MaxPower, Inc.

Organic-based Room Temperature Liquid Reserve Technologies

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Topics

• Company background
• MaxPower approach to reserve power for munitions
• Reserve battery case studies
  – Setback activated reserve battery for gun-launched submunition
  – Electrically activated reserve battery for ICBM reentry vehicle
• Future for reserve power at MaxPower
Company Background

- Established in 1995
- Mission statement: Special-purpose battery company, pursuing the development and manufacturing of lithium-based batteries
- Focus on “niche” applications
  - Reserve power is an important business component
Reserve Power Approach

- Organic-based room temperature lithium liquid reserve technology
- “What’s old is new again”
  - Ambient temperature operation
  - Safety of organic chemistry
  - Growth of lithium technology
Reserve Case Studies

- Setback activated reserve battery for 155 mm gun-launched submunition
- Design required unique off-axis placement and reliable activation at low acceleration levels
- Prototype batteries met electrical requirements across temperature range
- Demonstrated activation in air gun tests
Reserve Case Studies

- Electrically activated reserve battery developed for an ICBM reentry vehicle

- Prototype battery met performance requirements after being subjected to simulated environments (vibration, acceleration, spin)

- Follow-on paper study where this technology was scaled to other ICBM system batteries showed size/weight reductions
Reserve Case Studies – Take Away

- Highly configurable technology
  - Can meet a range of munitions battery form and function requirements
- Capable of meeting fast rise times and long run times
- High energy density – decreased size/weight
Future for Reserve at MaxPower

Special Purpose Batteries

• Continued development for applications
  – Ongoing program for Navy long-range missile battery
  – Large caliber fuze battery

• Technology development
  – Material improvements for increased power
  – Production process improvements

• Seek applications that leverage strengths
  – High power and energy with long active life
  – Ambient temperature
  – Reliable, organic chemistry
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