Counterfeit Electronics
NASA Update

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Agenda

• Counterfeit Parts in the News
• NASA Updates
• SAE AS5553 Updates
Federal agencies launch "Operation Chain Reaction"

U.S. Immigration and Customs Enforcement (ICE) sent this bulletin on 06/14/2011 03:08 PM EDT

Federal agencies launch "Operation Chain Reaction"

Operation will focus on counterfeit items entering the US government supply chain

WASHINGTON - The National Intellectual Property Rights Coordination Center (IPR Center) has announced "Operation Chain Reaction," a new comprehensive initiative targeting counterfeit items entering the supply chains of the Department of Defense and other U.S. government agencies.

Nine of the 18 IPR Center members are participating in "Operation Chain Reaction." They include:

- U.S. Immigration and Customs Enforcement (ICE), Homeland Security Investigations (HSI)
- U.S. Customs and Border Protection
- Federal Bureau of Investigation
- Naval Criminal Investigative Service
- Defense Criminal Investigative Service (DCIS)
- U.S. Army Criminal Investigative Command, Major Procurement Fraud Detachment
- General Services Administration, Office of Inspector General
- Defense Logistics Agency, Office of Inspector General
- U.S. Air Force, Office of Special Investigations

"Counterfeit and pirated goods present a triple threat to America," said ICE Director John Morton. "They rob Americans of jobs and their innovative ideas; fuel organized crime; and create a serious national security risk by allowing adversaries to penetrate our supply chains.

Although not listed in this news release, NASA-OIG is an active participating member of “Operation Chain Reaction”
Examples of recent investigations involving counterfeit products entering the federal supply chain include:

- An investigation uncovered the purchase of counterfeit Cisco Gigabit Interface Converters by an individual - since sentenced to prison - who intended to sell them to the Department of Defense for use by the Marine Corps to transmit troop movements, relay intelligence and maintain security for a military base.

- An investigation uncovered a global procurement and distribution network based in California that provided counterfeit integrated circuits to various governmental agencies, including the military and prime Department of Defense contractors. Agents conducted undercover purchases from individuals within the company under official Navy contracts and were provided counterfeits for weapons platforms.

- An investigation identified a Florida-based electronics broker providing counterfeit integrated circuits to a Department of Defense prime contractor fulfilling a Navy contract for components destined for implantation into ship and land-based antenna.
• ICE HSI investigated nearly 2,000 intellectual property cases last fiscal year, which resulted in 365 arrests, 216 indictments and 170 convictions.
• ICE HSI and CBP also made 19,959 IPR seizures topping $1.4 billion manufacturer's suggested retail price (MSRP) in FY 2010 - a 34 percent increase from the previous fiscal year.
• Computer hardware was one of the top commodities seized, increasing five-fold from FY 2009 to FY 2010, including a $2.3 million ICE HSI seizure that included counterfeit military-grade semi-conductors.
• Report IP theft or learn more about the IPR Center at www.IPRCenter.gov
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AN ACT to authorize the programs of the National Aeronautics and Space Administration for fiscal years 2011 through 2013, and for other purposes

SEC. 1206. COUNTERFEIT PARTS.

(a) IN GENERAL.—The Administrator shall plan, develop, and implement a program, in coordination with other Federal agencies, to detect, track, catalog, and reduce the number of counterfeit electronic parts in the NASA supply chain.
(b) REQUIREMENTS.—In carrying out the program, the Administrator shall establish—

1) counterfeit part identification training for all employees that procure, process, distribute, and install electronic parts ...

2) an internal database to track all suspected and confirmed counterfeit electronic parts ...

3) a mechanism to report all information on suspected and confirmed counterfeit electronic parts to law enforcement agencies, industry associations, and other databases, and to issue bulletins to industry ...
(c) REVIEW OF PROCUREMENT AND ACQUISITION POLICY.—

1) IN GENERAL.—In establishing the program, the Administrator shall amend existing acquisition and procurement policy to purchase electronic parts from trusted or approved manufacturers. To determine trusted or approved manufacturers, the Administrator shall establish a list, assessed and adjusted at least annually, and create criteria for manufacturers to meet in order to be placed onto the list.

2) CRITERIA.—The criteria may include ...
(d) REPORT TO CONGRESS.—Within one year after the date of enactment of this Act, the Administrator shall report on the progress of implementing this section to the appropriate committees of Congress.
ATTACHMENT B: Counterfeit Parts Control Plan Contents

a. Parts Availability Process:

Maximize availability of authentic, originally designed, and qualified parts throughout the product's life cycle ...

http://nodis3.gsfc.nasa.gov/
b. Procurement Process:

(1) Assess potential sources of supply to determine the risk of receiving non-authentic parts...

(2) Mitigate risks of procuring counterfeit parts from sources other than OCMs or authorized suppliers.

(3) Factor risk of receiving nonauthentic parts into the source selection process.

(4) Ensure that approved/ongoing sources of supply are maintaining effective processes for mitigating the risks of supplying counterfeit EEE parts.
b. Procurement Process: cont’d

(5) Include applicable contract/purchase order quality requirements related to counterfeit parts prevention. Examples of quality requirements are provided in AS5553, including: ...

(6) Specify contractor flow down of applicable counterfeit parts prevention requirements to their subcontractors.
c. Product Assurance Process:
 Verify receipt of authentic conforming parts, commensurate with product risk. Product risk is determined by the criticality of the part and the assessed likelihood of receiving a nonauthentic part...

d. Material Control and Disposition Process: ...

e. Reporting Process:
 Report nonconforming, defective, and/or suspected counterfeit parts in accordance with NPR 8735.1, and for all cases involving counterfeit parts or other potential fraud, to the NASA Office of Inspector General and the NASA Director, Acquisition Integrity Program (AIP).
About IPEC

• September 2009 - Victoria Espinel was appointed by the President to serve as the first Intellectual Property Enforcement Coordinator in developing and implementing the Administration’s overall strategy for enforcement of intellectual property.
• June 2010 – Victoria Espinel submitted to Congress the 2010 Joint Strategic Plan on Intellectual Property Enforcement

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http://www.whitehouse.gov/omb/intellectualproperty
## Counterfeit Parts Avoidance Training

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Counterfeit Parts Control Plans

• Pre-Draft
  – DFRC
    • Counterfeit parts avoidance is a key part of Procurement Quality Assurance process (documented in DCP-S-058) and includes:
      – Asking suppliers if they have a counterfeit parts avoidance plan per AS5553
      – Conducting supplier site visits
    • Plan in place to develop and release Center-wide Counterfeit Parts Control Plan through the Avionics Lab Branch with Quality Assurance Branch assistance
Counterfeit Parts Control Plans

• Drafted
  – GSFC
    • Draft in review/edit process
  – MSFC
    • MSFC-STD-3619 MSFC Counterfeit Control Requirements is to be released before December 2011
    • Final draft submitted to MSFC configuration management and currently undergoing format editing
    • When completed, the draft will be released for Center wide review through the MSFC RID process
    • Obsolescence management requirements will be released as a stand-alone document within three months
Counterfeit Parts Control Plans

• Released
  – GRC
    • Center directive “Space Assurance Requirements”, Sect. 5 “EEE and Mechanical Parts Control”, paragraph “Parts Procurement”:
      – “Parts shall be procured directly from the manufacturer or from the manufacturer’s authorized or franchised distributor. Parts may be purchased from independent distributors or brokers only when this is unavoidable, provided measures are taken to mitigate the risk of receiving counterfeit or discrepant parts.”
Counterfeit Parts Control Plans

• Released
  – GRC cont’d

• EEE and Mechanical Parts Management” handbook, a guidelines document, section 7.2 Counterfeit Parts specifies:
  – Parts procurement from the manufacturer or from manufacturer’s authorized or franchised distributors
  – If necessary to purchase parts from independent distributors or brokers, steps shall be taken to reduce the risk presented by counterfeit parts through assessment of the ID’s compliance verification process, traceability documentation, purchasing and acceptance practices, and history of supplying genuine parts
  – Suspect counterfeit parts shall be reported through a GIDEP ALERT or Problem Advisory
Counterfeit Parts Control Plans

• Released

  – JPL

    • Counterfeit Electronic Parts Control Program, Rev. 0, Effective: Sep 13, 2010, Guideline, DocID: 78395
    • Institutional Parts Program (IPPR), Effective May 19, 2011, Requirement, Doc ID: 57732 specifies:
      – Counterfeit parts control per JPL DocID 78395
      – Parts procurement from approved manufacturer or authorized (franchised) distribution
      – Traceability to a specific manufacturer, part number, and lot number or lot date code.
      – Non-conforming, defective, or suspected counterfeit parts reporting per GIDEP and NASA Advisories
    • Enhanced PQA Processes (e.g., supplier selection criteria, contract clauses, receiving inspection plans, etc.)
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• SAE AS5553 Updates
SAE G-19 Committee

• September 2007 - G-19 Chartered
  – Develop Standard(s) suitable for use in aeronautic, space, defense, civil and commercial electronic equipment applications to mitigate the risks of counterfeit electronic components... will document recognized best practices in component management, supplier management, procurement, inspection, test/evaluation methods and response strategies when suspect or confirmed counterfeit components are detected.

• November 2008 - NASA adopts AS5553 with update to NPD 8730.2C, NASA Parts Policy

• April 2009 - SAE International released aerospace standard AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

• August 2009 - DoD adopts AS5553
SAE G-19 Members
from Government, Defense and Industry Sectors

Government Members ...

- Defense Logistics Agency (DLA)
- Defense Contract Management Agency (DCMA)
- DOE - National Nuclear Security Administration (NNSA)
- Federal Aviation Administration (FAA)
- Intelligence Advanced Research Projects Activity (IARPA)
- Ministry of Defence, UK
- National Aeronautics and Space Administration (NASA)
- USAF/NRO (The Aerospace Corporation)
- USAF Wright Patterson AFB
- US Army - AMCCC Business Operations HQAMC
- US Army Aviation & Missile Command
- US Army Redstone Arsenal
- US Missile Defense Agency (MDA)
- US Navy - Naval Air Warfare Center
- US Navy - Naval Surface Warfare Center (NSWC )Crane
- US Navy - NAVSEA Crane
- US Navy, Submarine Maintenance Engineering, Planning and Procurement (SUBMEPP) Activity
- US Department of Transportation

Note: Members function as individuals intending to represent the best interests of the industry, and not as agents or representatives of any organization with which they may be associated
Participating Industry Associations ...

- ACLASS Accreditation Services
- Aerospace Industries Association (AIA)
- ANSI-ASQ Accreditation Board (ANAB)
- Component Obsolescence Group (COG)
- The Electronic Components Supply Network
- EIA Standards and Technology Electronic Components
- ERAI, Inc.
- Independent Distributors of Electronics Association (IDEA)
- International Electrotechnical Commission Quality Assessment System for Electronic Components (IECQ)
- Performance Review Institute
- UK Electronics Alliance (UKEA)
SAE G-19 Members  
from Government, Defense and Industry Sectors

Industry Members ...
Adaptive Management Solutions
Aero Engine Controls
American Electronic Resource
Analytical Alternatives
Analytical Solutions
Applied DNA Sciences
Arcadia Components
Ares Corp
Arrow Electronics
Astute Electronics
BAE Systems (Operations)
BAE Systems
Ball Aerospace & Technologies
Boeing
Boeing Advanced Systems
Business Quality Process Management
Bechtel Plant Machinery
CALCE University Of Maryland
Celestica Corp. Technology & Engineering
China Aero-Polytechnology Establishment
Creative Electron
Crestwood Technology Group
DA-Tech
Derf Electronics
Det Norske Veritas (DNV)
DPA Components International
Electronic Supply Chain Solutions
Eltek Semiconductors
General Dynamics
GE Aviation
Glenbrook Technologies
Goodrich Control Systems
Greenberg & Bass
Harris
Hi-Reliability Microelectronics
Hi-Rel Laboratories
Honeywell Aerospace Electronic Systems
Honeywell Int'l
Honeywell Technology Solutions
Infineon Technologies AG
Integra Technologies
Jabil Circuits
Jacobs Engineering
Jet Propulsion Laboratory
L-3 Communications - CSW
Left Coast Technical Solutions
Lockheed Martin Aeronautics
Lockheed Martin Missiles & Fire Control
3M
Microram Electronics
Motronics Circuits International
Mouser Electronics
Nisene Technology Group
Northrop Grumman Electronic Systems
N.F. Smith & Associates
NQA
Northrop Grumman
Orbital Sciences
Plexus
Premier Semiconductor Services
Process Sciences
Raytheon
Rochester Electronics
Sandia National Laboratories
Schlumberger HPS
Selex Galileo
Silicon Cert Laboratories
SMT Corp
SolTec Electronics
Sonix
Sonoscan
SRI International Sarnoff
Star Associates International
Trace Laboratories
TTI
Underwriters Laboratories, UL DQS
Westland Helicopters
White Horse Laboratories
World Data Products
World Micro
Wyle Laboratories

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Phil Zulueta – 6/29/2011 - CL#11-2507
G-19 Subcommittees

G-19 CI
Continuous Improvement Subcommittee
(AS5553A: Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition)

G-19 D
Distributor Subcommittee
(AS6081: Counterfeit Electronic Parts; Avoidance Protocol, Distributors)

G-19 DR
Distributor Risk Characterization Subcommittee
ARP6178: Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors

G-19 A
Test Laboratory Standards Development Subcommittee
AS6171: Test Methods Standard; Counterfeit Electronic Parts

G-19 C
Standards Compliance Verification Subcommittee
Document Roadmap since AS5553

Distributor

AS6081, Counterfeit Electronic Parts; Avoidance Protocol, Distributors
(Ready for Balloting)

AS6081 Compliance Standard or Guide
(includes Audit Checklist)

AS6178, Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors
(Worksheet and User Guide in ballot process)

User

AS6081, Counterfeit Electronic Parts; Avoidance Protocol, Distributors
(Ready for Balloting)

AS6081 Compliance Standard or Guide
(includes Audit Checklist)

AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
(Revision A in progress)

AS5553 Compliance Standard or Guide
(includes Audit Checklist)

Test Provider

AS6171, Test Methods Standard; Counterfeit Electronic Parts
(Standard Draft in Progress)

AS6171 Compliance Standard or Guide
(includes Audit Checklist)
Summary

- U.S. Government and multiple Federal Agencies are reacting to the increasing threat of fraudulent and counterfeit electronic parts in the supply chain
- NASA is responding to these same threats through proactive involvement in IPEC, Parts Policy Directives, Awareness Briefings at the NASA QLF, enhanced suspect Parts database reporting, support of VCS development and Counterfeit Parts Awareness Training of personnel
- The SAE G-19 Committee is addressing the global counterfeit electronic components threat through a set of international standards that establishes risk-based methods, practices and requirements for the entire supply chain
Thank you!

To order AS5553:

NASA Technical Standards Program:
https://standards.nasa.gov/
or
T: 877-606-7323
F: 724-776-0790
E: CustomerService@sae.org

SAE Web address: http://www.sae.org
Backup

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AS5553 - Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

- Intended for use by Original Equipment Manufacturers (OEMs), organizations that procure electronic components/parts and/or assemblies containing such items
- Requirements to be applied/flowed down through the supply chain to all organizations that procure electronic components/parts and/or assemblies, regardless of type, size and product provided
- Mitigation of counterfeit electronic components/parts is risk-based and varies, depending on the desired performance or reliability of the equipment/hardware
ARP6178 - Counterfeit Electronic Parts; Tool for Risk Assessment of Distributors

• Intended for use by organizations that procure electronic components from suppliers other than the original component manufacturer (OCM)

• Provides organizations with a tool to assess a supplier’s capability to prevent, detect, contain and report suspect or confirmed counterfeit electronic components

• Not intended to replace certification compliance criteria
AS6081 - Counterfeit Electronic Parts; Avoidance Protocol, Distributors

- Similar to AS5553, but contains prescriptive counterfeit parts avoidance requirements intended for distributors that purchase from the open market.
- OEMs can specify their suppliers comply with AS6081 to meet selected flow-down requirements of AS5553.
- AS6081 requirements are intended to be applied/flowed down to distributor’s suppliers.
- Independent, third-party certification bodies (CBs) verify of compliance to AS6081.
AS6171 - Test Methods Standard; Counterfeit Electronic Parts

- Standardize practices to detect suspect counterfeit electronic parts and to ensure consistency of test techniques and requirements across the supply-chain
- Includes external visual inspection, radiological inspection, x-ray fluorescence, tests for remarking and resurfacing, delid physical analysis, electrical tests, acoustic microscopy, optical/SEM inspection, FTIR/DSC/TMA testing and miscellaneous testing
- Level of testing is risk-based and includes sampling plans
- Accreditation of the Test Laboratory will be through ACLASS to ensure the impartiality and competence of the Test Lab
Terms and Definitions

Suspect Part
Broker
Distributor
Independent Distributor
Homogeneous Lot
Authority Having Jurisdiction
Counterfeit Part
Upscreened
Refinished
Broker Distributor
Authorized Supplier
Uprated

Approved Supplier
Aftermarket Manufacturer
Franchised Distributor

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Definition – Suspect, Fraudulent and Counterfeit Part

Suspect Part
A part in which there is an indication by visual inspection, testing, or other information that it may have been misrepresented by the supplier or manufacturer and may meet the definition of fraudulent part or counterfeit part provided below.

Fraudulent Part
Any suspect part misrepresented to the customer as meeting the customer’s requirements.

Counterfeit Part
A fraudulent part that has been confirmed to be a copy, imitation or substitute that has been represented, identified, or marked as genuine, and/or altered by a source without legal right with intent to mislead, deceive or defraud.

http://www.aeri.com/counterfeits.html
Note: The following diagram depicts the above relationships between Suspect, Fraudulent and Counterfeit Parts. A Suspect Parts becomes a Fraudulent or Counterfeit Part through further evaluation and testing. All counterfeit parts are fraudulent, but not all fraudulent parts are counterfeit. There are legal distinctions between counterfeit and fraudulent parts. Legal counsel and/or the OCM should be consulted to determine the nature and extent of these distinctions.
Risk Mitigation

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• Worked by the G-19 Continuous Improvement (G-19 CI) Subcommittee, co-chaired by G-19 members from Selex Galileo UK and Component Obsolescence Group (COG)
• Majority of members from OEM/Aerospace/Defense/Hi-Rel community and seeking same type of members from other countries
  – Recently added member from the UK Ministry of Defence (MoD)
• Primary tasks are to add international content, applicable global references and integrate selected AS6081 content