

## F-15 TCG Briefing: MTS-3060A SmartCan™ Update

ACE We Make <del>Test</del> Easy™

Presented by: Jon Semancik













#### The Marvin Group

- A world-leader in Alternate
   Mission Equipment (AME)
   production, sustainment, test
   equipment, and land systems
- Innovative military and aerospace solutions that are backed by unrivaled long-term support
- A privately-held, 60+ year strong small-business













## **Marvin Group Companies & Capabilities**





# Aircraft Armament Equipment

- Pylons
- Bomb Racks
- Ejector Racks
- Missile Rail Launchers
- Multiple Carriage Systems





# Test Systems / Software Solutions

- I-Level / Depot Test Sets
- O-Level / Flightline Test Sets
- Armament / Munition Test Sets
- COTS instruments & test executive
- Airborne Electronics products





#### Land Systems

- Weapons Stations
- Auxiliary Power Units
- Vehicle Environmental Systems
- Mission Critical Equipment Trailers

Comprehensive Solutions and Support Capabilities Repair / Overhaul / Upgrades / Maintenance / Training







# MTS: A World Leader in Armament & Munition Test















#### **Marvin Test Solutions: Global Deployment**

## **Summary:**

- Over 600 test sets
- 30 Countries
- Deployment started in 1994
- Innovative military and aerospace test solutions that are backed by unrivaled long-term support
- Making Test Easy<sup>™</sup> for our customers worldwide from the flightline to the depot

















## **Unrivaled Long-Term Availability and Support**

- Many DoD test sets become obsolete after worldwide deployment, creating production and sustainment issues that lead to refresh and extensive regression testing
- Test Sets produced by MTS remain available and supportable for decades – not the typical 10-15 years
  - Apache Armament testers deployed worldwide in 1994 are still in use
  - An F-16 SMS tester deployed in 1995 is still in daily use and has just started an MLU program (after 29 years!)
  - Over the past 30 years, Marvin Test Solutions has delivered hundreds of armament testers to over 50 customers in 30 countries
    - <u>All</u> of these testers are still supported by MTS with spares and repairs as well as remote- and on-site engineering support







# MTS-3060A SmartCan™ Universal O-Level Test Set







## **Background**

Responding to the need to bridge The Armament Test Gap in 4<sup>th</sup> and 5<sup>th</sup> Generation aircraft and air defense systems, Marvin Test Solutions developed the next generation universal O-Level armament test set, helping customers worldwide to:

"Verify that the weapon will fire/release when it's supposed to and not fire/release when it's not supposed to"



The MTS-3060A SmartCan™ delivers capabilities previously unavailable in a handheld O-level test set, meeting the USAF ACE and Mission Ready Airmen needs today







#### MTS-3060A SmartCan™ Overview

- The SmartCan tests MIL-STD-1760 Smart weapons by emulating Weapons (JDAM, AMRAAM, AIM-9X, Paveway, etc.)
  - Enables a full functional test of the entire system
- SmartCan provides sophisticated parametric measurement capabilities
  - Previously unavailable on the flight-line
- The SmartCan is already deployed in 19 countries
  - F-16, F-15, F/A-18, P-1, P-3, Hawk, LCA, and air defense systems
- Easily upgradeable
  - Capable of testing all F-35 armament systems







#### MTS-3060A SmartCan™ Certification Status

- Gen2 SmartCan is deployed by the Air National Guard
  - All F-16, A-10, and F-15 units

- Gen2 SmartCan is SERDed
  - SERD 75A77

- Gen2 SmartCan awarded Cybersecurity Authorization to Operate (ATO)
  - Issued by UASF for the SmartCan
  - Covers the ANG's F-16s, F-15s, and A-10s

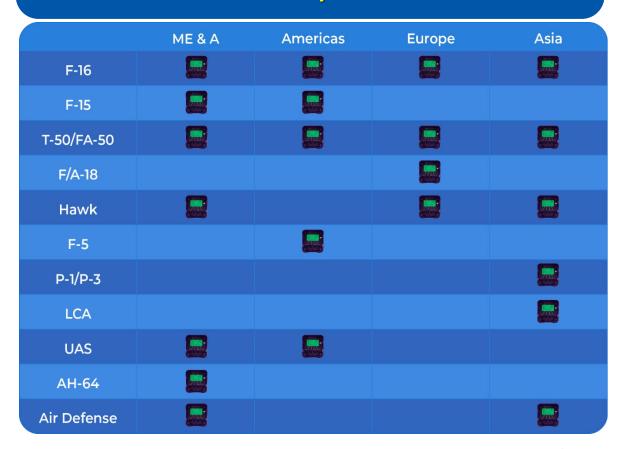






## **SmartCan: Global Deployment**

## **Global SmartCan Deployment:** 19 Countries / 14 Platforms



2025 Planned Deployment: 22+ Countries, 15+ platforms







## MARVIN TEST Universal Test Capabilities and Deployment

PAGE 12

#### **Deployed MDS**

F-16

F-15

F/A-18

T-50/FA-50

F-5

Hawk

Tejas LCA

P-1 / P-3

AH-64

A-10

UAS

Air Defense

#### **Available**

F-35

F-22 / NGAD

B-1

B-2

B-21

B-52

**ANY Armed Platform** 



#### **Deployed Munitions**

AIM-120

AGM-65

AIM-7

AIM-9L/M/X

Hellfire

1760 Weapons (JDAM)

Harpoon

HARM

Python / Derby

**IRIS-T** 

A-Darter

**Taurus** 

#### **Planned**

**ASRAAM** Many More!





#### **Small Footprint and Ease of Maintenance**

- Built-In Test (BIT):
  - An extensive test of most internal assemblies and circuits
- Self-Test:
  - Comprehensive self-test of the SmartCan™ and cables

Innovative Calibration:

- Built-in precision references allow
   a 4 year calibration cycle
- Calibration verification can be done at unit level or by PMEL
- Rapid Test Times:
  - Test times reduced by over 90%

Legacy O-Level F-16, A-10 & F-15 armament test sets



SmartCan kit for F-16, A-10 & F-15



VS.





#### **Parametric Test Data**

#### Test Data

- Test data is saved automatically by the MTS-3060A after each run
- Test logs can be viewed during and immediately after test run
- Test logs can be downloaded for additional diagnostics, trend analysis, or training
- A unique data driven capability not typically available with other handheld O-Level test sets

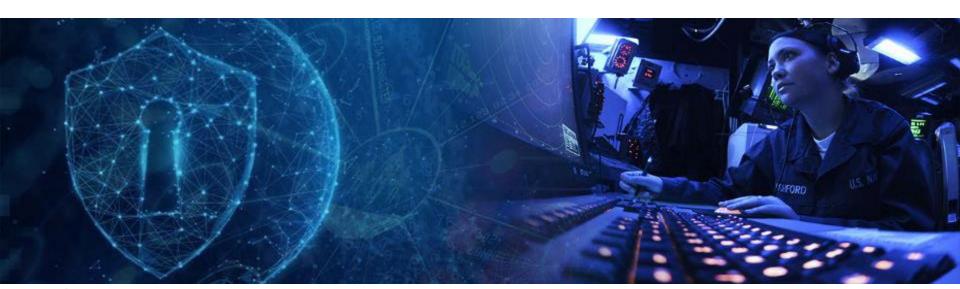
```
SmartCan Serial Number: 00BC2398
SmartCan FW Ver:
                    0xAA5F
SmartCan FPGA Ver:
                    0xAA0C
SmartCan NIOS Ver:
                    0xAA1F
SmartCan CPLD Ver:
                    0xAA02
                    11
ATEasy Serial Number:
Program Part Number:
                    3162-217-21
Program Name:
                    LAU129
Program Rev:
                    A.c
Program Date:
                    Thu Dec 08
Aircraft Tail Number:
                    n a
Equipment Serial Number: n a
Battery Voltage:
System Temp (C):
                    18.59
Start Time:
                     2022-12-15 09:59:38
: GND Check
Test 1 : J8-9 to J8-21
   Desc: Verify short @ J8-9 to J8-21
  Min 0
                                                          PASS
                    Res 0.384 Ohm
                                        Max 5
Test 2 : J9-17 to J9-29
   Desc: Verify short @ J8-17 to J8-29
   Pin : J9-17/29
                    Res 0.395 Ohm
                                         Max 5
                                                          PASS
Test 3 : Launch Latch
   Desc : Verify open @ Launch Latch to GND
   Pin : J8-3/9
   Min 100
                    Res 10948.001 Ohm
                                         Max 5000000
                                                          PASS
Test 4 : Cage Slew
   Desc : Verify open @ Cage Slew to GND
   Pin : J8-23/9
                    Res 965729.562 Ohm
                                         Max 5000000
                                                          PASS
   Min 100
```







# MTS-3060A SmartCan™ **Cyber Security**







#### The Cyber Security Advantage

- MTS is at the forefront of test equipment cyber security with multiple "firsts":
  - The MTS-3060A SmartCan is the most cyber-secure flightline test set available today
    - Custom operating system, program encryption, and a removable hard disk (SD card)
  - ATEasy, TPS development environment and test executive
    - First Test Executive software to be Cyber-Certified by the U.S. Air Force for use on the flightline
  - MTS MTS-207
    - First portable armament test set to be cyber-certified by the U.S. Air Force

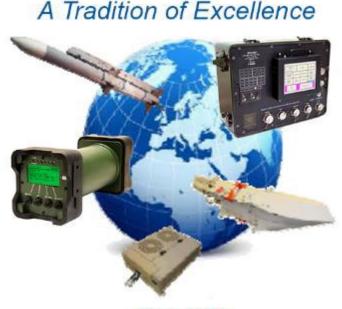






#### Conclusion

- The Marvin Group offers more than 61 years of experience (founded 1963) providing AME, EPU/ECU, and associated test and support equipment
  - Marvin Test Solutions was founded in 1988
- Marvin Test Solutions offers innovative test solutions that meet the customers' needs coupled with unrivaled long-term support



Since 1963

For More Information Contact:

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## Thank You for Attending!

We Make <del>Test</del> Easy™









