Counterfeit Parts Prevention & AS9100
Presentation Intent

- Discuss Industry Problems with Counterfeit Parts
- Discuss Industry Efforts On Counterfeit Part Prevention
- Discuss Role of G-19, AS5553 and Other Standards
- Discuss the Roles of Various Groups within an Organization in Preventing Counterfeit Parts From Entering Product
- Discuss Methods for Implementing Counterfeit Parts Prevention (CPP) within AS 9100 & Your QMS
What is a Counterfeit?

a. Parts which do not contain the proper internal construction consistent with the ordered part. (die, manufacturer, wire bonding, etc.)

b. Parts which have been used, refurbished or reclaimed, but are represented as new product.

c. Parts which have different package style or surface plating/finish than the ordered parts.

d. Parts which have not successfully completed the Original Component Manufacturer’s (OCM)’s full production and test flow, but are represented as completed product.

e. Parts sold as upscreened parts which have not successfully completed upscreening.

f. Parts sold with modified labeling or markings intended to misrepresent the parts’ form, fit, function, or grade.
US Department of Commerce Study

- Counterfeiting accounts for more than 8% of global merchandise trade and is equivalent to lost sales of as much as $600B and will grow to $1.2T by 2009.

- Counterfeit Present in Many Global Locations

**Figure II-4: Total Counterfeit Incidents**

- OCMs (2005 – 2008)

How Counterfeits Enter The Supply Chain

**Figure II-12: Percent of OCMs with Cases of Counterfeit Incidents Sold by Type of Entity**

<table>
<thead>
<tr>
<th>Type of Entity</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brokers</td>
<td>50%</td>
</tr>
<tr>
<td>Independent Distributors</td>
<td>45%</td>
</tr>
<tr>
<td>Authorized Distributors</td>
<td>36%</td>
</tr>
<tr>
<td>Contract Manufacturers</td>
<td>21%</td>
</tr>
<tr>
<td>OEMs</td>
<td>12%</td>
</tr>
<tr>
<td>Other</td>
<td>10%</td>
</tr>
<tr>
<td>DOD Depots</td>
<td>10%</td>
</tr>
<tr>
<td>Other U.S. Federal Agencies</td>
<td>5%</td>
</tr>
<tr>
<td>Prime/Sub Contractors</td>
<td>2%</td>
</tr>
<tr>
<td>OCMs</td>
<td>2%</td>
</tr>
<tr>
<td>Internet Exclusive Sources</td>
<td>2%</td>
</tr>
<tr>
<td>Individuals</td>
<td>2%</td>
</tr>
</tbody>
</table>

*Only includes companies who encountered counterfeits*

Laborer de-soldering circuit boards over a coal-fired grill. Rock in the box is where boards are hit to remove solder. Pliers are used to pick up chips which go into various buckets. The boards are then tossed into a pile for open burning. © Basel Action Network 2006.
Counterfeit Overview
## Counterfeit Overview

### Figure II-6: Type of Counterfeit Incidents - OCMs (2005-2008)

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial/Commercial</td>
<td>1511</td>
<td>4369</td>
<td>3125</td>
<td>2284</td>
</tr>
<tr>
<td>Consumer</td>
<td>102</td>
<td>251</td>
<td>262</td>
<td>383</td>
</tr>
<tr>
<td>Critical Safety</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>260</td>
</tr>
<tr>
<td>Qualified Manufacturers List (QML)</td>
<td>22</td>
<td>38</td>
<td>47</td>
<td>138</td>
</tr>
<tr>
<td>High Reliability – Industrial</td>
<td>34</td>
<td>48</td>
<td>62</td>
<td>95</td>
</tr>
<tr>
<td>Qualified Products List (QPL)</td>
<td>1</td>
<td>1</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>High Reliability – Automotive</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>ITAR Controlled</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Commercial Aviation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Generalized Emulation Microcircuits (GEM)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High Reliability – Medical</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Counterfeit Parts & The Industry Model

Industry Supply Chain

DOD, NASA, Civil Aviation, Etc.

Primes

Sub-System

Component

Sub-Component

More Complex Procurements In Supply Chain

Parts OCMs & Aftermarket

Franchised Distributor

Other Type Distributor

Other Sources

• Stocking
  • Broker
  • Independent

• Surplus
  • Open Market
  • Recyclers
  • Etc.

Counterfeit Parts Entering the Supply Chain
Industry Working Together

G-19
G19 - The Way Forward

- Brokers
- Independent Franchise
- Commercial Defense Space
- Inspection Test

| DISTRIBUTION AS6081 | MANUFACTURING AS5553 | TESTING ASXXXX |

COUNTERFEITS
AS 5553 Focus

- Parts Availability
- Purchasing Process
- Supply Chain Traceability
- Procurement Contract Requirements
- Product Assurance
- Material Control
- Reporting

AS 5553 Control Process

- Assess sources of supply
- Assess risk
- Make Risk Based Decisions
- Maintain approved supplier list

RATIONAL

This standard was created in response to a significant and increasing volume of counterfeit electronic parts entering the aerospace supply chain, posing significant performance, reliability, and safety risks.

This standard was created to provide uniform requirements, practices and methods to mitigate the risks of receiving and installing counterfeit electronic parts.

FOREWORD

To assure customer satisfaction, aerospace industry organizations must produce, and continually improve, safe, reliable products that meet or exceed customer and regulatory authority requirements. The globalization of the aerospace industry and the resulting diversity of regional/national requirements and expectations has complicated this objective. End-product organizations face the challenge of assuring the quality and integration of product purchased from suppliers throughout the world and at all levels within the supply chain. Aerospace suppliers and processors face the challenge of delivering product to multiple customers having varying quality expectations and requirements.

This document standardizes requirements, practices, and methods related to: parts management, supplier management, procurement, inspection, test/evaluation, and response strategies when suspect or confirmed counterfeit parts are discovered.
AS 5553 and Risk

- Risk in the Aerospace Supply Chain
  - Design Responsible Organizations
  - Manufacturing Responsible Organizations
  - Warehousing and Distribution Organizations

- Common Areas of Risk
  - Source Selection
  - Obsolescence
  - Loss of Traceability
  - Piece Part Configuration Changes without Notification
  - Many Others

- Risk Model in AS5553
  - Categorization of Risk
  - Hierarchy of Risk Inputs & Mitigations per Category
  - Application of Mitigations Based on Risk Input Hierarchy
SAE AS5553 & Risk Hierarchy

**Highest Risk**

- Life Dependent
  - Non-Critical
- Supplier with GIDEP & ERAI Alerts
  - OCM
- In Business < 1 Year & Unknown Financials
- Test / Insp Population
  - Small %
- Test & Insp Level
  - 1X Visual Inspection

**Lowest Risk**
Needs of the Industry

- Ensure QMS Promotes Acquisition of Acceptable Parts for Integration into the Organizations Product

- Engineering
  - Good Risk Identification, Analysis & Mitigation Decision Processes
  - Design Specifications that identify parts from suppliers that provide parts with a high degree of Supply Chain Assurance

- Purchasing & Receipt Inspection
  - Proper Source Usage to Prevent Inadequate Parts from entering the Organization’s Supply Chain
  - Supplier Assurance of Proper Sub-Tier Source Usage
  - Proper Evaluation Techniques to Prevent Inadequate Parts from entering the Production Process

- Production Planning & Inspection
  - Proper Production Planning that Ensures Adequate I&T of Supplier Parts at the appropriate points in the Production Process
 Scenario 1
Direct Purchase of OCM Parts

Where Are The Risks?
Where Do We Focus The Audit
Scenario 2
Purchase From Franchised Distributor

DOD, NASA, Civil Aviation, Etc.

Primes

Sub-System

Component

Sub-Component

Where Are The Risks?
Where Do We Focus The Audit

Parts OCMs & Aftermarket

Franchised Distributor

Other Type Distributor

CM?

COTC

Other Sources
• Surplus
• Open Market
• Recyclers
• Etc.
Scenario 3
Purchase From Other Type of Distributor

Where Are The Risks?
Where Do We Focus The Audit

Compliance Verification

DOD, NASA, Civil Aviation, Etc.

Sub-System
Component
Sub-Component

Parts OCMs & Aftermarket

Franchised Distributor
Other Type Distributor

• Stocking
• Broker
• Independent

Other Sources

No COTC

• Surplus
• Open Market
• Recyclers
• Etc.
AS Standards Used for CP Prevention

DOD, NASA, Civil Aviation, Etc.

Primes

Sub-System

Component

Sub-Component

Parts OEMs & Aftermarket

Franchised Distributor

Other Type Distributor

Other Sources

• Stocking
  • Broker
  • Independent

• Surplus
  • Open Market
  • Recyclers
  • Etc.

AS 9100 & AS 5553

AS 9120 & AS 6081
In Closing

- Industry Challenge to Use QMS for CP Prevention
  - Requirements Definition at Proposal/Contracts Phase
  - Design Planning For Production and Full Life of Components
    - Current Need, Future Need, Obsolescence, Etc.
  - Purchasing Strategy to Support Production and Full Life of Components
    - Reliability, Material Baselining, Etc.
    - Lot Control Against Know Qualified Part
  - Control of Subtier Suppliers for CM and Parts Qualification
    - Configuration Management, Change Notification, Sub Tier Supplier Sources, etc.
    - Identification & Traceability Requirements
      - In House & Through Out Supply Chain
  - Production Planning
  - Inspection & Test of Components based on Risk

- Significant Challenges

- Industry Focus Ramping Up.

- What Part will We Play in Solving this Industry Problem?
Which Device Do You Want In The Airplane you are flying on?

Counterfeit Part Prevention

Counterfeit

Known Good Part

Questions?