

*Serving "Our Army at War - Relevant and Ready"*



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*Innovation for Today and Tomorrow's Expeditionary Forces*  
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# PD TMDE Portfolio



**At-Platform Automatic Test Systems (APATS) Maintenance Support Device (MSD)**



Used by all weapon systems maintainers at Field and Sustainment Levels to perform At - Platform maintenance.

**Off-Platform Automatic Test Equipment (OPATS) Next Generation Automatic Test System (NGATS)**



Supports repair of Line Replaceable Modules at Field and Sustainment Levels for multiple weapon systems.

**General Purpose Electronic Test Equipment (GPETE) Test Equipment Modernization (TEMOD)**



Provides Field and Sustainment Level testing of weapon system operational tolerances.

**Calibration Sets (CALSETS) Instruments and Standards**



Performs Precision Maintenance & Calibration for General Purpose Electronic Test Equipment supporting weapon systems.





# Opportunities and Challenges



- Force structure changes and Basis of Issue analysis are impacting quantities of test equipment procured
- Although decreasing (like other programs), test equipment procurement funding will continue
- Procurements for Army general purpose electronic test equipment (via TEMOD program) will continue to be individual ACAT III managed programs, for now
- CALSETS and TEMOD procurements will continue to be primarily influenced by the annual developed Joint Working Group prioritization lists which require HQDA approval
- Shift to multi-task synthetic instrumentation as a material solution remains a work in process





# Next Generation Automatic Test Set (NGATS)



**Automatic Test Station**



**TPS Storage**



NGATS is a highly mobile, rapidly deployable, general-purpose, reconfigurable automatic test system which directly supports testing and screening of Army weapon systems to maintain their readiness to shoot, move, and communicate. Designated to replace Direct Support Electronic Systems Test Set (DSESTS), Base Shop Test Facilities (BSTF) versions 3 and 5, and other legacy automatic/automated off-platform test equipment currently used by the Army.

### NGATS Fielding:

- NGATS will replace legacy ATE
- Projected AAO is 181 systems,
  - includes 52 non-sheltered consoles

### NGATS Status:

- Contract awarded 24 Sep 2014





# Maintenance Support Device (MSD)



- Internal Combustion Engine Testing
- Mission Planning Software Up-loader
- IETM Diagnostic Software Host
- Digital LogBook

### PERFORMANCE:

- 25% reduction in maintenance task time, quicker, more accurate diagnoses
- Automates / eliminates the use of multi-meters, oscilloscopes, paper manuals, etc. used to troubleshoot and isolate faults

### SPECIAL FEATURES:

- Operates over an extended temperature range in rain, sand, and dust, and survives a 36-inch drop
- Passes 160 degree Fahrenheit temperature test

### FIELDING:

AAO: 38,994  
 FUE: 2006 (MSD-V2)  
 2012 (MSD-V3)  
 FIELDING PLAN: IAW AOP and as TPF or ASIOE with weapons supported

### PRIME CONTRACTOR:

VT Miltope, Hope Hull, AL

ACQ STRATEGY: Competitive award production contract based on performance specification

SCHEDULE: Production and deployment phase (MSD-V3)

## Supports More than 50 Weapon Systems & 30 Maintainer MOS's

- Abrams
- Apache
- Armored Security Vehicle
- Army Tactical Missile System
- Avenger
- Aviation Mission Planning System (AMPS)
- Base Shop Test Facility
- Blackhawk
- Bradley
- Calibration Sets
- Chinook
- CROWS
- Deployable Universal Combat Earthmover
- Explosive Ordnance Disposal
- Family of Medium Tactical Vehicles
- Firefinder Radar
- Forward Repair System
- Fox

- Heavy Equipment Transporter System (HET)
- Heavy Expanded Mobility Tactical Truck (HEMTT)
- Heavy Tactical Trucks
- Hellfire
- Hercules
- High Mobility Artillery Rocket System (HIMARS)
- High Mobility Multi-Purpose Wheeled Vehicle (HMMWV)
- Hunter
- Hydraulic Excavator
- Javelin
- Joint Attack Munitions System (JAMS)
- Joint Cargo Aircraft
- JLENS
- Joint Light Tactical Vehicle
- Joint Robotics
- Joint Tactical Ground Station
- Kiowa Warrior

- Knight
- Lightweight Howitzer
- Logistical Support Vehicle (LSV)
- Long Range Advanced Scout Surveillance Systems
- Marine Corps Tactical Unmanned Aerial System
- Mine Resistant Ambush Protected (MRAP)
- Multiple Launch Rocket System (MLRS)
- Paladin
- Palletized Load System
- PEO Integration
- Patriot
- Sentinel
- Shadow
- Stryker
- Tactical Quiet Generators
- Theater High-Altitude Area Defense
- Wolverine



# NGATS/MSD Acquisition Calendars



TPS & IETMS

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Next Generation Automatic Test Station	LRIP			FRP Contract Award	KP FAT	FRP Decision KP	Production			Follow-on Production Contract			
							LUT (-) Reliability Maintainability	FUE					

**Systems Impacted: 13 / TPSs Required: 289**



CMF: 94



Night Vision System - 5    Wolverine - 5    Stryker - 72    M777 - 15    Bradley - 69    Abrams - 67

AAO: 181  
FUE: 30FY17



CREW - Duke - 9    Longbow - 4    CROWS - 24    MLRS - 5    Avenger - 9    Missile Guidance System - 1

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
MSD-V4 (Light & Rugged)			MSD-V4(L) TC-LP/LKIP	MSD-V4(L) LRP Contract Award	MSD-V4(L) TC-S/FRP								
			MSD-V4(R) RFP	MSD-V4(L) FUE	MSD-V4(R) Contract Award	MSD-V4 FAT	MSD-V4(R) FRP						
							MSD-V4(R) FUE						

**MSD IETMs Supporting 50 Systems and 40 MOSs**



MSD-V4 (L)

CMF: 11, 12, 13, 15, 18, 19, 25, 74, 88, 89, 91, 92, & 94



Ground Combat Platforms - 7    UAV-2    Wheel and Track Support Vehicles - 12    Missile Systems - 7    Diagnostic - 3



MSD-V3 Rugged

MSD-V4 (L)  
AAO: 14K  
FUE: 20FY16

MSD-V4 (R)  
AAO: 26K  
FUE: 30FY17



Radar/Surveillance-8    CROW-1    Aviation - 5    TC Generators - 1





# CALSETS Instruments & Configuration



**Tactical (Active and NGB) = 52**



**AN/GSM 421 V2 (New)**

Sets	MTOE	TDA USATA/ NGB	NGB	Total
<i>AN/ GSM 705</i>	14		12	26
<i>AN/ GSM 421</i>	14		12	26
<b>Instruments</b>				
<i>AN/ GSM 286</i>		24/21		53
<i>AN/ GSM 287</i>		50/17		67
<i>AN/ GSM 439</i>	14	13	12	39
<i>AN/ GSM 440</i>	14	8	12	34





# CALSETS-Who We Support



## Calibration Equipment Supporting the War Fighter

### Individual Weapons



- M-2 .50 Cal
- M-4 Carbine
- M-9 Pistol
- M-16 Rifle
- MK19-3 Grenade Machine Gun
- M24 Sniper Rifle
- M203 Grenade Launcher
- M240B Machine Gun
- M-249 Squad Automatic Weapon

### Aircraft and Missile



- Apache Longbow
  - Hellfire Missile
  - 30mm Cannon
- Black Hawk
- Chinook
- Kiowa Warrior
- Armament:
  - 70mm rockets
  - .50 caliber machine gun
  - Stinger missiles

### Air Defense Artillery



- Avenger
- High Mobility Artillery System
- Medium Extended Air Defense System
- Surface Launched Advanced Medium Range Air-to-Air Missile
- Patriot
- Stringer

### Anti-armor Weapons



- Javelin
- TOW

### Communications



- VSAT
- SINGARS
- Transceivers

### Indirect Fire Systems



- MLRS
- M102, M119, M198, Towed Howitzer
- M120/M121, M224, M252 Mortar
- Paladin

### NBC Defense Equipment



- NBCRS M93/M93A1

### Tracked Vehicles



- Abrams
- Bradley
- M88A2 Hercules
- M113 Family of Vehicles

### Wheeled Vehicles



- FMTV M1070 HET
- PLS Stryker
- HEMTT HMMWV







# CALSETS Production & Fielding



FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 FY20 FY21 FY22 FY23 FY24

CALSETS and Instruments Fielding

In Fielding

### Fielding Actions:

- 11 each: Infrared Thermometer Calibrator
- 30 each: Signal Generators
- 21 each: Weight Sets

### Systems Impacted:



Wheel Vehicles



Aviation



Air Defense



Communication



Aviation



Air Defense



Indirect Fire



Missile



Wheel and Track Vehicles





# CALSETS Production & Fielding



FY12    FY13    FY14    FY15    FY16    FY17    FY18    FY19    FY20    FY21    FY22    FY23    FY24

CALSETS and Instruments Fielding				In Fielding									

**Fielding Actions:**

- 155 MSD Automated Test Equipment to Calibration organizations:
- 4 each: AN/GSM-421A(V)2 tactical calibration platforms
- 14 each: Themometry Bridge Temperature standards
- 162 each: Microwave Adapter Kits
- 162 each: Dyn400 Night Vision Test Set calibrators

Systems /Units Impacted:

**Tactical and TDA Units**  
 Joint Base Lewis-McChord  
 Ft. Bragg  
 Ft. Riley  
 520<sup>th</sup> OD CO (Korea)



Aviation

Track Vehicles



Aviation

Air Defense

Communication



Night Vision Goggles





# CALSETS Transfer Team Acquisitions



## Solicitation Opportunities

Transfer Teams			
FY12 Priority	JWG #	Item Name	Sets
3	JWG10-02	Instrument Controller (Replacement)	REF, 286, 287, 440, 439
12	JWG10-02	ICE Software Replacement	REF, 286, 287, 440, 439
NEW	JWG13-01	Pneumatic Pressure Controller	REF, 286, 287, 439, 440
8	JWG08-38	Tachometer Calibrator	REF, 440
20	JWG09-19	Fluke 744 Portable Thermocouple Calibrator	REF, 440
NEW	JWG13-03	Distortion Analyzer	REF, 286, 287, 440
6	JWG10-07	Core Workstation Replacement	REF, 286, 287, 440, 439
19	JWG10-01	Long Gauge Block Set	286, 287, 440, 439
16	JWG12-22	Thermocouple Calibrator	REF, 286, 287, 440
10	JWG09-16	Syncro-Resolver Calibrator	REF, 440
11	JWG12-05	DC Power Supply Test Set	286, 287, 440
21	JWG11-16	Precision Type N Gage Kit	REF
5	JWG11-10	3458A DMM Replacement	REF, 286, 287, 440, 439
7	JWG08-46	H-Frames and Pumps	286, 287, 440
4	JWG12-03	Fiber Optic calibration Workstation (FOCUS)	287, 440
9	JWG08-42	Torque Cells	REF, 286, 440
14	JWG10-16	Joint Chemical Agent Detector Tester Calibrator	286, 287, 440
13	JWG10-28	Joint Biological Detector System Calibrator	286, 287, 440
17	JWG09-02	HP 905A Coax Sliding Load	REF, 286, 287, 440
24	JWG08-35	Gamma Source For Calibrating Radiac Sensors	440
18	JWG09-10	Fluid Separator, MIS-26326 Replacement	REF, 286, 287, 440
23	JWG11-21	T-55 Test Fixture	440
15	JWG10-05	MERLIN Inventory System	P, REF, 286, 287, 440, 439





# CALSETS Reference Level/APSL Acquisitions



## Solicitation Opportunities

Reference Teams and Primary Lab			
FY12 Priority	JWG #	Item Name	Sets
NEW	JWG13-04	Low Differential Pneumatic Pressure Standard	REF
4	JWG10-23	Blackbody Calibration Source	REF
NEW	JWG13-26	Phase Noise Standard	P
NEW	JWG13-27	Power Sensor Standard	REF, P
NEW	JWG13-24	Freq Counter Standard	REF, P
NEW	JWG13-25	Oscope Plugin Standard	REF, P
NEW	JWG13-19	Type N Calibration Kit	P
6	JWG12-07	Low Frequency Vector Network Analyzer	REF
10	JWG12-21	Phase Angle Standard	P, REF
NEW	JWG13-18	Noise Figure Analyzer	P
15	JWG11-17	VNA Calibration Kits	REF
35	JWG09-08	Electronic Height Gauge	REF
17	JWG08-44	Teraohmmeter MIS-10549 & 13440048 (Guidline 9520 & 6500)	REF
16	JWG09-20	Fluke 5520A Multi-Product Calibrator	REF
34	JWG09-15	Gauge Block Comparator	REF
33	JWG09-17	Gaussmeter Calibrator	REF
19	JWG12-17	Signal Gen, 20GHz	P
20	JWG12-16	Test Cables, Vector Network Analyzer	P
21	JWG12-15	Signal Gen, Microwave Analog	P
22	JWG12-14	Power Meter, P Series	P
23	JWG12-13	PRT High Temperature	P
24	JWG12-10	Balance, 100G	P
25	JWG12-11	Balance, 5G	P
26	JWG12-12	Balance, 1KG	P
27	JWG12-09	Dead Weight Tester (Pneumatic)	P
28	JWG12-08	Temperature Readout, CHUB-E4	P
11	JWG12-20	Surface Measurement System	P
29	JWG09-09	Universal Calibrator	REF
30	JWG11-05	Pressure Controllers	P
32	JWG11-03	Humidifiers	P
18	JWG10-27	High Pressure Pneumatic controller Calibrator	REF
14	JWG12-18	Vibration System Controller, 4 channel	P
36	JWG11-06	Aerosol Cascade Impactor	P
12	JWG12-19	Reciprocity Accelerometer Calibration System	P
37	JWG11-02	Audio source	P
38	JWG11-04	High Frequency Oscilloscope System	P
13	JWG10-21	Hydraulic Deadweight Tester	REF
39	JWG08-24	Low Frequency Spectrum Analyzer	REF





# GPETE/TEMOD Acquisitions



FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 FY20 FY21 FY22 FY23 FY24

TS-4549/T Radio Test Set													
		▲ Issue Sources Sought				▲ ACQ Strategy Approval							
						▲ Draft APB							

**Scheduled is dependent on availability of funds in FY 16**



Actual photo not available



# GPETE/TEMOD Acquisitions

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
<b>ME-572(U)/U Ammeter</b>				▲ Contract Award	■ FRP								
				▲ FUE									



CMF: 15, 25 & 91

### Systems Impacted



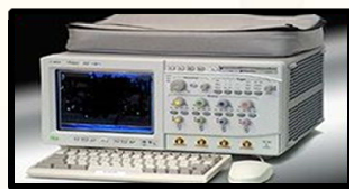
Aviation

Signal

Automotive

AAO: 682  
FUE: 1QFY16

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
<b>Oscilloscope: OS-305/U &amp; OS-307/U</b>				▲ ACO Strategy Approval									
				▲ Tech Evaluation									



Picture not Available

CMF: 25, 35 & 94

### Systems Impacted



Ordnance, Intelligence &  
Signal Schools

Communication & Electronic Shops  
& Area TMDE Support Teams

OS-305/U  
AAO: 1564  
FUE: 4QFY16

OS-307/U  
AAO: 3572  
FUE: 2QFY16

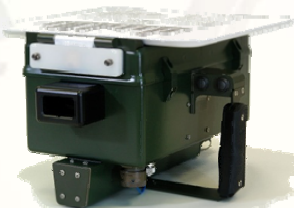




# GPETE/TEMOD Acquisitions

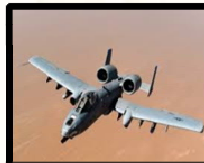


	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
TS-4530A/UPM RADAR TEST SET			FRP Kits										
			FUE	FRP Sets									



CMF: 15 & 94 Maintainers

Systems Impacted:



DOD Aircraft



DOD Watercraft



Commercial Aircraft



Preflight Checks

AAO: 1709  
FUE: 3QFY14  
Number Fielded: 50

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
AN/PRM-36 Radio Test Set		Contract Award		FRP									
		PVT	FUE										



CMF: 15, 25 and 94.

Systems Impacted:



ARC-201

GRC-245

PSC-5



PRC-148



ARC-186



PRC-150

AAO: 8000  
FUE: 4QFY14  
Number Fielded: 802





# GPETE/TEMOD Acquisitions



## Solicitation Opportunities

- |  |  |
|--|--|
| 1. SPECTRUM ANALYZER                   | Replaces: AN/USM-677, (LIN A70285)   |
| 2. TEST SET, OPTICAL FIBER             | Replaces: TS-4320/G, (LIN T24009)  |
| 3. TEST SET, RADAR (IFF)               | Replaces: AN/UPM-155, (LIN R19417)   |
| 4. COUNTER, UNIVERSAL ELECTRONIC       | Replaces: AN/USM-459, (LIN C19266); AN/USM-459A, (LIN C19266); AN/USM-459B, (LIN C19266) |
| 5. TEST SET, OPTICAL POWER             | Replaces: TS-4358/G, (LIN T23357)  |
| 6. SPECTRUM ANALYZER                   | Replaces: AN/USM-620, (LIN S01484)   |
| 7. TEST SET, RADIO FREQUENCY POWER     | Replaces: AN/URM-213, (LIN R22666)   |
| 8. METER, POWER (Wattmeter)            | Replaces: TS-3790/U, (LIN P41172); TS-3793/U, (LIN T90150)                               |
| 9. LEVEL METER, FREQUENCY SELECTIVE    | Replaces: AN/USM-490, (LIN F60502)   |
| 10. ANALYZER, LOCAL- WIDE AREA NETWORK | Replaces: TS-4511/P, (LIN A55428)  |
| 11. MODULATION METER                   | Replaces: ME-523/U, (LIN M61743)   |

