Transformation, Declining Budgets and the Drawdown

APBI
27 October 2011
Dr. Grace M. Bochenek, Director

Colonel Charles P. Dease
Military Deputy
**Report Documentation Page**

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1. **REPORT DATE**
   03 NOV 2011

2. **REPORT TYPE**
   Briefing Charts

3. **DATES COVERED**
   03-11-2011 to 03-11-2011

4. **TITLE AND SUBTITLE**
   TRANSFORMATION, DECLINING BUDGETS AND THE DRAWDOWN

5. **AUTHOR(S)**
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6. **PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)**
   U.S. Army TARDEC, 6501 E.11 Mile Rd, Warren, MI, 48397-5000

7. **SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)**
   U.S. Army TARDEC, 6501 E.11 Mile Rd, Warren, MI, 48397-5000

8. **PERFORMING ORGANIZATION REPORT NUMBER**
   #22401

9. **SPONSOR/MONITOR’S ACRONYM(S)**
   TARDEC

10. **SPONSOR/MONITOR’S REPORT NUMBER(S)**
    #22401

11. **DISTRIBUTION/AVAILABILITY STATEMENT**
    Approved for public release; distribution unlimited

12. **SUPPLEMENTARY NOTES**
    Briefing to Advanced Planning Briefing to Industry (APBI)

13. **ABSTRACT**
    N/A

14. **SUBJECT TERMS**

15. **SECURITY CLASSIFICATION OF:**
    a. REPORT unclassified
    b. ABSTRACT unclassified
    c. THIS PAGE unclassified

16. **LIMITATION OF ABSTRACT**
    Same as Report (SAR)

17. **NUMBER OF PAGES**
    16

18. **NAME OF RESPONSIBLE PERSON**

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*Standard Form 298 (Rev. 8-98)*

Prescribed by ANSI Std Z39-18
TARDEC Mission

**Mission**
Provides full life-cycle engineering support and is provider-of-first-choice for all DOD ground combat and combat support vehicle systems.

**Vision**
Develops and integrates the right technology solutions to improve Current Force effectiveness and provide superior capabilities for the Future Force.

- Advanced Research & Development
- Test Analysis
- Quick Reaction Cell
  - Request for Information (RFI)
- Operational Needs Statements (ONS)
- Joint Urgent Operational Needs Statement (JUONS)
- Design Prototype
- Analysis of Alternatives (AoA)
- Engineering Matrix Support to PM
  - TARDEC Reach back support to PM
- Modeling & Simulation
- Tours
- Etc.
Strategic Relationships

• Connected to World-Class Automotive Engineering Universities at our Doorstep

• Defense Industry Ground Systems Hub

• Direct Linkage to World-Class Automotive Research and Development Centers

• Strategic Engagement with 1st, 2nd and 3rd Tier Automotive Supplier Network
Key Technical Thrust Areas

• Ground System Survivability

• Vehicle Electronic Architectures

• Ground Vehicle Robotics and Intelligent Systems

• Ground Systems Power, Energy and Mobility

• Force Projection Technology; Alternative Fuels, Lubricants and Water Purification
Army Technical Challenge
More Mobile, Fuel Efficient, Safer Vehicles

Mobility & Energy Efficiency

- Vehicle Dynamics
- Hi-Energy, Hi-Density Energy Storage
- Comprehensive Thermal Management of Propulsion & Cabin
- High Power Density, Low Heat Rejection & Fuel Efficient Engines

Occupant Centric Survivability

- Active Protection Systems
- Holistic Occupant Centric Protection
- Affordable, Multi-hit Ceramic Armor
- Fire and Toxic Fume Resistant Materials

Multi-Physics Optimization
Increasing Demands and Operational Flexibility Require Strategic Investments in Key Areas

- **Kill Avoidance**
- **Penetration Avoidance**
- **Hit Avoidance**
- **Detection Avoidance**

**Cause Agent Breakdown (BI) 2002-2008**
- Firearms: 20%
- Munitions and Explosives: 77%
- Others: 1%
- Falls: 1%
- Other: 1%

**Contextual Information**
- N= 7,092 patients
- Falls
- Motor Vehicle Traffic
- Other

**Threats**
- RPG
- IED
- HE Frag
- RKG
- ATGM
- XL IED

**Design from Occupant Out**
- Hit Avoidance
- Penetrate Avoidance
- Kill Avoidance
- Encounter Avoidance
- Detection Avoidance
- Acquire Avoidance
Ground Systems Power, Energy and Mobility

Increasing Demands and Operational Flexibility Require Strategic Investments in Key Areas

- Weight/Power Demand
- Fuel Demand
- Agility Requirements
- Electrical Power Demand

- Powertrain
- Thermal Management
- Track & Suspension
- Non-Primary Power
- Energy Storage
- Advanced Propulsion
<table>
<thead>
<tr>
<th>Research</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Water recycling system</td>
<td>- Technology engineering analysis support</td>
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<td>- Wastewater treatment system</td>
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<td>- Develop two OBVP concepts</td>
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<td>- OPOC engine development</td>
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<td>- Power brick development</td>
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<td>- High power APU 25-40kW</td>
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<tr>
<td>- Develop engine-off capability</td>
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<tr>
<td>- Battery Management, lead-acid base</td>
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<tr>
<td>- Medium Tactical Powertrain</td>
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<tr>
<td>- Medium Combat Powertrain</td>
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<tr>
<td>- Thermal electrics</td>
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<td>- Advanced Battery research</td>
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<tr>
<td>- Structured Robotic Integration</td>
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<td>- SIC DC/DC Converter Development</td>
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<tr>
<td>Lab &amp; Facilities</td>
<td></td>
</tr>
<tr>
<td>- 200D shop floor restroom refurbishment</td>
<td></td>
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<tr>
<td>- Shipping and receiving 200E enhancement</td>
<td></td>
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<tr>
<td>- Hydraulic lift removal and re-concrete of PIT</td>
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<tr>
<td>- Battery lab equipment</td>
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</tbody>
</table>
### Competitive Opportunities

**New for FY12**

#### Materials & Components
- Procure Pre-Treatment Test Stand
- Water bottling system
- Water Monitoring Test Equipment
- Hull/Cab build
- Common Disposable Extinguisher
- High-voltage fan motor/controller

#### Test
- Water Monitoring Test Equipment
- MIL 810 Test
- Environmental Testing of Active Protection

#### Installation
- Fire protection, install equipment
- Head impact fabrication and install
### Congressionally Mandated Programs

<table>
<thead>
<tr>
<th>Small Business Innovation Research (SBIR)</th>
<th>Small Business Technology Transfers (STTR)</th>
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<tbody>
<tr>
<td><strong>SBIR</strong></td>
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<tr>
<td>• Phase I: FY11- $100,000</td>
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<td></td>
<td>FY12- $150,000</td>
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<td>Phase 2: FY11- $750,000</td>
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<td></td>
<td>FY12- $100,000</td>
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<tr>
<td>• $28 M in FY11/Approx. 200 procurements</td>
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</tbody>
</table>

More Information and opportunities: [http://www.dodsbir.net/solicitation](http://www.dodsbir.net/solicitation)
- Solicitation Schedule
- Current Solicitations
- Sample Proposals
- How to create a proposal
- Topic Identification

### Cooperative Research and Development Agreement (CRADA)
- Can be utilized to create innovative collaborative arrangements
- Success Stories:
  - Associate Exchange Program
  - Diminishing Manufacturing CRADA

### Test Services Agreement (TSA)
- Technology transfer mechanism that allows work for hire
- All inventions and data belong to the TSA partner
- Allows industry partners to leverage TARDEC’s unique capabilities
- Success Stories Include:
  - Engine Generator Testing
  - Turret Motion Based Simulator
TARDEC Omnibus

- Awarded August 2009
- 5-Year IDIQ Contract
- Multiple Opportunities to Provide:
  - Engineering, Demonstrators, Designers / Drafters, Workforce Dev, Lab Management / Operations, Research, Corporate Messaging, etc

Task orders

- Technical/Engineering Support
- Hull/Cab Build
- Technical Engineering Support
- Power brick development
- Develop Engine-off capability
- Battery management, lead-acid base
- Thermal electrics
- Advanced Battery Research
- Low-voltage power systems for VEA research SIL
- SIC DC/DC converter development

There are opportunities to work with TARDEC’s Omnibus Partners!
TARDEC Solicitations & Market Surveys Announcements

http://contracting.tacom.army.mil/

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TARDEC’s Ground Vehicle Gateway is YOUR entry point!

Submit your technology for review
https://tardec.groundvehiclegateway.com