NAVY TRAINING SYSTEM PLAN

FOR THE

JOINT HELMET MOUNTED

CUEING SYSTEM

N78-NTSP-A-50-0103/I

AUGUST 2001

JOINT HELMET MOUNTED CUEING SYSTEM

EXECUTIVE SUMMARY

This Initial Navy Training System Plan for the Joint Helmet Mounted Cueing System (JHMCS) was developed by Naval Air Systems Command (AIR 3.4.1) using the Training Planning Process Methodology. This document provides an early estimate of manpower, personnel, and training requirements to support the employment concepts currently being considered for the JHMCS. It also contains pertinent data required to make accurate decisions and assessments concerning manning and training alternatives for the JHMCS.

The JHMCS program is an Acquisition Category III joint USN/USAF program with the USAF as the Lead Executive Service. The program is in the System Development and Demonstration phase of the Defense Acquisition System (DAS). The Production and Deployment phase is scheduled for second quarter FY02. Contact Naval Air Systems Command, Program Manager Air (PMA) 202D for information regarding Initial Operational Capability (IOC).

The JHMCS is a helmet mounted cueing and display system which, in conjunction with the AIM-9X Sidewinder missile system, provides a high off-boresight capability for United States Navy (USN) and United States Air Force (USAF) tactical fighter aircraft. This capability gives the warfighter first-look, first-shot, air-to-air, and air-to-ground weapons and sensor cueing that allows eyes out of the cockpit targeting within the visual range arena. The JHMCS has produced major improvements in Pilot situational awareness, with good overall system accuracy, faster target acquisition, and less exposure time.

The JHMCS is currently being developed and planned for integration with the F/A-18E/F and the F-15 with Boeing as the prime contractor, the F-16 and F-22 with Lockheed Martin. System integration with the F/A-18C/D is planned to be part of a future Operational Safety Improvement Program, out-year schedule dates have not yet been determined. Vision Systems International is the development subcontractor.

The JHMCS will have a two-level maintenance concept with minimal intermediate level work-request maintenance. Navy Aircrew Survival Equipmentmen (PR), Aviation Structural Mechanics (Egress) (AME) with Navy Enlisted Classification (NEC) 8341/8342, and Aviation Electronics Technicians (AT) with NEC 8341/8342 will maintain the JHMCS. Based on the operation and maintenance concepts explained herein, it is estimated the JHMCS will not increase or decrease existing F/A-18 manpower levels for the AME and AT ratings; however, additional PR manning is projected to be required. JHMCS will be operated by the Pilots of the respective aircraft.

The JHMCS training program will consist of initial and follow-on training for operator and maintenance personnel. Fleet Air Introduction/Liaison Survival Aircrew Flight Equipment Team and the prime contractor will provide initial operator, maintenance, and cadre training. Pilot training for the JHMCS will be integrated into the existing follow-on Pilot training syllabus of the F/A-18. Maintenance training for AMEs and ATs will be integrated into the existing follow-on Naval Aviation Maintenance

Training Unit (NAMTRAU) courses. NAMTRAU does not currently support aircraft specific, follow-on, maintenance training for PRs due to the generic nature of most rating tasks and assigned NEC of 0000.

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LIST OF ACRONYMS

ABC	Automatic Brightness Control
AE	Aviation Electrician's Mate
AIMD	Aircraft Intermediate Maintenance Department
ALSS	Aviation Life Support Systems
AME	Aviation Structural Mechanic (Safety Equipment)
AMTCS	Aviation Maintenance Training Continuum System
AOB	Average Onboard
AT	Aviation Electronics Technician
BIT	Built-In Test
CAI	Computer-Aided Instruction
CEST	Classroom Explosive Ordnance Disposal System Trainer
CMI	Computer-Managed Instruction
CNO	Chief of Naval Operations
CP	Control Panel
CRT	Cathode Ray Tube
CU	Cockpit Unit
DT	Developmental Test
DU	Display Unit
EEPROM	Electrical Erasable Programmable Read-Only Memory
EU	Electronics Unit
FAILSAFE	Fleet Air Introduction/Liaison Survival Aircrew Flight Equipment
FEA	Front End Analysis
FMS	Foreign Military Sales
FOT&E	Fleet Operational Testing and Evaluation
FRS	Fleet Readiness Squadron
FY	Fiscal Year
HDU	Helmet Display Unit
HMD	Helmet Mounted Display
HMDTS	Helmet Mounted Display Test Set
HRC	Helmet Release Connector

JOINT HELMET MOUNTED CUEING SYSTEM

LIST OF ACRONYMS

HVI	Helmet Vehicle Interface
IBM	International Business Machines
IETM	Interactive Electronic Technical Manual
IOC	Initial Operational Capability
IRC	In-Line Release Connector
JHMCS	Joint Helmet Mounted Cueing System
LOS	Line-of-Sight
LRIP	Low Rate Initial Production
MRU	Magnetic Receiver Unit
MSD	Material Support Date
MTU	Maintenance Training Unit
NAMP	Naval Aviation Maintenance Program
NAMTRAU	Naval Air Maintenance Training Unit
NAS	Naval Air Station
NAVAIR	Naval Air Systems Command
NAVAIRSYSCOM	Naval Air Systems Command
NAVAIRWARCENWPNDIV	Naval Air Warfare Center Weapons Division
NAVICP	Naval Inventory Control Point
NEC	Navy Enlisted Classification
NSAWC	Naval Strike Air Warfare Center
NTSP	Navy Training System Plan
NWTS	Naval Weapons Test Squadron
NVG	Night Vision Goggles
OA	Operational Assessment
OJT	On-the-Job Training
OPNAV	Office of the Chief of Naval Operations
OPO	OPNAV Principal Official
ORD	Operational Requirements Document
OSIP	Operational Safety Improvement Program
OT&E	Operational Test and Evaluation
PC	Personal Computer

JOINT HELMET MOUNTED CUEING SYSTEM

LIST OF ACRONYMS

PMA	Program Manager, Air
PMD	Program Management Directive
PR	Aircrew Survival Equipmentman
QDC	Quick Disconnect
RFOU	Ready For Operational Use
SE	Support Equipment
SFTI	Strike Fighter Tactics Instructor
SPS	Seat Position Sensor
TBD	To Be Determined
USAF	United States Air Force
USN	United States Navy
WRA	Weapon Replaceable Assembly
VFA	Strike Fighter Squadron
VX	Air Test and Evaluation Squadron

JOINT HELMET MOUNTED CUEING SYSTEM

PREFACE

This Initial Navy Training System Plan (NTSP) is an early look at the Joint Helmet Mounted Cueing System (JHMCS) program. This is the first iteration of the Initial NTSP for the JHMCS program. This document explores the various employment and support alternatives currently under consideration. Since it is the first NTSP and still relatively early in the acquisition process, some definitive data was unavailable for inclusion in this version. This Initial NTSP is a product of the Training Planning Process Methodology, as outlined in Office of the Chief of Naval Operations (OPNAV) Publication P-751-3-9-97.

PART I - TECHNICAL PROGRAM DATA

A. NOMENCLATURE-TITLE-PROGRAM

1. Nomenclature-Title-Acronym. Joint Helmet Mounted Cueing System (JHMCS)

2. Program Element. 0604264N

B. SECURITY CLASSIFICATION

1. System Characteristics..... Unclassified
2. Capabilities..... Unclassified
3. Functions ..... Unclassified

C. MANPOWER, PERSONNEL, AND TRAINING PRINCIPALS

OPNAV Principal Official (OPO) Program Sponsor ..... CNO (N780C9)

OPO Resource Sponsor..... CNO (N78)

Functional Mission Sponsor..... CNO (N780C)

Developing Agency..... NAVAIRSYSCOM (PMA202)

Training Agency ..... CINCLANTFLT
CINCPACFLT
CNET

Training Support Agency..... NAVAIRSYSCOM (PMA205)

Manpower and Personnel Mission Sponsor ..... CNO (N12)
NAVPERSOM (PERS-4, PERS-404)

Director of Naval Training ..... CNO (N795)

D. SYSTEM DESCRIPTION

1. Operational Uses. The JHMCS is a helmet mounted cueing and display system which, in conjunction with the AIM-9X Sidewinder missile system, provides a high off-boresight

capability for United States Navy (USN) and United States Air Force (USAF) tactical fighter aircraft. This capability gives the warfighter first-look, first-shot, air-to-air, and air-to-ground weapons and sensor cueing that allows eyes out of the cockpit targeting within the visual range arena. The JHMCS has produced major improvements in Pilot situational awareness with good overall system accuracy, faster target acquisition, and less exposure time.

2. Foreign Military Sales. JHMCS will be made available for Foreign Military Sales (FMS). All current and future FMS users of the F/A-18 are potential users of the JHMCS. Contact Naval Air Systems Command (NAVAIRSYSCOM) Program Manager, Air (PMA) 202D for further information regarding FMS.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST. Developmental Testing (DT) using an F/A-18C was conducted in October 1998, and Operational Testing (OT) was conducted in August 1999 in conjunction with the AIM-9X Missile OT-IIA. Initial Operational Assessment (OA) was completed in January 2000 and was conducted at the Naval Air Warfare Center Weapons Division (NAVAIRWARCENWPNDIV) China Lake, California, by Air Test and Evaluation Squadron (VX)-9. The JHMCS was found to be potentially operationally effective, but potentially not operationally suitable due to low reliability issues with the In-Line Release Connector (IRC).

The first series of DT and OT using the F/A-18E/F began in February 2001 at Naval Weapons Test Squadron (NWTS), NAVAIRWARCENWPNDIV China Lake, and Naval Air Warfare Center Aircraft Division (NAVAIRWARCENACDIV), Patuxent River, Maryland. DT will continue through first quarter Fiscal Year (FY) 02. Operational Testing and Evaluation (OT&E) is currently scheduled to begin in September 2001, and will be conducted concurrent with F/A-18E/F Fleet Operational Testing and Evaluation (FOT&E)-1.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. No existing weapon system, equipment, or program is being replaced by the JHMCS.

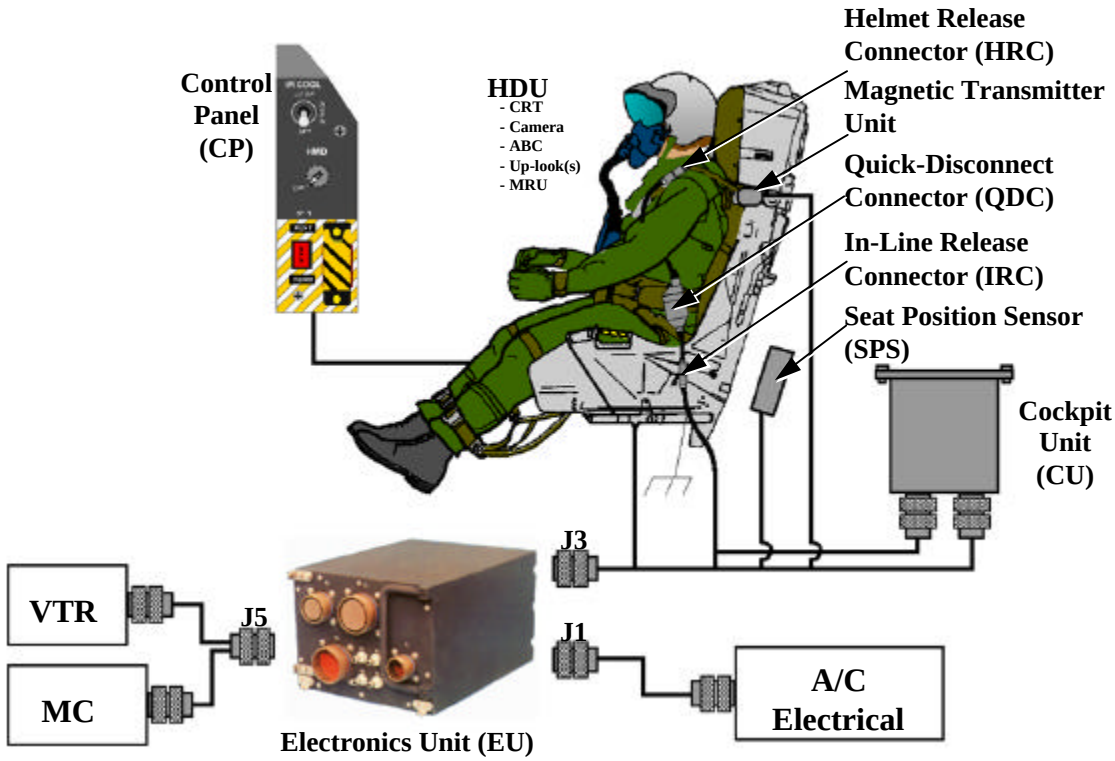
G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The JHMCS is a display system used to display cueing symbology for navigation, weapons, and sensors at high off-boresight angles. The JHMCS is comprised of the following components:

- Helmet Display Unit (HDU)
- Helmet Vehicle Interface (HVI)
- Electronics Unit (EU)
- Cockpit Unit (CU)
- Magnetic Transmitter Unit

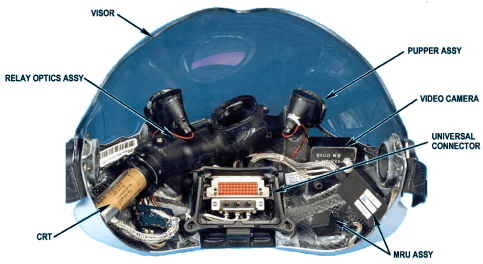
- Control Panel (CP)
- Seat Position Sensor (SPS)

Each of these Weapon Replaceable Assemblies (WRA) is described below.



a. Helmet Display Unit. The HDU is the complete assembly that is made up of the following components:

- Cathode Ray Tube (CRT) Assembly
- Relay Optics Assembly
- Magnetic Receiver Unit (MRU)
- Camera
- Automatic Brightness Control (ABC) Sensor
- Up-Look Reticles (Puppers)
- Visor Assembly
- Universal Connector



The HDU is connected to the helmet shell through a universal connector, and has a built-in hinge pivot that allows symbology to be projected onto the Pilot's visor and fold clear of the visor assembly when the visor is retracted.

(1) Cathode Ray Tube Assembly. The CRT provides the various symbology to be projected onto the visor assembly over the Pilot's right eye. The CRT is made of a lightweight housing that provides a means of attachment to the Relay Optics Assembly using a quarter-turn locking flange. A CRT Electrical Erasable Programmable Read-Only Memory (EEPROM) and a CRT make up the remainder of the CRT assembly. The CRT EEPROM contains the serial number, elapsed time, fault log, and electron beam correction data. Each of these components is permanently bonded to the overall CRT assembly. The CRT assembly has one electrical connector and weighs 2.3 ounces.

(2) Relay Optics Assembly. The Relay Optics Assembly is made up of four lenses and two mirrors within a lightweight plastic housing. It provides the optical transmission of the symbology image produced by the CRT assembly onto the visor assembly.

(3) Magnetic Receiver Unit. The MRU is a miniature version of the Magnetic Transmitter Unit. The MRU receives the transmitted magnetic signal from the Magnetic Transmitter Unit and provides a signal to the electronics unit Line-of-Sight (LOS) module. The signal is used to determine the LOS and position of the Pilot's head. It contains three coils that represent the X, Y, and Z axes of the system.

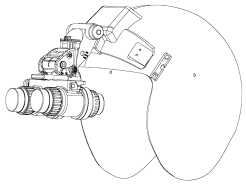
(4) Camera. The Camera is monochromatic with the same 20° field-of-view as the HDU. A video signal is transmitted between the EU and the Camera by way of the HVI. The EU combines the Camera image (Pilot's view) with the displayed symbology for recording purposes.

(5) Automatic Brightness Control Sensor. The ABC Sensor senses ambient light and adjusts the CRT brightness to maintain a constant display contrast ratio.

(6) Up-Look Reticles. The Up-Look Reticle assemblies provide a pair of symbols known as puppers. When selected, using Hands On Throttle And Stick (HOTAS), these symbols are used for high off-boresight targeting. The Up-Look Reticles are not adjustable, and the reticle projected is 27.5° above and 30° left or right of the eye.

(7) Visor Assembly. The Visor Assembly provides two functions. First, it provides the Pilot with protection from the sun and wind. Second, it provides a surface for symbology to be presented. The Visor can be rotated back over the top portion of the helmet. A locking device is used in both the retracted and deployed Visor positions to make sure the Visor does not move.

(8) Universal Connector. The Universal Connector allows the HDU to be removed from the helmet, and provides a means to attach non-JHMCS visors and Night Vision



Goggles (NVG) to the helmet system. The Universal Connector does not make provision for combined, simultaneous HDU and NVG use.

b. Helmet Vehicle Interface. The HVI provides the electrical cabling between the aircraft avionics and the helmet, and is divided into two segments, the Upper and Lower HVIs. The voltages and electronic signals required for HDU operation pass through this cable. The Upper HVI is routed through the helmet and terminates at the Quick Disconnect (QDC), which provides the interface between the Pilot and the aircraft. The Upper HVI contains the Universal Connector, the Helmet Release Connector (HRC), and the top half of the hip-mounted QDC. The Lower HVI is mounted in the aircraft to the Pilot's left and provides the interface between the QDC and the CU/EU. The Lower HVI contains the bottom half of the QDC and the IRC. A stowage bracket is also installed in the aircraft to provide stowage of the Lower HVI QDC when it is not mated with the Upper HVI.

(1) Helmet Release Connector. The HRC provides a one-time disconnect break point that allows the helmet to leave the Pilot's head cleanly in the event of helmet loss during ejection.

(2) Quick Disconnect Connector. The QDC is the daily use connector and provides the primary disconnect during ejection or emergency ground egress. A lanyard mounted to the aircraft disengages the QDC locking mechanism during ejection or emergency ground egress. The upper half of the QDC is attached to the Pilot's torso harness via a mounting bracket that imparts any disconnect loads during ejection or egress on the torso harness instead of the Pilot's head or neck.

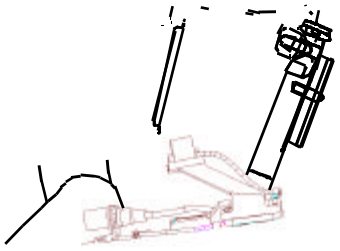
(3) Inline Release Connector. The IRC is located on the left-hand console, and provides a one-time back up disconnect should the QDC fail to release during an ejection.

c. Electronics Unit. The EU consists of four unique electronic cards (power supply, line-of-sight module, graphics processor/display driver, and central processor cards). The Mission Computer interfaces with the EU via the mux bus. The EU is installed in the 3C Equipment Bay for the single-seat aircraft and the left-hand console of the aft seat for the two-seat aircraft.

d. Cockpit Unit. The CU consists of a High Voltage Power Supply that generates the high voltage power needed for the CRT display in the HDU.

e. Magnetic Transmitter Unit. The Magnetic Transmitter Unit generates an Alternating Current magnetic field in the cockpit. The Magnetic Transmitter Unit is mounted on the canopy sill of the aircraft. The MRU in the HDU receives the magnetic field produced by the Magnetic Transmitter Unit. The MRU then passes the received signal to the EU to determine the helmet position and orientation in the cockpit.

The JHMCS Cockpit Mapper maps the cockpit magnetic characteristics during installation or subsequent maintenance action, and the resulting cockpit magnetic map is stored in the Magnetic Transmitter Unit and EU. Each cockpit magnetic map is unique to that individual aircraft. Relocating or removing metal from the cockpit changes the cockpit magnetic field and may impact the accuracy of the Helmet Mounted Display (HMD). Pilot equipment (including sidearm) does not impact accuracy due to the location of the equipment relative to the tracker.



f. Magnetic Transmitter Unit Support. The Magnetic Transmitter Unit Support provides a stable non-metallic platform to attach the Magnetic Transmitter Unit to the canopy rail.

g. Control Panel. The CP provides On-Off and Brightness control of the JHMCS. The brightness knob replaces the Map Gain knob on the spin recovery panel for the Radar set. The CP light plate is also replaced to correctly label the HMD brightness knob.

h. Seat Position Sensor. The SPS is a small WRA mounted to the ejection seat bucket. This sensor provides the JHMCS with a reference of seat position, which is needed to compensate for the distortion of the magnetic field in order to determine helmet position. Removal of the ejection seat bucket is required to remove and replace the SPS.

i. Modified HGU-55/P Helmet Shell. The lightweight configuration of the HGU-55 Type Helmet provides the mounting platform for the HMD and protects the Pilot from high impact and wind loads during ejection and egress. The helmet follows basic HGU-55 design, but is constructed of aramid and carbon fiber. It also includes an integrated chin and nape strap assembly and occipital bladder for Combat Edge compatibility. Modifications also include a cutout for the Universal Connector in the top front of the helmet, and a modified nape to accommodate the Upper HVI cable entrance.

j. Oregon Aero Aviation Helmet Upgrade Kit. The Oregon Aero Aviation Helmet Upgrade Kit includes the ZetaLiner™ Helmet Liner, SoftSeal™ Ear Cushions, Softskin™ Ear Seal Covers, and HushKit™ Passive Earcup Noise Attenuation Foam. The ZetaLiner™ Helmet Liner provides significant improvement in impact energy absorption, and is lighter weight than other approved liners for the HGU-55/P. Testing during OT showed significant improvements in overall helmet comfort and fitting.

The ZetaLiner™ Helmet Liner is composed of Confor™ foam sewn into cool, washable, wear-resistant fabric. The SoftSeal™ Ear Cushions are composed of Confor™ foam core, and covered with washable synthetic leather. The HushKit™ Passive Earcup Noise Attenuation Foam improves noise attenuation and intelligibility, and is most effective in the 2000-6000 Hz range.

2. Physical Description. The following table describes the physical characteristics of the major components of the JHMCS.

COMPONENT	DIMENSIONS	WEIGHT
Assembled Display Unit	9.500" x 5.850" x 5.080"	≤ 600 g
Cockpit Unit	5.620" x 5.000" x 2.094"	≤ 3.500 lbs.
Magnetic Transmitter Unit (length only)	305 mm / 115 ± 5 mm / 254 mm (674 ± 5 mm overall)	≤ 0.350 kg
Electronics Unit	10.150" x 7.000" x 5.290"	≤ 16.300 lbs.

3. New Development Introduction. The JHMCS is being included in 548 F/A-18E/F Aircraft. Lot 24 and subsequent will be forward fit at the Boeing assembly line. Lot 23 is being delivered with provisions for the JHMCS. Lot 21 and 22 may be part of a future retrofit program, with the date to be determined. Current planning calls for the F/A-18C/D to be part of a future Operational Safety Improvement Program (OSIP), with the out-year dates to be determined. The Type Commander will deliver aircrew helmet components to the operational squadrons. Contact the Deputy Assistant Program Manager for Logistics (AIR 3.1.4.3) for further information regarding retrofit programs.

Contact NAVAIRSYSCOM (PMA202D) for information regarding Initial Operational Capability (IOC). IOC will be achieved with the first F/A-18E/F Lot 24 cruise.

4. Significant Interfaces. The JHMCS provides off-boresight cueing of weapons and sensors in Air-Air and Air-Ground modes. The system interfaces with the aircraft to provide the Pilot with the capability to visually cue weapons and sensors to the helmet LOS. Feedback of the weapon and/or sensor line-of-sight is also provided for target verification. Aircraft state information such as altitude and airspeed is also provided. Specific F/A-18E/F weapons, systems, and equipment that JHMCS interfaces with are as follows:

- AIM-9X
- Cockpit Video Recording System (CVRS)
- Mission Computer System
- Stores Management System
- AN/APG-73 Radar
- ALR-67(V) Radar Warning Receiver
- NACES Ejection Seat
- Advanced Tactical Forward Looking Infra Red
- AN/AVS-9 Night Vision Goggles
- Existing and Future Laser Eye Protective Devices
- Navy Combat Edge Anti-Gravity Flight Ensemble

- MBU-24/P22P-16 Enhanced Pressure-Demand Oxygen Mask
- PCU-56/P Series Parachute Restraint Harness Assembly

5. New Features, Configurations, or Material. JHMCS represents significant advances in weapon system targeting technology, and capitalizes on advances in electronic miniaturization, magnetic resonance technology, and head-up display optical imaging.

H. CONCEPTS

1. Operational Concept. The JHMCS provides air-to-air and air-to-ground weapons and sensor cueing that allows eyes out of the cockpit targeting within the visual range arena. The current deployment concept calls for Pilot operation only in Navy F/A-18E/F. However, the JHMCS design provides for future inclusion of two-seat integration and operations on F/A-18F. The operational concept for the F/A-18C/D OSIP mirrors the F/A-18E/F.

2. Maintenance Concept. General direction and guidance concerning the maintenance concept for the JHMCS is provided by the established Naval Aviation Maintenance Program (NAMP), Office of the Chief of Naval Operations Instruction (OPNAVINST) 4790.2 series. The NAMP prescribes the concept of three levels of maintenance: organizational, intermediate, and depot. The NAMP also prescribes the classification of maintenance requirements for functional complexity; assignment to the maintenance level that has the resources to effectively and economically accomplish the maintenance action; and an organizational structure for the collection of data for program management.

Interim maintenance will be required until Navy organic support is fully achieved. The JHMCS is primarily designed on an organizational to depot (O to D) level maintenance concept, with minimal intermediate level maintenance capability. Aviation Electronic Technician (AT) and Aviation Structural Mechanic (Safety Equipment) (AME) personnel with Navy Enlisted Classification (NEC) 8841 or 8341 are required for JHMCS on-aircraft organizational level maintenance. Aircrew Survival Equipmentman (PR) personnel are required for JHMCS off-aircraft (aircrew equipment) organizational level maintenance.

Organizational, intermediate, and depot level maintenance responsibilities vary according to component, and are as listed in the following table.

TASK or WRA COMPONENT	MAINTENANCE LEVEL	MAINTENANCE REQUIREMENTS	RATING
HDU	Organizational	° Fault isolate to defective components ° Remove and replace defective components ° Align to Pilot's eye	PR

TASK or WRA COMPONENT	MAINTENANCE LEVEL	MAINTENANCE REQUIREMENTS	RATING
	Depot	° Remove and replace, repair, or dispose of defective component	NA
Visor	Organizational	° Custom fit to Pilot ° Remove, replace, and discard defective component	PR
Upper and Lower HVI	Organizational	° Fault isolate to defective cable and/or component ° Remove and replace defective cable and/or component	AT
	Depot	° Repair or dispose of defective cable	NA
EU	Organizational	° Fault isolate to defective component using Built-in Test (BIT) ° Remove and replace defective component	AT
	Depot	° Repair or dispose of defective component	NA
CU	Organizational	° Fault isolate to defective component using BIT ° Remove and replace defective component	AT
	Depot	° Repair or dispose of defective component	NA
Magnetic Transmitter Unit	Organizational	° Fault isolate to defective component using BIT ° Remove, replace, and discard defective component	AT
Magnetic Transmitter Unit Support	Organizational	° Visually fault isolate to defective component ° Remove, replace, and discard defective component	AT

TASK or WRA COMPONENT	MAINTENANCE LEVEL	MAINTENANCE REQUIREMENTS	RATING
CP	Organizational	° Visually fault isolate to defective component ° Remove, replace, and discard defective component	AT
SPS	Organizational	° Fault isolate to defective component using BIT ° Remove, replace, and discard defective component	AT AME (Assist)
CRT	Organizational	° Fault isolate to defective component	PR
	Intermediate	° Remove, replace, and discard defective component (assist on Work Request)	AT
Relay Optics Assembly	Organizational	° Fault isolate to defective component	PR
	Intermediate	° Purge using dry nitrogen	AT
	Depot	° Remove from HDU and replace, repair, or dispose of defective component	NA
MRU	Organizational	° Fault isolate to defective component	PR
	Depot	° Remove from HDU and replace, repair, or dispose of defective component	NA
Camera	Organizational	° Fault isolate to defective component	PR
	Depot	° Remove from HDU and replace, repair, or dispose of defective component	NA
Cockpit Mapping	Organizational	° Prepare aircraft for mapping procedure	Multiple
	Onsite Depot	° Conduct mapping of aircraft cockpit	NA
HGU-55/P Helmet Shell	Organizational	° Custom fit to Pilot ° Assemble component pieces ° Fault isolate to defective components ° Remove, replace, and discard defective component	PR

a. Organizational. The operating squadron performs JHMCS organizational level maintenance daily in support of its own operation. These actions encompass inspections, build-up and fitting of aircrew equipment, handling, performance verification testing and fault isolation to the defective WRA, and removal and replacement of WRAs or major aircraft components.

Additionally, the JHMCS has self-test capability and diagnostic capability with BIT functions in the aircraft components, as well as a stand-alone in-shop external test set. The stand-alone Helmet Mounted Display Test Set (HMDTS) is designed to verify the functionality of the JHMCS HMD during pre-operational checks, and operates in conjunction with an International Business Machines (IBM) compatible Personal Computer (PC) desktop or laptop computer. In addition to running a BIT, it also contains a Liquid Crystal Display (LCD) monitor for real-time verification of helmet camera operation.

(1) Preventive Maintenance. Preventive maintenance consists of pre-operational testing, and removal and replacement of the Upper HVI and QDC grommets every 90 days, using standard hand tools and special contractor provided tools.

(2) Corrective Maintenance. Organizational level personnel use BIT for primary fault isolation to a WRA. Faulty WRAs are removed and replaced using standard hand tools and special contractor provided tools. Some larger WRAs and components (i.e., ejection seat, canopy, etc.) that interface with the JHMCS require the use of non-complex Support Equipment (SE). The faulty WRAs and components are then forwarded to the supporting Aircraft Intermediate Maintenance Department (AIMD) or contractor depot for repair.

(3) Initial or Replacement Issue Maintenance. Initial or replacement issue maintenance consists of the initial build-up assembly, fitting, and incorporation of technical directives during initial or replacement issue of aircrew equipment components. Squadron PRs perform initial or replacement issue maintenance using standard and special hand tools, shop equipment, and non-complex SE, calipers, and locally manufactured alignment tools.

b. Intermediate. JHMCS intermediate level maintenance actions performed in support of organizational activities by AIMD include purging of the Relay Optics Assembly, and electromagnetic mapping of the cockpit area following aircraft canopy removal and replacement. Personnel in the Aviation Electrician's Mate (AE) or AT ratings in the 600 Division work center with night vision system capability will perform Relay Optics Assembly purging on a work request from the squadron. Additionally, AT personnel in the 600 Division will perform CRT removal and replacement installation on a work request from the squadron due to Electronic Sensitive Device considerations.

c. Depot. The depot level of maintenance supports lower levels of maintenance by providing logistics and engineering assistance, and performing maintenance that is beyond the capability of the lower level activities. The manufacturer will provide depot services and accomplish depot level maintenance during the Interim Maintenance period. The Joint Organic Depot for the JHMCS is scheduled to open in FY07.

JHMCS depot level maintenance actions performed in support of organizational activities include electromagnetic mapping of the cockpit area following aircraft canopy removal and replacement. The cockpit mapping procedure requires that the aircraft be leveled and is only performed ashore due to the intricacies and criticality of the aircraft set-up. Current planning is for the Cockpit Mapper and required common support equipment to be pre-positioned at the following select shore stations: Naval Air Station (NAS) Lemoore, California; NAS North Island, California; NAS Oceana, Virginia; Naval Station Rota, Spain; NAS Sigonella, Sicily; and Naval Air Facility Atsugi, Japan. Final selection of shore facilities and placement of required support equipment will be accomplished with the concurrence of the TYCOMs. Depot personnel will perform cockpit mapping on a work request from the squadron. Squadron personnel will provide aircraft preparation set-up and disassembly assistance, including aircraft jacking. Contact Naval Aviation Depot (NADEP) North Island (45500) for more information regarding the cockpit mapping procedure.

d. Interim Maintenance. A five-year interim support period has been established for the JHMCS beginning in September 2001. During this period, discrepant WRAs identified by the squadron will be returned to the vendor for repair. Interim support will continue until full Navy organic support is achieved with the establishment of the Joint Organic Depot. The Navy Material Support Date (MSD) is anticipated in fourth quarter FY04.

e. Life Cycle Maintenance Plan. NA

3. Manning Concept. The introduction of JHMCS into the Navy inventory will not increase or decrease existing F/A-18 manpower levels for the AME and AT ratings; however, additional PR manning is projected to be required. A manpower analysis was initially conducted in March 2000 by the NAVAIRSYSCOM (AIR 3.4.1) and updated in March 2001. Factors governing the manpower requirements for the JHMCS include maintenance task length in man-hours, task frequency, and number of aircrew and aircraft per squadron. Incorporating the JHMCS for the Weapon System Operator in dual-seat aircraft would be an additional factor involved in manpower requirements for future applications. Tasking considered in the manpower analysis only include those tasks that represent additional tasking beyond current squadron workload. Specific maintenance requirements identified in the manpower analysis having potential for significant manpower impact for PRs are:

- Visor Trimming Procedure for Initial and Replacement Issue.
- IPD Alignment upon HDU Swap
- Fault Isolate Helmet, HDU, and Upper HVI
- Functional Test for Troubleshooting
- Repair HDU by Removal and Replacement of Visor

The Estimated Maintenance Man-Hours per Flight Hour model was calculated for all models and series of the F/A-18, and distinguished between single- and dual-seat, Fleet Readiness Squadron (FRS) and operational fleet squadron applications. Information for the F/A-18E/F is presented in this iteration of the NTSP. This table will be updated as the JHMCS is

made available to other platforms. No new NECs will be established to support the JHMCS at this time.

a. Estimated Maintenance Man-Hours per Operating Hour (or Flight Hour)

SQUADRON TYPE	AME	AT	PR
F/A-18E/F FRS (Single-Seat)	0.01	0.10	4.21
F/A-18E/F FRS (Dual-Seat)	0.01	0.10	6.08
F/A-18E Fleet Squadron	0.01	0.05	0.60
F/A-18F Fleet Squadron (Single-Seat)	0.01	0.06	0.64
F/A-18F Fleet Squadron (Dual-Seat)	0.01	0.06	1.16

b. Proposed Utilization. Proposed utilization rates coincide with aircraft utilization rates as published in the Required Operational Capabilities and Projected Operational Environment statements for the specific JHMCS installed aircraft.

c. Recommended Qualitative and Quantitative Manpower Requirements

(1) Aircrew. NA

(2) Enlisted

SQUADRON TYPE	AME	AT	PR
F/A-18E/F FRS (Single-Seat)	0	0	4
F/A-18E/F FRS (Dual-Seat)	0	0	5
F/A-18E Fleet Squadron	0	0	1
F/A-18F Fleet Squadron (Single-Seat)	0	0	1
F/A-18F Fleet Squadron (Dual-Seat)	0	0	1

4. Training Concept. The contractor will deliver difference training curriculum materials to Maintenance Training Unit (MTU) 1038 Naval Aviation Maintenance Training Unit (NAMTRAU) Lemoore, California, in conjunction with the Interactive Electronic Technical Manual (IETM) delivery schedule in August 2001.

a. Initial Training. The primary method of providing Aviation Life Support Systems (ALSS) initial training is for the Fleet Air Introduction/Liaison Survival Aircrew Flight Equipment (FAILSAFE) Team to visit each site, including other training activities, providing indoctrination to aircrew and maintenance personnel. These FAILSAFE Teams receive their training either from the manufacturer or the development activity. The FAILSAFE Team for the JHMCS received their training from the contractor during Fleet Introduction Training in March 2001. As the JHMCS is introduced into the fleet, PR personnel will receive on-site maintenance indoctrination from FAILSAFE Teams.

(1) Operator. Flight Test Training consists of two hours of didactic classroom training, followed by two hours of flight simulator training per Pilot to familiarize the flight test aircrews with the operational and safety issues associated with JHMCS. Flight Test Training for the F/A-18C has been completed. Flight Test Training for the F/A-18E is currently being conducted under contract at the Boeing Company in St. Louis, Missouri.

Boeing has provided JHMCS Aircrew familiarization training to Naval Weapon Test Squadron, VX-9, and NAVAIR personnel prior to the start of JHMCS DT-IIB and OA test phases. Boeing will also provide training prior to FA-18E/F FOT&E-1 to support the JHMCS OT&E phase of this test. Test Pilot training has included and is expected to include instruction via a Microsoft PowerPoint® briefing with follow-along workbook notes and hands-on practice via the FA-18E/F dome simulator at Boeing facilities.

(2) Maintenance. The prime contractor will conduct difference training as part of the F/A-18E/F Low Rate Initial Production (LRIP) III Training Contract during fourth quarter FY01. FAILSAFE Teams will conduct initial maintenance indoctrination for PRs. MTU 1038 NAMTRAU Lemoore will conduct initial training for AMEs and ATs.

b. Follow-on Training

(1) Operator. Follow-on fleet operator JHMCS academic training material is on contract to be developed concurrently with the final phases of JHMCS testing. A Training Development Team consisting of test and fleet operators has been organized and is performing as the primary review body for JHMCS fleet representative academic material and initial syllabus development. Products being developed include:

- FA-18E/F JHMCS Interactive Courseware (ICW)
- Initial Tactical Recommendations
- JHMCS Pilot Briefing
- Initial JHMCS Pilot Familiarization Flight Syllabus

This approach allows for fleet representative academic material availability at the conclusion of OT&E and also develops initial fleet training subject matter experts prior to JHMCS entering into service. The following table lists the members of the Training Development Team:

Training Team Sponsor:

Mr. Terry Witte.....	NAVAIRSYSCOM (PMA202) Navy JHMCS Training Lead

Testers:

CDR Paul Pompier	Operational Test and Evaluation Force Navy OT
LCDR Rick McCormack	NWTS / NAWCWD Navy DT, China Lake
LT Tom Tennant.....	Naval Test Squadron / NAWCAD Navy DT, Patuxent River
LT Michael Siepert.....	VX-9 Navy OT

Users:

MAJ John Spahr	Naval Strike Air Warfare Center (NSAWC) TOPGUN
LT Phil Clay	NSAWC TOPGUN
LT Steve Trafton.....	NSAWC STRIKE
LCDR Shawn Cushing.....	Strike Fighter Wing Atlantic (SFWL) Navy Strike Fighter Tactics Instructor (SFTI)
LT Scott Bonz.....	Strike Fighter Wing Pacific (SFWP) Navy SFTI
LT Rob Mathewson	Special Weapons and Tactics Atlantic (SWATSLANT) Navy SFTI
LT Tony Breyer	Strike Fighter Squadron (VFA)-122 F/A-18E/F Fleet Introduction Team
MAJ Kevin Wolfe.....	Marine Aviation Weapons Test Squadron-1 Marine Weapons Tactics Instructor

Material Developers:

Mr. Richard Garcia	Whitney, Bradley, and Brown Project Lead
Mr. Bruce Kaiser	Systems Management Technology, Inc. ICW Lead

(2) Maintenance. Two organizational level F/A-18E/F NAMTRAU courses will have the JHMCS curriculum added to the existing syllabus. The AME pipeline course C-602-9980 in training track E-602-0664 will incorporate the JHMCS with no expected increase in course length. The AT pipeline course C-102-9977 in training track E-102-0623 will incorporate the JHMCS with an increase of approximately 14 hours of classroom training time. When aircraft become available to the NAMTRAU to facilitate training, additional increases in training time will be expected to accommodate practical labs.

NAMTRAU does not currently support follow-on, aircraft specific, maintenance training for PRs due to the generic nature of most rating tasks and assigned NEC of 0000. Additionally, the JHMCS Operational Requirements Document (ORD) stipulates that the JHMCS will be maintained within the current NEC structure. Since completion of NAMTRAU courses generally awards an NEC, establishing a PR training track within the NAMTRAU is not considered feasible at this time, since this would require the establishment of a new PR organizational level NEC.

The majority of ALSS organizational and intermediate maintenance training for PR personnel is currently provided by *C-602-2035, Aircrew Survival Equipmentman Common Core Class A1*. The Aircrew Survival Equipmentman Class C1 and F1 courses cover specific intermediate maintenance training requirements and are not utilized for organizational maintenance training. The JHMCS is currently limited to a single aircraft platform for the Navy, the F/A-18E/F. Although aircraft specific training is generally considered to be beyond the intended scope of the "A" school course concept, the JHMCS is currently being evaluated for incorporation into the *C-602-2035, Aircrew Survival Equipmentman Common Core Class A1* course curriculum. Follow-on training for current PR "A" school graduates for the JHMCS will be limited to locally developed On-the-Job Training (OJT), and follow-up FAILSAFE Team visits.

All current organizational level maintenance courses are in the process of integrating Computer-Based Training with its basic elements of Computer-Managed Instruction (CMI), Computer-Aided Instruction (CAI), ICW, and Aviation Maintenance Training Continuum System (AMTCS) Electronic Modules into their curricula for classroom presentation and management. The JHMCS courses are scheduled to be Ready For Training in September 2001. Refer to the F/A-18 NTSP listed in paragraph M. of this document for more detailed information regarding these existing courses.

c. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
AME	° C-602-2033, Aviation Structural Mechanic E (Safety Equipment) Common Core Class A1 ° C-602-2034, Aviation Structural Mechanic E (Safety Equipment) Egress Strand Class A1
AT	° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O Level Class A1
PR	° C-602-2035, Aircrew Survival Equipmentman Common Core Class A1

d. Training Pipelines. No new training pipelines or tracks will be established to support the JHMCS. Two organizational level F/A-18E/F NAMTRAU courses will have the JHMCS curriculum added. The AME pipeline course C-602-9980 in training track E-602-0664 will incorporate the JHMCS with no expected increase in course length. The AT pipeline course C-102-9977 in training track E-102-0623 will incorporate the JHMCS with an increase of approximately 14 hours of classroom training time. When aircraft training devices become available, additional increases in training time will be expected to accommodate practical labs. More information in these course changes will be incorporated in updates to this NTSP.

I. ONBOARD (IN-SERVICE) TRAINING. Onboard training will be conducted via an OJT syllabus locally developed by Strike Fighter Wing Pacific in accordance with current NAMP policy.

1. Proficiency or Other Training Organic to the New Development. AMTCS will provide career path training to the Sailor or Marine from their initial service entry to the end of their military career. AMTCS concepts will provide an integrated system that will satisfy the training and administrative requirements of both the individual and the organization. The benefits will be manifested in the increased effectiveness of the technicians and the increased efficiencies of the management of the training business process. Where appropriate, capitalizing on technological advances and integrating systems and processes can provide the right amount of training at the right time, thus meeting the CNO's mandated "just-in-time" training approach.

Technology investments enable the development of several state-of-the-art training and administrative tools: Interactive Multimedia Instruction (IMI) for the technicians in the Fleet in the form of ICW with CMI and CAI for the schoolhouse.

Included in the AMTCS development effort is the Aviation Maintenance Training Continuum System - Software Module, which provides testing [Test and Evaluation], recording [Electronic Certification Qualification Records], and a Feedback system. The core functionality of these AMTCS tools are based and designed around the actual maintenance-related tasks the technicians perform, and the tasks are stored and maintained in a Master Task List data bank. These tools are procured and fielded with appropriate Commercial-Off-The-Shelf (COTS) hardware and software, i.e., Fleet Training Devices - Laptops, PCs, Electronic Classrooms, Learning Resource Centers (LRC), operating software, and network software and hardware.

Upon receipt of direction from OPNAV (N789H), AMTCS concepts are to be implemented and the new tools integrated into the daily training environment of all participating aviation activities and supporting elements. AMTCS will serve as the standard training system for aviation maintenance training within the Navy and Marine Corps, and is planned to supersede the existing Maintenance Training Improvement Program (MTIP) and Maintenance Training Management and Evaluation Program (MATMEP) programs.

The Navy fleet aircrew academic training materials listed below are on contract to be developed by Whitney, Bradley, and Brown, Inc., Vienna, Virginia. Members of the Training Materials Development Team outlined in paragraph 4.b.(1) above will approve final deliverables for format and content. In-process reviews are scheduled throughout the end of the OT&E phase. Deliverables include:

- JHMCS System Briefing (Microsoft PowerPoint® Format with Notes Page Text)
- JHMCS Tactical Recommendations Briefing (Microsoft PowerPoint® Format with Notes Page Text)
- Lesson Module based JHMCS/FA-18E/F ICW (Authorware 5.1) to include the following lesson modules:
  - HMD Theory
  - JHMCS Familiarization/System Description
  - JHMCS Platform Integration
  - JHMCS Operational Procedures/Tactical Recommendations
  - JHMCS Degraded Operations
  - JHMCS Safety
  - JHMCS Lessons Learned
  - HMD Threat Overview
  - JHMCS ICW Test Module
- JHMCS TACMAN (Tactical Recommendations) Chapter (Boeing requested format)
- JHMCS Flight Syllabus Structure and Content (NSAWC requested format)

Members of the contractor development team will be working with VX-9 as trusted agents during the OT&E phase. This approach enables the contractor to collect JHMCS tactical

employment recommendations during the development process, which will facilitate final delivery of training materials prior to JHMCS system fleet bed-down.

2. Personnel Qualification Standards. NA

3. Other Onboard or In-Service Training Packages. NA

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers

CONTRACT NUMBER	MANUFACTURER	ADDRESS
F33657-97-C-0001	The Boeing Company	P.O. Box 516, MC S106-5235 St. Louis, MO 63166-0516
F33657-97-C-0001	Oregon Aero, Inc.	34020 Skyway Drive Scappoose, OR 97056
F33657-97-C-0001	Vision Systems International (VSI)	2711 Orchard Park Way San Jose, CA 95134-2083

2. Program Documentation. The Joint Mission Need Statement (CAF 308-93) was approved in January 1994. The Milestone A Acquisition Decision Memorandum was approved in December 1994. The original Program Management Directive (PMD) #2302(4)/PE64201F) was approved in January 1995. Subsequent PMDs were approved in January 1996 and in April 1996. Both the USN and USAF approved the ORD (CAF-USN 308-93-II-A) in December 1996. The current Single Acquisition Management Plan was approved in May 2000.

3. Technical Data Plan. Boeing is developing on- and off-aircraft technical manuals for both the USAF and the Navy. For the Navy, the on-aircraft manuals will be assigned a Technical Manual Identification Numbering System (TMINS) series number in the F/A-18 series manuals. The off-aircraft manual will be assigned the number NAVAIR 13-1-6.7-5, and will be titled in the Aviation Crew Systems Manual series. Additionally, the HMDTS operator instructions have been incorporated into the off-aircraft manual. The modifications to the Torso Harness will be incorporated through the Technical Directive process and added to the NA 13-1-6.2. All manuals will be delivered in electronic media in portable document format (PDF) compatible with Adobe Acrobat Reader. On-aircraft manuals will be delivered in IETM and PDF format. Delivery will be completed concurrent with the F/A-18E/F Operational Evaluation (OPEVAL) in fourth quarter FY01. Delivery of updates will continue as required.

4. Test Sets, Tools, and Test Equipment

a. Helmet Mounted Display Test Set. The JHMCS has one in-shop test set: the JHMCS HMDTS. The HMDTS is a stand-alone test set capable of verifying the functionality of the JHMCS HMD. It operates in conjunction with a standard IBM PC compatible computer via the supplied RS232 cable and test software. Items supplied in the HMDTS include Unit Under Test (UUT) test cable, RS232 cable, DB9 to DB25 adapter, power cable, and test software. Computer hardware requirements include:

- IBM PC Compatible
- Microsoft Windows 95/98 Operating System (See note)
- 16 MB of RAM
- 5 MB of Available Hard Disk Space
- One Available Serial Port

Note: The software has been tested with Microsoft Windows NT 4.0 and 2000 Operating Systems and found to be compatible.

b. Aircraft Mapper Test Set. The JHMCS Aircraft Mapper Test Set is a stand-alone test set that measures and records the magnetic resonance of the cockpit area in relation to the seat. The cockpit is mapped at three different heights that correspond to the Seat Position Sensor height as the seat is raised and lowered (full up, full down, and center of travel). The prime contractor is currently assembling a listing of items that will be included with the Aircraft Mapper Test Set.

c. Tools. Contact Strike Fighter Wing Pacific for information regarding the special tools listing. A table of Support Equipment, Common Tools, and Special Tools required to support the JHMCS has been developed by the lead contractor, and will be included in element IV.A.1 in the seven-part edition of this NTSP (to be developed in FY02).

5. Repair Parts. Provisioning action for the JHMCS repair parts will be accomplished by the lead service. One Primary Inventory Control Manager will be established for all services. The Naval Inventory Control Point (NAVICP) will be a secondary inventory control authority for the Navy. The MSD for NAVICP is anticipated by September 2004. The Technical Data Plans are currently sufficient to support organizational level parts provisioning, but are insufficient to support stand-up of the organic depot. All organizational level provisioning drawings have been received from the contractor and approved by the government. The following table lists spare and repair parts requirements.

ASSEMBLY	DESCRIPTION	PART NUMBER
EU	Single-Seat	620100-01-21
	Dual-Seat	620100-02-00

ASSEMBLY	DESCRIPTION	PART NUMBER
Magnetic Transmitter Unit	F-15, F/A-18 and F-22, FNT	620200-01-02
	F-15, Back	620200-02-00
	F-16, Front Seat	620200-03-00
	F/A-18, Back	620200-04-00
Magnetic Transmitter Unit Bolt	Screw Set	620202-01-00
CU	F-15/16/18/22	620300-01-02
HVI, Upper	F-15/16/22, XL Interface	620410-01-02
	F-15/16/22, L Interface	620410-02-02
	F-15/16/22, M Interface	620410-03-02
	F/A-18, XL 98% Interface	620410-04-02
	F/A-18, L 98% Interface	620410-06-02
	F/A-18, M 98% Interface	620410-08-02
	F/A-18, XL 3% Interface	620410-05-02
	F/A-18, L 3% Interface	620410-07-02
	F/A-18, M 3% Interface	620410-09-02
HVI, Lower	F-15	620420-01-03
	F/A-18C	620420-02-03
	F/A-18D, Front Seat	620420-05-03
	F-16	620420-05-03
	F/A-18E/F	620420-06-00
QDC Seal, Hi-Voltage	HVI Seal	620480-01-00
UC Seal, Hi-Voltage	HVI Seal	620490-01-00

ASSEMBLY	DESCRIPTION	PART NUMBER
Helmet/Interconnect	F-15/16/22, X-Large	620510-02-05
	F-15/16/22, Large	620510-02-05
	F-15/16/22, Medium	620510-03-05
	F/A-18, X-Large 98%	620510-04-05
	F/A-18, Large 98%	620510-06-05
	F/A-18, Medium 98%	620510-08-05
	F/A-18, X-Large 3%	620510-05-05
	F/A-18, Large 3%	620510-07-05
	F/A-18, Medium 3%	620510-09-05
Display Unit (DU)	With Mono Cam	620520-01-05
	With Color Cam	620520-02-00
Visor	Clear	620530-01-01
	15%	620530-02-00
	25%	620530-03-04
	High Contrast	620530-05-01
	Visor Tangs Kit	620532-01-00
	Latch Visor Kit	620534-01-00
	Knob, Visor Kit	620536-01-00
Helmet	X-Large, Modified	620540-01-00
	Large, Modified	620540-02-00
	Medium, Modified	620540-03-00
CRT Assembly		620590-01-03
HMDTS	Top Assembly	620900-02-01 (small)
	Test Set Cable	620992-01-01

6. Human Systems Integration. The JHMCS, by its very nature, is heavily reliant on successful accomplishment of the human system interface. However, the concept has been successfully demonstrated and the technology is mature enough to warrant proceeding through the Production and Deployment phase of the DAS. The Logistic Support Analysis has addressed the Human Systems Integration elements of manpower, training, safety, personnel, health

hazards, human factors engineering, and survivability. All identified issues have been or are being addressed.

K. SCHEDULES

1. Installation and Delivery Schedules

DELIVERY SCHEDULE
(NUMBER OF SHIPSETS PLUS SPARES)

PRODUCTION ORDER	FY02	FY03	FY04	FY05	FY06	FY07	FY08
LRIP-1 for F/A-18 Lot 24:	**36**						
VX-9 (Note 1)		5					
VFA-122 (PAC FRS)	3						
VFA-41	14 + 1						
VFA-14	12 + 1						
VFA-102 (Note 2)	0						
LRIP-2 for F/A-18 Lot 25:		**39**					
VFA-122 (PAC FRS)		12					
VFA-27		12 + 2					
VFA-174 (LANT FRS)		13					
FRP for F/A-18 Lot 26:			**42**	**42**	**42**	**42**	**42**
VFA-122 (PAC FRS)			1	3	4	7	3
VFA-174 (LANT FRS)			5	12	2		
VFA-97			12 + 1				
VFA-86			8	4 + 1			
VFA-211			14 + 1				
VFA-137				4	8 + 1		
VFA-11				12 + 1			
VX-9				3			
NSTS/NWTS				2			
VFA-154					5	9 + 2	

PRODUCTION ORDER	FY02	FY03	FY04	FY05	FY06	FY07	FY08
VFA-105					12 + 1		
VFA-213					9	5 + 1	
VFA-81						9	3 + 1
VFA-103						9	5 + 1
VFA-2							14 + 1
VFA-146							4
VFA-143							10

Note 1: In support of Lot 25 aircraft.

Note 2: VFA-102 is scheduled to have a mix of seven Lot 23 and seven Lot 24 aircraft. It is not recommended to mix JHMCS aircraft with non-JHMCS aircraft due to critical flight safety considerations with Pilot-cockpit situational awareness. Current planning is to not issue JHMCS components until all aircraft are JHMCS capable.

2. Ready For Operational Use Schedule. Since the JHMCS is being installed in the production F/A-18E/F during aircraft assembly, the Ready For Operational Use (RFOU) date of the JHMCS for a squadron will coincide with the delivery of the first aircraft to the squadron. Aircrew equipment will be RFOU upon completion of assembly and aircrew fitting at the squadron.

3. Time Required to Install at Operational Sites. The time required for JHMCS helmet installation at the operational site is currently under final evaluation by VX-9 and the primary contractor. This information will be incorporated in updates to this NTSP upon approval of the final maintenance plan.

Installation of aircraft components for the F/A-18E/F is accomplished on the assembly line during production for Lot 24 and subsequent aircraft. Provisions for JHMCS were incorporated into Lot 23 aircraft, and installation time does not exceed normal replacement installation time. Lot 21 and 22 aircraft are not currently being considered for JHMCS installation.

4. Foreign Military Sales and Other Source Delivery Schedule. An FMS delivery schedule is not currently available. Contact NAVAIRSYSCOM (PMA202D) for more information regarding FMS.

5. Training Device and Technical Training Equipment Delivery Schedule. Current planning calls for installation of four Weapons Tactics Trainers (WTT) in early FY03 at NAS Lemoore. There are no current plans for a WTT installation at NAS Oceana. There are no current plans for JHMCS to be incorporated in a Tactical Operational Flight Trainer (TOFT). A

comprehensive listing of Training Devices and Technical Training Equipment required for NAMTRAU Lemoore and NATTC Pensacola is currently To Be Determined (TBD) and will be included in updates to this NTSP.

L. GOVERNMENT-FURNISHED EQUIPMENT AND CONTRACTOR-FURNISHED EQUIPMENT TRAINING REQUIREMENTS

WEAPONS TACTICS TRAINER
GOVERNMENT FURNISHED EQUIPMENT REQUIREMENTS

EQUIPMENT	PART NUMBER	QUANTITY	DATE REQUIRED	
			NOV 01	OCT 02
EU	620100	3	2	1
Magnetic Tracker Unit	620200	3	2	1
CU	620300	3	2	1
Upper HVI	620410	3	2	1
Lower HVI (Note 1)	620420	3	2	1
Quick Disconnect Mounting Bracket	TBD	2	2	-
HGU-55/P Helmet (Note 2)	620510	3	2	1
DU	620520	3	2	1
Visor Assembly	620530	4	2	2

Note 1: With mating connectors for CU and WTT interface cable assembly (T-089495).

Note 2: With installed microphone and earphones.

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS. Current NTSP documents can be downloaded online from the OPNAV Aviation Technical Training (N789H) web site at: http://www.avtechtra.navy.mil/ntsp_catalog.htm.

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
Aviation Life Support Systems NTSP	N88-NTSP-A-50-9206A/D	PMA202	Draft June00
F/A-18 Aircraft NTSP	N88-NTSP-A-50-7703H/D	PMA265	Draft Nov 00

APPENDIX A - POINTS OF CONTACT

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APPENDIX A - POINTS OF CONTACT

NAME / FUNCTION / ACTIVITY, CODE / INTERNET EMAIL	TELEPHONE NUMBERS
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PRCS Kevan Lee Aircrew Systems Deputy Assistant Program Manager, Logistics NAVAIRSYSCOM, AIR 3.1.4F leeka@navair.navy.mil	**COMM:** (301) 757-6605 **DSN:** 757-6605 **FAX:** (301) 757-6995
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APPENDIX A - POINTS OF CONTACT

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