



BUILDERS, FIGHTERS, DIVERS

seabees work in a new
medium

• NCEL, Port Hueneme, Calif.

Most people are fully aware of the work of the Seabees. Ever since World War II, and especially now in Vietnam, Seabees have been known as builders and fighters—men who carried the tools of construction in one hand and a weapon in the other.

However, the Naval Civil Engineering Laboratory has helped to add a new dimension to Seabee activity—SCUBA diving.

NCEL has for some time been interested in building structures on the ocean floor, not only at relatively shallow depths, but in the deep ocean as well. Studies were initiated along these lines, and an important aim of the studies was to learn how well divers could perform the tasks of construction in an undersea environment.

In many ways the undersea environment is similar to that of space. A diver is nearly weightless, and this creates a problem when he has to exert force with a tool such as a drill, a saw, or a wrench.

Thus, the NCEL "diver locker" came into being. The diver locker is located at the CB Center and is manned by five Seabees who are all qualified, experienced divers.

Special Underwater Tools

Typical of the activities of these underwater Seabees is the testing of

various tools and devices which are designed to make construction beneath the surface of the sea easier. For example, in some work the Seabee diver may wear a tethering jacket to which small, powerful magnets are attached by lines. The magnets hold the diver to a metal bulkhead while he uses a special drill equipped with a shoulder stock. On smooth, nonmetal surfaces, suction cups replace the magnets.

Seabee divers are also participating in trials for a construction experiment which will be attempted during execution of the Sealab III project at a depth of 600 feet. The rehearsals for the construction experiment are being held at depths of about 50 feet. As yet, the names of the divers who will perform at the 600-foot depth have not been released.

The construction experiment consists of assembling a dry-repair or storage station held in place by an anchor with a dead weight of 30 tons. Various elements of the station will be lifted into place using a buoy containing a hydraulic winch. Buoyancy of the lifting device can be varied.

Sections of the dry-repair or storage station will be fastened together with bolts and with special quick-connect devices which will be used for the first time in construction. A buoyant

"chandelier" carrying underwater lights developed by NCEL will hang above the station, tethered to it, providing visibility.

When the station is assembled, high-pressure air, supplied from Sealab III, will force water from the hull, creating a dry chamber with an open well at the bottom.

Underwater 272 Hours

Seabee divers are active also in salvage studies being conducted by NCEL. They have, therefore, become an indispensable factor in the Laboratory's ocean engineering program. The extent of the diving done for NCEL by the five-man team was demonstrated during the period from May 1967 through December 1967. In that time, the Seabees made 299 dives, amounting to 272 hours of underwater activity.

The projects mentioned are funded by the Naval Facilities Engineering Command and the Navy Supervisor of Salvage. The Human Factors Division of the Naval Missile Center, Point Mugu, is participating in the studies of divers' abilities in underwater construction. The Office of Naval Research will have representatives on hand to observe the construction experiment during Sealab III.