



**U.S. Marine Corps (Ground)  
Liaison Report  
6 December 2011**

**K. Hurley**

# USMC ATE/TPS Overview

- AN/USM-657 - Third Echelon Test System (TETS)
- AN/USM-717 - Virtual Instrument Portable Equipment Repair/Test (VIPER/T) System
- AN/USM-718 - Ground Radio Maintenance Automatic Test System (GRMATTS)
- Platforms/TPSs
- On-going and Future Test Activities

# USMC ATE Systems

- AN/USM-657 - Third Echelon Test System (TETS)

- 228 systems

- 25 Core (Analog/Digital)
- 165 RF
- 38 EO

- Upgrades (from VIPER/T program)

- Instrument Controllers (replacement) – 228
- Power Distribution Units (replacement) – 164
- Synchro/Resolver Simulator (added capability) – 44
- 18 GHz RF Subsystem (replacement) - 5

- Field locations

- Supporting Marine Infantry Divisions, Air Wings, Logistics Groups, Headquarters Groups, and Depots



# USMC ATE Systems

- AN/USM-717 - Virtual Instrument Portable Equipment Repair/Test (VIPER/T) System
  - 127 VIPER/T Systems ordered and delivered
    - 45 RF
    - 44 RF/EO
    - 38 EO

**Core System**



**EO Subsystem**



# USMC ATE Systems

- AN/USM-717 - VIPER/T (Cont'd)
  - Fleet fielding
    - Light Armored Reconnaissance (LAR) Elements, Afghanistan
    - Combat Logistics Regiment (Forward), Afghanistan
    - 2nd LAR Bn, Camp Lejeune, NC
    - 3d LAR Bn, 29 Palms, CA
    - Exercise Support Division, 29 Palms, CA
    - Electronics Maintenance Company, Camp Lejeune, NC
    - 1st and 4<sup>th</sup> LAR Bn, Camp Pendleton, CA
    - 1st Ordnance Maintenance Co, Camp Pendleton, CA
    - 2nd Ordnance Maintenance Co, Lejeune, NC
    - School of Infantry, Camp Pendleton, CA

# USMC ATE Systems

- AN/USM-717 - VIPER/T (Cont'd)
  - Retrofit Kits for legacy TETS
    - Instrument Controllers – New laptop, docking station and Windows XP-based operating system with modified system software
      - 228 modification kits ordered and installed
    - Power Distribution Units - New single box PDU with modified system software
      - 164 kits ordered and installed
    - Synchro/Resolver Simulators - NAI Synchro/Resolver Simulator VXI card and cables with modified system software
      - 44 kits ordered; upgrades pending
    - RF Subsystems – Synthetic instrument-based design in VXI format to provide RF stimulus and measurement to 18 GHz as well as address obsolescence issues with legacy TETS RF instrumentation
      - 5 kits ordered; upgrades pending

# USMC ATE Systems

- AN/USM-657 TETS and AN/USM-717 VIPER/T
  - On-going efforts
    - Software Support
      - Software maintenance for TETS and VIPER/T being performed by USMC ATEP (Albany)
    - VIPER/T Calibration Software
      - Astronics DME provided final calibration program software for new USMC calibration instrumentation (final verification in process by USMC)
    - VIPER/T EO Upgrades
      - Low Light Mods
        - Reduce visible light levels for Image-Intensified (I2) devices
        - Support for AN/PAS-24A IWNS-I2 and similar I2 devices
      - Target Wheel Mods
        - Replace targets to allow testing and aligning of handheld and weapons-mounted optics and laser devices
        - Include removable/replaceable targets
      - EO systems being modified and delivered to USMC Albany
        - 11 of 82 units upgraded/delivered
        - 6-8 per month planned

# USMC ATE Systems

- AN/USM-657 TETS and AN/USM-717 VIPER/T
  - On-going efforts (Cont'd)
    - AN/USM-657 TETS
      - Contracted (2) industry studies to identify and demonstrate suitable alternatives for obsolete system instruments. A third study is pending award.
      - USMC Depot (Albany) procuring new Gigatronics RF synthesizers based on backorder demands
    - AN/USM-717 VIPER/T
      - EO collimators being modified to enhance test capabilities for Electro-Optic (EO) devices

# USMC ATE Systems

- Test Program Sets and Application Program Sets
  - ID/IQ contracts for TPS Development and APS Production
    - Base Contract with 3 Option years
      - Astronics DME
      - Mantech Test Systems
      - Analysis, Integration and Design, Inc.
    - First Option year has been exercised for all three contractors
    - No new Task Orders currently out for bid
      - VIPER/T and TETS Video capture card study to be awarded

# USMC ATE Systems

- Test Program Sets and Application Program Sets
  - ID/IQ contracts for TPS Development and APS Production
    - Twelve Task Orders awarded thus far
      - AN/PSM-105 APS Production and TPS Rehost (TRC-170 UUTs)
      - AN/PSM-113 APS Production (TETS Training TPS)
      - AN/PSM-109 TPQ-46A Firefinder TPS rehost and development
      - AN/PSM-120 LAV25-A2 Instrument Panel/Annunciator Panel TPS rehost and APS Production
      - AN/PSM-123 LAV25-A2 MOOG APS Production
      - Racal 3152 proof-of-concept replacement (TETS and VIPER/T)
      - Instrument Controller proof-of-concept replacement (TETS and VIPER/T)
      - AN/USM-657 (TETS) IETM Updates
      - AN/USM-717 (VIPER/T) IETM Updates
      - AN/PSM-120 IETM Development
      - AN/PSM-123 IETM Development

# USMC ATE Systems

- Test Program Sets and Application Program Sets
  - ID/IQ contracts for TPS Development and APS Production
    - Ground Radio Application Program Set (GRAPS) rehost and production. (Astronics ATS-2000 ATACTS to Aeroflex ADRA 7200)
    - GRAPS additional hardware production quantities

# USMC ATE Systems

- AN/USM-718 - Ground Radio Maintenance Automatic Test System
  - USMC MARCORSSYSCOM Quantico
  - Screening and diagnostic test capability for both current and future software-defined, tactical radios
  - Field-level solution for organic secrep maintenance
  - To be fielded 1-to-1 with TPS kits
    - Ground Radio Application Program Sets (GRAPS)
  - 5-Year contract with options for up to 700 units
  - GRMATS First Article Test approved 01 Dec 11
    - Initial fielding planned for March '12

# USMC ATE Systems

- Ground Radio Application Programs Sets (GRAPS)
  - TPS kits to be used in conjunction with AN/USM-718A GRMATS for testing USMC tactical radios
  - Rehosting existing test capabilities from currently fielded test systems (GRMATS Block I) to systems coming out of production (GRMATS Block II)
    - Astronics DME under contract to rehost 14 TPSs from GRMATS Block I to Block II
      - Includes production quantity of (100) GRAPS sets
      - PDR completed on 2 December 2011
    - Follow-on production for 100 additional kits awarded to Mantech
    - Additional kits to be put out for bid at a later date.
  - Developing new Test Programs to be implemented on Block II GRMATS
    - Utilizing DOD engineering facilities for new Test Program Development
    - Production to be awarded after LRIP delivery

# Platforms/TPSs

- Current platforms supported by Marine Corps ATE
  - AN/MRC-142B Digital Wideband Transmission System
  - AN/TPQ-46A Firefinder Radar
  - AN/TRC-170 Tropospheric Scatter Microwave Radio Terminal
  - LAV-25 Light Armored Vehicle (LAV-25A2) Turret LRUs
  - LAV-AT TOW II System and LRUs
  - AN/PAS-22 Long Range Thermal Imager
  - M-777A2 (LW155) Light Weight 155 Digital Fire Control System LRUs
  - M1A1 Abrams (CCAs)
  - Amphibious Assault Vehicle (AAV) Intercom System LRU/CCA
  - Family of Handheld/Vehicular Tactical Radio Systems

# Platforms/TPSs

- Current TPS and APS Efforts in Development/Production
  - Picatinny Arsenal – New Jersey
    - Rehost M-777A2 Lightweight Howitzer Digital Fire Control System LRU Test Programs to AN/USM-717(V)2 VIPER/T
      - Estimated completion in December 2011
  - Astronics DME – Orlando, FL
    - TPS Rehost and Production for TRC-170 Radar UUTs
      - Rehost effort complete
      - Production APSs complete, majority of kits delivered
    - TPS rehost and new development for TPQ-46A Firefinder Radar
      - Rehost complete for 14 of 15 TPSs, new development TPSs in progress (PDR complete)
    - TPS Production for LAV25-A2 Electric Turret LRUs
      - 21 of 42 APS kits delivered
      - Remaining 21 kits to be delivered in Jan 2012

# Platforms/TPSs

- Current TPS and APS Efforts in Development/Production
  - Mantech Test Systems
    - Rehost and production of LAV25-A2 Instrument Panel/Annunciator Panel/Heads-Up Display Assembly Test Program Sets
      - Scheduled delivery during December 2011

# Platforms/TPSs

- Future/Planned TPS Efforts
  - Support Wide Area Network (SWAN-D)
  - Shoulder-Launched Multipurpose Assault Weapon (SMAW II)
  - LAV-25A2 Improved Thermal Sight System (ITSS)
  - Thermal Sight System for Amphibious Assault Vehicle
  - Squad Thermal Sight (STS)
  - AN/MRC-142C Radio Set
  - Universal Power Supply/ UPS Test Program Sets

# Ongoing Efforts

- VIPER/T and TETS Technology Insertion
  - Proof-of-concept replacement of TETS and VIPER/T Racal 3152, 3152A with Racal 3152B
  - Proof-of-concept replacement of TETS and VIPER/T Instrument Controllers with new laptop computers (two different versions)
  - Proof-of-concept replacement of TETS and VIPER/T video capture cards with new video capture cards
- Increased Testing Capability of Nonlinear Optics
  - Common EO prototype
  - Downsized Laser Tester prototype
- Increased use of IT and Networking of ATS
  - NxOMS & Marine Corps Support and Response Enterprise (MSRE)
- Inter-service Initiatives
  - Common USMC ATE Interface
    - SBIR NAVAIR-101-666 - Universal Switching Across Automatic Test Systems
  - Advance the Concept of Smart Test
    - Army Parallel Test SBIR

# USMC Future Test Activities

- General Purpose Automatic Test System (GPATS)
  - Future Marine Corps Automatic Test System
    - Successor to TETS and VIPER/T
    - Reduced footprint, modular and configurable based on mission requirements
      - Analog/ Digital, RF, Optics, Lasers, Cable Testing
    - Will support Depot, Field and Organizational Maintenance
      - At-System Diagnostics
      - Off-System Component Testing
    - Joint Capabilities Integration Development System (JCIDS) action in progress
      - Initial Capabilities Document (ICD) for Automatic Test Systems in development

# USMC Future Test Activities

- EO Test Requirements
  - Common EO Tester prototype developed to assist in determining feasibility for a portable, stand-alone EO Test System
  - Downsized Laser Tester (DLT)
    - Develop a portable Laser Test Capability to support fielded laser aiming devices
    - Contract awarded to Santa Barbara Infrared
    - Demonstration/Acceptance TBD
- Identifying requirements for a Portable Cable Test System
  - On-vehicle testing of cable assemblies

# MCATES Roadmap

