



# AMMTIAC

## *2008 PEO/PM Symposium*

# **Advanced Materials, Manufacturing and Testing Information Analysis Center**

Mike Morgan, Director  
Alion Science and Technology  
[mmorgan@alionscience.com](mailto:mmorgan@alionscience.com)  
(937) 542-9908

Approved for Public Release  
U.S. Government Work (17 USC § 105)  
Not copyrighted in the U.S.

*Information for the Defense Community* 

# Report Documentation Page

Form Approved  
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE <b>NOV 2008</b>		2. REPORT TYPE <b>N/A</b>		3. DATES COVERED <b>-</b>	
4. TITLE AND SUBTITLE <b>Advanced Materials, Manufacturing and Testing Information Analysis Center</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>Alion Science and Technology</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release, distribution unlimited</b>					
13. SUPPLEMENTARY NOTES <b>See also ADM202819. Acquisition and Life Cycle Management Symposium: Rapid Access to Technical Information Supporting Defense Acquisition held in Huntsville, Alabama on 18-19 November 2008, The original document contains color images.</b>					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			



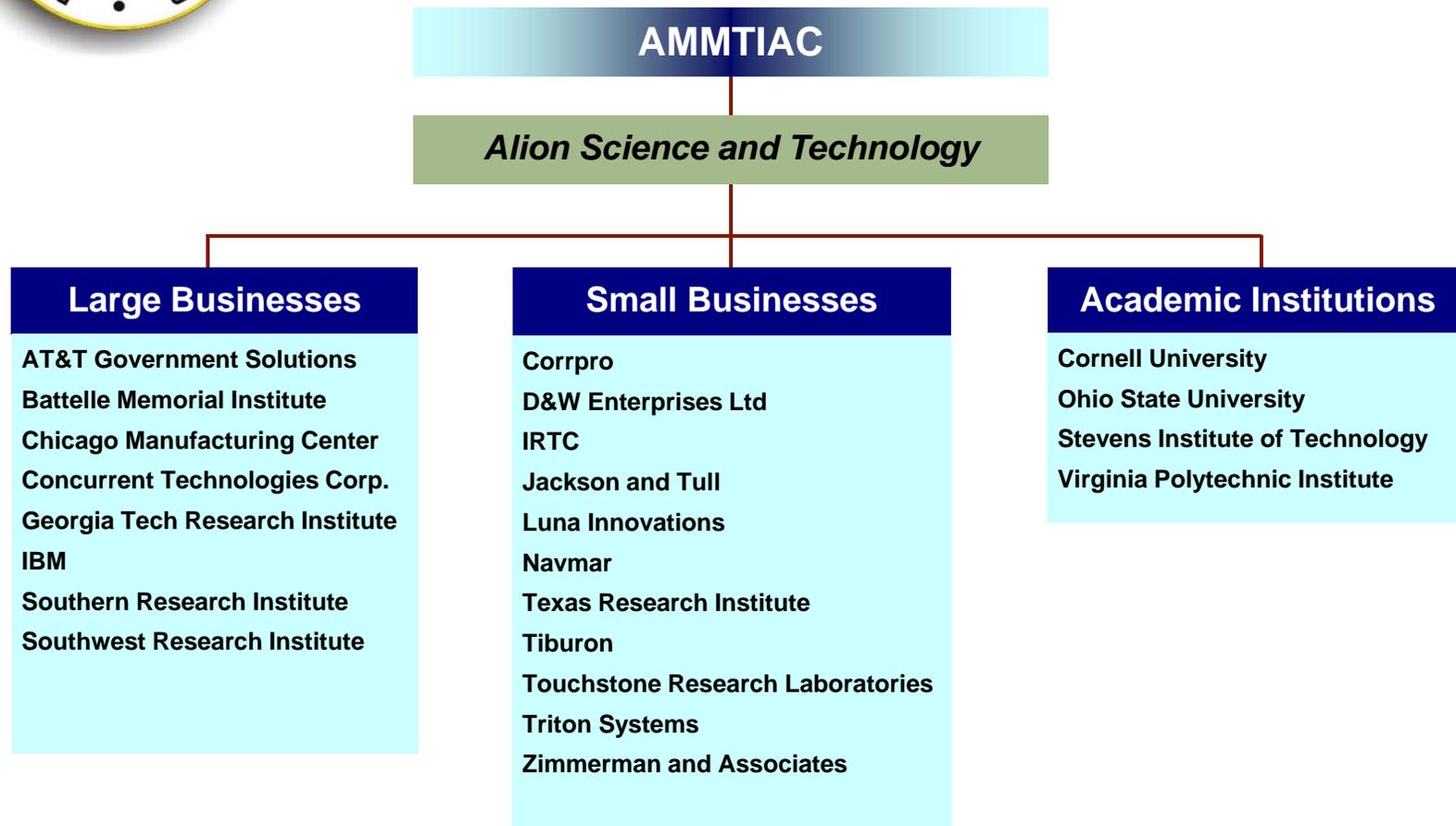
# AMMTIAC's Core Focuses

1. Life Cycle Management
  - Design review/optimization
  - Repair Practices
  - Re-engineering
2. Sustainment Technologies
  - Superfinishing, Specialty Coatings
  - NDI/NDE
  - Corrosion Prevention, Control & Mitigation
3. Acquisition Support
  - Corrosion Planning Review
  - Review for manufacturability
  - Review for sustainability
  - Manufacturing Readiness Review
4. System Engineering
  - Analysis of Alternatives
  - Requirements Allocation Review
5. Manufacturing Technologies
  - Design, Prototype & Process Optimization
6. Testing
  - Design & Execution
  - First Article Testing
  - Materials Through System Levels
7. Materials Engineering
  - Materials Selection, Failure Analysis & Technology Insertion
  - Blast Mitigation

***AMMTIAC is the full life cycle solutions provider***

*Information for the Defense Community* 

# THE AMMTIAC TEAM



**AMMTIAC's technically diverse and multi-faceted team spans all stages of the system life cycle, providing true "cradle to grave" support to the Warfighter.**

*Information for the Defense Community* 



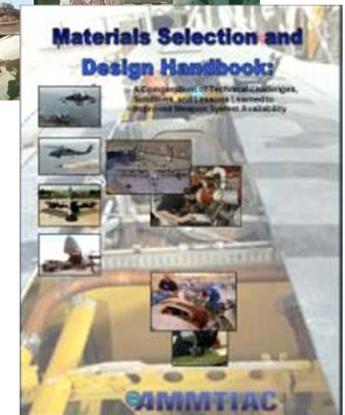
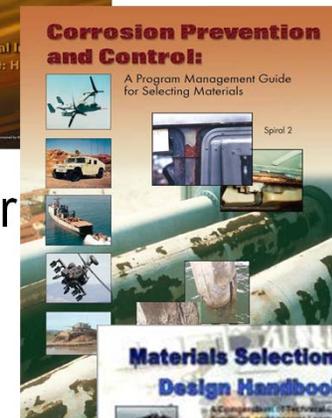
# AMMTIAC

# INFORMATION SERVICES



# Supporting the Acquisition Community Through Focused Technical Information

- ***The AMMTIAC Quarterly*** - Our technical journal highlighting the latest in DoD acquisition and sustainment activities
  - E.g. F-35 production updates, detecting insulation defects in complex wiring systems, NDT/NDI
- ***Program Manager's Handbook for Corrosion Prevention & Control*** – First of its kind reference on major causes of corrosion, their impact to military systems, and preventative design and maintenance strategies.
  - For use by PMs, product centers, and maintenance orgs.
- ***Readiness Handbook*** – Material selection and design handbook that examines the root technical causes of readiness and availability shortfalls of military assets.
  - Written for program office engineering staffs, field & depot-level maintenance personnel





# Supporting the Acquisition Community Through Ready Access to Quality Scientific, Technical, and Operational Support Information

## The AMMTIAC Website

<http://ammtiac.alionscience.com>

- Information Resource
  - 300,000 Reports In AMMTIAC Library
  - Online Newsletter Articles
  - Portal to 30,000 Electronic Reports in TEMS
- Industry Locator (MatPro)
- AMMTIAC Products & Services
  - Handbooks & Databooks
  - Inquiry Service



# Supporting the Warfighter

## Through AMMTIAC's Technical Inquiry Service

*Get rapid, reliable answers to your technical questions from AMMTIAC!*



*Contact us directly!*



- Modular Armor for Overhead Protection
- Modular Armor for Tent Structures
- B-2 Brakepad
- Galling of the Astern Throttle Valve on the USS John F Kennedy (CV-67)



# AMMTIAC

## **PROVIDING SOLUTIONS RELEVANT TO ACQUISITION**

### **Examples of contract work**



# PM Soldier Weapons Fielded System Study

- M4 Carbine Independent Assessment & Review
  - Design
  - Testing Approach
  - Quality, Manufacturing & Maintenance Data
  - Root Cause Analysis
- Recommend Corrective Actions
  - Technology Developments / Insertions
  - Design Improvements
  - Manufacturing Technology
  - Product Improvements
  - Changes Test Design and Execution
  - Improvements to Manuals
  - Lessons Learned to included Root Causes
  - Effects of Different Environments





# Battery Research Network (BATTNET)

- AMMTIAC supports the Battery Research Network (BATTNET)
  - Defense/Industry consortium sponsored by DLA
  - Promote robust & reliable US-based battery manufacturing capability
- Promote better battery technology
  - More field-portable
  - Reduced size and weight
  - Greater endurance and service life
  - Quicker, more recharges
  - Lower costs
  - Improved performance in harsh environments



*The battery power needs of today's soldier are great*



# Shock & Vibration Engineering Design & Testing

- Review & Evaluate Documents, for Compliance With Shock & Vibration Requirements
- Perform High-Impact Medium Weight Shock Testing for Naval Surface Warfare Center
  - DDG 1000 Integrated Deckhouse & Hangar Design
  - AN/SQQ-89A(V)15/(V)15 UNIT 804 Equipment Rack
  - NATO SEASPARROW MK 29 MOD 4 Guided Missile Launcher
  - Solid State Transmitter
  - Standard Missile
- Prepare Shock Deficiency Correction Plans
- Update MIL-STD-167-1A
- Predict Response of Systems to Shipboard Vibration Inputs
  - Conduct Frequency Response Vibration Analyses





# AMMTIAC

## AMMTIAC Success Stories



# Venom Penetrator

- Navy Surf-Zone De-Mining Program that Uses a Chemical to Neutralize the Explosives
  - Doesn't Leave Unexploded Ordinance
- Performed Life Assessment for Corrosion of Dart Body
  - Reduced Program Risk
  - Determined Dart Body Could Survive a 12 Year Storage Life
  - Recommended a Testing Approach
  - Recommended Dart Fill Procedures
- Re-design Penetrator Nose
  - Live Fire Tests Showed Best Performance (Highest Kill Ratio)
  - 2004 Admiral H. R. Stark Award for the Advancement of Ballistics, Penetrators & Projectiles.



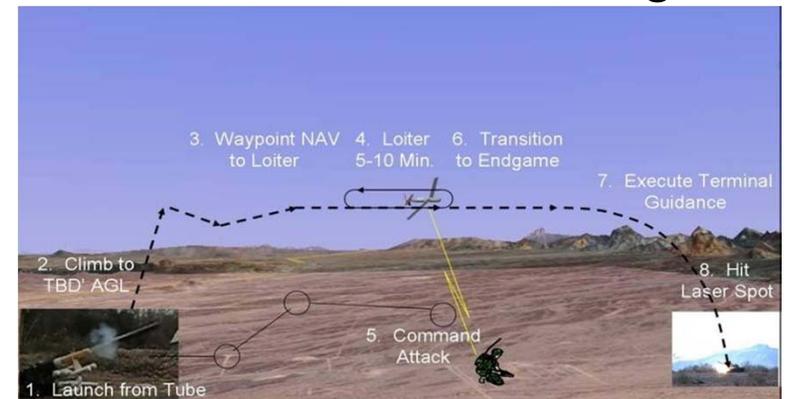
- Re-designed Nose Post Test Showing Penetrator Separation



# Hellshot

## Mortar Launched UAS Concept

- Army has need for a mortar-launched Unmanned Aerial System (UAS) capability with onboard laser seeker.
- AMMTIAC is demonstrating feasibility by constructing prototype and test launching from a mortar tube.
- AMMTIAC SMEs perform research, development and testing of prototype.
- Approach builds upon successful Navy SLADS UAS vehicle design.
  - Sonochute Launched Air Deployable Sensor (SLADS)
  - Reduces development costs
  - Assessing required design modifications, hardware adaptations, and changes in manufacturing practices
- Gives Army a new precision-guided munitions capability.

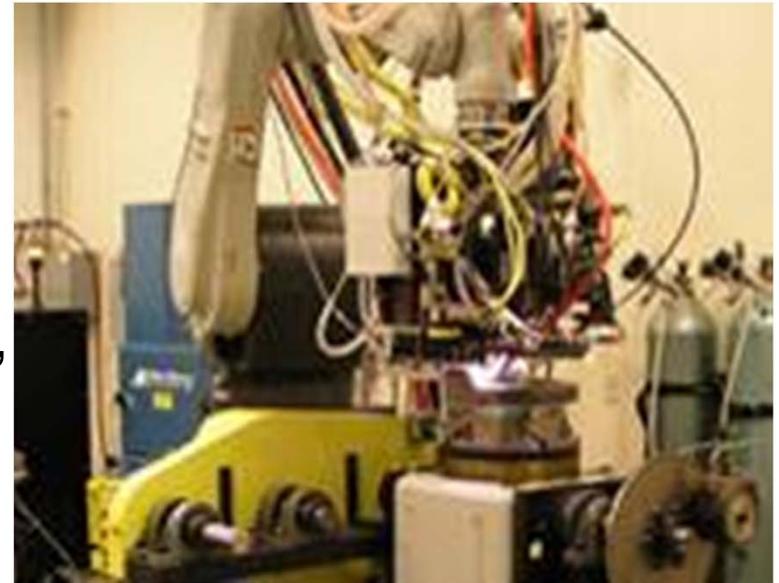




# AMMTIAC

## Low Volume Productivity

- High-power laser “cladding” to extend the useful life of metal parts
- Currently in use by US Navy for ship part refurbishment
- Economic alternative to replacing large, low-production-volume parts
  - Propeller shafts
  - Other large ship components
- Refurbishing worn parts using a custom robotic laser cell
- Robotic system improves productivity, reduces turn-around time
- Winner of two R&D Magazine “Top 100 Awards” for New Development





# Contact Information

Mike Morgan, AMMTIAC Director  
Alion Science and Technology  
[mmorgan@alionscience.com](mailto:mmorgan@alionscience.com)  
(937) 542-9908