



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

28 August 2022

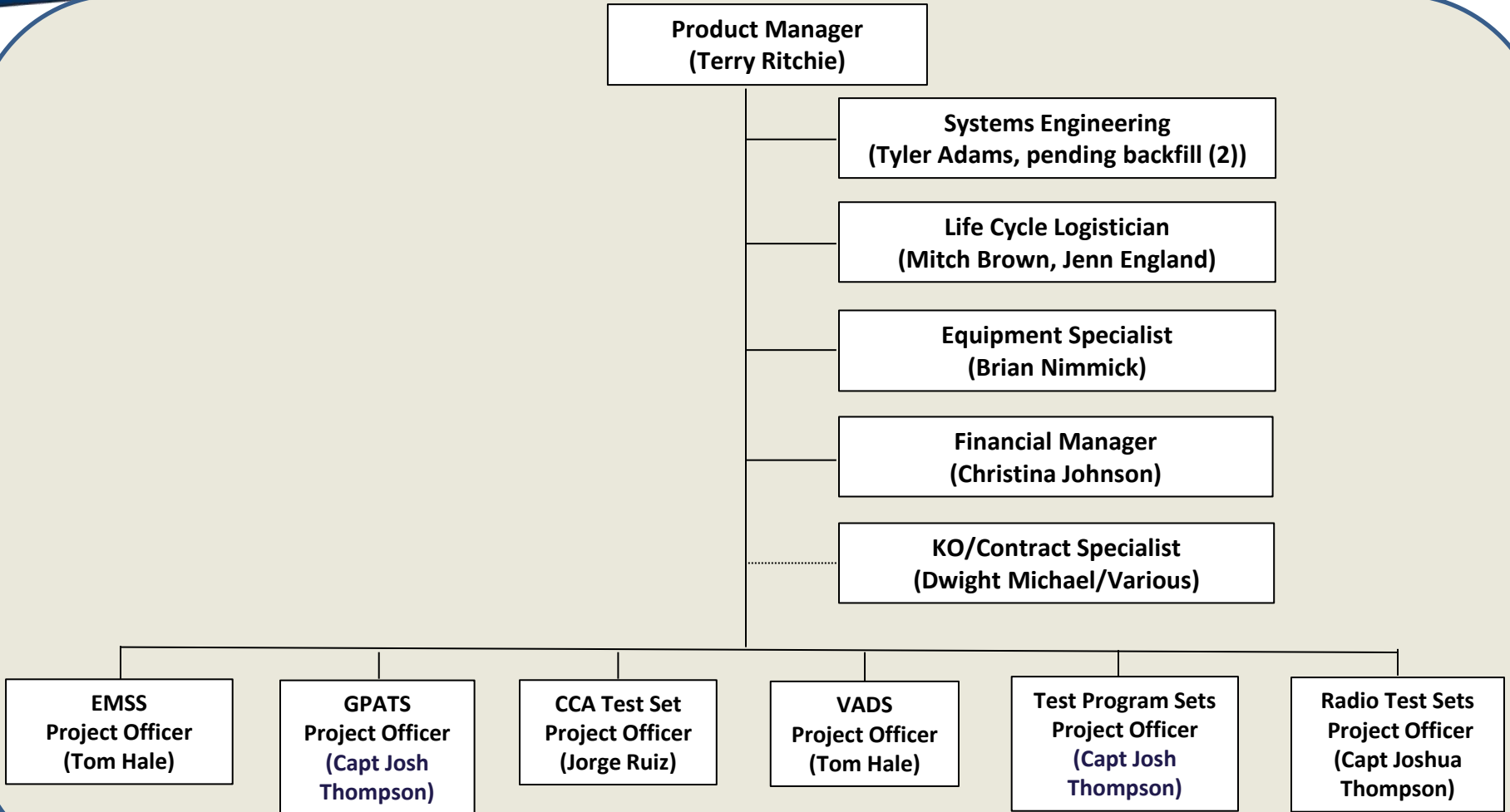
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USMC ATE/TPS Overview

- 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)
- Planned and Ongoing Efforts

USMC ATS Team Organization (PMM-151.4)



GPATS

- AN/USM-717(V)2 VIPER/T, AN/USM-657B(V)2 TETS
 - Supporting analog/digital Electronic Test Programs
- AN/USM-717(V)3 VIPER/T
 - Supports testing of:
 - Infrared (IR) and Image-Intensified (I2) night vision devices
 - Laser designators, illuminators, laser aiming devices, and laser range finders.



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 - LW155 LRU Diagnostics
 - AN/PSM-123 - LAV-25A2 LRU Screening/ Diagnostics
 - AN/PSM-120 - LAV Instrument Panels/ Heads-Up Display Diagnostics
 - AN/PSM-126 - 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-119A Lightweight 155 Howitzer Digital Fire Control System (DFCS) LRU APS
 - Addition of a comm cable for mission computer (ECP)
 - AN/PSM-123 LAV-25
 - TPS modifications in process for:
 - Slip Ring Assembly
 - High Power Distribution Module
 - AN/PSM-117 Handheld and Weapon-Mounted Optics/ Laser Devices - (Additional TPSs)
 - TPS modifications in process for:
 - Scout/Squad Sniper Laser Range Finder
 - Long Range Sniper Rifle Night Sight
 - Squad Thermal Sight

GPATS Application Program Sets

- Current TPS Efforts in Progress (Cont'd)
 - AN/PSM-130 LAV CCA APS
 - Pending TPS Development for upgraded CCAs

GPATS Modernization

- GPATS Modernization Program
 - Address current and anticipated obsolescence for GPATS (TETS and VIPER/T)
 - Completed/implemented efforts
 - Common Instrument Controller (CIC) Upgrade
 - Transition to MS Windows 10
 - TPS rehost validation in process
 - System Software Hardware Abstraction Layer (HAL) update
 - Work in progress with anticipated completion 2QFY23



GPATS Modernization

- GPATS Modernization Program (Cont'd)
 - Radio Frequency Subsystem (RFSS)
 - Initial R&D effort completed Sep 2020 to externalize the RF subsystem
 - PXI COTS solution
 - Goal to increase RF test capability up to 40GHz range
 - Eliminate Secondary Chassis
 - Initial R&D effort completed Jan 2021 for PXIe Instrumentation Insertion Kit
 - Replacement of legacy VXI instruments (DMM, Counter/Timer, DSO, Function Generator, Arbitrary Waveform Generator) with PXIe equivalents
 - PXIe instruments added to Primary Instrument chassis on carrier card
 - PDU Replacement/Modification/Upgrade
 - To be considered with next generation GPATS requirements

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:

- Expanded Platforms
- 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 Supported OccFlds (legacy):

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

Future Supported OccFlds

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

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**

- MTRV
- LVSR
- COUGAR
- MATV
- JLTV
- P19R
- MTRV 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

AN/USM-718A Ground Radio Maintenance Automatic Test System (GRMATS)

- Performance testing and diagnostic tool for software defined radio testing
- Primarily used at intermediate level maintenance activities in conjunction with the Ground Radio Application Program Set (GRAPS)
- 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
 - RT-1796 (PRC-117F)
 - RT-1694 (PRC-150)
 - AN/PRC-148 Urban (V2)
 - AN/PRC-148 Maritime (V1)
 - RT-1916 V1, V3 (PRC-152 V1, V3)
 - AN/VRC-111 VAA
 - AM-7588 VRC-103
 - RF-5833H
 - RF-300M 50W VRC-110
 - 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
 - Rehosted from AN/GRM-122

GRMATS Application Program Sets

Ground Radio Application Programs Sets (GRAPS)

- 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

AN/TSM-221A Tactical Radio Intermediate Maintenance Activity Application Program Set (TRIAPS)

- Used only at intermediate level
- COTS solution for PRC-117G and vehicle amplifier
- Includes laptop, power supply, RF attenuators, power sensor, interface cables
- Will expand to test future NSA crypto-compliant, software radios
- Radios added as fielded



Planned and Ongoing ATS Efforts

- **Advanced Combat Vehicle (ACV)**
 - Working with the ACV Program Office to identify test requirements for vehicle electronics and electro-optical components
 - Requirements document in process
 - Planning stages for support and concept
- **Stand-Alone Controller for Electro-Optic Testing**
 - Reduced footprint EO test system utilizing existing VIPER/T EO collimator
 - RFI planned
- **Next Gen GPATS**
 - PXI/PXIe-based system
 - USMC preparing requirements document
 - RFI planned

Thank You!

Questions?