The Navy gears up for...

Underwater construction

- Washington, D.C.

In its expanding role in new technologies, the Naval Facilities Engineering Command (NAVFAC) has become the focal point within the Naval Material Command for the design, construction, maintenance and repair of all *sub-surface* fixed ocean facilities.

These installations include offshore platforms, sensor arrays, underwater cables and pipelines, mooring systems and their related shore terminal connections.

To accomplish the new mission, NAVFAC established the Ocean Facilities Engineering and Construction Project Office at its Chesapeake Division (CHESDIV) in 1971 to serve as the center of expertise for the NAVFAC Ocean Facilities Program.

Recognizing that efficient and effective execution of ocean facility construction projects would require a variety of specialized equipment not currently in the NAVFAC inventory, NAVFAC established and CHESNAVFAC-ENGCOM is executing a program of identifying, procuring and maintaining an inventory of specialized ocean facilities equipment.

The inventory will enhance the NAVFAC and Naval Construction Force's (NCF) rapid response capability for construction and repair of those ocean facilities which are elements of high priority Navy defense systems.

The stock items are being procured from commercial sources and from Navy laboratories and in many cases reflect recent development efforts.

Some specific types of equipment which are either currently in the inventory or have been defined for future procurement include: oceanographic cable winches; linear cable handling machines; powered cable reel stands; underwater cable test units; acoustic transponder navigation systems; satellite navigation systems; automatic boat positioning equipment; platform positioning winches; underwater TV recording systems; seafloor soil corers and samplers; underwater rock drills; and other items.

Current planning calls for new additional equipment to be added to the inventory each fiscal year through FY78 as the ocean facilities program increases in scope.

Ocean facilities equipment pools are currently located at the Construction Battalion Center, Port Hueneme, Calif.; the Navy Supply Center, Cheatham Annex, Williamsburg, Va.; and at the Washington Navy Yard, Washington, D.C. The Chesapeake Division allocates funds for storage costs and major equipment maintenance and retains administrative control for use by those elements of the NCF and government contractors who may be engaged in defense-related ocean construction projects. Navy laboratories will also use the equipment to reduce the cost of support to ocean related research and development. Users of the equipment will normally be expected to fund for shipping, training, operational maintenance and refurbishment after use.

Two new pieces of equipment have now been added to the Naval Facilities Engineering Command's ocean engineering and construction equipment inventory to aid the Underwater Construction Teams (UCTs) in fulfilling the Navy's challenging mission of underwater construction.

A diver propulsion vehicle (DPV) has been approved by the Naval Sea Systems Command for use by the UCTs in specialized construction. This vehicle, while commercially available, has been modified to meet the Navy's particular standards for operational safety and project support requirements.

The underwater constructor must be just as concerned with selection and surveying of the construction site as is the surface constructor. The DPVs are utilized in this effort to expedite scanning of the ocean floor. With a top speed of 3.0 knots, the DPV enables a diver who is limited by depth and time to search with a minimum expenditure of energy an area threefold that which he could normally swim. Preliminary inspections of existing cable systems and pipelines can be performed more efficiently using the DPVs.

The second new acquisition is a self-contained, underwater video recording system. The unit has a distinct advantage over ordinary underwater video systems that require an umbilical to the surface. However, in rare instances, when direct top-side supervision of an underwater construction task is necessary, the unit can be cabled to a surface monitor, providing real time information to the supervisor and increasing his ability to control the operation.

The video system contains a low-light level camera which can automatically focus from six inches to infinity and quite often "sees" things that the diver cannot. With the aid of a three-inch monitor built into the unit, the diver can see exactly what is being recorded on video tape; this as opposed to a still camera system where photographs are not available until they have undergone processing. The diver can also rewind and play back the tape underwater for viewing on his monitor so segments may be reshot for increased clarity.

Finished tapes can then guide the designer and display the underwater situations to non-divers and present to a project customer an accurate record of work performed. Video records of underwater work also serve as valuable training aids for the improvement of construction techniques, the disclosing of possible discrepancies in method or design, or in demonstrating to new construction divers how a task is performed.

Currently, the equipment inventory contains six DPVs and two underwater video systems. Each UCT has two DPVs and one video system under its control for use in performing underwater construction tasks. The other two DPVs and a video system (on order) are held by the inventory manager, Chesapeake Division, Naval Facilities Engineering Command, Ocean Engineering and Construction Project Office, Washington, D.C.

For further information concerning equipment types, availability and loan agreements, interested persons may contact CHESNAVFACENGCOM Code FPO-1, Washington Navy Yard, Washington, D.C. 20374. Phone (202) 433-3881 or Autovon 288-3881.

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