JMAC Collaborates on Exposing Counterfeit Parts

By MICHAEL FORTANBARY
The Aerospace Corporation

Representatives from the four major space vehicle acquisition organizations that make up the Joint Mission Assurance Council (JMAC) met in Huntsville, AL on Sept. 13 and engaged in a lively discussion on how each agency addresses counterfeit parts.

Barry Birdsong presented an overview of the Missile Defense Agency’s (MDA) approach to mitigating counterfeit parts, materials, and processes (PMP). He is responsible for the Counterfeit Parts Program within MDA’s Quality, Safety, and Mission Assurance Directorate. Highlights of his briefing included the following:

- Counterfeit PMP are among the top risks to mission assurance at MDA.
- All counterfeit parts detected by MDA have been purchased through independent distributors.
- Original equipment manufacturers (OEMs) generally are not willing to verify the authenticity of parts purchased from independent distributors. Parts purchased from OEMs come with a certificate of authenticity.
- MDA has a part procurement policy memorandum that requires testing on all parts purchased from independent distributors.

Mike Sampson of the Na-

Dead Bus Recovery Standards for Satellites Using Li-ion Batteries

By ALBERT ZIMMERMAN and DAVID LANDIS
The Aerospace Corporation

As part of the 2011 NRO Battery and Solar Array Conference on Aug. 9-11 in Chantilly, VA, a special session was convened to discuss the key steps needed to make a dead satellite power bus capable of recovery. The session was focused on introducing the community to developing standards to help enable the recovery of satellites that experience loss of all solar array and battery power.

In the past 20 years, nine programs have seen satellites experience complete power loss due to unexpected processor behavior, circuit design flaws, single point failures, and ground commanding errors. In the past several years alone, there have been four such incidents. Of these satellites, roughly 50 percent have been successfully recovered by fortuitously regaining sufficient solar array power to recharge the batteries and thus bring the satellite bus back into operation. These satellites all used nickel hydrogen batteries, which can tolerate power loss and overdischarge without damage. Most modern satellites are changing to lighter and smaller lithium-ion (Li-ion) batteries; however, this technology suffers irreversible damage if overdischarged. This raises a concern that the capability for satellites to recover from a dead bus may be significantly eroded in the coming years unless some standards are adopted to assure that satellite designs include such capability.

During the NRO conference session, a number of fundamental capabilities were highlighted that are critical for giving the satellite power system a reasonable opportunity to recover from a dead bus. Some of these requirements are:

1. The solar array regulator must be capable of autonomously restoring power to a zero-volt spacecraft bus.
2. All bus and heater loads that are not essential for recovering the spacecraft must be turned off before power is restored.
3. The battery must be protected from damage that could be caused by overdischarge.

space supplier council tackles key topics at sept. 22 meeting

By CHERYL SPOHNHOLTZ
The Aerospace Corporation

Nine of the 20 Space Supplier Council (SSC) members say they have not experienced a joint audit. The members were responding at the SSC’s Sept. 22 meeting to the question “Have you experienced a joint audit? If yes, describe your experience.”

The suppliers that have had a joint audit provided mixed feedback. Some thought it was good and said it decreased their overall number of audits, while others shared a negative experience and did not observe a reduction in the number of audits.
LESSONS LEARNED

Tracking It All

By ROSEMARY BRESTER
President, Hobart Machined Products Inc., and RAJ SAKSENA, President, Omnitrol Networks Inc.

Editor’s note: Efficiency and economizing are the new bywords of the day—but they are only words unless ways can be found to put the strategic intent into practice. Here’s one case study that illustrates how one aerospace company took action.

Space Supplier Council member Hobart Machined Products took the initiative in January 2010 to push its lean manufacturing operations into a new era of collaborative manufacturing. In just two weeks, Hobart and Omnitrol Networks Inc. implemented a realtime operational visibility and supplier collaboration solution in Hobart’s Ellensburg, WA plant.

Omnitrol Supplier Visibility (OSV) solutions simplified the process of entering and tracking customer orders through a secured web portal that is accessible anytime from anywhere. Hobart and its customers can view customer orders throughout this inventory system and can generate extremely accurate production forecasts.

The solution eliminates the tasks of order tracking and manual entry. More importantly, the solution makes Hobart a better partner to its customers by automatically sharing critical order information with them 24x7. OSV also automates production status tracking and delivery projections of work orders for such key customers as Boeing and NASA through Omnitrol’s secure collaborative web portal.

As a completely automated realtime information exchange platform, OSV removes overhead and inaccuracies found in tracking orders for on-time delivery.

As original equipment manufacturers (OEMs) look for ways to reduce costs and increase efficiency, they outsource more to tier I and II suppliers. But moving some operations outside of their four walls obscures some areas of the manufacturing process, resulting in quality and compliance issues. Hobart looked for ways to address this problem and become a better supplier.

Hobart has simplified the creation of customer and shop floor work orders, automated warehouse and inventory tracking, and opened the door to sharing information on customer order status with OEMs. Automatic alerts can be quickly generated, addressing issues before they affect customer deliveries.

Hobart employees are freed from repetitive tasks, the number of errors is reduced, and shop floor equipment is better utilized.

The Hobart installation of OSV is a good example of steps taken to improve manufacturing and supply-chain efficiency while still focused on meeting customer needs. As a result of these improvements, Hobart Machined Products recently received the PM100 Award for Operational Excellence by Progressive Manufacturing and the Washington Manufacturing Award in the small business category for innovation.

For more information, contact Rosemary Brester, rosemary@hobartmachined.com, or Maria Kaganov, maria.kaganov@omnitrol.com.
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JEDEC is...
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the Tech America TB-003 “Counterfeit Parts and Materials Risk Mitigation.”

The SAE standards are works in progress. Sampson said that currently the distributor document AS6081 offers the customer several risk reduction options through levels of testing to discover potential counterfeit parts.

The JMAC agreed to meet quarterly, with the next session scheduled for Dec. 2, where each of the member agencies will prioritize at least two common concerns that the council can jointly address.

The JMAC, facilitated by Dr. Byron Knight of the NRO, is a collaborative forum for leveraging the efforts of its member agencies to more effectively address common mission assurance challenges.

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*Formerly known as the Joint Electron Devices Engineering Council and now called the JEDEC Solid State Technology Association.

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4. The batteries should be recharged whenever solar array power is available using a charge-only mode while keeping the batteries warm enough to accept charge.

5. Battery discharge must be re-enabled when battery state of charge and temperature are adequately restored.

The contractors attending the conference raised a number of questions about these points as they discussed the recommendations that were presented. There was discussion about how a power system might respond to a tumbling satellite, during which solar power collection could be intermittent and the batteries could be frequently subjected to overdischarge if not disconnected from the bus. Another discussion centered on how cold batteries or other system components might enter a dead bus condition, which experience suggests can be as low as -70°C, depending on the satellite design. Data presented for one type of commonly used lithium-ion battery showed that survival and recovery were not only possible but likely for an appropriately designed power system, even under these extreme conditions.

A key question that was brought up by the contractors had to do with how real the supplier experience was represented. Overall, the suppliers resonated with the briefing with one exception—the statement that the commercial supply chain was healthy.

The suppliers noted that many of them provide components to both government and commercial programs, and that even with the volume of both sectors, they would not consider the supply chain to be “healthy.” Of the SSC’s 20 member companies, 12 were represented at the Sept. 22 meeting. At the end of the day, government seniors from the SMC, NRO, MDA, NASA, the Navy Program Executive Office (Space Systems), and the Defense Contract Management Agency (DCMA) received a briefing of the day’s activities and provided feedback to the group.

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CALENDAR

May 9-10
Mission Assurance Improvement Workshop (MAIW)
Laurel, MD

Spring 2012

Feb 29
Space Supplier Council (SSC)
Los Angeles, CA

Dec 1
MA Summit
Reston, VA

Nov 30
Space Quality Improvement Council (SQIC)
Reston, VA

Week of Nov-Dec 2011

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