

Counterfeit Electronic Parts Risk Management Plan

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1. Introduction

1.1 Purpose

The purpose of this instruction is to provide uniform rules for managing the risk of purchasing non-genuine electronic parts for use in the manufacture of Crane Aerospace & Electronics assemblies. The primary area of emphasis is the controlling of purchases of electronic parts from non-authorized distribution channels to eliminate the incidences of purchasing non-compliant, substandard parts. The policy is to limit purchases from independent distributors or brokers to only those situations where no alternative exists, to adequately review all such purchases, and to provide education and training as to the potential risks of counterfeit parts getting into Crane Aerospace & Electronics equipment. SAE AS5553 is the basis for most of the practices outlined herein.

1.2 Broker Purchase Risk

The following are some of the risk factors encountered when purchasing electronic components from non-authorized distributors (brokers).

- **No Warranty/Manufacturer Support**
Parts purchased from brokers do not carry the manufacturer’s warranty. Any problems experienced cannot be addressed by the manufacturer, and they do not provide assistance in diagnosing faults.
- **Uncertain History/“Chain of Custody”**

From the time parts leave the factory through a franchised distribution system, the packaging, handling, and storage conditions are controlled by the manufacturer. This is especially important for ESD and moisture sensitive parts, and increasingly for termination finish solderability maintenance. For non-authorized channels, there is no way to determine what conditions the parts have been exposed to, and whether or not they may have been degraded or damaged due to these conditions. In extreme cases, parts have been reclaimed from scrapped assemblies, had their leads straightened, and then were marketed as new product. This is an unacceptable risk for Aerospace equipment.

- **Lack of Traceability/Certs**

Due to the fact that brokers are further down the supply chain, there is often no traceability to the Original Component Manufacturer (OCM). Since commercial parts do not normally require a Certificate of Conformance from the OCM, and unauthorized distributors cannot provide meaningful certification, traceability can be lost. Also, paperwork such as a Certification can be counterfeited.

- **Counterfeit Risk**

There has been a huge increase in the reports of counterfeit parts making their way into the broker supply chain, particularly for high end and expensive obsolete parts, but also for more mundane components such as resistors and capacitors. Since a parts control and reliability system is largely based on control of where the part was made, counterfeiting poses a serious threat to the reliability and performance of electronic equipment. Uncontrolled access to any and all brokers is not an acceptable risk.

- **Cost Control**

The cost of parts on the broker market can range from 2 to 20 or more times the price from a franchised distributor. Regular exposure to this type of price escalation is very undesirable.

- **Reliability of the Broker Marketplace**

Some brokers are motivated only by the bottom line. Long term customer relationships are not their focus. Consequently some of the information they provide is inaccurate or even deliberately false. Even reputable brokers often obtain parts from other brokers who are not as reliable. Nothing can be known for certain concerning the history of parts that have been outside the control of the franchised supply chain for a substantial period of time.

Regular procurement of aerospace parts from non-authorized distributors presents an unacceptable risk. For the extremely limited number of situations where such procurement is warranted, special care must be taken to mitigate this risk.

1.3 Applicability

This instruction applies to all Crane Aerospace and Electronics sites that are involved in the design and production of electronic assemblies. It also applies to subcontractors who are buying electronic parts for use in Crane Aerospace & Electronics products, including contract assembly houses, screening/test houses, and component lead finish processors. Non-electronic components are outside of the scope of this document, but are covered in AEP 40-029.

1.4 Policy

All purchased electronic component parts shall require traceability to the Original Component Manufacturer by means of a Certificate of Conformance, if required by the component specification, or, for commercial items, Certification from the OCM or an authorized distributor that is no more than one transaction removed from the OCM.

When justification and approval is given authorizing purchases that lack this traceability, additional measures as described in this document shall be employed. Such purchases are restricted to legitimate

part shortages caused by obsolescence or other long term interruption in the supply and can only be initiated with appropriate oversight and when the expectation of finding genuine parts is present.

All non-authorized (independent) distributors shall be classified as brokers in the Supplier Approval system. This includes independent distributors that have a mix of both authorized and non-authorized manufacturers. A list of acceptable brokers and testing facilities shall be maintained as an appendix to this document. Brokers and test facilities appearing on the list shall be evaluated for their capabilities to meet the requirements of this document.

All purchases from brokers, including those made by subcontractors, must be individually evaluated and approved on a case by case basis by Crane Component Engineering (CE) or other responsible engineer prior to placing an order. In addition, a Customer Account Manager or equivalent shall be notified prior to purchasing production parts from a broker in case there are specific customer requirements imposed. Any program-specific customer notification requirements are the responsibility of individual CAMs. Approval from the Supply Chain Director and group or site level Quality Director is required for all broker purchases other than material with verified OCM certification, or buy-back of material originally procured by Crane and held by a broker under a consignment agreement. Blanket or open Purchase Orders shall not be placed with brokers.

All brokers approved to sell directly to Crane will remain on Purchase Order (PO) Hold status until preliminary approval of individual purchases. When any supplier is on PO hold, the ERP system shall restrict the ability to enter a purchase order for that supplier. The PO hold can only be released by Supplier Quality, or their delegated representative, with CE approval. Supplier Quality shall be notified when the responsible buyer completes any broker transaction in Oracle, and the PO hold shall be reinstated. Subcontractors that purchase electronic parts for use in Crane Aerospace & Electronics assemblies shall implement a similar process that is approved by CA&E.

1.5 Related Documents

AS5553 – Counterfeit Electronic Parts: Avoidance, Detection, Mitigation, and Disposition
AS9120 – Quality Management Systems – Aerospace Requirements for Stocklist Distributors
DI-MISC-81832 – Counterfeit Prevention Plan (Data Item Description)
IDEA-STD-1010 – Acceptability of Electronic Components Distributed in the Open Market
AGIS 40-001 – Supplier Approval and Performance Measurement
AGIS 40-002 – Supplier Quality Assurance Requirements
AGIS 40-016 – Component Obsolescence Management Plan
AEP 40-029 – Counterfeit Risk Management for Non-Electronic Parts and Materials

Note: Referenced AGIS documents may be replaced with Group-Level AEP procedures in the near future. When an AGIS document is replaced by an AEP document, compliance to the newer AEP will meet the requirements of this procedure.

2. Definitions and Abbreviations

The following definitions and abbreviations apply to this document. Additional definitions may be found in SAE AS5553:

Aftermarket Manufacturer: A manufacturer that meets one or more of the following criteria:

1. The manufacturer is authorized by the OCM to produce and sell replacement parts, usually due to an OCM decision to discontinue production of a part. Parts supplied are produced from die that have been
 - a. transferred from the OCM to the aftermarket manufacturer, or
 - b. produced by the aftermarket manufacturer using OCM tooling and intellectual property (IP).

2. The manufacturer produces parts using semiconductor die or wafers, manufactured by and traceable to an OCM, that have been properly stored until use and are subsequently assembled, tested, and qualified using processes that meet technical specifications without violating the OCM's intellectual property rights, patents, or copyrights.
3. The manufacturer produces parts through emulation, reverse-engineering, or redesign, that match the OCM's specifications and satisfy customer needs without violating the OCM's intellectual property rights (IPR), patents, or copyrights.

In any case, the aftermarket manufacturer must label or otherwise identify its parts to ensure that the 'as shipped' aftermarket manufactured part will not be mistaken for the part made by the OCM.

Authorized Supplier: Aftermarket manufacturers as defined above, and OCM authorized sources of supply for a part (i.e., franchised distributors).

Broker: A non-authorized, independent distributor. Note: some distributors have franchised and non-franchised lines. Brokers have a majority of non-franchised lines, or the majority of their business consists of parts from non-franchised lines. Also some independent distributors stock inventory. Occasionally a distinction is made between stocking and non-stocking (broker) independent distributors. For the purposes of this document, the term "broker" refers to any unauthorized or non-franchised distributor of components.

Buyer: Anyone who procures components to be used in Crane Aerospace and Electronics manufactured equipment.

Certificate Of Conformance (C of C): A specific document required for military specification parts that documents conformance to the applicable specification as well as traceability to the manufacturer.

Certification (Commercial Parts): A document provided by a supplier of commercial parts 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. For commercial parts the certification may be in the form of a packing slip with reference to the manufacturer's part number. Such certification for commercial parts must be from an authorized supplier that is no more than one transaction removed from the OCM.

Counterfeit Part: A suspect part that is a copy or substitute without legal right or authority to do so or one whose material, performance, or characteristics are knowingly misrepresented by a supplier in the supply chain. Examples of counterfeit parts include, but are not limited to:

- a. Parts which do not contain the proper internal construction (die, manufacturer, wire bonding, etc.) consistent with the ordered part.
- b. Parts which have been used, refurbished or reclaimed, but are represented as new product.
- c. Parts which have different package style or surface plating/finish than the ordered parts.
- d. Parts which have not successfully completed the Original Component Manufacturer's (OCM)'s full production and test flow, but are represented as completed product.
- e. Parts sold as upscreened parts, which have not successfully completed upscreening.
- f. Parts sold with modified labeling or markings intended to misrepresent the part's form, fit, function, or grade.

Component Engineering: An engineering discipline focused on parts management and control. For business units without a formal Component Engineering function, the cognizant Design Engineer may fulfill the role of Component Engineer contained in this plan.

Customer Account Manager: The person within the Contracts or Sales organization that is responsible for the business relationship with a particular customer.

Destructive Physical Analysis (DPA): A systematic, logical, detailed examination of parts during various stages of physical disassembly, conducted on a sample of completed parts from a given lot, wherein parts are examined for a wide variety of design, workmanship, and/or processing problems. Information derived from DPA may be used to:

- a. preclude installation of inauthentic parts or parts having patent or latent defects
- b. aid in disposition of parts that exhibit anomalies
- c. aid in defining improvements or changes in design, materials, or processes
- d. evaluate supplier production trends

Franchised Distributor (Also Called Authorized Distributor): A distributor with which the OCM has a contractual agreement to buy, stock, re-package, sell and distribute its product lines. When a distributor does not provide products in this manner, then for the purpose of this document, the distributor is considered an independent distributor for those products. Franchised distributors normally offer the product for sale with full manufacturer flow-through warranty. Franchising contracts may include clauses that provide for the OCM'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 government sponsored program that collects and disseminates data of interest to military, defense, and aerospace organizations and agencies. GIDEP has been tasked by Congress to collect data on counterfeit parts that could potentially impact DOD and industry.

Independent Distributor: A distributor that purchases parts with the intention to sell and redistribute them back into the market. Purchased parts may be obtained from original equipment manufacturers (OEMs) or contract manufacturers (typically from excess inventories), or from other independent distributors. Re-sale of the purchased parts (re-distribution) may be to OEMs, contract manufacturers, or other independent distributors. Independent distributors do not have contractual agreements or obligations with OCMs.

Obsolete Part: A component that is no longer being manufactured by the OCM.

OCM (Original Component Manufacturer): An organization that designs and/or engineers a part and is pursuing or has obtained the intellectual property rights to that part.

1. The part and/or its packaging are typically identified with the OCM's trademark.
2. OCMs may contract out manufacturing and/or distribution of their product.
3. Different OCMs may supply product for the same application or to a common specification.

IDEA: Independent Distributors of Electronics Association (IDEA) is a non-profit trade association representing quality and ethically oriented independent distributors of electronic components.

ERAI: Electronic Resellers Association International is an affiliation of electronics distributors offering reporting and intervention to safeguard members against fraud, lost revenue, and unscrupulous business practices.

SAR: Supplier Approval Request per AGIS 40-001

Should vs. Shall: For the purposes of this document, use of the word "should" indicates a strong recommendation that is normally followed, but exceptions may be allowed in certain cases. "Shall" is a binding requirement that allows no deviation or exception.

Supply Chain Traceability: Documented evidence of a part's supply chain history. This refers to documentation of all supply chain intermediaries and significant handling transactions, such as from OCM to distributor, or from excess inventory to broker to distributor.

3. Requirements

3.1 Parts Availability

All production parts shall be purchased from authorized suppliers to the maximum extent possible. To support this goal, accurate requirements planning to reduce the incidence of shortages shall be performed in accordance with established processes. Supplier approval status shall be maintained in accordance with AGIS 40-001, Supplier Approval and Performance Measurement, or other applicable procedures.

3.1.1 Part Obsolescence

Part obsolescence shall be managed in accordance with AGIS 40-016 or other approved procedure. The goal of this Obsolescence management shall be to limit the need for procurement of parts from unauthorized channels by actively monitoring for obsolescence risk, planning for Last Time Buys, and supporting alternate part development and redesign.

3.2 Purchasing Requirements

3.2.1 Option 1 - Purchasing from OEM or Authorized Distributor

All purchases of parts intended for production shall be made from authorized suppliers that have been reviewed in accordance with a Supplier Management system approved by Crane Aerospace & Electronics. This includes procurement at subcontractor facilities, including Circuit Card Assembly, component test and screening facilities, and component lead re-finishing providers. If the supplier is an authorized distributor, such authorization must apply directly to the parts being purchased.

If a part cannot be located through an authorized channel, Crane Aerospace Component Engineering shall be contacted to research the possibility of finding an alternate part or source prior to considering other procurement options.

3.2.1.1 Certification to the Original Component Manufacturer (OCM)

Certification traceable to the OCM is required for all parts purchased through authorized channels. Acceptable certification includes a formal Certificate of Conformance, or Certification as defined in Section 2 herein.

3.2.2 Option 2 - Purchases from Brokers

Purchases from an independent distributor or broker may be considered only when there is no possibility of following Option 1 above. Such purchases are only allowed for legitimate part shortages caused by obsolescence or other long term interruptions in the supply. All purchases of component parts intended for use in production hardware from a broker must be proposed and reviewed with a cognizant Crane Component Engineer or responsible Design Engineer prior to any procurement activity.

Only brokers meeting the requirements of 3.3 and listed in **Attachment B**, Approved Brokers, shall be considered for procurement.

Justification for the proposed purchase shall include consideration of the financial impact of part shortages that would be resolved by a broker purchase so that a business case can be made. A Risk Assessment shall be prepared using the form shown in Attachment C. The Risk Assessment shall initially be reviewed by Component Engineering and Program Management, with customer notification as required. Approval of broker purchases without verifiable OCM certification requires high level management approval as documented on the Risk Assessment Form.

Verification tests and inspection requirements identified on the Risk Assessment Form shall be considered to be part of the Purchase Order. The Request Number from the Risk Assessment Form shall be noted on the Purchase Order. The purchasing documentation should also reference any tests or inspections to be performed by the supplier in addition to the standard set of tests identified herein. An Approved Test Facility (See **Attachment A**) shall be used for any additional electrical or environmental testing that is identified.

The results of all verification testing shall be reviewed by the cognizant Component Engineer, or other responsible engineer, and a final decision made as to the authenticity of the parts. Final approval shall be documented on the Risk Assessment Form.

All records related to the purchase of broker items shall be maintained and archived as part of the purchase order history.

3.2.2.1 OCM Certification Provided by Brokers

OCM certification is also desired when procuring from non-franchised channels, but care must be taken to avoid accepting falsified certification. The certification shall be verified for acceptable formatting and content, and the OCM should be contacted to provide further confidence that the certs are genuine. If reasonable certainty that the certification is authentic cannot be demonstrated, then the purchase shall be treated as if no OCM certification is available. A certification created by a non-franchised distributor is of no value for counterfeit risk mitigation and is not acceptable as the sole source of authentication evidence.

3.3 Broker Requirements

3.3.1 Approved Broker Status

The following requirements must be met by the broker prior to entering into a purchasing agreement and listing as an approved broker. Successful demonstration that the distributor meets or exceeds these requirements may result in the distributor being listed as an Approved Broker in **Attachment B**. Additional factors may be considered prior to listing as an Approved Broker, including the need for future transactions and other, intangible considerations. The ultimate decision shall be from a consensus between Component Engineering, Supplier Quality, and the Electronics Commodity Procurement Manager, or equivalent functions.

- a. Crane Aerospace and Electronics approved Quality System. SAE AS9120 Certification is the desired standard for all brokers.
- b. Active membership in an oversight organization (IDEA or ERAI)
- c. Aerospace oriented customer base; references may be required.
- d. Healthy Financial Standing (D&B report or other evidence; this will be evaluated when adding new brokers per the Supplier Approval process).
- e. Use of Crane Aerospace approved test facilities; the supplier must be willing to use an approved facility from the listing in **Attachment A**: List of Approved Test Facilities for electrical performance testing, or have their own set of test providers approved by Crane Aerospace. Counterfeit verification may be performed by Crane or an approved broker or test facility with the oversight of Crane Aerospace & Electronics Component Engineering.
- f. Site survey. A site survey in accordance with AEF 40-011-01 shall be completed prior to listing as an Approved Broker in **Attachment B**.
- g. Consignment or escrow purchasing agreement process. The supplier shall have a method of isolating Crane Aerospace & Electronics from committing resources toward procurement of any suspect parts that are found to be counterfeit, damaged, or otherwise unsuitable. One acceptable process is to commit procurement funds to an escrow account controlled by an uninterested party that will transfer to the supplier only when the parts are found to be acceptable. If parts are found

to be unacceptable, the funds shall revert immediately back to the purchaser. The time window for this process shall be at least 60 days.

- h. Counterfeit part disposal process. The supplier shall have a process for disposing of confirmed counterfeit parts that prevents them from being returned to the marketplace, and complies with any legal requirements for notifying the authority having jurisdiction or the IP owner. The supplier shall provide information into the GIDEP system of any suspect counterfeit material that is discovered.

Approved brokers will be added to the supplier base in accordance with AGIS 40-001, Supplier Approval and Performance Measurement, and AGIS 40-002, Supplier Quality Assurance Requirements. A minimum number of Approved brokers is considered desirable.

3.3.2 Disapproving Brokers

Disapproval of a broker by Crane Aerospace & Electronics can occur for various reasons including, but not limited to:

- a. A single, avoidable instance, or repeated instances, of deficient parts being supplied to Crane Aerospace & Electronics.
- b. A Quality rejection rate that is too high.
- c. Failure to accept financial responsibility for a counterfeit purchase.
- d. Failure to cooperate in the investigation of a suspected counterfeit part; the broker will need to divulge specific information about the source of such a purchase.
- e. Any deliberate deception regarding the status or origin of a purchase.
- f. Failure to comply with individual requirements identified in this plan.
- g. Repeated appearance in counterfeit reporting databases, such as GIDEP or IDEA, without adequate explanation.

Disapproved brokers will be made permanently inactive in the supplier database and removed from **Attachment B**.

3.4 Subcontractor Flow down:

The following requirements shall be flowed down in the agreement between Crane Aerospace & Electronics and any subcontractors who will purchase parts for use in equipment manufactured for or provided to us for production hardware. These subcontractors may include Circuit Card Assembly facilities, component testing facilities, and component lead refinishing facilities, among others.

- a. No procurement of parts from unauthorized distributors shall be allowed without prior approval from Crane Aerospace & Electronics.
- b. The use of Approved Brokers from the list in **Attachment B** is required. The subcontractor shall communicate to the broker that the end user is Crane Aerospace & Electronics.
- c. Broker purchases shall be approved using the same process as if the purchase was internal. This includes the completion of the Risk Assessment form and all required approvals.
- d. All supporting information (see Section 4) to initiate the Risk Assessment Form shall be provided with the request for approval, including the additional cost for testing, if known.
- e. Records shall be maintained providing traceability to specific assemblies when using parts purchased from a broker.

3.4.1 DID-MISC-81832 Flowdown

When the requirements of DID-MISC-81832, or other mandatory DFARS requirements pertaining to counterfeit parts are flowed down to the supplier by Purchase Order notes or other means, the requirements of 3.4 a. through e. above shall remain in effect. The supplier is not authorized to make their own authentication determination independently of Crane.

3.5 Risk Assessment

A Risk Assessment for each new broker purchase shall be initiated by the buyer and completed by Component Engineering and the CAM or Contracts management, as applicable. The Risk Assessment form (AG70-045) is shown in **Attachment C**. Full approval of the parts confirming acceptable risk is required prior to receiving the parts into inventory. When applicable, customer consensus shall be obtained and recorded on the form. A program manager or contracts administrator may approve on behalf of the customer when allowed.

The completed and approved Risk Assessment form shall be stored in the Component Engineering historical files.

3.5.1 Buyer-Provided Information

In order to initiate a Risk Assessment, the following information shall be provided by the buyer and added to the Risk Assessment form. The available, verifiable information will be used by the Component Engineer to determine whether additional testing beyond the minimum levels defined herein is required.

- a. Component part number affected
- b. Assembly and program generating demand
- c. Important program impact dates, i.e. short to line dates, date of available inventory from authorized distributor, etc.
- d. Root cause of need for broker purchase
- e. Name of Broker; Note: Must be from the Approved list
- f. Original Component Manufacturer
- g. Traceable, authentic manufacturer certification available? (Y/N)
- h. Complete Date/Lot Code and quantity information

Note that if specific Date Code and Quantity information is unavailable, a preliminary decision to move forward with the purchase cannot be made. Unwillingness or inability on the part of a supplier to provide this information should be taken as a warning sign of a potential high risk procurement that should be avoided.

3.5.2 Business Case

The Customer Account Manager (CAM) or Contracts manager shall be consulted and informed of the potential of a broker purchase. The CAM is responsible for verification of the impact to shipments and to communicate any additional program-specific requirements that are imposed. If a business case can be made to proceed, the Group or site level directors of Supply Chain Management, and Quality, along with the Solution Leader, shall provide concurrence with the decision to move forward on the Risk Assessment Form.

3.5.3 Initial Technical Review

The cognizant Component Engineer or other responsible engineer shall review the information provided and shall make the determination whether the technical risk is acceptable before proceeding. Any additional testing or inspection beyond that specified in 3.6 or 3.7 determined to be necessary shall be communicated to the buyer and added to the Purchase Order requirements.

All required testing shall be documented on the Risk Assessment form. A flowchart showing the Risk Assessment process is shown in **Attachment D**.

3.6 Minimum Testing for Parts With OCM Certification

Parts in original manufacturers packaging with verifiable certification to the OCM shall be subjected to the following as a minimum. A report showing the results of all testing and inspection shall be provided to Crane Aerospace & Electronics Component Engineering prior to final approval. All parts in the procurement lot must be represented by the certification documentation.

3.6.1 Inspection of Documentation and Packaging

Receiving Inspection shall verify that all parts are in original manufacturer's packaging and that the appearance of the documentation is consistent with genuine certification or packing slip. In addition they shall verify that there is traceability through authorized channels to the OCM. Additional guidelines for this inspection may be found in AS5553, E1.1.

3.6.2 Lot Visual Inspection

Parts shall be inspected to verify the part marking, date code and quantity information, as well as to inspect for general appearance matching the description provided by the supplier and the information on the certification document. The following examples are discrepancies that could indicate potential problems.

- a. Presence of multiple lot/date codes in a single tube, tray, reel, etc.
- b. Lot/date codes inconsistent with OCM production records and dates
- c. Partially filled reels, trays, etc.
- d. Country of origin not consistent with OCM assembly locations
- e. Marking inconsistencies across a single tube, tray, or reel, etc.
- f. Marking information that does not agree with certification information provided.

Any discrepancies shall be reported to the cognizant Component Engineer or other responsible engineer for disposition, and may require a full evaluation in accordance with 3.7.

3.7 Minimum Testing for Parts Without OCM Certification

Parts lacking certification to the OCM shall be subjected to the following testing and inspection as a minimum. A report showing the results of all testing and inspection shall be provided to Crane Aerospace & Electronics Component Engineering or other responsible Crane engineer prior to final approval. All parts subject to purchase shall be under control of the broker after the P.O. is executed. Parts subjected to verification testing shall be representative of the entire procurement lot, including parts from each date code if there are multiple date codes present. Blanket or open Purchase Orders may not be placed with brokers.

3.7.1 Piece Part Visual Inspection

A representative sample of parts shall be examined in accordance with IDEA-STD-1010 or an equivalent procedure as determined by Crane Aerospace & Electronics Component Engineering. The visual inspection shall be conducted at an appropriate magnification level (minimum 30X for most parts) to allow for inspection of critical attributes. The following examples shall be included as applicable to the part type:

- a. Uniformity of packaging material on all surfaces, including cavities in the molded package such as the pin 1 indicator for Plastic Encapsulated Microcircuits. Detection of "topcoating" or marking removal through abrasive techniques is the goal. Scratches or differences in surface texture may be indications of issues. Brushing surfaces with solvents should be employed to detect any deficiencies.

- b. Bent/damaged leads or evidence of prior assembly and reclamation.
- c. Termination finishes not consistent with the finish designator in the part number.
- d. Part marking inconsistencies. Note: OCM parts often have differences in marking appearance when produced in different plants or over different time spans.
- e. Evidence of handling damage.
- f. Cracking or other evidence of thermal overstress.
- g. Other evidence of remarking, resurfacing, or obliterating part of the marking.

3.7.2 X-Ray Fluorescence (XRF)

A representative sample shall be subjected to XRF testing of the package material and the leads at different points to determine if extension of the leads or patching or topcoating of the package has occurred.

3.7.3 X-Ray Inspection

X-Ray inspection shall be performed on a representative part sample to verify that the internal construction is consistent among the lot and, if available, consistent with a known authentic part.

3.7.4 Destructive Physical Analysis

A Destructive Physical Analysis (DPA) shall be performed on a representative sample part in accordance with accepted methods relative to the part type.

3.7.5 Electrical Testing

Electrical testing sufficient to verify the validity of the device or to detect damage due to ESD or other handling conditions should be performed on a representative sample of parts at an approved testing facility. Minimum testing should be DC static electricals from the military specification, internal component specification, or manufacturer data sheet as applicable. A wide variation of results, failure rate of more than 5%, or any other unexpected results shall be grounds for rejection. A summary of the test results shall be prepared and included with the shipment of parts.

For high complexity microcircuits or other difficult to test parts, functional testing may be performed at the Crane facility in the production units or on a representative engineering sample unit. This testing may be accomplished through the normal production testing of the equipment.

For one-time programmable devices such as certain types of memories or programmable logic devices, verification that the device is not programmed shall be accomplished. If evidence of prior programming is found, the parts shall be assumed to be counterfeit.

Additional testing requirements may be added after reviewing initial test results or at the request of a customer or program.

3.7.6 Hermeticity Testing

Parts that are designed to be hermetically sealed such as metal can and ceramic IC packages shall undergo fine and gross leak testing in accordance with their applicable specification. A representative sample may be tested initially. Any fallout shall require 100% testing of the lot.

3.7.7 Solderability Testing

Solderability testing shall be performed on all parts that are more than three years past the manufacturing date or if there are any indications of potential soldering issues based on the appearance of the terminations. Parts that fail solderability may be reworked by solder dipping or other accepted processes

for refinishing of component terminations. Parts that do not depend on solder for attachment or mounting purposes are exempt from this requirement.

3.8 Reporting and Evaluation of Test Results

A report showing the results of all testing completed shall be furnished to Crane Aerospace & Electronics Component Engineering or other responsible engineering prior to final approval and acceptance of parts. All discrepancies shall be addressed and recorded on the Risk Assessment form.

Test reports shall be archived in the Component Engineering or Purchasing historical files or on a server at the facility providing the testing services. All current and historical reports shall be readily retrievable upon request.

3.8.1 Suspect Counterfeit or Damaged Material

When the results of the Risk Assessment process point to the parts as likely counterfeit, misrepresented material, the lot shall be quarantined and subjected to the applicable counterfeit reporting and disposal processes for the broker. When the counterfeit lot is already in possession of Crane Aerospace & Electronics the parts should be disposed of in accordance with applicable local laws.

An internal hold shall be placed on all additional suspect material in inventory or WIP until the investigation is completed and the suspect parts are contained. Reporting to an oversight organization such as those listed in Appendix G of AS5553 is encouraged. As a minimum, any suspect counterfeit material should be reported into the GIDEP system.

3.9 Control of Broker-Purchased Inventory

Inventory purchased from a broker using the process herein shall be segregated from other inventory identified by the same controlling part number within the ERP system. This may be accomplished through existing traceability procedures or by the assignment of a manufacturing convenience number as a suffix to the controlling part number. The suffix "-700" has been reserved for this purpose for the Landing, Sensing, Fluid, and Power solutions and may be used by any of the other solutions. If this option is utilized, the "-700" should be the part procured from the broker and will be added to the ERP BOM for the affected assembly.

3.10 Exceptions for Crane Aerospace & Electronics Previously Owned Inventory

When a broker or lifecycle management company is acting on behalf of Crane Aerospace & Electronics in the capacity of inventory management or excess and obsolete material disposition, previously Crane-owned inventory may be repurchased without the need for completion of the entire Risk Assessment process. As a minimum, verification that the material was originally purchased by Crane and provided to the supplier under the terms of the agreement shall be furnished. If material is identified with other than an internal Crane Aerospace & Electronics control number, then the Risk Assessment process should be followed unless conclusive proof of custody can be provided.

These brokers are identified in **Attachment B**:

3.11 Receiving Inspection For Purchases From Brokers

In addition to normal Receiving Inspection required for any part, receivals from broker purchases shall be thoroughly examined to confirm that the quantities and Date Codes of the parts are as represented by the seller, and that any special instructions for testing and inspection required by the P.O. or the Risk Assessment Form have been performed. For electrical testing a fallout of no more than 5% (5%PDA) shall be standard unless otherwise specified on the P.O. Test data provided shall be reviewed and any potential discrepancies noted shall be shared with Component Engineering for a disposition decision prior to accepting the parts into inventory. Exceptions to the 5% rule may be allowed with written approval and explanation by Component Engineering or other responsible engineering.

3.11.1 Training Requirements for Receiving Inspectors

Individual inspectors involved in receiving and inspection of electronic components shall be trained to the requirements of this AGIS.

3.12 General Training Requirements

All individuals who are involved in the purchase, specification, and receiving Inspection of electronic components shall be trained to the requirements of this standard. Specific training for receiving Inspectors shall include material covering typical procedures used by counterfeiters with examples presented. In addition, general training on counterfeit part awareness shall be provided in accordance with DID-MISC-81832, AS5553, or other appropriate standard. A record of the training shall be maintained using standard procedures for the business site.

4. RACI

Responsibilities, **A**ccountabilities, **C**onsult or **I**nform Chart

Accountable: Buck stops here Responsible: The Doer
Consult: In the loop Inform: Keep in the picture

Tasks	Buyer	Component Engineer	Business / Contracts Manager	Supplier Quality	Subcontract Manager	Test Facility	Supply Chain Director	Quality/Solution Leaders
1. Identify need for broker purchase	R, A	I	I	-	-			
2. Collect preliminary information	R, A	C, I	-	-	-			
3. Initiate Risk Assessment Form	R	C,I	-	-	-			
4. Preliminary review/approval	I	R	-	I	-		R, A	R
5. Inform Customer	I	I	R,A	-	-			
6. Perform tests/inspections	I	R,A				R		
7. Complete Verification	I	R,A	I	-	-			
8. Final Purchase Approval		R,A						
9. Open access to broker	I	C	-	R,A	-			
10. Place P.O.	R,A	I	-	I	-			
11. Close Broker	C	I	-	R,A	-			
12. Subcontractor Flowdown	-	C	-	I	R,A			
13. Broker Approval	-	R,A	-	C,R	R,C			

Attachment A
List of Approved Test Facilities

The following facilities are authorized for the performance of the electrical testing defined herein. Only SMT and Crane Aerospace & Electronics Lynnwood Component Analysis Lab are approved for the performance of full authentication testing:

- Component Concepts (electrical and visual, only)

Company Name: COMPONENT CONCEPTS, INC
CAGE Code: 2P729
ZIP Code: 98201
State: WA
Phone: (425) 258-4548

- DPA Labs (electrical and visual, only)

Company Name: DPA LABS INC
CAGE Code: 6S055
ZIP Code: 93065
State: CA
Phone: (805) 581-9200

- E2V (formerly QP Labs, electrical and visual, only)

Company Name: E2V AEROSPACE & DEFENSE, INC.
CAGE Code: 0C7V7
ZIP Code: 95051
State: CA
Phone: (408) 737-0992

- Integra Technology (electrical and visual, only)

Company Name: INTEGRA TECHNOLOGY LLC
CAGE Code: 1SRY1
ZIP Code: 67226
State: KS
Phone: (316) 630-6821

- Tandex (electrical and visual, only)

Company Name: TANDEX TEST LABS INC
CAGE Code: 1FE65
ZIP Code: 91706
State: CA
Phone: (626) 962-7166

- Precision Testing Services (formerly Tektronix Component Solutions, electrical and visual, only)

Company Name: Tektronix Component Solutions
CAGE Code: 7H140
ZIP Code: 32807
State: FL
Phone: (407) 678-6900

- SMT Corporation

Company Name: SMT CORPORATION
CAGE Code: 3UCA5
ZIP Code: 06482
State: CT
Phone: (203) 270-4700

Attachment B
List of Approved Brokers

The following brokers are approved in accordance with the requirements of 3.2.3 herein.

- Serenity (approved for buy-back of previously owned inventory, only)

Company Name:	SERENITY ELECTRONICS INC
CAGE Code:	1KW86
ZIP Code:	12603
State:	NY
Phone:	(845) 486-5195

- Lee Air (approved for buy-back of previously owned inventory, only)

Company Name:	LEE AIR COMPANY INC
CAGE Code:	1A679
ZIP Code:	91352
State:	CA
Phone:	(818) 767-0777

- Sentry Aerospace (approved for buy-back of previously owned inventory, only)

Company Name:	SENTRY AEROSPACE CORPORATION
CAGE Code:	8T134
ZIP Code:	07751
State:	NJ
Phone:	(732) 617-8225

- SMT Corporation

Company Name:	SMT CORPORATION
CAGE Code:	3UCA5
ZIP Code:	06482
State:	CT
Phone:	(203) 270-4700

Attachment C Risk Assessment Form

**Counterfeit Risk
Assessment / Broker
Purchase Request**



- End User
 Lynnwood
 Burbank
 Other

Request Number: _____

Part Number: _____

Purchase Order: _____

Completed By Buyer

Date: _____	Buyer: _____	Phone: _____	Location: _____
Assemblies driving demand: _____			
Quantity of Parts Needed _____			
Root Cause of Need or Shortage: _____			

Additional Information

Completed by Buyer

Part Number: _____	Approved Broker: _____
Date Code/Qtys (list all): _____	
Original Component Manufacturer (OCM) (list all + CAGE if known) _____	
OCM Certs Available? _____	
Evaluation Samples Available? _____	
Part Cost: _____	Current Part Cost: _____
Short to Production date for OCM part from Authorized Distributor: _____	
Revenue Impacted _____	
Customer (s) Impacted _____	

Initial Approvals (Required prior to Purchase Order initiation)

CAM/Contracts Mgr: Customer Notified	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Name: _____	Date: _____
Comments: _____					
Supply Chain Director:	<input type="checkbox"/> N/A	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Name: _____	Date: _____
Comments: _____					
Site Quality Director:	<input type="checkbox"/> N/A	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Name: _____	Date: _____
Comments: _____					
VP, Solution:	<input type="checkbox"/> N/A	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Name: _____	Date: _____
Comments: _____					
Component Engineer:					Date: _____
Comments: _____					

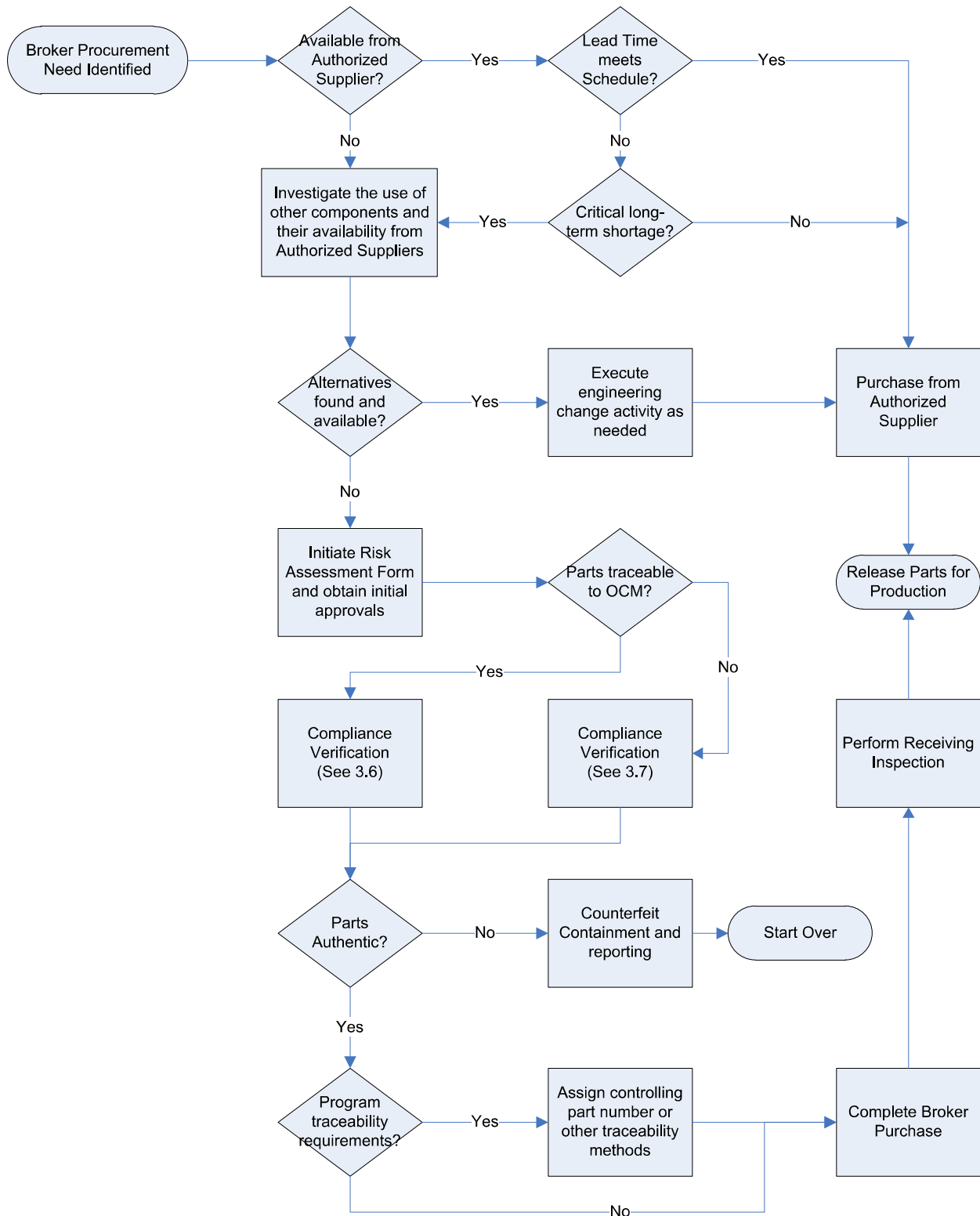
Verification Tests and Inspections

Limited Verification:	<input type="checkbox"/> CA&E Inventory Buyback	<input type="checkbox"/> OCM Certs	<input type="checkbox"/> OEM Certs
Visual Inspection	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Comments: _____	
Electrical Test	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Comments: _____	
DPA Results	<input type="checkbox"/> Pass <input type="checkbox"/> Fail	Comments: _____	
Validation of Results:	Name: _____	Date: _____	Position: _____

Final Approval

Final APPROVAL:	<input type="checkbox"/> Approved	<input type="checkbox"/> Disapproved	Engineer: _____	Date: _____
Comments: _____				

Attachment D Risk Assessment Process



Attachment E
Broker Evaluation Form