

# Battlefield Power for the Warfighter

## *Lessons for the Development Community*

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April 2007



SF soldiers in theater ripping apart dozens of MBITR boxes to run them from BA-5590s



Actual operational power supply rigged by soldiers to run \$500,000 thermal sight in theater

# BLUF

**2 years of developing, deploying, and supporting technology in OIF and OEF**



- **20% of successful technology deployment is the technology... 80% is logistics (materials, repair, training, support)**
- **Power is a large part of the logistics nightmare for many items... avoid proprietary solutions whenever possible**

# Proprietary Batteries: Resupply/Charge

## Cooling Vest for Mounted Operations



Viable technology solution but used proprietary battery:

- Field use impaired by battery choice
- Reduced value for Warfighter, military, manufacturer

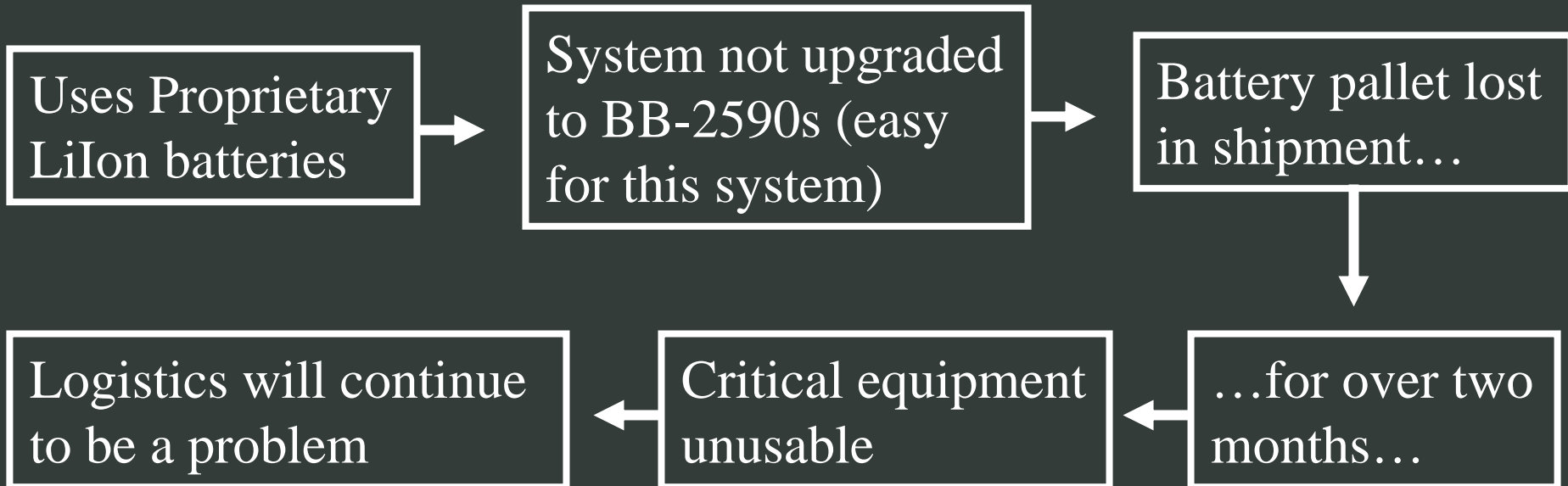
Correct solution:

- BB-2557 and/or BB-2590
- More utility, lower initial cost, lower long term cost, countless substitutes



# Proprietary Batteries: Logistics

ECM Device for Critical Application



# Proprietary Batteries: Support

Robot

Proprietary  
battery  
problems

Unit cold calls  
manufacturer

Manufacturer  
calls us, we  
contact unit

Travel from Baghdad  
to Mosul (2 weeks)

Replace/update  
batteries (2 days)

Travel back  
(3 days)

...three days after  
returning to Baghdad...

...unit calls:  
**CHARGER DIED**

Move charger  
through LNOs  
(2 weeks)

**Total Time ~ Six Weeks to support due to proprietary power system**

# Good News: Use the “Standards”



UAV uses standard mil batteries, HMMWV, and/or other sources to run both OCU and recharge lightweight aircraft batteries... best that could be done

# Good News: Use the “Standards”



Both these robots run directly off of BB-390/2590 standard military batteries, saving battery and charger logistical nightmares.

# Good News: Use the “Standards”



Unique split-body robot for rough terrain under vehicle inspection uses military standard BB-2847 batteries and military standard chargers.



# Good News: Use the “Standards”

Run anything COTS from an x90



## COTS:

- Cell phones
- Sat phones
- PDAs
- AA chargers
- Laptops
- Camcorders
- DVRs
- LCD monitors
- Surveillance cameras
- Loudspeakers
- Spotlights
- Dremel tool
- Etc.



# Good News: Use the “Standards”

## LRAS3: Developed for Mounted Units



VS.

No AC power supply was ever envisioned to be required in the initial fielding....

# LRAS3: Developed for Mounted Units



...so soldiers were hacking together field expedient solutions. Left: HMMWV taken off line to run sight. Right: field rigged power supply. This is not the way!

**Two proposed solution approaches for the LRAS3...  
Question: which approach is right?**

**NEITHER**

**COTS Approach**

- UK marine manufacturer
- \$2,700 each
- 1 month lead time



vs.

**Military Solution**

- US military manufacturer
- 9 -12 month lead time
- \$250k NRE
- \$5k+ each
- Meets strict equipment specs

# Good News: Use the “Standards”

**SSG D.W. of the 1/506<sup>th</sup> INF REGT wins with:**



**Moving to a “standard” 24V Power Supply:**

- Saved 9+ months of R&D
- Saved over \$250k in NRE for development
- Saved over \$800k in power supply costs
- Avoided logistics/support issues for new custom equipment

# Solar Battery Charging + UPS

**Problem: what's the best way to power long term, remote sensors in theater?**

- Lots of BA-5590s in parallel
- Several BA-8180s (Zn-Air) in parallel
- Solar UPS... Yes! (self operating, etc); modified military standard SP-4 to get there easily





# Product Design and Fielding Issues

*Why manufacturers should standardize and/or have the right adapters*

- **It CAN be done, and it's not that hard.**
  - Examples: MARCbot, ODIS, Raven, LRAS3
- **For manufacturers:**
  - Reduces time to market, battlefield
  - Increases military acceptance
  - ? Reduces product cost ?
- **For Military:**
  - Increases standardization (a good thing)
  - Reduces logistics and support issues (HUGE)
- **Manufacturers (military and consumer) need:**
  - Directive AND understanding why
  - Help with how: recommended options, dimensions, sources, connectors, DC-DC converters, suppliers, etc.



**Most power problems encountered in theater are OUR FAULT (incompatible / proprietary batteries, connectors, cables, etc), not because of the operational scenario.**

## **Contact Info**

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