MSFC EEE PARTS
OBsolescence Management Program
Overview

• **What is EEE Parts Obsolescence?**
  - Electrical, Electronic, and Electromechanical (EEE) parts obsolescence occurs when a part is no longer in production and has no approved sources of supply.

• **What challenges does NASA face?**
  - EEE parts are discontinued at a faster rate than NASA hardware is built.
  - Limited number of suppliers for space qualified parts.
  - Commercial sector dominates electronics market.
  - Technology advancements for space flight hardware limited by unavailability of next-generation, space qualified EEE parts.

• **Who is impacted by obsolescence?**
  - Everyone, regardless of mission type!
Overview

- Obsolescence issues may occur at anytime during a project life cycle.
  - Design
  - Development
  - Production
  - Sustainment
- Obsolescence may impact any project regardless of mission type or duration.

Examples of Obsolescence Impacts

<table>
<thead>
<tr>
<th>Part availability for lag time between design and production.</th>
<th>Single Flight</th>
<th>Multi-Flight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for spares due part failures.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reuse of designs for future projects (Heritage Hardware)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Availability of parts for multiple production units with similar configuration.</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Mitigate Obsolescence Risk by Performing Proactive Obsolescence Analysis
• **What is MSFC doing to mitigate obsolescence risk?**

1. Developed MSFC-STD-3620, EEE Parts Obsolescence Management and Control Requirements.

2. Worked with NASA Headquarters (HQ) to incorporate obsolescence management requirement to the EEE Parts Policy 8730.2.

3. Developed the Electronic Parts Application Reporting and Tracking System (EPARTS) obsolescence module.

4. Expanded obsolescence management capability beyond MSFC and to other NASA centers.
Obsolescence Analysis

- **EEE Parts Selection**: Coordinate with Design Engineers for part selection.
- **Parts List Development**: Ensure parts lists meet data requirements.
- **Obsolescence Analysis**: Perform analysis in accordance with MSFC-STD-3620.
- **Results Reporting**: Report results of analysis to impacted project.
Obsolescence Analysis

- Advanced part obsolescence notification

Monitor Product End-of-Life
- Manufacturing Sources
- Obsolescence Date

Determine EEE Part Availability
- Replacement Parts
- Alternate Manufacturer
- Existing Inventory

Identify Obsolescence Mitigations
<table>
<thead>
<tr>
<th>EEE Part Number</th>
<th>Function</th>
<th>Total Manufacturing Sources</th>
<th>EEE Part Availability</th>
<th>Obsolescence Date</th>
<th>Manufacturer</th>
<th>Replacement Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5962R9568301VCC</td>
<td>Quad 2-Input AND Gate</td>
<td>Obsolete</td>
<td>Obsolete</td>
<td>2007</td>
<td>Intersil</td>
<td>None Identified</td>
</tr>
<tr>
<td>5962F9671901VXC</td>
<td>Transistor</td>
<td>Obsolete</td>
<td>Obsolete</td>
<td>2007</td>
<td>Intersil</td>
<td>5962F8766303QXA</td>
</tr>
<tr>
<td>PPC440SP-ANC667C</td>
<td>PPC440SP Embedded Processor</td>
<td>End-of-Life</td>
<td>End-of-Life</td>
<td>04/11/2012</td>
<td>Applied Micro</td>
<td>None Identified</td>
</tr>
<tr>
<td>5962-8853401EA</td>
<td>Flip Flop</td>
<td>Sole Source</td>
<td>3-4 years</td>
<td>2015</td>
<td>QP Semi</td>
<td></td>
</tr>
<tr>
<td>JANTXV1N6111AUS</td>
<td>Diode</td>
<td>2 or More</td>
<td>&gt;18 years</td>
<td>2029</td>
<td>Microsemi, Semtech</td>
<td></td>
</tr>
</tbody>
</table>
Timeline of Events

2008
Established MSFC Obsolescence Management program

2010
Introduced obsolescence to EEE Parts Community of Practice (CoP)

2012
Initiated NASA Obsolescence Pilot Program

2014
Coordinated with CoP to develop EPARTS database

2015
Utilize EPARTS to provide obsolescence data across NASA

Identified MSFC as the only Center with an established proactive obsolescence management program.
• NASA EEE Parts Database
  – Agency EEE parts library
  – Obsolescence management tool
  – EEE parts process tool
  – Mission Assurance mechanism
Obsolescence Module

• Enables MSFC to perform EEE parts obsolescence analysis function for the Agency.
  – Identified as the only NASA center with capability.
  – Coordinated with JPL to design and develop module.

• Streamlines obsolescence management process.
  – Reduces research and analysis time.
  – Promotes common mitigations across projects and centers.

• Encourages users to participate in EPARTS.
  – Provides automatic obsolescence analysis upon parts list import.
  – Ensures parts monitored on continuous basis for product discontinuance.
• Each part loaded into EPARTS is assigned an obsolescence status.
• Fields are added to each EEE part to denote part availability:
  – Total manufacturing sources
  – Available manufacturers
  – Projected obsolescence date
  – Actual obsolescence date
  – Obsolete part replacement options
• Obsolescence risk color code is assigned to each part and appears on the project-specific dashboard.
• All parts monitored on a continuous basis for end-of-life notification.

Obsolescence Risk Legend

- **Y**: Obsolete, End-of-Life Date issued, Sole Source Manufactured with less than <4 years availability
- **N**: Part availability >4 years, 2 or more manufacturing sources
- **N/A**: Obsolescence risk not assigned due to part type (passive devices)
- **U**: Obsolescence risk unknown
Benefits of EPARTS Obsolescence Module

• EPARTS has the potential to provide significant cost savings at both the Center and Agency levels.
  
  – **Streamlines NASA obsolescence management process.**
    • Reduces MSFC analysis time by export of consolidated parts lists.
    • Enables MSFC to provide advanced EEE part obsolescence notification.
      – Reduces the risk of costly obsolescence mitigations, such as redesign.
  
  – **Reduces engineering labor hours.**
    • Eliminates duplication of effort for EEE parts analysis activities.
    • Provides web-based access to existing NASA-approved parts.
  
  – **Promotes consolidation of NASA part procurements.**
    • Identifies common parts on NASA projects.
    • Facilitates shared EEE part inventories across Centers.

  – **Enables EEE part data sharing.**
    • Captures EEE part attribute data across Centers.