NDIA 2008
Tactical Wheeled Vehicle (TWV) Conference
Session III – Meeting the Challenges of Today and Tomorrow
United States Army
Transportation Center and School
BG(P) James E. Chambers
Commanding General USATC&S
Chief of Transportation
5 February 2008
Spearhead of Logistics!
Distribution Statement A: Approved for public release: distribution is unlimited
## Light Tactical Vehicle Strategy

### HMMWV

<table>
<thead>
<tr>
<th></th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>13,068</td>
<td>13,679</td>
<td>6,525</td>
<td>4,555</td>
<td>3,383</td>
<td>858</td>
<td>1,358</td>
<td>1,329</td>
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</tbody>
</table>

### Total HMMWV
- AAO: 152,528
- OH: 133,353
- GTA: 19,175

### Joint Light Tactical Vehicle (JLTV)

<table>
<thead>
<tr>
<th></th>
<th>FY15</th>
<th>FY16</th>
<th>FY18</th>
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<tbody>
<tr>
<td>INC I</td>
<td></td>
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<tr>
<td>INC II</td>
<td></td>
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</tr>
</tbody>
</table>

### IOC
- FTTS ACTD demonstrators
- USMC CTV demonstrator

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Army Acquisition Objective - AAO
On Hand - OH
Grow The Army – GTA
Initial Operational Capability-IOC
Increment I/II-IOC/II
Medium Tactical Vehicle Strategy

ACAT 1C Program

AAO: 83,185
OH: 33,271
GTA: 49,914
LSAC: 2,035

<table>
<thead>
<tr>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
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<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
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<tr>
<td>17164</td>
<td>15367</td>
<td>5707</td>
<td>3557</td>
<td>4035</td>
<td>3114</td>
<td>2376</td>
<td>2418</td>
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Army Acquisition Objective - AAO
On Hand - OH
Grow The Army – GTA
Low Signature Armored Cab – LSAC
MTTCS – Multipurpose Troop Transport Carrier System
MTTS – Medium Troop Transport System
## Army Acquisition Objective - AAO

<table>
<thead>
<tr>
<th>Year</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
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<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
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<tr>
<td></td>
<td>1980</td>
<td>1132</td>
<td>184</td>
<td>188</td>
<td>77</td>
<td>86</td>
<td>38</td>
<td>39</td>
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</tbody>
</table>

- **M915**
  - AAO: 6,043
  - OH: 6,355
  - GTA: 8,738

## Continuous Capability Improvements

- Production based on FY08/09 supplemental funding

## Identifying Next Generation Line Haul Capability

- On Hand - OH
- Grow The Army - GTA

## Engineering Upgrades

- M915A5
Heavy Tactical Vehicle Strategy

**HEMTT A2**

<table>
<thead>
<tr>
<th>Year</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
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<tbody>
<tr>
<td></td>
<td>882</td>
<td>1265</td>
<td>574</td>
<td>109</td>
<td>72</td>
<td>48</td>
<td>55</td>
<td>55</td>
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</table>

Production based on FY08/09 supplemental funding

**HEMTT A4**

- AAO: 29,724
- OH: 13,405
- GTA: 29,724

**HETS**

- AAO: 1,974
- OH: 2,288
- GTA: 1,977

Army Acquisition Objective - AAO
On Hand - OH
Grow The Army - GTA
Simulators Save Lives

Tactical Wheeled Vehicle Training

HMMWV Egress Assistance Trainer

Motion-based Driver Trainer

- 55 TOTAL
- 37 FIELDED
- 34 CONUS
- 3 USAREUR

- 29 TOTAL
- IN THEATER

72 TOTAL
52 FLW
20 FT BLISS

FY08-13 POM
21 Sys FY08
Fielding FY09

- 2 USARPAC
- 1 USAREUR
- 1 FT HOOD
- 1 ARCENT

Virtual Combat Convoy Trainer (VCTT)

Reconfigurable Vehicle Tactical trainer

2 FLW
JOHN R. BARTLEY
Brigadier General, USA
Program Executive Officer,
Combat Support & Combat Service Support
◆ Our Goal
◆ Our Focus
◆ Our Challenges
◆ Our Approach
◆ Our Need
◆ Our Strategy for Future Acquisitions
Design, Develop, Field, and **Sustain** – at a Reasonable Cost

We Provide the Platform and Total System Integration – Everything Else is Developed by Others

Overcoming the Challenges of Today’s Rapidly Changing Requirements Requires Strong Partnership Between Government and Industry
Our Focus

Is to be Prepared for...

◆ Changes in Threat
  - Small Arms
  - Mines
  - IEDs/EFPs

◆ Changes in Technology
  - Ability to Keep Step with Technology Advances
  - The Army is serious about designing with Future Growth in Mind - Headroom - Improve Capability, Survivability, Network Communication and Reduce Burden on Soldier and Operating Costs

◆ Changes in Mission
  - Type of Conflict
  - Type of Unit
  - Homeland Defense
Our Challenges

Joint Environment
- Army
- USMC
- Navy
- USAF

Processes
- Requirements
- Funding
- Provisioning

Mixed Tactical Vehicle Fleet
- Old
- Used
- New

Ensure Consistency with Army’s Tactical Wheeled Vehicle Modernization Strategy
Our Need

Current Experiences Drive a Need for Refined Capability:

◆ Survivability
  - Fire Suppression:
    - Passenger
    - Engine
    - Fuel Tank
    - Tire
    - Outer Shell
  - Energy Dissipation
Our Approach

 Scalable C4I
 Adaptable Levels of Protection
   - Crew
   - Vehicle
   - Payload/Cargo

 Commonality/Family
   - System Design
   - Repair Parts/Sources of Supply
   - Tools
   - Maintenance Procedures
   - Training
   - SWaP – Do More with Less

 Ideally with No Impact on:
   - Payload
   - Performance
   - Protection

Balance Improvements and Design Changes Across the three P’s

Equipping our Joint Warfighters with the World’s Best Capability, Today and Tomorrow
Our Strategy for Future Acquisitions

- A Kit / B Kit Development
- Plug and Play Capability
- Modularity
- Flexibility
- Common/Commercial Standards vs Unique
  - USB
  - Light Socket
  - Electrical Outlet in a Room
  - Cigarette Lighter in a Car

Giving the Commander in the Field the Ability to Adapt to Changes...to Mission...to Threat...to Technology!
It’s All About Effective Integration

Design From the Beginning to Accommodate Change in Threat, Mission & Technology

Change Quickly

SWaP is a Finite Resource, Considered in the Beginning with Growth in Mind

Stand on Each Other's Shoulders to Reach Higher and Achieve More Together To Meet the Challenges of Today’s Rapidly Changing Requirements
PM Tactical Vehicles ~ The Army Truck Team!

**Project Manager**
COL Scott R. Kidd

**Deputy PM Acquisition:** Tony Shaw
**Deputy PM Logistics:** Cesare Gaglio

**MISSION**
The lifecycle management of light, medium and heavy tactical vehicles enabling the Modular, Joint and Expeditionary Ground Force

**OTHER SIGNIFICANT PROCUREMENT EFFORTS**
- Safety Enhancements
- Add-on-Armor/GPK

= **$1.5B**

**PRODUCT MANAGERS**
- Light Tactical Vehicles
  - LTC Samuel Homsy
- Medium Tactical Vehicles
  - LTC Alfred Grein
- Armored Security Vehicle ✶ Newly Established
  - LTC Moorhouse
- Heavy Tactical Vehicles
  - LTC Allen Johnson

**DIVISION CHIEFS**
- Business Management
  - Mike Scharra
- Acquisition Logistics
  - Ray McMillen
- Engineering
  - Joe Keusch
- PAT&E
  - Larry McNamara

Distribution Statement A: Approved for public release; distribution is unlimited
Kidd’s Screen Saver ~ FY08

AoA Surge

Production

Berry Amendment
Specialty Metals

GWOT Support

Modularity/Grow the Army

Full spectrum support to the War Fight & Modularity
3 CSL PMs ~ Approximately 220K Systems Fielded, over 150K Systems supported

**Light Tactical Vehicles**
- 29 variants
- 161K systems fielded
- @ 65-80 HMMWVs / Day
  - HMMWV Family of Vehicles
  - UAH Safety Enhancements
  - HEAT Trainer (UFR)

**Family of Medium Tactical Vehicles**
- 17 variants
- 33K systems fielded
- @ 800 / Month
  - High-Mobility Artillery Rocket System (HIMARS)
  - M935/M809 Series 5 Ton Trucks

**Heavy Tactical Vehicles**
- 33 variants
- Over 29K systems fielded
- @ 700 / Month
  - Heavy Expanded Mobility Tactical Truck (HEMTT)
  - Palletized Load System (PLS)
  - M915 Family of Vehicles
  - Heavy Expanded Mobility Trailer (HEMAT)
  - Heavy Equipment Transport Systems (HETS)
  - Container Handling Unit (CHU)

**Armored Security Vehicle**
- 2 variants
- Approx 800 systems fielded
- @ 48 / Month (post Katrina)
  - M1200 Armored Knight

**The Army’s Largest Major Item Producer**

*Big Business, Lots going on daily!*
**TWV Current Fleet Status – OIF**

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th># IN OIF</th>
<th>AVG AGE</th>
<th>EUL* Yrs</th>
<th>Annual Peacetime Mileage</th>
<th>Annual OIF/OEF Mileage</th>
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</thead>
<tbody>
<tr>
<td>Up-Armored HMMWVs (M1114, M1151/52, M1165)</td>
<td>25,378</td>
<td>2.8</td>
<td>15</td>
<td>1,651</td>
<td>10,502</td>
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<tr>
<td>Non-Armored HMMWVs</td>
<td>1,135</td>
<td>14.4</td>
<td>15</td>
<td>2,035</td>
<td>3,755</td>
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<tr>
<td>AoA HMMWVs (AoA Kits being removed in RECAP)</td>
<td>1,135</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>FMTV 2.5 Ton LMTV</td>
<td>4,200</td>
<td>7.2</td>
<td>20</td>
<td>1,930</td>
<td>1,628</td>
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<tr>
<td>FMTV 5 Ton MTV</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>M809, 5 Ton Series Truck, Manual Transmission</td>
<td>37</td>
<td>32.2</td>
<td>20</td>
<td>900</td>
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<tr>
<td>M939, 5 Ton Series Truck</td>
<td>987</td>
<td>18.7</td>
<td>20</td>
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<tr>
<td>M35, 2.5 Ton Series Truck</td>
<td>121</td>
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<td>20</td>
<td>989</td>
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<td>HEMTT</td>
<td>1,567</td>
<td>17.3</td>
<td>20</td>
<td>1,700</td>
<td>3,306</td>
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<tr>
<td>Palletized Load System (PLS)</td>
<td>975</td>
<td>10.5</td>
<td>20</td>
<td>1,617</td>
<td>1,760</td>
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<tr>
<td>HETS (M1070)</td>
<td>566</td>
<td>10.3</td>
<td>20</td>
<td>1,184</td>
<td>12,039</td>
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<tr>
<td>M915, Line Haul Tractor (M915 FOV)</td>
<td>1,086</td>
<td>12.4</td>
<td>20</td>
<td>3,794</td>
<td>20,211</td>
</tr>
</tbody>
</table>

* Largest Delta from Peacetime to Wartime OPTEMPO

**BL: A Legendary fleet doing well despite duty cycle, in an extremely hostile environment**

**How can you help reduce O&S now and in the future?**
GWOT Support:

- Executing Objective Gunner Protection Kit w/ MNF-I Mods (To date, 10,460 kits Installed in AOR) on TWVs, demand continues to grow!

- Completed Frag Kit (FK) 5 for UAH Systems, enhancing Soldier protection against IED events and other threats (To date, 14,545 Installed in AOR). Developing Frag Kit 6 for limited application.

- Safety Enhancements Program “Build-out”, integrated most into current UAH production baseline. Over 90K “eaches” delivered to the AOR.

- Other Key efforts underway:
  - ECM – Mission Module deconfliction
  - 400 amp alternator upgrade kit
  - Casualty Evacuation (CASEVAC) kit integration, External Fuel Tank Protection
  - ASV Frag Kit, Turret Bolt upgrades
  - Intensive management of tires, AC parts, M1151 & ASV Spares, other ‘consumables’ that result from a period of protracted war
  - TWV Surge for MTV/HTV Armored Systems
  - New load range E tire for LTV Fleet

*M984 HEMTT WRECKER – “Getting it Done”!*
ASV: Significant Events for FY08

- Maintaining $\geq 90\%$ OR
- Continuing production @ 48/Month
- Performing RESET Pilot program (RRAD)
- Conducting CONUS Training
  - Camp Shelby (mobilization site)
  - Fort Dix (mobilization site)
  - Fort Leonard Wood (Crewman’s Course – Mar 08)
- Applying Retrofits in theater
  - Frag Kit 1
  - Frag Kit 2
  - Turret Bolt
  - Firing Switch
  - Parking Brake Interlock

From the Balkans to Baghdad, ASV is a Force Multiplier.
“The Long War” = Opportunities for you to help us… in the areas of:

- **Space Management**
  - Space management both under the hood and in crew compartment an issue. Smaller footprints for components, accessories and modules are desirable.

- **More Demand on existing Power Distribution Infrastructure** (not readily able to accept higher output demand).
  - Wiring, circuit breakers, switches sized for lower output legacy alternators, we’re going to 400!
  - Replacement wiring harnesses need to be able to achieve desired higher demand

- **Thermal Management in hostile environment**
  - Heat reduction in crew compartment and in automotive components continues to be a challenge

- **Operation & Support Cost Reduction opportunities**
  - Frame and Suspension components longevity an issue
  - Filters/Oils/Brakes
  - Ballistic glass, armor components

*Did I say we’re a $10B Business?*
Colonel Kidd,

We want to thank you for all the support you’ve given us. We cannot even begin to explain the positive impact every person in your organization has had on the war fighters here. In the past months, we have traveled approximately 4 million miles in harm’s way. The Armor upgrades you and your group provide for us combined with LTC Caires’ and SFC Mortons’ work on distribution make it safer to conduct combat operations.

We brought 120 soldiers with us from 1-221 Cavalry from the Great State of Nevada. Every one of these Soldiers is a volunteer. We all came directly from a 2 year deployment at the National Training Center directly to the Iraq Theater of Operations. When you spend three years with soldiers you worry every time they go into harms way. Your Armor program helps to mitigate so many of the risks we face on a daily basis.

SGT Orozco’s gunner (the Soldier you met at Navistar) is SPC P. He is a 22 year old college student from Nevada and he volunteered for this deployment after NTC. He was on a mission as a gunner in Iraq with one of your new turrets. His turret took a direct hit from an EFP and he walked away with zero injuries. Yes, I said zero! That has not been the fact with Soldiers with the previous turrets.

SPC P just came in my office and dropped off a Harley shirt for me from Ireland. He just returned from R and R leave. He said that this leave had significant meaning because he knows that had it not been for that turret he would not be with us today.

On behalf of the United States Cavalry, the 11th ACR, 1st Squadron 221st Cavalry, myself and most of all SPC P, we thank you for all your hard work. Please let you staff know how much we appreciate them.

Keep up the great work! It is appreciated.

Robert S Brown
SGM, USA
Joint Combat Support Systems

**MISSION**
Develop and Acquire Joint Combat Support Systems for Expeditionary Forces

**VISION**
Support the Joint Warfighter across the spectrum of conflict

**Project Manager**
COL John S. Myers

*Deputy PM Acquisition:* Mr. Dennis Mazurek
*Deputy PM Technology:* Mr. Joel Wagner

**PRODUCT MANAGERS**
- Sets, Kits and Outfits
  - LTC Brian Tachias
- Joint Light Tactical Vehicle
  - LTC Wolfgang Petermann
  - LtCol Ruben Garza (USMC)

**PRODUCT DIRECTORS**
- Test, Measurement & Diagnostics Equipment
  - Mr. Steve Lingar

**PRODUCT OFFICE**
- Horizontal Technology Insertion
  - Mr. Jim Loughridge

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Equipping Our Joint Warfighters with the World’s Best Capability... Today & Tomorrow
Product Director – Test, Measurement and Diagnostic Equipment (PD TMDE)

http://pmtmde.redstone.army.mil/

Maintenance Support Device (MSD)

Portable Radar Test Set

Calibration Sets (CALSETS)

General Purpose Electronic Test Equipment (GPETE)

Wireless Diagnostic Sensors (WDS)

Equipping Our Joint Warfighters with the World’s Best Capability… Today & Tomorrow
Product Manager - Sets, Kits, Outfits and Tools (PM SKOT)

http://pmskot.army.mil

- Tool Kit Carpenter, Squad Box (CTK-S)
- Standard Automotive Tool Set (SATS)
- General Mechanics Tool Kit (GMTK)
- Shop Equipment Contact Maintenance (SECM)
- Carpenters, Tool Kits (CTK)
- Forward Repair System (FRS)
Horizontal Technology Insertion (HTI)


Expedited Modernization Initiative Procedure (EMIP)
Component Technology Demonstrations

MARKET RESEARCH – NOT SOURCE SELECTION
Expedited Modernization Initiative Procedure (EMIP) - What is It?

◆ What is EMIP?
  ● Multi-phased, continuous process designed to improve Current / Future Tactical Wheeled Vehicle Fleet
  ● Identify & leverage Industry’s investment in advanced technologies
  ● Provide both the Government & Contractors a single point of contact

◆ Qualification
  ● Technology Readiness Level (TRL) 7: actual system completed/qualified thru test & demonstration (no R&D)
  ● Available for production within 6 months
  ● Technologies new to Army (not already demonstrated in its current configuration)

◆ Submit Technology Application Ideas (TAIs) and Demo Plan in MS Word format to PM TWV mailbox
  ● TruckTech@conus.army.mil


- Market Education not Source Selection
Key Participants

User
- Represents the Soldier
- Training and Doctrine Command (TRADOC)
- TRADOC Capability Manager- Transportation (TCM-T)
- Located in Ft. Monroe, VA (Ft. Eustis, VA)

Other Organizations
- HQDA
- Trainers
- Testers
- Other PMs
- Other agencies

PEO CS&CSS / PMs
- Acquisition office responsible for about 80% of the Army’s equipment
- Three O-6 (COL) Level Project Managers
- PM Tactical Vehicles (PM TV)
  - PM LTV (O-5/LTC level)
  - PM MTV (O-5/LTC level)
  - PM HTV (O-5/LTC level)
- PM Joint Combat Support Systems (PM JCSS) Located in Warren, MI
- PM Force Projection (PM FP) Located in Warren, MI

Research & Development
- Does automotive R&D work for the Army
- TARDEC (Tank-automotive Research, Development & Engineering Center)
- Interfaces with other DoD Labs and Industry
- Focus is mainly R&D
- Located in Warren, MI

Logisticians
- Tank-automotive and Armaments Command (TACOM) Life Cycle Management Command (LCMC)
- Sustainer for Army’s equipment
- Located in Warren, MI

- Diverse viewpoints represented through IPT process

Equipping Our Joint Warfighters with the World’s Best Capability... Today & Tomorrow
Demonstration Capabilities

- Four Separate Sets of Demonstrations per Day (Mon-Fri)
- Vehicle Interior & Tire Fire Suppressions
- Vehicle Systems (static & dynamic (Ride))
- Communications
- Live Fire
- Watercraft, Rail Car, Helicopter

EMIP IPT Approved Demonstrations

- Live Tire Fire Suppression Demonstrations (2 Hand Held & 2 Systems)
- Manual Impact Wrenching technology (no air or power used)
- High volume-low pressure water/air alternating pulse cleaning system for Internal Combustion Engine (ICE) cooling system cavities.
- High efficiency over-pressurized compressor to deliver cooler, pressurized, oxygen-rich air to engine turbo charger. Potential for increased fuel efficiency.

General Attendance (Invited)

- Military (All Services)
- VIP’s (Civilian, Military, Congress)
  - Civilian Leaders (SES’s)
  - PEO’s and PM’s
  - Representatives & Senators (HAC & SAC)
PM Joint Light Tactical Vehicles (PM JLTV)

http://contracting.tacom.army.mil/majorsys/jltv/jltv.htm
The Balanced Solution – JLTV Family of Vehicles and Trailers

**PAYLOAD CATEGORY A**

**Battlespace Awareness**

Mission Area

Payload: 3,500
Performance: Exceed HMMWV
Transport: 1x EAT* CH/MH 47/ CH53
2x IAT** C130

Sub-Configurations

General Purpose Mobility
(JLTV-A-GP) (4 Seat) - Army/USMC

**PAYLOAD CATEGORY B**

**Force Application**

Mission Area

Payload: 4000 / 4500 lbs
Performance: Exceed HMMWV
Transport: 1x EAT* CH 47/53
1x IAT** C130

Sub-Configurations

Infantry Carrier, Fire Team - USMC***
Infantry Carrier, Fire Team - Army***
(JLTV-B-IC) (6 Seat)
Reconnaissance, Scout (6 Seat) - Army
Reconnaissance, Knight (6 Seat) - Army
Command & Control On The Move
(JLTV-B-C2OTM) (4 Seat) - Army/USMC
Heavy Guns Carrier (MP, Patrol, Escort)
(4 Seat+ Gunner) - Army/USMC
Close Combat Weapons Carrier (4 Seat)
Army/USMC
Utility (2 Seat) – USMC
Ambulance (3 Seat+2 Litter)
Army/USMC

**PAYLOAD CATEGORY C**

**Focused Logistics**

Mission Area

Payload: 5,100 lbs
Performance: Exceed HMMWV
Transport: 1x EAT* CH/MH 47/ CH53
2x IAT** C130

Sub-Configurations

Shelter Carrier / Utility / Prime Mover
(JLTV-C-UTL) (2 Seat) - Army/USMC
Ambulance (3 Seat+4 Litter)
Army/USMC

* EAT: External Air Transport
** IAT: Internal Air Transport
*** USMC & Army JLTV-B-ICs may be the same vehicle

ONR & TARDEC Concept Examples

ONR CTV Demonstrator Vehicle

Trailers for each payload category to have similar payload and mobility as prime movers.

ONR & TARDEC Concept Examples

Army FTTS Demonstrator Vehicles

Equipping Our Joint Warfighters with the World’s Best Capability… Today & Tomorrow
DAE Concerns:
- Firm requirements
- Maturity of technology to meet the requirements
- Funding adequacy

DAE Guiding principles - programs will not enter SDD unless:
- Demonstrated high probability of delivering systems on time and within budget
- Programs are fully funded
- Additional guidance:
  - Competitive prototyping and testing demonstrating achievable levels of the requirements
  - Analysis of options to sustain a competitive environment in tech development, SDD and production phases
  - Maximized commonality of high cost components across the vehicle variants
  - An SDD phase that includes entrance and exit criteria with demonstrated technology and manufacturing and integration readiness
  - Work with Joint Staff to define appropriate levels of protection from threats and incorporate lessons learned from OIF/OEF

JLTV Directed to a MS A review as soon as practical
Approval to enter Acquisition Process at MS A

Approval to release RFP for Technology Development (TD)
- Multiple Contract Awards
- Full and Open Competition

Approval of TD Exit Criteria

Army designated as Lead Service

Designation of JLTV as Pre-MDAP

Program documents to be approved within 90 days

Services directed to fund SDD Phase
Joint Light Tactical Vehicle Technology Development Schedule

<table>
<thead>
<tr>
<th>FY2008</th>
<th>FY2009</th>
<th>FY2010</th>
<th>FY2011</th>
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Release RFP</td>
<td>TD Ktr Award</td>
<td>Proposals Due</td>
<td>MS A Preproposal Conference</td>
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<td>IBR</td>
<td>SDI</td>
<td>SRR</td>
<td>Tech Demo Phase</td>
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<tr>
<td>Design/Fab</td>
<td>TD</td>
<td>PDR</td>
<td>MDA Review</td>
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<tr>
<td>TD CDR</td>
<td>TRR</td>
<td>Armor Coupon Testing</td>
<td>CDD Refinement for SDD</td>
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<tr>
<td>Ballistic Hull Testing</td>
<td>System Test</td>
<td>Performance Testing</td>
<td>End of Test</td>
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<tr>
<td>CDD Refinement for SDD</td>
<td>Prototype Live Fire</td>
<td>Reliability &amp; Maintainability Demonstration</td>
<td>Use Evaluation</td>
</tr>
<tr>
<td>Initial CDD Staffing</td>
<td>Final CDD Staffing</td>
<td>Test Report</td>
<td>Dates for Reviews are notional; Actual dates will be set at Contract Award</td>
</tr>
</tbody>
</table>

Notes: Actual dates will be set at contract award.
ONR (NATC) – Combat Tactical Vehicle (CTV) Technology Demonstrator (TD)

Survivability & Force Protection
- 6 Marine/Soldier cab
- Monocoque Aluminum-based V-Shaped Lower Hull with Integrated Armor/Structure
- Modular Armor Kit
- Blast-Mitigating Seats
- Air Conditioning w/ Modular NBC
- Automatic Fire Suppression
- Accepts Multiple Weapons Stations

Network Centricity
- Integrated communications suite

Sustainability
- Limited on-board diagnostics
- 10Kw on the Move & 30Kw Stationary Integrated, exportable AC power

Transportability
- 96” w x 220” l  Operational Ht = ~ 86 inches & Reducible Ht = 76.4 inches
- CH53/CH47 EAT & C130 Transportable
- MPS & Amphibious shipping
- Demonstrator curb weight = 15,600 lbs

Mobility
- 322 Hp Detroit Diesel 926
- 6-Speed Twin Disc Transmission with Integral Transfer Case
- SLA Independent w/ 3-Position Ride Height Adjustment & 24” Wheel Travel
- Central Tire Inflation Systems (CTIS)
- Anti-Lock Braking System (ABS) w/ Integrated Stability Control

Payload
- 6000 lb payload with integral armor

Operational Range
- 400 miles

Equipping Our Joint Warfighters with the World’s Best Capability… Today & Tomorrow
CTVTD LUE Overall Summary

◆ Marines: 22 Oct – 02 Nov (497 Miles)
  ● 7 Infantry / Combat Engineer / MT Operator & Maintenance
  ● 2 MT Operator / MT Maintenance

◆ Army: 05 – 16 Nov (595 Miles)
  ● 6 Infantry / Tank Crew
  ● 1 Maintenance Chief

◆ Air Force/Navy: 26 – 30 Nov (248 Miles)
  ● 4 Airman-Air Security Personnel
  ● 3 Seabees-Equip Operator / Maintainer

◆ CTVTD operated at 21,850 lbs plus 6-Man Crew
  ● Primary Road ~ 75 miles
  ● Secondary Road ~ 245 miles
  ● Trails ~ 480 miles
  ● Cross-country ~ 540 miles
  ● CTVTD average off road speed
    • 10 to 15 mph faster than HMMWV

◆ M1114 w/o payload & 2-man crew
  ● Power steering pump failure at ~300 miles
  ● Frame failure at ~340 miles

◆ Replacement M998 w/o payload & 3-man crew
  ● Failed rear lower control arms at ~1250 miles
LUE Participants’ Comments

**POSITIVES**
- Size, Power, & Mobility
- Ability to accomplish range of missions
- Inherent Protection
- Quickly adapted to vehicle features & capabilities (relative to HMMWV)
  - More Systems
    - CTIS, Adjustable Ride Height, ABS, Axle Locks
  - Driver Interface to Electronic Controls
    - Gages & Switches
- Saloon Doors for Flank Protection During Dismount
- Fore & Aft Adjustable Front Seats

**CONCERNS**
- Interior Stowage Volume
- C4I Suite Placement
- Visibility & Situational Awareness
  - Blind Spots at Driver & Commander Positions
  - Rearward Visibility & Situational Awareness
  - Immediate Front & Close-in Side Visibility
- Vehicle Height - Combat Dismounts & Mounts

**RECOMMENDATIONS**
- Need to Address Internal Stowage
  - Provide Space & Means to Secure Equipment
  - Want certain items accessible from inside
    - E.g., ammo, water, chow, mission equipment
  - Comfortable w/ Outside Stowage
- Turret Ring Location
  - Room for Gunner’s Feet
  - 360 Deg Freedom of Movement
- Do not need smaller rear side door
- Means to quickly lower vehicle from Combat Height for Combat Dismounts
- Wrap around instrument panel to provide more room btwn Driver & Cmdr/A-driver
- Potential for Opening Windows
  - In Event of Non Functional HVAC
Payload, Performance, Protection
Summary

- EMIP info at

- JLTV Program Updates at
  http://contracting.tacom.army.mil/majorsys/jltv/jltv.htm