

INITIAL
NAVY TRAINING SYSTEM PLAN
FOR THE
VIRTUAL IMAGING SYSTEM
FOR APPROACH AND LANDING

FEBRUARY 2000

February 2000

VIRTUAL IMAGING SYSTEM FOR APPROACH AND LANDING

EXECUTIVE SUMMARY

This Initial Navy Training System Plan (NTSP) for the Virtual Imaging System for Approach and Landing (VISUAL) was developed by the Naval Air Systems Command (AIR 3.4.1.1) using the Training Planning Process Methodology. This document provides an early estimate of the manpower, personnel, and training requirements to introduce and sustain the VISUAL acquisition program. These requirements will be further defined in updates to this document as the program matures.

VISUAL is a major system upgrade to the aircraft recovery monitoring and display systems aboard aircraft carriers and amphibious assault ships. The existing systems supporting the Landing Signal Officer (LSO) in assessing the pilot's performance on final approach are obsolete and inadequate in meeting current and future operational requirements. The VISUAL program will develop and integrate emerging technologies and data networks synergistically in order to provide critical information to the LSO and other decision makers on the ship.

VISUAL is currently in the Program Definition and Risk Reduction phase of the acquisition cycle. The acquisition strategy requires a heavy reliance on Non-Developmental Item, Commercial Off-The-Shelf, and Government Off-The-Shelf hardware, software, and firmware, repackaged for the shipboard operating environment.

Based on initial analysis, VISUAL will be maintained by the Interior Communications Electrician (IC) rating personnel with Navy Enlisted Classification (NEC) codes 4743 and 4745 aboard aircraft carriers. Aboard amphibious assault ships the maintainer will be ICs with NEC 4779. Aboard aircraft carriers, the operator function will be performed by LSOs with Navy Officer Billet Classification code 8662 and Integrated Launch And Recovery Television System (ILARTS) Operators (ICs) with NEC 4743. When Marines are embarked, Marines with the Military Occupational Specialty (MOS) 7593/7594 will perform the LSO function aboard aircraft carriers, and by MOS 7589 aboard amphibious assault ships.

The VISUAL training requirement includes both initial and follow-on training. Naval Air Warfare Center Aircraft Division, Lakehurst, New Jersey, will provide initial training to maintainers and operators on a prototype system. Additional initial and follow-on training will be required as VISUAL training requirements mature. It is estimated that VISUAL training will be incorporated into existing courses and will not increase or decrease the lengths of these courses.

VIRTUAL IMAGING SYSTEM FOR APPROACH AND LANDING

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VIRTUAL IMAGING SYSTEM FOR APPROACH AND LANDING

LIST OF ACRONYMS

ABE	Aviation Boatswain's Mate (Equipment)
ADMACS	Aviation Data Management And Control System
ALREMP	Aircraft Launch and Recovery Equipment Maintenance Program
BIT	Built-In Test
CNO	Chief of Naval Operations
COTS	Commercial Off-The-Shelf
CV	Aircraft Carrier
CVN	Multi-Purpose Aircraft Carrier, Nuclear
EDM	Engineering Development Model
FMS	Foreign Military Sales
GOTS	Government Off-The-Shelf
HUD	Head-Up Display
IC	Interior Communications Electrician
ILARTS	Integrated Launch And Recovery Television System
IOC	Initial Operational Capability
LHA	Landing Ship, Helicopter Assault
LHD	Multi-Purpose Amphibious Assault Ship
LOC	Limited Operational Capability
LSO	Landing Signal Officer
MOS	Military Occupational Specialty
NAS	Naval Air Station
NATOPS	Naval Air Training and Operating Procedures Standardization
NATTC	Naval Air Technical Training Center
NAVAIRSYSCOM	Naval Air Systems Command
NAWCADLKE	Naval Air Warfare Center Aircraft Division, Lakehurst
NDI	Non-Developmental Item
NEC	Navy Enlisted Classification
NOBC	Navy Officer Billet Classification

VIRTUAL IMAGING SYSTEM FOR APPROACH AND LANDING

LIST OF ACRONYMS

NTSP	Navy Training System Plan
OPEVAL	Operational Evaluation
OPO	OPNAV Principal Official
ORD	Operational Requirements Document
PQS	Personnel Qualification Standards
SITU	Stabilized Imaging and Tracking Unit
TBD	To Be Determined
TECHEVAL	Technical Evaluation
TRPPM	Training Planning Process Methodology
VISUAL	Virtual Imaging System for Approach and Landing
VLA	Visual Landing Aid

February 2000

VIRTUAL IMAGING SYSTEM FOR APPROACH AND LANDING

PREFACE

This Initial Navy Training System Plan (NTSP) is a product of the Training Planning Process Methodology (TRPPM), as outlined in OPNAV Publication P-751-3-9-97, and is an early look at the concepts and requirements for the Virtual Imaging System for Approach and Landing (VISUAL) program. This is the second iteration of the Initial NTSP for the VISUAL program, updating the June 1999 version. This document explores the various employment and support alternatives currently under consideration. Since it is the Initial NTSP and still relatively early in the acquisition process, some definitive data was unavailable for inclusion in this version.

The VISUAL program is Increment III of the Aviation Data Management And Control System (ADMACS) Operational Requirements Document (ORD). Each increment is managed, funded, developed, and tested separately and will contribute to the overall ADMACS development objectives and address the specific requirements of that particular user community.

PART I - TECHNICAL PROGRAM DATA

A. NOMENCLATURE-TITLE-PROGRAM

1. Nomenclature-Title-Acronym. Virtual Imaging System for Approach and Landing (VISUAL)

2. Program Element. 0604512N

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 (N885D)
- OPO Resource Sponsor CNO (N885D)
- Developing Agency..... NAVAIRSYSCOM (PMA251E)
- Training Agency CINCLANTFLT (N721)
CINCPACFLT (N70)
CNET (T234)
- Training Support Agency..... NAVAIRSYSCOM (PMA205)
- Manpower and Personnel Mission Sponsor CNO (N12)
NAVPERSCOM (PERS-4, PERS-404)
- Director of Naval Training..... CNO (N7)

D. SYSTEM DESCRIPTION

1. Operational Uses. The VISUAL is an electro-optical sensor and display system that will provide the ship's company with enhanced images of aircraft in low visibility and night conditions. The VISUAL will develop and integrate emerging technologies and data networks synergistically in order to provide critical recovery information to the Landing Signal Officer

(LSO) and other decision makers. The VISUAL is applicable to aircraft carriers (CV and CVN) and amphibious assault ships (LHA and LHD).

2. Foreign Military Sales. No Foreign Military Sales (FMS) or other service procurements are planned at this time.

E. DEVELOPMENTAL TEST AND OPERATIONAL TEST. The Engineering Development Model (EDM) of the VISUAL will be installed on CV, CVN, LHA, and/or LHD ships for Technical Evaluations (TECHEVAL) and Operational Evaluation (OPEVAL) to support a full-rate production decision. Limited Operational Capability (LOC) will be achieved following completion of the OPEVAL and a Milestone III decision to proceed to production, with the EDM used for OPEVAL deploying on the USS Harry S. Truman (CVN 75) and USS Bataan (LHD 5) with interim support provided.

F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED. The VISUAL may replace some of the components currently found in the Integrated Launch And Recovery Television Surveillance (ILARTS) system and the LSO Base Console and Head-Up Display (HUD) Unit on CV and CVN ships. This is a new system for LHA and LHD ships.

G. DESCRIPTION OF NEW DEVELOPMENT

1. Functional Description. The goal of VISUAL is to improve the safety and efficiency of operations by enhancing the LSO's capability to effectively control the aircraft during the recovery process. The VISUAL effort will affect both CV/CVN and LHA/LHD ships. The elements are described in the following paragraphs:

a. Stabilized Imaging and Tracking Unit. The Stabilized Imaging and Tracking Unit (SITU) will be a day-night, infrared TV, and laser ranging-tracking system that will image and track aircraft during approach and landing. The SITU will provide the LSO early aircraft identification and accurate position and trend information relative to glidepath, as well as imagery, to assess aircraft attitude and response to controls, aircraft damage and condition, and gear and hook status throughout the landing process. The SITU will enhance operations in reduced visibility both day and night. All ships will have SITU installed.

b. LSO Workstation. The LSO workstation will provide the LSO with dynamic aircraft and ship information necessary to aid in expediting the safe and efficient recovery of aircraft. The LHA and LHD ships currently do not have the benefit of a workstation specifically designed for this purpose. The CV and CVN LSO workstation will replace the existing unmaintainable LSO HUD console with an integrated display and control station. It will provide the LSO with a consolidated display of important aircraft recovery data and flight deck status during recovery operations.

c. Fixed Glidepath Sensor. LHA and LHD ships will utilize a fixed camera located on the aft end of the island that will provide an easily interpretable view of the aircraft during recoveries and provide the LSO with a reference for aircraft glideslope and line-up position.

2. Physical Description. VISUAL is currently in the Program Definition and Risk Reduction phase of the acquisition cycle. The acquisition strategy requires heavy reliance on Non-Developmental Items (NDI), Commercial Off-The-Shelf (COTS), and Government Off-The-Shelf (GOTS) hardware, software, and firmware, all repackaged for the shipboard operating environment. Therefore, a physical description is not currently available, but will be incorporated in later iterations of this document.

3. New Development Introduction. The VISUAL is a three-phase acquisition program.

- Phase I Program Definition and Risk Reduction
- Phase II Engineering and Manufacturing Development
- Phase III.... Full Rate Production

Quantities are shown in the following table: * designates the training unit

PHASE	TITLE	CV OR CVN	LHA OR LHD	LAND BASED
Phase I	Advanced Development Models	1	1	0
Phase II	Engineering Development Models	2	2	0
Phase III	Full Rate Production	13	13	*1

The Navy will procure the total system at Naval Air Warfare Center Aircraft Division, Lakehurst, New Jersey (NAWCADLKE), which will act as the system development agent.

4. Significant Interfaces. The CV and CVN VISUAL will interface with ADMACS, Integrated Shipboard Information System. The LHA and LHD VISUAL will interface with various shipboard systems.

5. New Features, Configurations, or Material. The VISUAL will develop and integrate emerging technologies and data networks synergistically in order to provide critical recovery information to the LSO.

H. CONCEPTS

1. Operational Concept. The VISUAL will provide a means of tracking and identifying approaching aircraft independent of the current shipboard radar. The VISUAL is designated as a

non-continuously operating system that will be capable of distributing and processing information in support of air operations. The LSO is the primary operator.

2. Maintenance Concept. The maintenance concept for the VISUAL system components contained in this Initial NTSP follows the general direction and guidance outlined in the Aircraft Launch and Recovery Equipment Maintenance Program (ALREMP). Maintenance of the VISUAL components will be accomplished through the use of an organizational to depot level concept. Its intent is to minimize the requirements for organizational corrective maintenance. The organizational level will be responsible for preventive maintenance and corrective maintenance down to the failed unit, assembly, subassembly, or module. The depot level will be responsible for scheduled overhauls, repairs, and refurbishment of selected major system units, assemblies, subassemblies, and modules.

The VISUAL system will be designed with Built-In Test (BIT) functions to facilitate rapid fault isolation and verification. All equipment will provide easy access to internal parts to facilitate testing, and module and component replacement. A remove, replace, and repair concept will be applied to the VISUAL components. When an equipment failure or performance degradation is detected on CV and CVN ships, an Interior Communications Electrician (IC) with Navy Enlisted Classification (NEC) code 4745 will troubleshoot and fault isolate the system to the unit, assembly, subassembly, or module level. On LHA and LHD ships, it will be the IC with NEC 4779. The VISUAL components will be of modular design, thus permitting a broad level of repair classification. Designated consumable units and modules will be discarded after failure. Faulty units, assemblies, subassemblies, and modules designated as depot level repairable will be forwarded to the cognizant designated overhaul point.

a. Organizational. The maintenance concept for all the VISUAL systems contained in this Initial NTSP will follow the general direction and guidance outlined in the OPNAVINST 4790.4C, Naval Ships' Maintenance Material Management (3M) manual.

(1) Preventive Maintenance. Preventive maintenance will be conducted at specified intervals in accordance with procedures established by Maintenance Requirements Cards and system certification.

(2) Corrective Maintenance. Corrective maintenance will consist of BIT fault isolation and removal and replacement of failed modules and components, and system function testing.

(a) Stabilized Imaging and Tracking System. The maintenance concept for the SITU has not been determined at this time. It is anticipated that for CV and CVN VISUAL, ICs with NEC 4743 ILARTS maintenance technicians will maintain the SITU. For the LHA and LHD VISUAL, ICs with NEC 4779 will maintain the SITU.

(b) LSO Workstation. The maintenance concept for the LSO workstation has not been determined. Currently, the ICs with NEC 4745 maintain the existing

LSO workstations for CV and CVN ships and NEC 4779 on LHA and LHD ships. This is not expected to change.

(c) Fixed Glidepath Sensor. The Fixed Glidepath Sensor is a fixed camera used on LHA and LHD VISUAL and it is anticipated the ICs with an NEC 4779 will maintain this sensor. The maintenance concept has not been defined at this time but will be incorporated in later iterations of this document.

b. Intermediate. Current planning indicates that there will be no intermediate level maintenance required for the VISUAL system.

c. Depot. The original equipment manufacturer or an authorized repair station will perform depot level maintenance. Depot level maintenance will consist of repair, rework, and overhaul of the replaceable assemblies that are beyond the repair capability of the organizational level.

d. Interim Maintenance. If necessary, interim depot maintenance will be provided by NAWCADLKE.

e. Life-Cycle Maintenance Plan. VISUAL will be installed during overhaul periods with configuration request and upgrades documented through the current ship's Maintenance Plan.

3. Manning Concept. Organizational level manpower requirements will not change due to the installation of VISUAL components. Manpower requirements were determined through workload comparability analysis per TRPPM procedures and information from Subject Matter Experts.

a. Estimated Maintenance Man-Hours per Operating Hour. The VISUAL and its related components are designated non-continuously operating systems and will be capable of distributing and processing information in support of air operations 24 hours per day throughout a six-month deployment. The technical parameter threshold values derived from the ORD for system reliability, availability, and repair time are as follows:

PARAMETER	DEFINITION	THRESHOLD	OBJECTIVE
System Reliability	Mean Time Between Operational Mission Failures	703 hours	1813 hours
System Availability	Uptime / (Uptime + Downtime) (percent of uptime usage)	95%	98%
Operational Mission System Maintainability	Maximum Corrective Mean Time for Operational Mission Failures	1.5 hours	1.0 hours

Assuming the VISUAL threshold and objective goals (above) are attained, the system will not generate enough maintenance actions to require any additional maintenance personnel. Further, since VISUAL does not generate any additional watch stations or operator positions, no additional operators will be necessary.

b. Proposed Utilization. The proposed utilization is 5040 hours annually (210 days times 24 hours).

c. Recommended Qualitative and Quantitative Manpower Requirements

(1) Operator. On CV and CVN ships the LSO workstation is manned by an LSO with a Navy Officer Billet Classification (NOBC) of 8662 and an IC with NEC 4745. On CV and CVN ships the ILARTS console is manned by an IC with NEC 4743. On LHA and LHD ships the VISUAL will be manned by an IC with NEC 4779. When Marines are embarked, the LSO duties are performed by Military Occupational Specialty (MOS) 7593/7594 on aircraft carriers and MOS 7589 for amphibious assault ships.

(2) Maintainer. Personnel in the IC rating will perform maintenance functions on CV and CVN VISUAL systems. NEC 4745 personnel are responsible for the Fresnel Lens Optical Landing Systems, the manually operated Visual Landing Aid (VLA) System, and the LSO HUD system, and will be trained to maintain the replaced components. ICs with NEC 4743 currently maintain the ILARTS and will be trained to perform maintenance tasks for replaced components. Vertical/Short Take-Off and Landing Optical Lens System Technicians with NEC 4779 will maintain the VISUAL system on LHA and LHD ships.

4. Training Concept. A systems approach will be applied in the development and preparation of a training program that will provide designated operation and maintenance personnel with the necessary knowledge and skills to support the VISUAL. Course C-670-2010 (NEC 4745) currently includes curriculum designed to train students to operate, maintain, fault isolate, and repair Optical Landing Systems (on CV and CVN ships) including the LSO HUD. Course A-670-0064 trains students to perform designated scheduled maintenance, organizational level corrective maintenance, troubleshoot system malfunctions, and replace faulty units on LHA and LHD ships. It is estimated that the portion of curriculum in these courses that is based on the LSO HUD will be replaced with curriculum based on the VISUAL. Course A-191-0011 provides ICs with the knowledge and skills to perform organizational level preventive and corrective maintenance, and operate the ILARTS. This course may need revision to include new VISUAL components. The LSO courses will also require incorporation of the VISUAL information. These courses are D-2G-0001, D-2G-0002, and D-2G-0003. The Naval Air Training and Operating Procedures Standardization (NATOPS) manual (NAVAIR 00-80T-104 and NAVAIR 00-80T-111) delineates the training, designation, and requirements for the LSO. The Officer In Charge of the Navy LSO School acts as the training and NATOPS model manager. The model manager is responsible for updating educational materials for all LSO training. These courses are normally conducted at the using unit level but must be updated to reflect the VISUAL changes.

a. Initial Training. Initial training will be required for TECHEVAL and OPEVAL personnel so they can successfully perform testing functions. Navy IC instructors will also require initial training so that they can establish organic follow-on training.

b. Follow-on Training. Follow-on training for shipboard operators will be integrated into the existing training courses listed below for the LSO billet. It is estimated that the addition of VISUAL training data into these courses will not increase course length.

(1) Operator

Title Initial Formal Ground Training

CIN D-2G-0001

Model Manager .. Navy LSO School

Description This course provides an introduction to fleet LSO administrative and operational responsibilities including shore-based and shipboard equipment, glideslope geometry, aircraft recovery bulletins, aircraft characteristics, waving concepts and techniques, conduct of field carrier landing practice, and Fleet Automated Performance Assessment and Readiness Training Systems.

Location Navy LSO School, NAS Oceana, Virginia

Length 10 days

RFT date Currently available. Will require revision.

Skill identifier None

TTE/TD To Be Determined (TBD)

Prerequisites ° Designation as LSO trainee
° Navy skill identifier 1310 or 1315, or Marine MOS 7590

Title Advanced Formal Ground Training

CIN D-2G-0002

Model Manager .. Navy LSO School

Description This course provides instruction in administrative and operational responsibilities of an airwing staff LSO including platform strategy, barricade, pitching deck recoveries, LSO training and evaluation, and Fleet Automated Performance Assessment and Readiness Training System.

Location Navy LSO School, NAS Oceana
 Length 3 days
 RFT date Currently available. Will require revision.
 Skill identifier None
 TTE/TD TBD
 Prerequisites ° D-2G-0001, Initial Formal Ground Training
 ° Wing LSO designation
 ° Skill identifier 1310 or 1315

Title Fleet Replacement Squadron Training Command

CIN D-2G-0003

Model Manager .. Navy LSO School

Description This course provides instruction in administrative and operational responsibilities of a training LSO including waving techniques and considerations, conduct of ground training and field carrier landing practice, initial carrier qualification requirements, and Fleet Replacement Squadron Automated Performance Assessment and Readiness Training System.

Location Navy LSO School, NAS Oceana

Length 3 days

RFT date Currently available. Will require revision.

Skill identifier None

TTE/TD TBD

Prerequisites ° D-2G-0002, Initial Formal Ground Training
 ° Squadron LSO designation
 ° Skill identifier 1310 or 1315

(2) Maintenance

Title Integrated Launch and Recovery Television Surveillance System Maintenance

CIN A-191-0011

Model Manager .. Service School Command

Description This course provides ICs with the knowledge and skills necessary to perform preventive and organizational level corrective maintenance, and operate the ILARTS System. The course also provides the ability to perform all authorized system operating and maintenance procedures under limited supervision onboard aircraft carriers.

Location Service School Command, Great Lakes, Illinois

Length 124 days

RFT date Currently available. Will require revision.

Skill identifier IC 4743

TTE/TD TBD

Prerequisites A-623-0105, IC Class “A” School

Title Optical Landing Systems Maintenance

CIN C-670-2010

Model Manager .. Naval Air Technical Training Center (NATTC)
Detachment Lakehurst

Description This course provides training to ICs to operate, maintain, fault isolate, and repair the Fresnel Lens Optical Landing System, the manually operated VLA System, and the HUD aboard aircraft carriers.

Location NATTC Detachment Lakehurst, New Jersey

Length 72 days

RFT date Currently available. Will require revision.

Skill identifier IC 4745

TTE/TD TBD

Prerequisites A-623-0105, IC Class “A” School

Title Vertical/Short Take-Off and Landing Optical Landing System Maintenance

CIN A-670-0064

Model Manager .. Service School Command

Description This course provides ICs with the knowledge and skills required to operate and perform preventive and corrective maintenance for the system in all modes.

Location Service School Command, Great Lakes

Length 12 days

RFT date Currently available. Will require revision.

Skill identifier IC 4779

TTE/TD TBD

Prerequisites IC, E-5 through E-7

Title Aircraft Launch and Recovery Equipment Maintenance

CIN C-2G-2011

Model Manager .. NATTC Detachment Lakehurst

Description The course prepares selected CWO and LDOs ordered to ALREMP organizational level billets and selected Aviation Boatswain's Mate (Equipment) (ABE) with the training to manage and supervise the administration and quality assurance of aircraft launch and recovery equipment maintenance ashore and afloat.

Location NATTC Detachment Lakehurst

Length 38 days

RFT date Currently available. Will require revision.

Skill identifier None

TTE/TD TBD

Prerequisites Officers selected by the CNO, or ABEs E-7 through E-9

c. Student Profiles

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
NOBC 8662	Qualified fixed-wing pilot
ABE	Paygrade E-7 through E-9

SKILL IDENTIFIER	PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS
IC 4743, 4745, and 4779	A-623-0105, IC Class “A” School

d. Training Pipelines. No new training pipelines or tracks have been identified at this early stage in the acquisition process, but the following courses have been identified to require revisions:

CIN	COURSE TITLE
D-2G-0001	Initial Formal Ground Training
D-2G-0002	Advanced Formal Ground Training
D-2G-0003	Fleet Replacement Squadron Training Command
A-191-0011	Integrated Launch and Recovery Television Surveillance System Maintenance
C-670-2010	Optical Landing Systems Maintenance
A-670-0064	Vertical/Short Take-Off and Landing Optical Landing System Maintenance
C-2G-2011	Aircraft Launch and Recovery Equipment Maintenance

I. ONBOARD (IN-SERVICE) TRAINING

1. Proficiency or Other Training Organic to the New Development. TBD

a. Maintenance Training Improvement Program. TBD

b. Aviation Maintenance In-Service Training. TBD

c. Aviation Maintenance Training Continuum System. TBD

2. Personnel Qualification Standards. Personnel Qualification Standards (PQS) will be developed by the PQS development center as required.

3. Other Onboard or In-Service Training Packages. The curriculum package for both operator and maintenance personnel must be delivered to the user activity and schoolhouses 90 days prior to Initial Operational Capability (IOC).

J. LOGISTICS SUPPORT

1. Manufacturer and Contract Numbers. TBD

2. Program Documentation

- Acquisition Strategy for VISUAL, approved 24 June 1997
- ORD number 459-88-97 for ADMACS
- Executive Summary for VISUAL, Increment III of ADMACS, dated April 1998

3. Technical Data Plan. Preliminary operator and maintainer manuals will be required, as well as final operation and maintenance manuals with illustrated parts breakdown that will be prepared by NAWCADLKE. Manuals will be developed in accordance with a Technical Manual Contract Requirement generated by the Naval Air Technical Data and Engineering Service Command. The formal technical manuals will be ready for printing and distribution approximately 90 days after receipt of verification of comments. Commercial manuals will be used where applicable.

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

5. Repair Parts. TBD

6. Human Systems Integration. The Human Systems Integration (HSI) program will be organized to achieve the effective integration of personnel into the design of the system. The human engineering effort will include, but not necessarily be limited to, active participation in the following three major interrelated areas of system development: analysis, design and development, and test and evaluation. The use of NDI, COTS, and GOTS hardware, software and firmware, common to other systems on the ship, should not require new personnel specialties but rather an extension of these skill levels. Further, the use of highly reliable, integrated, common support systems should result in the more efficient use of operating and support personnel.

K. SCHEDULES

1. Limited Operational Capability. LOC will be achieved following completion of the OPEVAL and a Milestone III decision to proceed to production, with the EDM used for OPEVAL deploying on CVN 75 and LHD 5, with interim support provided.

2. Initial Operational Capability. IOC will be achieved approximately two years after Milestone III.

3. Full Operational Capability. Full Operational Capability will be achieved approximately five years after Milestone III when all production units are installed.

4. Installation and Delivery Schedules. The total system will be procured by the Navy at NAWCADLKE. NAWCADLKE will act as the system development agent.

PROCUREMENT/DELIVERY SCHEDULE (CV/CVN: LHA/LHD: LAND BASED)

PHASE	FY97	FY98	FY99	FY00	FY01	FY02	FY03	OUT YEARS
Phase I Procurement	0: 0: 0							
Installation		1: 1: 0						
Phase II Procurement			0: 0: 0	2: 0: 0	0: 2: 0			
Installation					1: 0: 0	0: 1: 0		
Phase III Procurement							3: 0: 0	10: 13: 1
Installation								13: 13: 1

5. Ready For Operational Use Schedule. VISUAL should be ready for operational use approximately one year after the Milestone III decision.

6. Foreign Military Sales and Other Source Delivery Schedule. There is no FMS program scheduled at this time.

7. Training Device and Technical Training Equipment Delivery Schedule. TBD

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

M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS. The following are documents that affect, are related to, or were used to develop this Initial NTSP:

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
Aircraft Carrier VLA Systems NTSP	A-50-9202A/A	PMA251	Approved Nov 99
Amphibious Assault Ship VLA Systems NTSP	A-50-9203A/D	PMA251	Draft Sep 99

DOCUMENT OR NTSP TITLE	DOCUMENT OR NTSP NUMBER	PDA CODE	STATUS
Air Capable Ship VLA Systems NTSP	A-50-9205A/D	PMA251	Draft Sep 99
ADMACS Initial NTSP	Z-50-0034	PMA251	Initial June 1999
Acquisition Strategy for VISUAL	NA	PMA251	Approved Jun 97

APPENDIX A - POINTS OF CONTACT

NAME / FUNCTION / ACTIVITY, CODE / INTERNET EMAIL	TELEPHONE NUMBERS
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APPENDIX A - POINTS OF CONTACT

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