Joint Service Power Expo 2009

Battery Management
and Sustainment System
Most 24V systems are made up of multiple batteries in series or series parallel.

Failure occurs for a variety of reasons:
- Received “new” in an undercharged condition
- Never fully recharged
- Key off loads
- Parasitic drains
- Environmental
- Battery set imbalance
  - 12 Volt Taps
  - Dissimilar Chemistries
• Lead Sulfate Build up---Enlarged Crystals
• All L/A batteries create PbSO4
  – AGM – slower formation
  – Flooded Cell- faster formation
  – Heat accelerates self discharge/crystal formation
Common Causes of Battery Failure

Ohio State University
5-yr. old fully charged batteries

Cathode crystalline structures remaining after charging without pulsing

Cathode after charging with pulsing
Impact on Battery Performance

- Overall capacity is reduced
- Starting issues begin to increase
  - Heat
  - Cold
- Shorter “silent watch” times
- Insulating layer of crystals

Premature battery replacement
Operational & Financial Impact of Battery Failure

- Equipment Not Mission Capable
- Shrinking O&M budget spent on batteries
- Man-hours wasted on replacing batteries
- HAZMAT requirements
- RBE whole fleet battery replacement
• Goals
  – Minimize handling batteries
  – Keep them in the vehicles
• Training at every level
• Testing
• Preventive Maintenance
• Corrective Maintenance
490 PT and MBT-1
Part Nos. 741x490 and 741x800
(NSNs: 6130-01-510-9594 and 6130-01-463-8499)
Preventive Maintenance

**PM Goal**
KEEP BATTERIES IN VEHICLES

- Pro HDs
- Solar Chargers
Corrective Shop Maintenance

• When batteries are too far gone to be recharged/recovered in the vehicle
  Caused by:
  – Imbalanced set
  – Short run times
  – Too many add-on loads
  – Low output alternator
  – Mixed chemistries
  – Sitting too long without Solar Maintenance Charging (RBE)
  – How long is too long?
Battery Service Equipment Set (BSES)
- 1 – HD Pallet Charger
- 1 – Redi-Pulse Pro-HD 12/24V Charger
- 1 – Redi-Pulse Pro-12
- 10 – MBT-1 Battery Testers
- 1 – 490PT Battery Analyzer

“Initially we didn’t think it was going to be anything other than additional charging stations, but immediately we found that we could recover twice as many batteries using the technology incorporated into the BATTCAVE Chargers.”

DOL – Fort Lewis
Many battery failures are preventable
AGM (Hawker, Optima) can have over 6 yr service life
Flooded Cell (6T’s, 2/4HN, Grp 31’s) can have over 3 yr service life

Stop by PulseTech Products Booth 417 for more information!