Tank-Automotive Research, Development, and Engineering Center

Technologies for the Objective Force

Mr. Dennis Wend
Executive Director for the National Automotive Center

Updated: May 2001
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<td>Wend, Dennis</td>
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| Supplementary Notes | |
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| Abstract | |
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| Subject Terms | |
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TARDEC’s Vision
Superior Technology for a Superior Army
TARDEC’s Six Principal Product Lines

- Combat and Tactical Vehicles
- Military Bridging
- Logistics Equipment
- Fuels and Lubricants
- Countermine Equipment
- Water Purification Equipment
TARDEC’s Principal Laboratories

• Simulation Lab
• Concepts Lab
• Perception Lab
• Fuels & Lubricants Lab
• Water Purification Lab
• Propulsion Lab
• Vetronics Integration Simulation Lab
• Laser Lab
• Composite Application Lab
• Robotics Lab
• Virtual Prototyping Lab
• Track & Suspension Lab
• Rapid Prototyping Lab
• High Performance Computing
• Terrain Sensing Lab
• 50+ Special Facilities

Investing in Intelligent Systems
TARDEC’s Organization

Committed to Excellence
Research Business Group

- **Vehicle Electronics**
- Survivability Optimization
- Armor
- **Active Protection**
- Signature Management
- Robotics
- Propulsion
- Track & Suspension
- Crew Station Design
- Life Cycle Software Management
- **Vehicle Power Management**
- Laser Eye Protection

Soldier operating a crew station simulator.
National Automotive Center

Dual Use/Dual Needs Focus

Dual Use Science & Technology (DUS&T) Program

Advanced Automotive Developments

FAR Contract
Cooperative Agreement (CA)
Other Transaction (OT)
Cooperative Research and Development Agreement (CRADA)
Small Business Innovation Research (SBIR)
Automotive Research Center (ARC)

Leverage Shared Technology/Technology Transfer

Committed to Excellence

Advanced Collaborative Environments
High Performance Computing
Analytical Simulation
Physical Simulation
Virtual Prototyping Tools
Army Robotics Transition Strategy

Future Combat Systems

Objective Force

Robotic Follower ATD
- Near Term Application
- Low Level of Autonomy
- Moderate Risk

Semi-Autonomous Robotics STO
- Advanced Applications
- High Level of Autonomy
- Medium/High Risk
AUTOMOTIVE RESEARCH CENTER
A Partnership of Eight Research Universities
1st Thrust Area: Intelligent Vehicles and Robotics

- Enhance mission efficiencies
- Enhance fleet logistics
- Enhance driver/soldier efficiencies
- Reduce fuel consumption
- Increase mission safety margins
- Reduce overall emissions
- Reduce mission crew size

- Dynamic Route Guidance
- Driver Condition Systems
- Vehicle Dynamics/Stability

Design of Control System for Continuously Variable Transmission (CVT) System

Parallel Hybrid Vehicle Featuring a CVT

- Fleet Management
- Vehicle Diagnostics
- Vehicle Optimal Design
Conclusions: Investing in Intelligent Systems

TARDEC Intelligent Systems Groups:

- 21st Century Truck – Vehicle Intelligence Team
- TARDEC Robotics Lab
- Crew Automation and Robotics Team
- Vehicle Electronics (Vetronics)
- Telematics for Prognostics and Diagnostics
- Perception Lab
- Automotive Research Center

Pushing the envelope with intelligent systems
SmarTruck  Current Capabilities

- Bullet Proof Glass
- On-Board Diagnostics
- ARMORMAXS
- Wireless Communication
- Non-Lethal Weaponry
- Night Vision
- B.F. Goodrich Run Flat Tires
- Touch Screen Display
- Global Positioning System
- Bomb Detection