



AEROSPACE STANDARD	AS6174	REV. A
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Superseding AS6174		
Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel		

RATIONALE

AS6174A corrects a significant error in the standard's material traceability requirement and makes compliance with this standard's material traceability feasible. It modifies the materiel traceability procurements requirements in 3.1.2.c, 3.1.2.f, and 3.1.6. AS6174A also establishes precedence and provision for use of slash sheet documents.

FOREWORD

To assure customer satisfaction, industry organizations must produce, and continually improve, safe, reliable materiel that meet or exceed customer and regulatory authority requirements. The globalization of 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 integrity of materiel purchased from suppliers throughout the world and at all levels within the supply chain. Suppliers and processors face the challenge of delivering materiel to multiple customers having varying quality expectations and requirements.

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. This standard is a capstone standard. AS5553 pertains directly to electronic parts, and supplements the guidance of this standard.

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1. SCOPE

1.1 Purpose

This SAE Standard standardizes practices to:

- a. maximize availability of authentic materiel,
- b. procure materiel from reliable sources,
- c. assure authenticity and conformance of procured materiel, including methods such as certification, traceability, testing and inspection appropriate to the commodity/item in question,
- d. control materiel identified as fraudulent/counterfeit,
- e. and report suspect or confirmed fraudulent/counterfeit materiel to other potential users and Authority Having Jurisdiction.

1.2 Application

This standard is recommended for use by all contracting organizations that procure materiel, whether such materiel is procured directly or integrated into assemblies or equipment. The requirements of this standard are generic and intended to be applied/flowed down to all organizations that procure materiel, regardless of type, size, and product provided.

2. REFERENCES

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.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AS5553	Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
AS9003	Inspection and Test Quality System
ARP9009	Aerospace Contract Clauses
AS9100	Quality Management Systems - Requirements for Aviation, Space and Defense Organizations
AS9120	Quality Management Systems - Requirements for Aviation, Space and Defense Distributors

2.1.2 U.S. Government Publications

Available from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6396, <http://quicksearch.dla.mil/>.

MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-3018	Parts Management
SD-22	Diminishing Manufacturing Sources and Material Shortages (DMSMS) Guidebook
SD-19	Parts Management Guide

Available at www.dtic.mil/whs/directives/:

DoDM 4140.01	DoD Manual, Supply Chain Materiel Management
DoD 4160.21-M	DoD Manual, Defense Materiel Disposition Manual
DoDI 8320.04	DoD Instruction 8320.04, Item Unique Identification (IUID) Standards for Tangible Personal Property
Government-Industry Data Exchange Program (GIDEP) Operations Manual NAVSEA SO300-BT-PRO-010 (GIDEP Manuals and Guides are available from http://www.gidep.org/)	
Government-Industry Data Exchange Program (GIDEP) Requirements Guide - NAVSEA SO300-BU-GYD-010 (April 2008) (http://www.gidep.org/)	
OMB Policy Letter 91-3 Reporting Nonconforming Products (http://whitehouse.gov/omb/procurement_policy_letter_91-3)	
Fastener Quality Act, Pub. L. 101-592, Nov. 16, 1990, 104 Stat. 2943 (15 U.S.C. 5401 et seq.) (available at www.gpo.gov), Search Bill Text for Multiple Congresses, 101ST CONGRESS (1989-1990),H.R.3000.ENR	

2.1.3 ISO Standards

Available from American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 12931	Performance criteria for authentication solutions for anti-counterfeiting in the field of material goods
ISO 15459	Information technology - Unique identifiers
ISO 9000	Quality Management Systems - Fundamentals and Vocabulary
ISO 9001	Quality Management Systems - Requirements

2.1.4 ASME Standards

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), www.asme.org.

Y14.100	Engineering Drawing Practices
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2.2 Acronyms and Abbreviations

ACORD	Association for Cooperative Operations Research and Development
ANSI	American National Standards Institute
ARP	SAE designation prefix for Aerospace Recommended Practice
AS	SAE designation prefix for Aerospace Standard
BOM	Bill of Materials
CAGE	Commercial and Government Entity
CBP	U.S. Customs and Border Protection
CoC	Certificate of Conformance
CoC/T	Certificate of Conformance and Traceability
C of C	Certificate of Conformance
COQC	Certificate of Quality Compliance
C-SAM	C-Mode Scanning Acoustic Microscopy
DAPS	Document Automation and Production Service
DLA	Defense Logistics Agency
DMS	Diminishing Manufacturing Sources
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DoD	Department of Defense
FAX	Facsimile
FBI	Federal Bureau of Investigation
GIDEP	Government-Industry Data Exchange Program
ICE	U.S. Immigration and Customs Enforcement
IP	Intellectual Property
IPR	Intellectual Property Rights
ISO	International Organization for Standardization
IUID	Item Unique Identification
JIT	Just In Time
MDA	Missile Defense Agency
MIL-STD	Military Standard
NAS	National Aerospace Standard
NASA	National Aeronautics and Space Administration
OIG	Office of Inspector General
PM	Program Manager
PIND	Particle Impact Noise Detection
QAR	Quality Assurance Representative
QML	Qualified Manufacturers List
QPL	Qualified Products List
SD	DoD Defense Standardization Program Office prefix designation for Standard Document
STD	Standard
UUI	Unique Item Identifier

2.3 Terms and Definitions

For the purposes of this document, the terms and definitions stated in ISO 9000 and the following shall apply:

2.3.1 MATERIEL

Materiel in this standard refers to material, parts, assemblies, and other procured items (except for electronic parts, which are covered by AS5553).

2.3.2 MANUFACTURER

Manufacturer in this standard refers to the point of origin of any materiel covered by the standard, including factories, mills, foundries, mines, chemical plants, laboratories, etc.

2.3.3 SUSPECT MATERIEL

Materiel, items, or products in which there is an indication by visual inspection, testing, or other information that it may meet the definition of fraudulent materiel or counterfeit materiel provided below.

2.3.4 FRAUDULENT MATERIEL

Suspect materiel misrepresented to the customer as meeting the customer's requirements.

2.3.5 COUNTERFEIT MATERIEL

Fraudulent materiel 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.

NOTE: The following diagram depicts the above relationships between Suspect, Fraudulent and Counterfeit Materiel. Suspect Materiel can become Fraudulent or Counterfeit Materiel through further evaluation and testing. All counterfeit materiel is fraudulent, but not all fraudulent materiel is counterfeit. There are legal distinctions between counterfeit and fraudulent materiel. Legal counsel and/or the OCM should be consulted to determine the nature and extent of these distinctions.

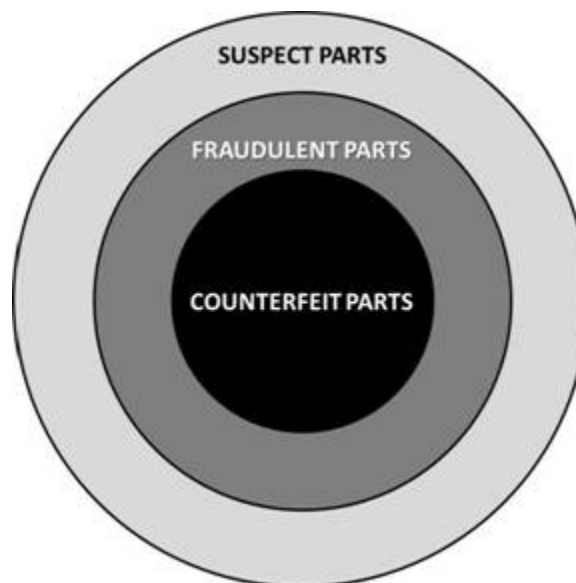


FIGURE 1

2.3.6 IDENTITY

Information such as the current design authority, original manufacturer, trademark or other intellectual property, performance, unique item identifier, part number, date code, lot number, testing methods and results, inspection, documentation, warranty, origin, ownership history, packaging, storage, handling, physical condition, previous use, etc.

2.3.7 AUTHENTIC

Produced with legal right or authority granted by the legally authorized source.

2.4 Related Definitions

AFTERMARKET MANUFACTURER: A manufacturer that meets one or both of the following criteria:

- a. The manufacturer is authorized by the original manufacturer to produce and sell replacement materiel, usually due to an original manufacturer decision to discontinue production of materiel. Materiel supplied is produced from dies, molds, or other manufacturing equipment that has been
 1. transferred from the original manufacturer to the aftermarket manufacturer,
 2. produced by the aftermarket manufacturer using original manufacturer tooling and intellectual property (IP), or
 3. produced by the aftermarket manufacturer through redesign to match the original manufacturer's specifications without violating the original manufacturer's intellectual property rights (IPR), patents, or copyrights.
- b. The manufacturer produces materiel by emulating or reverse-engineering obsolete materiel to satisfy continuing customer needs without violating the original manufacturer's intellectual property rights, patents, or copyrights.

APPROVED SUPPLIER: Suppliers that are formally assessed by the current design activity or the original manufacturer, determined to be a trusted source that will reliably provide authentic and conforming materiel, and entered on a register of approved suppliers.

AUTHORITY HAVING JURISDICTION: A statutory authority can differ between countries, the term is used to refer to the governmental organization at the federal, national, state, or local entity having statutory authority to respond to, enforce, or prosecute anti-counterfeiting laws. Examples are Customs and Judicial bodies.

AUTHORIZED RESELLER: An entity who has a legally binding relationship with the legally authorized source, but does not provide direct product support to the customer.

AUTHORIZED SUPPLIER: Aftermarket manufacturers as defined above, and suppliers authorized by the current design activity or the original manufacturer to produce and/or sell materiel (i.e., franchised distributors).

BROKER: In the independent distribution market, brokers are professionally referred to as independent distributors. See definitions for "broker distributor" and "independent distributor".

BROKER DISTRIBUTOR: A type of independent distributor that works in a "Just in Time" (JIT) environment. Customers contact the broker distributor with requirements identifying information such as the part number, quantity, target price, and date required. The broker distributor searches the industry and locates parts or other materiel that meet the target price and other customer requirements.

CERTIFICATE OF AUTHENTICITY (C of A): A statement to the effect that all materiel items listed above furnished on this contract are genuine, new and unused unless otherwise specified in writing herein; are suitable for the intended purpose; are not defective, suspect, or counterfeit; have not been provided under false pretenses; and have not been materially altered, damaged, deteriorated, or degraded.

CERTIFICATE OF CONFORMANCE (C of C, CoC): A document provided by a supplier formally declaring that all buyer purchase order requirements have been met. The document may include information such as manufacturer, distributor, quantity, lot and/or date code, inspection date, etc., and is signed by a responsible party for the supplier.

CERTIFICATE OF CONFORMANCE AND TRACEABILITY (CoCT): A certificate of conformance required by certain U.S. military specifications which requires documented traceability from the QPL/QML manufacturer through delivery to the U.S. Government if the material is not procured directly from the approved manufacturer.

COMMODITY LEVEL TRACEABILITY: The requirement to trace lifecycle management to a commodity for specified events related to acquisition, validation of authenticity, property accountability, storage, operation, maintenance, safety, physical security, retirement, and disposal by each commodity, e.g., a stock numbered product and/or a lot or batch of a product.

CURRENT DESIGN ACTIVITY: The organizational entity currently responsible for the design of materiel. This may be the original design activity or a design activity to which the design responsibility has been transferred.

DESTRUCTIVE TESTING: A systematic, logical, detailed examination of materiel during various stages of physical disassembly, conducted on a sample of completed materiel from a given lot, wherein materiel is examined for a wide variety of design, workmanship, and/or processing problems. Information derived from destructive testing may be used to:

- a. preclude installation of inauthentic materiel or materiel having obvious or latent defects
- b. aid in disposition of materiel that exhibits anomalies
- c. aid in defining improvement changes in design, materials, or processes
- d. evaluate supplier production trends

DISPOSITION: Decisions made by authorized representatives within an organization concerning future treatment of nonconforming materiel. Examples of dispositions are to scrap, mutilation, use-as-is (normally accompanied by an approved variance/waiver), retest, rework, repair, or return-to-supplier.

FRANCHISED DISTRIBUTOR: A distributor with which the original manufacturer has a contractual agreement to buy, stock, re-package, sell and distribute its product lines. Franchised distributors normally offer the product for sale with full manufacturer flow-through warranty. Franchising contracts may include clauses that provide for the original manufacturer's marketing and technical support inclusive of, but not limited to, failure analysis and corrective action, exclusivity of inventory, and competitive limiters.

GIDEP (GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM): A cooperative activity between U.S. and Canadian government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information essential during research, design, development, production and operational phases of the life cycle of systems, facilities and equipment.

INDEPENDENT DISTRIBUTOR: A distributor that purchases new materiel with the intention to sell and redistribute it back into the market. Purchased materiel may be obtained from original manufacturers or contract manufacturers (typically from excess inventories), or from other independent distributors. Resale of the purchased materiel (re-distribution) may be to original manufacturers, contract manufacturers, or other independent distributors. Independent distributors do not have legally binding relationships with current design activities or original manufacturers.

ITEM LEVEL TRACEABILITY: The requirement to trace lifecycle management to an individual item for specified events related to acquisition, validation of authenticity, property accountability, storage, operation, maintenance, safety, physical security, retirement, and disposal by a single instance of an item.

ITEM UNIQUE IDENTIFICATION (IUID): IUID is a materiel identification system instituted by the United States Department of Defense (DoD) in accordance with International Organization for Standards (ISO) standards including ISO 15459 to uniquely identify a discrete tangible item and distinguish it from other like and/or unlike tangible items. Tangible items are distinguished from one another by the assignment of a unique item identifier (UII) in the form of a unique data string and encoded in a Data Matrix bar code symbol which is placed on the item. The same approach has been adopted by the North Atlantic Treaty Organization, the Air Transport Association, American National Standards Institute, individual companies, etc. A UII is only assigned to a single instance of an item and is never reused. Once assigned to an item, the UII is never changed, even if the item is modified or re-engineered.

LEGALLY AUTHORIZED SOURCE: The current design activity or a supplier authorized by the current design activity or the original manufacturer to produce an item.

NONDESTRUCTIVE TESTING (NDT): Can also be described as Nondestructive Inspection (NDI) or Nondestructive Evaluation (NDE). NDT encompasses a wide variety of analytical techniques used in science and industry to evaluate the properties of materials, components, subcomponents, or systems without damaging or permanently altering them. See E.1.3 for further details.

OPEN MARKET: The trading market that buys or consigns primarily original manufacturers' and contract manufacturers' excess inventories of new materiel and subsequently utilizes these inventories to fulfill supply needs of other original manufacturers and contract manufacturers, often due to urgent or obsolete materiel demands.

ORGANIZATION: In the context of this document, it refers to procurement and design activity entities (government and contractor), and sub-tier materiel suppliers and producers.

ORIGINAL MANUFACTURER: An organization that designs and/or engineers and produces materiel and is pursuing or has obtained the intellectual property rights to that materiel. Notes:

- a. The materiel and/or its packaging are typically identified with the original manufacturer's trademark.
- b. Original manufacturers may contract out manufacturing and/or distribution of its product.
- c. Different original manufacturers may supply product for the same application or to a common specification.

PACKAGING: Packaging refers to the manner in which materiel is packaged in preparation for use. The determination of packaging types is determined by product sensitivities such as moisture, physical characteristics, etc., as well as the method (manually, or by use of automated equipment) to be used to place the materiel into its application.

REFURBISHED: Materiel that has been cleaned, freshened, painted, polished or renovated in an effort to restore it to a "like new" condition.

RESELLER: An entity providing materiel who may or may not have a legally binding relationship with the legally authorized source and is serving only as an agent of the transaction.

SLASH SHEET: For the purposes of this standard, an addendum and/or appendix like supplement to the basic standard that specifies requirements for a specifically defined commodity and its supply chain. Each slash sheet is balloted and released separately from the basic standard..

STOCKING DISTRIBUTOR: A type of independent distributor that stocks large inventories typically purchased from original manufacturers and contract manufacturers. The handling, chain of custody, and environmental conditions for materiel procured from stocking distributors is generally better known than for product bought and supplied by broker distributors.

SUPPLIER: Within the context of this document, a blanket description of all sources of supply for a materiel (e.g., original manufacturer, franchised distributor, independent distributor, broker distributor, stocking distributor, aftermarket manufacturer) who may or may not have a legally binding relationship with the legally authorized source. This relationship generally includes direct product support, training and marketing support from the legally authorized source and provides direct product support to the customer.

SUPPLY CHAIN TRACEABILITY: Documented evidence of materiel's supply chain history. This refers to documentation of all supply chain intermediaries and significant handling transactions, such as from original manufacturer to distributor, or from excess inventory to broker to distributor.

UNIQUE ITEM IDENTIFIER (UII): A globally unique and unambiguous identifier that distinguishes an item from all other like and unlike items. The UII is a concatenated value that is derived from a UII data set of one or more data elements encoded in an IUID compliant Data Matrix bar code symbol. The UII is intended to be a permanent mark placed on a single instance of an item of materiel and cannot be changed over the life of that item.

UNUSED (NEW SURPLUS): Materiel that has not been previously used. A shipment of unused materiel can contain mixed date codes, lot codes, or countries of origin, and should be received in unused factory or third party packaging. The materiel may have minor scratches or other physical defects as a result of handling, but should be in good condition and should not be refurbished. The materiel should be guaranteed to meet the manufacturer's full specifications.

UPRATED: Assessment which results in the extension of materiel ratings to meet the performance requirements of an application in which the materiel is used outside the manufacturer's specification range.

UPSCREENED: Additional materiel testing performed to produce materiel verified to specifications beyond the standard materiel's rated parameters.

USED (REFURBISHED OR PULLED): Materiel that has been installed and used, but subsequently removed from its application. Used materiel may be received in non-standard packaging (i.e., bulk), and may contain mixed lots, date codes, be from different facilities, etc. Materiel may have physical defects such as scratches, faded markings, chemical residue or other signs of use, but should be intact. Used materiel may be sold with a limited warranty. Used materiel marketed as refurbished should meet the industry definition of refurbished, or should be sold as used or pulled product.

3. REQUIREMENTS

3.1 Materiel Authenticity Assurance Plan

The organization shall develop and implement a materiel authenticity assurance plan that documents: (a) its processes used for assuring that only authentic and conforming materiel is procured from legally authorized sources, and (b) its planning to be used for risk mitigation, disposition, and reporting in the event any counterfeit materiel is encountered in its supply chains. The control plan shall include the processes described in 3.1.1 through 3.1.7.

NOTE: The material authenticity assurance plan is subject to customer approval, and may be disapproved if it does not incorporate appropriate guidance from the appendices considered necessary to provide for an appropriate level of assurance for procuring authentic and conforming materiel – see Appendix D for sample contract clauses.

3.1.1 Authentic and Conforming Materiel Availability

The materiel authenticity assurance processes shall maximize availability of authentic and conforming, originally designed and/or qualified materiel throughout the product's life cycle, including management of materiel obsolescence. Organizations shall modify/develop their risk management policies to direct immediate identification of items and supply sources susceptible to counterfeiting for enhanced product assurance. Information and guidance for ensuring authentic and conforming materiel availability is provided in Appendix A.

3.1.2 Purchasing

The procurement/purchasing processes shall:

- a. Assess potential sources of supply to determine their likelihood of delivering authentic and conforming materiel. Assessment actions may include surveys, audits, review of product alerts, and review of supplier quality data to determine past performance. Guidance: Appendix B.
- b. Maintain a register of approved suppliers, including the scope of the approval, to assure the highly likely supply of authentic and conforming materiel. Guidance: Appendix B.
- 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 materiel authenticity assurance plan. Refer to 3.1.2.f.
- d. Assure that approved/ongoing sources of supply are maintaining effective processes for assuring the delivery of authentic and conforming materiel. Assurances actions should include a request of the adoption of processes which are in accordance with documents such as ISO 12931, see applicable documents 2.1.3; and may include where appropriate testing (destructive, non-destructive, functional, measurements, etc.), surveys, audits, review of product alerts, and review of supplier quality data to determine past performance.

- e. Assess the likelihood that sources other than original manufacturers or authorized suppliers can deliver authentic and conforming materiel. Where applicable, this shall be accomplished and documented when it is necessary to procure from other than the original manufacturer or an authorized supplier.
- f. Implement risk management provisions, including risk assessment and risk mitigation per the materiel 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.
- g. Specify flow-down of applicable requirements of this document to appropriate contractors, their sub-contractors, and distributors. In the event that one or more supply chain intermediaries do not have a materiel authenticity assurance plan compliant to this document, a risk analysis shall be considered for every application of the materiel. Guidance: Appendix D.

3.1.3 Purchasing Information

The documented process shall specify contract/purchase order quality requirements to maximize the likelihood of being provided authentic and conforming materiel. Examples of procurement quality requirements and clauses are provided in Appendix D.

Procurement of material shall be subject to the applicable contract requirements pertaining to Fraud and Falsification (F&F). This shall include, but may not be limited to, the applicable pass-down clauses identified in Appendix D.

3.1.4 Verification of Purchased Product

The documented processes 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. Examples of verification actions include: review of data deliverables, visual inspection (including research on marking requirements, Item Unique Identification (IUID) scan, testing, non-destructive evaluation and destructive testing). Guidelines concerning the performance of risk-based product assurance are provided in Appendix E.

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 to prevent it from entering the supply chain under fraudulent circumstances.
- b. Control/destroy any suspect or confirmed counterfeit materiel to preclude its use or reentry into the supply chain.
- 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.

Guidelines for control of materiel are provided in Appendix F.

3.1.7 Reporting

The documented processes shall assure that all occurrences of counterfeit materiel are reported, as appropriate, to internal organizations, customers, government reporting organizations, industry supported reporting programs, and criminal investigative authorities. Guidance: Appendix G.

4. NOTES

- 4.1 A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY SAE COMMITTEE G-21, COUNTERFEIT MATERIEL

APPENDIX A - AUTHENTIC AND CONFORMING MATERIEL AVAILABILITY

A.1 DESIGN, PROPOSAL, AND PROGRAM PLANNING

A.1.1 Determining Counterfeit Risk

A.1.1.1 Implementing procedures should include a methodology to communicate the risk-informed authentication requirement, including a requirement for traceability and an indication of the degree of traceability to anyone involved in the acquisition/procurement of the end item or identified components. The degree of traceability required depends upon the complexity and criticality of the item and must be monitored by the program or item manager as the susceptibility of counterfeiting changes. Organizations should determine item criticality by assessing the bill of materials to identify the effects that the failure of an item would have on its application within an end item. The range of risks based on item criticality are shown in Figure A3.

A.1.1.2 The impact of supply chain risk should be assessed on the following continuum, see Figure A1:

- a. Negligible - Easily mitigated
- b. Minor - Increase the cost of operations
- c. Moderate - Degrade the function, use or operation of the system
- d. Serious - Sabotage, or maliciously introduce unwanted function
- e. Critical - Result in injury or death of personnel, or significant destructive product damage

Likelihood versus Impact of Counterfeit Risk

Likelihood	Near Certainty ~90%			Unacceptable Risk Levels		
	Highly Likely ~70%					
	Likely ~50%					
	Low Likelihood ~30%	Acceptable Risk Levels				
	Not Likely ~10%					
		Negligible	Minor	Moderate	Serious	Critical
Impact of Non-Mitigated Counterfeit Item						

Risk Categories:

HighMediumLow

FIGURE A1 - COUNTERFEIT SUPPLY CHAIN RISK ASSESSMENT MODEL

A.1.1.3 The likelihood of counterfeiting occurrence should be assessed on the following continuum, see Figure A2:

- a. Not Likely ~10% - Stable, high quality production base
- b. Low Likelihood ~30% - Isolated poor performance in second tier of production base
- c. Likely ~50% - Suppliers are exiting the production base
- d. Highly Likely ~70% - Diminishing sources and material shortages exist
- e. Near Certainty ~90% - Widespread degradation of the production base; frequent poor performance instances

Traceability Requirements Mapped to Counterfeit Risk Assessments

Likelihood	Near Certainty ~90%	Certificate of Authenticity	Process Audit/Review	Auditable Part History	OEM or OCM	OEM or OCM
	Highly Likely ~70%	Receipt Visual Inspection	Certificate of Authenticity	Verification Testing	OEM or OCM	OEM or OCM
	Likely ~50%		Receipt Visual Inspection	Authorized Supplier	Auditable Part History	Auditable Part History
	Low Likelihood ~30%			Certificate of Authenticity	Verification Testing	Verification Testing
	Not Likely ~10%			Receipt Visual Inspection	Certificate of Authenticity	Certificate of Authenticity
		Negligible	Minor	Moderate	Serious	Critical
Impact of Non-Mitigated Counterfeit Item						

Risk Categories:



FIGURE A2 - COUNTERFEITING OCCURRENCE RISK ASSESSMENT MODEL

A.1.2 Mitigating Supplier Risk

Once the impact of supply chain risk has been associated with the likelihood of counterfeiting occurrence in the supply chain, procurement assurance processes for avoiding counterfeit product should begin prior to the tendering of a contract for the item(s) at risk. The extent of these processes should be commensurate with risks related to the source of supply and item criticality. Figure A3 depicts overall risk as a function of supplier reliability and item criticality. Figure A4 identifies factors for assessing and mitigating supplier risk.

A.1.3 Long Term Materiel Availability

During design, proposal and program planning efforts, organizations should assess the long term availability of legally authorized sources for authentic and conforming materiel for production and support of systems. When assessments indicate availability risks, organizations should take the steps necessary to assure the continuing availability of authentic and conforming materiel, including, for example:

- a. Lifetime buy
- b. System redesign
- c. Alternate/multiple sources
- d. Substitutions
- e. Planning for adequate procurement lead times

A.2 OBSOLESCENCE MANAGEMENT

Obsolescence can increase the risk of acquiring counterfeit materiel. To maintain the likelihood of purchasing authentic and conforming materiel, manufacturers should proactively manage the life cycle of their products through the use of a Diminishing Manufacturing Sources and Material Shortages (DMSMS) management plan.

The following Government and Industry document(s) provide guidance with regard to managing DMSMS:

- a. SD-22: Department of Defense (DOD) Diminishing Manufacturing Sources and Material Shortages (DMSMS) Guidebook
- b. SD-19 Parts Management Guide
- c. MIL-STD-3018 Parts Management
- d. GIDEP DMS Reports
- e. TechAmerica STD-0016, Standard for Preparing a DMSMS Management Plan
- f. IEC 62402:2007: Obsolescence Management - Application Guide

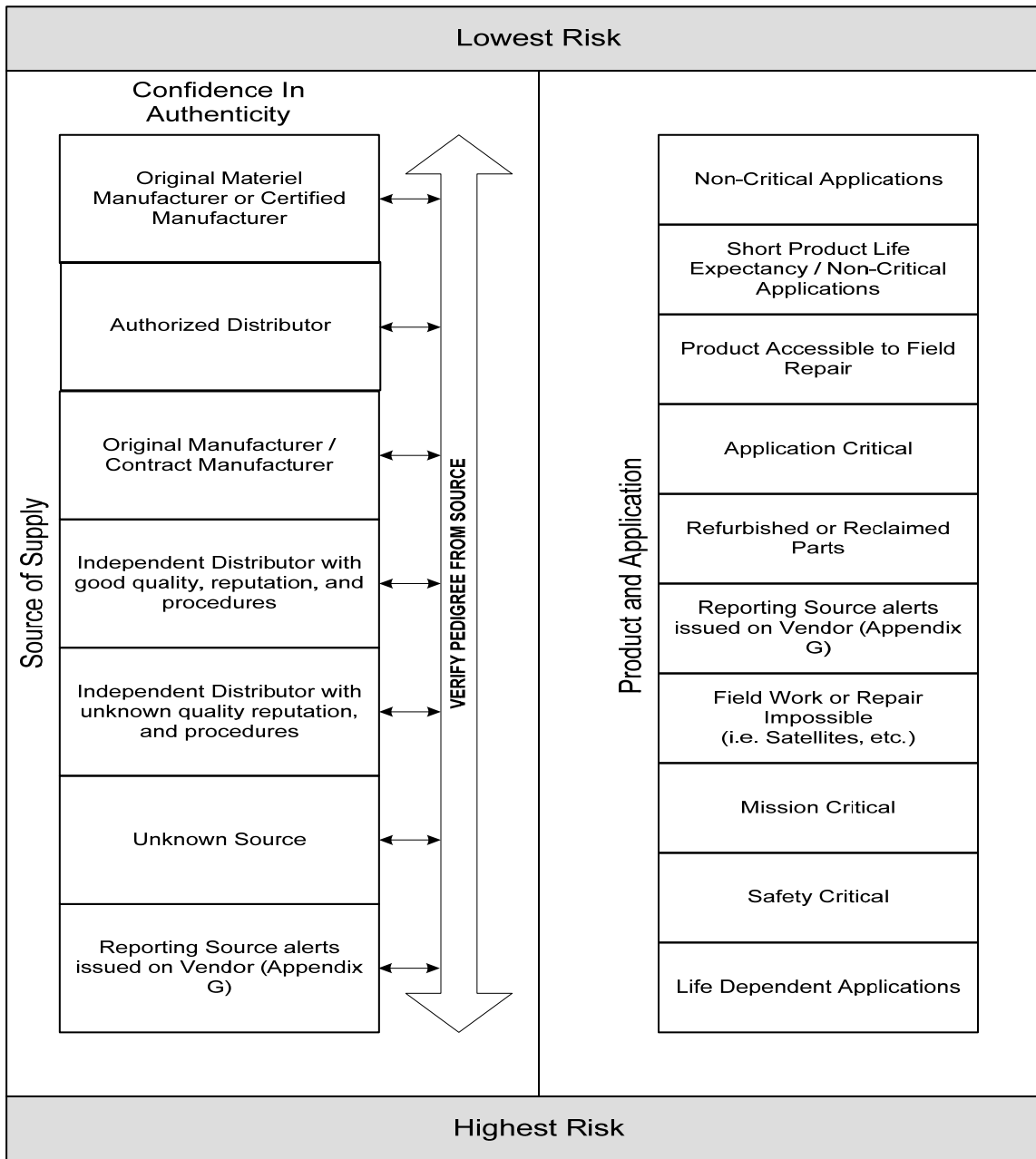
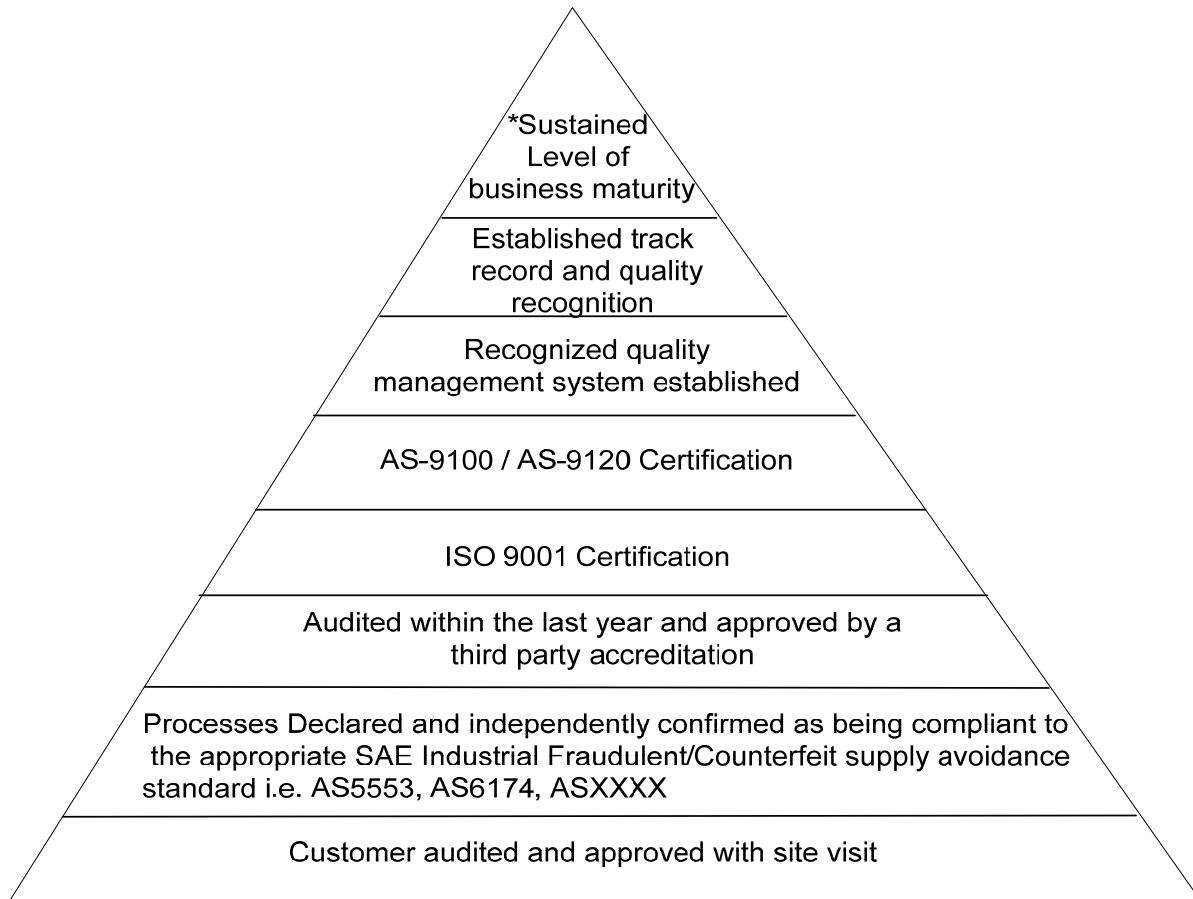


FIGURE A3 - RISK STACK CHART

Supplier Assessment Pyramid



* Industry organizations have recommended companies be in business between a minimum of one and three years.

FIGURE A4 - SUPPLIER ASSESSMENT PYRAMID

NOTE: ATTEMPT TO FILL IN MORE AREA WITHIN THE PYRAMID FOR LESS RISK

APPENDIX B - PURCHASING PROCESS

B.1 PROCUREMENT APPROACH

B.1.1 General

When materiel counterfeit risk is determined to be “highly likely” or “near certain” (see Appendix A), consideration should be given to purchasing wherever possible, directly from a legally authorized source, such as original manufacturers, their authorized distributors, or authorized suppliers. Independent distributors should be used only after consideration of alternate materiel, redesign, schedule adjustments and a reasonable search for materiel from authorized sources has been conducted. When independent distributors are used, risk mitigation should be implemented including such things as:

- a. process qualification/material qualification;
- b. validated quality check;
- c. certificate of conformance.

B.1.1.1 Original manufacturer/supplier agreements typically include provisions that protect the user by ensuring product integrity and traceability, such as:

- a. original manufacturer warranty;
- b. proper handling, storage and shipping procedures;
- c. failure analysis and corrective action support;
- d. certificates of conformance;
- e. acquisition traceability.

B.1.1.2 Independent distributors do not have warranty or product support agreements with the original manufacturer and, therefore, have limited means to ensure product integrity and traceability. Broker distributors, in particular, may only act as scouting agencies for hard-to-find materiel and may not maintain quality assured inventories.

B.1.1.3 Authorized distributors should provide product acquired through agreements with original manufacturers. If a distributor cannot provide product in this manner, then for the purpose of this document, the distributor is considered an independent distributor.

B.1.2 Supplier Approval and Source Selection

B.1.2.1 Supplier approval and source selection considerations should include:

- a. the buyer's historical experience with the source;
- b. previously documented problems with the source from external sources;
- c. how long the source has been in business;
- d. the source's demonstrated adherence and/or certification to higher-level quality standards such as the following:
 - assembly/equipment/system providers: AS9100 and ISO 9001
 - original manufacturers, aftermarket manufacturers: AS9100, ISO 9001, AS9003
 - distributors: AS9120

- test facilities: ISO 9001
- fastener suppliers: Fastener Quality Act (FQA)
- e. the source's demonstrated adherence to applicable provisions of this standard;
- f. the results of audits performed per B.1.3;
- g. acceptable documented purchasing and product acceptance processes and practices for verifying the authenticity and conformance of materiel supplied;
- h. use of outsourced or in-house laboratory testing;
- i. use of quality inspectors that have been trained and qualified concerning types and means of materiel counterfeiting and how to conduct effective product authentication and confirmation.

B.1.2.2 Buyers should ensure that distributors have established documented processes and the financial means to support any contractual guarantees expected. Purchase agreements should include product certifications and contractual remedies such as financial penalties if inaccuracies are found.

B.1.2.3 Buyers should investigate distributors through reporting sources in advance of procurement activity to ensure suspect counterfeiting incidents have not occurred. Guidance: Appendix G.

B.1.2.4 The cost of product inspections, tests, and supplier assurance actions (e.g., audits/surveys) should be factored into a determination of total procurement costs in order to fully evaluate and compare costs to be incurred by offerer proposals.

B.1.2.5 Figure B1 provides a procurement risk mitigation flow diagram.

B.1.3 Audits

B.1.3.1 Audits demonstrating that the supplier's quality management system incorporates adequate documented processes to assure the purchase, acceptance, use, and delivery of authentic and conforming materiel should be performed before purchasing product, and periodically thereafter. (NOTE: typical audit certifications apply to specific facilities, so multiple sites may require multiple audits.) These audits should occur at intervals sufficient to determine that the supplier's quality management system incorporates a program compliant with this standard (for equipment/system providers, where invoked), and/or other invoked contract requirements related to counterfeit materiel risk mitigation. Audits may be performed by a qualified independent third party.

B.1.3.2 Using the results of audits performed by other private sector or Government organizations is an acceptable alternative to second or third party auditing provided the auditing process, attributes, and auditor qualifications are evaluated and deemed adequate to assure compliance with this document and/or other invoked requirements.

B.1.3.3 Audit scope and frequency should be commensurate with the assessed risk of the source. Audit requirements may range from completion of a survey assessment of the source's processes and controls (procurement, quality, handling, test, etc.), to a full facility audit of these processes.

B.1.3.4 Whenever possible, audits should include visual inspection of items from non-original manufacturer sources to determine if they could be suspect counterfeit.

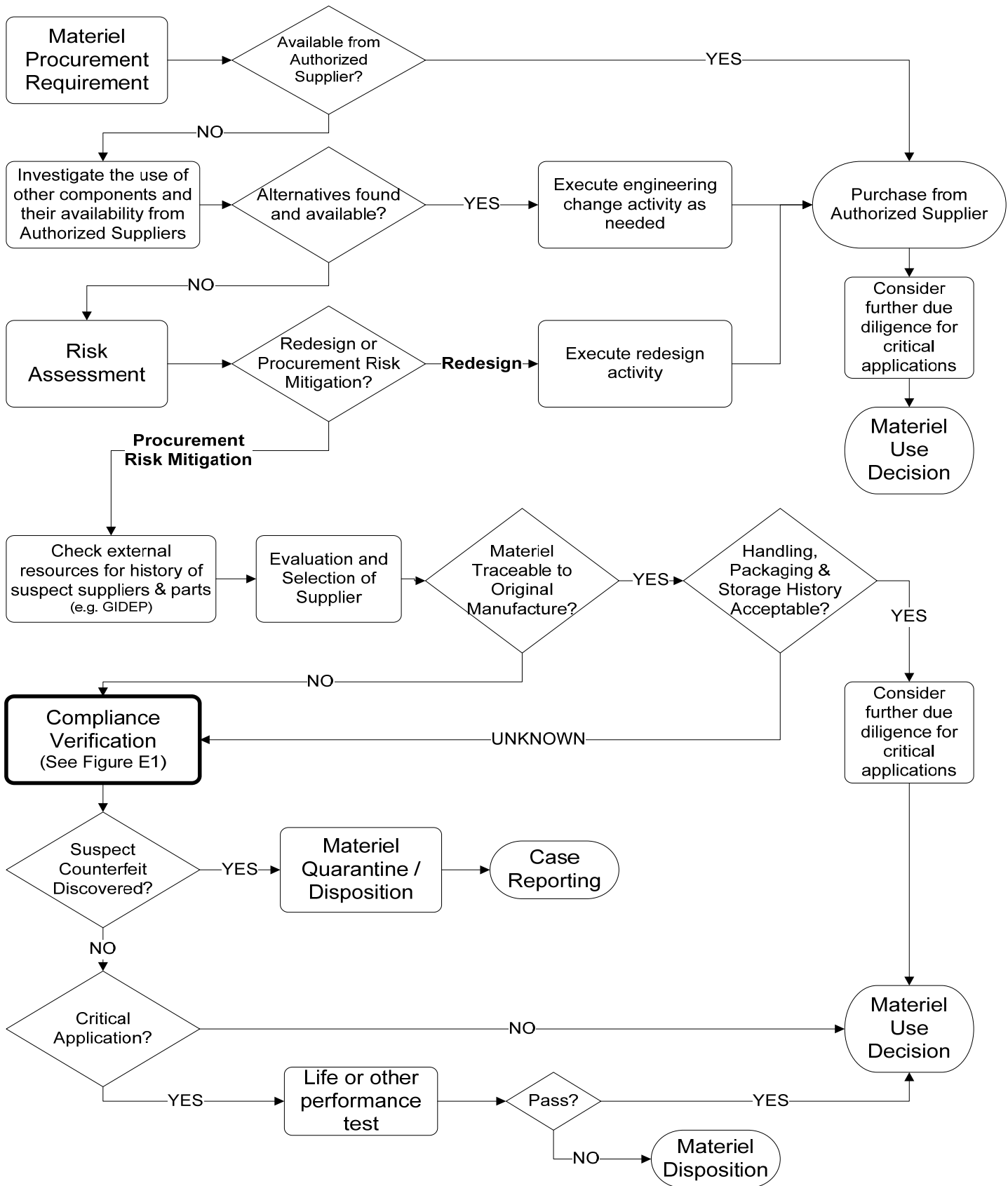


FIGURE B1 - PROCUREMENT RISK MITIGATION

APPENDIX C - SUPPLY CHAIN COMMODITY AND ITEM LEVEL TRACEABILITY

- C.1 Without certificates of conformance and acquisition traceability, the purchaser assumes unknown risks. Original manufacturers and distributors (authorized and independent) should be required to provide certificates of conformance and acquisition traceability. Acquisition traceability consists of the name and location of all supply chain intermediaries from the original manufacturer to the direct source of the materiel at either the commodity or item level. The organization should ensure that these requirements are clearly stated as deliverable data within the procurement documents, regardless of which level of the supply chain provides the materiel. If traceability is unknown, appropriate risk mitigation procedures should be used as described in this document.
- C.2 In order to assure supply chain traceability when materiel is purchased through authorized distributors, the documentation in the following paragraphs should be required. Note that there is a distinction regarding the level of documentation to be supplied when buying materiel manufactured to military standards and aerospace specifications versus materiel made to commercial or industrial standards.
- C.2.1 For procurement of materiel for commercial or industrial use, materiel delivered by the manufacturer to the franchised distributor is not normally required to contain a formal certificate of conformance. In such cases, the accompanying documentation is a commercially acceptable packing list. This document normally identifies the manufacturer, distributor to whom the materiel was supplied, distributor purchase order number, part number, and quantity. Additional information, such as date code or statement of compliance, may be provided but is not normally required. This document is maintained on file by the distributor and not supplied to the end customer. Shipments of commercial and industrial materiel is typically accompanied by a distributor packing list and/or certificate of conformance. Purchase orders should require that materiel purchased through authorized distribution be acquired directly from original manufacturers or authorized suppliers.
- C.2.2 For procurement of materiel for military or government use, a manufacturer certification to a specified military or aerospace specification or standard (or similar) may be required. This documentation should contain, at a minimum, the manufacturer, distributor, distributor purchase order number, part number, quantity, and date and/or lot and/or heat codes (if applicable) of each quantity of a commodity supplied. When unique item level traceability is required, the same information should be provided for each single instance of an item being supplied with a unique item identifier. Additional information, as required by governing specifications, may also be provided. A copy of this document should accompany shipment of materiel to the end customer and, for materiel procured through authorized distributors, should be accompanied by a certificate of conformance (or quality compliance) showing proper supply chain traceability.
- C.3 While it is prudent to request independent distributors to provide these certificates of conformance and acquisition traceability, independent distributors often do not have this documentation. Traceability to the original manufacturer may not have been maintained, is lost, or is unavailable. An independent distributor's inability to provide certificates of conformance and acquisition traceability does not indicate wrongdoing or that the products offered are noncompliant. However, in these circumstances the procuring organization assumes unknown levels of risk regarding product authenticity and must take appropriate risk mitigation actions.
- C.4 Commodity and item level traceability planning should be accomplished in the following steps:
- C.4.1 Items are identified during program/project management activities of systems development that require individual item or part traceability reporting and marking due to the risk of counterfeiting:
- a. Commodity level - by national stock number, part number, manufacturer
 - b. Unique item level - by Unique Item identifier (UII)
 - 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.
- C.4.2 Contractor and government quality management procedures are implemented, appropriate to the traceability required.
- C.4.3 Standards for commodity level and unique item level traceability, reporting and marking appropriate to the application and risk associated with the entity are selected and applied.

- C.4.4 Authoritative data sources information about commodity level items and dedicated registries for uniquely identified items are established for traceability and reporting.
- C.5 Examples of procurement clauses pertaining to certificates of conformance and supply chain traceability are provided in Appendix D of this standard.

APPENDIX D - RECOMMENDED CONTRACT PASS-DOWN CLAUSES – GENERAL

D.1 CONTRACT REQUIREMENTS - GENERAL

D.1.1 In order to maximize the assurance of procuring authentic and conforming materiel, the buyer's procurement contract language should include requirements which will help ensure that conforming, authentic materiel is provided. The seller's responsibilities should be plainly stated and agreed upon, including:

- a. Product traceability - Per Appendix C of this standard, the seller should be capable of providing full traceability for the materiel being purchased, including names and addresses of prior sources (if any). Both buyer and seller should maintain records containing date and/or lot and/or heat codes (if applicable), and any serialization or unique item identifiers associated with the purchase order and invoice.
- b. Tests and inspections - The seller should be notified of all tests and inspections that they will be required to perform to assure product authenticity, including development of accept/reject criteria and qualification of test/inspection personnel.
- c. Quality management system - The seller should be required to comply with, and/or be certified to, an appropriate higher level quality standard (e.g., AS9100, AS9120, ISO 9001, and AS9003).
- d. Acceptance of financial responsibility - The seller should be notified that they may be liable for remedial costs should any counterfeit materiel be provided. Procurement contracts should state that the buyer is not under obligation to return suspect or confirmed counterfeit materiel and the buyer may elect to scrap any known counterfeit materiel. The buyer may request proof of financial responsibility, such as a product liability/completed operations insurance certificate of insurance (e.g., ACORD Certificate of Liability Insurance) issued from the seller's insurance agent or broker. Limits of at least \$1,000,000 per occurrence and \$1,000,000 annual aggregate are common. The buyer may also request similar evidence of professional liability and/or product recall insurance with similar limits from the seller if the cost is commercially feasible for the seller.
- e. Length of obligation - The seller should be informed of the specific time period for which their responsibility applies. Terms and conditions between buyer and seller should allow for a reasonable time period for the buyer to detect, quarantine, and confirm counterfeit or substandard product. The buyer should perform a level of inspection or test sufficient to detect gross or common indications of counterfeiting before the time expires. The warranty period should not be less than the warranty period that may be invoked in the contract by the ultimate customer.
- f. Required documentation - The seller should be provided with clear and specific instructions concerning deliverable documentation. Documentation requirements, including certificates of conformance and test/inspection data, should be included in the contract terms and conditions.
- g. Penalties associated with fraud - The seller should be notified of potential legal penalties associated with fraud and falsification.

D.1.2 The sample contract clauses provided in this appendix are intended to supplement, not duplicate or replace, quality clauses/requirements contained in other quality standards such as ISO 9001, AS9100, AS9120, and ARP9009. These documents should be referred to during the selection and development of comprehensive procurement contract requirements related to assuring product quality.

D.2 SAMPLE CONTRACT CLAUSES - CONTRACTS ISSUED TO MATERIEL PROVIDERS

D.2.1 Guarantee of Materiel Source(s)

"The seller shall ensure that only new and authentic materials are used in materiel delivered to <BUYER>. The Seller may only purchase <MATERIEL> directly from original manufacturers, manufacturer franchised distributors, or authorized aftermarket manufacturers. Use of materiel that was not provided by these sources is not authorized unless first approved in writing by <BUYER>. The seller must present compelling support for its request (e.g., original manufacturer documentation that authenticates traceability of the materiel to the original manufacturer), and include in its request all actions to ensure the materiel thus procured is authentic and conforming."

D.2.2 Supply Chain Traceability

"The seller shall maintain a method of commodity and item level traceability that ensures tracking of the supply chain back to the manufacturer of all <MATERIEL> being delivered per this order. This traceability method shall clearly identify the name and location of all of the supply chain intermediaries from the manufacturer to the direct source of the materiel for the seller and shall include the manufacturer's commodity or item level identification for the item(s) such as date codes, lot codes, heat codes, serializations, unique item identifiers, or batch identifications."

D.2.3 Certificate of Conformance and Traceability (U.S. Department of Defense Contracts)

"This clause is applicable to all contracts for Qualified Products List (QPL) or Qualified Manufacturers List (QML)-controlled materiel. This clause applies regardless of the point of inspection designated in the contract award. This clause applies both to contracts awarded directly to a manufacturer listed on the applicable QPL/QML and to suppliers (e.g., distributors) not listed as approved manufacturers on the applicable QPL/QML.

The materiel supplied must be in strict conformance to the requirements set forth and/or referenced in the item description, including applicable revisions and slash sheets. To ensure this conformance, the contractor must provide a Certificate of Conformance and Traceability (CoC/T) with the information and documentation required by the applicable specification. This documentation must reference the contract number and include a certification signed by the approved QPL/QML manufacturer. In addition, if the materiel is not procured directly from the approved manufacturer, all additional documentation required by the specification must be provided to establish traceability from the QPL/QML manufacturer through delivery to the Government. The CoC/T is required to determine acceptability of the supplies. If the CoC/T is not provided, is incomplete or otherwise unacceptable, the supplies will be determined not to meet contract requirements and will be rejected.

If the contract requires inspection and acceptance at origin, the contractor shall furnish the original and two copies of the CoC/T to the Government Quality Assurance Representative (QAR) with the items offered for acceptance. The CoC/T must clearly reference the applicable contract number. The contractor shall submit one signed copy to the contracting officer. The second copy shall be retained by the QAR. The original shall be maintained by the contractor.

If the contract requires inspection and acceptance at destination, the contractor shall mail one copy of the CoC/T to the contracting officer upon shipment/delivery. The CoC/T must clearly reference the applicable contract number."

D.3 SAMPLE CONTRACT CLAUSES - CONTRACTS ISSUED TO INDEPENDENT DISTRIBUTORS

D.3.1 Test and Inspection Requirements

"The seller shall establish and implement test and inspection activities necessary to assure the authenticity and conformance of purchased materiel, including:

- Traceability and documentation verification;
- Visual examination;
- Tests and inspections [see Appendix E of this standard for examples and descriptions of test and inspection activities].

Tests and inspections shall be performed in accordance with clearly delineated accept/reject criteria provided or approved by <BUYER>. The seller shall prepare and provide to the <BUYER> records evidencing tests and inspections performed and conformance of the materiel to specified acceptance criteria.

Tests and inspections should be performed by persons that have been trained and qualified concerning detection of the types and means of counterfeiting and how to conduct effective product authentication."

D.3.2 Supply Chain Traceability

"The seller shall maintain a method of commodity and item level traceability that ensures tracking of the supply chain back to the manufacturer of the materiel being delivered per this order. This traceability method shall clearly identify the name and location of all of the supply chain intermediaries from the manufacturer to the direct source of the materiel for the seller, and shall include the manufacturer's commodity or item level identification for the item(s) such as date codes, lot codes, heat codes, serializations, unique item identifiers, or batch identifications."

D.3.3 Certificate of Conformance

"The seller shall approve, retain, and provide copies of Certificates of Conformance (CoC).

Manufacturer CoCs shall, at minimum, include the following:

- a. Manufacturer name and address;
- b. Manufacturer and/or buyer's part number and dash number, group number, or similar;
- c. Commodity or item level identification for the item(s) such as date codes, lot codes, heat codes, serializations, unique item identifiers, or batch identifications;
- d. Signature or stamp with title of seller's authorized personnel signing the certificate.

NOTE: Distributors shall, in addition to the above, include their name for each part shipped."

D.3.4 Certificate of Authenticity

"The seller shall approve, retain, and provide copies of Certificates of Authenticity (CoA).

Manufacturer CoAs shall, at minimum, include the following:

- a. Contract Number
- b. Manufacturer name and address;
- c. Manufacturer and/or buyer's part number and dash number, group number, or similar;
- d. Item Nomenclature, Quantity, Unit of Measure;
- e. Actual Manufacturer CAGE Code, Design Control Activity CAGE Code;

D.3.5 Quality Management System

"The seller shall have a quality management system that complies with AS9120, Quality Management Systems - Aerospace - Requirements for Stocklist Distributors. Independent certification/registration is not required unless specified by buyer.

Organizations that obtain certification/registration to AS9120 and subsequently change certification/registration bodies (CRB), lose registration status, or are put on notice of losing registration status, shall notify the buyer's procuring organization(s) within three days of receiving such notice from its CRB."

D.3.6 Product Impoundment and Financial Responsibility

"If suspect/counterfeit <MATERIEL> is furnished under this purchase agreement, such items shall be impounded. The seller shall promptly replace such items with items acceptable to the <BUYER> and the seller may be liable for all costs relating to impoundment, removal, and replacement. <BUYER> may turn such items over to Authority Having Jurisdiction for investigation and reserves the right to withhold payment for the suspect items pending the results of the investigation. Any known instances of fraud or attempted fraud shall be documented in writing to <BUYER>."

D.3.7 Penalties Associated with Fraud

"This purchase order and activities hereunder are within the jurisdiction of the <GOVERNMENT>. Any knowing and willful act to falsify, conceal or alter a material fact, or any false, fraudulent or fictitious statement or representation in connection with the performance of work under this purchase order may be punishable in accordance with applicable legal statutes.

Seller employees engaged in the performance of work under this purchase order shall be informed in writing prior to performance of work that there is a risk of criminal penalties associated with any falsification, concealment, or misrepresentation in connection with work performed under this purchase order.

Seller shall include the following statement preprinted on each Certificate of Conformance initiated by the seller and provided to the buyer in conjunction with this purchase order:

NOTE: The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a crime under <GOVERNMENT> statute.

Seller shall include all provisions of this contract clause, including this sentence, in all lower tier contracts under this order. Any inability or unwillingness of a lower-tier supplier to comply with this provision should be documented in writing and submitted to <BUYER>."

APPENDIX E - PRODUCT ASSURANCE

E.1 COUNTERFEIT MATERIEL DETECTION

For cases where there is reason to doubt the authenticity of materiel or compliance with manufacturing specifications, additional tests and inspections should be performed, as necessary, to detect counterfeits. The following mitigation methods can be applied to reduce the risk of receiving counterfeit materiel. These methods may not definitively distinguish authentic materiel from counterfeit materiel, but when properly used will minimize the risk of counterfeit materiel entering the production system. For high risk applications, it may be necessary to perform life testing and other static, dynamic and functional testing as additional tests in order to attain the requisite confidence level. Questionable test results may require performance of comprehensive failure analysis.

The process flow shown in Figure E1 is a recommended flow for assessing the authenticity of materiel. This suite of tests and inspections is intended to supplement, not to replace, product acceptance procedures applied by the organization. It assumes that there is capability for a full set of tests. It is recommended that a sequential flow similar to this be followed for each procurement.

E.1.1 Documentation and Packaging Inspection

The supplier should provide an unbroken chain of documentation (certifications, packing slips, etc.) tracing the movement of the materiel back to through the supply chain to origin, and certification that the materiel has not been salvaged, reclaimed, otherwise used, or previously rejected for any reason.

Any Certificates of Conformance or other documentation should be examined for authenticity and applicability to the delivered materiel, including:

- a. Lot and/or date codes on the packaging do not match the lot and/or date codes on the parts.
- b. Review of logos, trademarks and other identifying marks to ensure they match manufacturers' marks as applicable.
- c. Changes to or irregularities in the documentation and/or paper trail.
- d. Part number marked on the materiel does not match the part number on the Purchase Order and the certifications.
- e. Materials are inconsistent with the description on the supplied documentation.
- f. Serial number issues or duplication of UII (Unique Item Identifier).

If there is an elevated concern for product integrity, it may be possible to verify with the manufacturer that date, lot codes, serial numbers, and quantities listed on the documentation are valid.

E.1.2 Visual Inspection

Visual examinations should be performed at a magnification appropriate to the attribute under examination in appropriate lighting, at least 75 foot-candles. For materiel with product identification and/or other identifying/traceability markings, a representative sample based on a determination of product risk should be examined from each lot (date code or other identification code) for evidence of remarking and/or salvaged, reclaimed, or other indications of re-use. Industry and government standard "resistance to solvents" test methods can be effective, but more aggressive methods may be necessary to reveal forged markings, to remove coatings applied to disguise sanding marks, and to reveal other indications that the original device marking has been removed. Other methods include the use of acetone or scraping the surface of the materiel to remove markings and coatings or to detect original part numbers under resurfaced and remarked materiel. Examples of suspect counterfeiting include, but are not limited to:

- a. Altered or unexplained markings, stampings, moldings, and engravings.
- b. Improper surface treatment or signs of refurbishment without being identified as refurbished materiel.
- c. Re-marked, smeared or illegible bar codes (IUID or UII)
- e. Faceplates and nameplates showing signs of removal and re-installation
- f. Altered labels and tags
- g. Signs of re-painting or re-coating
- h. Other signs of re-used materiel such as oil stains, overheated areas, signs of disassembly and reassembly, erosion, wear, dents and scrapes, etc.

Suppliers should consider establishing a library of digital photographs for material received, that can be used to supplement other inspection criteria.

E.1.3 Nondestructive Testing

Nondestructive Testing (NDT): Can also be described as Nondestructive Inspection (NDI) or Nondestructive Evaluation (NDE). NDT encompasses a wide variety of analytical techniques used in science and industry to evaluate the properties of materials, components, subcomponents, or systems without damaging or permanently altering them. The following NDT Techniques can be used to validate the materials, processes and markings of materiel:

- a. Visual, weight, optical and infrared (if applicable), and dimensional inspections. Can be used on all items.
- b. Liquid penetrant inspection (surface defects only). It can be used only on non-porous materials; either metal or non-metals. Liquid penetrant may be fluorescent (Type I) which requires black lighting inspection, or non-fluorescent (Type II) also called visible dye which requires white light inspection. Most commonly used materials are post-emulsified hydrophilic, post-emulsified lipophilic, water-washable and solvent removed penetrants.
- c. Magnetic particle inspection (surface to ~0.25 inch depth). It is limited to the inspection of iron/steel items only. The process may be wet particle inspection using stationary or portable equipment, or dry particles inspection using portable equipment such as yokes, contour probes or prods. The inspections may be fluorescent which requires black lighting inspection, or non-fluorescent which requires white light inspection.
- d. Ultrasonic inspection may include thru transmission, pitch/catch, straight beam, shear, immersion or phased array. The inspection can be performed though the entire part depending on configuration, but is not good on/near surface). Used on all materials except very porous or non-homogenous materials.
- e. Eddy current inspection (also called electromagnetic inspection). It is limited to the inspection of metals only, to about 0.25 inch depth. Special controls are needed to use eddy current on iron/steel items. May also include phased-array eddy current. Eddy current is only used rarely to detect flaws on new/unused items, and is used extensively to detect flaws on used items, (in-service inspections, corrosion, wear, crack, impact, fatigue, etc.). Other uses of eddy current are conductivity testing, alloy sorting, coating thickness tests, and tubing/piping inspections.
- f. Radiological inspection includes film radiography, digital radiography, computed radiography, real time radiography and computed tomography. There are three main types of penetrating radiation used; those are X-ray, gamma ray (also called radioisotope source inspection), and neutrons. Can be used for internal inspections for most configurations or items or materials (metals, composites, etc.), and is also used to inspect assemblies. Neutron radiography is used to inspect explosives and plastic materials. Radiological inspections are not commonly used to find surface defects. X-ray fluorescence analysis (XRF) is sometimes used to identify the thickness and composition of plating, as well as being a viable method for detecting certain metal alloys.
- g. Thermography inspections. Used on both metals and non-metals to find defects, however, can be used to find "hot spots" in systems and assemblies.

- h. Acoustic Emission. Used to test systems for noise/noise reduction. Occasionally, the term is used for inspections that generate sounds into materiel to check for delaminations, (for example, tap tests or hammer tests, etc.). Used on systems requiring a certain level of sound control (i.e., submarines) and on composite materials/components (i.e., composite tap tests).
- i. Holography/shearography. Laser inspections, mainly used on composites and tires to find flaws and delaminations.
- j. Heat Flow Microcalorimetry. Inspections performed using comparative heat transfer rates of known versus unknown/suspect materials. Can be used to determine if material has been properly processed. Can also be used to predict corrosion or other material changes prior to its occurrence.
- k. Functional tests: Install part to see if it works, fit tests, perform dynamometer tests, etc.
- l. Other types of technology-specific nondestructive tests not listed.

E.1.3.1 NDT Data Management: NDT Data on items and materials should be retained per the terms of the contracts.

E.1.3.2 Qualification and Certification Of NDT Personnel: All NDT personnel should be qualified (trained) and certified in the method/technique per a nationally accepted standard if such a standard is available.

E.1.4 Destructive Testing

Destructive Testing can include: deformation tests (bend, vibration, shock, tensile, compression, shear, fatigue, hardness, adhesion, impact, etc.); metallurgical tests (cut materiel, polish and evaluate under magnification); exposure tests (heat, cold, fuel, weathering, aging, UV, ozone, chemical, salt spray, corrosion, etc.); analytical tests (gas chromatography, spectral analysis, electron microscopic inspections, wet chemistry composition analysis, etc.); functional tests (run it until it breaks), etc. These tests should be applied as appropriate per contractual agreements.

E.1.5 Other Tests

Other tests may be helpful in detecting counterfeit materiel. Scanning Acoustic Microscopy, for example, may be used to detect original laser-etched part numbers under resurfaced and remarked materiel.

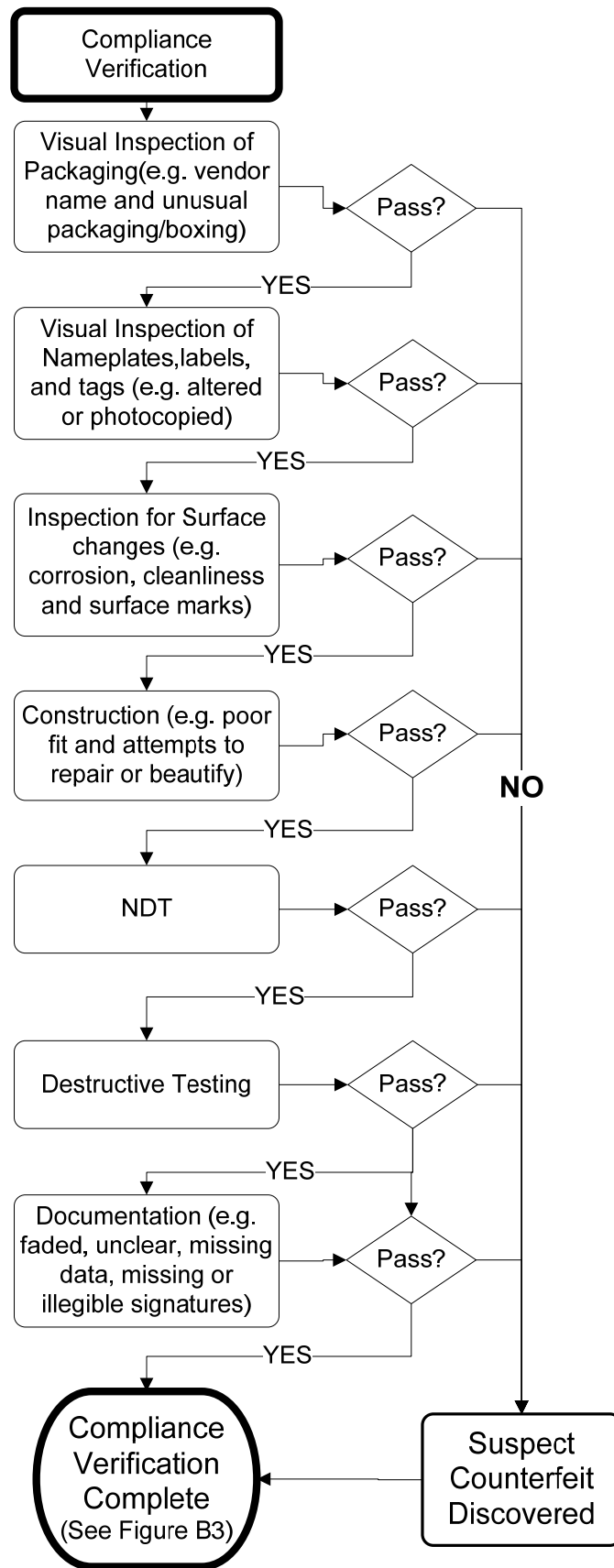


FIGURE E1 - SAMPLE AUTHENTICITY VERIFICATION PROCESS FLOW

APPENDIX F - MATERIEL CONTROL

F.1 CONTROL OF SCRAP OR SURPLUS MATERIEL

F.1.1 Scrap Materiel

Materiel that has been found to be nonconforming or otherwise unsuitable for use should be physically identified (e.g., tag, label, mark), segregated from conforming materiel, and rendered unusable by physical destruction (e.g., grinding, breaking, or crushing) prior to disposal. Paragraph F.1.4 discusses the control of suspect or confirmed counterfeit materiel.

F.1.2 Surplus Materiel

Excess inventory or surplus materiel originally procured for use in deliverable product should only be re-sold or dispositioned to external organizations with demonstrated adherence to higher level quality standards, this standard, and/or rigorous business, ethical, and quality standards intended to avoid acquiring and reselling counterfeit goods. If such action is taken, the supplier should provide a copy of any certification, traceability information, with the surplus product.

F.1.3 Return Materiel

In order to mitigate the risk of counterfeit materiel returning to the supply chain through supplier acceptance of returns, steps should be taken to permit supplier validation of authenticity. The following information should be provided to the supplier at the time of return.

- a. Part/lot/heat/item/date code/number of materiel to be returned
- b. Name of manufacturer
- c. Purchase order number under which materiel was supplied
- d. Quantity to be returned
- e. Reason for return

Returns should not be made to suppliers without proper return materiel authorization. After receipt of return authorization, the returned materiel should include copies of the original paperwork.

F.1.4 Control of Suspect or Confirmed Counterfeit Materiel

In the event that product assurance actions, in-process inspections/tests, or product failure experiences indicate that materiel may be counterfeit, the following steps should be implemented:

- a. Physically identify the materiel as suspect/counterfeit materiel (e.g., tag, label, mark).
- b. Physically segregate the materiel from acceptable non-suspect materiel and place in quarantine. Quarantine should consist of physical barriers and controlled access.
- c. Do not return the materiel to the supplier for refund, replacement, etc., except under controlled conditions which would preclude resale of the suspect counterfeit materiel into the supply chain, and to allow the supplier to conduct internal investigation.
- d. Confirm conclusively the authenticity of the materiel. This may include further tests, communications with the materiel's supposed manufacturer, third-party analysis, etc.
- e. Upon confirmation that materiel is counterfeit, identify and place on "Hold" all potential additional counterfeit materiel in storage and installed in product pending disposition by appropriate authorities.
- f. Report counterfeit materiel in accordance with guidelines provided in Appendix G.

- g. The known counterfeit material should be scrapped or mutilated (using a method that prevents its re-use by others), after confirming that the agency contacted (See Appendix G) does not require a sample of the material for legal proceedings.

F.2 TRACEABILITY AND CONTRACTOR CONTROL OF SUPPLIERS

Traceability and contractor control of suppliers (subcontractors and vendors) is a key element of assuring authentic and conforming material. Unique quality assurance requirements should be strictly adhered to by the contractor for procurement of items designated as "Critical" (i.e., critical safety items, critical application items, mission critical, maintenance critical, fracture critical traceable, etc.). The protocols outlined in Sections F.2.1 and F.2.2 may be imposed in contracts where appropriate (for safety critical items, for example) or where required by the acquisition regulations to reduce the risk of receiving counterfeit material or unauthorized substitutions.

F.2.1 Traceability

All technical/quality requirements applicable to the supplies and services under the contract should be traceable to the time and place of production. Records should provide the degree of traceability required to enable verification, at any point from raw material to final product, of all aspects of material, manufacturing, and documentation.

F.2.1.1 Material

Includes but is not limited to raw material and stock material. Traceability requirements include assurances that:

- a. The correct materials are utilized, including material for replacement and spare parts. It is imperative that traceability be maintained from the material to the material certification test report and other required Objective Quality Evidence (OQE). The material certification test report should completely and accurately reflect that the material supplied meets all specified requirements.
- b. The supplier should develop written procedures that implement the material control requirements stated herein and elsewhere in the contract/purchase order.
- c. Purchase orders for raw material should specify that it be traceable to material certification test reports by traceability codes that are marked on the material and identified on the test reports.
- d. Material traceability codes should be permanently applied to the material and annotated on test reports for each individual heat lot/heat treatment of material, manufacturing lot, or production batch supplied. Where lot traceability is not possible due to manufacturing processes (e.g., continuous casting operations), lot traceability should be provided as defined in the applicable material specification and, when applicable, as further defined in the contract/purchase order. Traceability marking should either be heat/lot number, a unique vendor traceability number/code, or a combination thereof to maintain complete traceability to certification for OQE.
- e. Traceability should be maintained through all process operations, including any subcontracted operations, to the finished component.
- f. Material distributors should provide documentation with direct traceability of characteristics between incoming and outgoing product.
- g. Material distributors should provide positive documentation that "No Additional Processing Has Been Performed" by the distributor or disclose on a certification if processing was performed which altered the incoming material condition, properties or dimensions.
- h. Prohibited - The contractor should not provide altered material as a means to achieve required final thickness if a physical process (e.g., forging, rolling, etc.) is specified. For example, the contractor should not substitute cut plate for bar stock.

F.2.1.2 Manufacturing

Traceability applies to prime contractors and their suppliers for manufacturing processes that include but are not limited to special processes applied to raw material or parts such as casting, forging, heat treatment, shot peening, and non-destructive testing; assembly processes; inspection processes especially those related to critical characteristics.

- a. The contractor should identify on their process/operation sheets, all manufacturing sources performing processes/operations outside their facilities.
- b. Operations sheets for all manufacturers (prime contractor and suppliers) should be available for review by the procuring organization.

F.2.1.3 Documentation

- a. A paper copy of all traceability documents for each lot should be presented for inspection with each submittal for acceptance.
- b. The inspection method sheets, which list the characteristics of each item produced under the contract, should have positive traceability to the raw material.
- c. The contractor should include with each shipment the raw material manufacturer's test report and/or certification (e.g., mill test report) that states that the lot of material furnished has been tested, inspected and found to be in compliance with the applicable material specifications. The test specimen should come from the same thickness/diameter that is being supplied. The test report should contain the following information:
 1. Specifications including revision numbers or letters to which the material has been tested and/or inspected to,
 2. Heat and lot numbers,
 3. When the material specification requires quantitative limits for chemical, mechanical, or physical properties, the test report should contain the actual test and/or inspected values obtained.
- d. The contractor should provide certifications, with each shipment, to demonstrate that all required processing (e.g., forming, heat treating, thermal cycling, conversion, etc.) has occurred and the results meet all specification and testing requirements. No unauthorized process should be allowed.
- e. The contractor should provide with each shipment a Certificate of Quality Compliance (COQC) to certify that the material meets the related requirements when non-destructive evaluations are required.
- f. If the material was altered (e.g., forged, rolled, heat treated, etc.) subsequent to procurement from the original material source and prior to delivery, the contractor should provide with each shipment an independent laboratory test certifying that the material complies with the requirements and the test report should contain all of the information in F.1.3.a. through F.1.3.c. Tests are to be completed after all subsequent conversion processing.
- g. Traceability documents should be retained at the contractor's facility for a minimum of three years, unless other requirements in the contract require a longer period of time. The longest period of time, past the completion of the contract, will take precedence. The contractor should make these documents available to the procurer upon request. At the end of this period, or in the event of contractor relocation or shutdown, all traceability documentation should be offered to the procurer prior to disposal.

F.2.2 Contractor Control of Suppliers

All supplies and services under the contract, whether manufactured or performed within the contractor's plant or at any other source, should be controlled at all points necessary to assure compliance to contractual requirements, which includes this specification. The contractor should maintain an effective control of purchased materials and subcontracted work.

- a. The contractor is responsible for assuring that all supplies and services procured from their suppliers conform to the contract requirements.
- b. When the procurer elects to perform inspection at a supplier's plant, such inspection should not be used by contractors as evidence of effective control of quality by such suppliers. It does not relieve the contractor of their responsibility for furnishing supplies that meet all specification requirements or for the performance of specified inspections and tests for such material.
- c. The contractor should assure that all applicable requirements (design, material, quality, etc.), in the contracts and associated technical requirements are properly included or referenced in all purchase orders for products ultimately applied to the contract.
- d. The contractor's quality program should assure that raw materials to be used in fabrication or processing of products conform to the applicable physical, chemical, and other technical requirements. Laboratory testing should be employed as necessary. Suppliers should be required by the contractor's quality program to exercise equivalent control of the raw materials utilized in the production of the parts and items which they supply to the contractor.
- e. All documents and referenced data for purchases applying to a contract should be available for review by the procurer to determine compliance with the requirements for the control of such purchases.
- f. The contractor should make available to the procurer reports of any nonconformance found on source inspected supplies and should (when requested) require the supplier to coordinate with the procurer on corrective action.

APPENDIX G - REPORTING

G.1 GENERAL

Upon identification of suspect or confirmed fraudulent/counterfeit materiel, the organization should provide timely notification to the reporting service organizations (as applicable) listed herein and to Authority Having Jurisdiction (as applicable).

G.1.1 Government Industry Data Exchange Program (GIDEP)

The Government-Industry Data Exchange Program (GIDEP) is a Department of Defense program established to promote and facilitate the sharing of technical information between government agencies and industry partners to increase systems safety, reliability, and readiness and to reduce systems development, production, and ownership costs. GIDEP has been designated by OMB Policy Letter 91-3 as the provider of the government's central database for receiving and disseminating information about nonconforming products and materials. Similarly, DoD has designated GIDEP as DoD's Diminishing Manufacturing Sources and Material Shortages (DMSMS) centralized database for sharing DMSMS information among DoD and Industry groups. Funded by the U.S. and Canadian governments, GIDEP membership is open and free to U.S./Canadian government agencies and their industry partners.

GIDEP participants should consult the GIDEP Operations Manual for guidance concerning participation in the program, reporting requirements, and procedures for the exchange of reports, data, and information. Non-participants may contact the GIDEP Help Desk (951-898-3207) for guidance.

G.1.2 FAA Suspected Unapproved Parts Program

FAA maintains a database of counterfeit, suspected unapproved parts and high-risk items (FAA Unapproved Parts Notifications (UPNs), listed by year). Data can be submitted by anyone by calling their hotline, e-mail or via hard copy (see below).

G.1.3 Product Data Reporting and Evaluation Program (PDREP)

PDREP is an automated information system designed to track quality and delivery performance on material/services procured by the DoD. This will include information about counterfeit materiel. Data is collected from all military sources on a daily basis and is maintained in the following records on the database: Contractor CAGE Information, Debarment/Suspension, Contract Delivery Data, DLA Contractor Alert List, GIDEP Documents, Material Inspection Records, Product Quality Deficiency Reports, Qualified Product List, Special Quality Data, Surveys, and Test Reports.

G.1.4 Joint Deficiency Reporting System (JDRS)

JDRS is used for deficiency reporting and resolution management across the DoD Aeronautical Enterprise. It is a cross-service web enabled automated tracking system designed to initiate, process and track deficiency reports from the Warfighter through the investigation process.

G.1.5 Government Investigative Authorities and Law Enforcement Agencies

In general, if counterfeit materiel is discovered, the appropriate Authority Having Jurisdiction (AHJ) should be contacted. Generally, reports can be provided directly to the AHJ points of contact, or via independent hotline reporting systems. The table below list contract sources for use by companies in the U.S.

G.1.6 Customer Notification

In addition to reporting to the appropriate agency listed in Table G1, all customers that are impacted by counterfeit material should be notified in writing of the counterfeit material details, along with an assessment/recommendation pertaining to any material in-house at the supplier/sub-contractor, or any previously delivered material. Additionally, If the supplier reported the counterfeit material information to one of the sources listed in Table G1, a copy of the reported information should be provided to the customer(s).

TABLE G1 - CONTACT SOURCES

<p>Department of Defense (DOD), Office of Inspector General (OIG)</p>	<p>By mail:</p> <p>Office of the Inspector General of the Department of Defense Investigative Policy and Oversight Contractor Disclosure Program 400 Army Navy Drive, Room 1051 Arlington, VA 22202-4704 Tel: (703) 604-8711</p> <p>By email: disclosure@dodig.mil</p> <p>By telephone: 866-604-8711</p> <p>By facsimile: 703-604-8720</p> <p>Online complaint form: http://www.dodig.mil/HOTLINE/submit_complaint.htm</p>
<p>Department of Commerce (DOC), Office of Inspector General (OIG):</p>	<p>The DOC OIG maintains several offices throughout the country. Headquarters can be reached through the U.S. Postal Service at:</p> <p>U.S. Department of Commerce Office of Inspector General 1401 Constitution Avenue, NW Washington, DC Tel: (202) 482-4661</p> <p>You can also call the main HQ hotline telephone at 800-424-5197.</p> <p>E-mails should be sent to: hotline@oig.doc.gov</p>
<p>Department of Energy (DOE), Office of Inspector General (OIG):</p>	<p>By Mail:</p> <p>U.S. Department of Energy Office of Inspector General ATTN: IG Hotline 1000 Independence Avenue, SW Mail Stop 5D-031 Washington, DC 20585</p> <p>Through e-mail at: ighotline@hq.doe.gov or you can call the Inspector's General Fraud Hotline: (800) 541-1625 (toll free) or (202) 586-4073 (toll)</p>
<p>Department of Transportation (DOT), Office of Inspector General (OIG):</p>	<p>Correspondence to the Department may be sent to:</p> <p>U.S. Department of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590</p> <p>or directly to the OIG at:</p> <p>DOT Inspector General P.O. Box 708 Fredericksburg, VA 22404</p> <p>DOT employees, contractors, or the public may report allegations. The OIG's Hotline is open 24-hours a day, seven days a week.</p> <p>Hotline is: (800) 424-9071 (toll free)</p> <p>E-mail concerns to: hotline@oig.dot.gov</p> <p>Online complaint form: https://www.oig.dot.gov/dot-oig-hotline-complaint-form</p>

Federal Aviation Administration (FAA):	<p>You can forward the completed FAA Form 8120-11, "Suspected Unapproved Parts Report," to:</p> <p>Federal Aviation Administration Office of Accident Investigation Aviation Safety Hotline, Room 840 800 Independence Avenue, SW Washington, DC 20591</p> <p>An electronic copy of FAA Form 8120-11, is available on the FAA Website at:</p> <p>http://www.faa.gov/aircraft/safety/programs/sups</p> <p>You may complete the electronic FAA Form 8120-11 and send it to the Aviation Safety Hotline e-mail at:</p> <p>9-AWA-AVS-AAI-SafetyHotline@faa.gov</p> <p>The FAA Safety Hotline is (800) 255-1111. You can also contact the FAA by calling: 1-866-TELL-FAA (1-866-835-5322).</p>
NASA Office of Inspector General (NASA OIG):	<p>When a government contractor encounters suspect fraudulent/counterfeit materiel that may affect NASA, the government contractor should contact the NASA OIG via the Hotline Reporting System.</p> <p>Contact can be made by calling the Hotline at: 1-800-424-9183; electronically by e-mail at:</p> <p>http://oig.nasa.gov/cyberhotline.html or through the</p> <p>U.S. Postal System at:</p> <p>NASA Inspector General P.O. Box 23089 L'Enfant Plaza Station Washington, DC 20026</p>
National Intellectual Property Rights Coordination Center	<p>The National Intellectual Property Rights Coordination Center (IPR Center) is the U.S. government's clearing house for investigations into counterfeiting and piracy—crimes that threaten public health, public safety and fair competition.</p> <p>Referrals can be made at: http://www.iprcenter.gov/referral.</p> <ul style="list-style-type: none"> • U.S. Immigration and Customs Enforcement • U.S. Customs and Border Protection • Federal Bureau of Investigation • U.S. Postal Inspection Service • Food and Drug Administration, Office of Criminal Investigations • Department of Commerce, International Trade Administration • Naval Criminal Investigative Service • Defense Criminal Investigative Service • U.S. Army Criminal Investigative Command, Major Procurement Fraud Unit • Defense Logistics Agency, Office of Inspector General • Air Force Office of Special Investigations • U.S. Patent and Trademark Office • General Services Administration, Office of Inspector General • Consumer Product Safety Commission • National Aeronautics and Space Administration, Office of Inspector General • U.S. Department of State, Office of International Intellectual Property Enforcement • INTERPOL • Mexican Revenue Service • Royal Canadian Mounted Police <p>In addition, the IPR Center works closely with the Department of Justice Computer Crime and Intellectual Property Section.</p> <p>By mail: Homeland Security Investigations National IPR Coordination Center 2451 Crystal Drive, STOP 5105 Arlington, VA 20598-5105 By telephone: 1-866-IPR-2060 By email: IPRCenter@dhs.gov Online: http://www.iprcenter.gov/</p>

UK Intellectual Property Office Intel Hub	<p>Intellectual Property Office Intelligence Hub Concept House Cardiff Road Newport South Wales NP10 8QQ</p> <p>Tel: 01633 814535 Fax: 01633 814950 Email: ipintel@ipo.gsi.gov.uk Web: www.ipo.gov.uk</p>
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