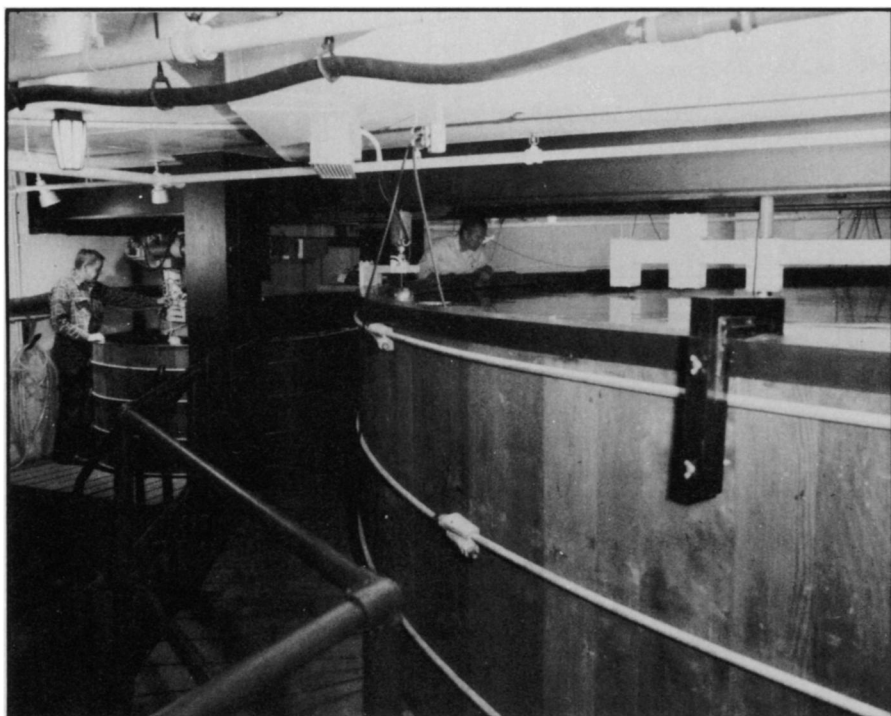


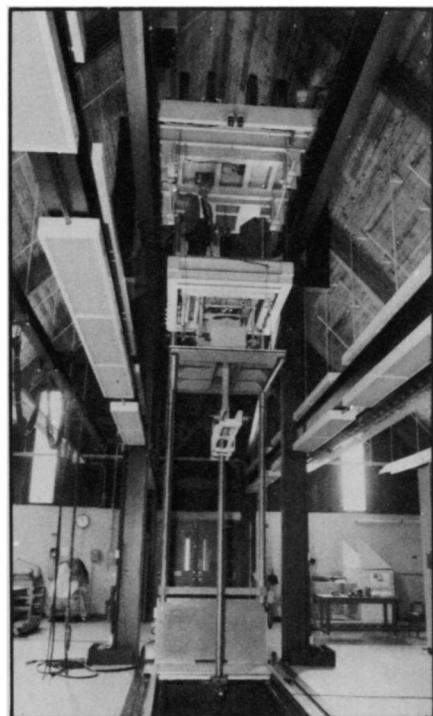
The Navy's New Acoustic Chapel

A recently completed hydroacoustic laboratory will allow testing of exquisitely sensitive underwater weaponry

BY JOHN H. DOUGLAS



Large, freshwater tank (right) and smaller saltwater tank that hold acoustic devices.



Assembly for lowering sensors into tanks.

NSWC

When the *Glomar Explorer* set out on its now famous search for a sunken Soviet submarine (SN: 3/29/75, p. 204), its skipper knew exactly where to go, for when the Russian sub exploded and sank far from land in three miles of water in 1968, the U.S. Navy was listening. In the succeeding flap over propriety of the salvage venture and the ponderous technology of the specially designed vessels involved, little mention was made of the extraordinary feat of locating the sub within a 10-square-mile area—when a Soviet task force failed to locate their sub.

The secret, of course, was a network of supersensitive listening devices the Navy has been deploying for several years, devices now so sophisticated that a new Hydroacoustic Facility has been constructed at the Naval Surface Weapons Center (NSWC) in Silver Spring, Md., to provide an adequately hushed environment for testing. The facility was officially dedicated on May 19.

Built with what architects call a “cathedral ceiling”—a high, steep roof supported by bent laminated wooden columns—the facility resembles a quiet

chapel in the woods. The design was chosen so that a tall crane assembly can manipulate acoustic devices weighing up to a thousand pounds into two tanks of water just below the floor of the large central room. For their part, the tightly girded redwood tanks resemble outsized fermentation vats in an old Abbey wine cellar.

But here the analogy ends, because a roomful of electronics has transformed these simple surroundings into a precisely controlled model of an infinite sea, into which are plunged some of the most sophisticated pieces of ordnance of modern naval warfare: sound projectors that could guide an underwater swimmer to his target, the whole nose assembly of a torpedo that tracks silent-running submarines, or sensitive directional transducers that can locate enemy ships from afar.

The larger tank, filled with fresh water at room temperature, is 30 feet in diameter and 20 feet deep. Equipment to be tested is suspended at the 10-foot level and the distance between projector and receiver can be precisely controlled. The apparatus can also be rotated about two axes. A

smaller tank, 14 feet long by 6 feet wide with only a 4-foot depth, contains salt water which can be adjusted between 32 and 100 degrees F. The tanks are mounted on compressible pads to keep out vibration from the earth. The whole lower level is isolated by acoustic absorption material from workrooms above, and even the crane assembly is independently suspended, completely separate from the lab floor.

The facility cost about three-quarters of a million dollars, including the equipment, and will allow rapid testing of new underwater devices developed at NSWC. In the words of an NSWC official, acoustic ordnance has reached the stage of “counter-counter measures,” in which the U.S. Navy is developing sensors that can overcome the evasive tactics adopted by the Soviet Navy in response to the first generation of sensors. No one is saying, of course, just *how* sensitive the newest devices really are, but if they could help detect the death throes of a submarine in the middle of the Pacific in 1968, by now they should be able to tell when a Russian submariner catches cold. □