DRAFT

NAVY TRAINING SYSTEM PLAN

FOR THE

PIONEER

UNMANNED AERIAL VEHICLE

SYSTEM

N88-NTSP-A-50-8622D/D

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PIONEER UNMANNED AERIAL VEHICLE SYSTEM

EXECUTIVE SUMMARY

The Pioneer Unmanned Aerial Vehicle (UAV) System is a joint Navy and Marine Corps program currently in the Production, Deployment, and Operational Support Phase of the Weapon System Acquisition Process. Pioneer is deployed by a Marine Air Ground Task Force (MAGTF) or Navy Battle Group Commander to provide real-time tactical intelligence services. Pioneer's Electro-Optical and Infrared sensors provide commanders with Reconnaissance, Surveillance and Target Acquisition, Naval Gun-Fire Support, Battle Damage Assessment, and sea control missions. Pioneer units also conduct proficiency and mobilization training, tactics and operational concept development, force structure deployment planning, support of MAGTF, Amphibious Ready Group, and Carrier Air Wing training exercises.

Pioneer maintenance is based on the three level maintenance concept identified in the Naval Aviation Maintenance Program, OPNAVINST 4790.2G. Organizational level maintenance is performed by Navy personnel with Navy Enlisted Classification (NEC) 8361, and Marine Corps personnel with Military Occupational Specialties (MOS) 6314, 6014, 6072, and 6531. Navy and Marine Corps personnel assigned to Aircraft Intermediate Maintenance Departments and Marine Aviation Logistics Squadrons perform limited intermediate level maintenance. Depot level maintenance is performed at contractor facilities.

Navy Pioneer UAV detachments will decrease from six to two, causing a decrease in manning. Marine Corps Pioneer UAV squadron manning has not changed since the last iteration of this document. Six operator watchstations are associated with the Pioneer UAV System: the Mission Commander (Officer, 13XX); External Pilot (EP) (NEC 8362, MOS 7316), Payload Operator (NEC 8364), Internal Pilot (IP) (NEC 8363, MOS 7316) and Ground Control Station (GCS) Operator (MOS 7614) are located in or near the GCS. The fifth and sixth stations involve the IP and EP at the Portable Control Station. The stations are manned as required during operational and training missions. Additionally, maintenance personnel, including a Crew Chief and Plane Captain, perform preflight, launch, recovery, and postflight functions.

The Pioneer UAV System training concept provides for organizational level maintenance training based on OPNAVINST 4790.2G, and operator training based on the Pioneer Naval Air Training and Operating Procedures Standardization Flight Manual. Training is provided to operator and maintenance personnel at Naval Air Maintenance Training Group Detachment, Maintenance Training Unit 6001, Fort Huachuca, Arizona. Initial training for incorporation of the Engineering Change Proposals associated with this NTSP is pending software correction and will be provided by Naval Air Systems Command PMA2053K. The date of software availability is yet to be determined.

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LIST OF ACRONYMS

AE	Aviation Electrician's Mate
AGL	Above Ground Level
AIMD	Aircraft Intermediate Maintenance Department
AMIST	Aviation Maintenance In-Service Training
AMS	Aviation Structural Mechanic (Structures)
AMTCS	Aviation Maintenance Training Continuum System
APML	Assistant Program Manager Logistics
ARG	Amphibious Ready Group
AS	Aviation Support Equipment Technician
AT	Aviation Electronics Technician
BIT	Built-In Test
C-Band	IEEE Radar Band, 4-8 GHz (3.75 - 7.5 cm wavelength)
CBT	Computer-Based Training
CIN	Course Identification Number
CNET	Chief of Naval Education and Training
CNO	Chief of Naval Operations
CPA	Central Processing Assembly
DB	Decibel
DET	Detachment
ECP	Engineering Change Proposal
EO	Electro-Optical
EP	External Pilot
FLIR	Forward Looking Infrared
FY	Fiscal Year
GCS	Ground Control Station
GFE	Government Furnished Equipment
GHz	Giga-Hertz
GPS	Global Positioning System
IFF	Identification Friend Foe
IP	Internal Pilot
IPT	Integrated Product Team
IR	Infrared

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LIST OF ACRONYMS

IS	Intelligence Specialist
ISR	Intelligence, Surveillance, and Reconnaissance
JUAVTOPS	Joint UAV Training and Operating Procedures Standardization
Ka-Band	IEEE Radar Band, 4-8 GHz (7.5 mm – 1.11 cm wavelength)
KHz	Kilo-hertz
LPD	Amphibious Transport Dock
LRU	Lowest Replaceable Unit
MAGTF	Marine Air Ground Task Force
MALS	Marine Aviation Logistics Squadron
MATMEP	Marine Training Management Evaluation Program
MC	Mission Commander
MCCDC	Marine Corps Combat Development Command
MHz	Mega-hertz
MIAG	Modular Integrated Avionics Group
MMF	Mobile Maintenance Facility
MOS	Military Occupational Specialty
MPT	Manpower, Personnel, and Training
MSL	Mean Sea Level
MTIP	Maintenance Training Improvement Program
MTU	Maintenance Training Unit
NA	Not Applicable
NAMTRAGRU DET	Naval Air Maintenance Training Group Detachment
NAVAIRSYSCOM	Naval Air Systems Command
NAVPERSCOM	Navy Personnel Command
NAWCAD	Naval Air Warfare Center Aircraft Division
NEC	Navy Enlisted Classification
NOBC	Navy Officer Billet Code
NTSP	Navy Training System Plan
OLSP	Operational Logistics Support Plan
OPNAV	Office of the Chief of Naval Operations
OPO	OPNAV Principal Official
PCS	Portable Control Station

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LIST OF ACRONYMS

PEO(CU)	Program Executive Officer, Cruise Missiles and Unmanned Aerial Vehicles
PMA	Program Manager, Air
PO	Payload Operator
PUI	Pioneer UAV Incorporated
RATO	Rocket Assisted Take-off
RF	Radio Frequency
RFT	Ready For Training
RGU	Rate Gyro Unit
RPV	Remotely Piloted Vehicle
RRS	Remote Receiving Station
RS	Recovery Subsystem
SE	Support Equipment
SMS	Ship Motion Sensor
SRA	Shop Replaceable Assembly
SR-RPV	Short Range-Remotely Piloted Vehicle
SPARS	Shipboard Pioneer Arrested Recovery System
TBD	To Be Determined
TCU	Tracking and Communications Unit
TD	Training Device
TDP	Touchdown Point
TRPPM	Training Planning Process Methodology
TS	Track Subsystem
TSAS	Track Subsystem Alignment Set
TTE	Technical Training Equipment
TUA	Tracking Unit Assembly
TV	Television
UAV	Unmanned Aerial Vehicle
UCARS	UAV Common Automatic Recovery System
UHF	Ultra-High Frequency
VC	Fleet Composite Squadron
VGU	Vertical Gyro Unit
VME	Versa Module Europa
VMU	Marine Unmanned Aerial Vehicle Squadron

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LIST OF ACRONYMS

VRS	Video Retransmission System

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PREFACE

This Draft Pioneer Unmanned Aerial Vehicle (UAV) System Navy Training System Plan (NTSP) is an update of the Pioneer UAV System Navy Training Plan (NTP), A-50-8622C/P of October 1997. This NTSP reformats the previous version to comply with the requirements of the Navy Training Requirements Documentation Manual, OPNAV P-751-1-9-97.

This revision also includes appendices for three major Engineering Change Proposals (ECP) to upgrade the Pioneer UAV System and improve sustainability. These ECPs include the Modular Integrated Avionics Group (MIAG), UAV Common Automatic Recovery System (UCARS), the Versatron 12DS Dual Electro-Optical (EO)/Infrared (IR) Sensor. Each ECP will significantly impact Pioneer UAV System training.

The number of detachments at VC-6 Detachment (DET) Patuxent River, Webster Field, Maryland, decreased from six to two, which will greatly affect Pioneer UAV manpower.

The Payload Operator Navy Enlisted Classification (NEC) changed from 8362 to 8364 and the Internal Pilot (IP) NEC changed from 8362 to8363.

PART I - TECHNICAL PROGRAM DATA

A. NOMENCLATURE-TITLE-PROGRAM

1. **Nomenclature-Title-Acronym.** Pioneer Unmanned Aerial Vehicle (UAV) System

2. **Program Element.** 63621N and 63635M

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 (N853F)

OPO Resource Sponsor ..... CNO (N853F)

Marine Corps Program Sponsor..... MCCDC (ASM1)

Developing Agency ..... NAVAIRSYSCOM (PMA263)

Training Agency.....CNET (ETE32)
CINCLANTFLT
CINCPACFLT

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

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

Director of Naval Training ..... CNO (N7)

Marine Corps Combat Development Command
Manpower Management..... TFS Division

D. SYSTEM DESCRIPTION

1. Operational Uses. The Pioneer UAV System is deployed by Marine Air Ground Task Force (MAGTF) and Navy Battle Group Commanders to provide real-time intelligence imagery in support of maritime, amphibious, and ground battle operations. Pioneer payloads provide commanders with day, night, or day/night mission capability for reconnaissance, surveillance, target acquisition data, artillery and gunfire adjustment support, battle damage assessment, search and rescue, and drug interdiction support. These missions are associated with the Pioneer's battlefield, amphibious, and maritime tasking requirements.

Secondary missions include proficiency and mobilization training; tactics and operational concept development; support and force structure deployment planning; follow-on system development; payload and system improvement testing; and support of MAGTF, Amphibious Ready Group (ARG) and Carrier Air Wing training exercises. The Pioneer UAV System is capable of operation from conventional airfields, unimproved airfields (with a smooth, Foreign Object Damage free surface), and six modified L-class ships. Alternative launch methods include pneumatic launch (Marine Corps only) ashore, and Rocket Assisted Take-off (RATO) ashore and afloat. Recovery methods include conventional and arrested landings ashore, and Shipboard Pioneer Arrestment and Recovery System (SPARS) net recoveries aboard ships.

2. Foreign Military Sales. Not Applicable (NA).

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST.

The Naval Air Warfare Center Aircraft Division (NAWCAD) Patuxent River, Maryland, and Fleet Assistance Support Team (FAST) completed Technical Evaluation and Developmental Testing-IIA in November 1987. Operational Evaluation and Operational Testing-II were completed by Fleet Composite Squadron Six (VC-6) aboard USS Iowa (BB-61) in October 1989. There were no findings impacting Manpower, Personnel, and Training (MPT).

Specific developmental and operational testing associated with the MIAG, UCARS, and Versatron 12DS payload are addressed in the appendices of this NTSP.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED

1. Modular Integrated Avionics Group. The MIAG will replace the Pioneer UAV's Central Processing Assembly (CPA), Vertical Gyro Unit (VGU), Rate Gyro Unit (RGU), Barometric Pressure Unit and flux valve assembly.

2. Versatron 12DS Payload. The 12DS EO/IR sensor will replace the MKD-200/200A and the MKD-400/400C payloads through attrition.

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The Pioneer UAV System is a transportable Intelligence, Surveillance, and Reconnaissance (ISR) asset capable of providing tactical commanders with day and night, battlefield and maritime reconnaissance in support of Marine expeditionary warfare and maritime control operations. The Pioneer UAV System consists of three ground elements, Ground Control Station (GCS), Portable Control Station (PCS), and Tracking and Communication Unit (TCU), and one airborne element (Pioneer UAV). The Pioneer UAV System is capable of operating from improved and unimproved sites ashore, and from ships which have undergone the required ship alteration for the SPARS. Strategic or tactically vital data may be obtained cost-effectively by exploiting the UAV's low radar cross-section, low IR signature, and remote control versatility.

Pioneer UAV is a Line Of Sight system, which operates in the C-band and Ultra High Frequency (UHF) spectrums. The UAV is typically operated by the External Pilot (EP) when within visual range. For missions beyond visual range, UAV control is passed to one of the IPs located in the GCS or PCS. Its CPA may also operate the UAV in a pre-programmed, semi-autonomous mode.

The basic Pioneer mission is accomplished by the IP positioning the UAV, under direction of the Mission Commander (MC), to provide a stable sensor platform for optimum imagery resolution of the areas of interest. The Payload Operator (PO) then directs the sensors to provide video imagery of the target. Pioneer imagery is down-linked to the controlling station and transferred to end users, via coaxial cable, a commercially purchased Video Retransmission System (VRS), or hard copy (VHS or Beta tape, or thermal or photo print).

a. Ground Control Station. The GCS contains three primary equipment bays; the Pilot Bay (IP workstation), the Observer Bay (PO workstation), and a Tracker Bay, which contains an X-Y plotter for displaying UAV position. Additionally, some GCS shelters are modified with an Intelligence Bay (Intelligence Specialist (IS) workstation). The GCS is typically contained in either an S-280 shelter (Marine and training systems), or a modified 20-foot Mobile Maintenance Facility (MMF) shelter for shipboard operations. The GCS communicates with the UAV via its companion TCU, which allows operation of the UAV throughout all mission phases, and to the system's maximum range of 185 kilometers (100 nautical miles).

b. Tracking and Communications Unit. The TCU is connected to the GCS via an umbilical, provides up-link communications to the UAV via two up-link channel transmitters (C-band and UHF), and receives down-link communications from the UAV via a single C-band receiver. Up-link data include UAV flight commands, payload commands, Identification Friend Foe (IFF) on/off commands, navigation and anti-collision light control, and a variety of sensor queries. Down-link data include UAV performance, UAV position, CPA acknowledgement of up-link commands, and payload imagery.

COMMUNICATIONS LINK	FREQUENCY	BANDWIDTH	POWER	GCS/TCU RANGE
Primary Up-link (C-band)	4.55 GHz	12.5 GHz	30 Watts	100 nm
Secondary Up-link (UHF)	420 - 470 MHz	600 KHz	50 Watts	100 nm
Down-link (C-band)	4.8 - 4.9 GHz	10 MHz	30 Watts	100 nm

c. Portable Control Station. The PCS operates independently of the GCS allowing split-site operations, or can be used to launch the UAV and transfer control to a down range GCS for mission execution, and then receive UAV control from the GCS to execute recovery. The PCS includes an IP workstation, radio frequency unit, hand-held pilot control units, and an electrical power source. The PCS, which does not require a shelter, is housed in an S-250 shelter ashore, or stack-mounted in a pre-groomed compartment aboard ship.

COMMUNICATIONS LINK	FREQUENCY	BANDWIDTH	POWER	GCS/TCU RANGE
Primary Up-link (C-band)	4.55 GHz	12.5 GHz	30 Watts	25 nm
Secondary Up-link (UHF)	420 - 470 MHz	600 KHz	50 Watts	25 nm
Down-link (C-band)	4.8 - 4.9 GHz	10 MHz	30 Watts	100 nm

d. Aerial Vehicle. The air vehicle is a remotely piloted or independently self-controlled, high wing, lightweight aircraft, capable of carrying a variety of mission payloads. The air vehicle is controlled by a Radio Frequency (RF) up-link data stream, from either the GCS (via the TCU) or the PCS, or can be programmed to fly independently under control of its autopilot. The UAV may be handed off from one control station to another (GCS-GCS or GCS-PCS, etc.), effectively increasing the range to that of its fuel capacity.

The air vehicle uses a pusher-propeller, located at the rear of the main fuselage, which is powered by a two-stroke, horizontally opposed two-cylinder engine, burning 100LL aviation gasoline. The air vehicle is weather sensitive, with neither flight surface nor carburetor anti-ice, limited water intrusion protection, and a laminated wood propeller. The UAV has a low radar cross-section and a small IR signature, minimizing detection by opposing forces.

While the air vehicle has a service ceiling of 12,000 feet Mean Sea Level (MSL), it is normally operated from 3,000 to 5,000 feet Above Ground Level (AGL) in order to ensure the best quality imagery. Mission altitude is greatly affected by the need to maintain line-of-sight between the air vehicle and the controlling ground station. Additionally, the Pioneer's

payloads require an optimum range from target of one to three kilometers, and are generally effective to a standoff distance of up to seven kilometers.

Standard Pioneer payloads are the Tadiran MKD-200/200A daylight Television (TV) EO cameras and the Tadiran MKD-400/400C IR sensors. A new payload, the Versatron 12DS dual EO/IR sensor, is described in Appendix C.

(1) MKD-200/200A Daylight TV Electro-Optical Camera. The MKD-200 payload consists of a TV camera, mounted on a stabilized platform, installed in the air vehicle's payload compartment. It receives electrical power from the air vehicle electrical system. Commands to the payload subassemblies (modes of operation, control of gimbals, camera azimuth, elevation, camera on-off, zoom, etc.) are received from the ground station via the RF up-link signal, while payload telemetry and video data are transmitted to the ground station through the UAV video and telemetry RF down-link.

The MKD-200A is an improved daylight payload, which is enclosed in the same opaque protective bubble as the MKD-400. Operating procedures are the same for both MKD-200 and the MKD-200A payloads, but video quality of the MKD-200A is reportedly better than the MKD-200. The MKD-200/200A has position control of 360° continuous azimuth rotation, and -88° (±3°) through +5° (±3°) pitch angle authority.

(2) MKD-400/400C Infrared Sensor. The MKD-400 payload consists of a lightweight Forward Looking Infrared (FLIR) system mounted on a stabilized platform, a Platform Electronic Box which receives control commands and sends status reports via the UAV CPA cable, and a FLIR Electronic Box which converts received thermal energy to a standard TV image. The FLIR is a real-time thermal imaging system, based on the principle of detecting thermal energy radiated by objects encountered in its field of view. The MKD-400 is installed in the special payload compartment provided in the UAV, and receives electrical power from the UAV electrical system. Commands to the payload subassemblies (modes of operation, control of gimbals, camera azimuth, elevation, camera on-off, zoom, etc.) are received through the UAV RF up-link, while payload telemetry and video data are transmitted to ground control through the UAV video and telemetry down-link.

The MKD-400C is an improved IR sensor incorporating a closed loop cooling system, eliminating the need for charging a nitrogen cooling system. The closed loop system has a built-in compressor that provides cooling of the IR sensor. The operating procedures and characteristics are the same for both payloads, except that the MKD-400C does not have the operating time limits of the nitrogen cooled MKD-400. The MKD-400/400C has position control of 360° continuous azimuth rotation and –85° through 0° (±3°) pitch angle.

e. Miscellaneous Equipment

(1) Rocket Assisted Take-Off Launch System. RATO launch allows the air vehicle to be operated from unprepared sites, ashore or aboard ship, where conventional take-off is impossible or impractical. The system uses a launching stand to hold the air vehicle at the proper launch attitude (angle-of-attack), and a disposable rocket motor assembly to boost the air

vehicle to flying speed within two seconds. The RATO launch system consists of a fire control box, remote SAFE-ARM switch, 150 feet of firing cable, rocket motor initiator, and a MK 125 Mod 0 rocket motor assembly.

(2) Pneumatic Launch System. The pneumatic launching system is designed to launch an air vehicle, equipped with launcher skids and a catch-release mechanism, from unprepared ground-based locations lacking a sufficiently prepared surface from which to conduct a conventional take-off. The launching system operates a pneumatic turbine, which draws in a nylon strap onto a rotating drum. As the drum rotates, the strap pulls the UAV along an inclined rail for approximately 18.5 meters (61feet), gaining sufficient end-speed and elevation to sustain controlled flight after the UAV clears the end of the launcher ramp.

(3) Remote Receiving Station. The Remote Receiving Station (RRS) is a truck-portable imagery/data receiving unit capable of monitoring real-time, non-annotated video directly from the UAV. It consists of a receiver, monitor, and an antenna system, and is capable of receiving UAV down-link imagery to a range of 25 kilometers. A 24-volt direct current power source is required for the station. The data received by the RRS consists of a video picture from the sensor payload in the UAV. The payload, which is remotely controlled from the GCS or PCS, continuously transmits a picture of the surveyed area, which is displayed on the RRS monitor. The video contains no graphic or parametric data.

(4) Shipboard Pioneer Arrestment and Recovery System. The SPARS net recovery system is used for shipboard operations, where conventional recovery methods are impossible. The SPARS consists of a recovery net, suspended across the aft end of the ship's flight deck between two vertical poles, and a cable tension/brake assembly operating with a third pole located at the forward end of the flight deck. All three poles can be raised and lowered for storage, rigging, and de-rigging the recovery net. The EP flies the UAV into the center of the net, which collapses around the UAV, stopping its forward motion. The net also suspends the UAV sufficiently high to prevent damage from striking the flight deck. Once safely trapped, and with the engine secured, the UAV and net assembly is lowered to the flight deck for postflight inspection and storage or turnaround.

2. Physical Description. The physical description of the Pioneer UAV System varies by whether the system is deployed aboard ship or ashore. In either case, the Pioneer UAV System consists of three ground elements and one airborne element, as functionally described above. Additionally, multiple payloads, RRS, launch systems, recovery systems, and other miscellaneous equipment are included in a Pioneer pack-out. The Pioneer UAV System has two general configurations: Land-based, operated by the Navy, Marine Corps, and Naval Air Maintenance Training Group Detachment (NAMTRAGRU DET) Fort Huachuca, Arizona; and Shipboard or Maritime, operated by the Navy and deployed aboard six modified Amphibious Transport Dock (LPD) class ships. Each ship has undergone extensive alteration to accommodate the Pioneer system and its associated equipment. Although similar, installations are not duplicates, due to varying ship design and technological changes over the installation timeline.

a. Ground Control Station

(1) Shore-based. The shore-based GCS is installed in a truck or trailer mounted S-280 shelter, and contains three standard equipment bays (Pilot Bay, Tracker Bay, and Observer Bay), and may contain an Intelligence Bay. The Pilot Bay is the IP workstation, the Observer Bay is the PO workstation, and the Intelligence Bay is the optional Intelligence Specialist workstation. Additionally, the shelter may include a communications equipment rack and small work table.

Dimensions ..... 147" x 87" x 87"
Cube..... 643 cubic feet
Weight ..... 1470 pounds

(2) Shipboard. The shipboard GCS is contained in a modified MMF shelter, which is installed onto pad-eyes welded to the deck as part of the Pioneer ship alteration. The exact orientation (fore-aft, port-starboard) varies by individual ship, but the shelter is generally located on the aft-most portion of the 0-2 deck, starboard side. In addition to the standard Pioneer equipment bays, the shipboard GCS contains additional desks, communications equipment, anemometer remote, and a ship's heading remote. The GCS is connected to the ship's communications system, Pioneer Interior Communications System, power and the TCU, via umbilical to pre-groomed service boxes.

Dimensions ..... 8' x 8' x 20'
Cube..... 1280 cubic feet
Weight ..... 7500 pounds

b. Tracking and Communications Unit

(1) Shore-based. The shore-based TCU is installed in a truck portable S-250 shelter, with a roof mounted C-band dish antenna platform and a telescoping UHF antenna mast. The TCU contains all GCS-to-UAV communications equipment, and interfaces with the GCS via cable connection.

Dimensions ..... 87" x 80" x 71"
Cube..... 281 cubic feet
Weight ..... 1800 pounds

(2) Shipboard. The shipboard TCU is contained in the same S-250 shelter as the land-based TCU. Although originally designed without support for a roof-mounted dish antenna, all VC-6 shipboard TCUs have since been modified as land or sea-based units. Additionally, the shipboard TCU contains extra equipment required to operate two remote antennae. The shipboard TCU is installed on the ship's 0-4 deck (0-3 on AUSTIN/PONCE), at the after end of the signals deck. It is mounted to pre-groomed pad-eyes, and is connected to the GCS and antennae via umbilical to deck-mounted junction boxes. The TCU's omni antenna is located on a mast atop the TCU. The shipboard TCU uses two C-band dish (directional)

antennae to ensure continuous coverage during masking of one antenna due to ship's movement. The forward antenna and pedestal are located within a radome, which sits atop a mast assembly located on the forward part of the ship's 0-4 level (0-3 on AUSTIN/PONCE). The aft antenna and pedestal are located inside a radome located above Pri-Fly.

Dimensions ..... 87" x 80" x 71"
Cube..... 281 cubic feet
Weight ..... 1800 pounds

c. Portable Control Station

(1) Shore-based. The shore-based PCS is installed in a truck portable S-250 shelter, and includes a Pilot Bay (IP workstation) and communications equipment. The shore-based PCS uses a directional horn type C-band antenna with an omni-directional stub antenna. UHF communications are supplied via a telescoping mast antenna. The shore-base PCS is designed to be remotely deployed from the GCS, but is limited by its UAV communications range. The PCS does not have a Tracker Bay or Observer Bay.

Dimensions ..... 87" x 80" x 71"
Cube..... 281 cubic feet
Weight ..... 2500 pounds

(2) Shipboard. The shipboard PCS is a portable, stacked isopod configuration vice the rack mounted configuration of the land-based S-250 shelter. The PCS is installed in a pre-groomed space on the ship's 0-1 level, just below Pri-Fly. The space has been modified as part of the Pioneer ship alteration to provide an installation pedestal, power, communications, and antenna support. The PCS C-band directional (horn) and omni-directional antennae are co-located inside a single radome mounted just below Pri-Fly.

Dimensions ..... 30" x 24" x 70"
Cube..... 29 cubic feet
Weight ..... 503 pounds

d. Unmanned Aerial Vehicle. The Pioneer UAV is a high wing monoplane with a trapezoidal cross-section fuselage, twin tail boom, and tricycle landing gear, with pneumatic main wheels and a steerable nose wheel. It is powered by an air-cooled 352 cubic centimeter, horizontally opposed two-cylinder, two-stroke, crankcase scavenged engine capable of generating 26 horsepower. Both cylinders are fired simultaneously by a magneto ignition system. The engine is installed in a pusher configuration, using a 29 inch diameter laminated wood propeller. The overall dimensions of the UAV are:

Wing Span	16.9 feet
Length.....	14.0 feet
Height	3.3 feet
Weights:	
UAV (empty)	276 pounds
Max Take-off (rolling)...	452 pounds
(RATO or Pneumatic) ...	447 pounds

Note: Depending on the payload configuration, up to 40 pounds of weight is added to the UAV for balance.

The UAV was produced in four configurations, Basic, Option I, Option II, and Option II+. There are no Basic or Option I UAVs remaining in the Pioneer inventory, and the remaining Option IIs are being converted to Option II+ configuration during overhaul. The Option II+ is essentially an Option II with a reshaped composite fuselage and multi-frequency capability, a larger engine shroud to improve engine cooling efficiency, and a modified wing strap assembly to accommodate the new fuselage, diplexer, small engine trap assembly, multi-frequency video and telemetry transmitter, frequency select cable, and a Global Positioning System (GPS) capability. Each UAV is stored in a shipping container with the following dimensions:

Dimensions	52” x 43” x 118”
Cube.....	153 cubic feet
Weight (with UAV).	1052 pounds

e. Miscellaneous Equipment

(1) Rocket Assisted Take-Off. The RATO launch system consists of a launch stand, MK 125 Mod 0 rocket motor assembly, rocket motor initiator, and the control system (firing box, 150 feet of firing cable and a remote safe-arm switch). The RATO launch stand is a portable, lightweight, wheeled metal stand, used to hold the UAV at the proper angle-of-attack during RATO launch. The unit is secured to the ship’s flight deck using aircraft tie-down chains attached between four handles on the stand and deck tie-down points (padeyes). On land, cables between the four handles and securing stakes secure the unit. The launch stand weighs approximately 150 pounds.

Dimensions	128” x 40” x 20”
Cube.....	58 cubic feet
Weight	150 pounds

(2) Pneumatic Launcher. The pneumatic rail launcher is designed to launch a Pioneer UAV (fitted with launching skids and a strap catch-release mechanism). The launcher consists of an air tank (20 inches in diameter by 9 meters long, with a 1.5 cubic meter capacity), four rail extensions (3 meters each) and a base structure, which connects the air tank assembly to a standard five-ton truck.

CONFIGURATION	LENGTH	HEIGHT	WEIGHT
Transport	10.16 m / 33.33 ft.	3.68 m / 12 ft.	3255 kg / 7161 lbs.
Launching	21.64 m / 71 ft.	4.31 m /14.1 ft.	3255 kg / 7161 lbs.

(3) Remote Receiving Station. The RRS is a truck-portable unit that incorporates the receiver, monitor, and antenna system. A 28-volt direct current power supply is required for the station when operating from a ship or isolated site. The RRS consists of two main subsystems:

(a) Tracking Unit Assembly. The Tracking Unit Assembly (TUA) consists of an Omni antenna assembly, tracking plate assembly (including horn antenna), and a pedestal assembly. The TUA provides 359° non-continuous coverage, with ±12° elevation adjustment, and tracks at a rate of 12° per second.

1) Omni Antenna Assembly. The Omni antenna is a vertically polarized C-band antenna, which receives Remotely Piloted Vehicle (RPV) down-link signals (4.8 to 4.99 GHz) from 360°. The Omni antenna assembly is approximately 40 centimeters in length, weighing 5.4 kilograms.

2) Tracking Plate Assembly. The tracking plate assembly rotates by manual control, and provides reception for the Omni antenna and the horn antenna assemblies. The vertically polarized, directional C-band horn antenna receives RPV down-link signals (4.5 to 5.5 GHz) and is 85 centimeters long, 46 centimeters wide, and 35 centimeters high. The tracking plate assembly weighs less than 5 kilograms.

3) Pedestal Assembly. The pedestal assembly supports and rotates the tracking plate assembly, and includes a DC motor, a transmission gear, and a control cable. The pedestal assembly weighs 12 kilograms.

(b) Main Unit Assembly. The Main Unit Assembly consists of four main subsystems enclosed in a single case: receiver unit, command panel, front panel assembly, and a power supply assembly.

Note: Shipping dimensions of an RRS packed in a wooden shipping crate are as follows:

Dimensions ..... 24” x 24” x 24”
Cube..... 12 cubic feet
Weight ..... 255 pounds

(4) Shipboard Pioneer Arrested Recovery System. The major hardware of the SPARS is permanently installed as part of the Pioneer ship alteration. The SPARS includes two main poles, mounted at the aft-most end of each flight deck catwalk, and operated by hydraulic mechanisms that allow one man to raise or lower each pole. One forward pole,

mounted on the port side of the helicopter hangar (AUSTIN is exception), requires one man to raise or lower via a pneumatic ram. The recovery net is suspended between the two aft poles, via a slipper cable, which is suspended by a tension cable and pulley system to the forward pole and cable winch assembly. Although not technically part of the SPARS, two barricade nets are used in conjunction with the SPARS to prevent over or under-run of the UAV. The aft barricade is mounted between the two aft SPARS poles, and the forward barricade is mounted between two removable flight-deck-mounted poles, just forward of the suspended recovery net.

(5) Maintenance Shelters

(a) Land-based. The United States Marine Corps (USMC) units use a standard S-280 shelter for maintenance purposes. The maintenance shelter and Peculiar Support Equipment are contained in trailer mounted S-280 military shelters. Empty weight, cube, and dimensions of the S-280 shelter are as follows:

Dimensions	147” x 87” x 87”
Cube.....	643 cubic feet
Weight (empty)	1470 pounds

(b) Shipboard. The shipboard MMF is contained in a standard MMF shelter, which is located on the ship’s 0-2 level, next to or across from the GCS (dependent on ship alteration). The MMF contains all ready-use spare parts, and some work space. The MMF receives electrical power and ship’s telephone service, via umbilical, from a pre-groomed junction box.

Dimensions	8’ x 8’ x 20’
Cube.....	1280 cubic feet
Weight	5000 pounds

3. New Development Introduction. NA

4. Significant Interfaces. The Pioneer UAV System interfaces with Government Furnished Equipment as well as shipboard power and the Video Retransmission System. The VRS is a commercially available Very High Frequency transmission system, which allows rebroadcast of the down-linked Pioneer imagery from the GCS, aboard the Amphibious Transport Dock, to the Amphibious Ready Group command ship (Amphibious Assault Ship (General Purpose)), Helicopter Assault Landing, Amphibious Assault Ship, and Landing Platform). Since the video is tapped off of the GCS’s Observer Bay, it contains all applicable annotation not available from direct receipt of UAV imagery via RRS. Additionally, the VRS is voice capable, allowing for voice-over narration by the Pioneer aircrew.

5. New Features, Configurations, or Material

a. Modular Integrated Avionics Group. The MIAG is a microprocessor-based inertial navigation and avionics suite that will replace and upgrade the avionics and electronics capability of the Pioneer UAV and its connected sensors. MIAG will increase Pioneer UAV

electronic reliability, reduce maintenance time and cost, and reduce UAV weight. Full functional and physical descriptions of the MIAG are provided in Appendix A.

b. UAV Common Automatic Recovery System. The UCARS is a microwave Ka-band radar-based UAV position measurement track system used to track and control recovery of a wide range of UAVs. UCARS is capable of operating day or night, from land-based and ship-based recovery sites, and in a variety of weather conditions. UCARS precisely tracks modified UAVs through a two-element system, comprised of an Airborne Subsystem, located entirely on the UAV, and a ground-based Track Subsystem. The Track Subsystem is capable of tracking a UAV augmented with an Airborne Subsystem at a maximum distance of approximately 14.8 kilometers (8 nautical miles). A third subsystem, the Recovery Subsystem, provides auto-recovery functions to the UCARS system, and consists of a circuit card assembly, resident within the Track Subsystem's Track Control Unit, a Versa Module Europa (VME) bus, and UAV-unique operating software. Full functional and physical descriptions of the UCARS system are provided in Appendix B.

c. 12DS Dual Electro Optical/Infrared Payload. The Versatron Model 12DS payload consists of a lightweight FLIR system and a lightweight color video camera co-mounted on a stabilized gimbaled platform, which provides six axes of passive isolation, enabling both cameras to maintain fixed lines of sight. The 12DS payload is installed in the special payload compartment provided in the UAV, and provides a standard EIA-525 composite video output signal. The FLIR sensor includes a helium-based closed cycle cooling system that allows for continuous operation. Its real-time thermal-imagery is converted to a standard TV image and passed through video switching circuitry that allows the observer to switch between color video and the FLIR sensor video at will. Full functional and physical descriptions of the 12DS are provided in Appendix C.

H. CONCEPTS

1. Operational Concept. Eight watchstations are associated with the Pioneer UAV System. The EP, PO, IP, and MC stations are located in or near the GCS. The fifth and sixth stations involve the IP and EP at the PCS, and the seventh and eighth stations are the runway or deck stations and involve the crew chief and plane captain. The stations are manned as required during operational and training missions. Maintenance personnel perform preflight, launch, recovery, and postflight evolutions (e.g., RATO teams, manning spare UAVs, rigging and manning launch and recovery equipment).

The GCS is the primary operational shelter for the Pioneer UAV System. Depending on mission and shelter configuration, the GCS has three to five watchstations; the MC, IP, PO, IS (optional), and EP (optional depending on which ground station is used for launch and recovery operations). The GCS is the central control point for the mission, launch, recovery, payload sensor operation, and UAV control.

2. Maintenance Concept. The Pioneer UAV System is maintained in compliance with the Naval Aviation Maintenance Program (NAMP), OPNAVINST 4790.2G. The general maintenance concept is organizational to depot level, with limited intermediate level support.

a. Organizational. Organizational level maintenance is performed at the activity level; VC-6, Marine Unmanned Aerial Vehicle Squadron (VMU)-1, VMU-2, and NAMTRAGRU DET Fort Huachuca. Organizational level maintenance personnel directly support and maintain the Pioneer UAV in support of day-to-day operations. Navy organizational level maintenance is performed by technicians with NEC 8361, UAV Systems Organizational Maintenance Technician. This NEC is awarded to graduates of both the Pioneer Short Range-Remotely Piloted Vehicle (SR-RPV) Electronics Technician course and the Pioneer SR-RPV Airframe/Mechanic course. Source ratings for the NEC 8361 are: Aviation Electrician's Mate (AE) Aviation Structural Mechanic (Structures) (AMS), Aviation Support Equipment Technician (AS), and Aviation Electronics Technician (AT). Marine Corps organizational level maintenance is performed by personnel in the following Military Occupational Specialties (MOSs): MOS 6313, UAV Avionics Technician; MOS 6014, UAV Mechanic; MOS 6072, Aircraft Support Equipment (SE)/Hydraulic/Pneumatic/Structures Mechanic; and MOS 6531, Aircraft Ordnance Technician. Organizational level maintenance for the Pioneer UAV System consists of:

(1) Preventive Maintenance. Preventive maintenance consists of preflight and postflight inspections, and routine servicing.

- Pre-launch and post-launch inspections
- Acceptance inspection and initial buildup
- Corrosion control and preservation

(2) Corrective Maintenance. Corrective maintenance involves minor structural repair as well as fault isolation and access, removal, and repair or replacement of failed components to the lowest level replaceable assembly.

b. Intermediate. Limited Pioneer UAV system intermediate level maintenance is performed at the Aircraft Intermediate Maintenance Department (AIMD), NAWCAD Patuxent River. The AIMD for the Pioneer UAV system is manned by a mix of contractor and military personnel. Marine Aviation Logistics Squadron (MALS)-13 and MALS-14 provide calibration and limited airframe support for VMU-1 and VMU-2, respectively.

c. Depot. Depot level maintenance is the responsibility of Pioneer UAV Incorporated (PUI), which sub-contracts to various vendors for depot level repair of their respective components. Appendices A through C address specific depot level repair concepts for the ECPs associated with this NTSP revision.

d. Interim Maintenance. Refer to appendices A through C.

e. Life-Cycle Maintenance Plan. The Pioneer UAV System was procured as an interim system and thus has no established Life-Cycle Maintenance Plan. The Pioneer UAV is maintained through scheduled and unscheduled inspections until the aerial vehicle becomes unserviceable.

3. Manning Concept. Navy Pioneer UAV detachments will decrease, which will affect manning through attrition. Marine Corps Pioneer UAV squadrons use directed manning. The Navy has established NEC 8362 for Pioneer UAV External Pilots, NEC 8363 for Pioneer UAV Internal Pilots, NEC 8364 for Pioneer UAV Payload Operators, and NEC 8361 for UAV Systems Organizational Maintenance Technicians. The Marine Corps has established MOS 7314, UAV Operator; MOS 6014, UAV Mechanics; MOS 6314, UAV Avionics Technician; and MOS 6072, Aircraft SE/Hydraulic/Pneumatic/Structures Mechanic. Additionally, secondary MOS 7316 (EP) may be assigned only to qualified holders of primary MOS 7314 (achieved through in-house or school qualification process).

4. Training Concept. The Pioneer UAV System training concept provides for organizational level maintenance training based on OPNAVINST 4790.2G, and UAV operator training based on the OPNAVINST 3710.7 series, and the Pioneer Naval Air Training and Operating Procedures Standardization Flight Manual. On 1 October 1997, Naval Air Maintenance Training Group Headquarters assumed responsibility for Pioneer UAV training from the Naval Air Systems Command (NAVAIRSYSCOM), Program Manager, Air (PMA) 205, which had formerly operated the schoolhouse under the title of Defense Unmanned Aerial Vehicle Training Center. The new NAMTRAGRU DET Fort Huachuca Maintenance Training Unit (MTU) 6001 is unique in that it conducts all training associated with the Pioneer UAV System, including maintenance and operator, for both officer and enlisted personnel.

a. Initial Training. Initial training for incorporation of the Engineering Change Proposals (ECP) associated with this NTSP will be provided by Naval Air Systems Command (NAVAIRSYSCOM) PMA205-3K upon delivery of the ECPs. Delivery is currently delayed pending software corrections. The expected date of ECP delivery is yet to be determined and will be included in future updates of this NTSP.

b. Follow-On Training. In October 1990, Navy follow-on training was established by using Naval Air Warfare Center Weapons Division, Point Mugu, California, management and Navy Civilian Technical Services (NCTS) instructors and maintainers. Responsibility for all operator, maintenance, and flight instruction courses was assumed by the government, which operated and maintained one fully operational Pioneer UAV system for follow-on training.

Title	**Pioneer SR-RPV Internal Pilot**
CIN	C-104-0645
Model Manager ...	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides Pioneer SR-RPV Internal Pilots with the skills to control the vehicle within the parameters of the Joint Unmanned Aerial Vehicle Training and Operating Procedures Standardization (JUAVTOPS) flight manual, under supervision, and in the squadron environment.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length	54 days

RFT date	Currently available
Skill identifier.....	AT, AE NEC 8363
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites	C-100-2020, Avionics Common Core Class A1 And either C-602-2039, Aviation Electrician's Mate O Level Strand Class A1 Or C-100-2018, Avionics Technician O Level Class A1

Title.....	**Pioneer SR-RPV External Pilot**
CIN	C-104-0641
Model Manager .	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides Pioneer SR-RPV External Pilots with the skills to control the vehicle during take-off and landing and to fly during both normal and emergency operations.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length	131 days
RFT date.....	Currently available
Skill identifier....	AD, AMS, AS NEC 8362 and MOS 7316
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites	C-601-2011, Aviation Machinist's Mate Common Core Class A1 C-601-2012, Aviation Machinist's Mate Helicopter Fundamentals Strand Class A1 C-601-2013, Aviation Machinist's Mate Turboprop Fundamentals Strand Class A1

Title.....	**Pioneer SR-RPV Payload Operator**
CIN	C-104-0643
Model Manager .	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides Pioneer SR-RPV Internal Pilots with the skills to control the vehicle within the parameters of the JUAVTOPS flight manual, under supervision, and in the squadron environment.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca

Length	38 days
RFT date.....	Currently available
Skill identifier....	AZ NEC 8364
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites	C-555-2010, Aviation Administrationman Class A1

Title.....	**Pioneer SR-RPV Mission Commander**
CIN	C-2E-0640
Model Manager .	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides knowledge to designated personnel in all phases of Pioneer UAV System operation during tactical employment of the Pioneer UAV.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length	19 days
RFT date.....	Currently available
Skill identifier....	Navy Officer Billet Code (NOBC)1302 and MOS 7315
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites	C-600-3601, NAMTRAGRU DET Command Indoctrination Navy Officer Designator 13XX or Marine Corps Aviator MOS 75XX

Title.....	**Pioneer SR-RPV Ground Control Station Operator**
CIN	C-104-0642
Model Manager .	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides the knowledge and skills required to perform IP and/or PO functions of the Pioneer UAV. These functions include mission planning, piloting the UAV, and operation of various payload configurations.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length	54 days
RFT date.....	Currently available
Skill identifier....	MOS 7314
TTE/TD.....	Refer to note in Part IV of this NTSP.

Prerequisites	C-100-2020, Avionics Common Core Class A1 And either C-602-2039, Aviation Electrician's Mate O Level Strand Class A1 Or C-100-2018, Avionics Technician O Level Class A1

Title.....	**Pioneer SR-RPV Airframe / Mechanic**
CIN	C-690-0644
Model Manager .	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Description	This course provides the Airframe / Mechanical Maintenance Technician the knowledge and skills required to maintain the structural components and mechanical systems of the Pioneer UAV.
Location	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length	40 days
RFT date.....	Currently available
Skill identifier	NEC 8361 and MOS 6014
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites	C-603-0175, Aviation Structural Mechanic S (Structures and Hydraulics) Common Core Class A1 And either C-603-0176, Aviation Structural Mechanic (Structures and Hydraulics) Strand Class A1 Or C-602-2026, Aviation Support Equipment Technician A1 Or both C-601-2011, Aviation Machinist's Mate Common Core Class A1 And C-601-2011, Aviation Machinist's Mate Turboprop Fundamentals Strand Class A1

Title.....	**Pioneer SR-RPV Electronic Technician**
CIN.....	C-690-0646
Model Manager..	MTU 6001, NAMTRAGRU DET, Fort Huachuca

Description.....	This course provides the Electrical Maintenance Technician with the knowledge and skills required to maintain the GDS and electrical and electronic systems of the Pioneer UAV.
Location.....	MTU 6001, NAMTRAGRU DET, Fort Huachuca
Length.....	61 days
RFT date.....	Currently available
Skill identifier....	NEC 8361 and MOS 6314
TTE/TD.....	Refer to note in Part IV of this NTSP.
Prerequisites.....	C-100-2020, Avionics Common Core Class A1 And either C-602-2039, Aviation Electrician's Mate O Level Strand Class A1 Or C-100-2018, Avionics Technician O Level Class A1

c. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
AE 8361 and 8363 MOS 6314 and 7314	° C-100-2020, Avionics Common Core Class A1 ° C-100-2017, Avionics Technician I Level Class A1 ° C-602-2039, Aviation Electrician's Mate O Level Strand Class A1
AD 8361 and 8362 MOS 6014 and 7316	° C-601-2011, Aviation Machinist's Mate Common Core Class A1 ° C-601-2012, Aviation Machinist's Mate Helicopter Fundamentals Strand Class A1 ° C-601-2013, Aviation Machinist's Mate Turboprop Fundamentals Strand Class A1 ° C-601-2014, Aviation Machinist's Mate Turbojet Fundamentals Strand Class A1
AMH MOS 6011	° C-603-0175, Aviation Structural Mechanic (Structures and Hydraulics) Common Core Class A1 ° C-603-0176, Aviation Structural Mechanic (Structures and Hydraulics) Strand Class A1

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
AMS 8361 and 8362 MOS 6014	° C-603-0175, Aviation Structural Mechanic (Structures and Hydraulics) Common Core Class A1 ° C-603-0176, Aviation Structural Mechanic (Structures and Hydraulics) Strand Class A1
AS 8361 MOS 6071	° C-602-2026, Aviation Support Equipment Technician Class A1
AT 8361 and 8363 MOS 6314 and 7314	° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O Level Class A1 ° C-100-2017, Avionics Technician I Level Class A1
AZ 8364	° C-555-2010, Aviation Administrationman Class A1
MOS 6511	° C-646-2011 Aviation Ordnanceman Common Core Class A1 ° C-646-2012 Aviation Ordnanceman Airwing Strand Class A1
MOS 7315	Qualified Marine Corps Aviator

d. Training Pipelines. NA

I. ON-BOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to New Development

a. Maintenance Training Improvement Program. The Maintenance Training Improvement Program (MTIP) is used to establish an effective and efficient training system responsive to fleet training requirements. MTIP is a training management tool that, through diagnostic testing, identifies individual training deficiencies at the organizational and intermediate levels of maintenance. MTIP is the comprehensive testing of one's knowledge. It consists of a bank of test questions managed through automated data processing. The Deputy Chief of Staff for Training assisted in development of MTIP by providing those question banks (software) already developed by the Navy. MTIP was implemented per OPNAVINST 4790.2 series. MTIP allows increased effectiveness in the application of training resources through identification of skills and knowledge deficiencies at the activity, work center, or individual technician level. Refresher training is concentrated where needed to improve identified skill and knowledge shortfalls. A replacement date for Aviation Maintenance In-Service Training (AMIST) to MTIP is to be determined.

b. Aviation Maintenance In-Service Training. AMIST is intended to support the Fleet training requirements now satisfied by MTIP, and in that sense is the planned replacement. However, it is structured very differently, and will function as an integral part of the new Aviation Maintenance Training Continuum System (AMTCS) that will replace the existing aviation maintenance training structure. AMIST will provide standardized instruction to bridge the training gaps between initial and career training. With implementation of AMIST, technicians will be provided the training required to maintain a level of proficiency necessary to effectively perform the required tasks to reflect career progression. AMIST will begin when funding becomes available.

c. Aviation Maintenance Training Continuum System. AMTCS will redesign the aviation training process (training continuum), and introduce CBT throughout the Navy technical training process. The application and adoption of recent advances in computer hardware and software technology will enable CBT, with its basic elements of Computer Managed Instruction, Computer Aided Instruction, and Interactive Courseware, to be integrated into the training continuum and provide essential support for standardizing technical training.

2. Personnel Qualification Standards. NA

3. Other On-Board or In-service Training Packages. Marine Corps on-board training is based on the current series of Marine Corps Order (MCO) P4790.12, Individual Training Standards System and Marine Training Management Evaluation Program (MATMEP). This program is designed to meet Marine Corps, as well as Navy OPNAVINST 4790.2G, maintenance training requirements. It is a performance-based, standardized, level-progressive, documentable, training management and evaluation program. It identifies and prioritizes task inventories by MOS through a front-end analysis process that identifies task, skill, and knowledge requirements of each MOS. MTIP questions coupled to MATMEP tasks will help identify training deficiencies that can be addressed with refresher training.

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers

CONTRACT NUMBER	MANUFACTURER	ADDRESS
N00019-96-H-38389	Pioneer UAV Incorporated (PUI)	9 Schilling Road, Hunt Valley, MD 21030
N00019-94-C-0239	Sierra Nevada Corporation (SNC)	444 Salomon Circle Sparks, NV 89434
N00019-95-G-0203 Delivery Order #0004	Versatron Corporation, WESCAM Inc.	103 West North Street Healdsburg, CA 95448

CONTRACT NUMBER	MANUFACTURER	ADDRESS
N0019-95-G-0203 Delivery Order #0005	Lear-Astronics	1111 Jefferson Davis Highway Suite 802 Arlington, VA 22202

2. Program Documentation. The Pioneer was purchased off-the-shelf, conforming to a Milestone IIIA decision and categorized as a non-development item. The Operational Logistics Support Plan (OLSP) was designed to fulfill the essential requirements of both the Integrated Logistics Support Plan (ILSP) and the OLSP as specified by NAVAIRINST 4000.14A. The principles and guidance provided by NAVAIRINST 4000.16 for off-the-shelf equipment have been followed in maintaining logistic support.

3. Technical Data Plan. Hard copy manuals provided by the contractor were reformatted in 1997 into NAVAIRSYSCOM work package format. Specific technical manuals needed for training are listed in Part IV of this NTSP. The technical manuals listed below were used as a baseline for proposing changes associated with the ECPs described in Appendices A through C. PUI will provide updates to these technical manuals on electronic media for later incorporation by the government. These changes will identify changes to the system description, theory of operation, operating procedures, menu descriptions, maintenance procedures, and illustrated parts breakdown areas of the Pioneer Technical Manuals.

- A1-SRRPV-SDM-000, System Description Manual (1 August 1995)
- A1-SRRPV-OPS-100, RPV Operation (1 December 1995)
- A1-SRRPV-MMI-200, RPV Organizational Maintenance with IPB (15 June 1995)
- A1-SRRPV-EWD-300, Electrical Wiring Diagrams (15 January 1997)
- A1-SRRPV-WAB-400, Weight and Balance (30 September 1995)
- A1-SRRPV-GCS-500, GCS Operation (15 July 1995)
- A1-SRRPV-PCS-700, PCS Operation (31 August 1995)
- A1-SRRPV-SEM-960, Support Equipment and Arresting Gear Description and Operation (1 November 1995)
- A/V Daily Inspection Maintenance Requirement Cards (MRC) A1-PIO-RPV-6-1.1 (1 May 1995)
- GCS/TCU Daily Inspection MRC A1-PIO-RPV-6-1.2 (1 May 1995)
- Air Vehicle Turnaround Inspection MRC A1-PIO-RPV-6-2.1 (1 May 1995)
- Air Vehicle Special Inspection MRC A1-PIO-RPV-6-3.1 (1 May 1995)
- Joint Unmanned Aerial Vehicle Training and Operating Procedures Standardization (JUAVTOPS) for the Pioneer UAV System (March 1997)

New illustration files will be provided in a Windows Metafile Format (WMF) and delivered separately from the text files.

4. Test Sets, Tools, and Test Equipment. Existing test equipment in the Navy and Marine Corps inventory will be used when applicable. Peculiar Support Equipment and special

tools required to support peculiar and unique maintenance requirements are controlled through the Navy Individual Material Readiness List system.

5. Repair Parts. Initial supply support was provided by the contractor and included acquisition, distribution, provisioning, and inventory replenishment of system components, spares, repair parts, and consumable supplies necessary to maintain the Pioneer UAV in a high state of readiness. Currently, supply support is an Assistant Program Manager, Logistics (APML) responsibility and is managed by the Pioneer Item Manager at NAWCAD Patuxent River, Maryland, Code 3.2.1.2A. The Pioneer Item Manager recommends spares and repair part requirements to the APML who provides recommendations to PMA263 for procurement. The Pioneer UAV System utilizes the NAVAIRSYSCOM Interim Supply Support System.

a. Class IX - Repair Parts. Spare parts requirements are generated by the Pioneer Item Manager (Code 3.2.1.2A) and forwarded to the APML who provides requirements to the Integrated Product Team (IPT) for procurement. Squadrons submit their repairable assets to the Navy Supply Support System.

6. Human Systems Integration. NA

K. SCHEDULES

1. Installation and Delivery Schedules. Specific installation and delivery schedules for ECPs associated with this NTSP are detailed in Appendices A through C.

2. Ready For Operational Use Schedule. Specific Ready For Operational Use schedules for ECPs associated with this NTSP are detailed in Appendices A through C.

3. Time Required to Install at Operational Sites. Details of time required for installation of ECPs associated with this NTSP are listed in Appendices A through C.

4. Foreign Military Sales and Other Source Delivery Schedule. NA

5. Training Device and Technical Training Equipment Delivery Schedule

a. Training Devices. The External Pilot Simulator has been delivered to all Pioneer activities. Software will be upgraded as required to integrate the effects of ECPs detailed in Appendices A through C.

b. Technical Training Equipment. In the Training Planning Process Methodology Manual (TRPPM), Appendix B - Technical Training Equipment (TTE) is described as: investment cost end items of operational equipment devoted to the training and instruction of naval personnel. The Pioneer UAV System has no TTE. On 1 October 1990, a fully operational Pioneer UAV System was designated as Training Equipment and delivered to Defense Unmanned Aerial Vehicle Training Center. All equipment utilized is Training Equipment, and is described in the TRPPM as equipment designed for operational purposes which is the subject of instruction, or which is used by the instructor or student as an element of the process of teaching or

learning. Training Equipment has, or had as its prime or initial purpose for existence some function other than that of training personnel.

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

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
COMNAVAIRSYSCOM Message RPV Training Plans Fiscal Year (FY)88/89		PMA205	Jun 88
System Description Manual	A1-SRRPV-SDM-000	PMA263	Aug 95
RPV Operation	A1-SRRPV-OPS-100	PMA263	Dec 95
RPV Organizational Maintenance	A1-SRRPV-MMI-200	PMA263	Jun 95
GCS Operation	A1-SRRPV-GCS-500	PMA263	Jul 95
PCS Operation	A1-SRRPV-PCS-700	PMA263	Aug 95
Support Equipment and Arresting Gear Description and Operation	A1-SRRPV-SEM-960	PMA263	Nov 95
OLSP Pioneer Remote Piloted Vehicle	NAVAIR-418 MS-004	APML	Nov 90, Revised Jan 95
Marine Corps VMU Table of Organization	8890	HQMC	Approved Apr 97
VC-6 Squadron Manpower Document	UIC 55243	NAVMAC	Approved Jul 96
Pioneer UAV System Employment	TAC Memo XZ0010-92	OPNAV	Approved Oct 92
System Performance Specification for UAV Systems	AS-5276	PMA263	Approved Mar 94
Operation and Maintenance Manual CARS AN/UPN-51(V)	0019A001 Rev. D	PEO(CU)	Preliminary Jan 98

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
Pioneer/MIAG ECP	ECP97-0203-H031R1	PMA263	Pending Feb 98
Pioneer/UCARS ECP	ECP97-0203-H028R2	PMA263	Pending Sep 97
Pioneer/12DS ECP	ECP98-0203-H033	PMA263	Pending Nov 98
JUAVTOPS Flight Manual for Pioneer UAV		PMA263	Approved Mar 97
Equipment Facility Requirements Plan For Pioneer UAV System		PMA205	Approved Mar 97
Users Logistic Support Summary For Pioneer Unmanned Aerial Vehicle		APML	Approved Jun 96

APPENDIX A
MODULAR INTEGRATED AVIONICS GROUP

A. OPERATIONAL USES. The MIAG will be used as an internal component of the Pioneer air vehicle, in support of typical Pioneer operational uses described in Part I of this NTSP.

B. DEVELOPMENTAL TEST AND OPERATIONAL TEST. Ground and flight testing of the MIAG was conducted at VC-6, Webster Field, Maryland, throughout FY98, and was concluded in September 1998. MIAG fielding is currently awaiting resolution of Pioneer system software issues and final testing.

C. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. The MIAG ECP will consist of the following changes to the Pioneer air vehicle:

AIR VEHICLE SYSTEM	ACTION	LOCATION
CPA	Remove	Main Compartment
GPS	Remove	Main Compartment
RGU	Remove	Aft Compartment
VGU	Remove	Aft Compartment
Barometric Pressure Unit	Remove	Nose Compartment
Airspeed Transducer Unit	Remove	Nose Compartment
Engine Run Cut Switch	Remove	Engine Compartment
Flux Valve Assembly	Remove	Right Wing
UAV Wiring Harness	Remove	Main Compartment
Engine Thermal-couple Unit	Remove	Engine
Air Data Static Tube	Remove	Nose Compartment
GPS Antenna	Remove	Main Cover
Electrical Power Supply Fuses	Remove	Aft Compartment

AIR VEHICLE SYSTEM	ACTION	LOCATION
MIAG with Magnetometer and Rails	Install	Main Compartment
RTD Temperature Sensor	Install	Engine
MIAG Wiring Harness	Install	Main Compartment
Test Connector	Install	Main Fuselage
IFF Bracket	Install	Cover
Flux Cover	Install	Wing
GPS Antenna	Install	Main Cover
Electrical Power Supply Adapter Cable	Install	Rear Compartment
Electrical Power Supply Fuses	Install	Aft Compartment

The following additional changes to the air vehicle are planned in association with the MIAG ECP:

- The Aileron-Rudder Integration is the coupling of the rudder command to aileron commands to coordinate turns. The Aileron-Rudder Integration will be modified to eliminate nose wheel coupling from aileron commands.

- A nose wheel steering change will result in the steering range being reduced by about 50 percent, resulting in the air vehicle being more stable during take-off and landing rollout.

- Elimination of the "computer-less" autopilot disengaged mode of flight, which will be replaced by a "software disk," allowing the pilot to safely operate the vehicle if there are significant problems encountered with the autopilot.

- The air vehicle will also be capable of reporting an engine temperature failure warning light illumination at selected temperatures. This will eliminate undesired illumination of the "Report Inhibit" light in the GCS/PCS, under certain circumstances.

D. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. MIAG is a microprocessor based, inertial navigation avionics suite used to fly the Pioneer air vehicle. MIAG is a critical element for the follow-on integration of the Tactical Control System and the Tactical Common Data-Link.

The MIAG features dual 25 MHz 80960 processors and power supplies, and analog and digital interfaces to the air vehicle and payload control. MIAG is equipped with a Programmable Encoder-Decoder Unit (PEDU) that has a RS-422 interface to both of the MIAG processors. General purpose interface cards connect MIAG to the support hardware within the air vehicle.

MIAG incorporates the functions of many of the existing Pioneer air vehicle electronic and electro-mechanical devices, and replaces several units which currently exhibit high failure rates, including the CPA, airspeed transducer unit, barometric pressure unit, and both the rate and vertical gyros. Additionally, test features built into MIAG will reduce equipment fault isolation and repair times. The MIAG equipment design allows for easy installation without modification of the current air vehicle fuselage, and the elimination of certain support equipment will provide additional space for future utilization. An increase in ground system and air vehicle performance is expected through MIAG's programmability and future expansion capability, and may achieve some performance gains through significant weight reduction.

2. Physical Description. MIAG replaces existing systems within the Pioneer air vehicle, allowing for space and weight reductions that can be put to other use. The MIAG enclosure consists of a 3/8-inch thick base, two 5/8-inch thick finned side plates, and a formed sheet metal cover, all made of 6061-T6A aluminum alloy. The unit is 9.65 inches wide, 5.76 inches deep, and 10.95 inches high, and weighs a maximum of 14.58 pounds. The enclosure contains two identical power supplies and CPUs, one PEDU, two analog processing boards, and one spare slot. There are nine connectors provided for interface with the air vehicle.

The MIAG is designed to consume a maximum of 52.47 watts, and will operate at altitudes up to 50,000 feet, with temperature variations of –40° C to +50° C, with a transient intermittent maximum of +71° C.

3. New Development Introduction. The MIAG ECP modification kits and spares will be delivered to the AIMD Patuxent River, Maryland, along with a Technical Directive including installation instructions. MIAG will be systematically retrofitted into the Pioneer Option II+ and converted Option II air vehicles.

E. CONCEPTS

1. Operational Concept. MIAG will be operated as an integral component of the Pioneer air vehicle, and will comply with the established Pioneer UAV System operational concept. The MIAG ECP will result in minor software menu changes, but will essentially be transparent to the Pioneer operator.

2. Maintenance Concept. MIAG maintenance will comply with the two level maintenance concept of the Pioneer UAV system.

a. Organizational. Organizational level MIAG maintenance will consist of:

- Diagnostics using Built-In Test (BIT)
- Remove and replace Lowest Replaceable Unit (LRU)

b. Depot. Depot level MIAG maintenance will consist of:

- Diagnose failure to Shop Replaceable Assembly (SRA)
- Remove and replace SRA

Note: SRAs are not repairable based on economic considerations.

3. Manning Concept. Introduction of the MIAG into the Pioneer UAV system will not impact the Pioneer manning concept outlined in Part I of this NTSP.

4. Training Concept. The MIAG training will meet all requirements of the Pioneer UAV system, as defined in Part I of this NTSP.

a. Initial Training. NAVAIRSYSCOM (PMA2053K) will provide initial training for the MIAG ECP, prior to or concurrent with delivery to the various field activities.

b. Follow-on Training. MIAG training will be incorporated into existing Pioneer UAV system courses at NAMTRAGRU Detachment, Fort Huachuca. All courses will require addition of MIAG overview materials, but the Electronics Technician course will require additional changes to classroom and lab curriculum. The estimated impact of the integration of MIAG training into current Pioneer curriculum is as follows:

Title	**Pioneer SR-RPV Mission Commander**
CIN	C-2E-0640
Percent Curriculum Impacted	5 percent
Description.....	Curriculum will be modified to include the functional and physical description of the MIAG, in addition to Pioneer avionics already taught.
Length.....	+ 1.0 hour classroom

Title	**Pioneer SR-RPV External Pilot**
CIN	C-104-0641

Percent Curriculum Impacted	5 percent
Description.....	Curriculum will be modified to include an overview of the functional and physical descriptions of MIAG, in addition to Pioneer avionics already taught.
Length.....	+1.0 hour classroom

Title	**Pioneer SR-RPV Ground Control Station Operator**
CIN	C-104-0642
Percent Curriculum Impacted	5 percent
Description.....	Curriculum will be modified to include an overview of the functional and physical descriptions of MIAG, in addition to Pioneer avionics already taught. Additionally, MIAG will require minor modifications to Pilot Bay menu options; however, MIAG will have minimal effect on Pioneer flight operations.
Length.....	+1.0 hour classroom

Title	**Pioneer SR-RPV Payload Operator**
CIN	C-104-0643
Percent Curriculum Impacted	5 percent
Description.....	Curriculum will be modified to include an overview of the functional and physical descriptions of the MIAG, in addition to Pioneer avionics already taught.
Length.....	+1.0 hour classroom

Title	**Pioneer SR-RPV Airframe / Mechanic**
CIN	C-690-0644
Percent Curriculum Impacted	5 percent
Description.....	Curriculum will be modified to include an overview of the functional and physical descriptions of the MIAG, in addition to Pioneer avionics already taught.

Length.....	+1.0 hour classroom

Title	**Pioneer SR-RPV Internal Pilot**
CIN	C-104-0645
Percent Curriculum Impact	5 percent
Description.....	Curriculum will be modified to include an overview of the functional and physical descriptions of the MIAG, in addition to Pioneer avionics already taught. Additionally, MIAG will require minor modifications to Pilot Bay menu options; however, MIAG will have minimal effect on Pioneer flight operations.
Length.....	+1.0 hour classroom

Title	**Pioneer SR-RPV Electronics Technician**
CIN	C-690-0646
Percent Curriculum Impact	15 percent
Description.....	Curriculum will be modified to include in-depth functional and physical descriptions of the MIAG, in addition to Pioneer avionics already taught. Classroom and lab training will include basic troubleshooting, remove and replace, and various calibration procedures.
Length.....	+6.0 hours classroom and lab

F. LOGISTICS SUPPORT

1. Test Sets, Tools and Test Equipment. PUI will provide new equipment to support the MIAG air vehicle in the form of a MIAG Support Box and two interface cables. This equipment will support software updates, magnetometer calibrations, and support operations for monitoring the microprocessors within MIAG. This support equipment will not be used during normal Pioneer mission operations.

2. Repair Parts. The following spare equipment will be delivered as part of the ECP:

- General Purpose Microprocessor Card - Autopilot
- General Purpose Microprocessor Card - Mission Control
- Programmable Encoder-Decoder Unit - Communication
- Analog Digital Input-Output Card - Air Vehicle Hardware Support

- Power Supply PC Card - System Power
- Air Data Sensors - Static and Dynamic Pressure
- Inertial Measuring Unit - Navigation
- Global Positioning System - Spacial Positioning, To Be Determined (TBD)

G. SCHEDULES

1. Installation and Delivery Schedules. These schedules are not available, pending final corrections on software; expected delivery is fourth quarter FY99.

2. Ready For Operational Use Schedule. Expected delivery is fourth quarter FY99.

3. Time Required to Install at Operational Sites. MIAG will be installed into Pioneer air vehicles at the AIMD Patuxent River on a phased basis.

APPENDIX B
UAV COMMON AUTOMATIC RECOVERY SYSTEM

A. OPERATIONAL USES. The UCARS will be employed as an integral part of the Pioneer UAV system for both land-based and shipboard automatic recovery of the air vehicle. UCARS will not change the operational uses of the Pioneer UAV system, as described in Part I of this NTSP.

B. DEVELOPMENTAL TEST AND OPERATIONAL TEST. The UCARS was field tested at VC-6 Detachment, Patuxent River's Webster Field facility in first quarter FY97, and completed initial shipboard testing in January 1997, aboard USS SHREVEPORT (LPD-12). Shipboard testing resulted in nine successful SPARS net recoveries. Final Operational Testing for shore-based and shipboard operations is to be determined pending software availability.

C. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The UCARS is a system-wide development to provide automatic recovery control and guidance for UAVs. UCARS is a microwave Ka-band system, capable of operating day or night, from land-based or ship-based recovery sites, and in a variety of weather conditions (fog, rain, smoke, low clouds, bright sunlight, etc.).

UCARS precisely tracks modified air vehicles through a two-element system comprised of an Airborne Subsystem, located entirely on the air vehicle, and a ground-based Track Subsystem (TS). The TS is capable of tracking an UAV augmented with an Airborne Subsystem at a maximum distance of approximately 14.8 kilometers (8 nautical miles). A third subsystem, the Recovery Subsystem (RS), consists of a circuit card assembly resident within the TS Track Control Unit VME bus. The RS provides automatic recovery functions through the use of air vehicle unique software and interface with the UAV GCS/PCS operator's workstation.

The UCARS consists of the following equipment:

COMMON NAME	NOMENCLATURE
Airborne Subsystem	Transponder Group, Radar, Aircraft OX-84/UPN-51(V)
Transponder	Transponder, Radar, Aircraft RT-1791/UPN-51(V)
TS	Interrogator Group, Tracking, Radar OX-83/UPN-51(V)

COMMON NAME	NOMENCLATURE
Boresight Camera	Camera, Television RO-649/UPN-51(V)
Interrogator	Receiver/Transmitter, Radar RT-1790/UPN-51(V)
Pedestal	Antenna Pedestal, Radar AS-4479/UPN-51(V)
Track Control Unit	Controller Tracker CD-144/UPN-51(V)
Track Subsystem Alignment Set (TSAS)	Test set, Radar TS-4507/UPN-51(V)

a. Airborne Subsystem. The Airborne Subsystem provides a point source beacon signal to aid in accurate position sensing, enabling the TS to detect and precisely track the air vehicle. The Airborne Subsystem transmits and receives vertically polarized signals, via a combination Omni-directional horn antenna. The front side of the radome contains the higher gain directional horn antenna, which is used initially when the UAV is acquired by the TS. When the UAV is 1000 feet from the intended touchdown point, a logic signal is transmitted, switching to the Omni-directional antenna for final approach, touchdown, and roll-out.

The Airborne Subsystem transponder is a digitally controlled transmitter-receiver, powered by +28 VDC supplied by the air vehicle electrical system. While transmitting, the receiver is disabled; while receiving, the transmitter is disabled. The transmitter is a Gunn Diode Oscillator that transmits at 35 GHz (±80 MHz). The allowable drift requires the TS to search in frequency to determine the exact Airborne Subsystem transmitter frequency. The Airborne Subsystem receiver is offset a precise 70 MHz below the Airborne Subsystem transmitter frequency.

Inside the transponder there are three circuit boards plus a RF front-end module. The circuit boards consist of an intermediate frequency board, a transponder controller board, and a power supply board. A run-time delay calibration circuitry monitors all active Airborne Subsystem output signals on a real-time basis, which allows for the implementation of a sophisticated sequence of BIT to be performed to detect most Airborne Subsystem error conditions. Between pulses, the Airborne Subsystem listens for interrogations by the TS, and upon determination that the TS is interrogating, the Airborne Subsystem enters the transponder mode, where it listens for TS interrogations and then replies providing TS tracking of the latest position.

AIRBORNE SUBSYSTEM CHARACTERISTICS	
Modes of Operation	Off, BIT-Initiate, Beacon, Transponder, Suspend
RF	Ka-Band, 35 GHz ±150 MHz Tx frequency offset by 70 MHz
Transmitter Power	≤200 mW, Bandwidth of ≤20 MHz
Operating Altitude	Up to at least 15,000 feet AGL
Antenna Polarization	Vertical
Power Requirements	24 - 48 VDC at ≤25 W, provided by UAV
Antenna Gain	Horn 14 dB, Omni-directional 5 dB
Detection Range	14.8 km/8 nm, down to 10.1 m/33 ft

b. Track Subsystem. The TS locates and precisely tracks a single selected UAV, relative to a desired Touchdown Point (TDP), which may be a land-based runway or a shipboard recovery net system, using a directional, vertically polarized antenna. A 35 GHz tracking link is established between the TS and the Airborne Subsystem, to allow precise determination of the air vehicle's position relative to the TDP. These positional data, along with system status, are sent to the RS to perform air vehicle specific automatic control computations. Using the optional Ship Motion Sensor (SMS), the TS also measures the ship's motion and outputs stabilized UAV position information required for automatic recovery operations. The TS is comprised of the TCU; the pedestal group, which in addition to the pedestal unit provides mounting for the bore-sight camera unit and interrogator unit; and the TSAS.

(1) Track Control Unit, Unit 1. The TCU includes the computing resources for the Track Subsystem Program and is the interface for bi-directional RS-422 data transfers between the TS and GCS or PCS. The TCU acquires data from the Government Furnished Equipment (GFE) SMS and performs UAV navigation data generation, analysis, and reduction, and provides power and control for the other TS hardware.

(2) Track Subsystem Pedestal Group, Units 2 through 4. The Track Subsystem Pedestal Group is composed of four LRUs: (1) the pedestal unit, (2) the interrogator unit, (3) the bore-sight camera unit, and (4) the GFE SMS.

(a) Pedestal Unit, Unit 2. The pedestal unit is a two-axis gimbal system with a high gain 18-inch parabolic dish, tracking antenna mounted to its gimbal. The antenna physical movement is ±130 degrees in azimuth, and –35° to +70° in elevation; driven by the elevation and azimuth motors. The large vertical movement permits antenna stabilization in all sea states. Once it has located the UAV and begins tracking, the antenna points directly at the

UAV and follows it precisely by measuring the four lobe signal strengths. During high wind and sea states, electronically operated circuits drive the antenna gimbals to the 0° position (home), and then apply brakes to prevent gimbal damage when power is removed.

(b) Interrogator Unit, Unit 3. The interrogator unit is the TS RF transceiver; it provides the signal processing necessary to track the Airborne Subsystem. The interrogator is frequency-locked to 70 MHz below the ≈35 GHz Airborne Subsystem transponder frequency. The interrogator processes amplitude and range data, which it provides to the TS computer, and transmits the pulsed RF interrogation signal to the Airborne Subsystem transponder.

(c) Bore-sight Camera, Unit 4. The bore-sight camera is a charge-coupled device, color video camera with a fixed (set for infinity) focal length. The camera is bore-sighted to the TS pedestal antenna, providing video monitor capability for the operator/pilot to qualitatively evaluate acquisition and track performance.

c. Track Subsystem Alignment Set, Unit 7. The TSAS is a ground-based version of the Airborne Subsystem transponder. It is used for initial system setup as well as Daily Operational Readiness Tests of TS performance. The TSAS provides a static, far-field point source for user on-site tracking-ranging bias and stability validation. The TSAS electronics contain an Airborne Subsystem transponder, a directional horn antenna, and a power supply circuit card assembly, which can operate from either 115 VAC or 24-28 VDC. The TSAS may be placed at any location, not necessarily on the runway TDP/Roll-out Point, and is also used for post-installation and post-maintenance validation.

TRACKING SUBSYSTEM CHARACTERISTICS	
Modes of Operations	Off, Self-test, SMS Initiate, Standby, Track, Acquisition, Auto-recovery, Suspend
Power Requirements	115 VAC, 60 Hz, single-phase, three-wire, 350 vA continuous, 1000 vA surge
Antenna Gain	41dBi on each of four lobes
RF Operating Frequency	Rx - (Airborne Subsystem dependent) 35 GHz ±150 MHz Tx – Offset 70 MHz below Rx frequency
Track Glideslope Angles	Minimum - 3.0° Nominal - 3.5° to 12° Maximum – 15°

TRACKING SUBSYSTEM CHARACTERISTICS	
Operating Temperature	-32°C (-26°F) to +49°C (+120°F)
Operating Altitude	Up to at least 10,000 feet MSL
Maximum Detection and Tracking Range	14.8 km/8 nm (3.7 km/2 nm in a rain rate of up to 10 mm/hr)
Angular Coverage	Azimuth ±130°, Elevation –35° to +70°
UAV Acquisition Capacity	One air vehicle or one target
UAV Track Capacity	One airborne subsystem at a time
Update Rates	50 Hz
Acquisition Window Scan Time	<20 seconds for a window of 20° azimuth, 5° elevation; time greater for a larger window
UAV Minimum Acquisition Speed	0.0 knots
UAV Maximum Acquisition Speed	≥120 knots, as long as UAV angular rates relative to pedestal are <1° per second and angular accelerations are <1° per second^2
UAV Minimum Track Speed	0.0 knots
UAV Maximum Track Speed	≥150 knots, as long as the UAV angular rates relative to the pedestal are <200° per second in azimuth and 40° per second elevation, and angular accelerations are less than 400° per second^2 in azimuth and 300° per second^2 in elevation

d. Recovery Subsystem. The RS performs air vehicle specific guidance and control functions, interfaces with the UAV data link, provides man-machine interfaces to control the Airborne Subsystem and TS, monitors overall launch and recovery performance, and commands a variety of recovery options. The RS consists of a single circuit card assembly, which is resident in the TS TCU, loaded with software unique to the type of UAV it is to control

during auto-recovery operations. When required, the RS sends commands to the TS via a communications interface. The auto-recovery commands generated by the RS are passed to the GCS or PCS via a TRI interface RS-422 serial port in order to achieve fully automatic, closed-loop control.

2. Physical Description. The UCARS contains 7 LRUs as part of its three subsystems.

a. Track Subsystem. The TS is comprised of the TCU; the pedestal group, which in addition to the pedestal unit provides mounting for the bore-sight camera unit and interrogator unit; and the TSAS. The TS, including TCU and cables but without the GFE SMS, weighs 80 kilograms (175 pounds). The TS Pedestal weighs an additional 58 kilograms (128 pounds).

(1) Track Control Unit, Unit 1. The TCU is an all-weather, convection-cooled unit that sits atop the fan pallet, and consists of the TS controller, pedestal drive electronics, TS input-output board, TS power supply, and VME bus backplane containing the RS controller.

(2) Track Subsystem Pedestal Group, Units 2 through 4. The Track Subsystem Pedestal Group is composed of four units:

- Unit 2, Pedestal unit weighs 58 kilograms (128 pounds)
- Unit 3, Interrogator unit (included in pedestal weight)
- Unit 4, Bore-sight camera unit (included in pedestal weight)
- GFE SMS weighs 40 pounds

(a) Pedestal Unit, Unit 2. The pedestal unit is a two-axis gimbal system with a high-gain 18-inch parabolic dish, tracking antenna mounted to its gimbal. There are three sets of lifting handles that permit two men to carry the 128-pound pedestal (168 pounds if the SMS is installed on the base).

(b) Interrogator Unit, Unit 3. The interrogator unit is the track subsystem RF transmitter and receiver, and is mounted to the top of the pedestal unit.

(c) Bore-Sight Camera, Unit 4. The bore-sight camera is a charge-coupled device, color video camera with a fixed (set for infinity) focal length, which is bore-sighted to the TS pedestal antenna. The bore-sight camera is mounted to the pedestal unit.

b. Airborne Subsystem. The Airborne Subsystem is comprised of an internally mounted transponder (Unit 5), and a fin-type antenna (Unit 6) mounted on top of the air vehicle's main compartment cover. The Airborne Subsystem, including antenna, weighs 1.32 kilograms (2.9 pounds).

c. Track Subsystem Alignment Set, Unit 7. The TSAS electronics enclosure sits atop a 40-67 inch telescoping tripod.

3. Significant Interfaces. A GFE SMS, with embedded GPS/Inertial Navigational System (INS) H-764G, receives GPS longitude and latitude data via a MIL-STD-1553 bus from the GCS; and contains an INS to generate ship's heading, and vertical and horizontal reference data for stabilization of the TS. The SMS outputs are used to stabilize the UCARS position data, generally allowing the recovery software to know if sensed relative air-vehicle-to-ship position changes are the result of UAV motion or ship motion. The UCARS operator must be conversant with the military GPS for precise positioning.

D. CONCEPTS

1. Operational Concept. The UCARS (AN/UPN-51(V) Navigation-tracking set, Radar) will be employed by the Pioneer UAV IP to conduct sea-based or land-based automatic recovery of the Pioneer air vehicle in a variety of weather conditions. Although UCARS does allow the IP to conduct a full automatic recovery of the air vehicle, a requirement for a qualified and current EP will continue, primarily as an emergency backup recovery method, and for those periods when the UCARS is inoperable or unavailable. The UCARS is fully portable and will deploy with Navy and Marine Corps Pioneer units.

2. Maintenance Concept. UCARS will be maintained per the Pioneer UAV system two level maintenance program.

3. Manning Concept. UCARS will be fully integrated into the Pioneer UAV system and will comply with the Pioneer manning concept discussed in Part I of this NTSP.

4. Training Concept. Pioneer personnel assigned to the operational units will require additional training as a result of the integration of UCARS into the Pioneer UAV system. Delta training consisting of UCARS familiarization, operation, and maintenance procedures will be required prior to or concurrent with system delivery.

a. Initial Training. Integrated Pioneer/UCARS Delta Operator/Maintainer Training will be developed by the integration contractor as part of the ECP. Mission Commanders will attend the training course for Internal Pilots. The courses will be designed to be suitable for integration into existing training courses. Training will be provided by NAVAIRSYSCOM (PMA2053K) prior to or concurrent with system delivery.

b. Follow-on Training. UCARS training will be integrated into existing Pioneer UAV system courses at NAMTRAGRU Detachment, Fort Huachuca. All courses will require addition of UCARS overview material, but the External Pilot, Internal Pilot, GCS Operator, and Electronics Technician courses will require more extensive changes to classroom, lab, and flight curriculum. Estimated impact of the integration of MIAG training into Pioneer UAV system curriculum is as follows:

Title.....	**Pioneer SR-RPV Mission Commander**
CIN.....	C-2E-0640

Percent Curriculum Impacted.....	5 percent
Description.....	The MC course will require additional curriculum to provide overview of the UCARS functional and physical descriptions and operational concepts.
Length.....	+1.0 hour classroom

Title.....	**Pioneer SR-RPV External Pilot**
CIN.....	C-104-0641
Percent Curriculum Impacted.....	5 percent
Description	The EP course will require additional curriculum to provide overview of the UCARS functional and physical descriptions and operational concepts. Additionally, UCARS will incorporate an over-ride switch into the EP control box, which will require additional proficiency flights for assuming air vehicle control under adverse circumstances.
Length	+2 flights, +2.0 hours classroom

Title.....	**Pioneer SR-RPV Ground Control Station Operator**
CIN.....	C-104-0642
Percent Curriculum Impacted.....	5 percent
Description	The GCS Operator course will require additional curriculum to provide overview of the UCARS functional and physical descriptions, and operational concepts. Additionally, UCARS will include new menu overlays, new controls, and modified air vehicle recovery flight patterns. The GCS Operator must also be trained to work closely with the EP during emergency control defaults or overrides.
Length	+2 flights, +4.0 hours classroom

Title	**Pioneer SR-RPV Payload Operator**
CIN	C-104-0643

Percent Curriculum Impacted	5 percent
Description.....	The PO course will require additional curriculum to provide overview of the UCARS functional and physical descriptions, and operational concept.
Length.....	+1.0 hour classroom

Title.....	**Pioneer SR-RPV Airframe / Mechanic**
CIN.....	C-690-0644
Percent Curriculum Impacted.....	5 percent
Description	The Airframe / Mechanic course will require additional curriculum to provide an overview of the UCARS functional and physical descriptions, and operational concept.
Length	+1.0 hour classroom

Title.....	**Pioneer SR-RPV Internal Pilot**
CIN.....	C-104-0645
Percent Curriculum Impacted.....	20 percent
Description	The IP course will require additional curriculum to provide overview of the UCARS functional and physical descriptions, and operational concept. Additionally, UCARS will include new menu overlays, new controls, and modified recovery flight patterns. The IP must be trained to work closely with the EP during emergency control defaults or overrides.
Length	+2 flights, +4.0 hours classroom

Title.....	**Pioneer SR-RPV Electronics Technician**
CIN.....	C-690-0646
Percent Curriculum Impacted.....	20 percent

Description.....	UCARS will cause a significant increase to the training and maintenance requirements of the Pioneer Electronics Technician. Curriculum will include physical and functional descriptions; set-up, alignment, and calibration; fault isolation procedures; and preventive and corrective maintenance.
Length.....	+4 days classroom and lab

F. SCHEDULES

1. Installation and Delivery Schedules. These schedules are not available, pending final corrections on software; expected delivery is fourth quarter FY99.

2. Ready For Operational Use Schedule. Expected delivery is fourth quarter FY99.

3. Time Required to Install at Operational Sites. TBD

APPENDIX C
VERSATRON 12DS DUAL ELECTRO-OPTICAL/INFRARED SENSOR

A. OPERATIONAL USES. The Versatron Model 12DS dual EO/IR payload will be employed as an integral part of the Pioneer UAV System, and in compliance with operational uses described in Part I of this NTSP. The 12DS is capable of providing high quality daytime color TV imagery and day-night IR-to-TV imagery of land and sea-borne targets of interest, in support of the Pioneer's Reconnaissance Surveillance and Target Acquisition tasking. The dual EO/IR capability will have the additional benefit of allowing Pioneer operators to schedule missions across the day-night boundary, while still having the optimum payload available for each lighting condition.

B. DEVELOPMENTAL TEST AND OPERATIONAL TEST. The 12DS was ground and flight tested between February and July 1998. The final three flight tests were completed at VC-6, Webster Field, Maryland, on 24 July 98. Proposed initial fielding is to be determined pending software availability. Current FY acquisition is 20 units.

C. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. The Versatron 12DS sensor will replace the MKD-200/200A EO daytime TV cameras and the MKD-400/400C IR sensors through attrition.

D. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The Versatron 12DS payload consists of a lightweight FLIR system and a lightweight color video camera co-mounted on a stabilized gimbaled platform, which provides six axes of passive isolation (x, y, z, pitch, roll, and yaw), enabling both cameras to maintain fixed lines of sight (relative to ground). The cameras can be trained on specific points by steering commands up-linked to the air vehicle via the CPA and electronics contained in the payload. The CPA issues positioning and mode control commands and receives status reports via the air vehicle CPA cable. Commands to the payload (modes of operation, control of gimbals, camera azimuth, elevation, camera on-off, zoom, etc.) are received through the air vehicle's RF up-link, while payload telemetry and video data are transmitted to the ground station through the air vehicle's video and telemetry down-link.

The 12DS payload is installed in the Pioneer air vehicle payload compartment, and provides a standard EIA-525 composite video output signal. The FLIR sensor is a real-time thermal-imaging system based on the principle of detecting thermal energy radiated by objects encountered in its field of view. Received thermal energy is then converted to a standard TV image and passed through video switching circuitry that allows the observer to switch between color video and the FLIR sensor video at will. The model 12DS IR sensor incorporates a helium-based closed-cycle cooling system, which allows for continuous operation. The closed-cycle

system has a built-in compressor that provides high-pressure gas for IR sensor cooling. The payload receives electrical power from the air vehicle electrical system.

a. Payload capabilities. The 12DS payload system has the following mission capabilities:

CALCULATED DETECTION AND RECOGNITION RANGES (50 PERCENT PROBABILITY) FOR NATO STANDARD TARGET (2.3 x 2.3 x 4.6 cm)		
	DETECTION	**RECOGNITION**
Super-wide Field of View	1.5 km	0.4 km
Wide Field of View	3.1 km	1.8 km
Narrow Field of View	7.7 km	3.7 km

LINE OF SIGHT COVERAGE	
Pitch	-90° through 0° (±3°), continuous
Yaw	360° multi-turn, continuous

b. Payload Control Modes. In order to perform reconnaissance missions, the payload operator may use several payload control modes. In these modes the PO is able to control the line-of-sight, as well as the focus and the Field of View of the 12DS payload system.

(1) Rate Mode. In the Rate Mode, the PO sets the sensor line-of-sight relative to ground. Once sensor line-of-sight is set, the platform will remain fixed along this line-of-sight (compass bearing) regardless of changes in air vehicle path. Look angle of the platform is changed by means of the PO stick.

(2) Position Mode. In the Position Mode, the PO controls the position of the platform line-of-sight relative to the air vehicle centerline by setting the payload bearing and depression degrees position control knobs.

(3) Electrical Caging Mode. The model 12DS payload does not support or require mechanical caging. The Pilot's Window positioning feature has been added to provide an electrical caging capability. In this mode the platform gimbals are commanded to preset pitch (depression) and yaw angles that place the selected sensor line-of-sight looking forward along the centerline of the air vehicle.

(4) Semi-Automatic Control Modes. The semi-automatic control modes are GCS controlled modes, in which only the platform pitch and yaw commands (line-of-sight) are station-computer controlled. The remaining sensor specific payload commands (Field of View, focus, video gain, heat polarity, etc.) are manually controlled. The semi-automatic/station computer line-of-sight control modes perform "lock" on a pre-selected ground location (target) or the current line-of-sight. Since the UAV is moving, the line-of-sight parameters must be constantly updated. There are two semi-automatic control modes: Target Hold Mode (Fast Acquisition) and Target Acquisition Mode.

(a) Target Hold Mode. In this mode the payload line-of-sight is locked on a manually set ground point (using one of the manual modes). The station calculates the platform pitch and yaw compensation command. The PO pressing Fast Acquisition selects target hold mode. The selected sensor will be looking at the selected ground point as long as this mode remains selected.

(b) Target Acquisition Mode. In this mode the payload line-of-sight is set to a pre-selected ground point (coordinates). Upon selecting this mode, the platform line-of-sight will be automatically set to the selected coordinates and will remain set until the mode is canceled.

2. Physical Description. The Versatron 12DS payload consists of a payload platform, system wiring harness, and CPA. The sensor platform is an enclosed sphere that contains both the daytime EO TV camera and the day-night IR sensor with closed-loop helium cooling system. The payload sphere contains two viewing windows: 1) the FLIR sensor uses a silicon window, 2) the video camera uses an optical glass window. Physical attributes of the 12DS payload are as follows:

Payload sphere diameter	12.10	inches
Height.....	10.99	inches
Weight.....	46.02	pounds
Installed opening diameter (hole in AV)....	13.00	inches
Shock resistance	12 Gs	in all directions

E. CONCEPTS

1. Operational Concept. The Versatron 12DS payload will be operated by the Pioneer UAV system PO consistent with current payload operating concepts. The sensor will be employed to provide route reconnaissance, Bomb Damage Assessment, ISR missions, Search and Rescue/Combat Search and Rescue, drug interdiction, perimeter security, and a variety of reconnaissance assignments.

The 12DS payload will be operated during all Pioneer flights in which it is installed. It will also be used during emergency procedures, by providing a "pilot's window" view for the IP, and used for searching for possible emergency landing sights. Though not the primary means of navigation, the 12DS payload will also be used to assist the Pioneer IP and MC in identifying landmarks to aid in navigation and target identification.

2. Maintenance Concept. The 12DS payload will be maintained per the directives guiding the maintenance of the Pioneer UAV system. Maintenance will include installation and removal of optical and mechanical assemblies, and payload calibration procedures that may be performed while the payload is installed in the air vehicle and operated in conjunction with the GCS-2000 only.

The 12DS will help to reduce maintenance support because personnel will no longer have to remove and replace payloads between day and night missions, thus reducing turnaround time and increasing mission availability.

3. Manning Concept. The manning concept of the 12DS is consistent with that of the host Pioneer UAV System, as described in Part I of this NTSP.

4. Training Concept. Training for the 12DS will be incorporated into all phases of Pioneer training at the NAMTRAGRU Detachment Fort Huachuca, Arizona.

a. Initial Training. NAVAIRSYSCOM (PMA2053K) will be responsible for providing initial training to Pioneer UAV operators and maintenance personnel prior to or concurrent with delivery of the first 12DS payloads to field units.

b. Follow-on Training. 12DS training will be integrated into existing Pioneer UAV system courses taught at NAMTRAGRU Detachment Fort Huachuca. All courses will require the addition of 12DS overview material, but the GCS Operator, Payload Operator, and Electronics Technician courses will require more extensive classroom, lab, and flight time. Estimated impact of the integration of 12DS training into current Pioneer curriculum is as follows:

Title	**Pioneer SR-RPV Mission Commander**
CIN	C-2E-0640
Percent Curriculum Impacted	5 percent
Description	Curriculum will be modified to include basic functional and physical descriptions of the 12DS payload.
Length	+1.0 hour classroom

Title	**Pioneer SR-RPV External Pilot**
CIN	C-104-0641
Percent Curriculum Impacted	5 percent
Description	Curriculum will be modified to include basic functional and physical descriptions of the 12DS payload.

Length	+1.0 hour classroom

Title	**Pioneer SR-RPV Ground Control Station Operator**
CIN	C-104-0642
Percent Curriculum Impacted	5 percent
Description	Curriculum will be modified to include in-depth functional and physical descriptions of the 12DS payload, in addition to operating procedures.
Length	+2.0 hours classroom, +1 flight

Title	**Pioneer SR-RPV Payload Operator**
CIN	C-104-0643
Percent Curriculum Impacted	5 percent
Description	Curriculum will be modified to include in-depth functional and physical descriptions of the 12DS payload, in addition to operating procedures.
Length	+1 flight, +2.0 hours classroom

Title	**Pioneer SR-RPV Airframe / Mechanic**
CIN	C-690-0644
Percent Curriculum Impacted	5 percent
Description	Curriculum will be modified to include basic functional and physical descriptions of the 12DS payload.
Length	+1.0 hour classroom

Title	**Pioneer SR-RPV Internal Pilot**
CIN	C-104-0645
Percent Curriculum Impacted	5 percent

Description	Curriculum will be modified to include basic functional and physical descriptions of the 12DS payload.
Length	+1.0 hour classroom

Title	**Pioneer SR-RPV Electronics Technician**
CIN	C-690-0646
Percent Curriculum Impacted	10 percent
Description	Curriculum will be modified to include basic functional and physical descriptions of the 12DS payload, in addition to preventive and organizational level corrective maintenance, remove and replace procedures, and any required calibration or alignment procedures.
Length	+3.0 hours classroom and lab

F. SCHEDULES

1. Installation and Delivery Schedules. These schedules are not available, pending final corrections on software; expected delivery is fourth quarter FY99.

2. Ready For Operational Use Schedule. Expected delivery is fourth quarter FY99.

3. Time Required to Install at Operational Sites. TBD

PART II - BILLET AND PERSONNEL REQUIREMENTS

The following elements are not affected by the Pioneer UAV and, therefore, are not included in Part II of this NTSP:

II.A. Billet Requirements

II.A.2.a. Operational and Fleet Support Activity Deactivation Schedule

PART II - BILLET AND PERSONNEL REQUIREMENTS

II.A. BILLET REQUIREMENTS

II.A.1.a. OPERATIONAL AND FLEET SUPPORT ACTIVITY ACTIVATION SCHEDULE

SOURCE: PMA263 **DATE:** 1/1/99

ACTIVITY, UIC		**PFYs**	**CFY99**	**FY00**	**FY01**	**FY02**	**FY03**
OPERATIONAL ACTIVITIES - USMC							
VMU-2 Cherry Point	01490	1	0	0	0	0	0
VMU-1 29 Palms	01480	1	0	0	0	0	0
TOTAL:		2	0	0	0	0	0
OPERATIONAL ACTIVITIES - NAVY							
VC-6 DET Patuxent River	55243	1	0	0	0	0	0
VC-6 Shore	46550	1	0	0	0	0	0
TOTAL:		2	0	0	0	0	0
FLEET SUPPORT ACTIVITIES - USMC							
MALS Augment (VMU-2 Cherry Point)	01490	1	0	0	0	0	0
MWCS Augment (VMU-2 Cherry point)	01490	1	0	0	0	0	0
MALS Augment (VMU-1 29 Palms)	01480	1	0	0	0	0	0
MWCS Augment (VMU-1 29 Palms)	01480	1	0	0	0	0	0
TOTAL:		4	0	0	0	0	0

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
OPERATIONAL ACTIVITIES - USMC					
VMU-2 Cherry Point, 01490					
USMC	1	0	CAPT	0202	
	1	0	CAPT	0402	
	1	0	CAPT	6002	
	2	0	CAPT	7210	7315
	1	0	CAPT	7315	7596
	3	0	CAPT	9969	7315
	1	0	CWO2	0170	
	1	0	CWO2	6302	
	1	0	LT	0207	
	1	0	LTCOL	9969	7315
	1	0	MAJ	7315	7202
	1	0	MAJ	9969	7315
	0	1	CPL	0121	
	0	1	CPL	0131	
	0	1	CPL	0151	
	0	3	CPL	0231	
	0	1	CPL	2531	
	0	2	CPL	0411	
	0	5	CPL	6014	
	0	3	CPL	6046	
	0	1	CPL	6072	
	0	3	CPL	6314	
	0	1	CPL	6531	
	0	10	CPL	7314	
	0	1	CPL	8711	
	0	1	GYSGT	0193	
	0	1	GYSGT	0241	
	0	1	GYSGT	2591	
	0	1	GYSGT	6014	
	0	1	GYSGT	6314	
	0	1	GYSGT	7041	
	0	2	GYSGT	7314	7316
	0	2	LCPL	1141	
	0	1	LCPL	0151	
	0	1	LCPL	2111	
	0	1	LCPL	2531	
	0	1	LCPL	3043	
	0	2	LCPL	4066	
	0	11	LCPL	6014	
	0	1	LCPL	6072	
	0	10	LCPL	6314	
	0	1	LCPL	6531	
	0	20	LCPL	7314	
	0	1	MSGT	6019	
	0	1	MSGT	7314	7316

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
USMC	0	3	SGT	0241	
	0	1	SGT	3043	
	0	2	SGT	3531	
	0	3	SGT	6014	
	0	1	SGT	6042	
	0	2	SGT	6314	
	0	1	SGT	6531	
	0	1	SGT	7041	
	0	1	SGT	7314	
	0	2	SGT	7314	7316
	0	1	SGTMAJ	9999	
	0	1	SSGT	0231	
	0	1	SSGT	0241	
	0	1	SSGT	3537	
	0	2	SSGT	0431	
	0	2	SSGT	6014	
	0	2	SSGT	6047	
	0	1	SSGT	6314	
	0	2	SSGT	7314	
	0	1	SSGT	8421	
VMU-2 Cherry Point, 01490					
ACDU	1	0	2102		
	0	1	HM1	8404	
	0	2	HM3	8404	
ACTIVITY TOTAL:	16	128			
VMU-1 29 Palms, 01480					
USMC	1	0	CAPT	0202	
	1	0	CAPT	0402	
	1	0	CAPT	6002	
	2	0	CAPT	7210	7315
	1	0	CAPT	7315	7596
	3	0	CAPT	9969	7315
	1	0	CWO2	0170	
	1	0	CWO2	6302	
	1	0	LT	0207	
	1	0	LTCOL	9969	7315
	1	0	MAJ	7315	7202
	1	0	MAJ	9969	7315
	0	1	CPL	0121	
	0	1	CPL	0131	
	0	1	CPL	0151	
	0	3	CPL	0231	
	0	1	CPL	2531	
	0	2	CPL	0411	
	0	5	CPL	6014	

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
USMC	0	3	CPL	6046	
	0	1	CPL	6072	
	0	3	CPL	6314	
	0	1	CPL	6531	
	0	10	CPL	7314	
	0	1	CPL	8711	
	0	1	GYSGT	0193	
	0	1	GYSGT	0241	
	0	1	GYSGT	2591	
	0	1	GYSGT	6014	
	0	1	GYSGT	6314	
	0	1	GYSGT	7041	
	0	2	GYSGT	7314	7316
	0	2	LCPL	1141	
	0	1	LCPL	0151	
	0	1	LCPL	2111	
	0	1	LCPL	2531	
	0	1	LCPL	3043	
	0	2	LCPL	4066	
	0	11	LCPL	6014	
	0	1	LCPL	6072	
	0	10	LCPL	6314	
	0	1	LCPL	6531	
	0	20	LCPL	7314	
	0	1	MSGT	6019	
	0	1	MSGT	7314	7316
	0	3	SGT	0241	
	0	1	SGT	3043	
	0	2	SGT	3531	
	0	3	SGT	6014	
	0	1	SGT	6042	
	0	2	SGT	6314	
	0	1	SGT	6531	
	0	1	SGT	7041	
	0	1	SGT	7314	
	0	2	SGT	7314	7316
	0	1	SGTMAJ	9999	
	0	1	SSGT	0231	
	0	1	SSGT	0241	
	0	1	SSGT	3537	
	0	2	SSGT	0431	
	0	2	SSGT	6014	
	0	2	SSGT	6047	
	0	1	SSGT	6314	
	0	2	SSGT	7314	
	0	1	SSGT	8421	

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
VMU-1 29 Palms, 01480					
ACDU	1	0	2102		
	0	1	HM1	8404	
	0	2	HM3	8404	
ACTIVITY TOTAL:	16	128			
OPERATIONAL ACTIVITIES - NAVY					
VC-6 DET Patuxent River, 55243					
ACDU	18	0	1302		
	0	1	ADC		
	0	1	AD1		
	0	6	AD2		
	0	6	ADAN		
	0	1	AEC		
	0	1	AE1	8361	
	0	6	AE1	8361	8363
	0	1	AE2	8361	
	0	5	AE2	8361	8363
	0	6	AE3	8361	
	0	6	AEAN	8361	
	0	6	AK2		
	0	2	AMS1	8361	
	0	6	AMS1	8361	7232
	0	6	AMS1	8362	
	0	6	AMS2	8361	8362
	0	6	AMS2	8362	
	0	6	AMS3	8361	
	0	6	AMS3	8361	7232
	0	12	AMSAN	8361	
	0	1	AOC		
	0	1	ASC		
	0	6	AS2	8361	7607
	0	6	AS2	8362	
	0	6	ASAN	8361	7607
	0	1	ATC		
	0	2	AT1	8361	
	0	6	AT1	8363	
	0	5	AT2	8361	8363
	0	7	AT2	8363	
	0	6	ATAN	8361	
	0	1	AZC		
	0	6	AZ2	8364	
	0	6	AZ3	8364	
	0	6	IS2		

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
VC-6 DET Patuxent River, 55243 FY99					
ACDU	0	1	IS3		
VC-6 DET Patuxent River, 55243 FY00					
ACDU	0	1	AS1		
ACTIVITY TOTAL:	18	165			
VC-6 Shore, 46550					
ACDU	1	0	1520		
	1	0	1630		
	0	1	AK1		
	0	1	AK3		
	0	1	AOCS		
	0	1	APOC		
	0	1	APO1		
	0	1	AZ2		
	0	1	YN1		
	0	1	YN3		
ACTIVITY TOTAL:	2	8			
FLEET SUPPORT ACTIVITIES - USMC					
MALS Augment (VMU-2 Cherry Point), 01490					
USMC	0	1	CPL	6413	
	0	1	CPL	6423	
	0	1	CPL	6466	
	0	1	CPL	6492	
	0	1	CPL	6672	
	0	1	LCPL	6073	
	0	1	LCPL	6432	
	0	1	LCPL	6672	
	0	1	SGT	6073	
	0	1	SGT	6466	
	0	1	SGT	6672	
ACTIVITY TOTAL:	0	11			
MWCS Augment (VMU-2 Cherry Point), 01490					
USMC	0	1	CPL	1142	
	0	4	CPL	2531	
	0	1	CPL	2841	
	0	1	CPL	3043	
	0	3	CPL	3521	
	0	3	LCPL	1141	
	0	2	LCPL	1142	
	0	1	LCPL	0121	
	0	1	LCPL	1345	
	0	2	LCPL	2512	
	0	11	LCPL	2531	
	0	1	LCPL	2841	
	0	2	LCPL	3381	

II.A.1.b. BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
USMC	0	3	LCPL	3521	
	0	1	LCPL	0411	
	0	2	SGT	2531	
	0	1	SGT	3521	
	0	1	SSGT	2519	
	0	1	SSGT	2537	
	0	1	SSGT	2861	
	0	1	SSGT	3529	
ACTIVITY TOTAL:	0	44			
MALS Augment (VMU-1 29 Palms), 01480					
USMC	0	1	CPL	6413	
	0	1	CPL	6423	
	0	1	CPL	6466	
	0	1	CPL	6492	
	0	1	CPL	6672	
	0	1	LCPL	6073	
	0	1	LCPL	6432	
	0	1	LCPL	6672	
	0	1	SGT	6073	
	0	1	SGT	6466	
	0	1	SGT	6672	
ACTIVITY TOTAL:	0	11			
MWCS Augment (VMU-1 29 Palms), 01480					
USMC	0	1	CPL	1142	
	0	4	CPL	2531	
	0	1	CPL	2841	
	0	1	CPL	3043	
	0	3	CPL	3521	
	0	3	LCPL	1141	
	0	2	LCPL	1142	
	0	1	LCPL	0121	
	0	1	LCPL	1345	
	0	2	LCPL	2512	
	0	11	LCPL	2531	
	0	1	LCPL	2841	
	0	2	LCPL	3381	
	0	3	LCPL	3521	
	0	1	LCPL	0411	
	0	2	SGT	2531	
	0	1	SGT	3521	
	0	1	SSGT	2519	
	0	1	SSGT	2537	
	0	1	SSGT	2861	
	0	1	SSGT	3529	
ACTIVITY TOTAL:	0	44			

II.A.1.c. TOTAL BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

DESIG/ RATING	PNEC/SNEC PMOS/SMOS		PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
USMC OPERATIONAL ACTIVITIES - USMC														
CAPT	0202		2		0		0		0		0		0	
CAPT	0402		2		0		0		0		0		0	
CAPT	6002		2		0		0		0		0		0	
CAPT	7210	7315	4		0		0		0		0		0	
CAPT	7315	7596	2		0		0		0		0		0	
CAPT	9969	7315	6		0		0		0		0		0	
CWO2	0170		2		0		0		0		0		0	
CWO2	6302		2		0		0		0		0		0	
LT	0207		2		0		0		0		0		0	
LTCOL	9969	7315	2		0		0		0		0		0	
MAJ	7315	7202	2		0		0		0		0		0	
MAJ	9969	7315	2		0		0		0		0		0	
CPL	0121			2		0		0		0		0		0
CPL	0131			2		0		0		0		0		0
CPL	0151			2		0		0		0		0		0
CPL	0231			6		0		0		0		0		0
CPL	2531			2		0		0		0		0		0
CPL	0411			4		0		0		0		0		0
CPL	6014			10		0		0		0		0		0
CPL	6046			6		0		0		0		0		0
CPL	6072			2		0		0		0		0		0
CPL	6314			6		0		0		0		0		0
CPL	6531			2		0		0		0		0		0
CPL	7314			20		0		0		0		0		0
CPL	8711			2		0		0		0		0		0
GYSGT	0193			2		0		0		0		0		0
GYSGT	0241			2		0		0		0		0		0
GYSGT	2591			2		0		0		0		0		0
GYSGT	6014			2		0		0		0		0		0
GYSGT	6314			2		0		0		0		0		0
GYSGT	7041			2		0		0		0		0		0
GYSGT	7314	7316		4		0		0		0		0		0
LCPL	1141			4		0		0		0		0		0
LCPL	0151			2		0		0		0		0		0
LCPL	2111			2		0		0		0		0		0
LCPL	2531			2		0		0		0		0		0
LCPL	3043			2		0		0		0		0		0
LCPL	4066			4		0		0		0		0		0
LCPL	6014			22		0		0		0		0		0
LCPL	6072			2		0		0		0		0		0
LCPL	6314			20		0		0		0		0		0
LCPL	6531			2		0		0		0		0		0
LCPL	7314			40		0		0		0		0		0
MSGT	6019			2		0		0		0		0		0
MSGT	7314	7316		2		0		0		0		0		0

II.A.1.c. TOTAL BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

DESIG/ RATING	PNEC/SNEC PMOS/SMOS		PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
SGT	0241			6		0		0		0		0		0
SGT	3043			2		0		0		0		0		0
SGT	3531			4		0		0		0		0		0
SGT	6014			6		0		0		0		0		0
SGT	6042			2		0		0		0		0		0
SGT	6314			4		0		0		0		0		0
SGT	6531			2		0		0		0		0		0
SGT	7041			2		0		0		0		0		0
SGT	7314			2		0		0		0		0		0
SGT	7314	7316		4		0		0		0		0		0
SGTMAJ	9999			2		0		0		0		0		0
SSGT	0231			2		0		0		0		0		0
SSGT	0241			2		0		0		0		0		0
SSGT	3537			2		0		0		0		0		0
SSGT	0431			4		0		0		0		0		0
SSGT	6014			4		0		0		0		0		0
SSGT	6047			4		0		0		0		0		0
SSGT	6314			2		0		0		0		0		0
SSGT	7314			4		0		0		0		0		0
SSGT	8421			2		0		0		0		0		0
USMC OPERATIONAL ACTIVITIES - ACDU														
2102			2		0		0		0		0		0	
HM1	8404			2		0		0		0		0		0
HM3	8404			4		0		0		0		0		0
NAVY OPERATIONAL ACTIVITIES - ACDU														
1302			18		0		0		0		0		0	
1520			1		0		0		0		0		0	
1630			1		0		0		0		0		0	
ADC				1		0		0		0		0		0
AD1				1		0		0		0		0		0
AD2				6		0		0		0		0		0
ADAN				6		0		0		0		0		0
AEC				1		0		0		0		0		0
AE1	8361			1		0		0		0		0		0
AE1	8361	8363		6		0		0		0		0		0
AE2	8361			1		0		0		0		0		0
AE2	8361	8363		5		0		0		0		0		0
AE3	8361			6		0		0		0		0		0
AEAN	8361			6		0		0		0		0		0
AK1				1		0		0		0		0		0
AK2				6		0		0		0		0		0
AK3				1		0		0		0		0		0
AMS1	8361			2		0		0		0		0		0
AMS1	8361	7232		6		0		0		0		0		0
AMS1	8362			6		0		0		0		0		0
AMS2	8361	8362		6		0		0		0		0		0

II.A.1.c. TOTAL BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

DESIG/ RATING	PNEC/SNEC PMOS/SMOS	PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
AMS2	8362		6		0		0		0		0		0
AMS3	8361		6		0		0		0		0		0
AMS3	8361 7232		6		0		0		0		0		0
AMSAN	8361		12		0		0		0		0		0
AOC			1		0		0		0		0		0
AOCS			1		0		0		0		0		0
APOC			1		0		0		0		0		0
APO1			1		0		0		0		0		0
ASC			1		0		0		0		0		0
AS1			0		0		1		0		0		0
AS2	8361 7607		6		0		0		0		0		0
AS2	8362		6		0		1		0		0		0
ASAN	8361 7607		6		0		0		0		0		0
ATC			1		0		0		0		0		0
AT1	8361		2		0		0		0		0		0
AT1	8363		6		0		0		0		0		0
AT2	8361 8363		5		0		0		0		0		0
AT2	8363		7		0		0		0		0		0
ATAN	8361		6		0		0		0		0		0
AZC			1		0		0		0		0		0
AZ2			1		0		0		0		0		0
AZ2	8364		6		0		0		0		0		0
AZ3	8364		6		0		0		0		0		0
IS2			6		0		0		0		0		0
IS3			0		1		0		0		0		0
YN1			1		0		0		0		0		0
YN3			1		0		0		0		0		0
USMC FLEET SUPPORT ACTIVITIES - USMC													
CPL	1142		2		0		0		0		0		0
CPL	2531		8		0		0		0		0		0
CPL	2841		2		0		0		0		0		0
CPL	3043		2		0		0		0		0		0
CPL	3521		6		0		0		0		0		0
CPL	6413		2		0		0		0		0		0
CPL	6423		2		0		0		0		0		0
CPL	6466		2		0		0		0		0		0
CPL	6492		2		0		0		0		0		0
CPL	6672		2		0		0		0		0		0
LCPL	1141		6		0		0		0		0		0
LCPL	1142		4		0		0		0		0		0
LCPL	0121		2		0		0		0		0		0
LCPL	1345		2		0		0		0		0		0
LCPL	2512		4		0		0		0		0		0
LCPL	2531		22		0		0		0		0		0
LCPL	2841		2		0		0		0		0		0
LCPL	3381		4		0		0		0		0		0
LCPL	3521		6		0		0		0		0		0
LCPL	0411		2		0		0		0		0		0

II.A.1.c. TOTAL BILLETS REQUIRED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

DESIG/ RATING	PNEC/SNEC PMOS/SMOS	PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
LCPL	6073		2		0		0		0		0		0
LCPL	6432		2		0		0		0		0		0
LCPL	6672		2		0		0		0		0		0
SGT	2531		4		0		0		0		0		0
SGT	3521		2		0		0		0		0		0
SGT	6073		2		0		0		0		0		0
SGT	6466		2		0		0		0		0		0
SGT	6672		2		0		0		0		0		0
SSGT	2519		2		0		0		0		0		0
SSGT	2537		2		0		0		0		0		0
SSGT	2861		2		0		0		0		0		0
SSGT	3529		2		0		0		0		0		0
SUMMARY TOTALS:													
USMC OPERATIONAL ACTIVITIES - USMC		30	250	0	0	0	0	0	0	0	0	0	0
USMC OPERATIONAL ACTIVITIES - ACDU		2	6	0	0	0	0	0	0	0	0	0	0
NAVY OPERATIONAL ACTIVITIES - ACDU		20	170	0	1	0	2	0	0	0	0	0	0
USMC FLEET SUPPORT ACTIVITIES - USMC			110		0		0		0		0		0
GRAND TOTALS:													
USMC - USMC		30	360	0	0	0	0	0	0	0	0	0	0
USMC - ACDU		2	6	0	0	0	0	0	0	0	0	0	0
NAVY - ACDU		20	170	0	1	0	2	0	0	0	0	0	0

II.A.2.b. BILLETS TO BE DELETED FOR OPERATIONAL AND FLEET SUPPORT ACTIVITIES

ACTIVITY, UIC, PHASING INCREMENT	BILLETS OFF	BILLETS ENL	DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS
OPERATIONAL ACTIVITIES - NAVY					
VC-6 DET Patuxent River, 55243, FY99 Increment					
ACDU	0	1	AD1		
	0	4	AD2		
	0	6	ADAN		
	0	3	AE1	8361	8363
	0	2	AE3	8361	
	0	5	AEAN	8361	
	0	3	AK2		
	0	2	AMS1	8361	
	0	5	AMS1	8361	7232
	0	6	AMS1	8362	
	0	6	AMS2	8362	
	0	6	AMS3	8361	
	0	2	AMS3	8361	7232
	0	12	AMSAN	8361	
	0	1	AOC		
	0	4	AS2	8361	7607
	0	5	AS2	8362	
	0	6	ASAN	8361	7607
	0	3	AT1	8363	
	0	1	AT2	8363	
	0	2	ATAN	8361	
	0	1	AZC		
	0	3	AZ2	8364	
	0	4	AZ3	8364	
	0	5	IS2		
VC-6 DET Patuxent River, 55243, FY00 Increment					
ACDU	0	1	ASC		
ACTIVITY TOTAL:	0	99			
VC-6 Shore, 46550, FY99 Increment					
	0	1	APO1		
ACTIVITY TOTAL:	0	1			

II.A.2.c. TOTAL BILLETS TO BE DELETED IN OPERATIONAL AND FLEET SUPPORT ACTIVITIES

DESIG/ RATING	PNEC/SNEC PMOS/SMOS		PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
NAVY OPERATIONAL ACTIVITIES - ACDU														
AD1				1		-1		0		0		0		0
AD2				6		-4		0		0		0		0
ADAN				6		-6		0		0		0		0
AE1	8361	8363		6		-3		0		0		0		0
AE3	8361			6		-2		0		0		0		0
AEAN	8361			6		-5		0		0		0		0
AK2				6		-3		0		0		0		0
AMS1	8361			2		-2		0		0		0		0
AMS1	8361	7232		6		-5		0		0		0		0
AMS1	8362			6		-6		0		0		0		0
AMS2	8362			6		-6		0		0		0		0
AMS3	8361			6		-6		0		0		0		0
AMS3	8361	7232		6		-2		0		0		0		0
AMSAN	8361			12		-12		0		0		0		0
AOC				1		-1		0		0		0		0
APO1				1		-1		0		0		0		0
ASC				1		0		-1		0		0		0
AS2	8361	7607		6		-4		0		0		0		0
AS2	8362			6		-5		0		0		0		0
ASAN	8361	7607		6		-6		0		0		0		0
AT1	8363			6		-3		0		0		0		0
AT2	8363			7		-1		0		0		0		0
ATAN	8361			6		-2		0		0		0		0
AZC				1		-1		0		0		0		0
AZ2	8364			6		-3		0		0		0		0
AZ3	8364			6		-4		0		0		0		0
IS2				6		-5		0		0		0		0
SUMMARY TOTALS:														
NAVY OPERATIONAL ACTIVITIES - ACDU				140		-99		-1		0		0		0
GRAND TOTALS:														
NAVY - ACDU				140		-99		-1		0		0		0

II.A.3. TRAINING ACTIVITIES INSTRUCTOR AND SUPPORT BILLET REQUIREMENTS

DESIG RATING	PNEC/SNEC PMOS/SMOS		PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
TRAINING ACTIVITY, LOCATION, UIC: NAMTRAGRU DET, Fort Huachuca, 31714														
INSTRUCTOR BILLETS														
USMC														
CPL	6014		0	1	0	1	0	1	0	1	0	1	0	1
CPL	6314		0	1	0	1	0	1	0	1	0	1	0	1
GYSGT	6014		0	1	0	1	0	1	0	1	0	1	0	1
SGT	6014		0	1	0	1	0	1	0	1	0	1	0	1
SGT	6314		0	1	0	1	0	1	0	1	0	1	0	1
SGT	7314		0	2	0	2	0	2	0	2	0	2	0	2
SSGT	6314		0	1	0	1	0	1	0	1	0	1	0	1
SSGT	7316	7314	0	4	0	4	0	4	0	4	0	4	0	4
ACDU														
AE1	8363	9502	0	2	0	2	0	2	0	2	0	2	0	2
ATCS	8361	9502	0	1	0	1	0	1	0	1	0	1	0	1
ATC	8363	9502	0	1	0	1	0	1	0	1	0	1	0	1
AT1	8361	9502	0	1	0	1	0	1	0	1	0	1	0	1
AT1	8363	9502	0	1	0	1	0	1	0	1	0	1	0	1
SUPPORT BILLETS														
ACDU														
6380			1	0	1	0	1	0	1	0	1	0	1	0
AD1			0	1	0	1	0	1	0	1	0	1	0	1
AE1	8361		0	1	0	1	0	1	0	1	0	1	0	1
AKC			0	1	0	1	0	1	0	1	0	1	0	1
AK2			0	1	0	1	0	1	0	1	0	1	0	1
AMSC	8361		0	1	0	1	0	1	0	1	0	1	0	1
AMS2	8361		0	1	0	1	0	1	0	1	0	1	0	1
ATC			0	1	0	1	0	1	0	1	0	1	0	1
ATC	8361		0	1	0	1	0	1	0	1	0	1	0	1
AT1	8361		0	1	0	1	0	1	0	1	0	1	0	1
AT2	8361		0	1	0	1	0	1	0	1	0	1	0	1
AZ1			0	1	0	1	0	1	0	1	0	1	0	1
YN1			0	1	0	1	0	1	0	1	0	1	0	1
TOTAL:			1	30	1	30	1	30	1	30	1	30	1	30

II.A.4. CHARGEABLE STUDENT BILLET REQUIREMENTS

ACTIVITY, LOCATION, UIC	USN/ USMC	PFYs OFF	PFYs ENL	CFY99 OFF	CFY99 ENL	FY00 OFF	FY00 ENL	FY01 OFF	FY01 ENL	FY02 OFF	FY02 ENL	FY03 OFF	FY03 ENL
NAMTRAGRU DET, Fort Huachuca, 31714													
	USMC	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0
	NAVY	0.3	9.3	0.3	8.2	0.3	4.8	0.3	4.8	0.3	4.8	0.3	4.8
SUMMARY TOTALS:													
	USMC	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0	0.3	7.0
	NAVY	0.3	9.3	0.3	8.2	0.3	4.8	0.3	4.8	0.3	4.8	0.3	4.8
GRAND TOTALS:													
		0.6	16.3	0.6	15.2	0.6	11.8	0.6	11.8	0.6	11.8	0.6	11.8

II.A.5. ANNUAL INCREMENTAL AND CUMULATIVE BILLETS

DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS	BILLET BASE	CFY99 +/-	CFY99 CUM	FY00 +/-	FY00 CUM	FY01 +/-	FY01 CUM	FY02 +/-	FY02 CUM	FY03 +/-	FY03 CUM
a. OFFICER - USN													
Operational Billets ACDU and TAR													
1302			18	0	18	0	18	0	18	0	18	0	18
1520			1	0	1	0	1	0	1	0	1	0	1
1630			1	0	1	0	1	0	1	0	1	0	1
2102			2	0	2	0	2	0	2	0	2	0	2
Staff Billets ACDU and TAR													
6380			1	0	1	0	1	0	1	0	1	0	1
Chargeable Student Billets ACDU and TAR													
			0	0	0	0	0	0	0	0	0	0	0
TOTAL USN OFFICER BILLETS:													
Operational			22	0	22	0	22	0	22	0	22	0	22
Staff			1	0	1	0	1	0	1	0	1	0	1
Chargeable Student			0	0	0	0	0	0	0	0	0	0	0
b. ENLISTED - USN													
Operational Billets ACDU and TAR													
ADC			1	0	1	0	1	0	1	0	1	0	1
AD1			1	-1	0	0	0	0	0	0	0	0	0
AD2			6	-4	2	0	2	0	2	0	2	0	2
ADAN			6	-6	0	0	0	0	0	0	0	0	0
AEC			1	0	1	0	1	0	1	0	1	0	1
AE1	8361		1	0	1	0	1	0	1	0	1	0	1
AE1	8361	8363	6	-3	3	0	3	0	3	0	3	0	3
AE2	8361		1	0	1	0	1	0	1	0	1	0	1
AE2	8361	8363	5	0	5	0	5	0	5	0	5	0	5
AE3	8361		6	-2	4	0	4	0	4	0	4	0	4
AEAN	8361		6	-5	1	0	1	0	1	0	1	0	1
AK1			1	0	1	0	1	0	1	0	1	0	1
AK2			6	-3	3	0	3	0	3	0	3	0	3
AK3			1	0	1	0	1	0	1	0	1	0	1
AMS1	8361		2	-2	0	0	0	0	0	0	0	0	0
AMS1	8361	7232	6	-5	1	0	1	0	1	0	1	0	1
AMS1	8362		6	-6	0	0	0	0	0	0	0	0	0
AMS2	8361	8362	6	0	6	0	6	0	6	0	6	0	6
AMS2	8362		6	-6	0	0	0	0	0	0	0	0	0

II.A.5. ANNUAL INCREMENTAL AND CUMULATIVE BILLETS

DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS	BILLET BASE	CFY99 +/-	CFY99 CUM	FY00 +/-	FY00 CUM	FY01 +/-	FY01 CUM	FY02 +/-	FY02 CUM	FY03 +/-	FY03 CUM
AMS3	8361		6	-6	0	0	0	0	0	0	0	0	0
AMS3	8361	7232	6	-2	4	0	4	0	4	0	4	0	4
AMSAN	8361		12	-12	0	0	0	0	0	0	0	0	0
AOC			1	-1	0	0	0	0	0	0	0	0	0
AOCS			1	0	0	0	0	0	0	0	0	0	0
APOC			1	0	1	0	1	0	1	0	1	0	1
APO1			1	-1	0	0	0	0	0	0	0	0	0
ASC			1	0	1	-1	0	0	0	0	0	0	0
AS1			0	0	0	1	1	0	1	0	1	0	1
AS2	8361	7607	6	-4	2	0	2	0	2	0	2	0	2
AS2	8362		6	-5	1	1	2	0	2	0	2	0	2
ASAN	8361	7607	6	-6	0	0	0	0	0	0	0	0	0
ATC			1	0	1	0	1	0	1	0	1	0	1
AT1	8361		2	0	2	0	2	0	2	0	2	0	2
AT1	8363		6	-3	3	0	3	0	3	0	3	0	3
AT2	8361	8363	5	0	5	0	5	0	5	0	5	0	5
AT2	8363		7	-1	6	0	6	0	6	0	6	0	6
ATAN	8361		6	-2	4	0	4	0	4	0	4	0	4
AZC			1	-1	0	0	0	0	0	0	0	0	0
AZ2			1	0	1	0	1	0	1	0	1	0	1
AZ2	8364		6	-3	3	0	3	0	3	0	3	0	3
AZ3	8364		6	-4	2	0	2	0	2	0	2	0	2
HM1	8404		2	0	2	0	2	0	2	0	2	0	2
HM3	8404		4	0	4	0	4	0	4	0	4	0	4
IS2			6	-5	1	0	1	0	1	0	1	0	1
IS3			0	1	1	0	1	0	1	0	1	0	1
YN1			1	0	1	0	1	0	1	0	1	0	1
YN3			1	0	1	0	1	0	1	0	1	0	1
Staff Billets ACDU and TAR													
AD1			1	0	1	0	1	0	1	0	1	0	1
AE1	8361		1	0	1	0	1	0	1	0	1	0	1
AE1	8363	9502	2	0	2	0	2	0	2	0	2	0	2
AKC			1	0	1	0	1	0	1	0	1	0	1
AK2			1	0	1	0	1	0	1	0	1	0	1
AMSC	8361		1	0	1	0	1	0	1	0	1	0	1
AMS2	8361		1	0	1	0	1	0	1	0	1	0	1
ATCS	8361	9502	1	0	1	0	1	0	1	0	1	0	1
ATC			1	0	1	0	1	0	1	0	1	0	1
ATC	8361		1	0	1	0	1	0	1	0	1	0	1
ATC	8363	9502	1	0	1	0	1	0	1	0	1	0	1
AT1	8361		1	0	1	0	1	0	1	0	1	0	1
AT1	8361	9502	1	0	1	0	1	0	1	0	1	0	1
AT1	8363	9502	1	0	1	0	1	0	1	0	1	0	1
AT2	8361		1	0	1	0	1	0	1	0	1	0	1
AZ1			1	0	1	0	1	0	1	0	1	0	1
YN1			1	0	1	0	1	0	1	0	1	0	1

II.A.5. ANNUAL INCREMENTAL AND CUMULATIVE BILLETS

DESIG/ RATING	PNEC/ PMOS	SNEC/ SMOS	BILLET BASE	CFY99 +/-	CFY99 CUM	FY00 +/-	FY00 CUM	FY01 +/-	FY01 CUM	FY02 +/-	FY02 CUM	FY03 +/-	FY03 CUM
TOTAL USN ENLISTED BILLETS:													
Operational			176	-98	78	0	78	0	78	0	78	0	78
Staff			18	0	18	0	18	0	18	0	18	0	18
Chargeable Student			9	-1	8	-3	5	0	5	0	5	0	5
c. OFFICER - USMC													
Operational Billets USMC and AR													
CAPT	0202		2	0	2	0	2	0	2	0	2	0	2
CAPT	0402		2	0	2	0	2	0	2	0	2	0	2
CAPT	6002		2	0	2	0	2	0	2	0	2	0	2
CAPT	7210	7315	4	0	4	0	4	0	4	0	4	0	4
CAPT	7315	7596	2	0	2	0	2	0	2	0	2	0	2
CAPT	9969	7315	6	0	6	0	6	0	6	0	6	0	6
CWO2	0170		2	0	2	0	2	0	2	0	2	0	2
CWO2	6302		2	0	2	0	2	0	2	0	2	0	2
LT	0207		2	0	2	0	2	0	2	0	2	0	2
LTCOL	9969	7315	2	0	2	0	2	0	2	0	2	0	2
MAJ	7315	7202	2	0	2	0	2	0	2	0	2	0	2
MAJ	9969	7315	2	0	2	0	2	0	2	0	2	0	2
Chargeable Student Billets USMC and AR													
			0	0	0	0	0	0	0	0	0	0	0
TOTAL USMC OFFICER BILLETS:													
Operational			30	0	30	0	30	0	30	0	30	0	30
Chargeable Student			0	0	0	0	0	0	0	0	0	0	0
d. ENLISTED - USMC													
Operational Billets USMC and AR													
CPL	0121		2	0	2	0	2	0	2	0	2	0	2
CPL	0131		2	0	2	0	2	0	2	0	2	0	2
CPL	0151		2	0	2	0	2	0	2	0	2	0	2
CPL	0231		6	0	6	0	6	0	6	0	6	0	6
CPL	2531		2	0	2	0	2	0	2	0	2	0	2
CPL	0411		4	0	4	0	4	0	4	0	4	0	4
CPL	6014		10	0	10	0	10	0	10	0	10	0	10
CPL	6046		6	0	6	0	6	0	6	0	6	0	6
CPL	6072		2	0	2	0	2	0	2	0	2	0	2
CPL	6314		6	0	6	0	6	0	6	0	6	0	6
CPL	6531		2	0	2	0	2	0	2	0	2	0	2
CPL	7314		20	0	20	0	20	0	20	0	20	0	20

II.A.5. ANNUAL INCREMENTAL AND CUMULATIVE BILLETS

DESIG/	PNEC/	SNEC/	BILLET	CFY99		FY00		FY01		FY02		FY03	
RATING	PMOS	SMOS	BASE	+/-	CUM	+/-	CUM	+/-	CUM	+/-	CUM	+/-	CUM
CPL	8711		2	0	2	0	2	0	2	0	2	0	2
GYSGT	0193		2	0	2	0	2	0	2	0	2	0	2
GYSGT	0241		2	0	2	0	2	0	2	0	2	0	2
GYSGT	2591		2	0	2	0	2	0	2	0	2	0	2
GYSGT	6014		2	0	2	0	2	0	2	0	2	0	2
GYSGT	6314		2	0	2	0	2	0	2	0	2	0	2
GYSGT	7041		2	0	2	0	2	0	2	0	2	0	2
GYSGT	7314	7316	4	0	4	0	4	0	4	0	4	0	4
LCPL	1141		4	0	4	0	4	0	4	0	4	0	4
LCPL	0151		2	0	2	0	2	0	2	0	2	0	2
LCPL	2111		2	0	2	0	2	0	2	0	2	0	2
LCPL	2531		2	0	2	0	2	0	2	0	2	0	2
LCPL	3043		2	0	2	0	2	0	2	0	2	0	2
LCPL	4066		4	0	4	0	4	0	4	0	4	0	4
LCPL	6014		22	0	22	0	22	0	22	0	22	0	22
LCPL	6072		2	0	2	0	2	0	2	0	2	0	2
LCPL	6314		20	0	20	0	20	0	20	0	20	0	20
LCPL	6531		2	0	2	0	2	0	2	0	2	0	2
LCPL	7314		40	0	40	0	40	0	40	0	40	0	40
MSGT	6019		2	0	2	0	2	0	2	0	2	0	2
MSGT	7314	7316	2	0	2	0	2	0	2	0	2	0	2
SGT	0241		6	0	6	0	6	0	6	0	6	0	6
SGT	3043		2	0	2	0	2	0	2	0	2	0	2
SGT	3531		4	0	4	0	4	0	4	0	4	0	4
SGT	6014		6	0	6	0	6	0	6	0	6	0	6
SGT	6042		2	0	2	0	2	0	2	0	2	0	2
SGT	6314		4	0	4	0	4	0	4	0	4	0	4
SGT	6531		2	0	2	0	2	0	2	0	2	0	2
SGT	7041		2	0	2	0	2	0	2	0	2	0	2
SGT	7314		2	0	2	0	2	0	2	0	2	0	2
SGT	7314	7316	4	0	4	0	4	0	4	0	4	0	4
SGTMAJ	9999		2	0	2	0	2	0	2	0	2	0	2
SSGT	0231		2	0	2	0	2	0	2	0	2	0	2
SSGT	0241		2	0	2	0	2	0	2	0	2	0	2
SSGT	3537		2	0	2	0	2	0	2	0	2	0	2
SSGT	0431		4	0	4	0	4	0	4	0	4	0	4
SSGT	6014		4	0	4	0	4	0	4	0	4	0	4
SSGT	6047		4	0	4	0	4	0	4	0	4	0	4
SSGT	6314		2	0	2	0	2	0	2	0	2	0	2
SSGT	7314		4	0	4	0	4	0	4	0	4	0	4
SSGT	8421		2	0	2	0	2	0	2	0	2	0	2
Fleet Support Billets USMC and AR													
CPL	1142		2	0	2	0	2	0	2	0	2	0	2
CPL	2531		8	0	8	0	8	0	8	0	8	0	8
CPL	2841		2	0	2	0	2	0	2	0	2	0	2
CPL	3043		2	0	2	0	2	0	2	0	2	0	2
CPL	3521		6	0	6	0	6	0	6	0	6	0	6
CPL	6413		2	0	2	0	2	0	2	0	2	0	2
CPL	6423		2	0	2	0	2	0	2	0	2	0	2

II.A.5. ANNUAL INCREMENTAL AND CUMULATIVE BILLETS

DESIG/	PNEC/	SNEC/	BILLET	CFY99		FY00		FY01		FY02		FY03	
RATING	PMOS	SMOS	BASE	+/-	CUM	+/-	CUM	+/-	CUM	+/-	CUM	+/-	CUM
CPL	6466		2	0	2	0	2	0	2	0	2	0	2
CPL	6492		2	0	2	0	2	0	2	0	2	0	2
CPL	6672		2	0	2	0	2	0	2	0	2	0	2
LCPL	1141		6	0	6	0	6	0	6	0	6	0	6
LCPL	1142		4	0	4	0	4	0	4	0	4	0	4
LCPL	0121		2	0	2	0	2	0	2	0	2	0	2
LCPL	1345		2	0	2	0	2	0	2	0	2	0	2
LCPL	2512		4	0	4	0	4	0	4	0	4	0	4
LCPL	2531		22	0	22	0	22	0	22	0	22	0	22
LCPL	2841		2	0	2	0	2	0	2	0	2	0	2
LCPL	3381		4	0	4	0	4	0	4	0	4	0	4
LCPL	3521		6	0	6	0	6	0	6	0	6	0	6
LCPL	0411		2	0	2	0	2	0	2	0	2	0	2
LCPL	6073		2	0	2	0	2	0	2	0	2	0	2
LCPL	6432		2	0	2	0	2	0	2	0	2	0	2
LCPL	6672		2	0	2	0	2	0	2	0	2	0	2
SGT	2531		4	0	4	0	4	0	4	0	4	0	4
SGT	3521		2	0	2	0	2	0	2	0	2	0	2
SGT	6073		2	0	2	0	2	0	2	0	2	0	2
SGT	6466		2	0	2	0	2	0	2	0	2	0	2
SGT	6672		2	0	2	0	2	0	2	0	2	0	2
SSGT	2519		2	0	2	0	2	0	2	0	2	0	2
SSGT	2537		2	0	2	0	2	0	2	0	2	0	2
SSGT	2861		2	0	2	0	2	0	2	0	2	0	2
SSGT	3529		2	0	2	0	2	0	2	0	2	0	2
Staff Billets USMC and AR													
CPL	6014		1	0	1	0	1	0	1	0	1	0	1
CPL	6314		1	0	1	0	1	0	1	0	1	0	1
GYSGT	6014		1	0	1	0	1	0	1	0	1	0	1
SGT	6014		1	0	1	0	1	0	1	0	1	0	1
SGT	6314		1	0	1	0	1	0	1	0	1	0	1
SGT	7314		2	0	2	0	2	0	2	0	2	0	2
SSGT	6314		1	0	1	0	1	0	1	0	1	0	1
SSGT	7316	7314	4	0	4	0	4	0	4	0	4	0	4
Chargeable Student Billets USMC and AR													
			7	0	7	0	7	0	7	0	7	0	7
TOTAL USMC ENLISTED BILLETS:													
Operational			250	0	250	0	250	0	250	0	250	0	250
Fleet Support			110	0	110	0	110	0	110	0	110	0	110
Staff			12	0	12	0	12	0	12	0	12	0	12
Chargeable Student			7	0	7	0	7	0	7	0	7	0	7

II.B. PERSONNEL REQUIREMENTS

II.B.1. ANNUAL TRAINING INPUT REQUIREMENTS

CIN, COURSE TITLE: C-2E-0640, Pioneer SR-RPV Mission Commander
COURSE LENGTH: 3.0 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 0% Marine: 0% **BACKOUT FACTOR:** 0.06

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	USMC	USMC	5		5		5		5		5	
	NAVY	ACDU	6		6		6		6		6	
		TOTAL:	11		11		11		11		11	

CIN, COURSE TITLE: C-690-0644, Pioneer SR-RPV Airframe Mechanic
COURSE LENGTH: 5.6 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 10% Marine: 0% **BACKOUT FACTOR:** 0.11

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	USMC	USMC		12		12		12		12		12
	NAVY	ACDU		18		6		6		6		6
		TOTAL:		30		18		18		18		18

CIN, COURSE TITLE: C-690-0646, Pioneer SR-RPV Electronics Technician
COURSE LENGTH: 8.0 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 10% Marine: 0% **BACKOUT FACTOR:** 0.16

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	USMC	USMC		9		9		9		9		9
	NAVY	ACDU		15		12		12		12		12
		TOTAL:		24		21		21		21		21

CIN, COURSE TITLE: C-104-0641, Pioneer SR-RPV External Pilot
COURSE LENGTH: 19.0 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 10% Marine: 0% **BACKOUT FACTOR:** 0.38

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	USMC	USMC		4		4		4		4		4
	NAVY	ACDU		7		3		3		3		3
		TOTAL:		11		7		7		7		7

II.B.1. ANNUAL TRAINING INPUT REQUIREMENTS

CIN, COURSE TITLE: C-104-0642, Pioneer SR-RPV Ground Control Station Operator
COURSE LENGTH: 8.0 Weeks **TOUR LENGTH:** 48 Months
ATTRITION FACTOR: Marine: 0% **BACKOUT FACTOR:** 0.16

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	USMC	USMC		21		21		21		21		21
		TOTAL:		21		21		21		21		21

CIN, COURSE TITLE: C-104-0643, Pioneer SR-RPV Payload Operator
COURSE LENGTH: 5.6 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 10% **BACKOUT FACTOR:** 0.11

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	NAVY	ACDU		4		2		2		2		2
		TOTAL:		4		2		2		2		2

CIN, COURSE TITLE: C-104-0645, Pioneer SR-RPV Internal Pilot
COURSE LENGTH: 8.0 Weeks **TOUR LENGTH:** 36 Months
ATTRITION FACTOR: Navy: 10% **BACKOUT FACTOR:** 0.16

TRAINING		ACDU/TAR	CFY99		FY00		FY01		FY02		FY03	
ACTIVITY	SOURCE	SELRES	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL
NAMTRAGRU DET, Fort Huachuca, 31714												
	NAVY	ACDU		11		9		9		9		9
		TOTAL:		11		9		9		9		9

PART III - TRAINING REQUIREMENTS

The following elements are not affected by the Pioneer UAV and, therefore, are not included in Part III of this NTSP:

III.A.1. Initial Training Requirements

III.A.2. Follow-on Training

III.A.2.b. Planned Courses

III.A.2.c. Unique Courses

III.A.3. Existing Training Phased Out

III.A.2. FOLLOW-ON TRAINING

III.A.2.a. EXISTING COURSES

CIN, COURSE TITLE: C-2E-0640, Pioneer SR-RPV Mission Commander
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: USMC **STUDENT CATEGORY:** USMC - AR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
5		5		5		5		5		ATIR
5		5		5		5		5		Output
0.3		0.3		0.3		0.3		0.3		AOB
0.3		0.3		0.3		0.3		0.3		Chargeable

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
6		6		6		6		6		ATIR
6		6		6		6		6		Output
0.3		0.3		0.3		0.3		0.3		AOB
0.3		0.3		0.3		0.3		0.3		Chargeable

CIN, COURSE TITLE: C-690-0644, Pioneer SR-RPV Airframe / Mechanic
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: USMC **STUDENT CATEGORY:** USMC - AR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	12		12		12		12		12	ATIR
	12		12		12		12		12	Output
	1.2		1.2		1.2		1.2		1.2	AOB
	1.2		1.2		1.2		1.2		1.2	Chargeable

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	18		6		6		6		6	ATIR
	16		5		5		5		5	Output
	1.8		0.6		0.6		0.6		0.6	AOB
	1.8		0.6		0.6		0.6		0.6	Chargeable

III.A.2.a. EXISTING COURSES

CIN, COURSE TITLE: C-690-0646, Pioneer SR-RPV Electronics Technician
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: USMC **STUDENT CATEGORY:** USMC - AR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	9		9		9		9		9	ATIR
	9		9		9		9		9	Output
	1.3		1.3		1.3		1.3		1.3	AOB
	1.3		1.3		1.3		1.3		1.3	Chargeable

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	15		12		12		12		12	ATIR
	14		11		11		11		11	Output
	2.1		1.7		1.7		1.7		1.7	AOB
	2.1		1.7		1.7		1.7		1.7	Chargeable

CIN, COURSE TITLE: C-104-0641, Pioneer SR-RPV External Pilot
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: USMC **STUDENT CATEGORY:** USMC - AR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	4		4		4		4		4	ATIR
	4		4		4		4		4	Output
	1.4		1.4		1.4		1.4		1.4	AOB
	1.4		1.4		1.4		1.4		1.4	Chargeable

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	7		3		3		3		3	ATIR
	6		3		3		3		3	Output
	2.4		1.0		1.0		1.0		1.0	AOB
	2.4		1.0		1.0		1.0		1.0	Chargeable

III.A.2.a. EXISTING COURSES

CIN, COURSE TITLE: C-104-0642, Pioneer SR-RPV Ground Control Station Operator
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: USMC **STUDENT CATEGORY:** USMC - AR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	21		21		21		21		21	ATIR
	21		21		21		21		21	Output
	3.1		3.1		3.1		3.1		3.1	AOB
	3.1		3.1		3.1		3.1		3.1	Chargeable

CIN, COURSE TITLE: C-104-0643, Pioneer SR-RPV Payload Operator
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	4		2		2		2		2	ATIR
	4		2		2		2		2	Output
	0.4		0.2		0.2		0.2		0.2	AOB
	0.4		0.2		0.2		0.2		0.2	Chargeable

CIN, COURSE TITLE: C-104-0645, Pioneer SR-RPV Internal Pilot
TRAINING ACTIVITY: MTU 6001 NAMTRAGRU DET
LOCATION, UIC: Fort Huachuca, 31714

SOURCE: NAVY **STUDENT CATEGORY:** ACDU - TAR

CFY99		FY00		FY01		FY02		FY03		
OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	OFF	ENL	
	11		9		9		9		9	ATIR
	10		8		8		8		8	Output
	1.5		1.3		1.3		1.3		1.3	AOB
	1.5		1.3		1.3		1.3		1.3	Chargeable

PART IV - TRAINING LOGISTICS SUPPORT REQUIREMENTS

The following elements are not affected by the Pioneer UAV System and therefore are not included in Part IV of this NTSP:

IV.A. Training Hardware

IV.A.1. TTE / GPTE / SPTE / ST / GPETE / SPETE

IV.A.2. Training Devices

IV.B. Courseware Requirements

IV.B.1. Training Services

IV.C. Facility Requirements

IV.C.1. Facility Requirements Summary (Space/Support) by Activity

IV.C.2. Facility Requirements Detailed by Activity and Course

IV.C.3. Facility Project Summary by Program

Note: The NAMTRAGRU DET uses operation equipment owned by Program Office, PMA 263, to perform the required training.

IV.B. COURSEWARE REQUIREMENTS

IV.B.2. CURRICULA MATERIALS AND TRAINING AIDS

CIN, COURSE TITLE: C-690-0644, Pioneer SR-RPV Airframe Mechanic (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	2	Oct 98	Onboard
Trainee Guides	7	Oct 98	Onboard

CIN, COURSE TITLE: C-690-0646, Pioneer SR-RPV Electronic Technician (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	2	Oct 98	Onboard
Trainee Guides	7	Oct 98	Onboard

CIN, COURSE TITLE: C-2E-0640, Pioneer SR-RPV Mission Commander
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	3	Oct 98	Onboard
Trainee Guides	4	Oct 98	Onboard

CIN, COURSE TITLE: C-104-0641, Pioneer SR-RPV External Pilot (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	3	Oct 98	Onboard
Trainee Guides	3	Oct 98	Onboard

CIN, COURSE TITLE: C-104-0642, Pioneer SR-RPV Ground Control Station Operator (Marine Corps)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	2	Oct 98	Onboard
Trainee Guides	2	Oct 98	Onboard

IV.B.2. CURRICULA MATERIALS AND TRAINING AIDS

CIN, COURSE TITLE: C-104-0643, Pioneer SR-RPV Payload Operator (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	2	Oct 98	Onboard
Trainee Guides	2	Oct 98	Onboard

CIN, COURSE TITLE: C-104-0645, Pioneer SR-RPV Internal Pilot (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TYPES OF MATERIAL OR AID	QTY REQD	DATE REQD	STATUS
Instructor Guides	2	Oct 98	Onboard
Lesson Plan	3	Oct 98	Onboard
Trainee Guides	2	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

CIN, COURSE TITLE: C-690-0644, Pioneer SR-RPV Airframe Mechanic (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	7	Oct 98	Onboard
JUAVTOPS	Hard copy	7	Oct 98	Onboard
NA 01-1A-509 Aircraft System Cleaning and Corrosion Control Manual	Hard copy	7	Oct 98	Onboard
NA A1-PIO-RPV-6-1.1 through 6-4.1 Maintenance Requirements Cards	Hard copy	7	Oct 98	Onboard
NA A1-POI-RPV-WUC-800 Work Unit Code Technical Manual	Hard copy	7	Oct 98	Onboard
NA A1-SRRPV-SEM-960 Description and Operation, Support Equipment and Arresting Gear	Hard copy	7	Oct 98	Onboard
NA-01-1A-8 Aircraft and Missile Structures	Hard copy	7	Oct 98	Onboard
NA-01-75RPV-1 Pioneer RPV RATO Checklist	Hard copy	4	Oct 98	Onboard
NA-A1-SRRPV-MMI-200 RPV Maintenance with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-WAB-400 RPV Weight and Balance Manual	Hard copy	7	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	7	Oct 98	Onboard
OPNAVINST4790.2G NAMP	Hard copy	7	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

CIN, COURSE TITLE: C-690-0646, Pioneer SR-RPV Electronic Technician (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
NA 01-1A-509 Aircraft System Cleaning and Corrosion Control Manual	Hard copy	7	Oct 98	Onboard
NA A1-PIO-RPV-6-1.1 through 6-4.1 Maintenance Requirements Cards	Hard copy	7	Oct 98	Onboard
NA A1-POI-RPV-WUC-800 Work Unit Code Technical Manual	Hard copy	7	Oct 98	Onboard
NA A1-SRRPV-GCS-520 Illustrated Parts Breakdown, Ground Control Station	Hard copy	7	Oct 98	Onboard
NA A1-SRRPV-SEM-960 Description and Operation, Support Equipment and Arresting Gear	Hard copy	7	Oct 98	Onboard
NA-01-75RPV-1 Pioneer RPV RATO Checklist	Hard copy	4	Oct 98	Onboard
NA-A1-SRRPV-EWD-300 RPV Electrical Wiring Diagram	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-GCS-510 GCS Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-LAU-800 Launcher Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-MMI-200 RPV Maintenance with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-PCS-700 PCS Operation Manual	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-PCS-710 PCS Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-RRS-900 RRS Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

NA-A1-SRRPV-SRP-850 MKD-200 Operation and Maintenance Manual	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-SRP-860 MKD-400 Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1-SRRPV-SSM-970 Shipboard System Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	7	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	7	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	7	Oct 98	Onboard
OPNAVINST4790.2G NAMP	Hard copy	7	Oct 98	Onboard

CIN, COURSE TITLE: C-2E-0640, Pioneer SR-RPV Mission Commander
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	10	Oct 98	Onboard
JUAVTOPS	Hard copy	5	Oct 98	Onboard
FM 21-26 Map Reading and Land Navigation	Hard copy	3	Oct 98	Onboard
FMI-230 Meteorology for Army Aviators	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-LAU-800 Launcher Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-PCS-700 PCS Operation Manual	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-RRS-900 RRS Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	5	Oct 98	Onboard
NA-A1-SRRPV-SRP-850 MKD-200 Operation and Maintenance Manual	Hard copy	5	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

NA-A1-SRRPV-SRP-860 MKD-400 Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	5	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	5	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	5	Oct 98	Onboard
OPNAVINST3710.7 Series General Flight and Operating Instructions	Hard copy	5	Oct 98	Onboard

CIN, COURSE TITLE: C-104-0641, Pioneer SR-RPV External Pilot (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	3	Oct 98	Onboard
JUAVTOPS	Hard copy	3	Oct 98	Onboard
FMI-230 Meteorology for Army Aviators	Hard copy	3	Oct 98	Onboard
NA-01-75RPV-1 Pioneer RPV RATO Checklist	Hard copy	4	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-SSM-970 Shipboard System Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	3	Oct 98	Onboard
NA-SRRPV-FCC-150 Flight Crew Checklist	Hard copy	3	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	3	Oct 98	Onboard
OPNAVINST4790.2G NAMP	Hard copy	3	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

CIN, COURSE TITLE: C-104-0642, Pioneer SR-RPV Ground Control Station Operator (Marine Corps)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	3	Oct 98	Onboard
JUAVTOPS	Hard copy	3	Oct 98	Onboard
FM 21-26 Map Reading and Land Navigation	Hard copy	5	Oct 98	Onboard
FMI-230 Meteorology for Army Aviators	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-LAU-800 Launcher Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-PCS-700 PCS Operation Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-RRS-900 RRS Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-SRP-850 MKD-200 Operation and Maintenance Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-SRP-860 MKD-400 Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	3	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	3	Oct 98	Onboard
OPNAVINST3710.7 Series General Flight and Operating Instructions	Hard copy	3	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

CIN, COURSE TITLE: C-104-0643, Pioneer SR-RPV Payload Operator (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	3	Oct 98	Onboard
JUAVTOPS	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-LAU-800 Launcher Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	2	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	2	Oct 98	Onboard
NA-A1-SRRPV-PCS-700 PCS Operation Manual	Hard copy	2	Oct 98	Onboard
NA-A1-SRRPV-RRS-900 RRS Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	2	Oct 98	Onboard
NA-A1-SRRPV-SRP-850 MKD-200 Operation and Maintenance Manual	Hard copy	2	Oct 98	Onboard
NA-A1-SRRPV-SRP-860 MKD-400 Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	2	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	2	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	2	Oct 98	Onboard
OPNAVINST3710.7 Series General Flight and Operating Instructions	Hard copy	2	Oct 98	Onboard

CIN, COURSE TITLE: C-104-0645, Pioneer SR-RPV Internal Pilot (Navy)
TRAINING ACTIVITY: NAMTRAGRU DET MTU 6001
LOCATION, UIC: Fort Huachuca, Sierra Vista, Arizona, 31715

TECHNICAL MANUAL NUMBER / TITLE	MEDIUM	QTY REQD	DATE REQD	STATUS
FAA Handbook	Hard copy	3	Oct 98	Onboard
JUAVTOPS	Hard copy	3	Oct 98	Onboard
FM 21-26 Map Reading and Land Navigation	Hard copy	3	Oct 98	Onboard

IV.B.3. TECHNICAL MANUALS

FMI-230 Meteorology for Army Aviators	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-LAU-800 Launcher Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-OPS-100 RPV Operations Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-PCS-700 PCS Operation Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-RATO-820 RATO Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-RRS-900 RRS Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-SRP-850 MKD-200 Operation and Maintenance Manual	Hard copy	3	Oct 98	Onboard
NA-A1-SRRPV-SRP-860 MKD-400 Operation and Maintenance Manual with Illustrated Parts Breakdown	Hard copy	3	Oct 98	Onboard
NA-A1_SRRPV-GCS-500 GCS Operations Manual	Hard copy	3	Oct 98	Onboard
NAA1-SRRPV-SMD-000 System Description Manual	Hard copy	3	Oct 98	Onboard
OPNAVINST3710.7 Series General Flight and Operating Instructions	Hard copy	3	Oct 98	Onboard

PART V - MPT MILESTONES

COG CODE	MPT MILESTONES	DATE	STATUS
PDA	Begin analysis of manpower, personnel, and training requirements.	Oct 85	Completed
ACNO/DMSO	Program manpower and training resource requirements.	Dec 85	Completed
PDA	Award production contract	Dec 85	Completed
TSA	Award factory training and curriculum contract.	Dec 85	Completed
EPMAC	Requisition enlisted personnel.	Feb 86	Completed
NMPC/CMC	Begin ordering enlisted personnel.	May 86	Completed
TSA	Begin initial training.	May 86	Completed
TSA	Deliver curricula materials for initial training.	May 86	Completed
TSA	Deliver TTE.	May 86	Completed
PDA	Promulgate Draft NTP to ALCON for review and comments.	Jun 86	Completed
PDA	Fleet introduction.	Jul 86	Completed
ACNO(MPT)	Chair NTSPC and issue minutes and action items that result.	May 87	Completed
PDA	Submit Proposed NTP to OPNAV.	Jul 87	Completed
ACNO/DMSO	Initiate OPNAV Form 1000/4A.	Oct 87	Completed
ACNO/CMC	Promulgate OPNAV Form 1000/2 T/O.	Apr 88	Completed
ACNO (MPT)	Promulgate updated NTP.	Sep 88	Completed
TSA	Installed TTE.	Oct 88	Pending
OPTEVFOR	Begin OPEVAL.	Nov 88	Completed
TSA	Begin training services.	Nov 88	Completed
ACNO(MPT)	Approve and promulgate NTP.	Jun 90	Completed
ACNO/CMC	Allocated student billets.	Jul 90	Completed
TSA	Begin follow-on training.	Nov 90	Completed
PDA	Update and revise NTP	Oct 96	Completed
PMA 205	Submit updated NTP to operator units for review	Nov 96	Completed
OPNAV 853F	CNET Transition	Oct 97	Completed
PDA	Review NTSP	Aug 98	Completed

COG CODE	MPT MILESTONES	DATE	STATUS
PDA	UCARS integration	Jul 99	Pending
PDA	MIAG integration	Sep 99	Pending
TSA	Deliver Training Devices	FY99	Pending
PDA	TUAV	Oct 02	Pending

PART VI - DECISION ITEMS / ACTION REQUIRED

DECISION ITEM OR ACTION REQUIRED	COMMAND ACTION	DUE DATE	STATUS

No action items for this NTSP.

PART VII - POINTS OF CONTACT

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