

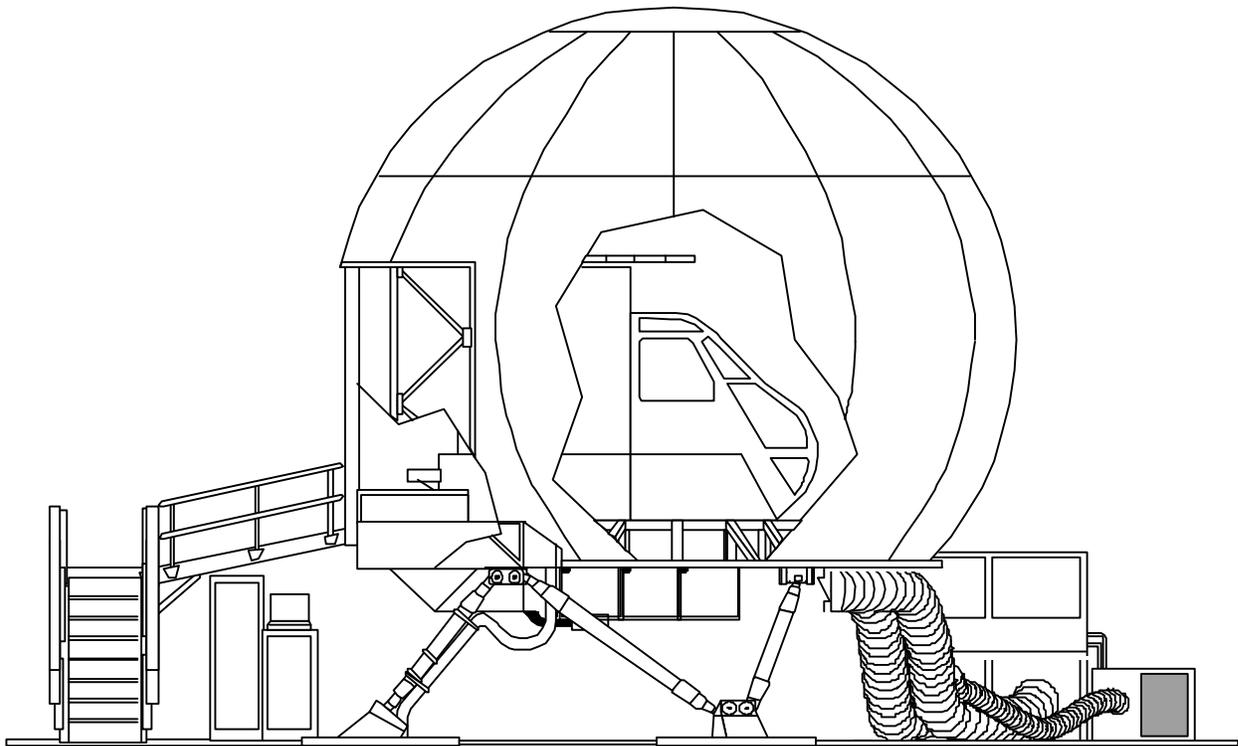
SUMMARY OF CH-53E WEAPONS SYSTEM TRAINER (WST)

26 February 1999

Device 2F174

NAVAL AIR WARFARE CENTER TRAINING SYSTEMS DIVISION

ORLANDO, FLORIDA



TRAINING CATEGORY:

AVIATION

ORIGINATING AGENCY:

CNO/AIR

SECURITY CLASSIFICATION OF DEVICE:

Device 2F174 is unclassified.

PURPOSE OF DEVICE:

To provide for increased proficiency of CH-53E pilots by simulation of the following operations: normal/emergency procedures (air, land, and shipboard), preflight, startup, takeoff, maneuvers, instrument flight, loading operations, landing, shutdown, and postflight.

INTENDED USE:

To provide initial qualification transition and requalification proficiency under instrument flight conditions in terms of operational flight training.

FUNCTIONAL DESCRIPTION:

Overview: The CH-53E Operational Flight Trainer, Device 2F174 Weapon Systems Trainer (WST) is intended to train crewmembers of a CH-53E helicopter in all modes of the operational aircraft's mission.

The Device 2F174 simulates the response of CH-53E controls, instruments, and systems, to include the aural, motion, and force-feel sensations. The trainer provides the capability for procedure and proficiency training of pilots and copilots under both normal and emergency conditions in the operation, navigation and communications of the CH-53E helicopter in fulfillment of their designated missions.

The instructor is physically located on-board the flying platform in an enclosure directly behind the cockpit in order to observe the trainees. He is provided with a system of training program indications that keeps him constantly in touch with the developing situation and the progress of training.

The trainer provides the means of developing proficiency in the operation of controls, interpretation of instrument indications, operation of navigation and communication systems, and coping with a variety of emergency situations as experienced in takeoff, hover, flight, and landing. The physical configuration and interior appearance of the trainer environment is accurately simulated.

Visuals: The environment for human senses of sight, feel, and sound is realistically simulated. The visual scene through the windshields and windows is provided by five channels of computer generated image equipment. The five channels are the copilot's side and front windows, center window, pilot's front and side windows, and pilot's chin window.

All five channels visual scenes are calculated relative to the pilot's or copilot's eyepoint. The environment is established through functional instrument presentations, realistic communications and navigation reception and transmission, cockpit noises and vibrations, realistic feel in the control system stick and pedals, and airframe motions as experienced during takeoff, hover, flight at various altitudes, and landing.

Host Computer: The host computer chassis is a Harris Nighthawk HN 5808 Computer, built around a Motorola 88110 reduced instruction set computer (RISC) architecture. The HN-5808 computer consists of a 19-slot chassis assembly with self-contained power supply and control panel. Installed in the base of the chassis are two 4.0-GB disk drives and one 150-MB tape streamer. The HN-5808 uses a CX/UX real-time UNIX operating system and is supported by a wide collection of software development tools, advanced technology compilers, and a comprehensive ADA multi-tasking language environment. Once loaded with CH-53E WST simulation program, the host computer controls all real-time operations of the trainer.

PHYSICAL INFORMATION

Major Equipment:	Weight	Size	Ib.
Host Computer Cabinet	24x35x78		400
Power Distribution Cabinet	22x27x78		300
Cockpit A/C	44x50x28		360
Ingress/Egress Ramp	50x53x88		1900
Dome Assembly	300x300x262		1700
Motion Controller Cabinet	24x36x68		250
Visual A/C Evaporator	80x34x54		350
Visual A/C Condenser	78x36x33		250
Special Purpose Computer Units #s 1 & 2	24x36x65	(each)	350 (each)
Special Purpose Computer Units #s 3, 4 & 5	45x36x78	(each)	1250 (each)
Hydraulic Power Unit	134x90x86		15,054

Installation Requirements:	Floor Space	Ceiling Height
Computer Room Area:	20'4" x 37'8"	9' - 6"
High Bay Area:	37'6" x 42'8"	40' - 0"
Hydraulic Room Area:	14' x 20'	10' - 0"
Brief/Debrief Room:	9' x 10'	9' - 0"

EQUIPMENT REQUIRED (Not Supplied):

None.

POWER REQUIREMENTS:

1. WST – 120/208 vac, 60 Hz, 3 phase, 1600 Amp Service
2. Visual A/C Evaporator/Condenser – 277/480 vac, 60 Hz, 3 phase, 1200 Amp Service
3. Cabin A/C – 277/480 vac, 60 Hz, 3 phase, 100 Amp Service
4. Hydraulic Unit – 277/480 vac, 60 Hz, 3 phase, 1200 Amp Service

PUBLICATIONS FURNISHED:

- Operation and Maintenance Instructions, NTSC P-4841-1 (U)
- Operation and Maintenance Instructions, NTSC P-4841-2 (U)
- Maintenance Requirement Cards, NTSC P-4842 (U)
- Instructor's Utilization Handbook (IUH), NTSC P-5046 (U)

PERSONNEL:

- Instructor:** One qualified Instructor Pilot.
- Operator:** Instructor-operated.
- Trainee:** Two student Pilots.
- Trainee Observers:** One.
- Maintenance Technicians:** Six per 40-hour utilization week.

CONTRACT IDENTIFICATION:

Sperry Rand Corporation, Fairfax, Virginia, under NAVTRASYSCEN Contract No. N61339-79-C-0079 manufactured Device 2F120, which was later modified to a Weapon Systems Trainer, Device 2F174, by Hughes Training, Inc. (HTI).

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