

# The Marvin Group Specialized Capabilities Overview



## Wright-Patterson Technical Expo

*April 2021*

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INTEGRITY - PARTNERSHIP - CAN-DO ATTITUDE - INNOVATION

## An overview of our company (2021)

World Leading  
High Tech  
Solutions,  
Products and  
Services for  
The Global  
Aerospace &  
Defense Market

Our Values:

*Integrity*

*Partnership*

*Can-Do Attitude*

*Innovation*

- Currently 1,100 + employees across 3 business units, local presence via authorized distributors/ reps in multiple countries/global regions and FMS/FMF/DCS customers in 40+ nations worldwide
- Total Square footage: Over 500K square feet in Inglewood and Irvine, California
- Classified as “Small Business”
- MEC is Recipient of FY2019 **Nunn-Perry Award** for Excellence in **DoD’s OSBP Mentor-Protégé Program** along with our partner, Lockheed Martin Aeronautics
- Vertically integrated business units covering Air | Land | Maritime Domains



# The Marvin Group's Companies



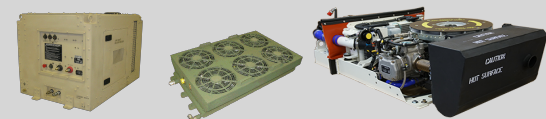
## Armament Equipment Air-to-Air, Air-to-Ground, Surface Launch

- Bomb & Ejector Racks
- Missile Rail Launchers
- Multiple Stores Carriage Systems
- Pylons
- MRO/Sustainment
- User/Maintainer Training
- Technology Development



## Multi-Level Test Systems, Electronic Components | Assemblies

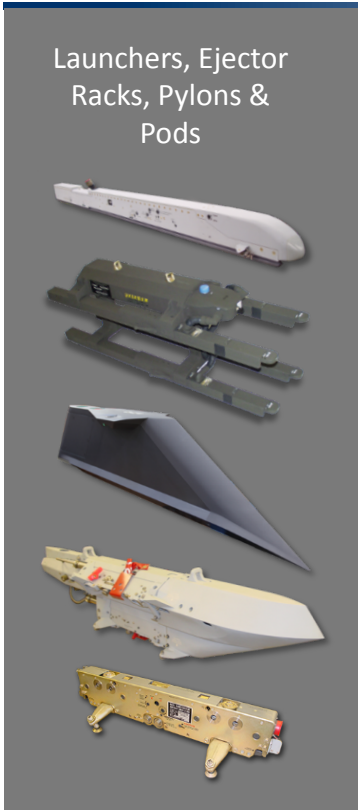
- Armament Test Sets
- SMS Test Sets
- Flightline Testers
- O-/I-/Depot-Level Maintenance Testers
- Airborne electronics
- User/Maintainer Training
- Engineering services



## Ground & Maritime Primary | Secondary Support Systems

- Rigid Wall Equipment Shelters
- Environmental Control Units design and production
- Auxiliary Power Units design and production
- Remote Weapons Stations
- Electronics Chillers

# MEC, Delivered to Date Stores Carriage/Release Solutions

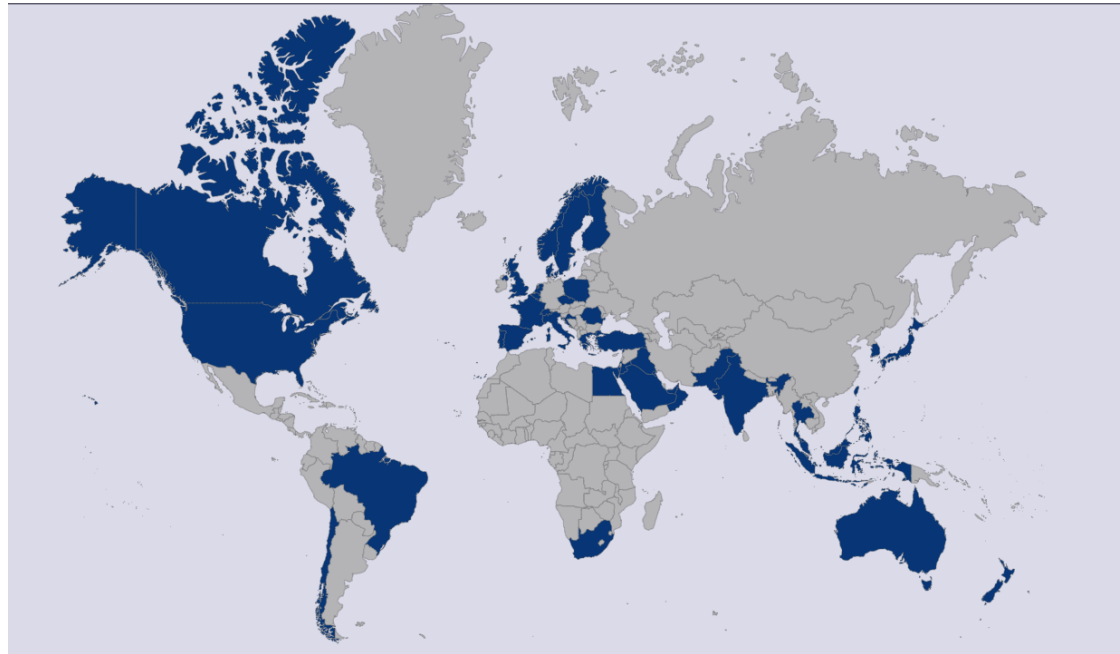


- High performance, combat proven designs
- Supporting the majority of U.S. fixed wing and rotary wing combat aircraft in service since the 1960s
- Small logistics footprint, cost-effective operation, upgrades, spares, maintenance training and logistics support
- Safe carriage and release of legacy and Precision Guided Munitions (PGMs)

Alternative Mission Equipment	Delivered Units
Missile Rail Launchers (LAU-1XX Series, All Configurations)	20,000+
F-16 Fuel Pylon, Sidewinder Launchers	5,000+
F-22 pylons, launchers, travel pods	900+
F-35 pylons, launchers, adapters	8,100+
Maverick Launchers	1,850
LAU-7 Launcher (All Variant)	7,200+
Hellfire/Longbow Launchers	10,000+
TOW Launchers	1,200+
Triple Ejector Racks (TER-9/A, BRU-42)	5,700+
BRU-32 Ejector Racks	3,450+
MAU-12 Ejector Racks	7,500+
Other Various Ejector Racks (BRU-12, BRU-14, BRU-15, BRU-22, AERO-7, AERO-20, B-1B 14", BRU-56, LGTR, BRU-41 MER/IMER, MA-4, MAU-40, MAU-50)	14,100+
<b>Total AME Delivered</b>	<b>85,000+</b>

# The Marvin Group Around the Globe

- |                       |                     |
|-----------------------|---------------------|
| <b>Australia</b>      | <b>Netherlands</b>  |
| <b>Belgium</b>        | <b>New Zealand</b>  |
| <b>Brazil</b>         | <b>Norway</b>       |
| <b>Canada</b>         | <b>Oman</b>         |
| <b>Chile</b>          | <b>Pakistan</b>     |
| <b>Croatia</b>        | <b>Philippines</b>  |
| <b>Czech Republic</b> | <b>Poland</b>       |
| <b>Denmark</b>        | <b>Portugal</b>     |
| <b>Egypt</b>          | <b>Romania</b>      |
| <b>Finland</b>        | <b>Saudi Arabia</b> |
| <b>France</b>         | <b>Singapore</b>    |
| <b>Greece</b>         | <b>South Africa</b> |
| <b>India</b>          | <b>Spain</b>        |
| <b>Indonesia</b>      | <b>Sweden</b>       |
| <b>Iraq</b>           | <b>Switzerland</b>  |
| <b>Israel</b>         | <b>Taiwan</b>       |
| <b>Italy</b>          | <b>Thailand</b>     |
| <b>Japan</b>          | <b>Turkey</b>       |
| <b>Jordan</b>         | <b>UAE</b>          |
| <b>Korea</b>          | <b>UK</b>           |
| <b>Kuwait</b>         | <b>USA</b>          |
| <b>Malaysia</b>       |                     |



Currently supporting customers and end users in 40 plus countries via FMS, FMF, and DCS

**5 Global Regions: The Americas | Western Europe & Scandinavia | Eastern, Central and Southeastern Europe | Africa, Middle East & Central Asia | Indo-Pacific**

# Select Marvin Group Customers Around the Globe

**ATK**

**BAE SYSTEMS**

**BOEING**

**GENERAL ATOMICS**

**GENERAL DYNAMICS**

**KAI**  
한국항공우주산업주식회사  
KOREA AEROSPACE INDUSTRIES, LTD.

**LEONARDO**

**LOCKHEED MARTIN**

**MBDA**  
MISSILE SYSTEMS

**NORTHROP GRUMMAN**

**RAFAEL**  
ADVANCED DEFENSE SYSTEMS LTD.

**RAYTHEON**

**SIKORSKY**  
A LOCKHEED MARTIN COMPANY

**UNITED TECHNOLOGIES**

DEFENSE ACQUISITION PROGRAM ADMINISTRATION

DEPARTMENT OF THE ARMY  
UNITED STATES OF AMERICA

DEPARTMENT OF DEFENSE  
UNITED STATES OF AMERICA

DEPARTMENT OF THE AIR FORCE  
UNITED STATES OF AMERICA

DEPARTMENT OF THE NAVY  
UNITED STATES MARINE CORPS

UNITED STATES COAST GUARD  
1790

DEFENSE CONTRACT MANAGEMENT AGENCY  
UNITED STATES OF AMERICA

SAAB TECHNOLOGIES

THINKING WITH YOU



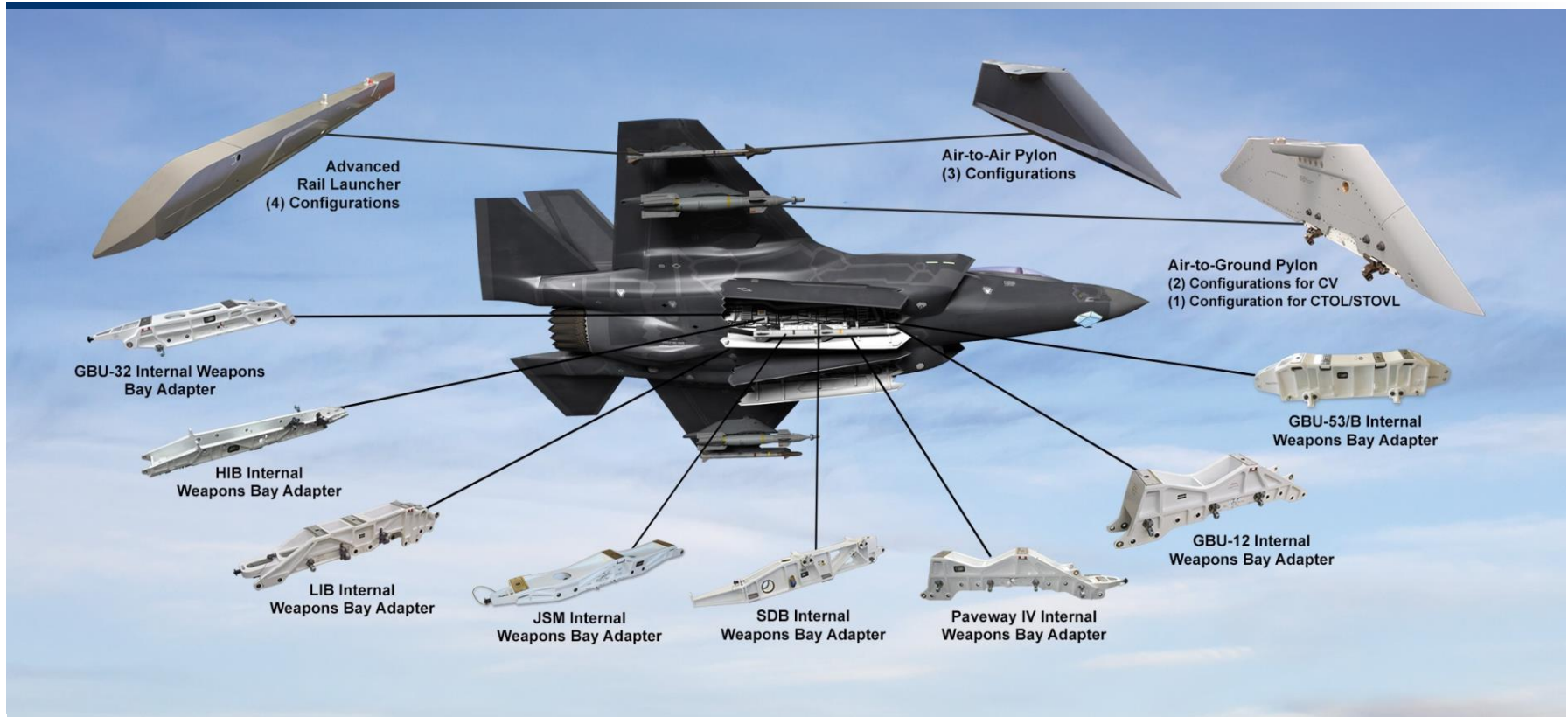
## The Marvin Group, a Global Success Story



*Since 2003, MEC has served as Lockheed Martin's Managing Partner for F-35 AME, overseeing the manufacture and qualification of missile launchers, weapons bay adapters, and external pylons, working with 5 initial international partners (reduced to 4 partners in 2020 by U.S. Government)*



# F-35 Lightning II Solutions





# F-16 Fighting Falcon Solutions

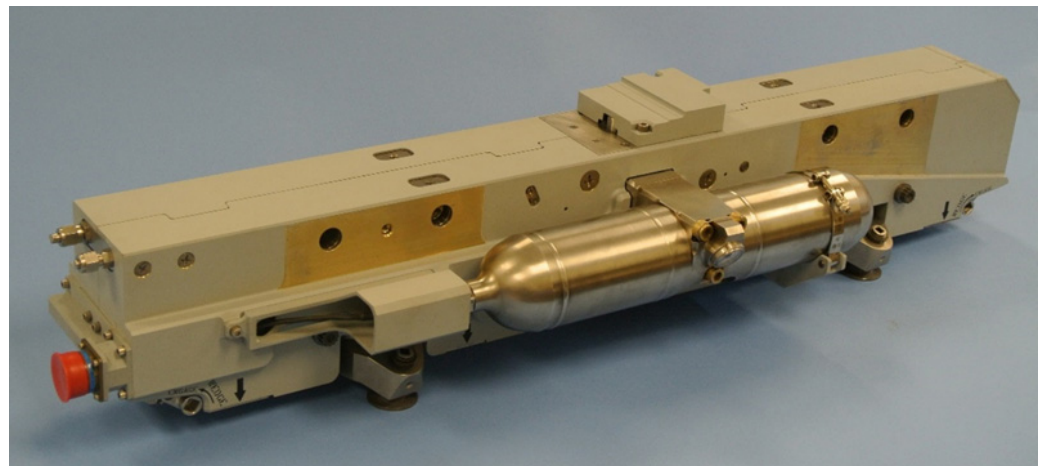


# UAS | RPA | Rotary Wing Solutions



## High Performance Bomb Release Unit (HPBRU)

- HPBRU is a family of high-performance, pneumatic ejection racks with 14"/30" adjustable hooks and a potential 14" suspension lightweight variant
- Variants of this system have been identified for integration on 5<sup>th</sup> Generation and beyond manned and unmanned aircraft
- Performance attributes of previously fielded pyrotechnic and competitor pneumatically actuated ejection racks limit the employment envelope and energy of weapons releases



**Demonstrated capabilities of this system are currently *unmatched* by any known competitor and have been assessed by the U.S. Government as “game-changing”**

## Hellfire Scalable Rail Launcher (HSRL)



Multi-Platform  
Airborne | Ground |  
Maritime Application

Manned & Unmanned  
Systems

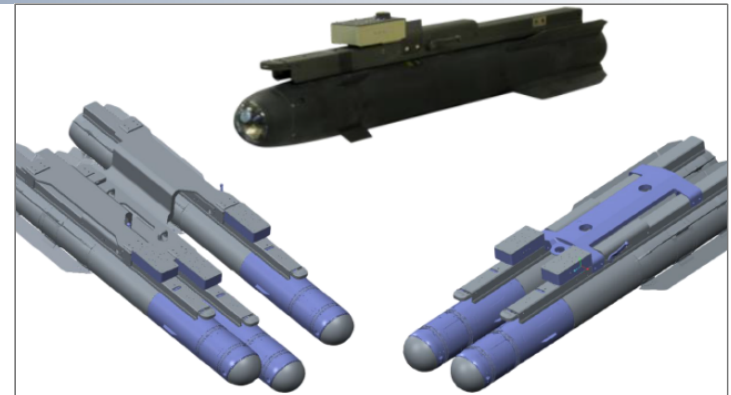


- **Multiple Configurations Planned**

- ✓ Single Rail
- ✓ Dual Rail Cluster
- ✓ Triple Rail Cluster
- ✓ Quad Rail Cluster

- **Alternative to M299/M310 Series**

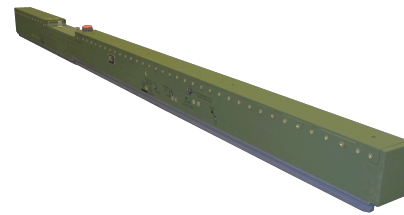
- ✓ Lighter Weight due to miniaturized Rail Electronics Unit (REU)
- ✓ DC only power requirements
- ✓ Combat proven rail design
- ✓ Pending qualification via Redstone Test Center/JAMS



- Designed initially for AGM-114 Hellfire
- Adaptable to Brimstone (MBDA)
- With adapters, capable of supporting 50 lb. class and smaller “micro-munitions”

## Surface Launched Missile Systems Support

- Support for U.S. Army's Multi-Mission Launcher (MML)
- NASAMS and Ground Launched Hellfire
- Proven expertise with AGM-114 Hellfire, AIM-9 Sidewinder, AIM-120 AMRAAM
- Adaptation of foreign missiles to U.S. rail launchers in the MRL Family (LAU-12X)



Trained NATO personnel from multiple countries on the maintenance and repair of NASAMS system

## Armament Test & Vetronics

### ■ Armament Test

- O/I/D Level Military Systems
- Preload Flight Test/Weapons Emulation for Smart Weapons including AIM-9, AIM-120, AGM-65, JDAM, SDB, AGM-114
- Integration Experience with U.S. and Foreign MIL-STD-1760 munitions



### ■ Vetronics

- Vehicle Health Management
- Predictive Maintenance



FOR MORE INFORMATION:

<https://www.marvintest.com/>

# MTS-3060A SmartCan™

## Flightline Solution



## Next-Generation Armament Test

- Supports legacy and "smart" weapons systems
- Pre-load test modes for stray voltage and basic signals (such as SERD 75060)
- Enhanced weapons system test using weapon emulation for AIM-9, AIM-120, JDAM, AGM-65, and more
- Audio, video, and MIL-STD-1760 test capabilities for advanced troubleshooting
- Parametric test with automated test log storage
- Over 30 measurement channels
- Latest information available [here](#)



- An advanced flightline armament test set that enables preload and weapons system testing of aircraft armament systems.

## F-35 AME/AAE Test Set, 5<sup>th</sup> Generation

### I-Level Solution



### The Solution

- For all F-35 Armament including the LAU-151 ARL variants and SUU-96 AGP
- Deployed: 2010 (used in F-35 AME production)
- Included in depot level sustainment package (CARD) being stood up at Hill AFB



- Used to Qualify All F-35 AME
- Supporting F-35 Flight Testing at Edwards AFB
- Depot Level Tester in portable footprint, deployable as I-Level Tester



## MTS-209 Common Armament Test Set

Currently the  
Standard  
Armament Tester  
for  
KAI's FA/TA-50  
Light Fighter /  
Light Attack  
Platforms



### The Solution

- Provides Intermediate Level (Back shop) and Field test capabilities for a variety of armament systems on multiple aircraft platforms
- Designed to support missile launchers, ejector racks, pylons and more
- State-of-the-Art modular PXI Design
- Full parametric test with built-in diagnostics
- Can test all MIL-STD-1760 aircraft weapons stations and weapons systems
- ***Expandable to additional aircraft platforms***



- Adapted to support F-15, F-15, FA-50 and TA-50 to date
- Supports missile launchers including LAU-7, LAU-117, LAU-127/128/129, 16S210
- Multiple ejector racks supported

## AN-TSM-205 Series Armament Systems Test Set



### The Solution

- A rugged portable tester for Hellfire platforms and launchers
- Flight-line fire control system test on the AH-64A and OH-58D (AN/TSM-205), and on the AH-64D, WAH-64, SH-60, Tiger and other M299 platform (AN/TSM-205A/B)
- Flight-line stand-alone test on the M272, M279, M299, and M310 launchers
- Full parametric test with diagnostics to the LRU level
- Interactive missile simulation with fault injection for platform integration (AN/TSM-205A/B)



- With MT3045 Advanced Hellfire Missile Simulator, provides full simulation of Hellfire and Hellfire II missile (AGM-114A-K, M, N,P,R) and partial simulation of AGM-114L

## Laser Source Simulator, MT1888

### Flightline Solution



### For Laser Guided Munitions (LGM)

- Hand-held, battery-operated Laser Source/spot Simulator (LSS) for the testing of laser-guided weapons
- Eye-safe product allows flight-line testing without the need for safety goggles
- Deployed worldwide to support multiple aircraft platforms
- Full line-up of Marvin Test Solutions' military test equipment available at [www.marvintest.com](http://www.marvintest.com)



- MT1888 Supports NATO PRF codes
- MT1888A Supports PIM and PRF codes
- MT1888A+ Adds remote control capabilities

## Configurable Armament Repair Depot (CARD)

### Sustainment & Readiness Solution

- Forward Deployable
- Optimizes Mission Readiness
- Streamlines Repair Process
- Sustains Product Quality
- Reduces Footprint of Logistics Support
- Configurable to Customer Specs



## Configurable Armament Repair Depot (CARD)

### Sustainment & Readiness Solution



### The Solution

- Supply “one-stop” repair capability for all AME/AAE used across multiple platforms and aircraft including equipment fault isolation, repair, and repair validation.
- Support multiple airbases with fewer dedicated facilities where applicable.
- Provide mobile repair capability for all AME/AAE without the need for a permanent dedicated building.
- Shorter repair turn-around times for all AME/AAE due to reduced transportation and consolidation of repair resources.
- CARD philosophy can be utilized in support of all levels of logistics. (Depot, I and O Levels)



- *Forward Deployable*
- *Optimizes Mission Readiness*
- *Streamlines Repair Process*
- *Sustains Product Quality*
- *Reduces Footprint of Logistics Support*

## Depot, MRO, Sustainment & Upgrade Services

Dedicated depot facility at Marvin Engineering:

- Navy AAE Depot
- Air Force Depot
- FMS Depot



- The Marvin Group has been supporting customers with depot services including:
  - Construction and engineering of depot facilities
  - Depot repair and refurbishing services
  - Depot construction:
    - The Marvin Group has established full depot facilities in foreign countries
    - Work scope included construction of facilities, all equipment installation, work instructions, and training
  - Depot Services:
    - The Marvin Group provides depot services to the U.S. Air Force, U.S. Navy, and select FMS customers

Diverse factory rebuilds and upgrades of ejector racks and missile launchers



## Our Training Programs

- Special Test Set Technical Manuals
- Operators Manual
- Maintenance Manual
- Repair Manuals for AME/AE



- Covers maintenance and repair of AME/AE and all test equipment
  - Classroom and hands on experience based on technical manual
  - At MEC HQ or in-country
  - Customized content based on user needs
  - Dialog and best practices with experienced technicians directly from assembly line
  - Supports up to I-Level "Plus" MRO capabilities

- Depot Deployment
- Operations
- Scheduled maintenance
- Use of Special Tools and Equipment
- Process and Procedures
- Acceptance and Verification Testing





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