



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

29 March 2017

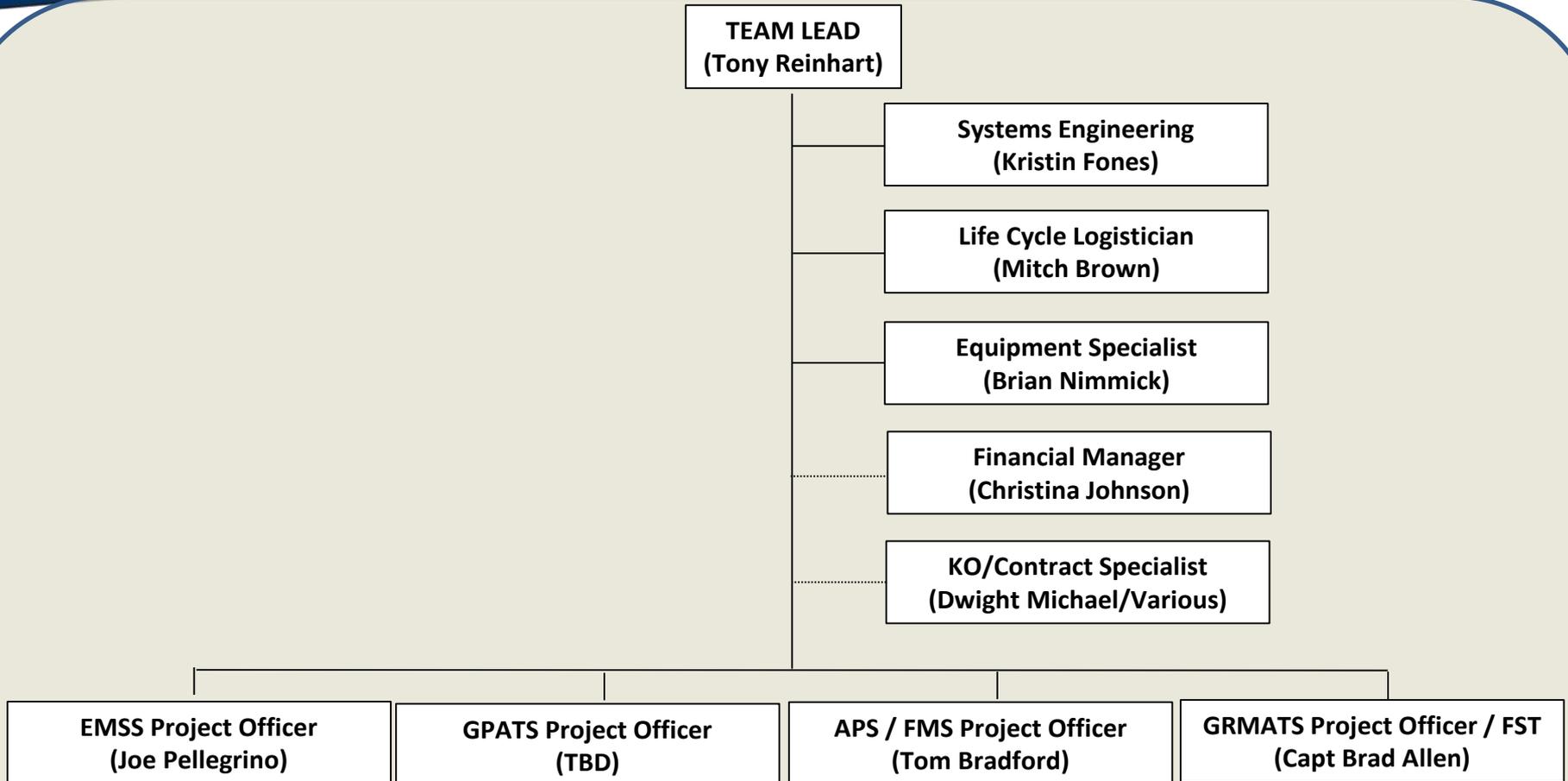
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# USMC ATE/TPS Overview

- General Purpose Automatic Test Systems (GPATS)
- Ground Radio Maintenance Automatic Test System (GRMATS)
- Application Program Sets (APS)
- On-going and Planned Programs

# USMC ATS Team Organization



# Systems Supported by GPATS

- LAV-25A2
  - Eight-wheeled amphibious armored reconnaissance vehicle built by GDLS Canada
  - A2 upgrades include electric drive turret and improved optics (ITSS)
  - US and FMS
  - Items tested: Turret and Gun drive/electronics
- LAV-AT (variant of LAV-25)
  - LAV fitted with TOW-2 Anti-Tank Guided Missile launcher
  - Items tested: Turret and Gun drive/electronics
- M1A1 Abrams
  - M1 has been in service for 30+ years
  - General purpose battle tank
  - Items tested: Tank CCAs (10)



# Systems Supported by GPATS

- AN/TRC-170 Radar
  - Digital tropospheric scatter radio terminal which provides connectivity between two major nodes
  - Air or ground transportable
  - RF operation up to 5 GHz
  - Items tested: Radar LRUs
- AN/TPQ-46A Firefinder Radar
  - Weapon-locating radar designed to detect and track incoming artillery and rocket fire to determine the point of origin for counterbattery fire
  - Operates up to 4 GHz
  - Items tested: Radar LRUs
- Lightweight M777 155mm Howitzer
  - Transported by the MV-22 Osprey, CH-47 helicopter or trucks
  - Utilizes a digital fire-control system
  - Items tested: Fire control system LRUs (5)



# Systems Supported by GPATS

- SATCOM VSAT - Very Small Aperture Terminal Family of Systems (VSAT FoS)
  - Integrated COTS SATCOM system for Marine Corps' communications
  - Critical command and control information
    - transmits voice, video, data
  - Operates up to 40 GHz
  - Items tested: 21 LRUs associated with VSAT Small, Medium and Large platforms



- M41A4 Saber Missile System
  - M41 TOW Improved Target Acquisition System (ITAS)
  - Anti-tank missile system
  - Replacement for legacy TOW2
  - Items tested: Electronic and electro-optical LRUs (7) from the Saber weapon system



# Systems Supported by GPATS

- Electro Optics
  - Testing of man-portable electro-optical non-lethal sights/scopes
    - Thermal Weapons Sights
    - Enhanced Night Vision Goggles
    - Rifle Combat Optic variants
    - NIR Laser pointers and illuminators
    - Laser Rangefinders
    - Laser Designators/Illuminators



## UUT Examples:

- AN/PAS-22 Long Range Thermal Imager
- AN/PAS-13D Heavy Weapon Thermal Sight
- AN/PAS-28 Medium Range Thermal Bi-ocular
- AN/PVS-24A Individual Weapons Sight Image Intensifier

# Systems Supported by GRMATs

- USMC Tactical Radios
  - PRC-117F/G Harris Multiband Manpack
  - PRC-150 Harris Falcon II Manpack
  - PRC-148 Thales Multiband Inter/Intra Team Radio (MBITR)
  - PRC-152A Harris Falcon III SDR
- Tactical Remote Sensor System
  - Provides ground surveillance for continuous, unattended, remote, all-weather detection, location determination, and monitoring of enemy activity
  - Originally supported by a variant of the GRM-122
  - Items tested: RCVR/XMTRs, Imager, Signature Data Recorder, VHF Preamp,



HAND-HELD PROGRAMMER-MONITOR (HHPM)



ENCODER-TRANSMITTER UNIT - II (ETU-II)



SIGNATURE DATA RECORDER - II (SDR-II)



IMAGER-II



RT-1847 RADIO REPEATER

# 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**
- **(128) systems deployed for USMC users**



# GPATS

## GPATS Electro-Optic (EO) Variant

- **AN/USM-717(V)3**
  - VIPER/T EO Variant
- **Consists of a core test system with 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.
- **(82) total EO systems deployed for USMC users**



- GPATS Modernization Program
  - New 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
    - Contract currently underway to provide two first article units and 229 production CICs
  - Graphical User Interface (GUI) Update
  - Transition to MS Windows 10
  - Radio Frequency (RF) subsystem capability enhancement
    - R&D effort underway to externalize the RF subsystem
    - Increase RF test capability to 40GHz range

# GRMATS

## Ground Radio Maintenance Automatic Test System (GRMATS)

- **AN/USM-718 (GRMATS Block I)**
- **(68) systems delivered in 2007 and fielded to support urgent requirement for software-defined radio test support through a Field User Evaluation**
- **This system (Block I) was retired in FY '15**
  
- **AN/USM-718A (GRMATS Block II)**
- **All (562) systems have been delivered by the OEM (Aeroflex)**
- **AAO reduction (~450) in order to align systems primarily with intermediate level maintenance activities**



AN/USM-718 (ATS2000)



AN/USM-718A (GRMATS 7200)

# 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
  - 14 TPSs rehosted from the legacy GRMATS (Block I) to the currently fielded GRMATS (Block II)
  - Total of 556 GRAPS kits procured under various contracts



# Application Program Sets

- Currently Fielded GPATS Application Program Sets
  - AN/PSM-105 - AN/TRC-170 LRU/CCA
  - AN/PSM-109 - AN/TPQ-46 LRU/CCA
  - AN/PSM-112 - LAV-AT LRU
  - AN/PSM-115 - AAV MSQ-115 Diagnostics
  - AN/PSM-117 - Electro-Optic Test Suite
  - AN/PSM-118 - LAV-25 Chain Gun
  - AN/PSM-119 - LW 155 LRU Diagnostics
  - AN/PSM-123 - LAV-25A2 LRU Screening/ Diagnostics
  - AN/PSM-120 - LAV Instrument Panels/ Heads-Up Display
  - AN/PSM-124 - M1A1 Tank CCA Diagnostics

# Application Program Sets

- Current Efforts in Development/Production
  - M41A4 Saber System CCA TPS Development (12 new TPSs, 2 LRIP sets)
    - Initial integration concluded July 2016
    - Follow-on planned for mid - FY 17
  - Automatic Test Systems Division - Picatinny Arsenal, NJ
    - AN/PSM-126 Very Small Aperture Terminal (VSAT) LRU TPS Development (24 new TPSs, 6 LRIP units)
      - To be completed during March 2017
      - Full-rate production planned for Apr 2017
    - AN/PSM-119 Lightweight 155 Howitzer Digital Fire Control System (DFCS) LRU TPS Upgrades (New ID, cables and TPS software)
      - In progress
    - AN/PSM-112 LAV-AT (Anti-Tank) LRU TPS Development (15 new TPSs, 2 LRIP units)
      - To be completed during August 2017

# Application Program Sets

- Planned FY17 Fielding – Test Program Sets
  - AN/PSM-130 LAV-25A2 Circuit Card Assemblies (CCA) TPS
    - 12 new TPSs, 13 units
    - Equipment fielding is in progress through September 2017
  - AN/PSM-129 Saber Line Replaceable Units (LRU) TPS
    - 8 new TPSs, 18 units
    - Equipment fielding is in progress through September 2017
  - AN/PSM-131 Tactical Remote Sensor System (TRSS) TPS
    - 6 new TPSs, 22 units
    - Equipment fielding is in progress through September 2017
  - AN/TSM-220 Power System Application Program Set (PSAPS)
    - 22 new TPSs, 42 units
    - Equipment fielding is in progress through September 2017

# Application Program Sets

- Planned ATS Efforts
  - Assault Amphibious Vehicle (AAV) Upgrade Support
  - Shoulder Mounted Assault Weapon (SMAW) Mod II Program Support
  - LAV Foreign Military Sales (FMS) Program Support
    - Multiple programs
  - WI-FI Application Module (WAM)
    - At-system test capability for weapon systems
  - PMO will develop an ATS portfolio life cycle management plan and road map from 2QFY17 – 2QFY18
    - Intent is to determine the requirements for the next generation of GPATS/GRMATS
    - Identify any required JCIDS documents and actions
    - POM accordingly
    - Quartz Watch and RFIs to industry will be leveraged

# Ongoing Efforts

- LAV Foreign Military Sales (FMS) Support
  - USMC TMDE providing support for FMS procurement of USMC VIPER/T systems and LAV-25 APSs
    - (2) VIPER/T and APS FAT units
    - Additional production quantities (4 units)
    - Initial deliveries in April 2017
    - In-country training/support
  - TMDE will execute additional ATE and APS procurements, as required
- Stand Alone VIPER/T Electro-Optic (SAVEO) Test System
  - Stand-alone controller, power supply and instrumentation solution to utilize with existing VIPER/T EO collimators
  - Completed July 2016
- Expeditionary Maintenance Support System (EMSS)
  - Working to implement network connectivity to provide Global Combat Service Support- Marine Corps (GCSS-MC) Mobile Field Service support and access to technical manuals for weapon system maintenance

Thank You!

**Questions?**