



U N I T E D S T A T E S M A R I N E C O R P S

# **U.S. Marine Corps (Ground) Liaison Report**

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# USMC ATE/TPS Overview

- General Purpose Automatic Test Systems (GPATS)
- Electronic Maintenance Support System (EMSS)
- Vehicle Automated Diagnostic System (VADS)
- Circuit Card Assembly (CCA) Test Station
- Ground Radio Maintenance Automatic Test System (GRMATs)
- Application Program Sets (APS)
- Planned and Ongoing Efforts

# GPATS

## GPATS Radio Frequency (RF) Variant

- **AN/USM-717(V)2**
  - VIPER/T (Astronics) RF Variant
- **AN/USM-657B(V)2 RF**
  - TETS (ManTech) RF Variant
- **Systems are form, fit, functionally the same**
- **Support Test Program Sets that require RF capabilities in addition to analog/digital**
- **(134) systems deployed for USMC users**



# GPATS

## GPATS Electro-Optic (EO) Variant

- **AN/USM-717(V)3**
- **Consists of a core test system with a separately managed EO subsystem**
- **Supports testing of multiple EO devices:**
  - Infrared (IR) and Image-Intensified (I<sup>2</sup>) night vision devices
  - Laser designators, illuminators, laser aiming devices, and laser range finders.
- **(76) total EO systems deployed for USMC users**



# GPATS

- GPATS Modernization Program
  - Acquisition program initiated to address current and anticipated obsolescence for GPATS (TETS and VIPER/T)
  - Common Instrument Controller (CIC) Upgrade
    - Replace current controller (laptop/docking station) with a modern solution
    - 258 production CICs delivered
  - Transition to MS Windows 10
    - Integration complete by USMC Albany
  - Run Time System (RTS) update
    - FY20 effort
  - EO Modularization
    - Field calibration capability
    - Downsized EO capability



# GPATS

- GPATS Modernization Program (Cont'd)
  - Radio Frequency subsystem capability enhancement
    - R&D effort underway to externalize the RF subsystem
    - Increase RF test capability to 40GHz range
    - Integration effort currently in process
  - PDU Replacement
    - Reduce size, weight, power input
    - Address safety concerns
    - FY20 effort
  - Eliminate Secondary Chassis
    - VXI insert or carrier
    - PXI instruments



# EMSS

## Electronic Maintenance Support System (EMSS)

- Program Description: EMSS provides a rugged, lightweight, one-man portable maintenance aid designed to enhance combat service support to MAGTF forces in both deployed and garrison environments. EMSS provides the maintainer with networked tools and electronic information which enables sustained performance and readiness of weapons systems. EMSS provides diagnostic capabilities, access to technical information, and access to GCSS-MC when connected to the MCEN-N.

### CURRENT CAPABILITY:

- One-Man Portable Maintenance Aid
- External Equipment Hardware Interfaces
- Test and Diagnostics
- Displays Technical Data
- Support Maintenance Mentoring
- Network Connectivity

### FUTURE CAPABILITY:

- Software Update Service
- CBM+ Enabler
- Integrate software to replace the Vehicle Automated Diagnostic System



### SUPPORTED OCCFLDS:

EMSS serves as an At-Platform maintenance aid for the following MOSs:

#### Current (legacy): Fielded 2300

- 2141 AAV Mechanics
- 2147 LAV Mechanics
- 2146 Tank Mechanics
- 2171 Electro-Optical Maintenance Repair
- 3521 MT Mechanics

#### (New Program Of Record) – ACAT IV(M): Add MOSs:

#### Total fielding of 10,000

- 11XX (Utilities Maintenance) in FY21
- 13XX (Engineer Maintenance) in FY21
- 28XX (Ground Electronics Maintenance) TBD
- 59XX (Electronics Maintenance) TBD

# VADS





# Vehicle Automated Diagnostic System (VADS)

VADS is a lightweight, portable diagnostic system of modular design that is used to perform intrusive diagnostics on diesel engines, transmissions, central tire inflation, anti-lock braking, and other vehicle data bus systems. The vehicle communication interface is called the Test Adapter Vehicle (TAV) that is interfaced with an instrument controller with available USB port, DVD drive, Diagnostic Software and Windows based operating system. This is combined with a complete set of interconnect cables and transducers/adapters in one weather resistant transit case.



B70002B Analyzer Set, Vehicular



D70002B Analyzer Set, Vehicular



E70002B Analyzer Set, Vehicular

# VADS

## Weapon Families/ Weapon Systems Supported

- **“E” TAMCN ORDNANCE PLATFORMS**

- LAV
- AAV
- M88 TRACKED RECOVERY VEHICLE
- HIMARS

- **“B” TAMCN ENGINEER PLATFORMS**

- ATC / MAC 50
- MCT
- TRAM
- 120M GRADER
- WTS SCRAPER
- STREET SWEEPER
- BHL
- MMV
- BUFFALO
- MTL
- HUSKY
- HYEX
- AMC
- M9 ACE
- AMMPS GENERATORS

- **“D” TAMCN MOTOR TRANSPORT PLATFORMS**

- MTVR
- LVSR
- COUGAR
- MATV
- JLTV
- P19R
- MTVR WRECKER
- LVSR WRECKER
- HMMWV



# Circuit Card Assembly (CCA) Test Station

- The Circuit Card Assembly (CCA) Test Station is a shelter mountable unit that provides the capability to capture, digitize, and store signatures of known good components for reference with the test of similar CCAs and electronic modules for out of tolerance, deteriorating, or defective components on a wide variety of weapon systems.
- The CCA Test Station consist of the Huntron Pro-Track Tester model 32, PC Controller (Win 10) compliant, and accessories ESD Kit.
- The CCA Test Station features a variable range parameters resulting in hundreds of voltage, source resistance, and frequency combinations.



**Huntron Model 32  
AN/USM-726  
Tech Refresh**

# GRMATS

## Ground Radio Maintenance Automatic Test System (GRMATS)

- **AN/USM-718A**
- **Used as a diagnostic tool for software defined radio testing**
- **Primarily used at intermediate level maintenance activities in conjunction with the Ground Radio Application Program Set**
- **Systems upgraded with new I7 processors in FY18**
- **Currently exploring options for replacing legacy GRMATS systems**



AN/USM-718A (GRMATS 7200)



# GRMATS Application Program Sets

- Currently Fielded GRMATS Application Program Sets
  - AN/PSM-127 – Ground Radio Application Program Set (GRAPS) – Multiple Software-Defined Radio System Components
  - AN/TSM-221 – Tactical Radio Intermediate Maintenance Activity Application Program Set (TRIAPS) – AN/PRC-117G Radio and Vehicle Amplifier Unit (VAU)
  - AN/PSM-131 – Tactical Remote Sensor System (TRSS) LRU Diagnostics

# GRMATS Application Program Sets

- Ground Radio Application Programs Sets (GRAPS)
  - GRAPS are essentially TPS kits used in conjunction with AN/USM-718A GRMATS for testing USMC tactical radios
  - Tests PRC-152, PRC-150, PRC-148, PRC-117F and vehicle amplifiers



# GRMATS Application Program Sets

- TRIAPS (Tactical Radio IMA Application Program Set)
  - Used only at intermediate level
  - Pure COTS solution for PRC-117G and vehicle amplifier
  - Will expand to test future NSA crypto-compliant, software radios
  - Includes laptop, power supply, RF attenuators, power sensor, interface cables



# GPATS Application Program Sets

- Currently Fielded GPATS Application Program Sets
  - AN/PSM-115 - AAV MSQ-115 Diagnostics
  - AN/PSM-117 - Handheld and Weapon-Mounted Optics/ Laser Devices
  - AN/PSM-118 - LAV-25 Chain Gun Functional Test
  - AN/PSM-119A - LW 155 LRU Diagnostics
  - AN/PSM-123 - LAV-25A2 LRU Screening/ Diagnostics
  - AN/PSM-120 - LAV Instrument Panels/ Heads-Up Display Diagnostics
  - AN/PSM-125 - Very Small Aperture Terminal Diagnostics
  - AN/PSM-129 - Saber Anti-Tank Weapon System LRU Diagnostics
  - AN/PSM-130 - LAV-25A2 CCA Diagnostics
  - AN/TSM-220 - Power Systems (Power Supplies, Conditioners, Chargers)
  - AN/TSM-223 - LAV-Anti Tank LRU Diagnostics



# GPATS Application Program Sets

- Current TPS Efforts in Progress
  - AN/PSM-119 Lightweight 155 Howitzer Digital Fire Control System (DFCS) LRU APS
    - TPS upgrades in progress at ATSD Picatinny Arsenal, NJ
    - Fielding of upgraded kits in progress
  - AN/PSM-120 - LAV Instrument Panels/ Heads-Up Display Diagnostic Upgrade
    - In response to LAV platform upgrade
  - AN/PSM-123 LAV-25 LRU Diagnostic Upgrade
    - In response to LAV platform upgrade
  - AN/PSM-117 Handheld and Weapon-Mounted Optics/ Laser Devices - (Additional TPSs)
    - Efforts underway to develop TPS for:
      - Scout/Squad Sniper Laser Range Finder
      - Ocular Interrupter (O/I)
      - Long Range Sniper Rifle Night Sight

# Planned and Ongoing ATS Efforts

- Planned ATS Efforts
  - Advanced Combat Vehicle (ACV)
    - Working with the ACV Program Office to identify test requirements for vehicle electronic and electro-optical components.
  - Handheld Radio Test Set Replacement
    - RFI (Sources Sought) released Sept 2018 requesting Industry feedback on the purchase description for the replacement solution for the legacy 3515N Handheld Radio Test Set. Responses were received and are under evaluation.
  - Stand-Alone Controller for Electro-Optic Testing
    - Solicitation released July 2019 on a stand-alone solution to support USMC EO test requirements.

# Foreign Military Sales (FMS)

- LAV Support
  - Providing acquisition, technical and logistical support for the procurement of multiple ATS solutions to support FMS Light Armored Vehicle Platforms
    - (2) First Article Test (FAT) VIPER/T units, (4) production VIPER/T units, and (4) LAV-25A2 APS units procured/delivered
    - Fielded initial VIPER/T and APS units to FMS customer during Sep 2017
    - Production of (13) additional build-to-print VIPER/T units is in progress
      - 10 of 13 VIPER/T systems completed/delivered
      - Conducted fielding/training to FMS customer during Apr 2019
    - Completed development of (17) new test programs for the FMS LAV-Anti-Tank (LAV-AT) weapon system. Full rate production of TPS hardware is in progress. Delivery to FMS customer during Sep 2019.
    - Effort underway to develop and implement a dual-language user interface capability for FMS VIPER/T and associated TPSs
    - Task order awarded to procure additional spare parts for FMS VIPER/T and TPS sustainment

Thank You!

**Questions?**