FAS Nuclear Forces Guide

Project 949 / Oscar

The Oscar-class nuclear-powered cruise missile attack submarine, which displaces more than 18,000 tons when under water, is one of Russia's largest and most capable submarines. As with earlier cruise-missile submarine, the Oscar was designed primarily to attack American aircraft carrier battle groups.

As with other Russian submarines, the Oscar features a double hull -- and inner pressure hull and an outer hydrodynamic hull [American submarines have a single pressure hull, with additional hydrodynamic fairings, such as the cap that encloses the bow sonar dome]. The 3.5 meter separation between the inner and outter hulls on the Oscar provides significant reserve buoyancy, and improved survivability against conventional torpedoes. These large submarines are said to be slow to dive and maneuver, though they are credited with a submerged speed of about 30 knots - sufficient to keep pace with their targets. The improved Oscar II is about 10 meters longer than the Oscar I, possibly making room for a quieter propulsion system, and feature upgraded electronic systems. The Oscar II is also characterized by a substantially enlarged fin, which should improve underwater manueverability.

The Oscars are rather poorly characterized in the open literature, with substantial discrepancies in reported submerged displacement [the upper estimates are probably closer to the mark] and maximum submerged speed [reportedly classified intelligence estimates have tended upward over time. Considerable confusion also exists as to the names of some units. During the Cold War essentially no information was publicly available concerning the names of Soviet submarines, and with the end of the Cold War the Russian Navy has exibited an annoying tendency to rename ships [a very un-American practice]. And unlike the American practice, in which hull numbers are generally assigned in a consecutive numerical sequence which corresponds to the chronological sequence of construction, the pennant numbers assigned Russian submarines [eg, K-141] do not conform to an apparent set pattern.

The submarine is equipped with two dozen SS-N-19 missiles with a range of 550-kilometers -- three times as many anti-ship cruise missiles as earlier Charlie and Echo II class submarines. The missiles, which are launched while the submarine is submerged, are fired from tubes fixed at an angle of approximately 40 degrees. The tubes, arranged in two rows of twelve each, are covered by six hatches on each side of the sail, with each hatch covering a pair of tubes. The launchers are placed between the inner pressure hull and the outer hydrodynamic hull. The torpedo tubes fire both torpedoes and shorter range anti-ship missiles, and a combination of some two dozen weapons are carried.

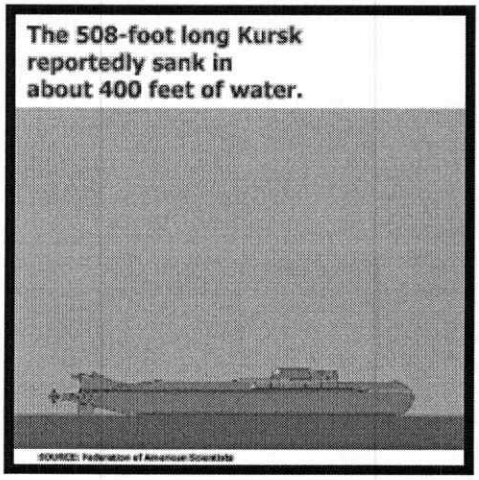
In the 1980s the Rubin Design Bureau was responsible for developing a number of third generation nuclear submarines with cruise missiles, including Projects 949 ("Granit", "Oscar I") and 949A ("Antey", "Oscar II"). The Bureau took the lead in using naval cruise missiles, designing the first cruise missile nuclear submarine -- Project 659 ("Echo I"), then Project 675 ("Echo II") and related modifications.

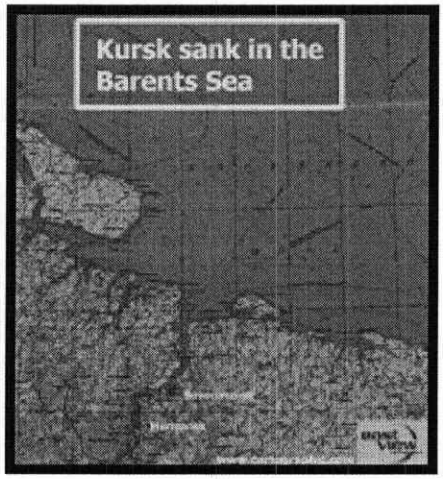
To manage the impact of its resource problems, the Russian Navy, in the early 1990's, made a series of hard choices aimed at preserving its core submarine force capabilities. These included early retirements of older and less capable units, strict controls on operating tempo, and focused maintenance on its best submarines. The first Oscar I units were decommissioned in 1996. The Russian Navy continued to invest in new construction. In the late 1990s it completed several new submarines of the third generation Oscar II SSGN. A dozen of the larger Oscar II submarines were built between 1985 and 1999 at the Sevmash yard in Severodvinsk. The status of the twelfth Oscar-II is somewhat uncertain, as some sources suggest it was comissioned in late 1999, while others suggest that outfitting was suspended after it was launched. Some Western sources suggest that construction was suspended on a thirteenth unit, but Russian sources maintain that the Oscar-II class was never intended to consist of more than twelve vessels. The fourth Oscar II [K-173 *Krasnoyarsk*] was reportedly deactivated in 1998. A fourth-generation follow-on to the Oscar was planned, but reduced defense spending forced the cancellation of the project.

On 26 January 1998 a moored nuclear-powered submarine suffered a cooling system accident. During routine tests aboard a cooling system pipe broke, releasing ammonia and nitrogen gas into the compartment. A total of 5 crew members were injured, one of whom, a Captain of the 3rd Rank, died two days later. The Oscar II submarine was reportedly the K-512 *St.Georgy Pobeditel* [formerly named *Tomsk*]. This eleventh unit of the 'Oscar II' SSGN class had been launched in July 1995 despite irregular materiel and component delivery problems.

In 1994 an Oscar submarine conducted operations off the East Coast of the United States. In July 1997 when the Oscar II submarine K-442 *Chelyabinsk* [aka *Pskov*] shadowed several US aircraft carriers off Washington state. In February 1999 an Oscar-class submarine was observed monitoring a NATO exercise off the coast of Norway. In August 1999 NATO sonar detected the presence in Western Atlantic waters of a Russian Oscar class submarine belonging to the northern fleet, based in the Arctic ports. In the mid-1999 an Oscar II-class submarine sailed from northern Russia to the Mediterranean, then on to areas off the eastern United States. In early September 1999 the crew of the *Jose Maria Pastor*, a fishing trawler registered in Almeria [southeastern Spain] reportedly snagged an Oscar submarine in its nets. The incident occured some 27 miles (50 kilometres) from the Tarifa coast (Cadiz Province), and continued for over half an hour before the submarine broke free. Another Oscar II deployed from the Russian Far East, sailing to the area around Hawaii before arriving in waters off San Diego by October 1999. It reportedly spent a week following the aircraft carrier USS John C. Stennis and the amphibious landing ship Essex.

On or about 12 August 2000, the tenth unit of the Oscar-II class, the K-141 *Kursk*, sank about 100 miles from the Russian port of Murmansk. At the time the boat was participating in the fleet's major summer exercises, involving about 30 other vessels. The *Kursk* apparently sank quickly, and did not launch distress buoys. The submarine was not carrying any nuclear weapons at the time, and there was apparently no immediate danger of radiation leaks. Considerable confusion surrounded initial reports, though apparently the *Kursk* shut down its two nuclear reactors after it was crippled. Although Russian Navy commander Adm. Vladimir Kuroyodev stated that there were "signs of a big and serious collision," subsequent reports cast doubt that the sub was damaged in a collision. The US Department of Defense stated that there was " no indication that a US vessel was involved in this accident."





Initial reports suggested that at least some of the crew were alive and communicating through rhythmic tapping on the hull. Rescue submarines that rushed to the *Kursk* reportedly found it damaged but resting upright on the seabed, at a depth variously reported as between 350 feet and 500 feet of water. According to initial reports, as of Monday 14 August 2000 at least one rescue craft, the *Kolokol*, was said to be feeding power and oxygen to the *Kursk*. Communication links with the boat's captain, Gennady Lyachin, were reportedly restored after a day of radio silence. Admiral Kuroyedov initially expressed doubts about the possiblity of rescuing the crew, stating "the chances for a positive outcome are not very high." The Russians had two India-class rescue submarines, each of which carried a pair of small rescue submarines which could reach a depth of 2,275 feet. However, these submarines and their rescue capabilities were apparently discarded by the Russians in 1995 as a cost-savings measure.

Specifications

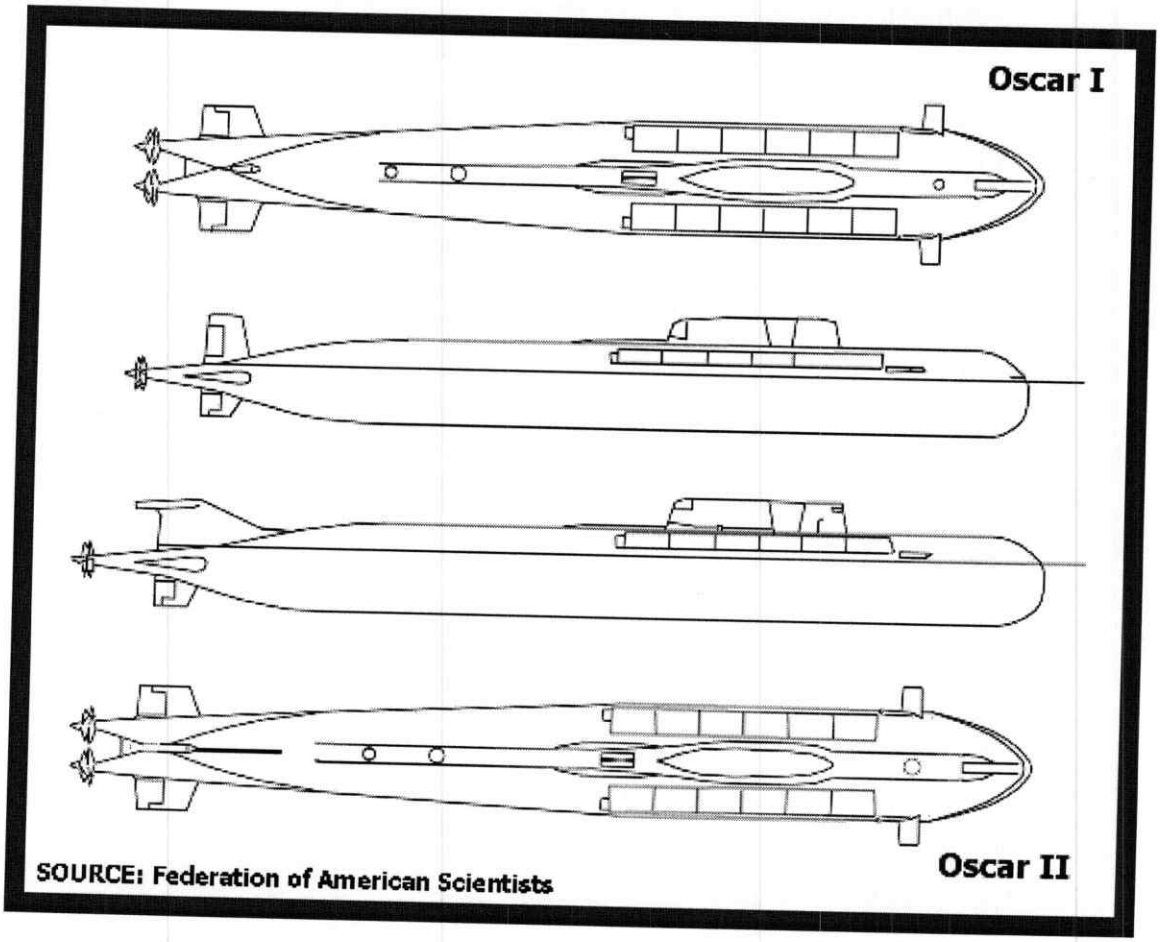
	949 (Oscar-I)	949A (Oscar-II)
Displacement (tons):	12,500 surfaced 15,500 - 22,500 submerged	13,400 - 14,700 surfaced 16,400 - 24,000 submerged
Speed (kts):	30 - 32 knots dived 15 kts surfaced	28-32 knots dived 15 kts surfaced
Dimensions (m):	143.0 meters long 18.2 meters beam (20.1 with stabilizers) 9.0 meters draft	154.0 meters long 18.2 meters beam 9.0 meters draft
Propulsion	2 VM-5 pressurized-water nuclear reactor (OK-650b), 2 steam turbines; 2/7-bladed propellerss; 90,000 shp	
Endurance:	50 days	
Crew (officer/enlisted):	44/68 (130)	

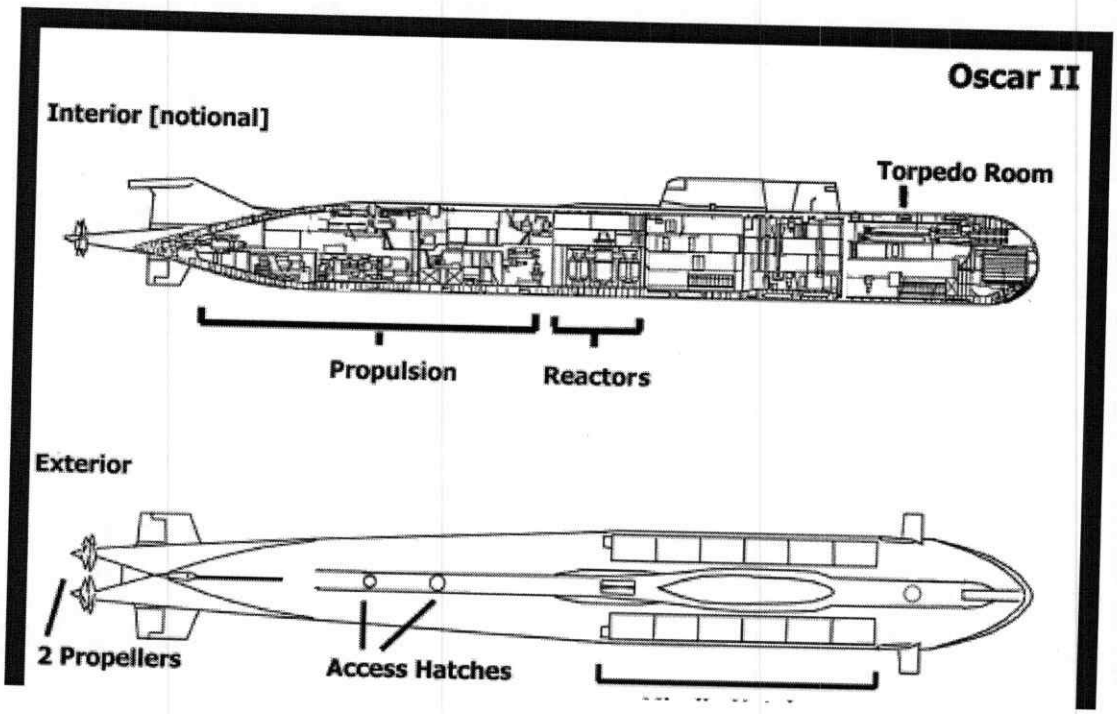
Armament:	• 24 - SS-N-19 / P-700 Granit • 4 - 533mm torpedo tubes - SS-N-15 Starfish / 82-P missiles or torpedoes • 2 - 650 mm bow torpedo tubes - SS-N-16 Stallion / 85-P missiles or torpedoes
Electronics	Radar • Snoop Pair or Snoop Half Surface Search • Rim Hat intercept array Sonar • Shark Gill (MGK-503) hull mounted • Shark Rib flank array • Mouse Roar MG-519 Hull mounted • Pelamida towed array 2 periscopes

Class Listing

Boat		Shipyard	Chronology				
NO.	Name		Laid Down	Launched	Comm.	Stricken	
Project 949 ("Granit" type), NATO code "Oscar I"							
K-525	Arkhangelsk	402 Sevmash	1978	04/**/1980	1982	1996	12 19 19 20
K-206	Murmansk	402 Sevmash	1980?	12/**/1982	1983	1996	19 19 20
Project 949A ("Antey" type), NATO code "Oscar II"							
K-148	Krasnodar	402 Sevmash	----------	08/**/1985	12/**/1986		
K-132	Irkutsk	402 Sevmash	----------	03/**/1986	01/**/1987		(n
K-119	Veronesh	402 Sevmash	----------	12/**/1987	12/**/1988		
K-173	Krasnoyarsk	402 Sevmash	----------	01/**/1989	12/**/1989		(n "T 19
K-410	Smolensk	402 Sevmash	----------	12/**/1989	12/**/1990		
K-442	Chelyabinsk	402 Sevmash	----------	01/**/1990	01/**/1991		(n
K-456	Viliuczinsk	402 Sevmash	----------	12/**/1991	11/**/1992		(e
K-266	Orel	402 Sevmash	----------	01/**/1992	01/**/1993		(e
K-186	Omsk	402 Sevmash	----------	05/08/1993	10/27/1993		
K-141	Kursk	402 Sevmash	1992	05/**/1994	10/**/1994	8/12/2000	

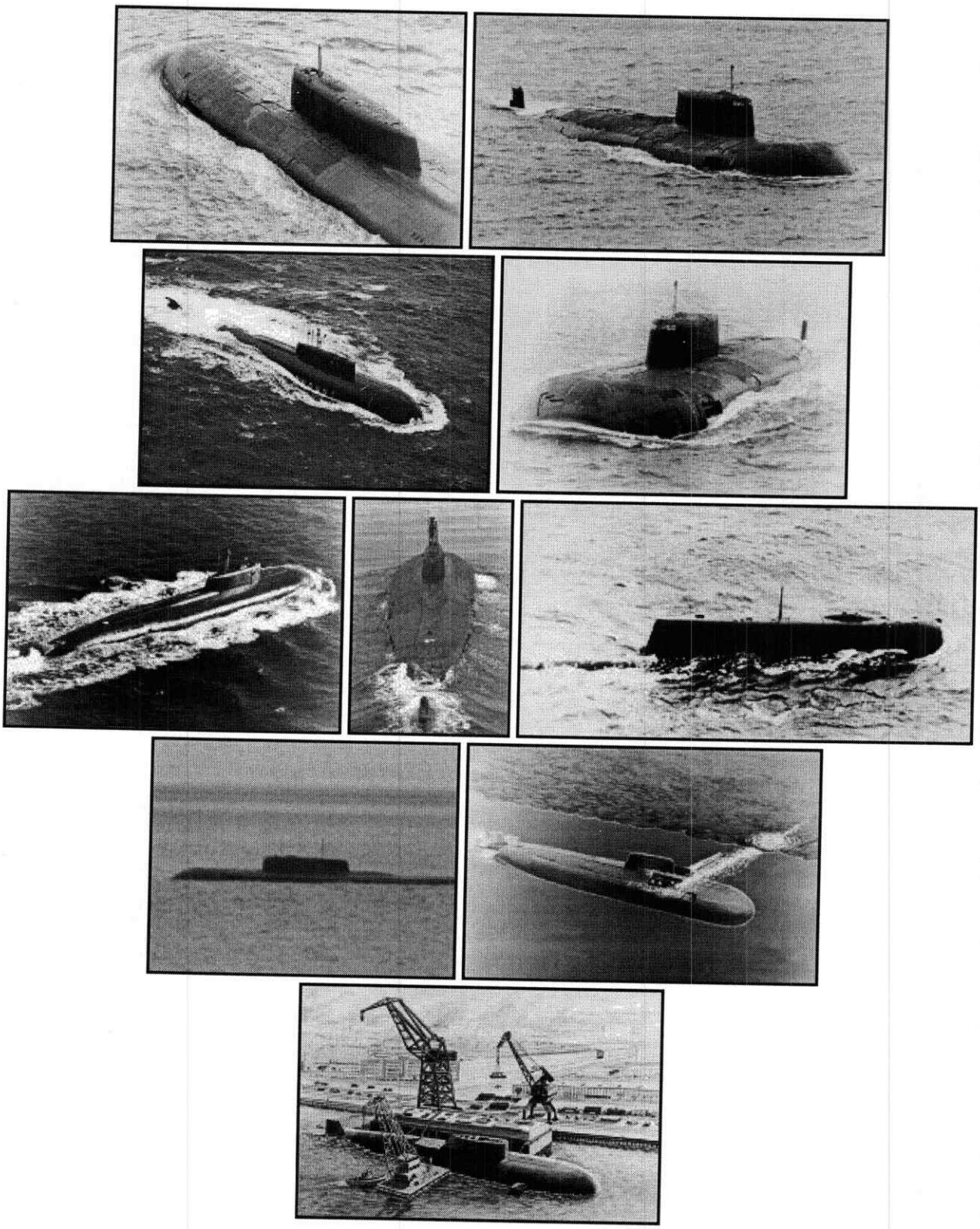
K-512	St.Georgy Pobeditel	402 Sevmash	----------	07/18/1995	12/31/1997	(e 08 01
K-530	Belgorod	402 Sevmash	----------	1998	1999	(n [c
K-___		402 Sevmash	????	????	????	[?





Missile Hatches

SOURCE: Federation of American Scientists



Sources and Resources

- RUSSIA / SUB Voice of America 14 August 2000 -- A Russian nuclear submarine is lying crippled on the sea bottom in Arctic waters. Officials say the submarine's engine failed and it sank during a routine exercise.

- RUSSIA SUB Voice of America 14 August 2000 -- Russia's senior navy commander says he is not optimistic about the prospects for a rescue.
- U.S-RUSSIAN SUB Voice of America 14 August 2000 -- President Clinton has been briefed on the plight of the sunken Russian submarine, and the United States is offering help in the recovery effort.
- RUSSIA / SUB Voice of America 14 August 2000 -- Officials at the Pentagon say there is no information to suggest that a U-S submarine or surface vessel had been involved in a collision with the Russian submarine.
- Russian Sub Stranded on Sea Bottom By Daniel Williams Washington Post August 15, 2000 - The submarine Kursk sank about 100 miles from the Russian port of Murmansk during a naval exercise that involved about 30 vessels. Two U.S. Navy submarines were operating in the area at the time of the accident, and one reported hearing an explosion at the site Saturday. The Kursk reportedly shut down its two nuclear reactors after it was crippled. Crewmen appeared to be alive and were communicating through rhythmic tapping on the hull. Small rescue submarines circling the Kursk found it damaged but sitting straight on the seabed.
- Aboard Kursk, 'Submariner's Worst Nightmare'; by Steven Mufson and Kathy Sawyer, Washington Post August 15, 2000 - "Obviously something seriously is wrong, because this is a big, robust sub that was designed to be hard to sink," said John Pike of the Federation of American Scientists. "They didn't just stub their toe."
- 116 Russians trapped in submarine By Marcus Warren in Moscow, Ben Fenton in Los Angeles and Michael Smith, Defence Correspondent, [London] Telegraph Tuesday 15 August 2000 -- John Pike, of the Federation of American Scientists, an independent group, said: "It sounds as if it suffered a combination of human error and mechanical failure. Russian subs are poorly maintained and rarely go to sea. Most of their units have spent most of the past decade in port."
- RUSSIA / SUB Voice of America 15 August 2000 -- Bad weather is hindering efforts to rescue 116 Russian sailors trapped aboard a crippled nuclear submarine in the Russian Arctic.

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