



GIANT SHADOW

*SSGN ISR & NBC Force Protection Mission
Limited Objective Experiment*

BACKGROUND

An SSGN outfitted with Special Operations Forces (SOF) equipment, ordnance and personnel offers the potential for a significant improvement in our nation's ability to conduct clandestine maritime SOF operations. The large capacity of the SSGN permits a significant increase in the number of SOF on board, the number of days on station, and the number of missions conducted without replenishment. These increased capabilities, along with improved habitability, mission planning, and physical readiness facilities, allow SSGN to perform clandestine maritime SOF operations over an extended period of time that spans the full spectrum of conflict from early intelligence and warning stages through full-scale conflict.



The initial baseline for SSGN calls for supporting SOF and launching Tomahawk missiles. Potential future transformation technologies being examined now would employ advanced unmanned vehicles and sensors on the SSGN, enhancing SOF support by allowing the ship to extend its reach into shallow waters and far inland. Such enhancements would provide a significant increase in SSGN capabilities and make the ship an even more potent weapon in the nation's maritime arsenal.

The SSGN is a key element of military transformation. SSGN will support joint warfighting with unique SOF capabilities, large-scale strike packages and, eventually, advanced vehicles and sensors in one clandestine, survivable platform. In addition, it will serve as a transformation "bridge" for submarine delivery of joint payloads by offering a setting for experimentation and development of offboard vehicles and sensors. The large volume of SSGN's missile tubes will allow incorporation of advanced payloads for enhanced Intelligence, Surveillance and Reconnaissance (ISR), including significant improvements in mine reconnaissance and acoustic surveillance.

SSGN achieves Sea Strike, Sea Shield and Sea Basing through:

- Employment of Special Operations Forces (and future unmanned vehicles and sensors) to extend the submarine's reach, critical to gaining and sustaining battleforce access;
- Use of onboard equipment, Special Operations Forces (and future unmanned vehicles) to develop and share knowledge with Combatant, Joint and National Commanders;
- Conducting covert organic Intelligence, Surveillance and Reconnaissance and employment of Special Operations Forces (and future unmanned vehicles and sensors) to deter conflict and counter weapons of mass destruction; and
- Large volume Tomahawk Strike and Special Operations Forces (and future submarine launched) munitions to project close-in power with surprise.

Enhancing SSGN's utility with unmanned vehicles and sensors will further the transformational nature of this platform.

The SSGN conversion concept meets Secretary of Defense Donald Rumsfeld's definition of transformation, because SSGN, with its tremendous payload, can employ technologies developed by others to create affordably an entirely new capability for the joint force. It remolds the SSBN to perform joint missions never envisioned by its designers, for a fraction of the cost of developing a comparable capability from scratch.

GIANT SHADOW: SSGN ISR & NBC FORCE PROTECTION MISSION LOE

The Undersea Warfare Directorate of the Naval Sea Systems Command will sponsor a Limited Objective Experiment (LOE) called GIANT SHADOW in January 2003. GIANT SHADOW is the first LOE under the Sea Trial initiative of the Chief of Naval Operation's "Sea Power 21" vision. This effort is the first in a planned series of SSGN Transformational Payloads and Sensors Experiments. The experiments will be done on OHIO Class submarines prior to the ships' overhaul and conversion to test SSGN capabilities for employment by the joint force. This first event will test an SSGN ISR and Nuclear-Bio-Chem (NBC) Force Protection Mission.

GIANT SHADOW will:

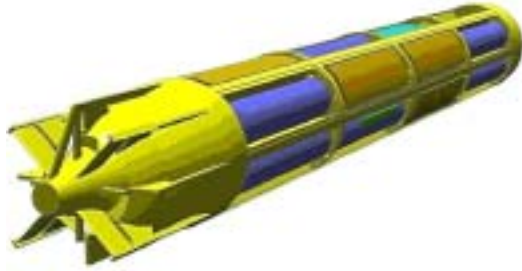
- Explore how a network of forces consisting of a stealthy platform (SSGN), Special Operations Forces, Unmanned Vehicles (UUVs & UAVs) and sensors (underwater, overhead, and ground) could be used to clarify ambiguous intelligence and provide persistent ISR, and then develop, recommend, and execute appropriate courses of action within the guidance of the Joint Commander, including time-critical strike;
- Assess the marginal or incremental value of this network of forces and their ability to provide a powerful new capability to enhance asymmetric operations against future, non-state threats to find, fix and finish these threats;
- Demonstrate time-critical cueing and fusion of manned, unmanned, and unattended sensor information;
- Determine whether an orbiting UAV with a COTS communications network repeater could reduce reliance on overburdened satellite channels; and
- Test how this network of forces might enable SOF/SSGN to transition from reactive to preemptive operations.

GIANT SHADOW is being preceded by and coordinated with an at-sea demonstration and validation (DEMVAl) test of the Tomahawk launch concept from the USS FLORIDA (SSBN 728) prior to starting the conversion to SSGN.

To perform the experiment, NAVSEA selected the Forward Pass Consortium, one of two industry teams executing the Submarine Payloads and Sensors Project. Members of the Consortium include Raytheon Company (Lexington, MA); Electric Boat Corporation (Groton, CT); The Boeing Company (Chicago, IL); and Rite-Solutions (Stonington, CT). Additional participants include Pennsylvania State University Applied Research Laboratory (State College, PA); Naval Oceanographic Office (Bay St. Louis, MS); Naval Undersea Warfare Center (NUWC) Newport Division (Newport, RI); and NUWC Keyport Division (Keyport, WA).

Military units taking part in GIANT SHADOW include USS FLORIDA; elements of Naval Special Warfare Group Four; Naval Meteorology and Oceanography Command's USNS *Mary Sears* (T-AGS-65); MV *Dolores Chouest*; and Hairy Buffalo, NAVAIR's Time Sensitive Strike and Network Centric Warfare Test Aircraft. The experiment will be conducted at the Atlantic Undersea Test and Evaluation Center (AUTEc) in the Bahamas.

Technologies being evaluated include NBC sensor, ISR, and targeting systems (some of which are employed by SOF supported by Unmanned Vehicles); strike assets; and a C4I network. All of these assets will be covertly delivered and supported by the submarine. To show the utility of unmanned vehicles, a large UUV will be launched from the missile tube of the SSGN to conduct a long-range ISR and Mine Countermeasures (MCM) surveillance in support of SOF insertion. The UUV will also resupply SOF elements inserted ashore for strategic reconnaissance of suspected WMD facilities.



The Consortium will use the Seahorse UUV, which was developed by Penn State ARL for the Naval Oceanographic Office. This vehicle measures 28 feet, 10 inches long by 38 inches wide and weighs 10,500 lbs. It is powered by dry cell batteries and has a range of 300 nautical miles. This effort marks the first time a large UUV will be launched from a submarine. This experiment is consistent with the Navy's UUV master plan. The Navy's program office for UUVs (PMS 403) intends to use information developed in this experiment to support the development of UUV programs such as the Mission Reconfigurable UUV (MRUUV).

Another unmanned vehicle, a UAV, will be launched and recovered at a shore location to participate in the LOE. The UAV will serve as a relay node for an RF communications network and provide ISR for over-the-horizon surveillance. UAV launch from the SSGN will not be demonstrated for this experiment; this organic capability is envisioned as a potential future submarine upgrade, pending further development of advanced encapsulation techniques. The Hairy Buffalo aircraft will provide advanced ISR and communications support to the simulated SSGN and SOF elements.

For the UAV asset, the Boeing Company is providing the ScanEagle, a vehicle 4 feet long with a 7-inch diameter fuselage and 10 foot wingspan. With a 1-kilogram payload, the ScanEagle can stay aloft for about 15 hours and operate out to 500 nautical miles.



Analysis and recommendations regarding the military utility of technologies evaluated in Giant Shadow will be provided by Naval Warfare Development Command, Newport, Rhode Island.

The next experiment is planned for June 2004.

For more information, contact Naval Sea Systems Command Office of Congressional and Public Affairs at (202) 781-4124