**Joint Light Tactical Vehicle Power Requirements**

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**12. DISTRIBUTION/AVAILABILITY STATEMENT**
Approved for public release, distribution unlimited

**13. SUPPLEMENTARY NOTES**
The original document contains color images.

**16. SECURITY CLASSIFICATION OF:**
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**17. LIMITATION OF ABSTRACT**
SAR

**18. NUMBER OF PAGES**
10

**19a. NAME OF RESPONSIBLE PERSON**
Ground Vehicle Power and Energy

Non-Primary Power
- Thermal
- Communications
- Survivability
- Etc...

Power Needs

Mobility

FY02
FY12

Non-Primary Power
Estimated Electrical Power Growth

Electrical Power (kw)

Current
Future

JLTV
FCS
Stryker
HBCT
HMMWV

Actual Growth
1985-2007
Mission Role Variants

**Combat Tactical Vehicle** – Provide support for maneuver forces (infantry and combat arms)
  - Infantry Fire Team Carrier
  - Heavy Guns Carrier
  - Anti-tank Missile Carrier

**Power Estimates**

Mobility + On Board + Exportable ~ 335-400HP

On Board Requirement – 7kW(t) 10kW(o)*

Exportable Requirement – 10Kw(t) 30kW(o)*

Silent Watch – 2 hours (t) 6 hour (o)*
(includes 2 SINCGARS, Blue Force Tracker, Remote weapon System)

* Stated in JLTV RFI Dec. 06, Attachment 2a

On Board and Export Power must be provided while vehicle is mobile or stationary.
Mission Role Variants
Provide support for combat support and combat service support forces
Utility Vehicle Light
Utility Vehicle Heavy
Shelter Carrier
Ground Mobility Vehicle

Power Estimates
Mobility + On Board + Exportable ~335-400HP

On Board Requirement – 7kW(t) 10kW(o)*
Exportable Requirement – 10Kw(t) 30kW(o)*

Silent Watch – 2 hours (t) 6 hour (o)*
(includes 2 SINCGARS, Blue Force Tracker, Remote weapon System)

* Stated in JLTV RFI Dec. 06, Attachment 2a

On Board and Export Power must be provided while vehicle is mobile or stationary
Mission Role Variant

Long Range Surveillance
Provide support for conventional force long range surveillance, Special Operations Command, plus other Service reconnaissance and surveillance forces conducting intelligence, surveillance and reconnaissance missions.

General Purpose
C2

Power Estimates

Mobility + On Board + Exportable ~280-320HP

On Board Requirement – 10kW(t) 14kW(o)*

Exportable Requirement – 10kW(t) 30kW(o)*

Silent Watch – 4 hours (t) 12 hour (o)*
(includes 2 SINCGARS, Blue Force Tracker, Remote weapon System and Long Range Acquisition Sensor)

* Stated in JLTV RFI Dec. 06, Attachment 2a

On Board and Export Power must be provided while vehicle is mobile or stationary.
Requirements - Functional Decomposition

Ground Vehicle Power and Energy

Prime Power
- Engine
  - Diesel
  - Turbine
  - Gasoline
  - Stratified Charge
- Drivetrain
  - Electrical
  - Mechanical
  - Driveline Components
  - Mobility Components

Non Primary Power
- Diesel
- Turbine
- Fuel Cell
- Battery
- Generators

Energy Storage
- Batteries
- Capacitors
- Flywheels
- Fuels

Power & Thermal Management
- Power Generation
- Energy Storage
- Power/Thermal Control & Distribution
- Power Plant Cooling
- Power-Electronics Cooling
- Climate Control

Non Primary Power

Advanced Suspension

Militarized Commercial Engines

JP8 Reformer

Hybrid Components

Energy Storage

Power Dense Quiet Power Generation
Back-up
Survivability & Force Protection
- Monocoque cab
- Modular Armor Kit
- Front, rear and side cameras
- NBC system
- Collision avoidance
- 2 person cab

Network Centricity
- Integrated communications suite
- Integrated computer system

Sustainability
- 30 kW exportable AC power
- Enhanced On-board Diagnostics
- Lube for Life (bushings & bearings)

Transportability
- 96"w x 102"h x 406"l
- C-17 transportable
- 49,000 lbs. Curb Weight
- 75,000 lbs. Gross Vehicle Weight

Mobility
- Parallel Hybrid Electric Propulsion
- Air Suspension Height Control (ASHC) and Load Monitoring System (LMS)
- Central Tire Inflation System (CTIS) / run-flat
- Anti-Lock Braking System (ABS)

Payload
- 13 Tons - Residual Payload w / B Kit

Distribution
- Multi-functional LHS & MHE crane hook lift and a forklift
- 6,100 lbs at 23 feet MHE
- 13,200 lbs at 24’ 3” LHS

Operational Range
- 300 miles

- C9 8.4L engine (335 kW @ 2200 rpm)
- 4 NiMH batteries 8.5 amp hrs, 336 Volts
- Integrated starter/generator (ISG) 120kW peak, 100 kW continuous
- 7 speed hydrokinetic automatic transmission

Commonality with MSV
- Axles, suspension, wheels, tires, brakes, ABS, Central Tire Inflation System (CTIS), 24 Volt CAN/Bus System

Distribution
- Receives Flat Racks and ISO containers from Truck Load Handling System (LHS)
- Move loads and trailer without truck

Mobility
- 3 Axle with semi-autonomous operation
- Steering on Axle #1 and #3
- Turning radius (Autonomous): 20 ft-8 in
- Max speed 1.89 MPH
- Vertical Obstacle 24 in Step
- Gradient (Autonomous) – 30%
- Air Bag Independent Wishbone Suspension with ride height control
- 230 mm Jounce, 200mm Rebound
- Central Tire Inflation System (CTIS)

Deploymability
- Self-Powered offload C-130 and operational watercraft Joint Requirement

Operational Range
- Range 65 miles
- Power Diesel Engine (73 HP)
- Hydrostatic Drive Train
- Tethered Coupled / Wireless Uncoupled Control

MSV Companion Trailer (CT)
Survivability & Force Protection
- Monocoque cab
- Modular Armor Kit
- 2 person cab

Network Centricity
- Integrated communications suite
- Integrated computer system

Sustainability
- Limited on-board diagnostics
- 75kW integrated, exportable AC power

Transportability
- 92” w x 83” h x 221” l
- CH-47 and C-130 Transportable
- Demonstrator curbweight = 18,600 lbs
- Reducible weight = 16,400 lbs

Mobility
- Parallel Hybrid electric propulsion
- Torsion bar suspension, passive shocks
- Designed for adjustable ride height control
- Central Tire Inflation Systems (CTIS)
- Rear axle steer
- Anti-Lock Braking System (ABS)

Payload
- 3400 lb payload with integral armor
- On-board crane with 800 lb lift @ 8’

Operational Range
- Over 555 mile range

UV Companion Trailer

Commonality with UV
- Common tires, suspension, brakes with truck

Payload
- 5500 lb payload
Lockheed Martin – Owego – FTTS Demonstrator

Utility Vehicle (UV) & Trailer

Survivability & Force Protection
- Monocoque cab
- Modular Armor Kit
- Machine Gun Ringmount
- 2 crew + 1 jump seat

Network Centricity
- Integrated communications suite
- Integrated computer system

Sustainability
- Limited on-board diagnostics
- 8kW integrated exportable AC power

Transportability
- 95” w x 90” h x 229” l
- CH-47 & C-130 Transportable
- Demonstrator curbweight = 21,600 lb
- Reducible curbweight = 19,705 lb

Mobility
- Parallel Hybrid electric propulsion
- SLA suspension with Air Spring, passive shocks
- Adjustable Ride height control (4 position)
- Central Tire Inflation (CTIS)
- Anti-Lock Braking System (ABS)

Payload
- 3300 lb payload with A-kit armor
- On-board crane with 1000 lb lift @ 5’

Operational Range
- 528 mile range

UV Companion Trailer

Commonality with UV
- Common tires, suspension, brakes with truck

Payload
- 6100 lb payload