Order Code RS21007
Updated February 6, 2002

Navy Trident Submarine Conversion (SSGN) Program: Background and Issues for Congress

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Summary

The Administration's proposed FY2003 defense budget requests $1,018 million for the Navy's program to refuel and convert 4 Trident ballistic missile submarines (SSBNs) into cruise-missile-carrying and special operations forces (SOF) support submarines (SSGNs). The Administration's proposal follows Congressional action last year on the FY2002 defense budget to expand the Administration's originally proposed 2-boat Trident conversion program into a 4-boat program. This report will be updated as events warrant.

Background

Trident Submarines. The Navy currently operates 18 Ohio (SSBN-726) class nuclear-powered ballistic missile submarines (SSBNs) as part of the U.S. strategic nuclear force. They are commonly called Trident submarines because they carry Trident submarine-launched ballistic missiles (SLBMs). The first Trident entered service in 1981, the 18th in 1997. The first 8 (SSBNs 726 through 733) were armed with Trident I (C4) SLBMs; the final 10 (SSBNs 734 through 743) are armed with larger and more powerful Trident II (D5) SLBMs. The boats were originally designed for a 30-year life but have now been certified for a 42-year life, composed of 20 years of operation, a 2-year mid-life nuclear refueling overhaul, and then another 20 years of operation.

Origin of SSGN Conversion Concept. The Clinton Administration's 1994 Nuclear Posture Review (NPR) recommended a strategic nuclear force for the START II strategic nuclear arms reduction treaty that included 14 Tridents (all armed with D5 missiles) rather than 18.[1] As a result of this recommendation, there has been interest in Congress and elsewhere since 1994 in the idea of converting the first 4 Trident SSBNs

[1] Consistent with this recommendation, the 5th through 8th Tridents (SSBNs 730 through 733) are being converted to carry the same D5 missiles carried by the final 10 Tridents. These Trident D5 conversions need to be distinguished from the Trident SSGN conversions discussed in this report.

(SSBNs 726 through 729) into non-strategic submarines called SSGNs,[2] so as to make good use of the 20 years of potential operational life remaining in these 4 boats and bolster the U.S. attack submarine (SSN) fleet, which has been significantly reduced in recent years.[3] The Bush Administration's Nuclear Posture Review, completed in January 2002, retained the idea of reducing the Trident SSBN force to 14 boats.

The SSGN conversion idea has received support from various observers since the mid-1990s[4] and is sometimes mentioned as a program that can contribute to the transformation of U.S. naval forces.[5] The Navy in previous years supported the SSGN concept in principal but also expressed concern over its ability to finance all 4 conversions while also funding other priorities. Congress appropriated $1 million in FY1999 to study the conversion concept and directed the Secretary of Defense to report on the issue to the congressional defense committees by March 1, 1999. (The report was delivered to Congress in classified and unclassified form in June 1999.) The project received $12.7 million in FY2000 and $35.8 million in FY2001 for further studies and concept development work.

A few observers, notably naval author and analyst Norman Polmar, have questioned the merits of the SSGN concept, in part on the grounds that the Tomahawk-launch and SOF-support missions of the converted boats would conflict with one another.[6]

Description of the Conversion. The Tridents as converted would carry up to 154 Tomahawk cruise missiles (or other land attack missiles) and 66 Navy SEAL special

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[2] The G in SSGN stands for guided missile, a reference to the Tomahawk or some other land attack missile.

[3] The recommendation for a 14-boat force was made in expectation that the START II treaty would enter into force. The treaty has not entered into force. Section 1302 of the FY1998 defense authorization act prohibited U.S. strategic nuclear forces from being reduced during FY1998 below START I levels (including 18 Trident SSBNs) until the START II treaty entered into force. This prohibition was extended through FY1999 by Section 1501 of the FY1999 defense authorization act and was made permanent by Section 1501 of the FY2000 defense authorization act. The latter provision, however, also contained a section that would permit a reduction to 14 Trident SSBNs, even without START II entering into force, if the President certifies to Congress that this reduction would not undermine the effectiveness of U.S. strategic nuclear forces. For a general discussion of the START Treaties, see CRS Issue Brief IB98030, *Nuclear Arms Control: The U.S.-Russian Agenda*, by Amy F. Woolf. Washington, 2001. (Updated periodically) 16 p.

[4] See, for example, Houley, William P. Making the Case for SSGNs. *U.S. Naval Institute Proceedings*, July 1999: 47-49; Blazar, Ernest. A "New Dimension" in Warfighting Capabilities. *Sea Power*, July 1999: 37-40; Krepinevich, Andrew. The Trident "Stealth Battleship," An Opportunity for Innovation. CSBA Backgrounder, February 24, 1999, 4 p.; Cote, Owen R. Jr. How To Spend Defense Dollars. *Washington Times*, January 15, 1999: 19.

[5] See CRS Report RS20851, *Naval Transformation: Background and Issues for Congress*, by Ronald O'Rourke. Washington, 2001. (updated periodically) 6 p.

[6] See Polmar, Norman. A Submarine for All Seasons? *U.S. Naval Institute Proceedings*, August 1999: 87-88, and Polmar, Norman. The Submarine Arsenal Ship. *The Submarine Review*, January 1997: 7-9.

operations forces (SOF) personnel.[7] Each boat would retain its 24 large-diameter SLBM launch tubes but be modified as follows:

- SLBM tubes 1 and 2 would be altered to serve as lockout chambers for the SOF personnel. Each chamber would be equipped to connect to an Advanced SEAL Delivery System (ASDS) or Dry Deck Shelter (DDS).[8] Other spaces aboard the submarine would be converted to berth and support 66 SOF personnel.

- Tubes 3 through 24 would be modified to carry 7 Tomahawks each, for a total of 154 Tomahawks. Alternatively, tubes 3 through 10 could be used to carry additional SOF equipment and supplies; leaving tubes 11 through 24 to carry 98 missiles.

- The Trident SLBM fire control systems would be replaced with tactical missile fire control systems, and certain other systems aboard the boats would be modernized.

In addition to these changes, each boat would undergo a mid-life engineering (nuclear) refueling overhaul (ERO). Without EROs, the boats would exhaust their nuclear fuel cores and have to be inactivated and dismantled in the FY2003-FY2005 time frame.

According to one potential Navy plan for carrying out the conversions, the first Trident conversion, for SSBN-726, would begin in early FY2003 and be completed in early FY2006. The second, for SSBN-728, would begin at about the same time and be completed at the start of FY2007. The third, for SSBN-727, would begin at the start of FY2004 and be completed, like the second, at the start of FY2007. The fourth, for SSBN-729, would begin in mid-FY2004 and be completed at the end of FY2007.[9]

General Dynamics' Electric Boat Division (EB) of Groton, CT and Quonset Point, RI, the designer and builder of all 18 Tridents, would do the design and engineering work for the program and will likely manufacture some components to be installed into the converted boats. The first part of the shipyard work (the refueling overhauls) would be performed at the Puget Sound Naval Shipyard (PSNSY) at Bremerton, WA (the first and third conversions) and the Norfolk Naval Shipyard (NNSY) at Norfolk, VA (the second and fourth conversions). The Navy has not yet decided who will perform the second part of the shipyard work (the actual conversions).

Missions and Concept of Operations. Each SSGN would be operated with 2 crews, like SSBNs. As a result, for each 2 SSGNs, at least one would be on station in an overseas operating area at any one time. The boats would operate as forward-deployed, covert platforms for conducting strike (i.e., land attack) and SOF-support missions. In the covert strike role, the boats could fulfill a substantial portion of the in-

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[7] The Navy's SOF personnel are called SEALs, which stands for Sea, Air, and Land.

[8] The ASDS is a new mini-submarine for Navy SEALs; the DDS is a less-capable predecessor.

[9] Woods, Randy. Aldridge Approves SSGN Program Plan; Navy Aims For FY-07 Deadline. *Inside the Navy*, February 4, 2002.

theater Tomahawk missile requirements that are established by regional U.S. military commanders, and thereby permit forward-deployed multimission Navy surface combatants and SSNs to concentrate on other missions. In their SOF-support role, the SSGNs would be functional replacements for the James K. Polk (SSN-645) and the Kamehameha (SSBN-642) – 2 older-generation SSBNs that were converted into SSNs specifically for supporting larger numbers of SOF personnel. The Polk was retired in 1999 at age 33; the Kamehameha, commissioned in 1965, is currently awaiting decommissioning..

Cost. The Navy estimates the total cost for refueling and converting 4 Tridents (including both research and development as well as procurement costs) at about $3.3 billion, or about $825 million per boat. Refueling and converting 4 Tridents would avoid a near-term expenditure of $440 million to inactivate and dismantle them. The net near-term additional cost to the budget to convert the 4 boats rather than inactivate and dismantle them is thus $2.9 billion, or about $725 million per boat.

The Department of Defense (DoD) estimated in 1999 that the operating and support (O&S) cost for 2 SSGNs over 20 years would be $1,645.3 million in constant FY1998 dollars, or an average of about $41 million per boat per year. Using this figure, the total 20-year life-cycle cost for 4 Trident SSGNs (including research and development costs, annual operation and support costs, and eventual inactivation and dismantlement costs) would be about $7.0 billion.

Arms Control. Since the SSGNs as converted would retain their large-diameter SLBM launch tubes, they would remain accountable as strategic nuclear launch systems under the START strategic nuclear arms reduction treaties. Four SSGNs, even though they carried no SLBMs, would be counted for treaty purposes as carrying 96 Trident SLBMs each with 4 nuclear warheads, for a total of 384 warheads. Having to include 384 "phantom" warheads within the allowed START II U.S. strategic nuclear force of 3,500 warheads was viewed as problematic from a U.S. perspective, since it would deprive the United States of about 11 percent of its permitted warheads. The alternative of asking Russia to exempt SSGNs from the counting scheme was also viewed as problematic, since Russia would likely either refuse or ask for something significant in return. The phantom warhead issue would be even more pronounced under a potential START III treaty that might limit the United States to 2,500 or fewer nuclear warheads.[10]

The phantom warhead issue appeared to have receded due to the Bush Administration's originally stated intention to not complete ratification of START II, and to instead reduce U.S. strategic nuclear forces unilaterally, without the use of new treaties. This would leave only the older START I treaty, with its much higher permitted nuclear force levels, as an in-force treaty against which the SSGNs could be counted. On February 5, 2002, however, Secretary of State Colin Powell announced that the United States is now seeking a legally binding agreement with Russia on future levels of strategic nuclear weapons. This could make the phantom warhead issue once again potentially relevant.

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[10] U.S. Department of Defense. *Analysis of Converting Trident-Class Ballistic Missile Submarines (SSBNs) to Nuclear-Powered Guided-Missile Submarines (SSGNs)*. Washington, 1999. (Unclassified version) p. 4-3.

FY2002 Funding Request and Congressional Action. The Administration for FY2002 requested $116.4 million ($30 million for research and development and $86.4 million for procurement) to begin the refueling and conversion in SSGNs of SSBNs 727 and 729, and $26.1 million to begin the inactivation and dismantlement of SSBNs 726 and 728. Prior to submitting its amended FY2002 defense budget in June 2001, the Administration cited the Trident SSGN concept as an example of its plans for defense transformation. It therefore came as somewhat of a surprise, particularly to supporters of the SSGN concept, that the Administration requested funding to convert only 2 of the 4 Tridents.

Navy officials said that the decision to pursue a 2-boat rather than 4-boat SSGN conversion program was driven in part by Navy budget constraints. It was also explained that the deadline for committing to the refueling and conversion of SSBNs 726 and 728 on a timely basis[11] had passed some time between late 2000 and June 2001. This also came as a surprise to some observers, since the Navy during the intervening months had not done much to publicize the impending deadline. The Navy later explained, however, that refueling and converting SSBNs 726 and 728 would still be possible if funds were provided in FY2002, though the schedule for planning and carrying out the operation would now be less than optimal.

The conference report (H.Rept. 107-333 of December 12, 2001) on the FY2002 defense authorization bill (S. 1438) increased the research and development funding for the program by $15 million, to $45 million, and increased procurement funding for the program by $51 million, to $137.4 million. The total authorization of $182.4 million – a $66-million increase over the request – was intended to support a 4-boat conversion program, but is less than the $163-million increase in FY2002 funding that the Navy identified in 2002 as the minimum increase needed to support the minimal FY2002 needs of a 4-boat program.

The conference report (H.Rept. 107-350 of December 19, 2001) on the FY2002 defense appropriation bill (H.R. 3338) increased research and development funding for the program by $45 million, to $75 million, and increased procurement funding for the program by $279 million, to $365.4 million. The total appropriation of $440.4 million – a $324-million increase over the request – was intended to support a 4-boat program and exceeds the $307-million increase in FY2002 funding the Navy identified in FY2002 as the amount needed to fully support the FY2002 needs of a 4-boat program. FY2002 appropriations for the program are thus in excess of authorizations.

FY2003 Funding Request. The Administration's proposed FY2003 defense budget requests $1,018 million to support the FY2003 funding requirements of a 4-boat

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[11] As a matter of policy for ensuring the safety and reliability of nuclear propulsion, nuclear-powered ships with exhausted nuclear fuel cores are not permitted to wait any significant time between the exhaustion of their nuclear fuel cores and the completion of preparations to refuel them. If a ship cannot go immediately into a refueling operation, it is instead permanently inactivated. A decision to refuel a ship must therefore be made by a certain date prior to the refueling, so that the fuel cores and other equipment needed can be ordered and manufactured in time to be ready for installation when the ship comes into dry dock.

Trident conversion program. Table 1 below shows funding for the program for the period FY2000-FY2007.

Table 1. Funding for Trident SSGN Conversion Program
(in millions of then-year dollars)

	Fiscal Year								
	00	**01**	**02***	**03**	**04**	**05**	**06**	**07**	**Total**
R&D	12.7	35.8	75.0	83.0	45.0	20.0	12.0	0	515.4
SCN	0	0	355.4	825.3	936.0	504.7	170.3	0	2559.8
OPN	0	0	0	110.0	0	0	110.0	0	220.0
Total	12.7	35.8	430.4	1018.3	981.0	524.7	292.3	0	3295.2

R&D is funding in the Navy's Research, Development, Test & Evaluation (RDT&E) appropriation account. SCN is procurement funding in the Navy's Shipbuilding and Conversion, Navy (SCN) account. OPN is procurement funding in the Navy's Other Procurement, Navy (OPN) account.

Sources: For SCN figures for FY2002-FY2007: U.S. Navy data sheet provided to CRS, February 4, 2002. For R&D and OPN figures: Woods, Randy. Pentagon FY-03 Budget Requests $1 Billion For SSGN Next Year. *Inside the Navy*, February 4, 2002.

* The amount appropriated was $440.4 million, including $365.4 for procurement in SCN. The amount authorized was $182.4 million. The Navy's FY2003 budget submission shows $430.4 million in funding, including $355.4 million in SCN, reflecting a $10-million downward adjustment to the FY2002-appropriated figure for SCN.

Issues for Congress

Potential issues for Congress for FY2003 regarding the Trident conversion program include the following:

- **Reconciling FY2002 authorization and appropriation.** As mentioned earlier, the FY2002-appropriated funding level for the program exceeds the FY2002-authorized funding level. Technically, appropriations for a defense program may not exceed authorizations. The defense oversight committees may seek to reconcile the authorized and appropriated funding levels through a DoD reprogramming action or some other mechanism. If the issue is resolved closer to the authorized figure, it may raise questions about the Navy's ability to execute a 4-boat program as currently planned by the Administration.

- **Program schedule.** The defense oversight committees may also wish to examine the Administration's proposed schedule for carrying out the refuelings and conversions. Changes in the schedule could affect the total cost of the program.