UNITED STATES ARMY ROCK ISLAND ARSENAL
JOINT MANUFACTURING & TECHNOLOGY CENTER

Welcomes BRAC Commission

COL J. Bruce Elliott
Commander

1 June, 2005

DCN: 4006

Agenda

- Mission/Vision
- History of RIA
- Strategic Location
- Manufacturing Capabilities
- Contributions to the Joint Warfighter
- Depot Maintenance Programs
- Army Ammunition Plants
- Summary

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RIA-JMTC Mission Statement

Mission Statement

**Support the National Defense Strategy with world-class products and services through development / prototyping, manufacturing, integration,
testing and logistics support.**

RIA-JMTC Vision and Goals

VISION

Provider of Choice for the 21st Century War Fighter.

GOALS

- Transform RIA-JMTC to meet the needs of current and future forces
- Be technologically advanced, value-added, fully integrated and responsive
- Pursue internal and external reform initiatives to remain competitive
- Maintain and advance a diverse, trained and ready workforce
- Enhance communications to keep employees informed

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Relevant Factors

- Critical Manufactured Parts
- Surge Capability
- Competitive Pricing (Honest Broker)
- Contract Lead Time

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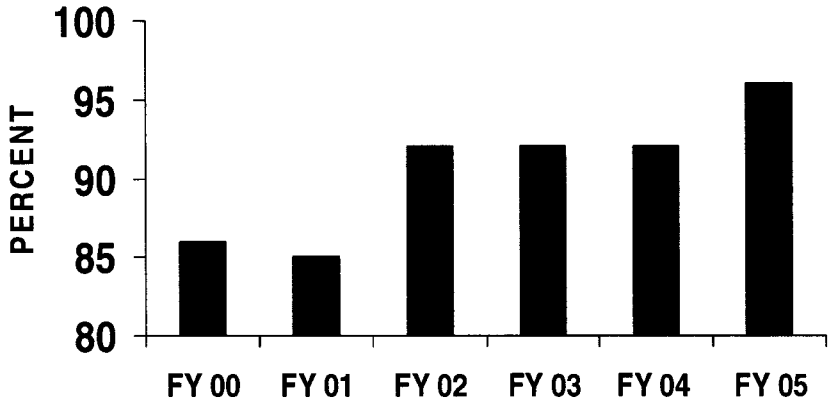
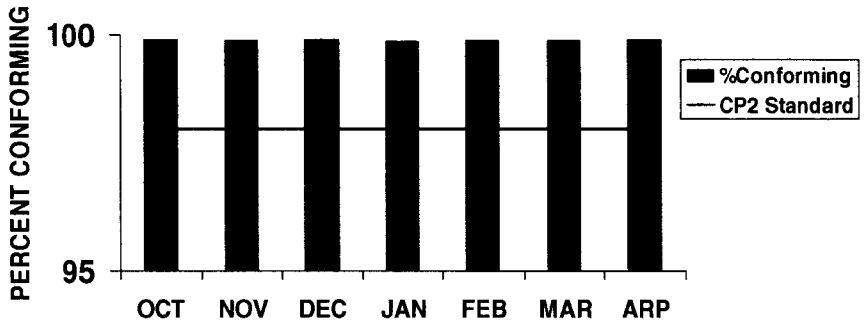
RIA-JMTC Business Metrics

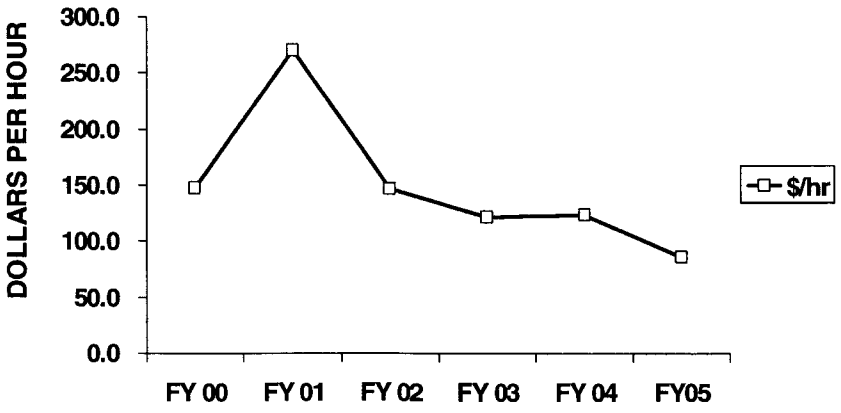
DELIVERY PERFORMANCE
FY00 - FY05



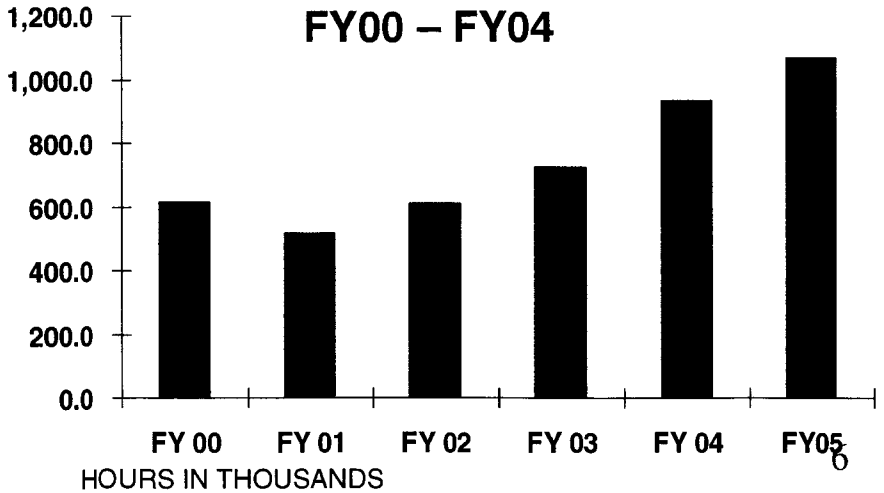
PRODUCTION QUALITY
OCT 04 – APR 05



COMPOSITE STABILIZED RATE
FY00 – FY05



DIRECT LABOR HOURS
FY00 – FY04



Arsenal Island

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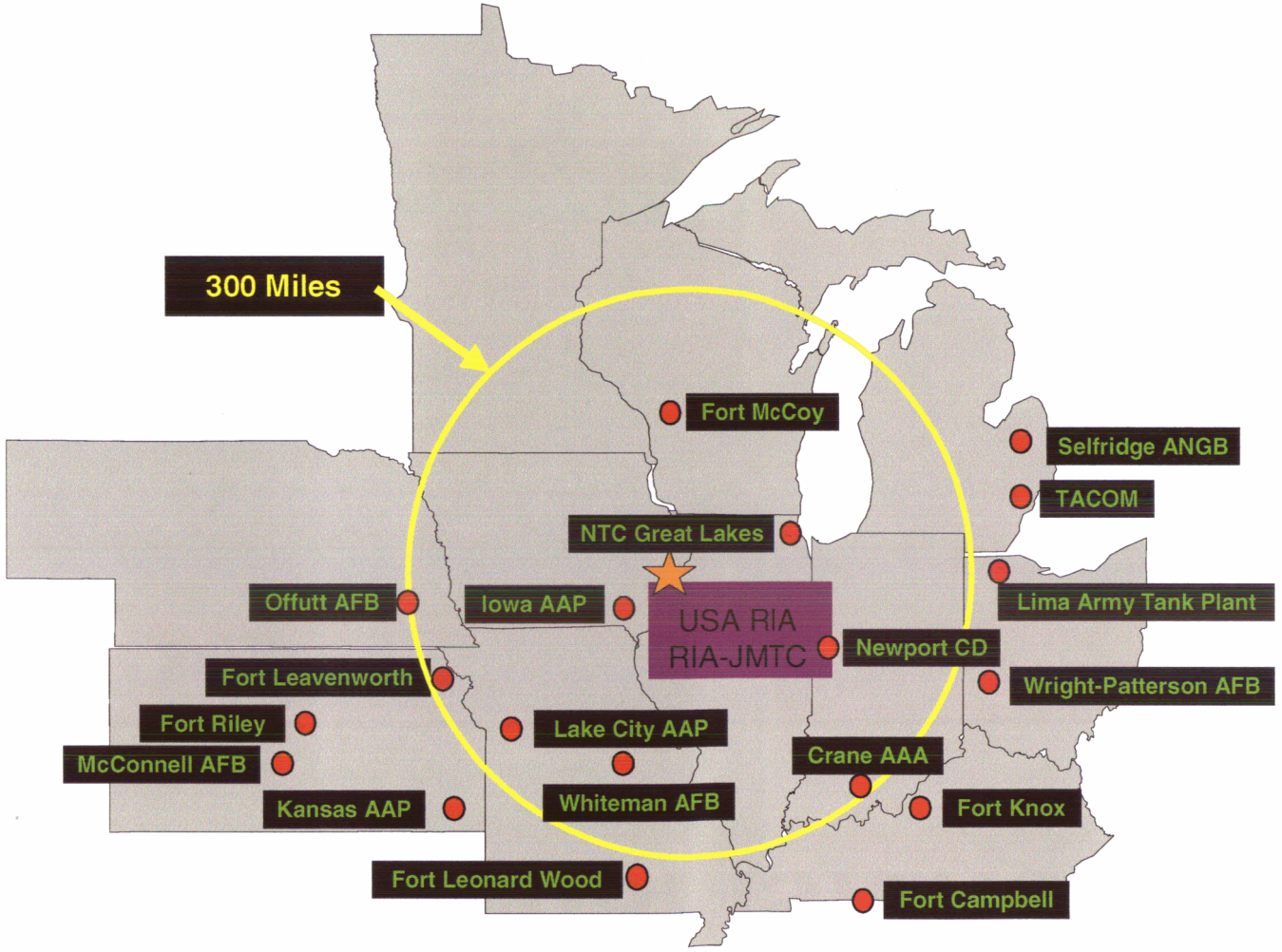
Central Location



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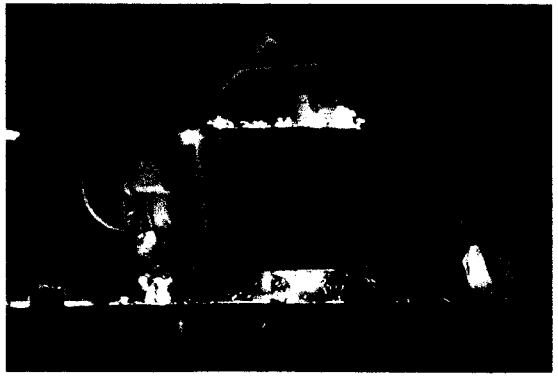
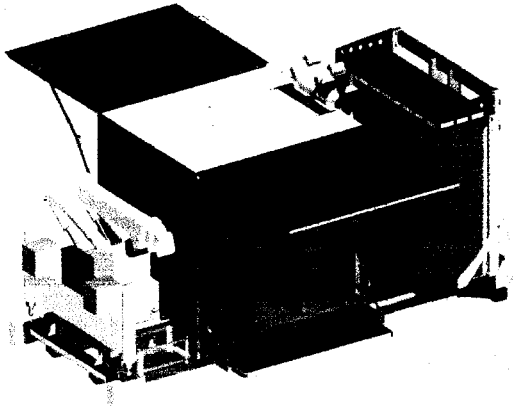
RIA-JMTC Attributes

- Only vertically integrated metal manufacturing facility in DoD
- Precision machining
- In-house integration of engineering and production
- Critical knowledge base for prototype, production engineering, manufacturing, testing
- Rapid Response Machining Center
- Original Equipment Manufacturer (OEM)
  - Towed Artillery
  - Tracked Vehicle Gun Mounts
  - Small Arms Field Service Gages
  - Small Arms Weapon Pedestals and Mounts
  - Battle Field Maintenance Platforms – SECM, FRS
  - M17A3 Light Weight Decontamination System
- Future focus tied to the needs of the Warfighter





RIA-JMTC Attributes

Critical Processes / Capabilities

Foundry	Tool/Fixture Design	Material Laboratory
Forging	Die Sinking	Non Destructive Testing
Investment Casting	Shot Blast	Vibratory Testing
Surface Plating	Painting	Salt Spray Testing
CNC Machining	Tool Set Design	Coordinate Measuring
Gear Cutting	Tool Set Assembly	Machine Inspection
Honing	Pattern Making	Large Caliber Testing
Heat Treat	Mold Making	Simulation
Welding	Systems Integration	Small Arms Live Fire Testing
Spring Making	Metallurgy	Concurrent Design & Prototyping
Rubber Compounding	NC Programming	Reverse Engineering
Injection Molding	Welder Certification	Inventory Control Point
Tool Making	Production Engineering	Supply Depot Ops
	Failure Analysis	

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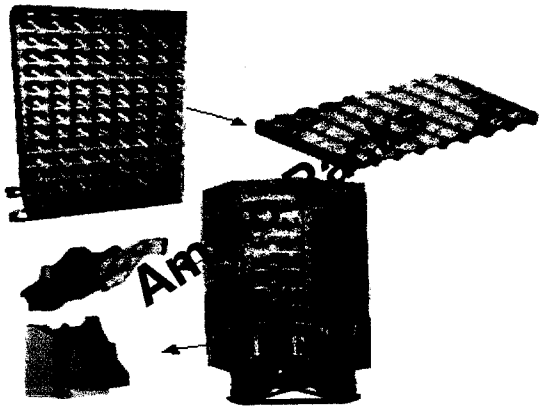
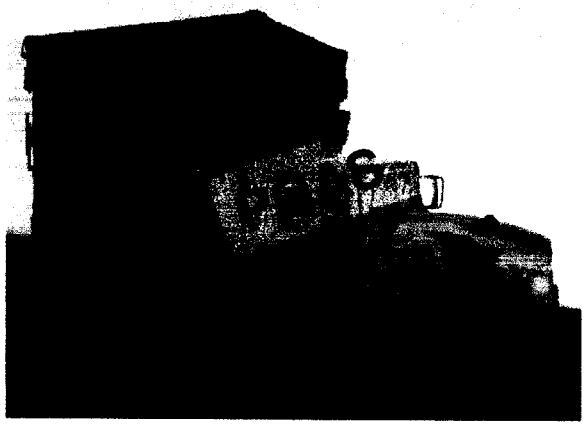
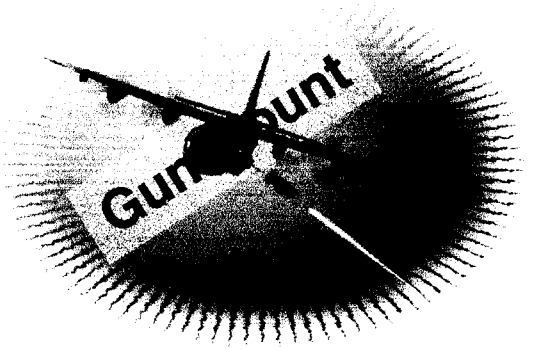
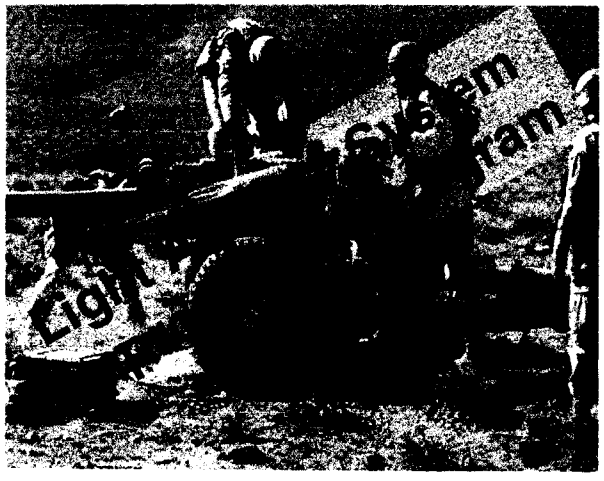
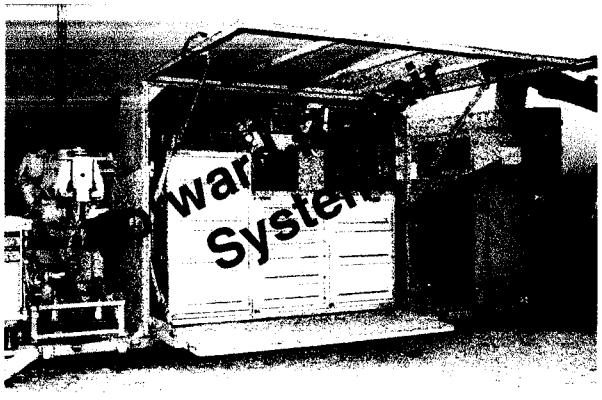


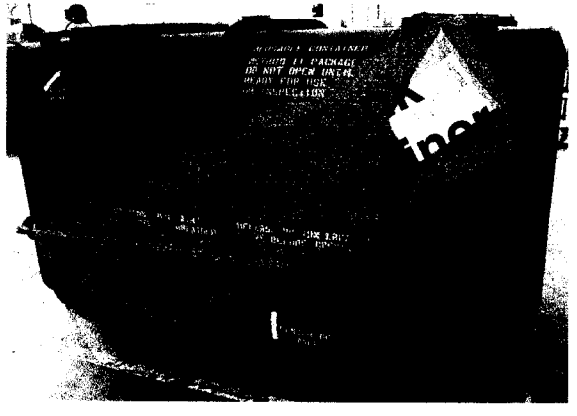






Recent Developments





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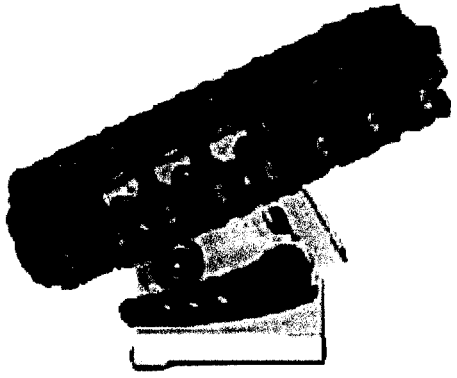
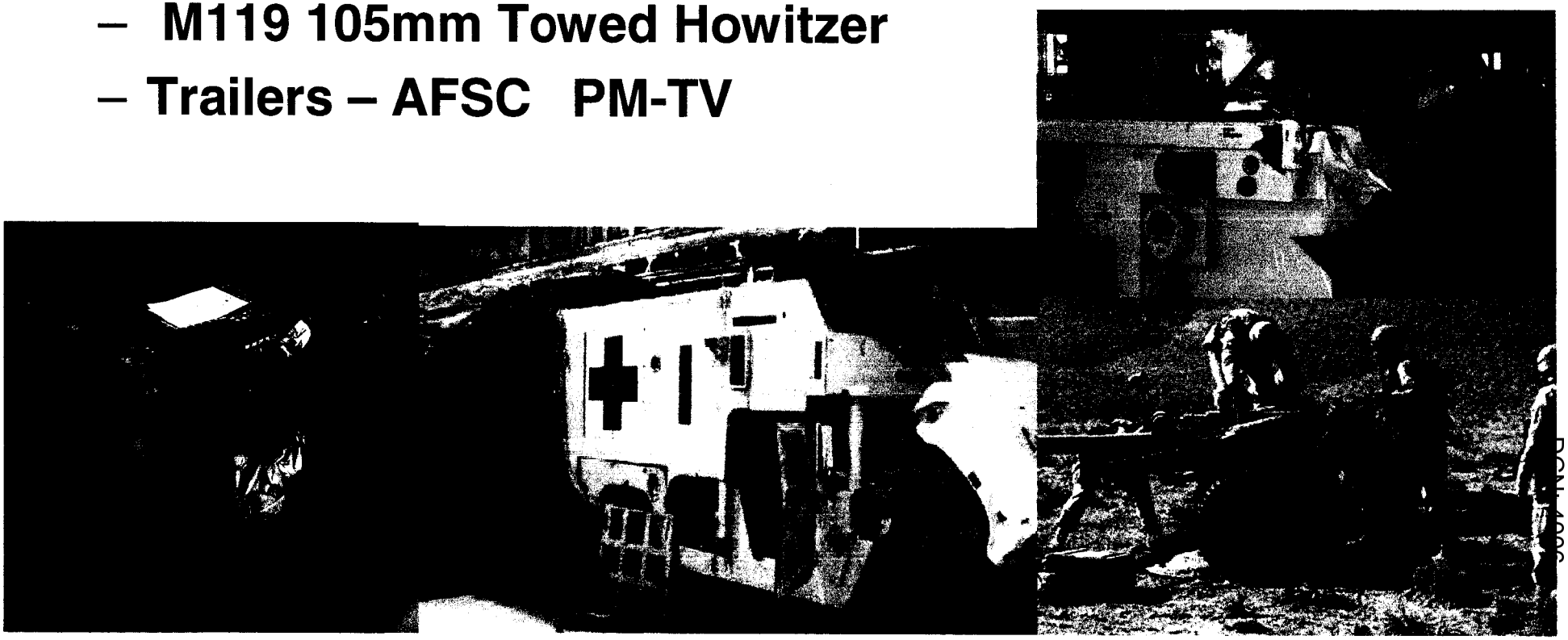
RIA-JMTC Products Supporting Joint Warfighter

- Machine Gun Pedestal Mounts (M6 and M7)
- Field Service Gages (Small Arms)
- Armor Survivability Kit Production – HMMWV, M969, M939
- Trailer Reset Program
- Forward Repair System
- Shop Equipment Contact Maintenance Vehicle
- Explosive Ordnance Disposal Vehicle
- Gun Electronic Laying Optical Night Sight (GELONS)



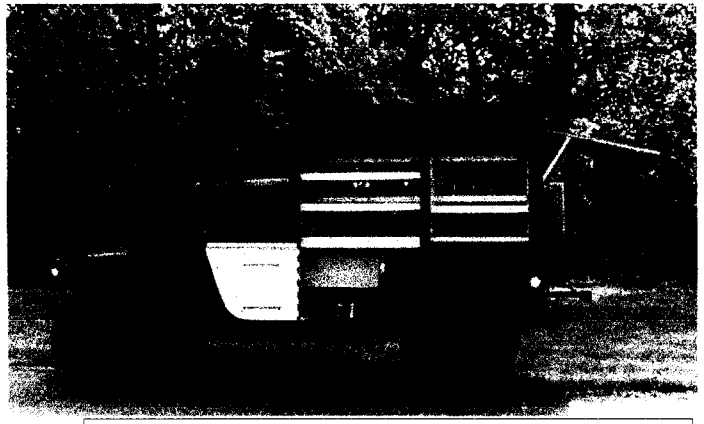
Support to Operation Iraqi Freedom & Global War On Terrorism

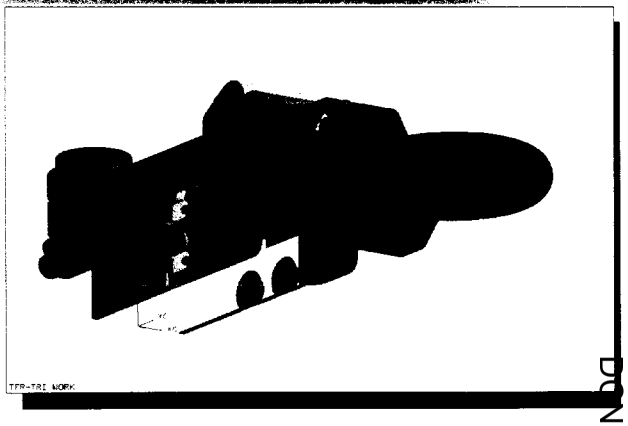
- **RESET**
  - M17A3 Light Weight Decontamination System
  - Chemical Biological Protected Shelter
  - M119 105mm Towed Howitzer
  - Trailers – AFSC PM-TV



RIA-JMTC Responds to Urgent Requirements

Design/Prototype High Mobility Trailer Surge Brake
Blackhawk Gun Mount Castings for ARDEC
Prototype & Deliver Armor Kits for TARDEC
M2 Machine Gun Belt Feed Lever
Design/Produce Forward Repair System
Prototype Explosive Ordnance Disp Vehicle
Apache Coupling Half Shaft Estimate
Produced Apache Shims & Threaded Pins
Prototype Technology Demonstrator for ARDEC
Repair RIA Bridge for Corps of Engineers
***Multi-year MOA to produce Field Service Gages**
***Prepared 180 Iowa NG Vehicles for Deployment**
***Produce 1,000 M6 Pedestal Gun Mounts**
***Armor Survivability Kits HMMWV, M969, M939**
***ABRAMS Main Battle Tank Engine Containers**
***Recoil Mechanism (M198 Howitzer) Overhaul for USMC Depot at Barstow**





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Enterprise Excellence

- Lean Manufacturing / Six Sigma
- ISO 9001:2000 Registered (only DoD Facility)
- Presidential Quality Awards
- Army Community of Excellence Awards
- Best Manufacturing Practices

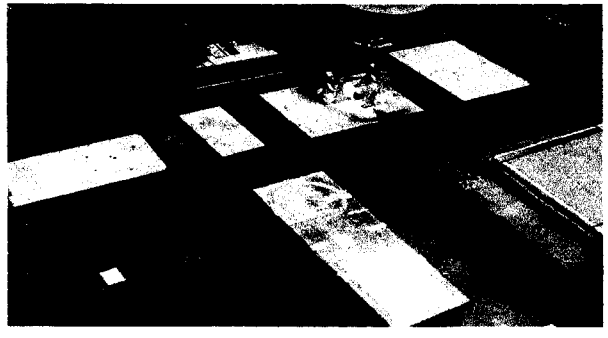
LEAN Score Card

- Lean Savings
  - $252K FY05 Personnel Redeployment
  - $5.2M Total FY05
  - $7.8M Projected FY06-FY07
- Lean Benefits
  - Eliminated 60 Forms
  - Resolved 94 Safety/Ergonomic Issues
  - 126 Fewer Flow Days
  - Reduced Travel Distance 15 Miles
  - Redeployed 6 Personnel to Critical Projects
  - Freed up 34,000 sq ft of Floor Space
- Six Sigma Green Belt Projects
  - Develop Strategy for Workforce Diversification on Machine Tools
  - Tool Set Insert Design Process
- Six Sigma Black Belt Project
  - M119A2 Howitzer Production

Layout Area
Rapid Improvement Event

Before

During



After

Supplemental Programs

- M119 105mm Towed Howitzer
- M7 Forward Repair System
- Shop Equipment Contact Maintenance

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Depot Maintenance Programs

- Programs
  - Artillery
    - Towed Howitzer System/Subsystem Repair/Upgrade/RESET
    - Tracked Vehicle Gun Mount Repair
  - M17A3 Light Weight Decontamination System
    - Refurbishment/Overhaul/RESET
  - Trailers
    - COSIS/Refurbish/Paint
    - Reset
- Source of Requirements
  - Item Managers (PSID) – US and FMS
  - Marine Corps
  - Guard/Reserve
- Discrepancies
  - Armor Kit Production
  - Demilitarization of Chemical Agent Containers (Ton Containers)

Army Ammunition Plants

- Location of Incoming Operations
  - Specific building(s) will be designated
    - Plant layout analysis
    - PAT team recommendations
      - Joint RIA/JMC membership
- Existing Skill Base/Capabilities Complementing New Workload
  - General Industrial Capabilities
    - Fabrication, Weld, Forge, Heat Treat, Machining, Plating, Assembly, Test, Inspection, Packaging/Shipping, Engineering

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Summary

- Mission Loss
  - Artillery
  - M17A3 Decontamination System
  - Trailers
- Mission Gain
  - Ammo Parts
- Net Impacts
  - Retention of Core Skills
  - Addition of new Center of Excellence

The Bottom Line....

It's all about the Joint Warfighter!

Questions?

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Introduction

The US Army Rock Island Arsenal Joint Manufacturing and Technology Center (USA RIA JMTC) is one of the world's largest weapons manufacturing facilities and the only active foundry left in the Department of the Army. From engineering and design, to prototyping, through full production and assembly, JMTC is fully capable of providing the finest weapons parts and equipment for our nation's Joint War Fighter. The JMTC is rich in history, having produced weapons for the American military since the late 1800s. The first American-built tank was produced here shortly after World War I. Today, the JMTC continues its tradition of quality and excellence by providing quality products for the Joint Services. The modern facility is able to provide a wide diversity manufacturing solutions to the War Fighter.
The JMTC excels in responding to critical, urgent requirements. Following are some of the examples of the exemplary support provided.

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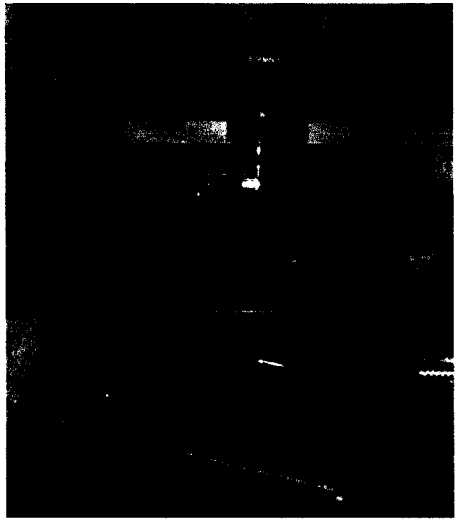
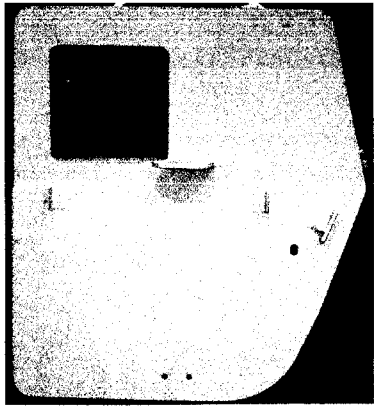
HMMWV Armor Door Kits

- Joint Warfighter urgent need
- HMMWV Ballistic protection
- 2-door and 4-door kits
- RIA response – 24/7 production
- First delivery in 6 weeks – Dec 2003





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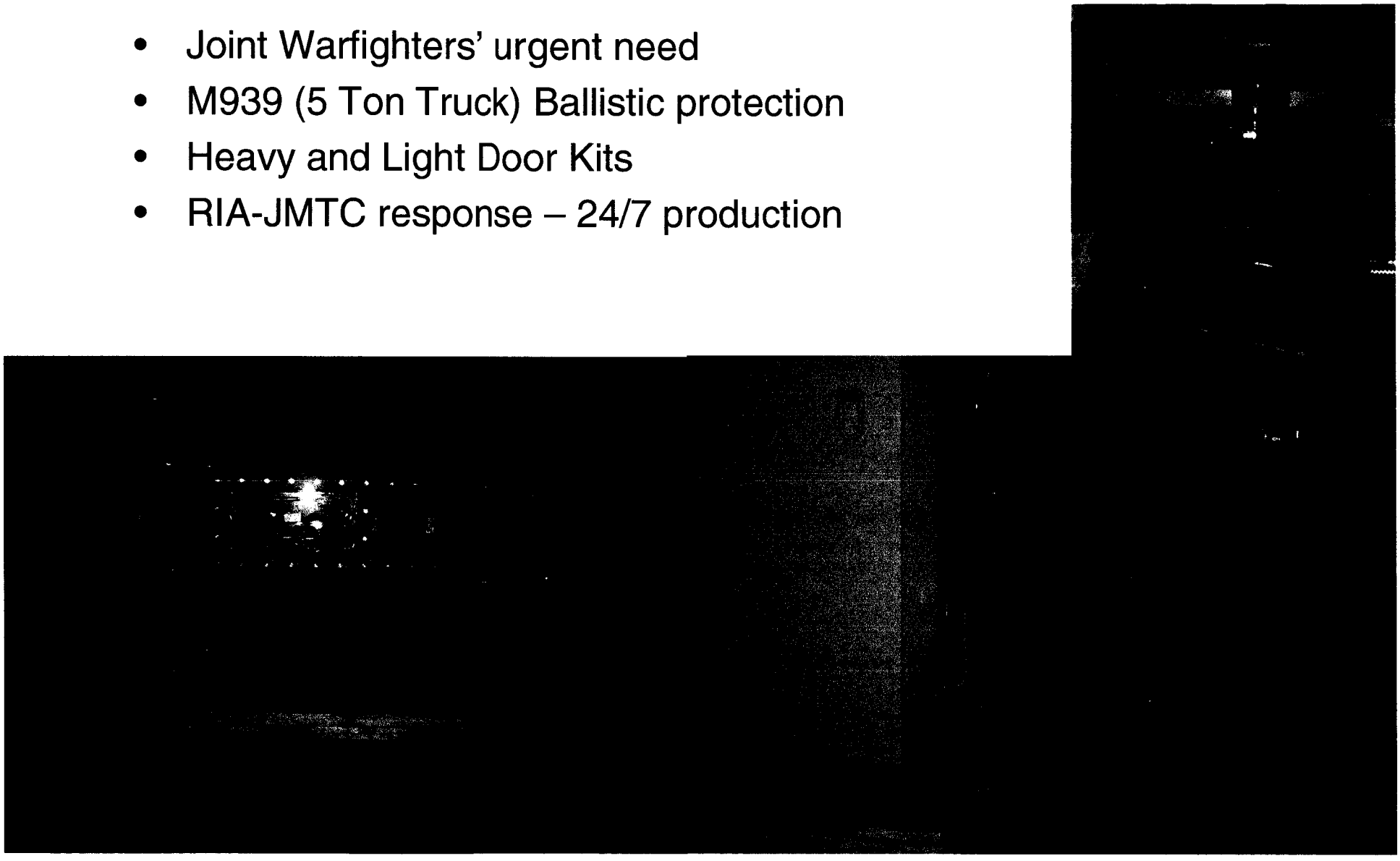
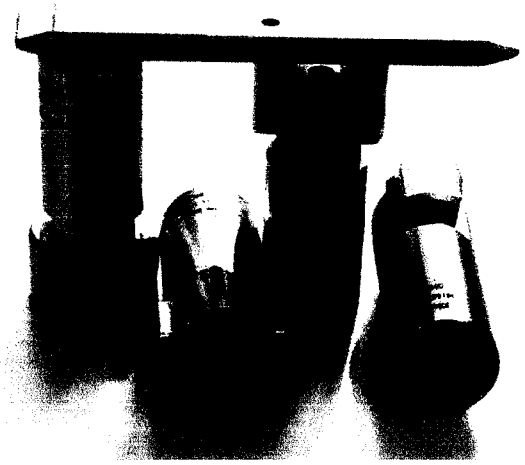
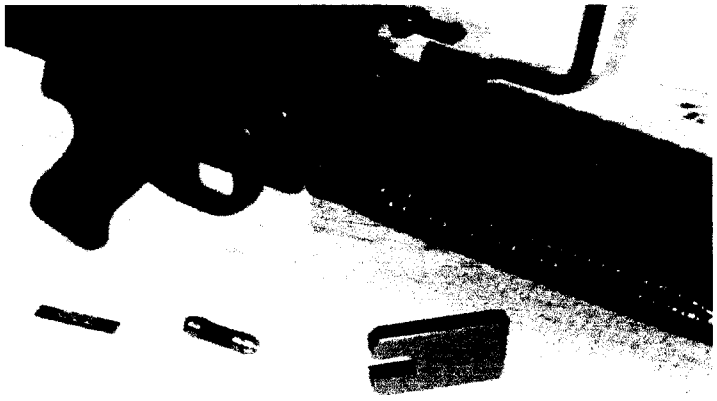
M939 Armor Cab

- Joint Warfighters' urgent need
- M939 (5 Ton Truck) Ballistic protection
- Heavy and Light Door Kits
- RIA-JMTC response – 24/7 production

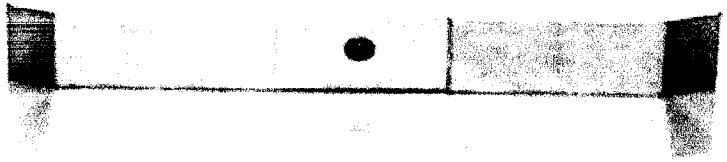


Small Arms
Field Service Gages





- RIA-JMTC produces a variety of precision Small Arms Gages
  - Gages may have tolerances of +/ -.00003
- User: US Armed Forces, FMS
- Customer: TACOM
- Performing to 3rd Multi-year Agreement



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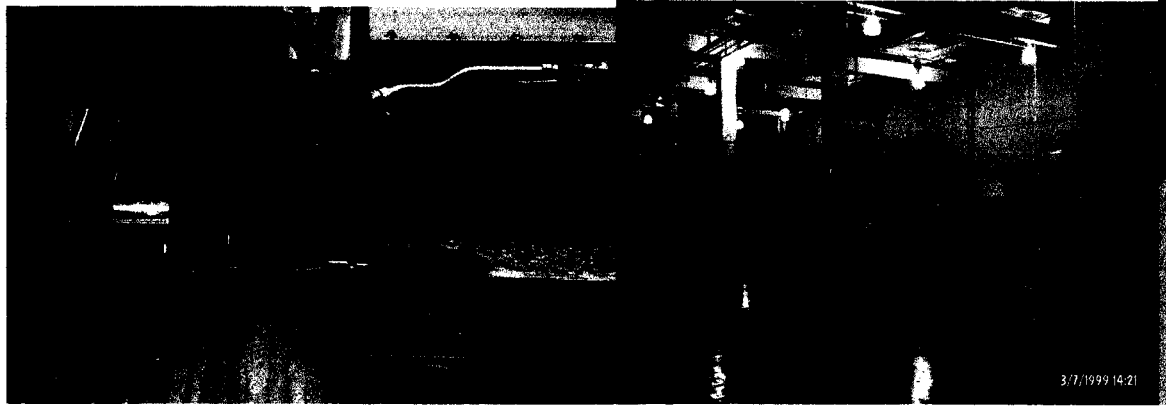
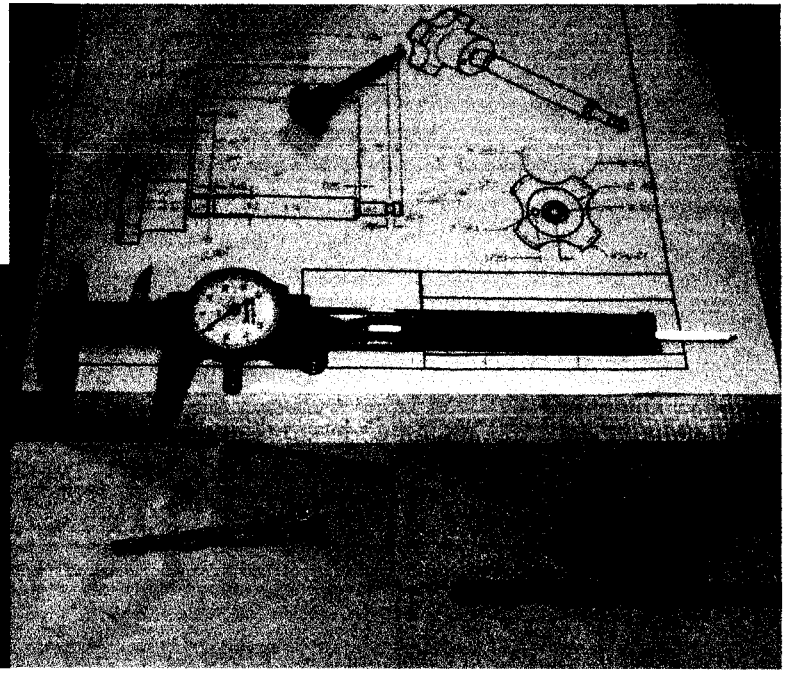
Rapid Response Manufacturing Cell

- Joint Warfighter urgent requirements
- 33 orders received for 16,000+ components supporting small arms overhaul at Anniston Army Depot as well as direct support to the warfighter
- Initial project delivered 300 components in 10 days
- Diverse mix of products varying in complexity and size
  - Machine gun components
  - Mortar Components
  - Tow bar Components
- User: Deployed Joint Warfighter





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Windage Screws

- Joint Warfighter urgent need
- Used for making windage adjustment on MK19 Grenade Mach Gun
- User: Deployed US Armed Forces
- Funding accepted June 8, delivery June 22
- Program delivered ahead of schedule

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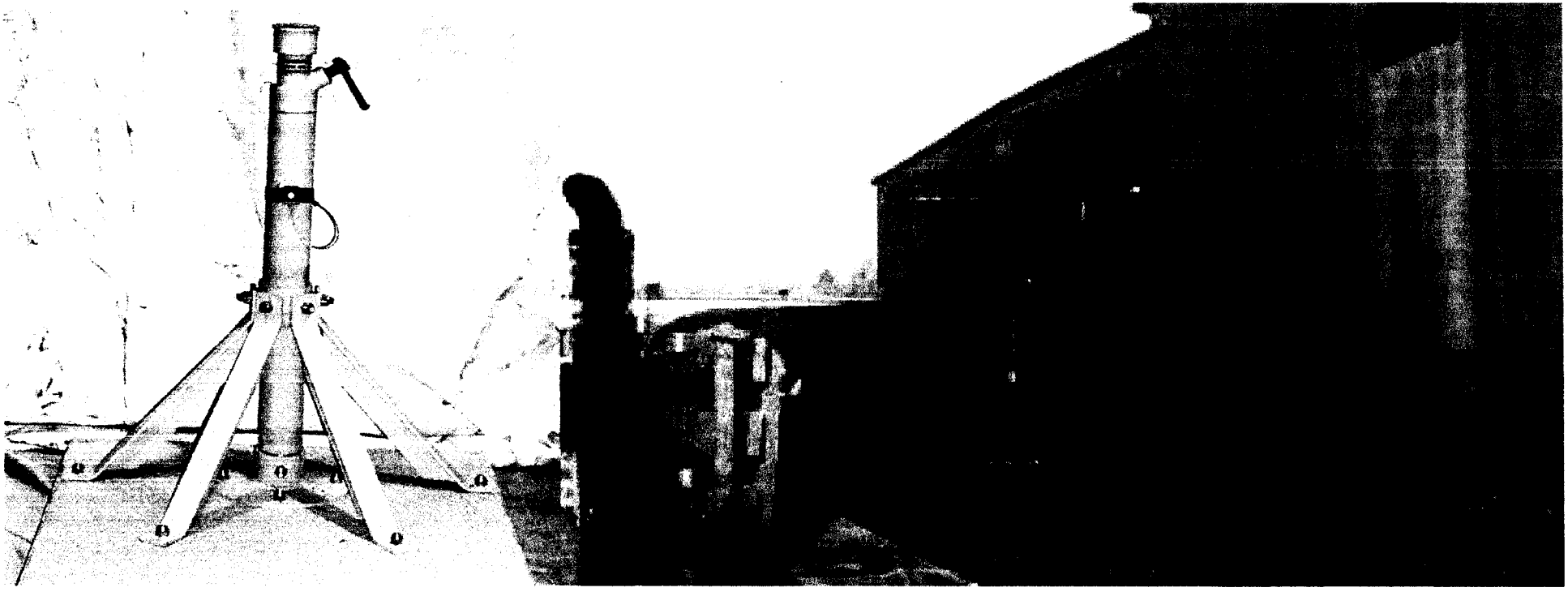
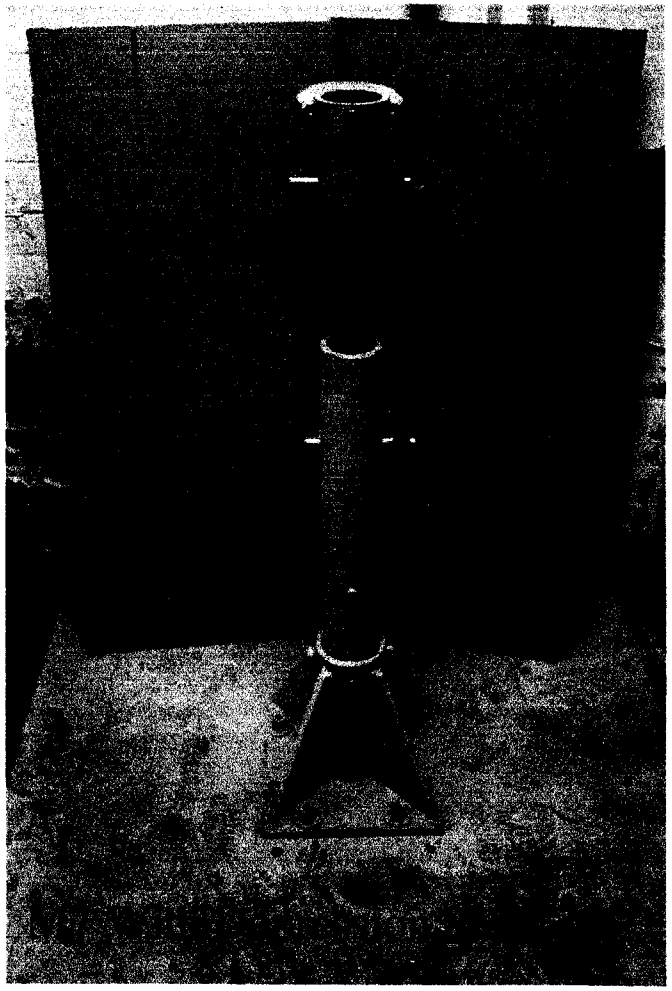
M6 Weapon Stand

- Urgent War Fighter requirement
- Weapon stand for mounting small arms to HMMWV
- Program for 1,000 ea
- Completed 100 ea – 60 days
- User: Deployed US Joint War Fighter



M7 Weapon Stand



- Urgent War Fighter requirement
- Weapon stand for mounting small arms to HMMWV
- Jointly Developed by Aircraft Armaments/Small Arms PSID and RIA-JMTC
  - Depression stop designed to provide safer field of fire

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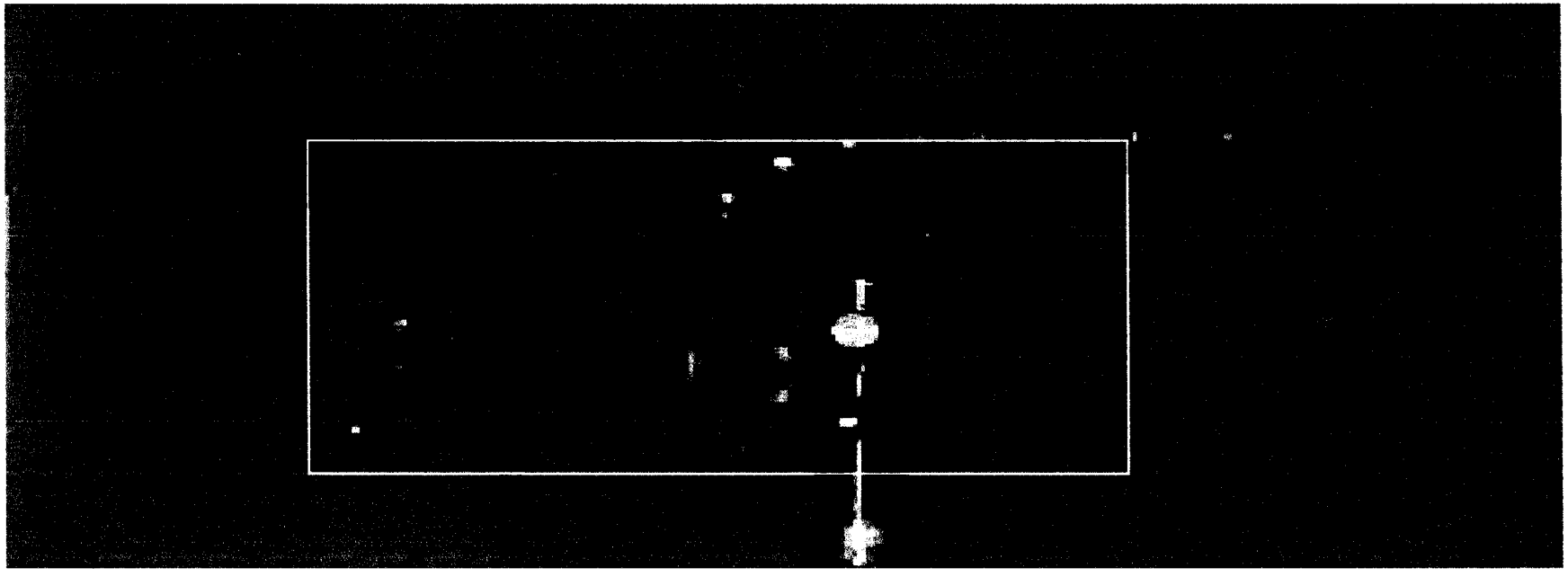
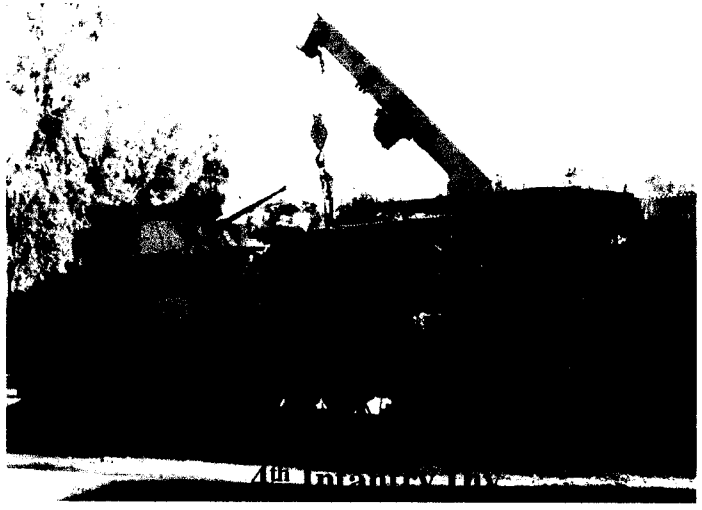
MK93 Weapon Mount

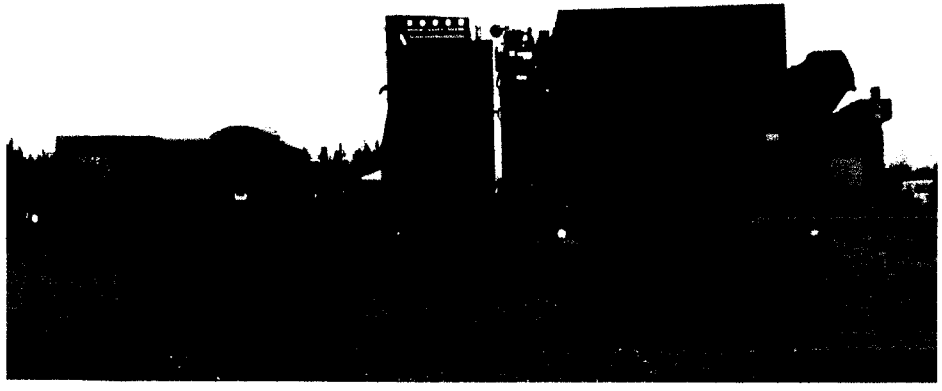
- RIA-JMTC producing 1,000 to meet high demand
  - Supplementing commercial capacity
  - Anticipated follow-on requirements



M7 Forward Repair System

- RIA-JMTC Designed/produced from Performance Specification
- Produced/tested 5 systems Dec 98 – Nov 99
- Roll out ceremony Aug 2000
- First Unit Equipped Oct 2000 - 4th ID
- Produced 200+ to date
- Supplemental Program for Modularity
- Customer PM SKOT





Mission: Repair Battle Damaged Heavy Combat Systems"On site" up thru the Direct Support Level

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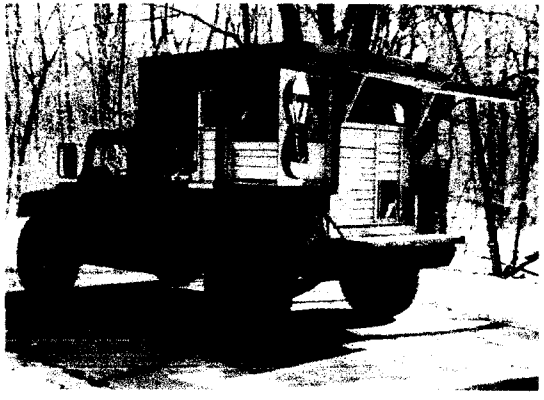
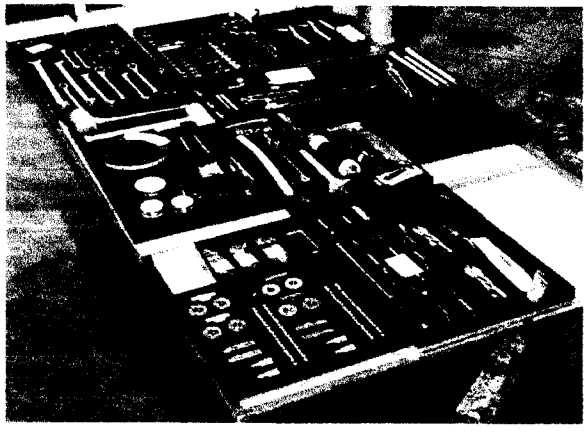
Shop Equipment Contact Maintenance SECM

- Production start - FY95
- User: US Army, USAR, USMC, NG, FMS, COE
- Original Equipment Manufacturer
- Base Vehicle – M1097 HMMWV, M1113 HMMWV
- Customer: PM SKOT
- Supplemental Program for Modularity





Industrial Grade Hand Tools

Mission: Repair Battle Damaged Equipment "On Site"

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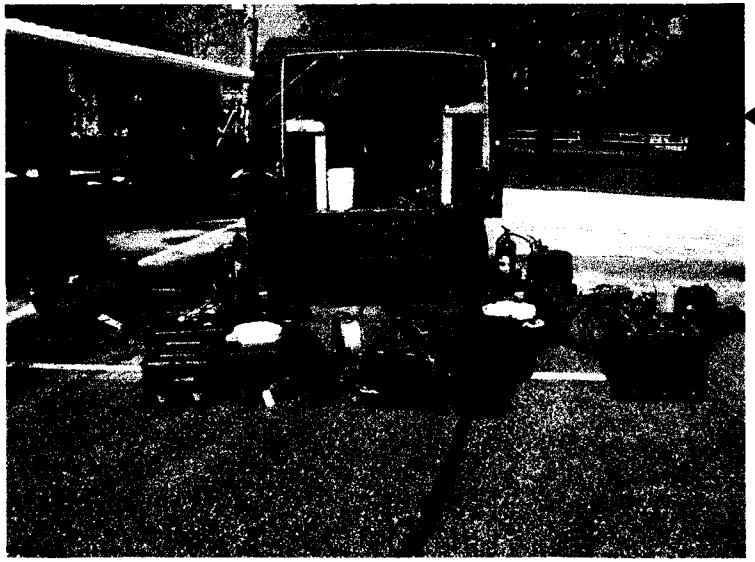
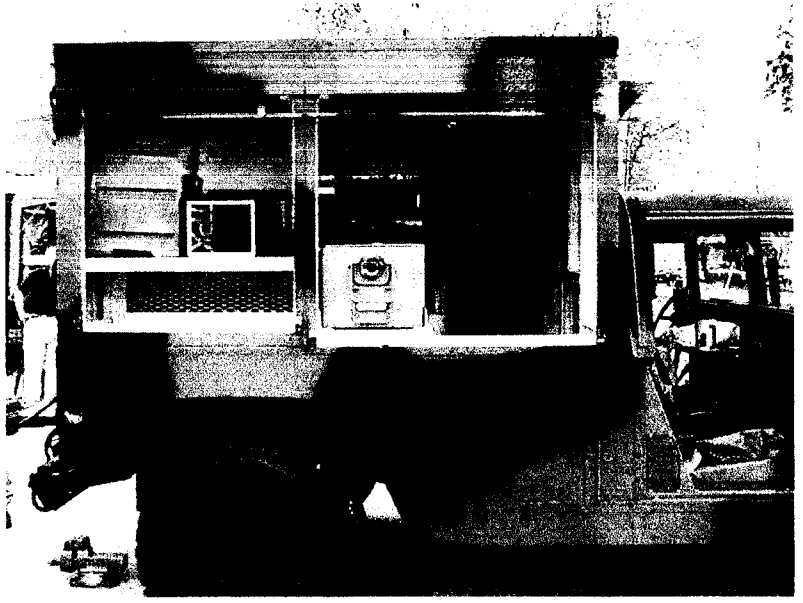
Body Explosive Ordnance Disposal BEOD

- Produced Prototype in 1 month – Apr 99
- User: US Army, USAR
- Produced/delivered 254 to date
- Customer: PM SKOT

Mission: Explosive Ordnance Disposal

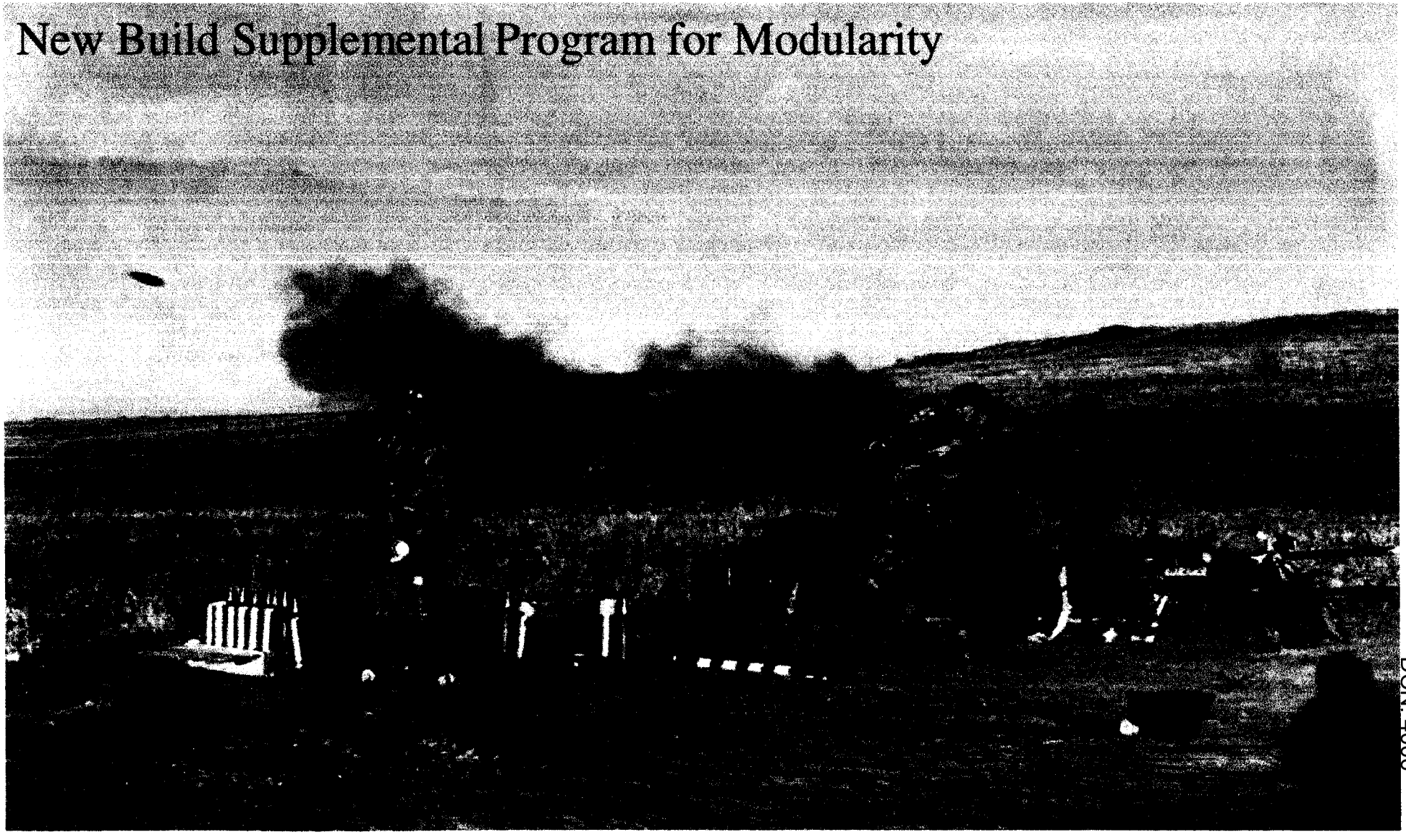


Addresses Lessons Learned in Europe for Robustness and Mobility



M119 105mm Towed Howitzer Reset/Overhaul

New Build Supplemental Program for Modularity



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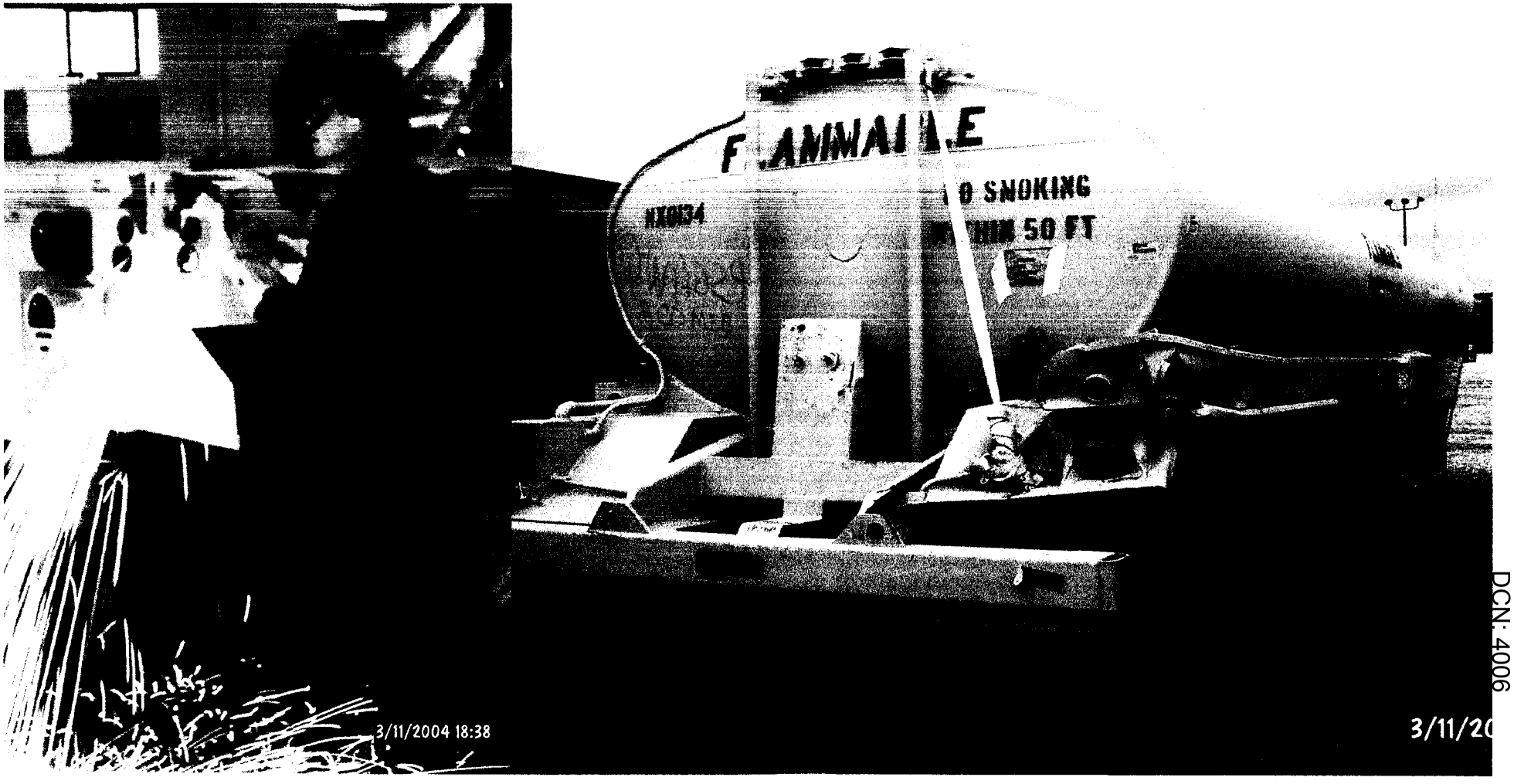
Trailer Reset

- RIA-JMTC Repairing to 10/20 Standards + 3D
- FY 05 - Approx 600 Trailers



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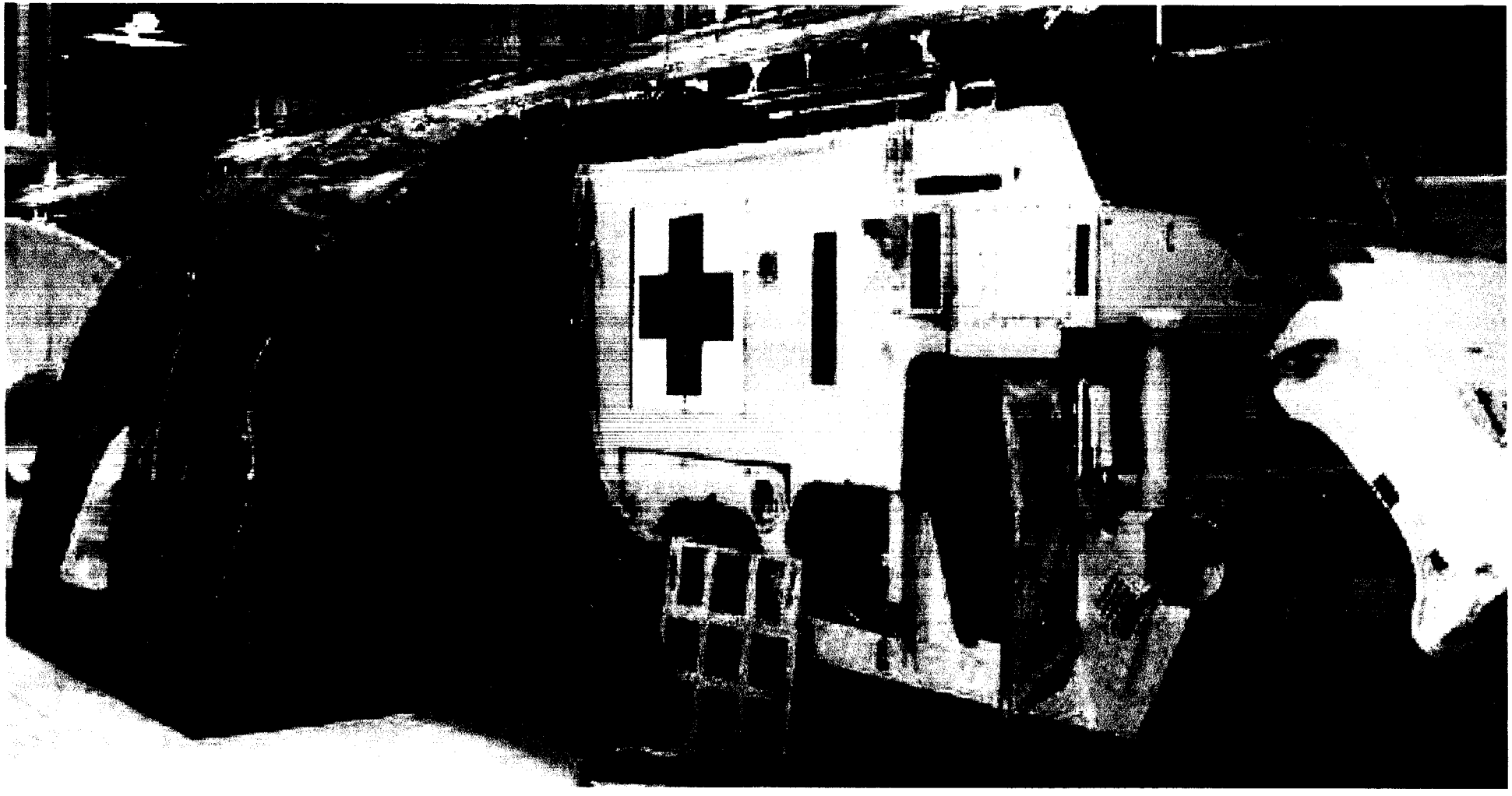
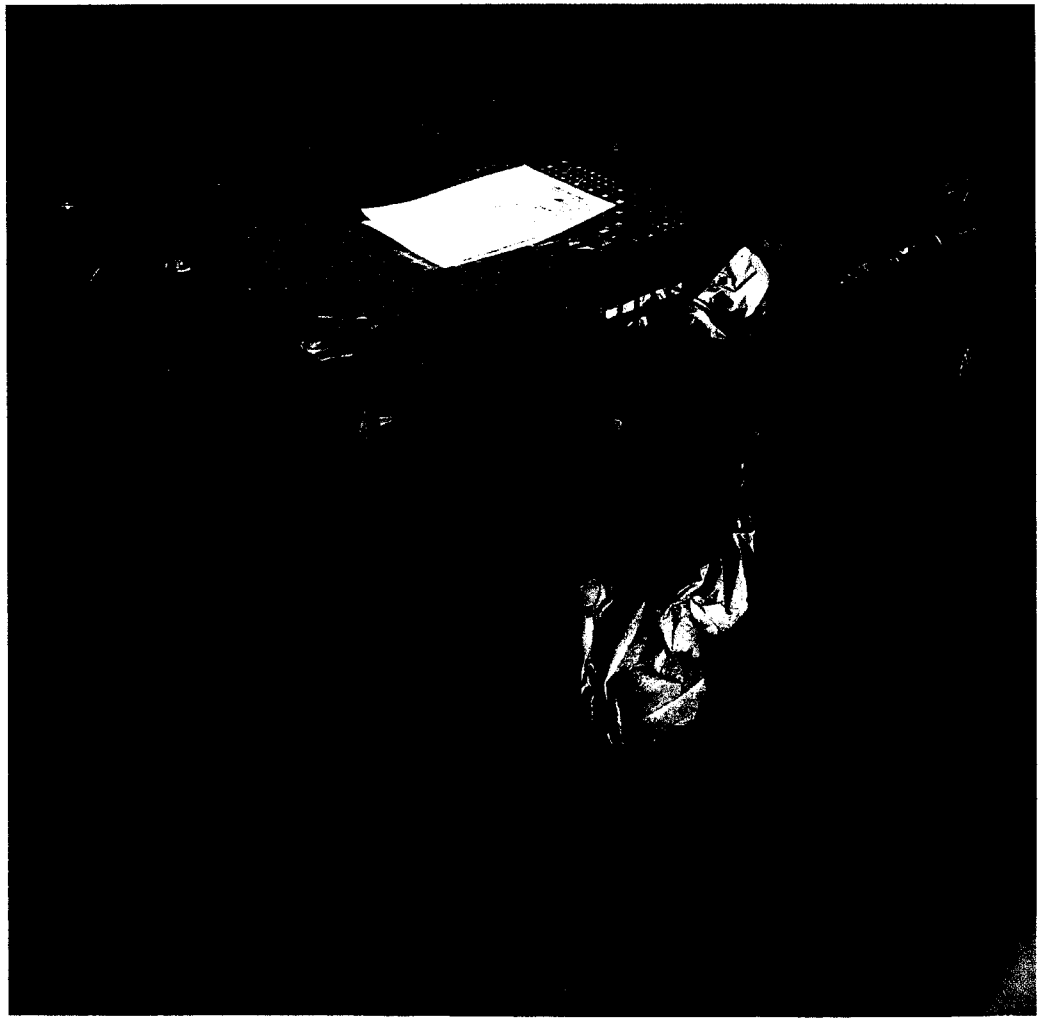
CBPS Reset

- RIA-JMTC Repaired to 10/20 Standards + 3D
- 14 Systems RESET to supplement Depot Capacity

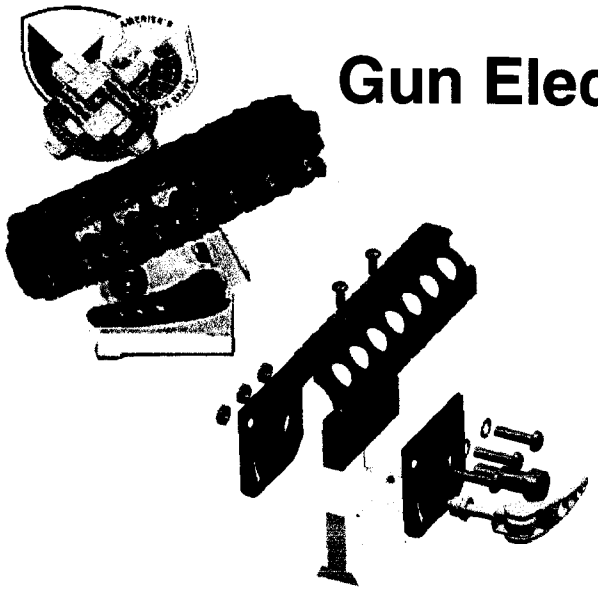


M17 Decontamination System Reset/Overhaul



- RIA-JMTC only source of repair (Developed processes and vendor sources)
- 20-40 per month being overhauled to the meet Warfighter requirements
- Modularity requirements may drive New Build Requirement in FY06

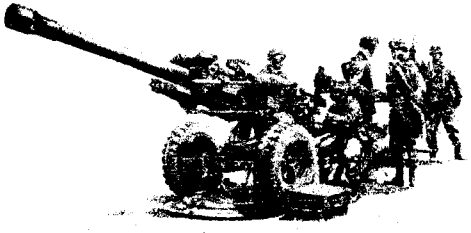
DCN: 4006



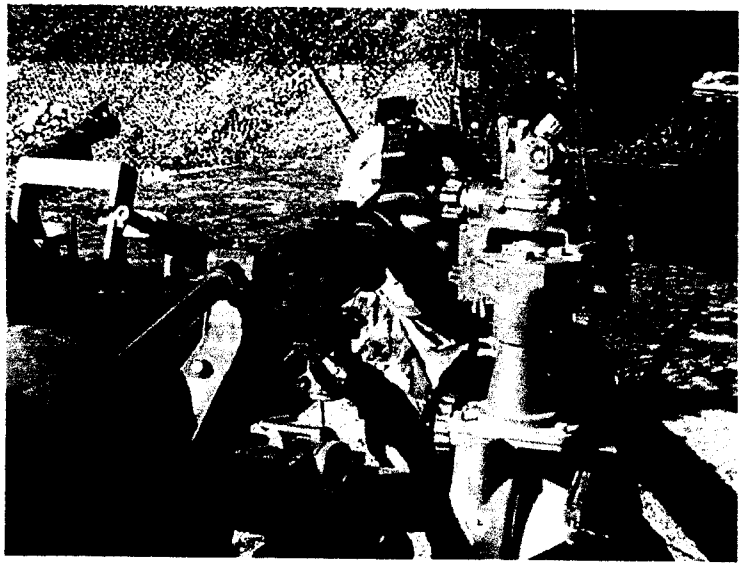
Gun Electronic Laying Optic Night Sight

GELONS

GELONS + M119 Howitzer = Worlds Most Powerful "Sniper Rifle"



- Soldier's model adopted small arms night vision & fire control optics to M119
- RIA-JMTC's Engineering Services provided ergonomic and product design
- Engineering was concurrent with in-house prototype production
- Six prototype sights produced in one week
- Direct fire accuracy at night better than daylight
- 10 rounds at 1,000m in 2m diameter pattern



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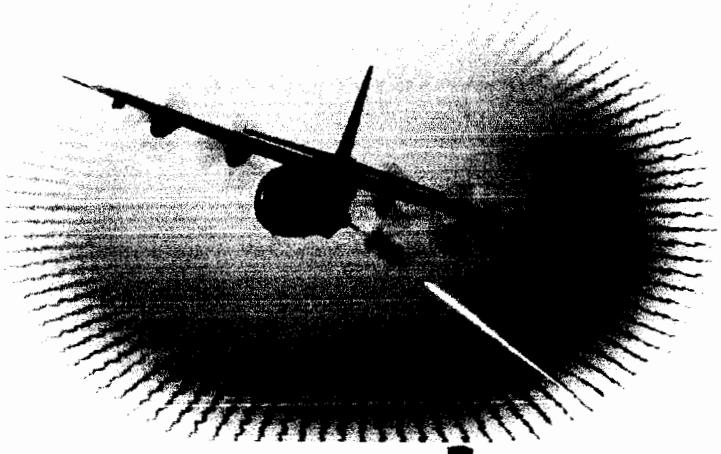
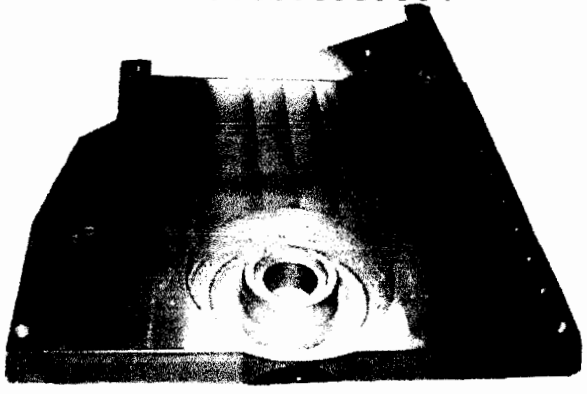
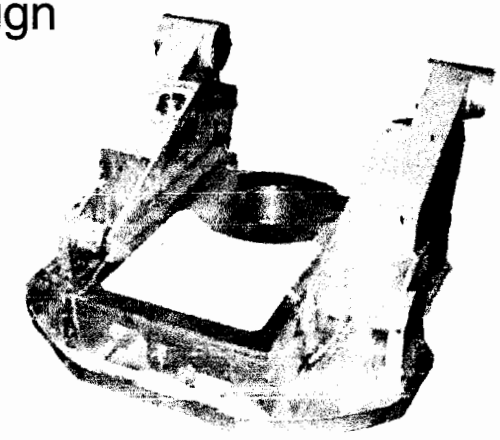
AC-130H SPECTRE GUNSHIP

LIGHT WEIGHT GUN MOUNTS





Machined aluminum redesign by RIA-JMTC of original welded steel gun mount:



Saved 1,000 lb. per aircraft
Significant weld reduction
Greatly reduced part count
Aerospace Quality Assurance

Disciplines and Technologies used in project:

- Product, Producibility & Reverse Engineering
- CAE – Computer Aided Engineering
- FEA – Finite Element (stress) Analysis
- CAD – Computer Aided Drafting & Solid Modeling
- RP - Rapid Prototyping
- CAM - Computer Aided Manufacturing
- CNC - Computer Numerically Controlled machining & inspection

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Artillery Systems Support

- Gun Mounts
  - Original Equipment Manufacturer
  - Spare and repair parts
  - Upgrade services
  - Overhaul part support
  - Replenishment

DCN: 4006

M102 105mm Towed Howitzer

M119 105mm Towed Howitzer

Artillery Systems Support

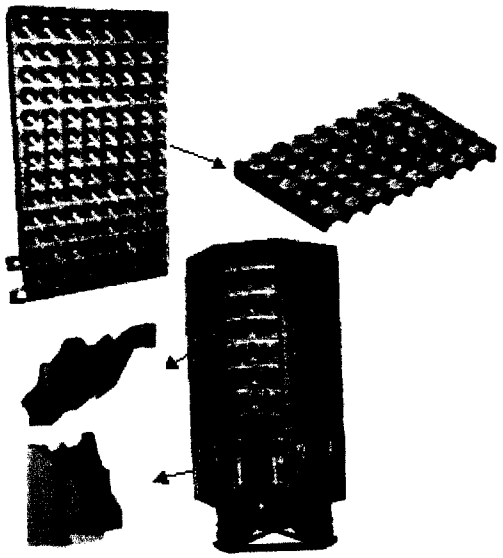
- Towed Howitzers
  - Original Equipment Manufacturer
  - Spare and repair parts
  - Upgrade services
  - USMC Recoil Overhaul
  - Overhaul part support
  - Replenishment

M198 155mm Towed Howitzer

AC-130H SPECTOR GUNSHIP

LIGHT WEIGHT AMMUNITION RACKS

- Designed, developed, and manufactured by RIA-JMTC for SOCOM
- Rotational molded hollow plastic parts which can be reinforced with metal
- Leading edge technology development
- Saved 1,000 lbs



- Improved function
- Low tooling and part cost
- Durable – impact and temperature resistant

DCN: 4006

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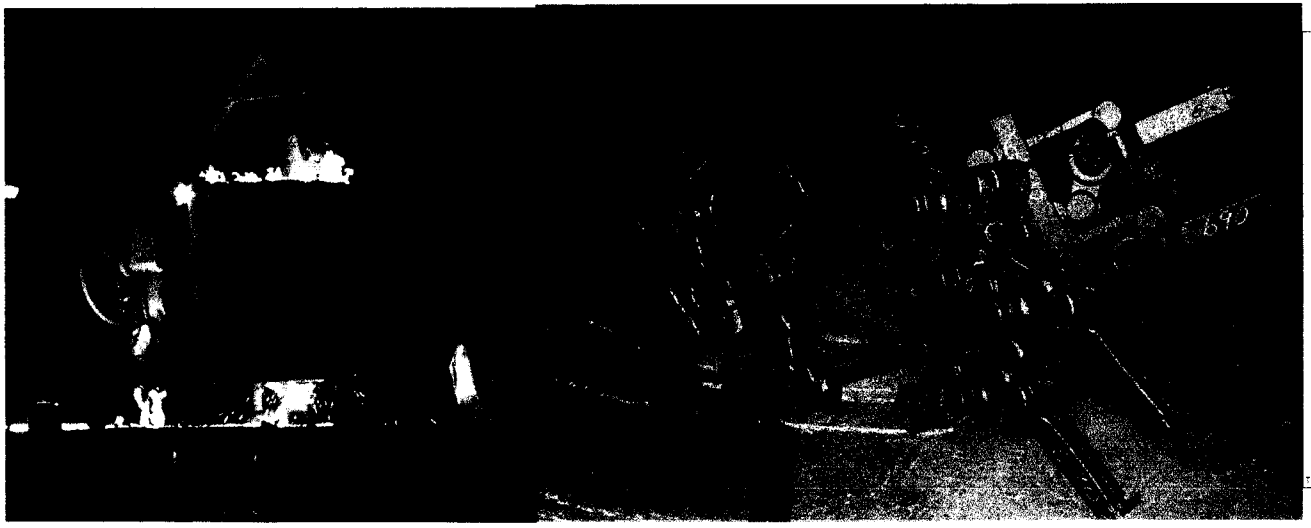
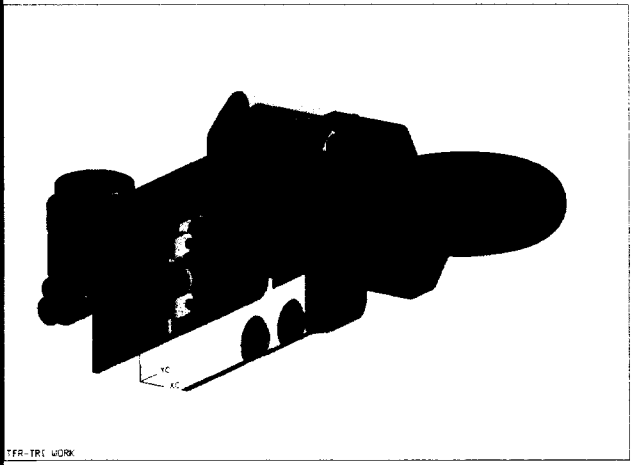
Surge Brake Actuator Kits

- RIA-JMTC designed/produced Surge Brake to retrofit 6,700 deadlined High Mobility Trailers
- Passed durability test without issue
- Very difficult castings to produce (thin ¼" cross section)
- User: US Armed Forces
- Customer: PM Light Tactical Vehicles
- Produced/delivered over 7,200 to date





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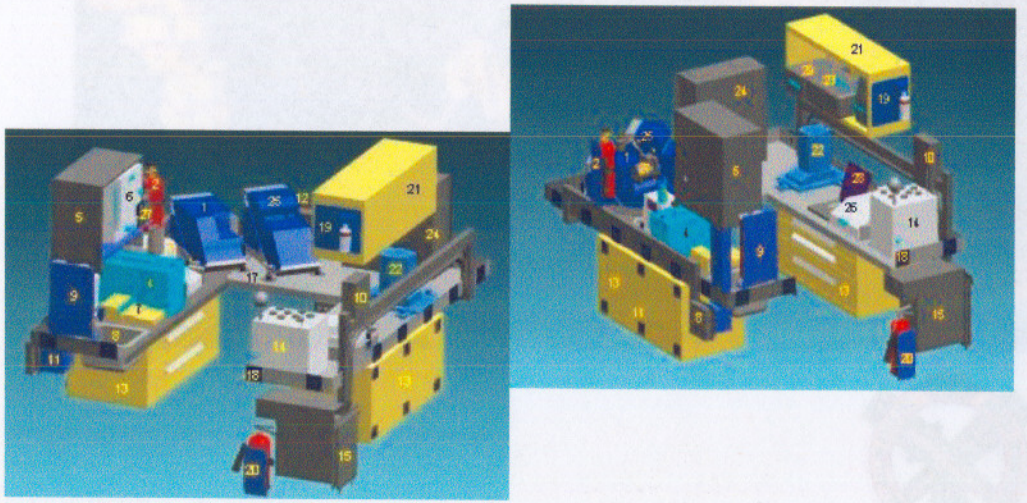
Petroleum Quality Analysis System (PQAS)

PQAS Project Manager PM-PAWS

Engineering and Manufacturing Demonstration Prototype

System Description

- State of the art lab
- CPU integrated data acquisition instruments for fuel analysis
- Environment controlled lightweight expandable shelter mounted on HMMWV
- Diesel and aviation fuel tested by one 77L soldier
- Transportable by C-130 or externally transported by CH-47C



RIA-JMTC

- Specification Development
- Contract Administration
- Human Factors Engineering
- Laboratory Methods & Procedures
- Prototype Design/Fabrication
- DT/OT Support
- Logistics Coordination
- Production Integration & Assembly

DCN: 4006

It's all about the Joint Warfighter!