

SAE INTERNATIONAL

ERAI EXECUTIVE CONFERENCE

COUNTERFEIT MATERIEL ANOTHER SUPPLY CHAIN THREAT

SAE AS6174A Counterfeit Materiel; “Assuring
Acquisition of Authentic and Conforming Materiel”

23 April 2015

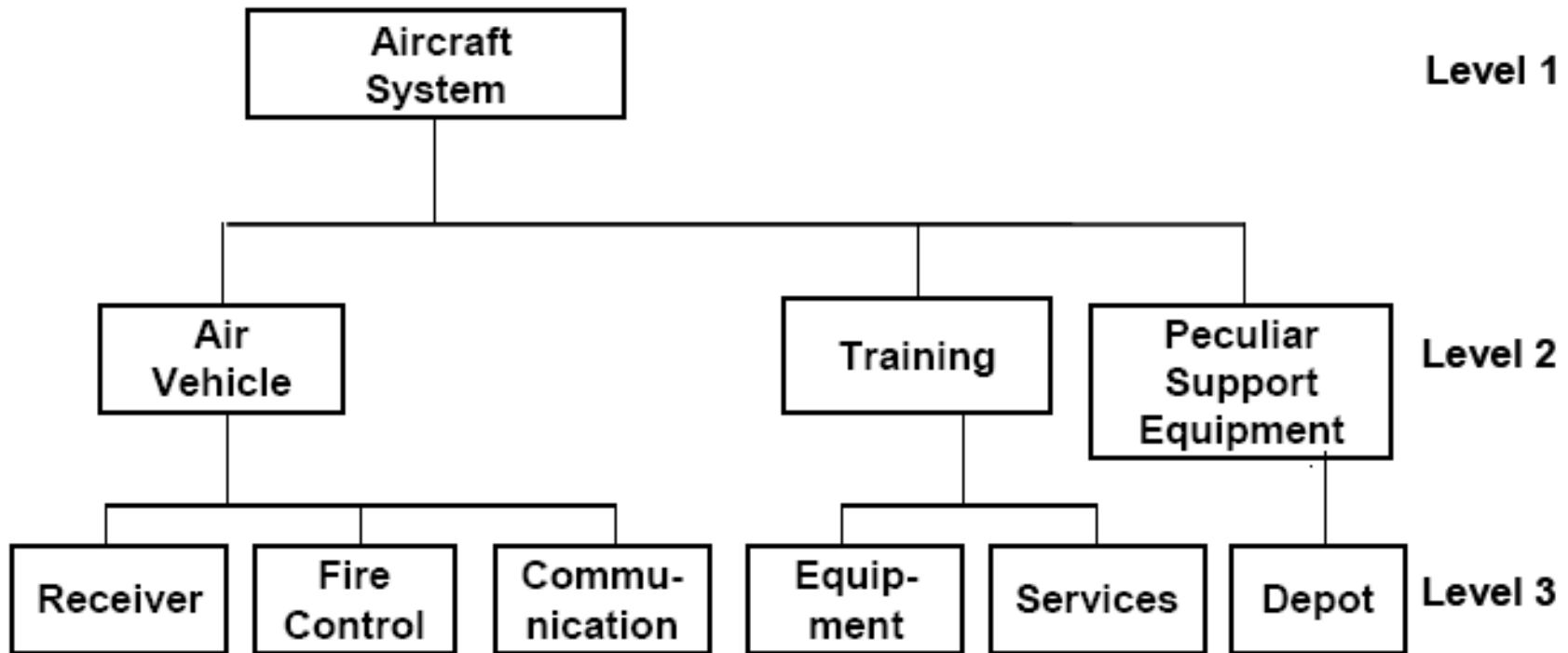
Presenter: Bob Tipton, Wyle – SAE G-21 Chair
Co-authors: Bruce Mahone - SAE Administrator
Paula George, DLA – SAE G-21 Co-Chair



Overview

- Counterfeit Risk – a Systems View
- Counterfeit Materiel
- SAE Counterfeit Standards Genesis - AS6174
- Related Standards/Efforts
- Traceability
- Summary

Systems Functional Breakdown



All Parts of the “System” Essential

Basic Supply Systems Process

- Design
- Specification
- Source Selection
- Purchase
- Receipt
- Inspection
- Distribution/Storage
- Use

Every Step is Essential to “Supply Chain Integrity”

NAVSEA Brief Excerpt (47 slides)

(Butler, 2013)

Non-Electronic (Mechanical) Counterfeit Materiel General List of Non-Electronic Items Counterfeited:

- Welding material
- Rod
- Wire
- Flux
- Small piping products
- Small structural members (pipe supports/beam clamps)
- Valves
- Fasteners
- Raw metal

Other NAVSEA Non-Electronic Examples (Mechanical) Counterfeit Materiel

News Articles on Counterfeit Materiel Around the World:

- Counterfeit Scan Tools in Automotive Industry-USA

<http://www.marketwatch.com/story/gms-bob-stewart-to-address-counterfeit-tools-nov-6-2013-08-23>

- Roller Bearings-Europe

<http://www.pandct.com/media/shownews.asp?ID=37361>

- IPS PVC Pipe-Tanzania

<http://allafrica.com/stories/201307260325.html>

- Aircraft Parts for MIG 29-Russia

<http://www.strategypage.com/htmw/hthead/articles/20130706.aspx>

- Water Pumps-United Arab Emirates

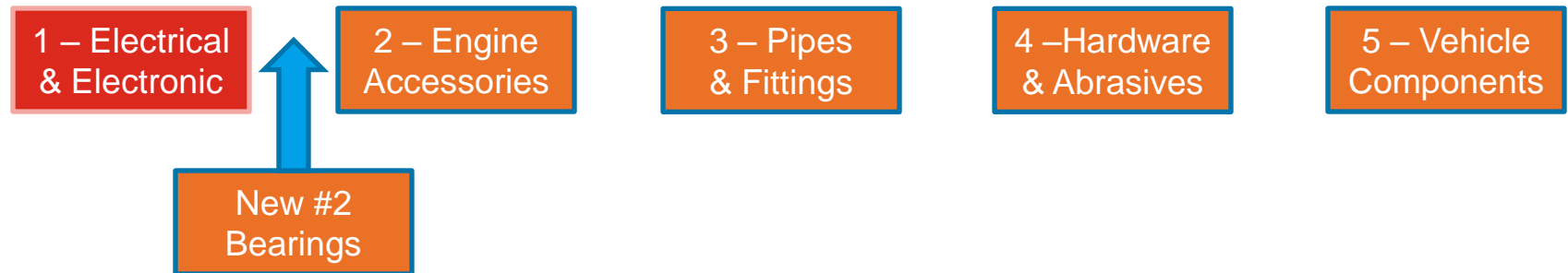
<http://www.constructionweekonline.com/article-15251-4000-counterfeit-water-pumps-seized-in-the-uae/>

DLA Brief Excerpt (20 slides)

(Metz, April 2014)

Assessment of Supply Class Risk

- DLA manages 4.3 million items, assigned to 548 supply classes
- Supply classes evaluated for counterfeit vulnerabilities
- Electrical & Electronic Components ranked 1 of top 5 five commodities most vulnerable to counterfeits



Trend in Mechanical Counterfeits (George, DLA 2014)

Aftermarket replacement parts used as “counterfeit stock”

- **Example: requirement is for an OEM air filter, supplier accepts contract agreeing to provide the OEM filter, but will substitute an aftermarket replacement air filter.**
 - Sometimes may not try to deceive the customer - use the aftermarket replacement packaging / markings
 - Other times try to hide the substitution by using the OEM’s packaging, may repaint and / or remark the filter in OEM’s colors and part numbers
- **Another variation is the use of raw stock parts – i.e. contract requires the use of ALCOA forgings (or another known manufacturer’s parts) to manufacture mechanical items.**
 - Supplier goes on internet, and finds aftermarket replacement forgings, usually from China (with or without proper markings), then substitutes those replacement raw forgings to manufacture the item.

**Unknown materials / manufacturing processes,
may or may not perform, etc...**



Other Counterfeited Parts and Materials



If it can be counterfeited, it will be counterfeited



Used parts



Brittle or weak



Nonfunctional

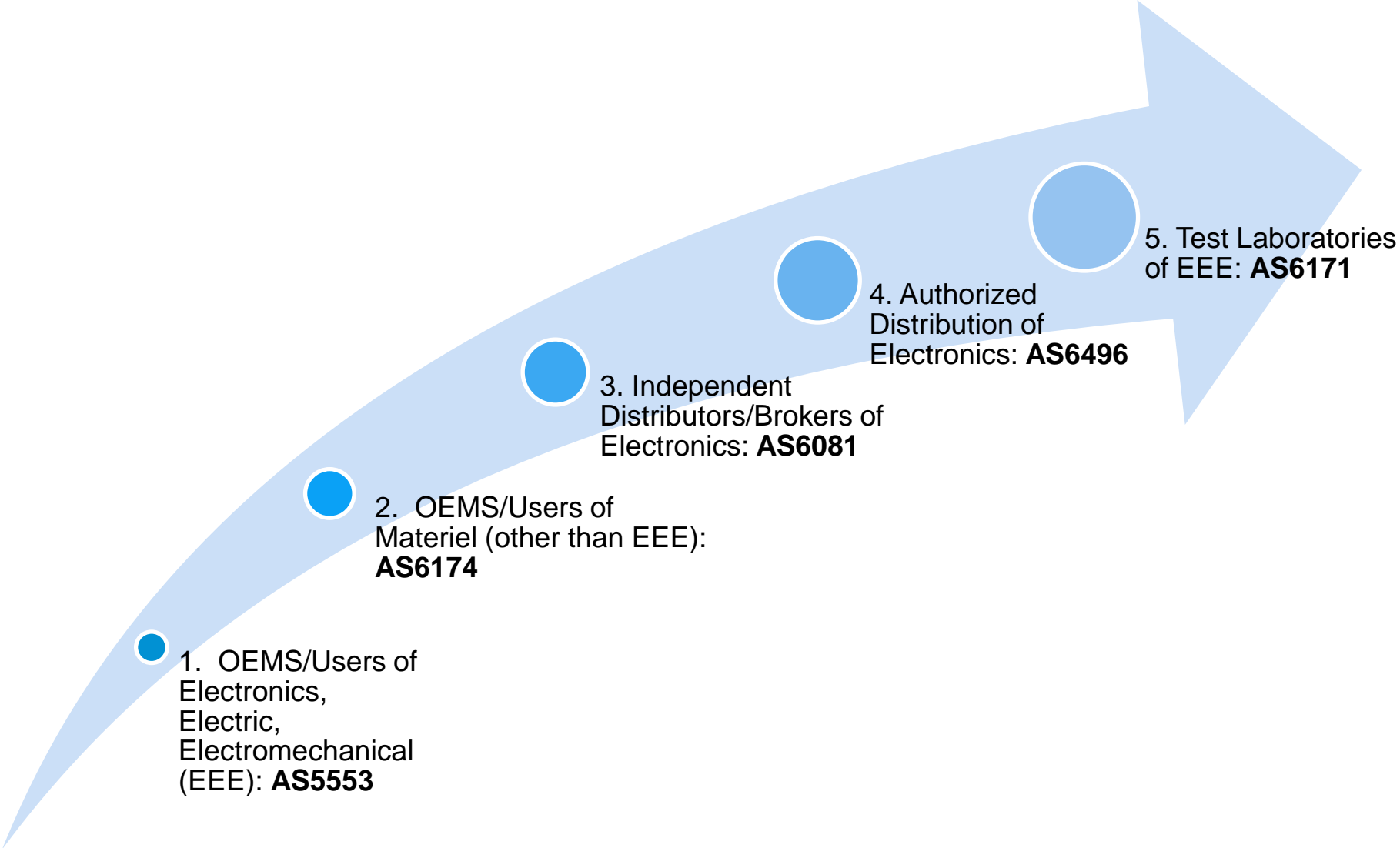


Dispenses flour



Explosive refrigerants

G-19 & G-21 Counterfeit Prevention & Detection Standards



1. OEMS/Users of Electronics, Electric, Electromechanical (EEE): **AS5553**

2. OEMS/Users of Materiel (other than EEE): **AS6174**

3. Independent Distributors/Brokers of Electronics: **AS6081**

4. Authorized Distribution of Electronics: **AS6496**

5. Test Laboratories of EEE: **AS6171**

AS 6174 - Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel

- April 2010 – DoD PSMC (Parts Standardization and Management Committee) requested that SAE address counterfeit NON-electronic parts.
- October 2010 – AS6174 based on AS5553 rewrite to address non EEE materiel.
- Jan-May 2011 – Revised to consider Office of the Secretary of Defense (OSD) and White House Intellectual Property Enforcement Coordinator(IPEC) input.
- AS6174 published May 2012 - Tracks closely with draft Office of the Secretary of Defense (OSD) and White House policy for avoiding counterfeits with all materiel, including medicine, tourniquets, etc.
- Worked revisions to basic standard on traceability (industry feedback) and to provide provisions for commodity specific “slash sheets” (appendices).
- AS6174A published 29 July 2014.

-Preference for purchase from original manufacturer or licensed/franchised source/distributor (authorized supply chain)
-Extra documentation/testing for other sources/distributors/brokers

AS 6174 - Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel

Scope

- This document standardizes requirements, practices, and methods related to: (a) materiel management, parts management, supply chain management, procurement, inspection, test/evaluation to assure the authenticity and conformance of materiel being acquired, and (b) response strategies when suspect or confirmed counterfeit materiel is discovered.

Purpose

- This standard was created to provide uniform requirements, practices and methods to improve the likelihood of only acquiring authentic and conforming materiel of any type in any industry sector.

Applicability

- Suppliers, processors, and end product organizations.

Supply Chain Sector

- Any industry sector.

Commodity(s) Covered

- All materials and parts except electronic, electrical & electromechanical (EEE).
- G-21R WG producing standard on refrigerants – AS6886 finished committee balloting.
- G-21H WG working “fasteners.”
- Exploring work on bearings, batteries, others.

Overview

- This standard was created in response to a significant and increasing volume of counterfeit materiel (in violation of intellectual property laws) entering the supply chain, posing significant performance, reliability, and safety risks.
- This standard is a capstone standard. AS5553A pertains directly to EEE parts, and supplements the guidance of this standard.

SAE AS6174A Table of Contents

1. SCOPE	3
1.1 Purpose	3
1.2 Application	3
2. REFERENCES.....	3
2.1 Applicable Documents	3
2.1.1 SAE Publications	3
2.1.2 U.S. Government Publications.....	4
2.1.3 ISO Standards.....	4
2.1.4 ASME Standards	4
2.2 Acronyms and Abbreviations	5
2.3 Terms and Definitions	6
2.4 Related Definitions	7
3. REQUIREMENTS	10
3.1 Materiel Authenticity Assurance Plan	10
3.1.1 Authentic and Conforming Materiel Availability	10
3.1.2 Purchasing	10
3.1.3 Purchasing Information	11
3.1.4 Verification of Purchased Product	11
3.1.5 In-Process Investigation	11
3.1.6 Materiel Control	11
3.1.7 Reporting	11
4. NOTES	12

SAE AS6174A Table of Contents continued

APPENDIX A AUTHENTIC AND CONFORMING MATERIEL AVAILABILITY	13
APPENDIX B PURCHASING PROCESS	18
APPENDIX C SUPPLY CHAIN COMMODITY AND ITEM LEVEL TRACEABILITY	21
APPENDIX D RECOMMENDED CONTRACT PASS-DOWN CLAUSES – GENERAL.....	23
APPENDIX E PRODUCT ASSURANCE	27
APPENDIX F MATERIEL CONTROL	31
APPENDIX G REPORTING	35

Is Removing the Appendices Fixing the Wrong Problem?

Who Audits the Auditors?

AS6174A Path Forward

- **Assess “state of the practice/possible”** in scanning or marking/taggant technology
 - Suitability for best practice/guidance/requirement?
- **Beef up training** guidance/requirement?
- Continue to **gather feedback** from the entire industry before embarking on next revision:
 - Government
 - Laws
 - Services & Agencies
 - Users
 - Primes
 - Suppliers
- **Enhance process for selection/production** of commodity area slash sheets/standards
- **Encourage in-depth look** both quantitatively and qualitatively **into non-electronic counterfeiting**
 - Studies/Surveys?
 - Symposium topics – SMTA/CALCE Counterfeit Symposium
 - Now open to all counterfeiting materiel issues

G-21R - Refrigerants Working Group

Draft AS6886 - Counterfeit Materiel, Assuring Acquisition of Authentic and Conforming Refrigerants

RATIONALE

This document is intended to provide guidance and requirements for users during the purchase and use of refrigerants.

FOREWORD

This document standardizes requirements, practices, and methods related to: (a) refrigerant supply chain management, procurement, inspection, test/evaluation to assure the authenticity and conformance of refrigerant being acquired, and (b) response strategies when suspect or confirmed counterfeit refrigerant is discovered.

STATUS – Passed final committee ballot 19 March 2015 – to Aerospace Council ballot process.

Related Standard - AS6279

Title: Industry Standard Practice for Production, Distribution, and Procurement of Metal Stock

Issued: January 2014 by AMS Committee G (Metals Group, Titanium)

Motivation: Lessons Learned from metals industry GIDEPS & reported issues

Implementation: 1st wave effectivity October 2015 - titanium wrought stock specs: AMS4905, 4911, 4918, 4928, 4965, 4967, 4971, 4975, 4976, 4978, 4979, 4981, 4988, 6905, 6930, 6931.

Producers:

- Quality System: AS9100 or CEO Approved
- Self-Identify to MMPDS (statistical substantiation of mechanical properties)

Distributors:

- Quality System: AS9100, 9120, or CEO Approved
- Report Valued-Added Operations Performed
- Restrict cutting practices that affect the as-produced gage & grain orientation

Purchasers:

- Provide complete ordering information (Checklist included)
- Responsible to review material certification reports

Introduction training presentation available (free-of-charge) at publically-accessible URL:
<http://www.sae.org/servlets/works/committeeHome.do?comtID=TEAAMSMGC>

Traceability: the “Elephant” in the Policy

National Defense Authorization Act of 2012 - SEC. 818. DETECTION AND AVOIDANCE OF COUNTERFEIT ELECTRONIC PARTS. Excerpts:

- “due diligence”
- “trusted suppliers” (qualified)
- “mechanisms to enable traceability of parts”

DFARS Case 2012-D055: Detection and Avoidance of Counterfeit Electronic Parts

DFARS Case 2014-D005: Detection and Avoidance of Counterfeit Electronic Parts—Further Implementation – final rule applies only to electronic parts (proposed was all parts):

Processes for maintaining electronic part traceability - The rule requires traceability but, as DoD notes in its discussion, gives ***"contractor[s] flexibility to utilize industry standards and best practices"*** The contractor's processes must, however, include certification and traceability documentation; clear identification of the name and location of supply-chain intermediaries from the manufacturer to the direct source of the product for the seller; and, where available, the manufacturer's batch identification for the electronic parts, such as date codes, lot codes or serial numbers. DFARS 252.246-7007(c)(4). The clause lists "item unique identification" (IUID) as one example of the processes that might be implemented, but does not require it. (Source [Crowell & Moring LLPJ. Chris Haile, J. Catherine Kunz, Peter J. Eyre, Grant J. Book](#) and [Jason C. Lynch](#) USA May 7 2014)

AS6174A Corrected Unachievable Traceability Requirement
Now Customer Decision to Contract for “back to source” traceability
- Nuclear, Engine Turbine Blades, etc.

Summary

- Counterfeit Risk – a Systems View
- Counterfeit Materiel
- SAE Counterfeit Standards Genesis - AS6174
- Related Standards/Efforts
- Traceability
- Summary

**Sponsorship Acknowledgement to:
US Navy, NAVAIR, PMA-266
SAE International**

**cheers and travel safe
bob tipton
robert.tipton@wyle.com
937 408-8725**

AS6081 Approach to Appendices

The content of the Appendices is provided as guidance and can be invoked in whole or in part, by the policies, requirements or procedures of the Organization. **If the Organization or the Customer has mandated compliance with the Appendices, in whole or in part, the extent, to which the Appendices apply, shall be considered requirements and included, or referenced, in the Organization's Counterfeit EEE Parts Control Plan (see 4.2).**

If the Organization or the Customer has not mandated compliance with the Appendices, in whole or in part, then nonconformance to the Appendices is not considered a nonconformity to AS6081, except that if the Organization is seeking third-party certification to AS6081, the Appendix G Compliance Verification Criteria for SAE AS6081, shall be used by the Certification Body, see requirement 5.

AS6174A Change Highlights

“limited scope change”

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. When a commodity specific slash sheet (e.g., AS6174/X) has been published, the applicable commodity slash sheet requirements take precedence over conflicting requirements within AS6174A. In the event of conflict between the text of this document and other references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

AS6174A Change Highlights

“limited scope change” continued

3.1.2.c. When possible, ***procure directly from original manufacturers, authorized suppliers, or other legally authorized sources*** on the approved supplier/source register/list. When the procurement item/material is ***not available*** from the ***authorized chain***, then ***risk management provisions shall be incorporated*** from the material authenticity assurance plan. Refer to: 3.1.2.f

3.1.2.f. ***Implement risk management provisions***, including risk assessment and risk mitigation per the material authenticity assurance plan, ***when traceability*** to an authorized source is ***not readily available*** or an ***authorized source*** is ***not available***. Guidance and information regarding industry best practices for supply chain commodity and item level traceability are provided in Appendix C.

AS6174A Change Highlights

“limited scope change” continued

3.1.6.c. Establish a process to ***ensure*** the supply chain is ***not compromised*** by any ***material being returned***.

Manufacturers/suppliers and their approved supply chain ***shall implement an effective returns process*** which ***segregates and assesses*** the returned items until validated as authentic and unused.

C.4.1.c. For certain high risk and/or critical materials, materiel traceability may be required from raw material to final product and include all aspects of materiel use and disposal as determined by the contract and/or application.

NAVSEA Excerpt continued

Visual Indicators - Surface Changes:

- Wear marks or scratches on external surfaces or “new” products/ Used component appearance
- External weld or heat indications-Signs of weld repairs
- Pitted or corroded
- Casting markings ground off /Re-stamped with other markings/ Components with no markings/Ground off logo mark
- Evidence of hand-made parts
- Excess wire brushing or painting
- Threads showing evidence of wear or dressing

AS6174A Section 3 Requirements Summary

3. REQUIREMENTS

3.1 Materiel Authenticity Assurance Plan

The organization ***shall develop*** and ***implement*** a ***materiel authenticity assurance plan*** that documents:

- (a) processes ... ***assuring*** ... authentic and conforming materiel is ***procured*** ...
- (b) planning ... ***for risk mitigation, disposition, and reporting*** ... counterfeit materiel

3.1.1 Authentic and Conforming Materiel Availability

- (a) processes ***shall maximize*** ... authentic and conforming materiel ... throughout the product's life cycle, including management of materiel obsolescence.
- (b) Organizations ***shall*** ... ***direct*** immediate ***identification*** of items and supply sources susceptible to counterfeiting ... enhance product assurance.

AS6174A Section 3 Requirements Summary - continued

3.1.2 Purchasing

The procurement/purchasing processes **shall**:

(a) **Assess** ... **sources** of supply ... determine ...likelihood of delivering authentic and conforming materiel.

(b) **Maintain** a **register** of approved suppliers ...

(c) When possible, **procure directly from original manufacturers, authorized suppliers, or other legally authorized sources** When the procurement item/material is not available from the authorized chain, ... incorporate risk management provisions ...

(d) **Assure** ... **sources** of supply ... **maintaining effective processes** for assuring the delivery of authentic and conforming materiel. ...

AS6174A Section 3 Requirements Summary - continued

3.1.2. continued

(e) **Assess ... sources ... can deliver** authentic and conforming materiel. Where applicable, ... when ... necessary to procure from other than the original manufacturer or an authorized supplier.

(f) **Implement risk management** provisions, ... per the materiel authenticity assurance plan, when traceability to an authorized source is not readily available or an authorized source is not available. ...

(g) **Specify flow-down** of applicable **requirements** If ... supply chain intermediaries do not have a compliant materiel authenticity assurance plan ..., a risk analysis shall be considered for every application of the materiel. ...

AS6174A Section 3 Requirements Summary - continued

3.1.3 Purchasing Information

... **shall specify** contract/purchase order **quality requirements** to maximize the likelihood of being provided authentic and conforming materiel. ...

Procurement of materiel shall be subject to the applicable contract requirements pertaining to **Fraud and Falsification** (F&F). ...

3.1.4 Verification of Purchased Product

... **shall assure detection** of any counterfeit materiel **prior to** formal product **acceptance**. The **rigor** of the verification process shall be **commensurate with product risk**. Product risk is determined by the criticality of the materiel and the assessed likelihood of receiving counterfeit materiel. ...

AS6174A Section 3 Requirements Summary - continued

3.1.5 In-Process Investigation

The documented processes **shall** address the **detection, verification, and control** of any in-process (post acceptance) and in-service suspect counterfeit materiel.

3.1.6 Materiel Control

The documented processes **shall** specify methods for manufacturers to:

- a. **Control excess** and nonconforming materiel
- b. **Control/destroy** any suspect or confirmed counterfeit materiel
- c. ... **ensure** the supply chain is not compromised by any material being returned. ...**shall** implement an effective returns process which **segregates** and **assesses** the **returned items** until validated as authentic and unused. ...

3.1.7 Reporting

... **shall assure** that all occurrences of **counterfeit materiel** are **reported**, as appropriate ...

Related Standard - AS6279

AMS G Titanium and Refractory Metals Committee

Issued 2014-01-09

Standard Practice for Production, Distribution, and Procurement of Metal Stock

RATIONALE

This is a new document to establish requirements for production, distribution, and procurement of metal stock.

SCOPE

This SAE Aerospace Standard (AS) establishes requirements applicable to metal stock that is ordered and produced in accordance with an Aerospace Material Specification (AMS). Topics include producer requirements, distributor requirements, size and grain orientation nomenclature, and purchaser ordering information to distributors. Requirements of this document have been developed to address titanium and titanium alloys.