

# Counterfeit Parts Prevention Strategy Guide Product Overview

May 8, 2014

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Prepared for:

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# Acknowledgments

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This document was created by multiple authors throughout the government and the aerospace industry. For their content contributions, we thank the following contributing authors for making this collaborative effort possible:

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A special thank you for co-leading this team and efforts to ensure completeness and quality of this document goes to Scot Lichty (Co-Lead), Lockheed Martin Corporation.

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# Counterfeit Parts Prevention Strategy Guide

## *Product Overview*

Scot R. Lichty, Lockheed Martin Corporation  
David C. Meshel, The Aerospace Corporation

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U.S. SPACE PROGRAM MISSION ASSURANCE IMPROVEMENT WORKSHOP  
ORBITAL SCIENCES CORPORATION | DULLES, VA | MAY 7 - 8, 2014

# Agenda

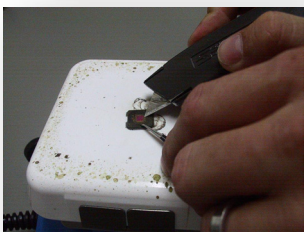


Part marking is blurred compared to authentic part



Marking slightly different on counterfeit part

Part Shows "Blacktopping" and Remarketing



Counterfeiter removing die from part



- Motivation
- Counterfeit Escapes
- Intended Product Use
- Differentiators
- Charter and Outline
- Workshop Accomplishments
- SME Comment Summary
- Follow-on Recommendations
- Team Membership and Recognition



\*Bags of Electronic Waste



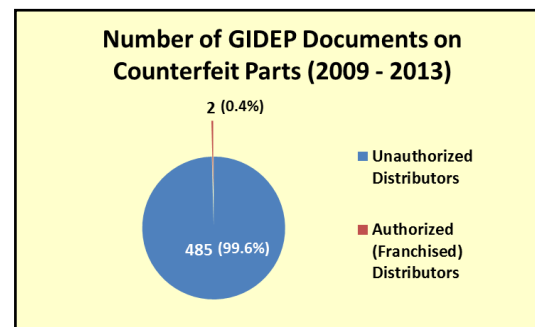


# Motivation

- 250% increase in suspected counterfeit cases between 2005 – 2008 with another 4X increase between 2009 – 2012
  - *For NSS systems only 1 known occurrence*
- New Public Law Instituted – 2012 NDAA, §818
  - *Requires “counterfeit electronic parts avoidance and detection systems”*
  - *Increased contractor liability / financial risk with limited safe harbor*
- Maintain Currency...Continuous Improvement
- Significant Portion of Counterfeit Threat Can Be Eliminated
  - *Simply procuring only from “authorized suppliers”*
  - *Applying risk mitigation techniques when using “unauthorized suppliers”*



Pukmedia.com



# Threat

## Is This a Possible Source.....?

This flow illustrates how counterfeit parts can be sourced and eventually sold.



....a Higher Probability from Distributor/Broker

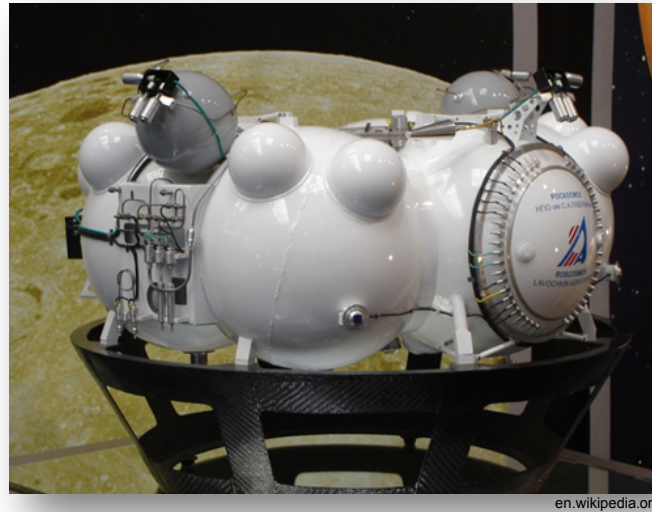
\*Photos courtesy of Tom Sharpe and SMT Corporation

\*\*Photo courtesy of Basal Action Network



# Impact of Counterfeit Parts

- Counterfeit Parts Can Cause:
  - *Personal injury*
  - *Mission failure*
  - *Reduced reliability*
  - *Risk to the War Fighter*
  - *Potential loss of contracts*
  - *Shutdown of manufacturing lines*
  - *Negative cost and schedule impacts*
  - *Penalties for companies and individuals*



**Phobos Grunt**

**No 2nd  
Chances  
for  
Space**

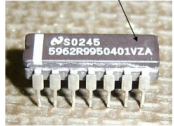


# Examples of USG Products with Counterfeit Parts

**Suspect Counterfeit Parts**  
*Space Level LM124 100 KRad in gull wing package*

- DSCC P/N: 5962R9950401VZA
- NSC P/N: LM124AWGRQMLV
- A contractor caught these parts during receiving inspection
  - Contacted NSC to verify part marking
  - Part received was a side brazed dip, not gull wing and mark is not National's
    - Date code and assembly identification code is incorrect
    - Plus parts aren't serialized

*This letter "Z" indicates "gull wing" shaped leads*



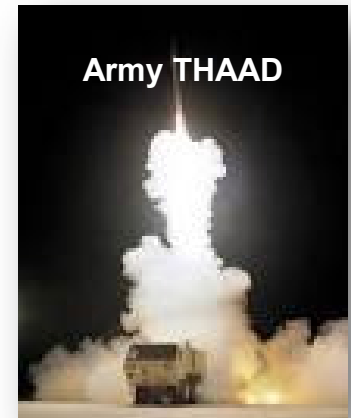
*"This is a blatant counterfeit part" NSC*



**Air Force C-130J**

[www.defencetalk.com](http://www.defencetalk.com) and [www.worldtribune.com](http://www.worldtribune.com)

- Display units with parts of unknown reliability
- Parts traced to China



**Army THAAD**

[www.army-technology.com](http://www.army-technology.com)

- Mission Computers
- Distributor provided parts
- Obsolescence

## Themes

- **Unauthorized source procurement**
- **Inadequate requirement flow down**
- Unspecified testing and inspection requirements
- Reporting and quarantining failures

## Relevance to Counterfeit Guide

- Preventive measures to avoid procuring from unauthorized sources
- Mitigation actions when only option is unauthorized source procurement
- Evaluation of all parts received from suspect suppliers



# Intended Product Use

- Provide Guiding Principles and Practices for Contractors and Suppliers to align to and be compliant to 2012 NDAA, §818 and DFARS rule, 48 CFR 246.870 (**especially lower tiers**)
  - Establish and strengthen counterfeit prevention systems
  - Provide consistent implementation methodology throughout supply chain
  - Assist the supply chain in preparing for certifications
  - Potential utilization outside of space systems
- Professional associations or educational organizations
  - SAE International, JEDEC, AIA, NDIA, SIA, etc.
- Guide for Certifying Agencies
  - DCMA
- Assist for criminal investigation (support to)
  - DOJ Computer Crimes and Proprietary Information Section
  - National Intellectual Property Rights Coordination Center



# Differentiators

- Preventative measures being implemented by NSS programs
- Techniques to ensure part availability from authorized suppliers
- Lessons learned, best practices, observations and case studies
- Basis for building an effective training program with links to fully developed programs
- New reporting and quarantining requirements
- Structured to match DFARS rule, 48 CFR 246.870 (released 16 May 2014)



# Themes from Lower-Tier Survey

- Assistance welcomed to better comply with requirements
- Procure from OCM and Authorized Distributors
- Standardized flow downs helpful
  - Commonality lowers costs
- Increased costs to implement law
- Unlimited liability potential



## 15. What can prime contractors do to help sub-tiers with counterfeit parts prevention?

**Better education, training, process assessment and sharing of lessons learned**



# Counterfeit Parts Prevention Strategy Guide Charter

- Outline recommendations for Contractor Systems for Detection and Avoidance of Counterfeit Electronic Parts
- Provide methodologies for counterfeit avoidance
- Develop a risk assessment methodology when using unauthorized or non-franchised suppliers
- Identify methods to ensure and verify sub-tier compliance
- Address the evolving nature of the threat and what is needed to maintain currency

U.S. Space Program Mission Assurance Improvement Workshop		
Counterfeit Parts Prevention Strategies		
Team	Problem Statement	Examples
<p><b>Team LEADS</b>            David Drake (Airspace)            Scott Lichey (SIS)</p> <p><b>Team Members</b>            Mike Kellar (SAB)            John Walker (SAB)            Mike Ivers (SAB)            Robert Ricco (NGSC)            Greg Wilson (OSAS)            George Young (Raytheon)            Michael Woo (Raytheon)            Jerry Livingston (SAC)            Larry Dinkens (NOA)            Fred Schlop (MDU/NAVY)            Mark White (SASG)            Carol Akers (NSA)            Michael Moore (Airspace)</p>	<p>With the new public law in effect, the liability and financial risk associated with counterfeit parts have escalated for all contractors. As a result, MAIW members have been enhancing their Counterfeit EEEE Parts Prevention strategies. Lack of consistent implementation throughout the supply chain requires special emphasis. This MAIW topic will leverage the best practices from each team member to provide a stronger set of prevention strategies for the protection of deliverable space systems hardware (ground or flight).</p>	<p>Senate Arms Service Committee Report (May 2012) contains counterfeit parts disclosures for the following programs:</p> <ul style="list-style-type: none"> <li>• THAAD</li> <li>• U.S. Navy SH-60B Helicopter</li> <li>• Air Force C-130J and C-27J</li> <li>• Navy P-8A Poseidon</li> </ul>
Stakeholders	Charter	Products
<ul style="list-style-type: none"> <li>• SMC</li> <li>• NSIC</li> <li>• NSA</li> <li>• Industry</li> </ul> <p>Steering Committee            Champion:            John Kowalchuk (LM)</p> <p>Sept. 9, 2013</p>	<ul style="list-style-type: none"> <li>• Outline recommendations of the Contractor Systems for Detection and Avoidance of Counterfeit Electronic Parts focusing on the 9 criteria required by law: 1) Training, 2) Inspection and test, 3) Apolish proliferation, 4) Parts traceability, 5) Use of trusted sources, 6) Reporting and quarantining, 7) Rapid identification, 8) Systems to detect and avoid 9) Flow downs</li> <li>• Trade study methodology for counterfeit avoidance (e.g., redesign vs. life time buy vs. open market purchases)</li> <li>• Develop a Risk Assessment methodology for using non-authorized/franchised suppliers</li> <li>• Identify methods to ensure verify sub-tier compliance</li> <li>• Address the evolving nature of threat and what would need to be done to maintain currency</li> </ul>	<ul style="list-style-type: none"> <li>• Set of recommended practices for the prevention, detection, avoidance, reporting and disposition of counterfeit following the outline of 9 criteria required by law</li> <li>• Strategy for ensuring Counterfeit Prevention compliance throughout the supply chain</li> <li>• Set of recommended methods for identifying low risk non-authorized suppliers</li> <li>• Set of recommended methods for identifying and determining authenticity of EEEE parts</li> <li>• Recommend updates to industry standards</li> <li>• Ensure the product is written in a manner that promotes both awareness and training in our supply chain</li> </ul>



# Counterfeit Parts Prevention Content (1 of 2)

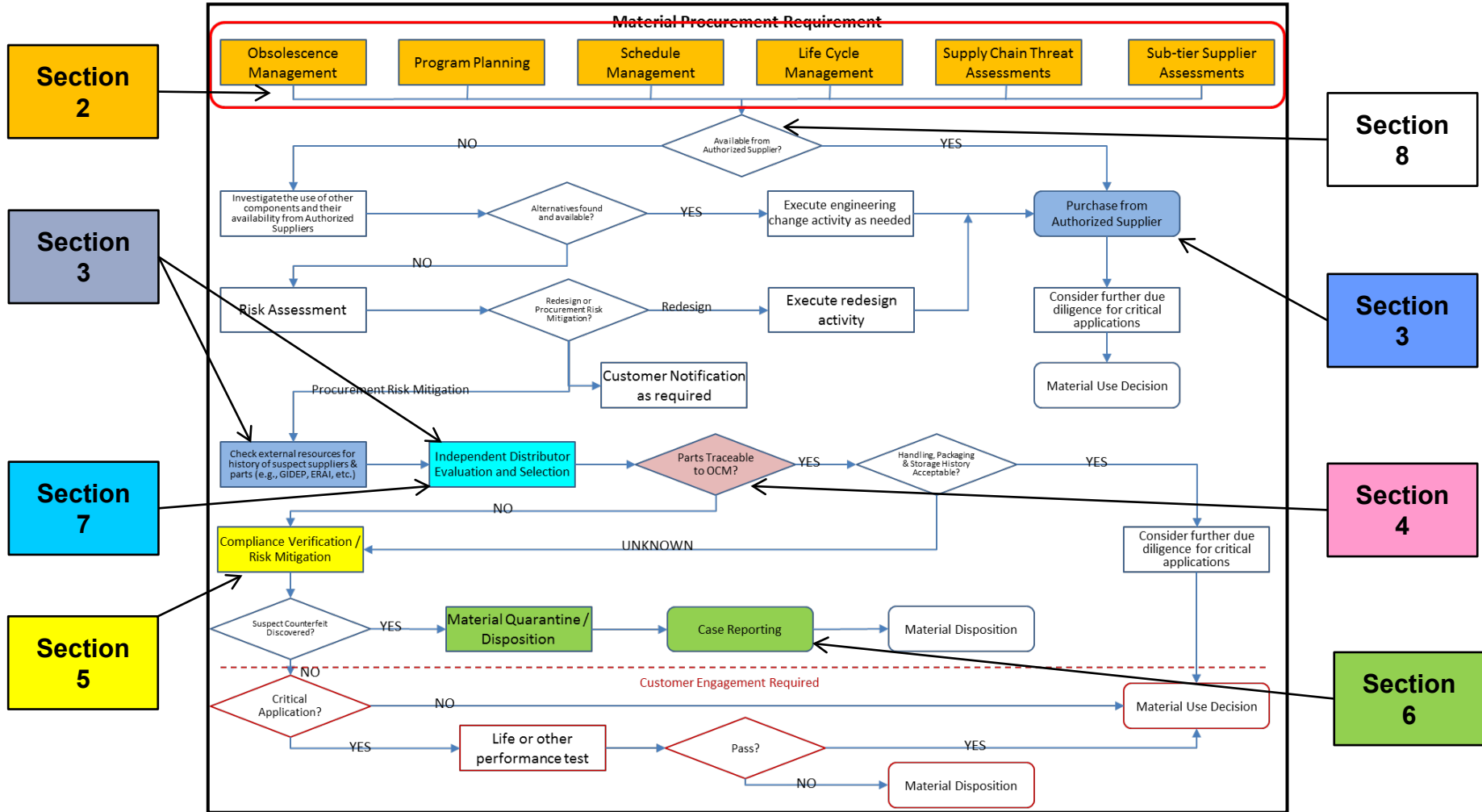
Main Body	
Executive Summary	
1. Introduction	
2. Design, Operation and Maintenance of Systems to Detect and Avoid Counterfeit Electronic Parts	
3. Use and Approval of Suppliers	
4. Traceability of Parts to Suppliers	
5. Inspection and Testing of Electronic Parts, Including Criteria for Acceptance and Rejection	
6. Reporting and Quarantining of Counterfeit Electronic Parts and Suspect Counterfeit Parts	
7. Flow Down of Counterfeit Avoidance and Detection Requirements	
8. Training of Personnel	
9. Summary	
10. Suggested Updates to Industry Standards	

**Aligns to the  
Released DFARS**

Appendices	
A – Training Resources	
B – Best Practices and Lessons Learned	
C – Observations and Driving Philosophies	
D – Case Studies	
E – How This Guide Fits In The Total Picture	
F – CF Prevention Standards Applicability Analysis	
H – Counterfeit Parts Process Audit Checklist	
I – Acronyms	
J – References	



# Counterfeit Parts Prevention Content (2 of 2)



Program Management and Procurement Flow



# Workshop Objectives & Accomplishments

- Incoming objectives of workshop
  - Brief team members on the released DFARS ruling and comparison to draft version
  - Identify changes needed to the document based on the released DFARS
  - Finalize ideas to be incorporated
  - Compare product with original charter
  - Disposition comments received
  - Obtain endorsement across team members for product and follow-on recommendations

Name of Submitter	Company Name	Topic Team	Page	Section	Paragraph	Line Number	Figure/ Table (y/n)	Finding (with justification/rationale for change)	Proposed Change	Topic Team Disposition
Larry Harshbarger	Aerospace Corp	Counterfeit Parts Prevention Guide	1	Exec Sum	1			check text selective starting in line 7 and replace with placeholder wording	replace with the following. In response to the incoming threat, the President signed the 2012 National Defense Authorization Act (NDAA), which includes very specific actions by contractors to eliminate the potential for counterfeit parts and control of counterfeit parts in any DOD system and places financial liability on the contractor for any impacts caused by counterfeit part escapes.	100: partially incorporated. Add 2 sentences for how letters and used "counterfeit parts" referenced in the product" instead of "escapes." (pg)
CJ Land	Harris	Counterfeit Parts	30	5.1	1		Item K, electrical tests	These are termed "minimum" tests but in fact the electrical test can be quite expensive if the test software and fixtures must be developed.	Not clear if the word "minimum" is a worded word to be used. Recommend to change the reference to "The following tests are recommended and have been found valuable in detecting counterfeit parts."	100: incorporated. (10)
Mark King	Mitsubo	Counterfeit Parts Prevention Guide	40	6.2 Quantifying	6.2.3 (new)			Justification: Concerns to ensure the OCM or third party test facility must ensure destruction of non-compliant parts that are sent for disposition and/or reclamation of raw materials (such as gold). Since the definition of "counterfeit part" also includes re-used or reclaimed, or expired item from a legally authorized source.	Suggestion: All non-compliant parts that are sent and will be disposed or sent for reclamation from any authorized supplier, OCM, or, when appropriate, approved supplier shall include in their scope of work instructions to ensure proper processing. The necessary steps to ensure the parts cannot be re-used or re-established in any way.	100pg
Debra Jentz R. Hubner	Boeing	Counterfeit Parts Prevention Guide	13	2	1			The industry is moving towards a complete solution where part registration at the OCM is being created and then dataflow at the back end by the distributor and/or OEM to ensure supply chain custody and part authentication. Hence schema is being developed that includes part types and the authenticity through enhanced visual aids.		100: Team
Michael Sampson	NASA	Counterfeit Parts Prevention Guide	18	3	1				Include aftermarket manufacturers as one of the ways to avoid the counterfeit - especially those that are OEM or OPM.	100: incorporated. Aftermarket Manufacturer defined as "subcontract supplier" and terminology updated throughout document. (pg)
Shawn Orsadle	Loaned Martin	Counterfeit Parts Prevention Guide	Gen					Agent: I think we're missing this fairly significant section in the process: Auditable Detection, Mitigation and Disposition. Do see some promising language in Appendix C, at Section C13. At least a summary and reference to this section should appear in the body of the paper.		100: Done

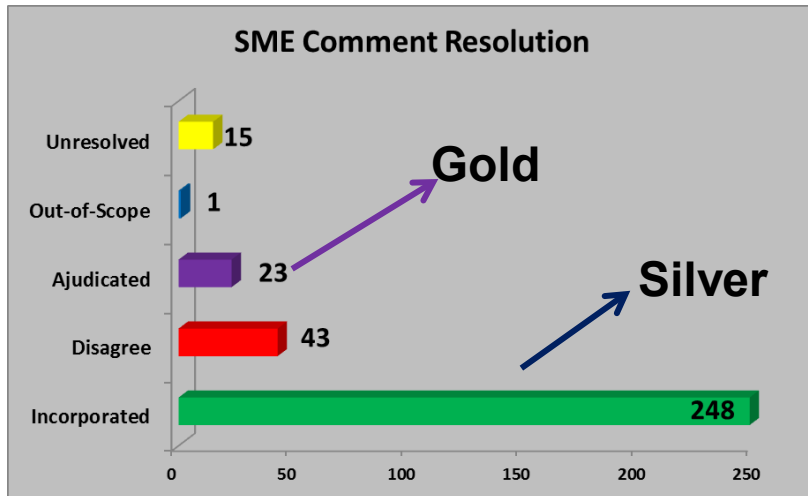
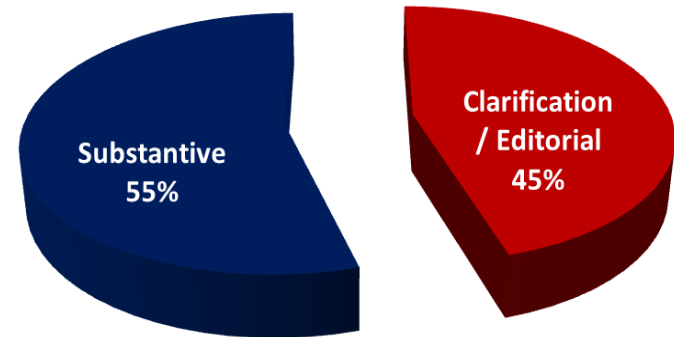
- Workshop Accomplishments
  - Obtained buy-in from SMEs and team members
  - Path forward to closing remaining open items
  - Briefing by Attorneys from the DOJ Cybercrimes on prosecution of counterfeit cases and reporting of counterfeit occurrences



# SME Comment Summary

	SME Responders
Gov't Agencies / Contractors	17

## SME Comments - Type



## Observations

1. Extremely wide distribution of SMEs
2. Drove improved pedigree and credibility of document
3. Identified gaps and areas requiring increased attention
4. Outstanding clarification and readability recommendations

# DFARS Counterfeit Avoidance and Detection Criteria

## Criteria

- (1) Training of personnel
- (2) Inspection and testing
- (3) Processes to abolish counterfeit parts proliferation
- (4) Process for electronic part traceability
- (5) Use of original manufacturer or authorized sources
- (6) Reporting and quarantining
- (7) Methodologies to identify suspect counterfeit
- (8) Design, operation, and maintenance
- (9) Flow down
- (10) Process for improvement (new)
- (11) Screening of GIDEP (new)
- (12) Obsolescence management (new)

## Notables:

- Electronics parts includes assemblies and embedded software / firmware
- Traceability
- Flow down to all sub-tier contractors
- GIDEP Access





# Topic Follow-on Recommendations

- MAIW Follow-on Recommendations:
  - *“Malicious or destructive intent” considered out-of-scope for 2014*
    - 2015 product could incorporate these concepts, which may warrant different prevention and protection schemes
    - Subject to ITAR protection – Not for Public Release
  - *Develop a guideline document on selecting, qualifying, handling and verifying COTS assemblies including counterfeit prevention*
  - *Promote common database of supplier counterfeit audits, assessments, or surveys across industry*



# Team Introductions

Core Team	
Company	Participant
The Aerospace Corporation	David Meshel
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Ball Aerospace & Technologies Corp	Mike Kahler
The Boeing Company	Lilian Hanna
Lockheed Martin Corporation	Scot Lichty                      Ken Baier
Northrop Grumman Electronic Systems	Bob Ricco
Orbital Sciences Corporation	Greg Hafner
Raytheon	George Young                      Michael Woo
SSL	John Walker
MDA	Fred Schipp                      Barry Birdsong
NASA	Carlo Abesamis



# SME Team Introductions

SME Reviewers	
Company	Participant
The Aerospace Corporation	Larry Harzstark, Edward Ortiz, Terita Norton
Aerojet Rocketdyne	Dale Gordon
Ball Aerospace & Technologies Corp.	Bob Bodemuller
The Boeing Company	Gerald Aschoff
DCMA	Christopher Brust
DoD AT&L/RESE GIDEP Program	Jim Stein
DOJ / CCPIS	Matthew Lamberti
Harris Corporation	C. J. Land
Integra Technologies	Sultan Ali Lilani
Lockheed Martin Corporation	Shawn Cheadle
Micropac	Mark King
Moog, Inc.	Yehwan Kim
NASA	Brian Hughitt                      Michael Sampson
Northrop Grumman	Jim Creiman
Orbital	Robert Lasky



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