Executive Summary

This conversion project is a result of exploring a material alternative to meet the mission need for a naval combatant that provides Special Operating Forces (SOF) and Strike Warfare support for the 21st century. The existing SOF submarines (SSBN-642 and 645) will be decommissioned in 2001 and current submarine strike capability is limited to 12 VLS cells plus some additional torpedo tube launched missiles. The chosen alternative is a conversion of the Ohio class (SSBN-726) or “Trident” submarine. The first 8 Tridents (SSBN-726 to 733) will need to be either upgraded to the D-5 missile, converted to a different mission purpose, or decommissioned. The missile upgrade is a costly option whose merits are unclear in light of the end of the cold war. The allowable hull life has been extended to 42 years based on engineering performance and predictions, making the decommissioning of such a valuable ship unrealistic. If the Russian Republic ratifies the Strategic Arms Reduction Treaty, START II, then the US must disable the ballistic missile capability of 4 of the 18 Tridents in some verifiable way. The opportunity exists to convert these 4 Tridents into SOF/Strike submarines.

SOF/Strike Submarine Concept

The SOF/Strike submarine must be able to covertly transport, deliver and extract SOF, launch and support precision strike weapons, and conduct Operations Other Than War (OOTW). The basis of this conversion is to remove all 24 Trident I (C-4) missiles and associated launch equipment, and to clear out the Missile Control Center (MCC).
The empty tubes and MCC are used to install new equipment to meet the mission need. The effectiveness of various combinations of the chosen equipment in meeting the mission need is assigned an Overall Measure of Effectiveness (OMOE) and a cost. Each of the combinations is a possible ship concept or “variant”. A computer program incrementally varies each attribute and calculates a cost for each unique variant. The cost-effective solutions can be found by plotting the OMOE versus cost of all variants. The best variant or solution is chosen to minimize cost while maximizing OMOE.

The SOF/Strike Submarine is capable of fulfilling the mission needs of both the special operations and the strike communities. It is a substantial improvement over any current submarine SOF platform and also offers a significant improvement in submarine strike operations. The modifications made and technologies inserted allow the primary mission areas, Special Operations, Strike, and OOTW, to be effectively achieved, based on a prospective warfare environment involving increased small unit insertions in the littorals. The SOF/Strike Submarine will deliver the SOF vehicles (Advanced Swimmer Delivery System (ASDS), or Dry Deck Shelter (DDS) which includes the MK-VIII Swimmer Delivery Vehicle (SDV)), and men as close as possible to the objective, and then the vehicles will transit closer in.

The SOF Steering Committee lists the desired high priority capabilities as communications/connectivity, real time intelligence and threat warning, improved habitability/deployment endurance, stowage volume, and OOTW capabilities. The major needs of the Strike community are strike missile load-out capacity between 72 and 132, and high data rate communications. All of these items are addressed and implemented into the design. The final submarine conversion concept retains the propulsion, electrical, and anti-submarine warfare systems of the Ohio class SSBN, with the additional characteristics:

- 91 Tomahawk Strike Missiles (in 13 tubes)
- Two SOF delivery vehicles (ASDS and/or DDS) attached to the forward tubes
- Double lock-in/lock-out chambers (2 tubes) allowing a complete SOF team (16 men) to simultaneously swim out.
- Habitability, readiness equipment, stowage, and support for 4 SOF teams for a 45-day endurance period.
- A 40-mm multi-purpose naval gun (1 tube)
- Shoulder launched AAW Stinger missiles
- General storage space in unused portions of the tubes
- Raytheon Submarine High-data rate (HDR) communication system
- Improved Buoyant Cable Antenna (BCA)

The SOF/Strike Submarine Concept is:

- A cost effective solution to the SOF/Strike mission needs
- A stealthy complete SOF transport and support vessel
• A viable **Strike Warfare** platform
• An effective maritime interdiction/**OOTW** platform

The engineering details and arrangements are fully described in the report

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