POWER OPTIMIZER FOR THE WARFIGHTER'S ENERGY REQUIREMENTS
“Battery Calculator”

Created by: US ARMY CE-LCMC, Power Sources Team, Fort Monmouth, NJ

2007 Joint Service Power Expo
Presented by Don Brockel,
Rechargeable Project Leader US Army
No Batteries: No Commo

Army Capt. Chad Foster.
Photo by Petty Officer 1st Class Michael Larson, U.S. Navy.
Supply vs. Demand

[Graph showing supply vs. demand over time with production and actual demands plotted.]
POWER
POWER OPTIMIZER FOR THE WARFIGHTER'S ENERGY REQUIREMENTS

• POWER is a battery requirement calculator
• Designed with the Warfighter in mind
  – Accessibility:
    • Can be downloaded from the internet
    • Stored on a secure server (AKO access required for download or can be emailed to "mil addresses")
    • Microsoft Excel based
  – Usability:
    • Full user instructions included
    • Simple step-by-step process
    • Data is saved in spreadsheet format
Large Database

• Built around the data in SB 11-6
  (Supply Bulletin 11-6: Communications-electronics Batteries Supply And Management Data; 1 June 2001)

• Battery options for most portable devices in the DoD inventory

• Runtimes for many devices

• Temperature corrections
Live Demonstration
Sample Use:
Comparing different battery options

• Example: AN/PRC-119F
  – Device always on
  – Battery swap times in 24 hour* intervals
  – 24 hour re-supply time
  – Comparing battery options using FY07 pricing
  – Normal Temperature

*20 Hours for the BB-390
## Comparing Battery Options

### Summary of Minimum Battery Requirements (ASIP) - Normal Temp

<table>
<thead>
<tr>
<th></th>
<th>Minimum for 1 day mission</th>
<th>Minimum for 3 day mission</th>
<th>Minimum for 30 day mission</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Batts (day)</td>
<td>Pkgs to order (day)</td>
<td>Weight (day)</td>
</tr>
<tr>
<td>BA-5590B/U</td>
<td>1</td>
<td>0.3</td>
<td>2.25</td>
</tr>
<tr>
<td>BB-390B/U</td>
<td>5</td>
<td>5</td>
<td>21</td>
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<tr>
<td>BA-5390A/U</td>
<td>1</td>
<td>0.3</td>
<td>3</td>
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<td>BB-2590/U</td>
<td>4</td>
<td>4</td>
<td>12.8</td>
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<tr>
<td>BA-8180/U</td>
<td>1</td>
<td>1</td>
<td>6</td>
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</tbody>
</table>

**Lowest Weight**

**Lowest Cost**
POWER: Battery Management

Can you hear me now?

Army Capt. Chad Foster.
Photo by Petty Officer 1st Class Michael Larson, U.S. Navy.
Summary

• POWER helps the Warfighter estimate battery needs
  – Eliminates waste
  – Helps avoid needless battery shortages

• POWER allows the Warfighter to figure out which options work best for the mission profile
  – Weight
  – Runtime
  – Cost
Questions & Contact Information

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Supplemental Slides
Runtime Calculations

1. **End Item with its listed battery**
2. **Look up automatic battery alternates**
   - **Is there a listed runtime?**
     - **Yes**: Calculate automatic battery alternates' runtimes based on lookup table
     - **No**: Continue
   - **No**: Leave Blank
3. **Display the runtimes**
   - **Normal**
     - **What temperature range is chosen?**
       - **Other**: Does temp. data exist for the battery type?
         - **No**: Leave Blank
         - **Yes**: Continue
       - **Normal**: Calculate runtime by looking up temperature conversion factor by battery type
   - **Other**: Leave Blank

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**Flowchart Diagram:**

- Start: **End Item with its listed battery**
- **Yes** to runtime: **Look up automatic battery alternates**
- **No** to runtime: Leave Blank
- **Yes** to runtime: Calculate automatic battery alternates' runtimes based on lookup table
- **No** to runtime: Display the runtimes
- **Normal** to runtime: What temperature range is chosen?
  - **Other**: Does temp. data exist for the battery type?
    - **No**: Leave Blank
    - **Yes**: Calculate runtime by looking up temperature conversion factor by battery type
- **Other** to runtime: Leave Blank
Comparing Battery Options

Battery Weight (lbs)

<table>
<thead>
<tr>
<th>Battery</th>
<th>Weight (day)</th>
<th>Weight (3dy)</th>
<th>Weight (mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-5590B/U</td>
<td>70</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>BB-390BU</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>BA-5590U</td>
<td>20</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>BB-3900U</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>BA-8180U</td>
<td>5</td>
<td>5</td>
<td>2</td>
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</table>

Battery Cost

<table>
<thead>
<tr>
<th>Battery</th>
<th>Cost (day)</th>
<th>Cost (3dy)</th>
<th>Cost (mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA-5590B/U</td>
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<tr>
<td>BB-390BU</td>
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<tr>
<td>BA-5590U</td>
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<tr>
<td>BB-3900U</td>
<td>$750</td>
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<td>$250</td>
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<tr>
<td>BA-8180U</td>
<td>$250</td>
<td>$200</td>
<td>$100</td>
</tr>
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</table>