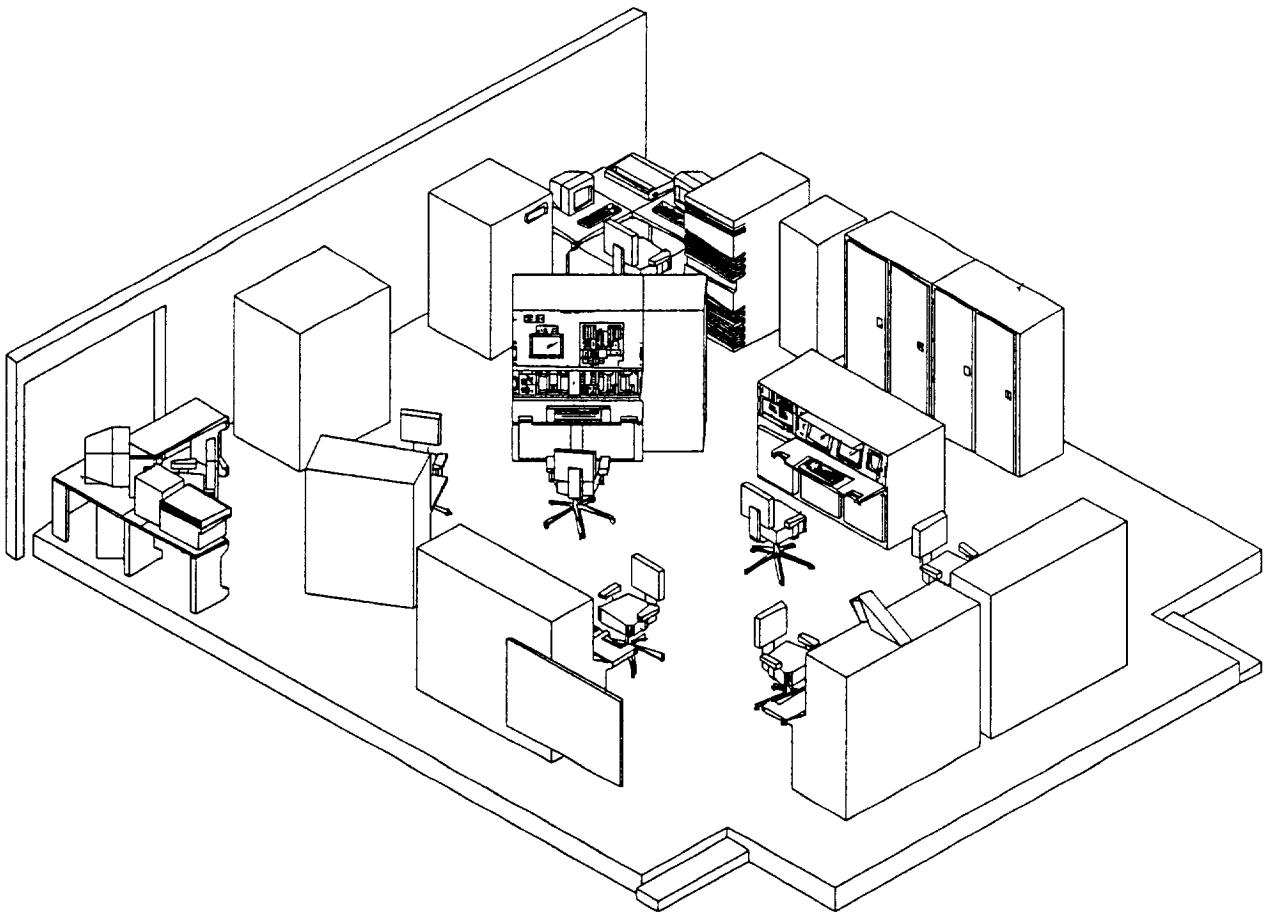
SUMMARY OF
DDG-51 GAS TURBINE PROPULSION PLANT TRAINER (GTPPT)

MAY 1997 **Device 19G4**

NAVAL AIR WARFARE CENTER TRAINING SYSTEMS DIVISION **ORLANDO, FL**



TRAINING CATEGORY:

SURFACE

ORIGINATING AGENCY:

NAVSEA

SECURITY CLASSIFICATION:

Device 19G4 is unclassified.

PURPOSE OF DEVICE:

Develop trainee proficiency in gas turbine engineering principles and practices, watchkeeping and casualty control.

INTENDED USE:

The GTPPT is used in a classroom environment to simulate DDG-51 Machinery Control System (MCS) operation for Prospective Commanding Officers, Prospective Executive Officers, Department Heads and Engineering Officer of the Watch (EOOW) trainees.

Using full-scale simulated DDG-51 equipment, students are trained in the principles of the gas turbine propulsion plant, watchkeeping and operation of the following MCS consoles:

- Propulsion/Auxiliary Control Console (PACC)
- Electric Plant Control Console (EPCC)
- Damage Control Console (DCC)
- EOOW Logging Unit (EOOW/LU)
- Shaft Control Unit (SCU) No. 1

FUNCTIONAL DESCRIPTION:

The GTPPT is installed in a single room with a raised floor. Training equipment includes the following simulated consoles: Propulsion/Auxiliary Control Console, Electric Plant Control Console, Damage Control Console, Engineering Officer of the Watch / Logging Unit, Shaft Control Unit No. 1 and the Instructor Control Position (ICP). The consoles are located in such a way that the instructor can view the activities of the trainees from the ICP. Other equipment in the trainer room includes: Central Processing System (Central Computer), Trainer Interface System, Trainer Interface System Station (including programming terminals for both the Trainer Interface System and the Central Computer), Main Wiring Cabinet, Local Area Network (LAN) station, Power Conditioner, Air Conditioner, and Engineer Order Board.

A digital Central Processing System, with associated software, dynamically controls the operation of the trainer during normal and casualty control operations. The Central Computer runs a math model that simulates the physics of the actual DDG-51 propulsion system. The math model allows the trainer to simulate normal and casualty operations in DDG-51 propulsion, electrical, and auxiliary systems. Multiple casualties can be simulated at the same time.

Training scenarios are initiated, controlled and monitored from the Instructor Control Position. The instructor can inject casualties sequentially or simultaneously and evaluate trainee performance. The MCS consoles operate simultaneously and interactively through associated indicators, controls and real-time responses. The system responds to trainee input in the same manner as an actual DDG-51 propulsion plant. Simulated casualties are automatically removed when the trainee(s) initiates the proper corrective action or when the instructor removes the casualties. Simulated casualties that are not correctable can be removed only by the instructor. The instructor may freeze the training scenario at any time.

PHYSICAL INFORMATION:

Trainer Room - 32 feet long x 27 feet wide x 8 feet high (from top of raised floor to ceiling).
Total Floor Area - 864 square feet
Trainer Weight (all equipment) - 7,050 lb.
Trainer Type - Permanently installed

EQUIPMENT REQUIRED (Not Supplied):

None.

POWER REQUIREMENTS:

208Y VAC, 60 Hz, three phase, 95 amperes per phase max., 30 KVA max. power.

INSTALLATION REQUIREMENTS:

864 ft^2 min. installation area. 250 lb/ft^2 max. floor loading. 36,921 BTU/hr. air conditioning.

PUBLICATIONS FURNISHED:

System Operation and Maintenance (O&M) Manual, DDG-51 GTPPT, Device 19G4, P-6991, (U).

Commercial-Off-The-Shelf (COTS) documentation, DDG-51 GTPPT, Device 19G4, P-6992, (U).

Planned Maintenance System (PMS) documentation, DDG-51 GTPPT, Device 19G4, P-6993, (U).

Training System Utilization Handbook, DDG-51 GTPPT, Device 19G4, P-6994, (U).

PERSONNEL:

Instructor - One instructor (SWOS Instructor Certified).

Trainees - One to five students.

Maintenance personnel - One journeyman level COMS technician, eight hours per week.

CONTRACT IDENTIFICATION:

Manufactured by Newport News Shipbuilding, Inc., Newport News, Virginia, under NAWC/TSD Contract No. N61339-92-C-0030.