Naval Aviation Training Systems

CAPT Craig Dorrans
301-757-6944
craig.dorrans@navy.mil
Training System Stakeholders and Programs

Sustainment: 800+ training devices supporting 25 platforms in 60 locations

Procurement: 2 ACAT IV, 28 Abbreviated Acquisition Programs (AAPs) and 14 “other” programs

Planning: 20 programs in progress
Training Systems Funding*

PMA-205 FY15 Budget Authority: $322M
Total Training System Funding: $1.1B
FY15 Strategic Focus Areas

- Acquisition execution, efficiency, and agility
- Open Systems Architectures and Integration
- Training Proficiency Optimization and LVC
- Cyber Warfare
USMC Training Systems

Col David Owen
301-757-6939
david.owen1@navy.mil
Overview

FY15 Execution
- H-53E Enhanced Aircrew Externals Trainer
- AV-8B Maintenance Trainer Upgrades
- VH-3D Relocation/Modification and Visual Data Base Upgrade

FY15 Planned
- CH-53E Weapons Systems Trainer (WST) / Aircrew Procedures Trainer (APT) - Trainer Technology Upgrade
- AV-8B Deployable Mission Rehearsal Trainer (DMRT)

Future Requirements / Plans
- Marine Common Aircrew Trainer (MCAT)
- AV-8B Weapons System Trainer (WST) Tech Refresh
Description:
The Trainer Technology Upgrade (TTU) is for the CH-53E WSTs (2F174-S/N 1 & 2) and CH-53E APTs (2F190-S/N 1 & 2).

• S/N 1 Devices are located at MCAS New River, NC.
• S/N 2 Devices are located at MCAS Miramar, CA.
• The TTU will incorporate technology upgrades to maintain high fidelity flight training for CH-53E USMC pilots.

Program Milestones:
Contract - TSC III LOT 2
RFP – 14 Nov. 2014
Proposals Due – 17 Dec. 2014
Contract Award – March 2015
AV-8B DMRT

Description:
The goal of the DMRT program is to manufacture and deliver training devices that are concurrent with aircraft configuration, thereby replacing the obsolete Multi-Task Trainer (MTT).

The DMRT program will procure deployable AV-8B training systems that can train pilots on radar operation, Hands-On-Throttle-and-Stick (HOTAS), Heads-Up Display (HUD), Multi-Purpose Displays (MPDS) and Control Monitor Set (CMS) operations. The DMRT capabilities are a near-replica of the 2F150 WST, in a small, deployable configuration.

Program Milestones:
- Contract - TSC III LOT II (Restricted to Small Business)
- Request For Proposal – 2nd Qtr FY15
- Contract Award – 4th Qtr FY15
- Fielded by 3rd Qtr FY17
Future Actions

• MCAT
  - FY16
  - TSC III LOT 1

• AV-8B WST Tech Refresh
  - FY16
  - TSC III LOT TBD
Tactical Training Ranges

CDR Ken Grzymalski
301-757-8121
Ken.grzymalski@navy.mil
Overview

FY15 Execution

- Tactical Combat Training Systems (TCTS) Inc I Engineering Change Proposals (ECPs)
  - Block 4 (U.S. Air Force lead)
  - P5JSF Decryption (U.S. Air Force lead)

FY16 Planned

- TCTS Inc I ECPs
  - Block 5 (U.S. Air Force lead)
- TCTS Inc II
  - Development Contract Award (U.S. Navy Lead)
Tactical Combat Training System (TCTS) Increment II

• TCTS Inc II will provide an improved environment for air combat training with secure air-to-air and air-to-ground data links, encryption, enhanced threat environment and multiple platform interfaces.

• The program will run in 2 phases:
  - **Phase 1**: Engineering and Manufacturing Development + 2 Low-Rate Initial Production (LRIP) options
  - **Phase 2**: Production (to include a base award with options)

• Current acquisition strategy calls for contracts for each phase to be awarded competitively:
  - The Phase 1 contract will include a separately priced Contract Line Item for procurement of production level data and drawing packages, as well as data rights.
TCTS Inc II Future Actions

• Pre-solicitation Conference – 2\textsuperscript{nd} QTR FY15
• Request For Proposal Release – 2\textsuperscript{nd} QTR FY15
• Contract Award – 2\textsuperscript{nd} QTR FY16
• ECP for LVC – FY17
• LRIP 1 – FY20
• LRIP 2 – FY21
• Initial Operating Capability – FY21
  (MCAS Cherry Point, NC)
Air Warfare Training Development

LCDR Jeff Grubb
301-757-8097
Jeff.grubb@navy.mil
Overview

Air Warfare Training Development (AWTD)

- Interface between S&T community and PMA205
- Bridges the “Valley of Death” between research projects and training system acquisition programs
  - Manages the PMA205 SBIR/STTR Portfolio
  - Transition sponsor for technologies developed under research programs at ONR, DARPA, etc.
S&T / R&D Focus Areas

Live, Virtual, and Constructive (LVC) Capability

- **Live** - Human Factors of presenting virtual and constructive entities on live avionics
- **Virtual** - Objective methods for quantifying required simulator fidelity
- **Constructive** - Automated generation of large numbers of realistic constructive entities

Training Fidelity Enhancements

- **Realistic SAF Behavior** - Constructive entities that act as though under human control
- **Aerodynamics** - Improved flight models for simulators
- **Visuals** - Improved simulation of out-the-window and sensor scenes
- **Motion Cueing** - Tactile, proprioceptive, and vestibular cues for simulators

Post Mission Assessment

- **Automated Assessment** - Automatic scoring of trainee performance
- **Data Capture** - Compilation of data necessary to enable performance assessment
- **IOS Human Factors** - Enhancements to Instructor Operator Stations to reduce instructor workload and enable improved debrief of training
Live, Virtual, Constructive (LVC) Training

LCDR Justin Wiesen
301-757-8149
Justin.wiesen@navy.mil
Overview

- PMA-205 currently executing multiple AAPs which contribute to an LVC capability
  - Near term, this strategy will continue
- OPNAV currently validating LVC requirements
  - TBD whether future LVC programs will be single ACAT or multiple AAPs
LVC Architecture

**Training Datalink**
- Pod / Instr. Pkg
- Range
- Network Bridge or Gateway
  - (DIS/HLA) state information and interactions (ES, FIRE, DET, etc.)
- Aircraft Interface (1553 or Fiber Channel)
- RF Datalink

**Operational Datalinks**
- Link 16/11, CEC, MADL, Hawklink, etc...
- Datalink Gateway Bridge
  - Terrestrial Datalink Transceiver
  - Datalink Gateway Equipment
    - (DIS/HLA) Link-16, or TDL protocol

**Voice Comms**
- A/C Cockpit Voice Radio
- UHF/VHF Voice Radio
- Live Radio Interface Equipment
  - (DIS/HLA) Voice Radio

**Operational Datacoms**
- A/C TSPI
- Sensors
- Weapons
- Chaff/Flare
- EA / EP
- A/C Cockpit Voice Radio

**Live Aircraft**
- Link 16/11, CEC, MADL, Hawklink, etc...
- Datalink (A/C System)

**Voice Comms (A/C System)**
- UHF/VHF Voice Radio
- Live Radio Interface Equipment
  - (DIS/HLA) Voice Radio

**NCTE**
- Monitoring / Control Stations
- Weapons Server(s)
- Performance Measurement
- Threat Systems
- Role Player Radios
- SAF/CGF Simulations

**Simulators**
- 4th Gen Sim
- 5th Gen Sim
- Red Air Sim
- AEW/GCI
- BFTT Simulators
# LVC Roadmap

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### Notes:
- **F-18 LRIP 1 (36)**
- **F-18 LVC ECP**
- **Cherry Point**
- **Fallon VACAPES**
- **NCTE & CDS**
- **NADTC (Prototype/TTGP/Oceana)**
- **NADTC w/CDS Enabled (POCM17)**
- **NASHP II**
- **Complete (F-18, H-60)**
- **F-35, P-8, H-60, E-2**
- **P-8A, H-60, EDRT**
- **F18, E-2D**
- **JSF**
- **F18, E-2, NADTC**
- **F18, E-2, NADTC**
- **V4.0 & V4.2.2**
- **MH-60R/S, P-8A**
- **V4.3**
- **Fire Scout**, **MH-60R/S, P-8A**, **Triton**
- **MH-60R, P-8A, P-8A RAAM**
- **MH-60R, P-8A, P-8A TBD**
- **MH-60R, P-8A, P-8A RAAM**
- **MH-60R, P-8A, P-8A RAAM**
- **MH-60R, P-8A, P-8A RAAM**
- **MH-60R, P-8A, P-8A RAAM**
- **MH-60R, P-8A TBD**
- **MH-60R, P-8A TBD**

### Future String
- **V18.2, V18.3 & V19.1**
- **V20.0**
- **Future String**
Future Actions

• Reviewing Open Systems Architecture
  – Goal, minimize OFP changes to incorporate LVC onto displays

• Simulator updates
  – Updates needed to support integrated warfare training across different security domains

• Connect training ranges to VC distributed training
F/A-18 and EA-18 Training Systems

CDR Anthony J. Fortescue
301-342-7333
Anthony.fortescue@navy.mil
Overview

FY15 Execution
- F/A-18E/F and EA-18G HD9 Visual Upgrade
- SAN Disk / Footprint Reduction (SD/FR)
- Operational Flight Program Updates (25X, H10)
- F/A-18C/D Windows 7 Upgrade
- Next Gen Threat Sys (NGTS) v3.0 Integration
- Maintenance Trainer Suite (MTS I/II) Upgrade

Future Requirements / Plans
- NASMP Immersion Fidelity (NIF)
- Fleet Synthetic Training (FST)
- NASMP System Fidelity (NSF) Increment 1-3
- NGTS v3.2 Integration
- Next Generation Jammer (NJG) Integration
- Simulated Aircraft Maintenance Trainer (SAMT) Upgrade
H-60 Training Systems

LCDR Ray Miller
301-757-7692
Raymond.L.Miller@navy.mil
Overview

FY15 Execution
- Technology Refresh & Procurement of Simulators (TRPS)
- Aircraft Virtual Environmental Trainer (AVET)
- Naval Aircrew Training Systems (NATS)

FY15 Planned
- Avionics Maintenance Trainers (AMT) / Weapon Load Trainers (WLT) update (AOP 14/15)
- Courseware update (8a)

Future Requirements / Plans
- Demilitarization (B/F/H)
- Courseware update
Future Actions

Courseware update

- Description: Long term courseware development contract to maintain configuration with platform.
P-3 / EP-3 Training Systems

CDR Scott Small
301-757-8150
scott.m.small@navy.mil
Summary

FY15 Execution
- P-3 & EP-3 Operational Flight Trainer (OFT) / Tactical Operational Readiness Trainer (TORT) WIN 7 update & Information Assurance compliance

FY15 Planned
- P-3 & EP-3 OFT & TORT Tech Refresh

Future Requirements / Plans
- Demilitarization / Reserve Forces / Foreign Military Sales
- Transition preparation
P-8A Training Systems

LCDR John Thoe
301-995-4254
john.thoe@navy.mil
Overview

FY15 Execution
- Training Software Releases (TSRs 9 and 10)
  - Early Multi-static Active Coherent (eMAC) Fleet integration
  - Next Generation Threat System (NGTS) simulator integration
- NAS Whidbey Island electronic classrooms delivered in mid 2015

FY15 Planned
- Block Modification Contract (multi-year releases)
  - Fidelity improvements and aircraft driven updates
  - Hardware and software obsolesces changes

Future Requirements / Plans
- NAS Whidbey Island device deliveries in early 2016
- Improved acoustic and non-acoustic simulation
  - Eliminate training need for aircraft mission playback through fidelity improvements in sensor and environmental modeling
Description: Sim fidelity upgrades encompassing four years and five software releases
- NGTS integration (single SAF)- ESM, Link improvements
- CHAT improvements (mIRC, Mako)
- NASMP/NCTE compliance
- AAR aero model integration
- Joint Range Extension Applications Protocol (JREAP)
- Acoustic replay software installation
- 6th workstation installation
- Stall recovery training capability
- Automated performance measurement capability

Status:
- Procurement Planning Conference complete
- Joint Statement Of Work- Dec ‘14
- First software release scheduled Oct ‘16

Program Milestones:
- Joint RFP development (sole-source)
- Expect Fall ‘15 contract award
- FYs 16-19 releases dates
- Fleet Need Dates:
  - Phase 1 aero model- Oct ‘16
  - Phase 2 aero model- Apr ‘18
Future Actions

Device Delivery Schedule:

Continuing Delivery of Courseware and Items Supporting Maintenance and Aircrew Training
MQ-4C Training Systems

LCDR JUSTIN FISHER
301-757-3100
Justin.fisher@navy.mil
Overview

FY15 Execution
- Fleet Readiness Squadron (FRS) Operator Mission System Trainer (MST) 2F230

FY15 Planned
- Electronic Classrooms (Operator & Maintenance)
- Initial Partial Maintenance Trainers

Future Requirements / Plans
- End State Courseware (Operator & Maintenance)
- Remaining Maintenance Trainers
Future Actions

End State Courseware:
- Operator
  • TBD / 4QFY16
- Maintenance
  • TBD / 3QFY16

Maintenance Trainers:
- Avionics, Mission Control System (MCS)
  • TBD / 1QFY16
Fire Scout Training Systems

LCDR Elizabeth Hernandez
301-757-7405
Elizabeth.a.hernandez@navy.mil
Overview

FY15 Execution
- Mission Systems Trainer (MST) #2, MQ-8B Avionics Maintenance Trainer (AMT), MQ-8C Front End Analysis (FEA), Mission Control Station (MCS) FEA

FY15 Planned
- MQ-8B Curriculum Updates
- Operator Proficiency Devices

Future Requirements / Plans
- MQ-8C Maintenance Training Devices
- MCS Maintenance Training Devices
- MCS and MQ-8C Maintenance Curricula
Future Actions

- FY16 competitive contract award: MQ-8C Maintenance Training Devices (avionics and mechanics) procurement
- FY16 competitive contract award: Mission Control Station Training device procurement
- FY16 competitive contract award: MQ-8C maintenance curricula
- FY16 competitive contract award: MCS curriculum
Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) Training Systems

Doug Steward
(301) 757-4193
douglas.steward@navy.mil
Overview

Unmanned aircraft system that supports persistent Intelligence, Surveillance, and Reconnaissance and strike capabilities that will enhance the versatility provided by an aircraft carrier

• ACAT1 Pre-Milestone/Pre-Source Selection

• Initial Training System Supports Early Operational Capability
**UCLASS Training**

**Familiarization (FAM) Training**
- Informal (i.e. over the shoulder/intro training)
- Prepares personnel for discrete functions:
  - System Engineering
  - Developmental and Operational Test
- Fleet Introduction Team Cadre Instructors
- Compliments aircrew ILT classroom sessions
- Appended to the UCLASS Mission Control System (UMCS) to provide a Training Mode
- Includes air vehicle and threat models, instructor operator station and synthetic environment,
- Capable of supporting mission rehearsal, crew readiness training, fleet synthetic and joint mission training

**Instructor Led Training**
- Blended classroom and lab instruction
- Capstone training that prepares students for EOC deployments
- Built using Instructional Systems Design and Front End Analysis
- Scoped to Transition Training (CAT II Syllabus)

**Mission Systems Trainer**
- Backup UMCS
- CDS
- MST
- Op. AV (Not Connected)
- NCTE
- Debrief

**CDS**

**MST**

**Backup UMCS**

**Op. AV (Not Connected)**

**NCTE**

**Debrief**

**IOS**
Future Actions

Courseware

- Description: UMCS Training Master Task List, UMCS FAM, and Automated Data Network System Job Duty Task Analysis development
- Execution: Present through 4QFY15

MST

- Description: UMCS Training Mode and Navy Continuous Training Environment analysis
- Execution: Present through 2QFY18