Marine Corps
On-Board Vehicle Power Systems
for Legacy Military Vehicles

Joint Service Power Exposition
2007
On-Board Vehicle Power Systems

- DC-AC Power Inverters
  - 1500-3000 watts

- OBVP - Medium
  - 30 kW Add-on HMMWV

- OBVP - Small
  - 5-8 kW (HMMWV)

- OBVP - Large
  - 120 kW (MTVR)

Retrofits for In-Theater Assets
Vehicle Power Inverters

- Requirement for DC-AC Power Inverter
  - 18-32 VDC input
  - 120 VAC, single phase output
  - 1800 watts minimum output
  - Easily installed
  - Readily available / commercial based item
- Market Research and testing conducted
- GSA schedule showed adequate competition
- Solicited, competed, awarded in 2007
- Multi-year contract awarded to IRIS QP-1800
  - Inverter
  - Ruggedized carrying case
  - NATO cable connector
  - 5600 articles planned
On-Board Vehicle Power - Small

- Up to 400 Amps at 28 VDC needed
- Army has lead on retrofit kit
  - Vehicles in theater
  - DC power needs
- USMC will procure kits in 2007/2008
  - M1114, M1151, M1152 configurations
- Continuing to investigate / test inverters at higher power levels for AC power needs
- Future USMC vehicles will be procured with 400 Amp capacity (LVSR, MRAP)
Alternator Amperage Rating on HMMWV at 28 VDC

- Initial Fielding – 60 Amps
- Post Desert Storm – Start of Digitization
- First Generation Vehicles Wearing-Out
- Second Generation Vehicle Deliveries
- OEF / OIF / Digitization / Networking kicking in
On-Board Vehicle Power
Medium & Large Systems

• Technology Demonstrations funded by Office of Naval Research
• HMMWV based system:
  • 30 kilowatts stationary / 10 kilowatts on-the-move
  • Will be mounted on HMMWV M1123
  • Power output at 120/208 VAC, 60 hz
  • Two vehicles can be connected in parallel (60 kW output)
  • Can synchronize to MEP-805B generator
• MTVR based system:
  • 120 kilowatts stationary / 20 kilowatts on-the-move / 3 kW transition
  • Mk 23 Truck
  • Power output at 120/208 VAC, 60 hz
  • Can synchronize to MEP-807A generator
• Vehicles will be delivered in 2007 for evaluation
On-Board Vehicle Power - Medium

DRS Technologies Selected for Hardware Fabrication Phase

PM Alternator
DC Link Capacitance
Auxiliary Power Distribution System
Alternator Rectifier
On-Board Vehicle Power - Large

OshKosh Selected for Hardware Fabrication Phase

Marathon Generator (same as MEP-807A)

Power Distribution / Terminal Wiring
Inverter for on-the-move power

3 Electric Motors feeding combiner drive box
Drivetrain aft of motor drive box is unchanged
# OBVP Schedule (HMMWV & MTVR)

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- **Concept Definition**
- **Down Selection**
- **Detailed Design / Fabrication**
- **Design Reviews**
- **Vendor Testing**
- **Delivery to Gov’t**
- **Gov’t Testing / Demonstration**
- **Transition to MARCORSYSCOM**
- **Maturation / Kit Development**
- **Gen 2 Vehicle Kit**
- **Integ / Testing**
- **Production Decision**
On-Board Vehicle Power
Unique Applications

- Power community continually requested to support other platforms
  - Tanks
  - Logistics Vehicle System
  - HIMARS
  - Light Armored Vehicle
  - Lightweight 155 Howitzer
  - Amphibious Assault Vehicle
  - Force Protection / Military Police
- Continued need for power for Jammers, Silent Watch, stationary applications
- Necessary when host vehicle incapable of power load, or host vehicle can not be retrofitted with larger alternator
- 28 VDC Gensets needed (various sizes, ratings, restrictions)
On-Board Vehicle Power - Unique

Watch FedBizOpps for solicitations