-class SSN		1	2	1		1		1			
S	1	2	3	3	3	3	3	3	3	2	2
SS											
K	3	3	4	4	4	4	4	2	2		
Tango follow-on			1	1	1	1	2	2	2	2	2
Total general purpose units	6	8	11	12	10	13	12	12	10	8	7
Total units of all types	8	9	13	13	10	14	13	12	11	9	8

Future Prospects

In planning the general purpose submarine force that they will need for the 1990s, the Soviets have probably made three basic assumptions:

- Their submarines will become quieter at a rate faster than the United States can improve the detection ranges of its submarines.
- They will further improve their submarines' detection capabilities; either through the transfer of foreign technology or via gradual improvements in indigenously developed acoustic or nonacoustic sensor systems.
- Their submarine force will continue to enjoy a substantial numerical advantage over its US and NATO opponents.

We believe that the annual rate of Soviet submarine production will rise to 11 to 12 units during the late 1980s and early 1990s. Over 90 percent—rather than about 68 percent during the mid-1970s to mid-1980s period—of these new submarines will be general purpose units (see table 2). Despite this increase, we expect a net reduction in Soviet general purpose submarine force levels—from about 270 to 240 units—due to the slow rate of production of diesel submarines and the gradual retirement of older units. Barring a dramatic increase in Western submarine construction efforts, however, Moscow will continue to enjoy a nearly 3-to-1 advantage in total submarine numbers.

We believe that the Soviets plan to emphasize the production of nuclear-powered general purpose submarines, and we estimate that they will build about 40 percent more of these units in the next decade than they did since the mid-1970s. We expect that, as a result, the share of nuclear-powered submarines in the Navy's inventory will increase from about 43 percent to more than 60 percent by 1994 (see table 3).

Table 3
Projected Soviet General Purpose Submarine Inventory,
1984-94 [a]

Type and Class	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Nuclear-powered torpedo attack submarines (SSNs)											
E-I	5	4	3	2	1						
N	10	8	6	4	2						
A	6	6	6	6	6	6	6	6	6	6	6
V-I	16	16	16	16	16	16	16	14	14	14	14
V-II	7	7	7	7	7	7	7	7	7	7	7
V-III	18	20	20	20	20	20	20	20	20	20	20
M	1	1	2	2	3	3	4	4	5	5	6
Y SSN	1	2	3	4	5	6	6	6	6	6	6
S	1	2	5	7	11	14	16	19	23	25	27
Total	65	66	68	68	71	72	75	76	81	83	86
Nuclear-powered cruise missile submarines (SSGNs)											
E-II	20	19	18	15	13	12	11	10	8	6	4
E-II Mod	7	8	9	10	10	10	10	10	10	10	10
C-I	11	11	11	11	11	11	11	11	11	11	11
C-II	6	6	6	6	6	6	6	6	6	6	6
P	1	1	1	1	1	1	1	1	1	1	1
O	2	2	3	3	4	5	5	6	6	7	7
Y SSGN	1	1	1	1	1	1	1	1	1	1	1
C follow-on				1	2	3	5	7	9	11	13
Large SLCM carrier				1	2	2	3	3	4	4	5
Total	48	48	49	49	50	51	53	55	56	57	58
Total SSNs/SSGNs	113	114	117	117	121	123	128	131	137	140	144
Diesel-powered torpedo attack submarines (SSs)											
Z	7	4									
W	35	30	25	20	15	10	5				
R	11	8	8	6	5	4	3	2			
F	46	45	43	41	39	34	30	26	22	18	14
T	20	20	20	20	20	20	20	20	20	20	20
K	8	11	15	19	22	25	28	32	34	35	36
T follow-on			1	1	3	4	6	8	10	13	16
Total	127	118	112	107	104	97	92	88	86	86	86
Diesel-powered cruise missile submarines (SSGs)											
J	13	13	13	13	13	13	12	12	5	3	
Total	13	13	13	13	13	13	12	12	5	3	
Total SS/SSG	140	131	125	120	117	110	104	100	91	89	86

Table 3 (continued)

Type and Class	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Other types (auxiliary, command and control, training, and coastal submarines)											
SSQN	1	1	1	1	1	1	1	1	1	1	1
SSAN	1	1	1	1	1	1	1	1	1	1	1
SSQ	3	3	3	3	3	3	2	1			
SSA	3	3	3	3	3	3	3	3	3	3	3
SSC	2										
SST	4	4	4	4	4	4	4	4	4	3	2
Total	14	12	12	12	12	12	11	10	9	8	7
Total general purpose submarines	267	257	254	249	250	245	243	241	237	237	237

* Based on 1984 SCAM projections (excludes units in reserve).

The Soviets have shown little interest in accelerating the production of modern diesel-electric submarines, although diesel units constitute about 56 percent of their current general purpose submarine force. On average, only about two diesel submarines have been added to the Navy's inventory each year during the period 1974-84—a rate of procurement insufficient to keep pace with the attrition of the force's older diesels.

Production of the T-class long-range diesel submarine ceased in 1982, and a follow-on to this class has yet to appear [redacted]

Although we expect the percentage of Soviet diesel general purpose submarines to drop to about 35 percent by the early 1990s, we believe that Moscow will remain committed to the production of such units, and that new diesel classes will continue to appear.

We estimate that the four major Soviet shipyards where submarines are constructed are operating well below 60 percent of their capacity. It appears that future overhaul requirements for nuclear submarines will have relatively little impact upon the underuse of these facilities. In the next 10 years we expect to see large-scale series production (20 to 30 units) of the S-class SSN at as many as three shipyards, coupled with more limited production of Y- and M-class SSNs. [redacted] Moreover, the Soviets' annual production of titanium is more than sufficient to allow them to make increased use of this material in future general purpose submarine production

In addition to new SSN classes and SSGNs carrying advanced antiship and long-range land attack cruise missiles, in the 1990s we expect the Soviets to produce other classes of general purpose submarine designs, possibly based upon technology tested aboard the 196E and U-class SSANs and other specialized or research submarines