

INITIAL
NAVY TRAINING SYSTEM PLAN
FOR THE
AN/ASH-XXX TRAFFIC ALERT AND
COLLISION AVOIDANCE SYSTEM

N88-NTSP-A-50-0002/I

APRIL 2000

AN/ASH-XXX TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

EXECUTIVE SUMMARY

The AN/ASH-XXX Traffic Alert and Collision Avoidance System (TCAS) is an independent airborne system designed to provide time-critical aural and visual warnings that cue appropriate pilot responses to prevent mid-air collisions. The TCAS tracks the range, bearing, and altitude of other transponder equipped aircraft. If a collision potential exists, the TCAS will direct which vertical maneuver is to be performed or avoided to maintain safe separation between aircraft. The system will be installed on the C-2A, U/VP-3A, C-130T, and the KC-130F/R/T aircraft. The TCAS is currently pre-Milestone III in the Weapon System Acquisition Process.

The TCAS is a non-developmental item, consisting of modified Commercial Off-The-Shelf equipment provided by Honeywell Incorporated and Rockwell Collins. Installation for Validation and Verification began in October 1999 for the C-130T and KC-130F/R/T, in December 1999 for the C-2A, and in March 2000 for the U/VP-3A. Recurring installation for all platforms will begin in fourth quarter FY00; Initial Operational Capability is scheduled for fourth quarter FY01. Honeywell will provide engineering and support services during the initial installation period.

Initial training provided by Honeywell will include installation, pilot familiarization, and maintenance. This training will be conducted to ensure that qualified personnel are available to support Developmental Test, Operational Test, and system deployment. Naval Air Maintenance Training Group Detachment instructors and other key personnel will attend the initial maintenance training.

Maintenance of the TCAS will be performed at two levels: organizational and depot. Organizational level maintenance will be performed by Aviation Electronics Technicians (AT) with Navy Enlisted Classification code 8307 on the C-2A, AT 8319 or 8819 on the U/VP-3A, and AT 8318 on the C-130T. On the KC-130F/R/T, organizational maintenance will be performed by Marine Corps personnel with Military Occupational Specialty 6316. Depot level maintenance on all repairable Weapon Replaceable Assemblies will be performed at the prime contractor's facility under an initial two-year warranty. Based on achieved in-service reliability during this period, Naval Inventory Control Point Philadelphia, Pennsylvania, will either renew the warranty, establish a repair contract for continued prime contractor support, or conduct a full and open competition for repairs. No organic depot repair of the TCAS equipment is planned for the life of the system.

Preliminary assessment of the impact of fielding the TCAS indicates no requirement to change existing manning or skill levels. Upon receiving training, existing personnel should be able to easily operate and maintain the TCAS.

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LIST OF ACRONYMS

AMTCS	Aviation Maintenance Training Continuum System
AT	Aviation Electronics Technician
ATC	Air Traffic Control
BIT	Built-In Test
CBT	Computer-Based Training
COTS	Commercial Off-The-Shelf
DT	Developmental Test
FRS	Fleet Readiness Squadron
IFF	Identification Friend or Foe
MATMEP	Maintenance Training Management and Evaluation Program
MFD	Multifunction Display
MHz	MegaHertz
MOS	Military Occupational Specialty
MT	Maintenance Trainer
MTBF	Mean Time Between Failure
MTIP	Maintenance Training Improvement Program
NA	Not Applicable
NAMP	Naval Aviation Maintenance Program
NAMTG	Naval Air Maintenance Training Group
NAWCAD	Naval Air Warfare Center Aircraft Division
NEC	Navy Enlisted Classification
NTSP	Navy Training System Plan
OFT	Operational Flight Trainer
OJT	On-the-Job Training
OPO	OPNAV Principal Official
OT	Operational Test
PMA	Program Manager, Air
PQS	Personnel Qualification Standards

AN/ASH-XXX TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

LIST OF ACRONYMS

RA	Resolution Advisory
RFI	Ready For Issue
RFT	Ready For Training
TA	Traffic Advisory
TBD	To Be Determined
TCAS	Traffic Alert and Collision Avoidance System
TD	Training Device
TFS	Total Force Structure
TTE	Technical Training Equipment
USAF	United States Air Force
VSI/TRA	Vertical Speed Indicator/Traffic Resolution Advisory
WRA	Weapon Replaceable Assembly

AN/ASH-XXX TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

PREFACE

This is the first iteration of the Initial Navy Training System Plan (NTSP) for the Traffic Alert and Collision Avoidance System (TCAS). Since the TCAS is still in the early stages of program acquisition, some definitive data is currently unavailable. Future updates to this Initial NTSP will provide more specific information, as it becomes available.

PART I - TECHNICAL PROGRAM DATA

A. NOMENCLATURE-TITLE-PROGRAM

1. Nomenclature-Title-Acronym. AN/ASH-XXX Traffic Alert and Collision Avoidance System (TCAS)

2. Program Element. 0204161N

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 (N88)
- OPO Resource Sponsor CNO (N88)
- Marine Corps Program Sponsor..... CMC (APW-91)
- Developing Agency..... NAVAIRSYSCOM (PMA209)
- Training Agency CINCLANTFLT (N721)
CINCPACFLT (N73)
CNET (ETE32)
COMNAVVAIRESFOR (N37, N721)
- Training Support Agency NAVAIRSYSCOM (PMA205)
COMNAVVAIRESFOR (N387)
- Manpower and Personnel Mission Sponsor CNO (N12)
NAVPERSCOM (PERS-4, PERS-404)
- Director of Naval Training..... CNO (N7)
- Commander, Reserve Program Manager COMNAVVAIRESFOR (N4311)
- Marine Corps Force Structure..... MCCDC (C53)

D. SYSTEM DESCRIPTION

1. Operational Uses. The TCAS is used to determine the range, altitude, and bearing of nearby aircraft equipped with Mode S or Air Traffic Control Radar Beacon System transponders with respect to its own aircraft. It also monitors the trajectory of these aircraft to determine if any of them constitute a potential collision hazard. If the flight path of an aircraft is predicted to penetrate the collision area of the TCAS aircraft, aural and visual advisories are provided to the pilot. These advisories can direct an evasive vertical maneuver intended to preserve or increase vertical clearance. Complementary avoidance maneuvers between two TCAS-equipped aircraft are ensured by coordination of intentions with the other aircraft through the Mode S transponders.

2. Foreign Military Sales. A version of the TCAS is currently used in United States Air Force (USAF) and Coast Guard C-130s.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST. Developmental Test (DT) for the C-2A, U/VP-3A, C-130T, and KC-130F/R/T will be conducted by Naval Air Warfare Center Aircraft Division (NAWCAD) in Patuxent River, Maryland. Operational Test and Evaluation Force will conduct Operational Test (OT). For the C-2A, this testing will be conducted at North Island, California. OT for the U/VP-3A, C-130T, and KC-130F/R/T will be conducted at Patuxent River.

OT will be conducted in conjunction with DT for each aircraft type. For the C-2A, DT/OT is being conducted from second quarter FY00 through first quarter FY01. DT/OT for the U/VP-3A is being conducted from second through fourth quarters FY00. For the C-130T and KC-130F/R/T, DT/OT is being conducted from first through fourth quarters FY00.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. The TCAS Mode S/Identification Friend or Foe (IFF) Control Panel will replace the existing IFF Control Panel and the Mode S/IFF Transponder will replace the AN/APX-72 or AN/APX-100 IFF systems on the C-2A, U/VP-3A, C-130T, and KC-130F/R/T. A Vertical Speed Indicator/Traffic Resolution Advisory (VSI/TRA) Display will replace each Vertical Speed Indicator on the U/VP-3A, C-130T, and KC-130F/R/T.

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The TCAS is an independent airborne system that supplements the Air Traffic Control (ATC) system and the “see and avoid” concept. This is done by interrogating the Mode A, Mode C, and Mode S transponders of nearby aircraft, tracking their responses, and providing advisories to the flight crew to assure vertical separation.

The two levels of advisories provided are Traffic Advisory (TA) and Resolution Advisory (RA). TAs indicate the range, bearing, and relative altitude of the intruder as an aid to visual

acquisition by the flight crew. RAs indicate what vertical maneuver is to be performed or avoided in order to assure safe separation. The TCAS also provides a surveillance display of nearby aircraft that are not TAs or RAs. An aircraft that is not equipped with an operating transponder will not be tracked by TCAS.

The TCAS consists of the following components:

a. TCAS Processor. This unit performs airspace surveillance, intruder and own aircraft tracking, threat detection and resolution, and advisory generation. Barometric and radar altimeter inputs and other aircraft configuration discrete inputs are used by the computer to control the collision avoidance logic parameters that determine the protection volume around the TCAS aircraft.

b. Mode S/IFF Transponder. This unit performs the normal ATC functions of existing Mode A and Mode C transponders. The selective address capability allows the Mode S transponder to be used for air-to-air data exchange between TCAS equipped aircraft, which ensures coordinated, complementary RAs.

c. TCAS Mode S/IFF Control Panel. This panel selects and controls all TCAS components including the TCAS Processor, Mode S/IFF Transponder, and TCAS displays. All inputs to the TCAS Processor are provided via the Mode S/IFF Transponder.

d. Directional Antenna. The directional antenna is a four-element, vertically polarized, monopole array that is used to transmit interrogations in four selectable directions at 1030 MegaHertz (MHz). It receives replies at 1090 MHz from all directions simultaneously and provides bearing information.

e. Omnidirectional Antenna. The omnidirectional antenna is an L-band, blade type antenna. It receives interrogations at 1030 MHz and transmits at 1090 MHz. This antenna provides range and altitude information only.

f. Vertical Speed Indicator/Traffic Resolution Advisory Display. The VSI/TRA Display is a backlighted, full-color, liquid crystal display panel used to show the current vertical speed and TCAS traffic and warning information, including fault data. It contains a graphics microprocessor that reads and processes the analog and digital inputs to the instrument and generates the display. The VSI/TRA Display will be installed in the U/VP-3A, C-130T, and KC-130F/R/T.

g. Multifunction Display. The Multifunction Display (MFD) is a color, flat-panel, liquid crystal display that consolidates flight information from diverse sources, including weather radar and the TCAS Processor. This information is presented in a concise, integrated manner to eliminate pilot overload. The MFD will be installed in the C-2A and the U/VP-3A.

2. Physical Description

NOMENCLATURE	HEIGHT (INCHES)	WIDTH (INCHES)	DEPTH (INCHES)	WEIGHT (POUNDS)
TCAS Processor	7.66	4.90	15.20	14.70
Mode S/IFF Transponder	7.62	4.90	15.20	11.50
TCAS Mode S/IFF Control Panel	5.24	5.74	5.66	2.50
VSI/TRA Display	3.18	3.18	8.65	2.75
MFD	5.08	5.08	8.85	8.00

3. New Development Introduction. The TCAS will be introduced during a modernization retrofit through Operational Safety Improvement Program 24-99.

4. Significant Interfaces. The TCAS Processor receives radar altitude inputs through the AN/APN-232 on the C-130T and KC-130F/R/T, and through a new Low Probability of Intercept Altimeter, which will replace the existing AN/APN-194 on the C-2A and U/VP-3A. The Mode S/IFF Transponder receives barometric altitude and Mode IV IFF encryption. The barometric altitude is supplied through the Control Display Navigation Unit on the C-2A and through the Air Data Computer on the U/VP-3A, C-130T, and KC-130F/R/T. The Mode IV IFF encryption is provided by the KIT-1C.

5. New Features, Configurations, or Material. The TCAS computes the range, relative altitude, and bearing of nearby aircraft and provides a visual and aural alert to pilots if there is a collision potential.

H. CONCEPTS

1. Operational Concept. The Pilot and Copilot will operate the TCAS. Their duties will include applying power to the system, running Built-In Test (BIT) to verify proper system operation, and monitoring system displays during flight. The Mission Essential status of the TCAS requires that the Type Commanders establish a policy as to whether or not passengers will be debarked if the system becomes inoperable prior to departure.

2. Maintenance Concept. The TCAS will be maintained using a two-level maintenance concept: organizational and depot.

a. Organizational. Organizational level maintenance for the TCAS will consist of on-aircraft fault isolation, removal and replacement of a faulty Weapon Replaceable Assembly

(WRA), and a functional test using BIT. This maintenance will be performed by Aviation Electronics Technicians (AT) with Navy Enlisted Classification (NEC) codes 8307 on the C-2A, AT 8319 or 8819 on the U/VP-3A, and AT 8318 on the C-130T. On the KC-130F/R/T, organizational level maintenance will be performed by Marine Corps personnel with Military Occupational Specialty (MOS) 6316.

(1) Preventive Maintenance. Not Applicable (NA)

(2) Corrective Maintenance. Organizational level technicians will fault isolate the TCAS to the WRA level using system BIT and listening to the audio activity present on the audio channels. A defective WRA will be removed and turned in to supply in accordance with the Maintenance Plan. A replacement Ready For Issue (RFI) WRA will be requisitioned through normal supply channels.

b. Intermediate. NA

c. Depot. Depot level maintenance on all repairable WRAs will be performed at the prime contractor's facility under an initial two-year warranty. Based on achieved in-service reliability during this period, Naval Inventory Control Point in Philadelphia, Pennsylvania, will either renew the warranty, establish a repair contract for continued prime contractor support, or conduct a full and open competition for repairs. No organic depot repair of the TCAS equipment is planned for the life of the system.

d. Interim Maintenance. With engineering support services provided by Honeywell, the organizational level technicians will perform interim maintenance. The Navy Support Date is scheduled for December 2001.

e. Life-Cycle Maintenance Plan. The life-cycle of the TCAS is planned to be equal to or greater than the aircraft life remaining after installation of the system aboard the designated platforms.

3. Manning Concept. A preliminary assessment of the impact of fielding the TCAS indicates no requirement to change existing manpower requirements or skill levels. Upon receipt of training, existing personnel will be able to easily operate and maintain the TCAS.

a. Estimated Maintenance Man-Hours per Operating Hour. The estimated Mean Time Between Failure (MTBF) for most of the TCAS WRAs and the expected number of returns to the depot per year are listed below. Assuming these objectives are met, the system will not generate enough maintenance actions to require any additional maintenance personnel.

NOMENCLATURE	MTBF (HOURS)	EXPECTED RETURNS
TCAS Processor	16,000	7

NOMENCLATURE	MTBF (HOURS)	EXPECTED RETURNS
Mode S/IFF Transponder	12,000	7
TCAS Mode S/IFF Control Panel	12,000	7
VSI/TRA Display	16,000	11

b. Proposed Utilization. The estimated operating hours per year once all systems are deployed is as follows:

AIRCRAFT TYPE	NUMBER OF AIRCRAFT	HOURS PER YEAR
C-2A	36	11,000
U/VP-3A	8	2,550
C-130T and KC-130F/R/T	95	63,182

c. Recommended Qualitative and Quantitative Manpower Requirements

(1) Aircrew. Naval Aviators with Navy Officer Billet Code 8501 and Additional Qualification Designators DQ4, DQ5, or DS2 and Marine Corps personnel with MOS 7556 or 7557 will operate the TCAS.

(2) Enlisted. Navy ATs with NECs 8307, 8318, 8319, or 8819 and Marine Corps personnel with MOS 6316 will maintain the TCAS.

4. Training Concept. TCAS operator training for the C-2A and KC-130F/R/T will be conducted at the aircraft-specific Fleet Readiness Squadron (FRS). U/VP-3A and C-130T pilots will receive training upon arrival at their operational squadron. Organizational level maintenance training will be provided through Naval Air Maintenance Training Group (NAMTG) courses for the C-2A, C-130T, and KC-130F/R/T. Maintenance personnel on the U/VP-3A will receive Computer-Based Training (CBT) at their operational squadron instead of classroom instruction.

Selected Reserve personnel may earn maintenance NECs by attending formal training at NAMTG Detachments provided a quota and funding are available and the student is available to attend the training. Specific guidelines are contained in NAVPERS 18068F Volume II, Chapter IV, Navy Enlisted Classifications manual.

The established training concept for most aviation maintenance training divides “A” School courses into two or more segments called Core and Strand. The “C” School courses are also divided into separate Initial and Career training courses. “A” School Core courses include general knowledge and skills training for the particular rating, while “A” School Strand courses focus on the more specialized training requirements for that rating and a specific aircraft or equipment, based on the student’s fleet activity destination. Strand training immediately follows Core training and is part of the “A” School. Upon completion of Core and Strand “A” Schools, graduates going to organizational level activities attend the appropriate initial “C” School for additional specific training. Initial “C” School training is intended for students in paygrades E-4 and below. Career “C” School training is provided to organizational level personnel, E-5 and above, to enhance skills and knowledge within their field. “A” School graduates going to intermediate level activities attend the appropriate intermediate level “C” School. Intermediate level “C” Schools are not separated into Initial and Career courses.

a. Initial Training

(1) Installation Team

Title	Installation Team Training
Description	This course covers aircraft specific installation techniques, and will be conducted for installation team members.
Location	Installation site for each platform
Length	2 days (estimated)
RFT date	April 2000
TTE/TD	NA
Prerequisites	NA

(2) Operator

Title	Pilot Familiarization Training
Description	This course provides training to pilots on the capabilities and the proper operation of the TCAS.
Location	C-2A in North Island; U/VP-3A, C-130T, and KC-130F/R/T in Patuxent River
Length	2 days (estimated)
RFT date	To Be Determined (TBD)
TTE/TD	NA
Prerequisites	Designated Naval Pilot

(3) Maintenance

Title **TCAS Maintenance Training**

Description This course provides instruction on the theory of operation, troubleshooting, and functional checkout procedures for the TCAS. Upon completion of this course, organizational level personnel and NAMTG instructors will be able to fault isolate the system to a defective WRA, remove and replace the defective WRA, and verify proper system operation using BIT or train others to perform these procedures.

Location TBD

Length 2 days (estimated)

RFT date April 2000

TTE/TD NA

Prerequisites ° USN: AT NEC 8307, 8318, 8319, or 8819
 ° USMC: MOS 6316

b. Follow-on Training

(1) Operator. The method to be used for U/VP-3A and C-130T pilot training has not been determined. For the C-2A and KC-130F/R/T, the TCAS will drive minor changes to the following training tracks:

TRACK NUMBER	TRACK TITLE
D-2B-2351	C-2A Fleet Replacement Pilot Category I Pipeline
D-2B-2352	C-2A Fleet Replacement Pilot Category II Pipeline
D-2B-2353	C-2A Fleet Replacement Pilot Category III Pipeline
D-2B-2354	C-2A Fleet Replacement Pilot Category IV Pipeline
No Course Number	KC-130 Pilot Basic
No Course Number	KC-130 Pilot Refresher
No Course Number	KC-130 Pilot Modified Refresher

(2) Maintenance. The installation of the TCAS will necessitate minor changes to the following courses:

COURSE NUMBER	COURSE TITLE	TRACK NUMBER	RFT DATE WITH TCAS
C-102-4511	KC-130 Aircraft Communication/Navigation System Technician MOJT	M-102-0451	Sep 00
C-102-9496	C-2A (Reprocured) Avionics Systems Organizational Maintenance	D-102-2321	Sep 00

Note: U/VP-3A maintenance personnel will receive training through CBT at their operational squadron. Also, Naval Air Technical Data and Engineering Service Command representatives will be available to provide assistance as required.

c. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
AT 8307, 8318, 8319, 8819	<ul style="list-style-type: none"> ° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O-Level Class A1
MOS 6316	<ul style="list-style-type: none"> ° C-100-2020, Avionics Common Core Class A1 ° C-100-2018, Avionics Technician O-Level Class A1

d. Training Pipelines. NA

I. ONBOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to the 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 4790.2G, Naval Aviation Maintenance Program (NAMP). 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. MTIP will be replaced by the Aviation Maintenance Training Continuum System (AMTCS). Current planning is for AMTCS to begin initial implementation in third quarter FY00.

COMNAVAIRPAC has discontinued using MTIP. They are currently using maintenance data products as a source to determine maintenance training deficiencies until AMTCS is implemented.

b. Aviation Maintenance Training Continuum System. AMTCS will provide career path training to the Sailor or Marine from their initial service entry to the end of their military career. AMTCS is planned to be an integrated system that will satisfy the training and administrative requirements of both the individual and the organization. The benefits will be manifested in the increased effectiveness of the technicians and the increased efficiencies of the management of the training business process. By capitalizing on technological advances and integrating systems and processes where appropriate, the right amount of training can be provided at the right time, thus meeting the CNO's mandated "just-in-time" training approach.

Technology investments enable the development of several state-of-the-art training and administrative tools: CBT for the technicians in the Fleet in the form of Interactive Courseware with Computer Managed Instruction and Computer Aided Instruction for the schoolhouse.

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

Upon receipt of direction from OPNAV (N889H), AMTCS is to be implemented and the new tools integrated into the daily training environment of all participating aviation activities and supporting elements. AMTCS will serve as the standard training system for aviation maintenance training within the Navy and Marine Corps, and is planned to supersede the existing MTIP and Maintenance Training Management and Evaluation Programs (MATMEP).

2. Personnel Qualification Standards. The Personnel Qualification Standards (PQS) Development Group, Naval Education and Training Professional Development and Technology Center, Pensacola, Florida, will update PQS for maintenance personnel with the TCAS information as applicable.

3. Other Onboard or In-Service Training Packages. TCAS information will be integrated into existing On-the-Job Training (OJT) packages. Each Navy and Marine Corps squadron has an OJT program that has been custom tailored to their operational requirements.

Marine Corps onboard training is based on MCO P4790.12B, Individual Training Standards System and MATMEP. This program is designed to meet Marine Corps, as well as the NAMP 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 enhanced with refresher training. MATMEP will be replaced by AMTCS in approximately FY02.

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers

CONTRACT NUMBER	MANUFACTURER	ADDRESS
GS-35F-0116J	Honeywell Incorporated	Commercial Flight Systems Group P.O. Box 21111 Phoenix, AZ 85036-1111
F19628-98-D-0020	Rockwell Collins	Headquarters 400 Collins Road NE Cedar Rapids, IA 52498

2. Program Documentation

DOCUMENT	ORIGINATOR	APPROVAL DATE
Acquisition Logistics Support Plan	PMA209	29 November 1999

3. Technical Data Plan. The existing Technical Manuals for each platform will be updated to include TCAS information. Source Data Packages to be used in this process will be acquired by PMA209 and will be distributed to each platform Program Manager, Air (PMA). Manufacturer’s commercial manuals will be used on an interim basis if necessary.

4. Test Sets, Tools, and Test Equipment. NA

5. Repair Parts. The range and depth of interim spares and the location of replacement RFI WRAs after Material Support Date, which is scheduled for December 2001, has not been determined. This information will be included in future updates to this Initial NTSP.

6. Human Systems Integration. No human engineering documents were prepared for the TCAS. A human engineering design was implemented during the original USAF development of the COTS equipment in the system. The design of the TCAS aircraft installations considers human factors for the performance of periodic and corrective maintenance tasks.

K. SCHEDULES

1. Installation and Delivery Schedules

INSTALLATION SCHEDULE (NUMBER OF AIRCRAFT)

AIRCRAFT TYPE	FY99	FY00	FY01	FY02	FY03	FY04
C-2A		1	1	10	18	
U/VP-3A		1	4		1	2
C-130T and KC-130F/R/T	1	14	40	40		

2. Ready For Operational Use Schedule

AIRCRAFT TYPE	FY99				FY00				FY01				FY02				FY03			
	1	2	3	4																
C-2A								1												
U/VP-3A								1												
C-130T and KC-130F/R/T								1												

3. Time Required to Install at Operational Sites. Installation of the TCAS is expected to take six to eight weeks per aircraft.

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

5. Training Device and Technical Training Equipment Delivery Schedule. No new Training Devices will be required to support the TCAS. One Operational Flight Trainer (OFT) and one Maintenance Trainer (MT) for the C-2A and three OFTs and one MT for the KC-130 will be retrofitted as identified by the platform PMAs through the Engineering Change Proposal process.

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

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS. NA

APPENDIX A - POINTS OF CONTACT

NAME / FUNCTION / ACTIVITY, CODE / INTERNET EMAIL	TELEPHONE NUMBERS
<p>CAPT Owen Fletcher Deputy Head, Plans, Policy, and Fleet Maintenance Support CNO, N881B fletcher.owen@hq.navy.mil</p>	<p>COMM: (703) 604-7747 DSN: 664-7747 FAX: (703) 604-6972</p>
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APPENDIX A - POINTS OF CONTACT

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