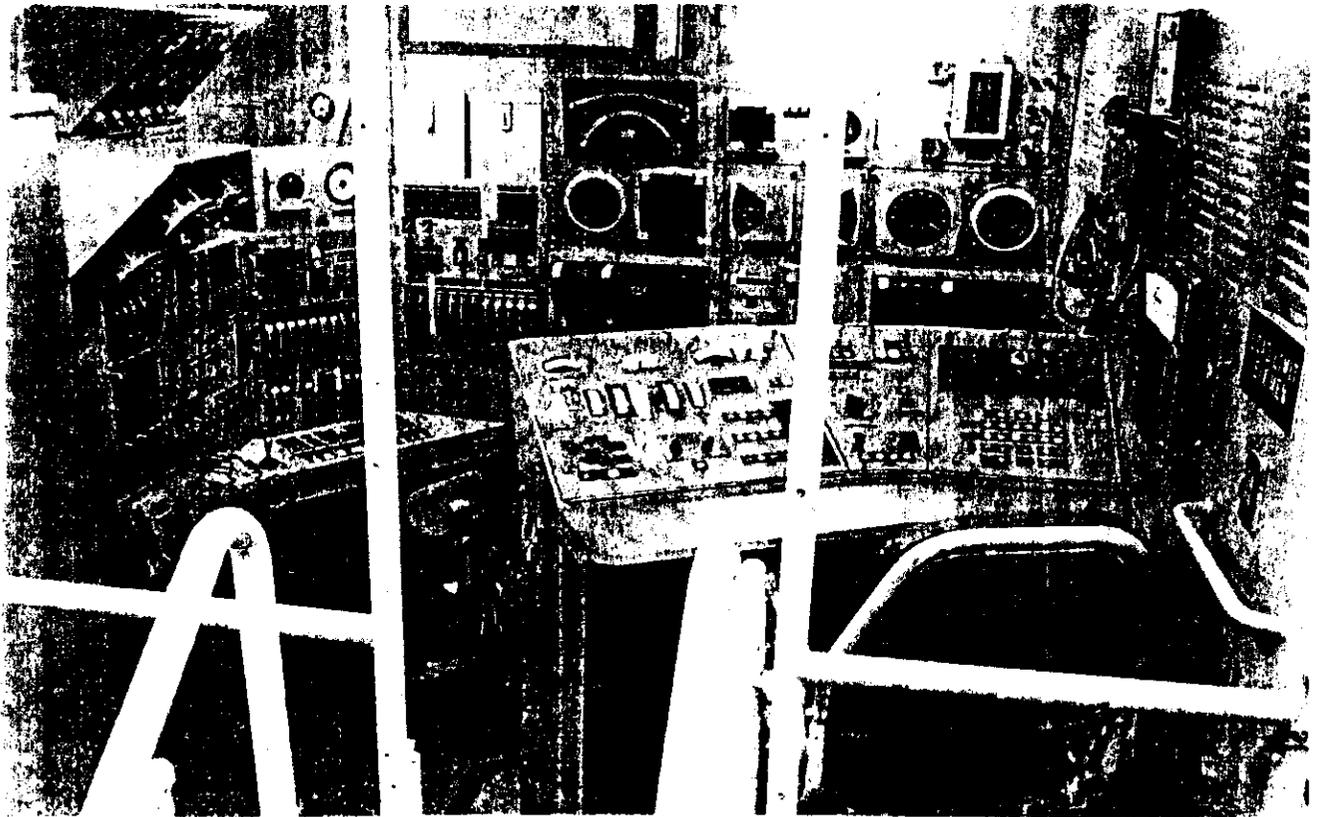


### DIRECTORY OF NAVAL TRAINING DEVICES



#### HIGH SPEED SUBMERGED SHIP CONTROL TRAINER 688 CLASS, DEVICE 21B56F

**TRAINING CATEGORY:**

SHIP CONTROL

**ORIGINATING AGENCY:**

CNET

**SECURITY CLASSIFICATION:**

Device 21B56F is Confidential.

**PURPOSE OF DEVICE:**

To provide realistic training and practice in steering and diving and ballast control functions of the SSN688 Class submarine during both normal and casualty conditions.

**INTENDED USE:**

In Submarine School, SUB BASE, New London, CT, for operational training of experienced and inexperienced officer and enlisted personnel in ship control functions.

**FUNCTIONAL DESCRIPTION:**

Device 21B56F is a computerized system providing simulated control of the SSN688 Class submarine Ship Control Panel (SCP) and Ballast Control Panel (BCP). The SCP and BCP are realistically simulated. The various controls that are operated by the students provide inputs to the computer, which simulates the responses of an actual submarine.

The Instructor's Console (IC) provides for simulation of external devices (i.e., engine room for engine order answer bells) and to provide casualties. Casualties include jamming of the control surfaces, failure of various meters, flooding, different ballast levels, hydraulic systems failures and propulsion failures.

The cab is located on a two degree of free gimbal system which provides for roll and pitch simulation. Various active alarm systems are provided (i.e., diving claxon and general alarm).

An interface is provided on the cab with a maintenance and test panel to facilitate troubleshooting. The computer is located remotely from the cab in a computer room.

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The device is used to emphasize classroom ship control training, provide proficiency training, and to practice maneuvers which would otherwise be dangerous to both personnel and ships (i.e., stern plane jam on full dive while at flank speed). The device contains a timer on the instructor's console to determine student reaction times, and has a hold feature which temporarily freezes a problem so that corrective actions can be emphasized to students by the instructor. A reset feature is also employed which allows for a complete restart of the program. The instructor can pre-program failures from the IC before program start.

The cab is cooled via the building installed air conditioning and several fans designed to remove the minimal heat generated by onboard cab equipment. The SCP contains rheostat control of its lighting. The instructor's console switches are dimly lit until depressed for activating a function, after which they glow brightly. The switches are silent to prevent students from being alerted that a change has been made in cab status.

State-of-the-art computers and interface provide reliable, inexpensive repair solutions.

### PHYSICAL INFORMATION:

The cabs are 10' x 10' x 8' high and weigh approximately 60,000 lbs. The device is permanently installed in Building 152, US Naval Submarine Base, Groton, CT.

Computer Software is provided on a 25 MB Removable Lark hard disk and on 8" floppy disks. One (1) special tool is provided for serial number 2 to check hydraulic ram alignment.

### POWER REQUIREMENTS:

**Cabs:** 115 VAC, 60 Hz. 35A

**Computer:** 115 VAC, 60 Hz, 20A 3-Wire  
208 VAC, 60 Hz, 30A 4-Wire,  
2-Phase

### INSTALLATION REQUIREMENTS:

**Room Size:** 19' W x 22' D x 20' H

No special air-conditioning requirements exist other than normal building air-conditioning.

### PUBLICATIONS FURNISHED:

1. Technical Manual, Operation and Maintenance Instructions, Organizational and Intermediate, SSN688 Class Basic High Speed Submerged Ship Control Trainer, Device 21B56F, NAVTRADEV P-5205 (U).
2. Technical Manual, Instructor Utilization Handbook for SSN688 Class Basic High Speed Submerged Ship Control Trainer, Device 21B56F NAVTRADEV P-5206 (U).

### PERSONNEL:

**Instructor:** One (1), Chief or 1st Class; qualified Chief of the Watch and Diving Officer.

**Operators:** Instructor-Operated

**Trainees:** Four (4)

**Trainee Observers:** One (1) observer on cab,  
12 + on observer platform

**Maintenance:** One (1) ET or TD (7.5 man hours per 40 hrs. utilization (2.5 for daily readiness test/5 for preventive maintenance).

### CONTRACT IDENTIFICATION:

Manufactured by General Dynamics Corp., Electric Boat Div., Groton, CN 06340 under NAVTRASYS-SCEN Contract No. N61339-84-C-0042.

### LOCAL STOCK NUMBER:

6930-LL-C00-6891