



# QMS-CIM-0132-4: Supplier Quality Manual

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## *Table of Contents*

<b>1</b>	<b>GENERAL .....</b>	<b>2</b>
<b>2</b>	<b>SUPPLIER QUALITY SYSTEM REQUIREMENTS .....</b>	<b>4</b>
<b>3</b>	<b>CERTIFICATE OF CONFORMANCE .....</b>	<b>14</b>
<b>4</b>	<b>THIS SECTION WAS LEFT BLANK INTENTIONALLY .....</b>	<b>15</b>
<b>5</b>	<b>COMPONENT IDENTIFICATION / TRACEABILITY .....</b>	<b>16</b>
<b>6</b>	<b>IDENTIFICATION OF CAE TOOLING .....</b>	<b>18</b>
<b>7</b>	<b>AUDIT (VERIFICATION) OF CAE PRODUCTS AT THE SUPPLIER'S FACILITY .....</b>	<b>21</b>
<b>8</b>	<b>FIRST ARTICLE VERIFICATION REPORT (FAVR) .....</b>	<b>22</b>
<b>9</b>	<b>PROCESS CONTROL .....</b>	<b>24</b>
<b>10</b>	<b>SOFTWARE CONTROL .....</b>	<b>26</b>
<b>11</b>	<b>NON-CONFORMANCES .....</b>	<b>28</b>
<b>12</b>	<b>HANDLING, PACKAGING, TRANSPORTATION .....</b>	<b>31</b>
<b>13</b>	<b>QUALITY RECORDS.....</b>	<b>33</b>
<b>14</b>	<b>ECN NOTIFICATION .....</b>	<b>34</b>
<b>15</b>	<b>SUBCONTRACTED CIRCUIT CARD ASSEMBLY (CCA) AND PRINTED WIRING BOARD CONTROL DOCUMENTS.....</b>	<b>35</b>
<b>16</b>	<b>ANNEX 1 – SAMPLING PLAN .....</b>	<b>36</b>
<b>17</b>	<b>ANNEX 2 – PAINT VERIFICATION TEMPLATE .....</b>	<b>38</b>

## 1 GENERAL

### 1.1 Purpose

To define the scope and use of the CAE Supplier Quality Manual (SQM).

### 1.2 Scope

The intent of the Supplier Quality Manual is to serve as a guide for CAE suppliers with regards to quality requirements. The SQM provides instructions that are intended to facilitate supplier compliance with CAE requirements, assist in the processing of inquiries, and improve communication between CAE and its suppliers.

This manual represents a continuing effort on CAE's part to meet the objectives of the company's quality policy, included below, through improvement of supplier quality processes.

"CAE's quality policy is to align all elements of the organization on consistent delivery of world-class products and services that meet or exceed customer expectations and to promote a culture of continuous improvement built on effective processes."

### 1.3 Definitions

**Product-related:** Affecting the appearance or functionality of CAE's product (hardware or software).

**In writing:** Unless otherwise noted, means communicated via e-mail, fax, or hardcopy (letter sent by mail).

### 1.4 Applicability

This manual applies to the purchase of all product-related goods and services when the SQM is called out on the CAE purchase order (PO) or Terms & conditions.

Please note the applicability of sections will depend on the type of product or service provided.

### 1.5 Company Name

For the purposes of this manual, the official company name of CAE Inc. will always be referred to as CAE.

## 1.6 Supplier Quality

The supplier shall ensure products or services provided to CAE conform to purchase order, drawing, and specification requirements, competency and personnel qualification requirements, whether performed directly by the supplier or through subcontractors.

## 1.7 Technical Conflict

Where a conflict of technical terms or conditions exists relative to a purchase order, the supplier shall contact CAE Quality Assurance for assistance in clarification. Correspondence of this type must be confirmed in writing.

## 1.8 Notification Responsibility

Suppliers shall notify CAE's Quality Assurance department, in writing, for any of the following circumstances:

- changes in ownership, Quality management personnel, company name and/or location;
- suspected shipment of nonconforming product without CAE approval;
- suspected problems with material, manufacturing, processing, design, etc. which may affect product integrity.

## 1.9 SQM Content

Supplier comments on the SQM and its contents should be addressed to CAE Quality Assurance.

## 1.10 SQM Revisions

After the initial issue of the SQM, changes to SQM sections will result in:

- the revision level of the document being updated; the revision history box states the changes.

## 2 SUPPLIER QUALITY SYSTEM REQUIREMENTS

### 2.1 Purpose

To define requirements for suppliers regarding quality system implementation.

### 2.2 Applicability

This procedure applies to all suppliers providing product-related goods and/or services to CAE.

### 2.3 Definitions

**Quality plan:** A detailed document describing the supplier's plan for implementation of quality requirements applicable to the purchase order/contract. Typical data to be included in the quality plan includes, but is not limited to:

- process flowcharts;
- inspection points;
- use of specific methods, equipment, procedures, or work instructions.
- Acceptance test procedure

The quality plan must be approved by CAE Quality Assurance upon request.

**Technical surveillance:** An audit not geared towards verification of a supplier's quality system, but focussing on the verification of the supplier's manufacturing capabilities, review of special process control, or control of CAE product throughout the manufacturing process, process control requirements to be in accordance with section 9.

### 2.4 Procedure

**2.4.1** CAE is working towards using ISO 9001 (or equivalent) registered suppliers. When the supplier is not third-party registered for its quality system and/or special processes, CAE requires the supplier to have in place a documented quality system meeting the intent of ISO 9001.

Quality systems found to be lacking in the requirements of the ISO 9001 framework may result in one or more of the following additional requirements being imposed on the supplier:

- requirement for a quality plan to be submitted and approved by CAE
- added quality system or technical surveillance audits to be performed on the supplier by CAE

**2.4.2** CAE will advise the supplier in advance when an audit is to be performed at the supplier's facility. The audit may take the form of:

- Quality system audit
- Product audit
- Technical surveillance audit
- Required qualification of personnel

Audits may also take the form of a self-survey reference document number 5389-2 questionnaire submitted to the supplier for completion and return to CAE QA.

Audit frequency will depend on criteria developed by CAE for supplier evaluation, and may be based on, but not restricted to, the following:

- Supplier's third-party registration
- Supplier performance history
- Customer complaints concerning supplier's product
- Type and/or critical nature of product supplier is providing to CAE

**2.4.3** Suppliers approved by CAE will be listed in CAE's Approved Vendor Listing (AVL). Only suppliers approved by CAE QA listed on the AVL will be considered for product-related purchases.

**2.4.4** When using subcontractors, primary suppliers must ensure CAE's purchase order/specification requirements are flowed down to the subcontractor.

Primary Suppliers using subcontractors to perform special process operations such as heat treatment, painting, anodizing, plating, or non-destructive testing (NDT) must qualify, maintain and demonstrate control of his source(s) and ensure proper documentation/traceability is received and maintained on file.

If the previous requirements are not demonstrated to CAE, the product will be rejected and quarantined at CAE pending evidence of approval documentation. Should the subcontractor not be approved by the primary supplier, the product will be returned to the supplier for replacement/rework at the primary supplier's expense.

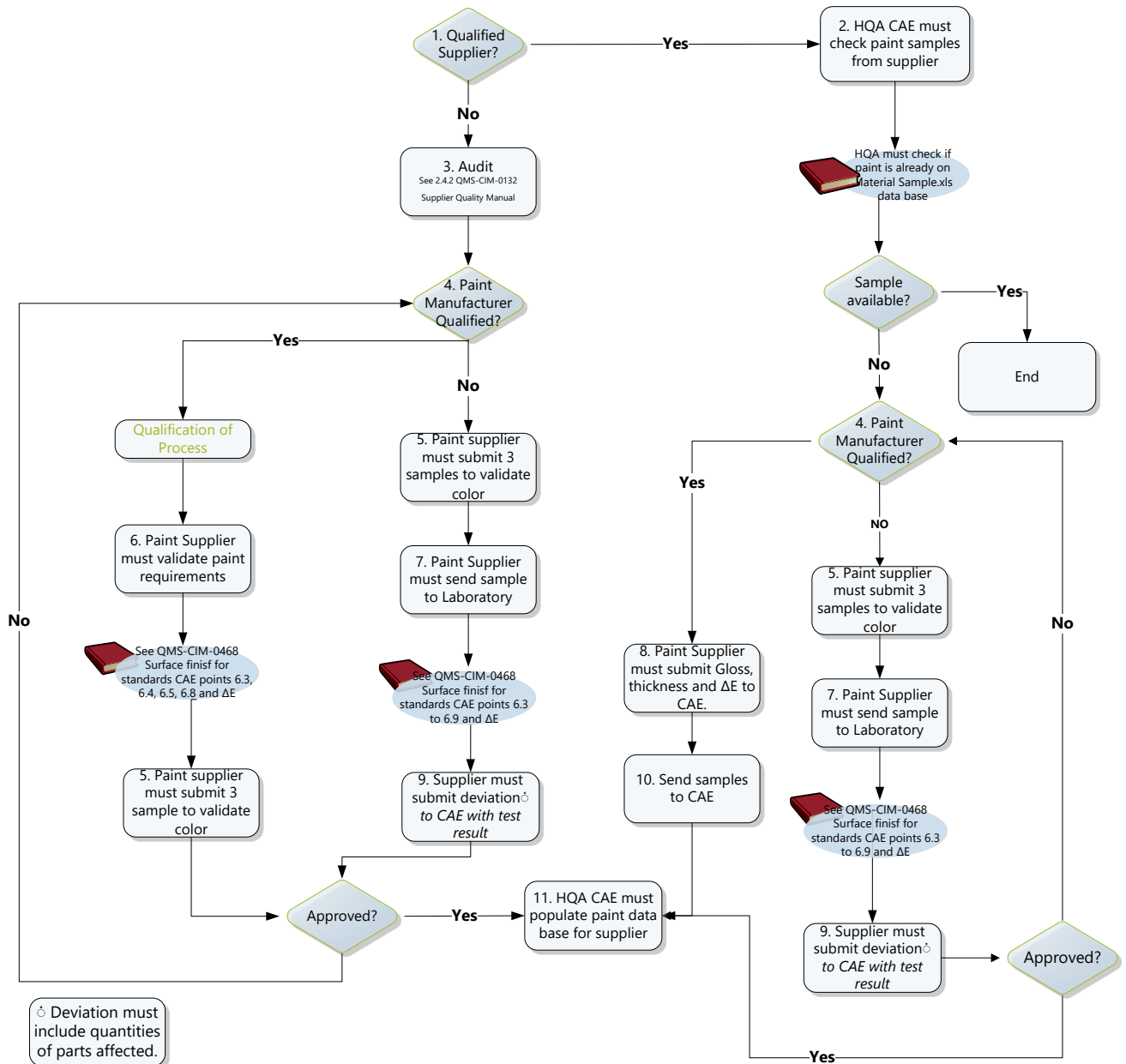
Primary suppliers are responsible for subcontracted material and services. Furthermore, sub tier suppliers can be subject for a CAE audit, for special process the choice of subcontractor requires CAE approval. Sub tier supplies for special process must be CAE proffered vendor list or must be subject to CAE approval.

## 2.5 Special processes

### 2.5.1 PAINT

#### 2.5.1.1 Paint Qualification

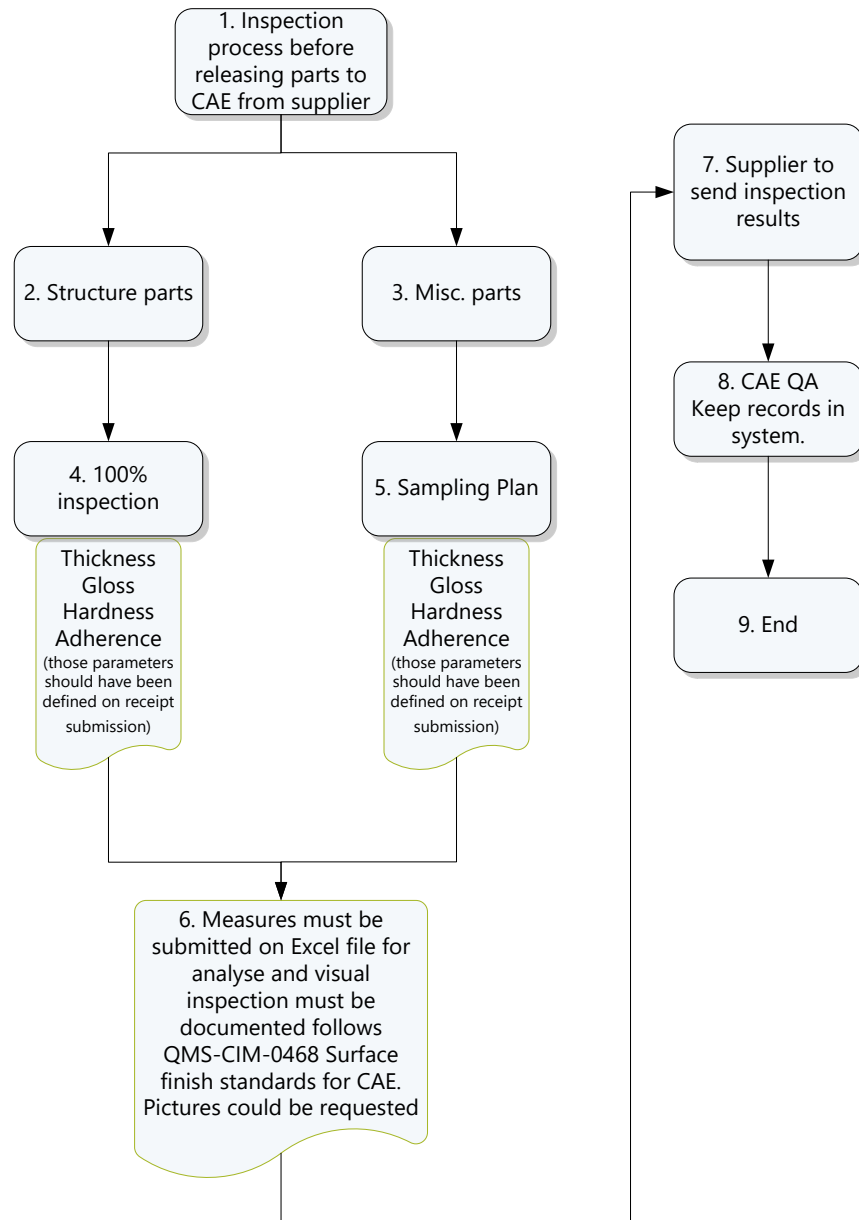
This section is applicable to primary suppliers which will perform painting process on CAE's build-to-print specifications. Primary suppliers using Subcontractors shall comply to Section 2.4.4 of this document.



1. Qualified Supplier?: Is the supplier qualified by CAE to paint pieces?
2. CAE QA must check samples from supplier: *CAE QA must check if paint already exists in QA database.*
3. Audit: see point 7 of this document.
4. Paint Manufacturer Qualified? Is the paint manufacturer listed on PPS ?  
**IN SPECIAL CASES ONLY**, CAE will accept another type of paint if all requirements are satisfied (steps 5 thru 9).
5. Supplier must submit 3 sample to validate color: supplier must submit to CAE QA 3 samples (6"x 3") made from aluminium, having a complete paint system (primer + topcoat). Supplier must provide its painting process along with test results (thickness, gloss,  $\Delta E$ ). CAE QA will validate samples received following PPS, Fed. Standards and CAE samples.
6. Supplier must validate paint requirements: supplier must validate its process in order to meet requirements identified in Sections 6.3, 6.4, 6.5, 6.8 of QMS-CIM-0468, and validate  $\Delta E$  vs a paint standard (if applicable).
7. Supplier must send samples to Laboratory: supplier must validate its samples in order to meet requirements identified in Sections 6.3 through 6.9 of QMS-CIM-0468. This validation shall be done using a laboratory.
8. Supplier must submit Gloss, thickness and  $\Delta E$  to CAE: Supplier must send CAE QA test results from its paint samples.
9. Supplier must submit deviation to CAE with test results: When validation process is completed, Supplier shall send CAE QA all related documentation along with completed Deviation/Waiver request (as described in Section 11.3 of this document) for approval.
10. Send samples to CAE QA for approval and labeling: Supplier must send CAE QA its paint samples for approval. Once approved, samples will be returned to Supplier.
11. CAE QA must populate paint data base for supplier: *CAE QA will populate paint database with information provided by Supplier.*

*\*\* Action Items in ITALIC are under CAE QA's responsibility.*

2.5.1.2 *Paint inspection process*





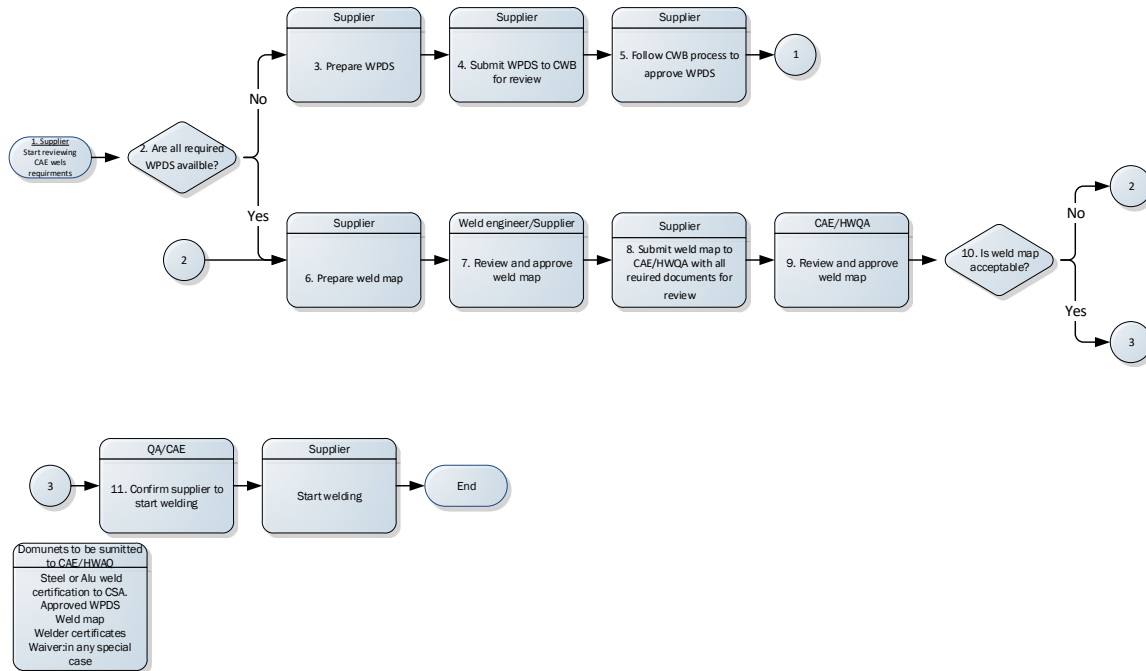
1. Inspection process before releasing parts to CAE from supplier: This high-level process sets the requirement for part/assembly inspection of painted parts for CAE.
2. Structural assemblies: completed structures (ex: cockpit assembly, NSA structure, etc...)
3. Miscellaneous parts: fabricated parts (ex: "FPxxxxxx" parts), sub-assemblies (low-level MA's). These items are usually painted in batch and are delivered at CAE as separated (standalone) items.
4. 100% Inspection: every major structural assemblies (cockpits, NSAs, beams, etc....) must be inspected by the supplier before delivery. The following elements, as a minimum, must be part of the inspection plan: **Visual, Thickness, Gloss, Hardness and Adherence**. Inspection results must be compliant to CAE/paint manufacturer's specifications. Any deviation from these specifications shall be recorded on a waiver request (as described in Section 11.3 of this document) for approval.
5. Sampling Plan: due to high volume of parts, CAE requests a sampling plan to be put in place to validate painted parts for every P/O or W/O submitted to the Supplier. The following elements, as a minimum, must be part of the inspection plan: **Visual, Thickness, Gloss, Hardness and Adherence**. Inspection results must be compliant to CAE/paint manufacturer's specifications. Any deviation from these specifications shall be recorded on a waiver request (as described in Section 11.3 of this document) for approval.  
Please refer at sampling plan identified in **Annex 1** of this document to determine number of parts to be inspected based on parts delivered on the P/O or W/O. **Use LEVEL II inspection level.**
6. Measure must be submitted on Excel file: Supplier will submit an Excel (see **Annex 2**) file for CAE's analysis and visual inspection must be documented follows QMS-CIM-0468 Surface finish standards for CAE. Pictures could be requested.
7. Supplier to send inspection results: Supplier must send CAE-QA inspection results at least 24hrs before shipment. It is CAE-QA's responsibility to review the results received from the Supplier.  
**If CAE-QA determine Supplier's overall performance is not under control**, Supplier will be advised to wait CAE-QA's approval before shipment of goods to CAE until further notice.
8. *CAE-QA to keep records of the inspection documents in the associated supplier folders in the server.*

*\*\* Action Items in ITALIC are under CAE QA's responsibility.*

## 2.5.2 WELDING

### 2.5.2.1 Supplier weld qualification process

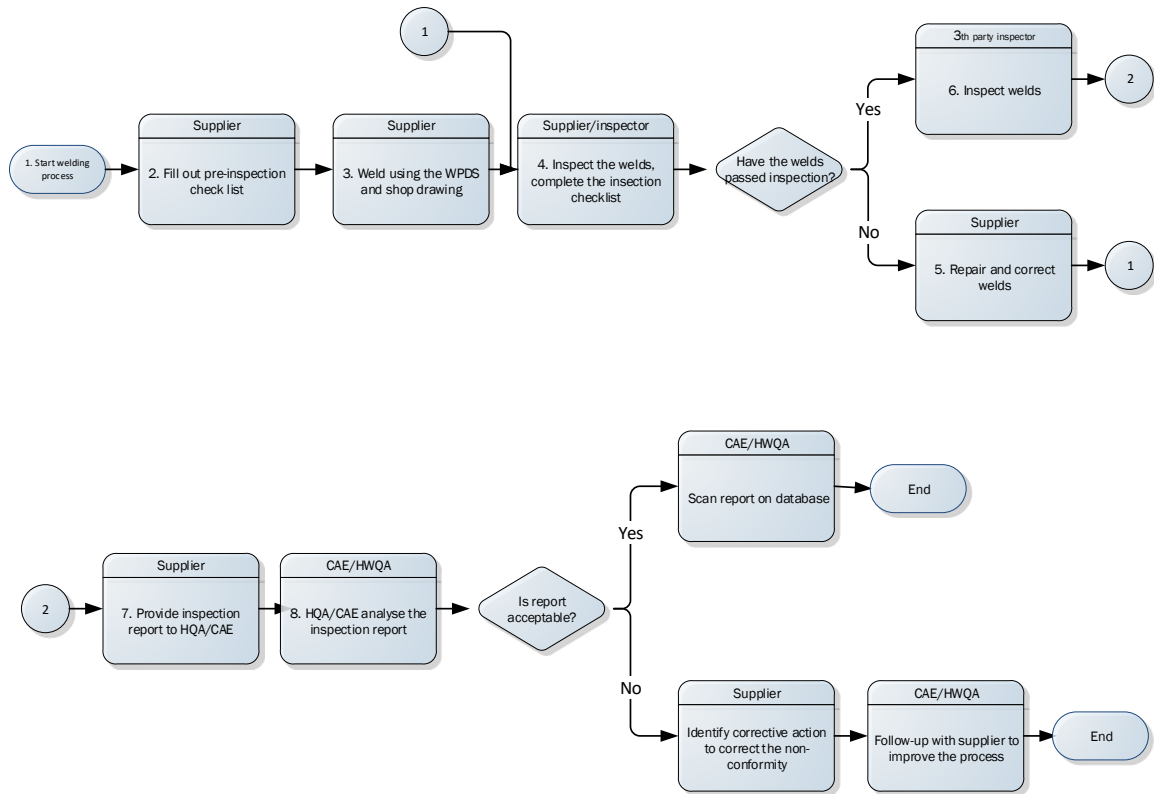
CAE requests suppliers to provide required weld qualifications and certifications to make sure that the product delivered by supplier meets CAE technical requirements. This special process is applicable to structural and build to print products.



1. Supplier must review the weld requirements defined on the CAE drawing and submit the following documents prior to start welding:
  - Steel or Aluminum weld certification to CSA 47.1 or 47.2 issued by CWB.
  - CWB Approved WPDS.
  - Weld map or shop drawing approved by supplier designated welding engineer.
  - Welder performance certification carts.
  - Waiver: In any special case.
2. Are all required WPDS available?

3. Supplier must review their available WPDS to make sure all required weld procedures to complete the welds are available. If any new WPDS requires supplier shall inform HWQA/CAE.
4. Welding supervisor and welding engineer assigned by supplier needs to prepare the required WPDS and submit to CWB for review.
5. Supplier must follow CWB process to complete required test and PQR.
6. If all required WPDS are available, afterward supplier must prepare weld map or shop drawing.
7. Welding engineer designated by supplier must review and sign the weld map.
8. Once the weld map signed by welding engineer, supplier must submit the signed weld map to HWQA/CAE along with all other required documents (Weld procedures, welder certificates, etc.) for review and approval.
9. CAE/HWQA will review the weld map, received from supplier, to make sure that the weld map and all WPDS conforms to CAE drawing requirements.
10. If submitted weld map is not acceptable, HWQA/CAE must communicate to supplier to make required modification and resubmit the weld map.
11. If the weld map is acceptable HWQA/CAE needs to confirm to supplier to start welding.

2.5.2.2 Supplier weld inspection process

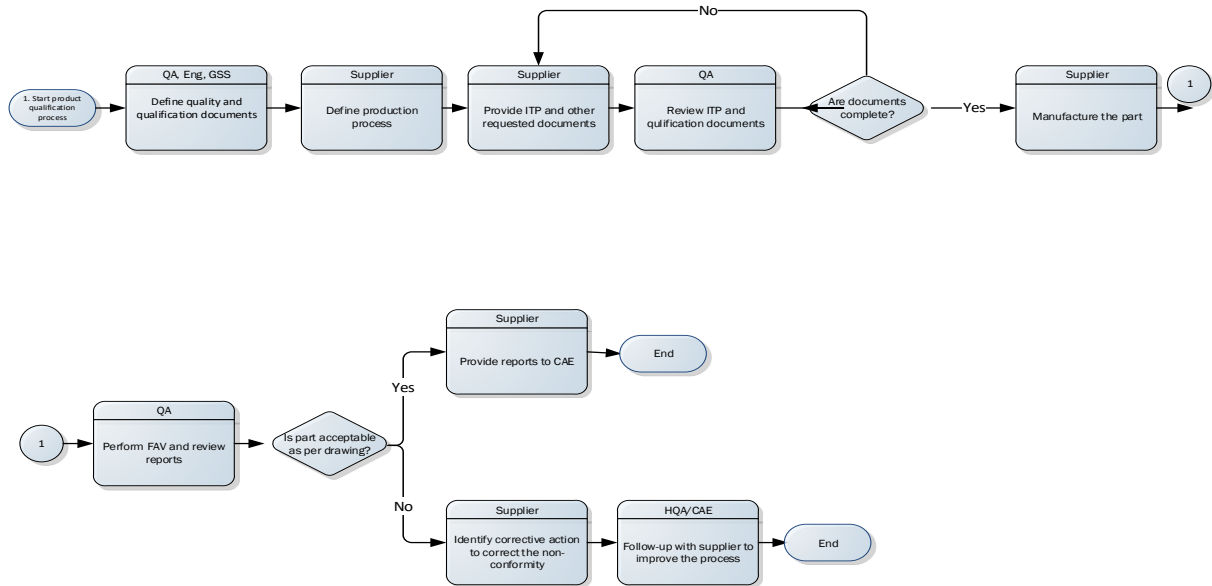


Supplier must control the welding process and complete required inspections prior to start of welding, during welding and after welding process.

1. Supplier should start welding once HWQA/CAE confirmed to them.
2. Supplier needs to fill out pre-inspection check list to make sure that all fit-up of the weld joints are as per drawing and meet WPDS.
3. Supplier must weld the parts with respect to the weld prodders specified in the weld map or shop drawing.
4. Supplier must perform internal inspection and complete the inspection check list to make sure all weld conforms to the welding standard W59 prior to 3rd party inspection.
5. If the welds are not acceptable supplier needs to repair and correct the weld defects prior to 3rd party inspection.

6. If the weld pass internal inspection supplier must perform 3rd party visual inspection by a third-party inspection company certified to CWB 178.1 designated by CAE/QA. Welding inspector shall be certified in accordance with CSA W178.2 level 2.
7. Supplier must provide third-party inspection report to CAE for review.
8. CAE/HWQA analyse the inspection report if it not acceptable inform supplier to identify the corrective action to correct the non-conformity.

### 2.5.2.3 Supplier Product & Production qualification process



### 2.5.2.4 Acronyms

- CWB – Canadian Welding Board
- NCR – Non-Conformance Report
- PQR – Procedure Qualification Report
- QA – Hared Ware Quality Assurance
- WPDS – Welding Procedure Data Sheet
- Welding engineer – CWB certified welding Engineer

## 3 CERTIFICATE OF CONFORMANCE

### 3.1 Purpose

To define the documentation requirements for suppliers providing CAE with product-related goods and/or services.

### 3.2 Applicability

This procedure applies to any supplier providing product-related goods and/or services to CAE when the requirement for a Certificate of Conformance (C of C) is specified on the CAE drawing or the CAE purchase order

### 3.3 Procedure

**3.3.1** The supplier shall provide a Certificate of Conformance (C of C) with each product shipment. The intent of the C of C is to:

- identify the product being delivered;
- provide the required release and traceability information.

**3.3.2** The following information is required on the supplier's C of C, as applicable:

- supplier's name and address;
- C of C serial number. This number should not be repeated on other C of Cs. It may be similar to the packing slip number;
- CAE Purchase Order number;
- quantity of parts being shipped;
- part description;
- Lot/Batch number (as applicable); when a lot number is provided to the supplier by CAE for raw material, the lot number **must be** included on the C of C;
- part serial numbers (required for aircraft instruments and avionics; as applicable for other parts);
- shelf life data (as applicable);
- applicable specifications related to work performed or product supplied;
- a statement confirming parts supplied meet all CAE purchase order requirements;
- signature of person authorized to release the product. Electronic signatures are accepted provided the supplier has an auditable procedure in place to control the use of electronic signatures. Rubber stamp signatures are not acceptable;
- title of the person releasing the product;
- date of authorization.

The following documents are also required, as applicable:

- Certificate of Airworthiness (either FAA 8130 or JAA Form One) for aircraft and avionics instruments;
- Test reports, when requested on the CAE Purchase Order; apply to critical motion parts and to procurement of military specification assemblies such as power supplies and displays;
- configuration listing, applicable to computers being incorporated into simulators. The listing should indicate what is in the computer, as per the procurement specification control drawing (PSCD);
- First Article Verification Report, when the supplier is manufacturing a component for the first time;
- Test reports for special processes related to non-destructive testing (magnetic particle inspection, radiographic inspection, etc.). In the case of radiographic inspection, x-rays must also be submitted with the test report.
- Test reports for heat treating; hardness results shall be included;
- Mil test reports, detailing chemical/physical properties and traceability data, for raw materials;
- reports detailing cross-section results, summaries of electrical testing, and impedance control data, for suppliers of Printed Circuit Boards (PCBs).

**3.3.3** Suppliers' C of Cs which do not contain all the necessary information may result in the rejection of the subject goods by CAE. Suppliers will be contacted and requested to correct and resubmit nonconforming documentation.

## 4 THIS SECTION WAS LEFT BLANK INTENTIONALLY

## 5 COMPONENT IDENTIFICATION / TRACEABILITY

### 5.1 Purpose

To define the requirements for the identification of components by suppliers.

### 5.2 Applicability

This procedure applies to all purchased goods and services where an identification requirement is specified on the drawing, and for finished parts supplied by subcontractors. This procedure does not apply to identification of component packaging. For bare printed circuit cards refer to control document CD279006.01.8.300.

### 5.3 Procedure

**5.3.1** Suppliers shall identify components in accordance with the drawing requirements, using the method, location, and specification indicated. Requests for substitution of materials/location/methods shall be communicated in writing to CAE for approval prior to incorporation.

**5.3.2** Subcontract suppliers providing finished components to CAE are required to identify components, in a non-critical area, with their vendor code or vendor name.

Information related to non-critical areas of components may be obtained by contacting the following personnel:

- QA representative

Information related to a supplier's vendor code may be obtained by contacting the following personnel:

- CAE Purchasing agent specified on the purchase order
- CAE Expeditor
- QA Representative
- Circuit Cards assemblies must be identified with the MA, Sources code and serial number and vendor ID. The format for the serial number and the vendor ID can follow the sequence if there is limited space: Vendor ID (letter) / year (two digits) / month (letter) serial number (4 digits).
- Ex For a board made by a vendor starting with S made on the 13 October 2008, serial number 2010, it would be represented as **S08J2010**.



The preferred methods of identification are:

- Ink stamp, .125" (1/8") high characters covered with a varnish as per PPS 6.1.114
- Stencil, .125" (1/8") high characters per DR10-3.
- Label (P-touch or other)

Parts too small for proper identification may be bagged and tagged (not valid for CCA).

**5.3.3** Components having undergone non-destructive (NDT) testing (Fluorescent Penetrant inspection, Magnetic Particle inspection, Radiographic inspection) must be stamped appropriately to indicate test acceptance. Components having undergone radiographic inspection must also be identified with a unique radiographic serial number.

**5.3.4** Components requiring electrical termination must follow the identification requirements documented in Manufacturing Engineering Instruction (MEI) 2.1.5. Copies of the specification may be obtained by contacting CAE's QA representative.

**5.3.5** Information for CAE Assemblies should contain the following information:

- CAE Assembly Part Number
- Vendor Identification
- Date Manufactured
- Drawing Revision

## 6 IDENTIFICATION OF CAE TOOLING

### 6.1 Purpose

To describe the requirements for the supplier's use of CAE-owned tooling and equipment (measurement devices and test jigs).

### 6.2 Applicability

This procedure applies to all tooling:

- Furnished to the supplier by CAE in some cases test jigs
- Manufactured or purchased by the supplier, and that has been paid for by CAE. This includes punches purchased by sheet metal suppliers to the requirements of CAE cut-out drawings and measurement devices
- Test jigs built by the supplier paid for by CAE

This procedure does not apply to tooling that will be discarded after component manufacture or will be consumed during the manufacture of the CAE product.

### 6.3 Definitions

**Vendor tooling (VT):** Tooling furnished to a supplier by CAE, or tooling manufactured or purchased by the supplier that has been paid for by CAE.

**VT #:** A number assigned by CAE to identify and control CAE-owned tooling. The number will be stated in CAE's purchase order to the supplier.

**Original purchase order:** A six-digit number specifying the CAE purchase order number the tooling was charged against.

**Part Number:** The CAE part number the VT will produce or aid in producing.

**Revision level of part:** The part revision level at the time of manufacture or purchase of the VT. The part revision level will be a two-character field that will include the drawing revision level and an Engineering Change Notification (ECN) counter.

**ECN counter:** Count of ECNs that apply to the part at time of manufacture.

**Life Expectancy:** Estimated number of parts that can be produced with the VT.

**Equipment:** CAE owned material which is used to verify the conformity of product delivered to CAE.

**Test jigs:** equipment used to test CCA but does not require calibration

**Measurement devices:** Used to measure an element of a part to judge conformity and requires calibration.

## 6.4 Procedure

Suppliers may require specialized tooling or equipment to perform the work stated on the purchase order/contract. Suppliers shall comply with the following requirements.

**6.4.1** All tooling charges must be agreed upon by CAE Purchasing prior to purchase or manufacture of the tool and will be indicated on the purchase order given to the supplier. Unless otherwise specified on the purchase order, payment for the tooling will be made upon receipt and acceptance, at CAE, of a product made from the tooling.

**6.4.2** The VT is to be identified with the following information:

- “Property of CAE Inc.”
- VT #
- part number and revision level
- Date of Manufacture
- Life expectancy
- original purchase order number

**Exception:** If the VT is too small to be identified with the above information, as a minimum it should be identified with the VT number. A tag may be used for identification when there is a lack of available space on the VT.

When the vendor has been furnished with tooling from CAE, the supplier shall verify the minimum identification requirements have been met. Any questions concerning tooling identification should be addressed to CAE Purchasing.

**6.4.3** A VT# log shall be maintained by the supplier which shall include all the information stated in paragraph 6.4.2. A copy of the log shall be forwarded to CAE Purchasing whenever a change is made. The log must clearly state that all tools identified with VT numbers are the property of CAE.

**6.4.4** Unless otherwise stated on the purchase order, it is the supplier’s responsibility to ensure that all VT in his facility is stored in a manner that will prevent damage or shorten life expectancy.

**6.4.5** All tooling which is property of CAE shall be returned to CAE in the following instances:

- The CAE/supplier business relationship has been dissolved.
- CAE requests return of the tooling.

**6.4.6** VT shall not be disposed of without prior written authorization from CAE Purchasing. Once written approval has been received the supplier's log shall be updated to reflect this disposal.

**6.4.7** It is forbidden to use CAE-owned VT on products other than CAE's without prior written approval from CAE Purchasing.

In the case where CAE owned equipment used by a supplier for testing and validation purposes. The calibration and maintenance of that equipment will be added to the CAE calibration system (asset no assigned). It is the supplier's responsibility to calibrate and maintain equipment. If the equipment is lost, it is the suppliers' responsibility to replace said equipment. CAE has the right to audit or retrieve material at anytime. Furthermore, calibration of equipment must be conducted by CAE approved suppliers.

## 7 AUDIT (VERIFICATION) OF CAE PRODUCTS AT THE SUPPLIER'S FACILITY

### 7.1 Purpose

To describe the procedure for possible audit (verification) of CAE products at the supplier's facility.

CAE shall advise the supplier via a statement on the purchase order/statement of work, if customer or government verification is required for specific products or purchase orders.

The supplier is responsible for ensuring all products and appropriate documentation are completed as per purchase order/statement of work/technical requirements document/drawing and ready for review, including verification (inspection) reports and/or deviation requests.

The supplier's measuring and testing equipment shall be made available to the CAE representative, or the customer's or Government representative for use in verifying conformance to contract requirements. The supplier's personnel shall be made available as required for operation and/or verification of the adequacy and condition of such devices.

In the case of raw material at the supplier's facility, the raw material shall be stored by the supplier pending written authorization from CAE to have the material released to other suppliers. Supplier with the raw material shall identify the raw material with a lot number. When shipped to suppliers, the lot number must appear on all release documentation.

It is important to note that acceptance of goods by the CAE, customer, or government auditor does not indicate final product acceptance, nor does it relieve the supplier of their responsibility for ensuring all parts/products are delivered to CAE's requirements as per final acceptance by CAE's end user.

## 8 FIRST ARTICLE VERIFICATION REPORT (FAVR)

### 8.1 Purpose

To evaluate a supplier's ability to produce components which meet CAE engineering specifications and Purchase Order (PO)/technical requirements document/statement of work.

### 8.2 Applicability

This procedure is applicable:

- when a First Article requirement is specified on the CAE purchase order/technical requirements document/statement of work;
- to any material, part, assembly, and service submitted to CAE for the first time, or when the material, part, assembly, when requested by CAE;
- when the CAE documentation used to produce the part or assembly changes revision level. The FAV in this case will be limited to the affected changes;
- when there are significant changes in the manufacturing method/process. Suppliers shall notify CAE of the changes, and after review, CAE may request a FAV be performed;
- when required by corrective action plans for a product with a repetitive rejection history.

This procedure is not applicable to proprietary parts (except when required according to bulleted item five listed above), parts or raw material manufactured to national standards, to suppliers acting as distributors, and to purchases of software.

### 8.3 Definitions

**8.3.1 First Article Verification** - is defined as a verification performed, whenever practical, without the use of acceptance fixtures and gauges used during the manufacturing process, to verify the finished component against the requirements specified by applicable drawings, specifications, and the CAE Purchase Order/technical requirements document/statement of work. This activity shall be performed by the supplier and validated by a CAE Quality representative.

### 8.4 Procedure

**8.4.1** Suppliers performing a first article verification shall utilize the CAE FAVR form QMS-CAE-7001-4 or their own form as long as it contains all the information specified on CAE's standard form. Forms may be requested through the CAE Purchasing department. Some FAVR will include an Acceptance test procedure which will need to be provided and accepted by CAE prior to conducting the tests.

**8.4.1.1** The form includes a front page summarizing the results of the inspection, and a dimensional report recording the actual values measured during the assessment of the component selected for the FAVR.

**8.4.1.2** When performing a FAV on assemblies, each sub-assembly, including all detail parts, shall be included in the FAVR.

**8.4.1.3** When performing FAVs on a range of similar components, a complete FAVR is required for only one component. Partial FAVs may be raised to document the differences in the other components. Reference should be made to the complete FAVR for traceability purposes. Appropriate examples include:

- a set of tubes differing only in diameter size.
- an assembly (FAVR previously approved) which has changed part number as a result of changes made to certain features.

**8.4.1.4** The supplier shall send a completed form to QA for review/approval and a copy of the calibration certificate of the tool(s) used for measurement(s).

**8.4.2** The original copy of the FAVR should be attached to the Certificate of Conformance (C of C) along with the following documentation/materials, as applicable:

- All certificates (i.e. raw material, special processes).
- Waiver/deviation requests.
- X-Ray films.
- Laboratory test pieces.
- Laboratory test results.

**8.4.3** Suppliers shall not ship product to CAE if the FAV has not been performed or the FAVR has been rejected without approval from CAE Quality Assurance. When a FAV requirement is waived, the supplier shall perform the FAV prior to the next shipment.

**8.4.4** When a FAV reveals deviations from the applicable specifications the supplier shall correct the deviations and submit a partial FAVR, on the corrected features only, with the next shipment. The partial FAVR should reference the original FAVR for traceability purposes.

**8.4.5** After the FAVR has been reviewed by CAE, a confirmation will be sent to supplier.

## 9 PROCESS CONTROL

### 9.1 Purpose

To define the CAE requirements for fixed process control.

### 9.2 Applicability

This procedure applies to all purchased goods and services when the requirement for process control documentation is indicated on the CAE purchase order/technical requirement document/statement of work.

### 9.3 Definitions

**Source:** Includes any material supplier, manufacturer, or sub-contractor involved with any manufacturing sequence of a component including processing, inspection, and assembly steps.

**Method:** Includes any material, equipment, or operation used to produce the component in question.

### 9.4 Procedure

**9.4.1** Depending on the type and nature of the component/service being purchased from a supplier, CAE Quality Assurance (QA) may request the supplier to provide documentation detailing control of their processes during part manufacture or processing.

The principal objective of this procedure is to ensure that changes to manufacturing or processing operations of parts will yield components equal in quality and performance to those parts which have previously satisfied the CAE drawing and specification requirements.

**9.4.2** The areas to be controlled and documented may include:

- sources for all manufacturing or processing activities along with their supplier approval information
- methods and sequences of operations used in the part's manufacture or processing, and any applicable controlling documentation required to produce the component to the Engineering specification.
- Special processes, via technique sheets established for the component (i.e.: processes in which measurements for conformity can be taken directly)
- Quality system, via a quality plan



**9.4.3** When notified by CAE QA that process control documentation is required, suppliers must submit the information listed in paragraph 9.4.2 to CAE QA for review and approval. Written approval of the documentation must be issued by CAE before the supplier can start working on the subject parts.

**9.4.4** Once the control documentation has been approved, the supplier may only make changes to the control documentation by following the guidelines detailed below.

The supplier shall prepare a submission for requested process changes and shall include the following information:

- The engineering drawing number of the part(s) in question.
- The part description as per the engineering drawing.
- Clearly document all changes requested and attach any supporting documentation. Include references to previous submissions on similar parts, if applicable. The date when implementation of the proposed changes is required should be indicated.
- Document, in detail, the justification for the proposed changes.
- Signature, title, and printed name of the person requesting the changes.

**9.4.5** The submission shall be forwarded to CAE QA for review. CAE may ask for additional information to be furnished if the submission is not deemed to be sufficiently detailed. The supplier will be notified by CAE QA as to the acceptance/rejection of his submission.

## 10 SOFTWARE CONTROL

### 10.1 Purpose

To define the requirements for purchase of software specifically designed for CAE

### 10.2 Applicability

This procedure applies to customized software purchased from suppliers. This procedure does not apply to the purchase of “off-the-shelf” software packages.

### 10.3 Procedure

**10.3.1** Potential suppliers shall be submitted a Request for Proposal (RFP), including a Statement of Work (SOW) identifying technical or program requirements. Suppliers shall submit their proposal to the CAE Subcontract Management Group for evaluation.

**10.3.2** CAE Software Quality Assurance may perform an audit of the supplier’s facility to assess the supplier’s capabilities. Deficiencies in the supplier’s system may necessitate implementation of corrective actions and/or the implementation of a quality plan to complement the supplier’s system.

**10.3.3** The specific proposal accepted by CAE will result in the awarding of a Contract, including a SOW, to a supplier.

**10.3.4** Suppliers awarded a contract shall have their performance monitored through regular communication with CAE Project Management and through submission of progress reports, as specified in the contract: Typical information to be contained in progress reports includes:

- objectives for the reporting period and their status
- software development and delivery status
- problems encountered and risks
- objectives for the next reporting period
- correspondence list (incoming/outgoing correspondence)

**10.3.5** Based on the complexity and scope of the effort involved in the contract, CAE may hold one or more design reviews with the supplier. Requirements governing the scope and timing of the design reviews shall be identified in the SOW. A CAE Technical representative shall perform the design review. The frequency of reviews shall be determined by the technical representative in conjunction with the supplier’s counterpart.

**10.3.6** Prior to delivery to CAE, the subcontractors shall demonstrate that all requirements specified in the SOW and Contract have been met by successfully performing an acceptance test procedure, or its equivalent. The test procedure may include one or more of the following:

- An acceptance test at the supplier's facility
- An acceptance test at CAE's facility with the software integrated with CAE's product
- An acceptance test at the customer's facility with the software integrated with CAE's product

**10.3.7** Witnessing and acceptance of the supplier's software shall be carried out by the CAE Technical representative and/or Quality Assurance representative. The Technical representative shall be responsible for technical verification of the supplier's acceptance test procedure.

**10.3.8** Software received at CAE shall be integrated with CAE's product to ensure software functions as required. The supplier may be required to provide assistance during the integration procedure. Any deficiencies encountered during validation shall be documented and forwarded to the supplier for resolution.

**10.3.9** Once the software has been accepted by CAE, supplier support with regards to warranty considerations, after-sales service, software upgrades, or any other issues affecting product quality and/or performance shall be carried out as documented in the Contract or SOW.

## 11 NON-CONFORMANCES

### 11.1 Purpose

To describe the methods used to treat non-conforming material when it occurs.

### 11.2 Applicability

This procedure applies to all purchased goods and/or services found to deviate from the requirements of the Purchase Order (PO), contract, applicable drawings, specifications, or other documents, or when the supplier is cannot meet the requirements specified on one of the controlling documents indicated above.

#### **Definitions:**

Non-conformances:

The failure of a unit or product to conform to specified product.

Waivers:

A temporary known departure from requirements during or after the manufacture of the item.

Deviations:

A temporary known departure from requirements prior to manufacturing of the item.

### 11.3 Procedure Deviation

Deviation must be submitted in writing to the purchasing department at CAE. These will in turn be reviewed by a Material Review board and if necessary, CAE's end customer to be dispositional Products waiting for disposition of deviations must not be shipped without CAE QA authorization. Incomplete or incorrect submissions shall be returned to the supplier for completion and resubmission.

Submissions covering multiple deviations will have a disposition documented against each deviation.

Suppliers shall document deviations with the CAE form or on their internal documentation. The following minimum information shall be included when suppliers are using their documentation:

- Supplier's name and CAE vendor code
- CAE purchase order number
- Date of request
- CAE part number and revision
- Part or material description
- Batch/Lot/Serial numbers, as applicable
- Number of parts affected
- Drawing location/note related to deviation or request for waiver
- Detailed description of deviation and its reason
- Explanation of corrective / preventive action
- Signature of supplier's authorized quality representative

A copy of the CAE QA-approved deviation shall be attached to the Certificate of Conformance or Packing Slip.

Accepted deviations might be subject to additional requirements (part/packaging identification, submission of additional test reports, etc.) which will be documented on the supplier's request. Product(s) may be shipped to CAE once any applicable requirements have been satisfied.

#### 11.4 Procedure: Waivers

When a non-conformance is detected at the suppliers and a waiver is requested it must be submitted to CAE purchasing department in writing with the following information:

- Supplier's name and CAE vendor code
- CAE purchase order number
- Date of request
- CAE part number and revision
- Part or material description
- Batch/Lot/Serial numbers, as applicable
- Number of parts affected
- Drawing location/note related to deviation or request for waiver
- Detailed description of deviation and its reason
- Explanation of corrective / preventive action
- Signature of supplier's authorized quality representative

A CAE non-conformance report must be opened by QA. Dispositioned requests shall be authorized by the CAE MRB and shall be returned to the supplier. Supplier will need to provide a corrective action in order to avoid the issue in the future.

Accepted waivers might be subject to additional requirements (part/packaging identification, submission of additional test reports, etc.) which will be documented on the supplier's request. Product(s) may be shipped to CAE once any applicable requirements have been satisfied.

A copy of the CAE NCR with disposition shall be attached to the Certificate of Conformance or Packing Slip.

Rejected waivers may require additional rework/repair to bring the non-conformance (s) within acceptable parameters or may be deemed to be scrap and will require products to be remade.

### 11.5 Corrective actions

In case where a non-conformance is identified by CAE upon inspection or during use of the delivered goods, a non-conformance report will be provided to the supplier for corrective action. If corrections or repairs are necessary prior to acceptable of goods, and the goods cannot be returned to the supplier for any reason whatsoever, CAE may, at its sole discretion request compensation for the administrative charge and the said repair, or request that the supplier carry out the necessary repairs at CAE's premises.

The corrective action report must be provided in the time frame required. It is the supplier's responsibility to communicate with CAE QA in order to for approval of additional time if required.

Failure of suppliers to respond to CAR's will be escalated, Group leader, manager, director and Vice president if required and may result in the withdrawal of the supplier's approval.

## 12 HANDLING, PACKAGING, TRANSPORTATION

### 12.1 Purpose

To define the handling and packaging requirements for suppliers providing CAE with goods and/or services.

### 12.2 Applicability

This procedure applies to all CAE purchases of goods, whether shipped directly to CAE or drop-shipped to another location.

### 12.3 Procedure

**12.3.1** Special packaging requirements detailed on the CAE purchase order or product specifications shall be read in conjunction with this procedure. Should a conflict arise between the various packaging instructions, the purchase order and product specifications shall take precedence.

**12.3.2** Products are to be packaged in such a way as to minimise the risk of environmental contamination, damage, deterioration, and corrosion during transportation, storage at the supplier's facility, and handling within the supplier's facility. Product lot/batch traceability shall be maintained as applicable.

**12.3.3** Precautions shall be taken to prevent foreign objects and contaminants from entering components with orifices.

**12.3.4** Material subject to damage from electrostatic discharge (ESD) shall be handled and protected with necessary precautions and in accordance with any specific requirements for the handling of these products.

**12.3.5** Products that are hazardous, flammable, or toxic shall be clearly identified and handled in accordance with the manufacturer's recommendations and applicable government regulations.

**12.3.6** The packaging method shall enable removal of parts without risk. Particular attention shall be paid to the protection of sharp edges and machined surfaces, which present problems during unpacking.

**12.3.7** Packaging shall be made from material that will not contaminate the enclosed products.

**12.3.8** The materials used in the packaging shall not be harmful to personnel and shall not require any special health precautions.

**12.3.9** Packaging materials requiring specialized disposal methods shall not be used without prior approval from CAE Purchasing.

**12.3.10** Packaging which carries a charge, requires a deposit, or is considered returnable, shall be approved by CAE Purchasing prior to use.

**12.3.11** External packaging shall be robust enough to withstand normal handling and shall also offer a degree of protection against careless or accidental handling. Examples of acceptable final containers are:

- rigid cartons;
- wood or plywood cases;
- double or triple walled corrugated board framed containers.

**Note:** Cardboard shall not be used to cover or protect composite surfaces that have been painted.

**12.3.12** Each container shall contain a label identifying its contents. When smaller containers containing the same product are placed in an outer container, only the outer container shall require an identification label. Each label shall include the following information:

- Purchase order number.
- Part number.
- Part description.
- Serial number (when applicable).
- Quantity.
- Cure date, lot number, batch number (when applicable).
- Special handling/usage instructions (when applicable).

**12.3.13** In certain cases, CAE may provide the supplier with specific containers for specific product handling/shipping. These containers shall be identified with serial numbers starting with the letter's 'TF'. The containers should only be used for the intended products and remain the property of CAE. Should CAE not have the required containers, drawings shall be supplied to the supplier for manufacture of the containers.



## 13 QUALITY RECORDS

### 13.1 Purpose

To define the retention period for quality records.

### 13.2 Procedure

**13.2.1** Quality records may be in the form of any medium, including hardcopy, electronic, and microfiche formats.

**13.2.2** Retention periods are divided into the following categories:

- For military, commercial, or marine system contracts – seven years from the date of product shipment to the customer.
- For nuclear contracts – retention for the active life of the product.

The minimum records to be retained, as applicable, are listed below:

- Process control plans (includes routing cards and quality plans).
- First Article Verification Reports.
- Inspection procedures and results (in-process and final).
- Laboratory and test records.
- Special process techniques and test records.
- Subcontractor certificates of conformance (C of C) and test data.
- Requests for deviations or waivers.
- Competence, including any records of required qualification of personnel.
- Supplier C of Cs.
- Design data and validation records.

**13.2.3** When purchase orders or contracts define requirements different from the above with regards to types of records or retention periods, the purchase order or contract shall take precedence.

**13.2.4** Disposal of quality records after expiry of the retention period must first be authorized by CAE personnel.

**13.2.5** Quality records shall be preserved in a safe, suitable environment and be available to CAE, customer, or government representatives for reference at any time during the manufacturing or storage period.

**13.2.6** Records shall remain, readily identifiable and retrievable

## 14 ECN NOTIFICATION

### 14.1 Purpose

To define the procedure suppliers must follow in actioning ECN (Engineering Change Notice) notifications issued by CAE.

### 14.2 Procedure

**14.2.1** Suppliers will be advised by email when an ECN is issued against a part they are currently working on for CAE. The email will contain relevant information such as part number, purchase order (PO) number, PO line number, and the changes attached to this order.

**14.2.2** Once an email is received for an ECN notification, suppliers have the following options:

- **ACCEPT CHANGE:** The supplier accepts the requested change. All parts shipped to CAE must have the change(s) incorporated.
- **SHIPPED:** The supplier has already shipped the affected part prior to receiving an email concerning a proposed change.
- **ZIP:** The supplier zips the drawing to see the changes. The supplier must then respond in the ACCEPT change box and contact the CAE buyer with the new pricing/delivery information.

There is a comment box available to the supplier to enter comments on the changes being made. The comments entered in this box will be transferred to the footer display. The supplier is expected to respond to each individual change. Once one of the three options have been actioned, the supplier's response will be logged as a confirmation at CAE that the request has been actioned.

**14.2.3** Suppliers are responsible for contacting the CAE buyer to notify them of changes which can/cannot be incorporated as well as any changes in price and delivery.

**14.2.4** Suppliers have five working days to action ECN notifications. If no confirmation is received within the five-day period, CAE assumes all changes will be incorporated with no extra cost involved and no delay in delivery.

**14.2.5** Purchase Orders will be updated with changes resulting from ECN notifications. A copy will be forwarded to the supplier.

**14.2.6** Part Identification shall be modified to reflect latest design changes and incorporation of ECN.

## 15 SUBCONTRACTED CIRCUIT CARD ASSEMBLY (CCA) AND PRINTED WIRING BOARD CONTROL DOCUMENTS

### 15.1 Applicability

For Supplier of Printed Wiring board and inspection criteria, refer to control document CD279006.01.8.300.

## 16 ANNEX 1 – SAMPLING PLAN

### **Scope**

This annex describes sampling plan tables and references. It is to be used in the planning phase to conduct proper inspections of parts. This sampling plan is based on the Standard ANSI/ASQC Z1.4.

### **Sampling**

Test samples shall be drawn from a lot or batch, being selected at random without regards to their quality; in such a manner to represent the entire production of the lot or batch.

Sampling size shall be according to the total number of parts or products delivered on the Purchase Order (P/O) or Work Order (W/O).

### **Inspection Levels**

- Level S3 → Hardware (bolts, nuts, etc.).
- Level I → Standard off the shelf items.
- Level II → Raw material, manufactured parts, rubber extrusion, ply metal, glass products, minor system without TRD.
- Level III → Major Systems with TRD.

### **Acceptable Quality Level**

Please find below details and instructions regarding acceptance/reject of lots inspected.

“AC” → Accept lot if parts found defective in sample size are equal to or less than the number indicated.

“RE” → Reject lot if parts found defective in sample size are equal to or more than the number indicated. If in this situation, 100% of lot must be inspected and all rejected parts need to be reworked.

**TABLE I**

Taille du lot ou de la cuvée / Lot or batch size	Niveaux de contrôle général / General Inspection Level				Lettre code de l'échantillon / Sample code letter	Taille de l'échantillon / Size of Sample	1.0	
	S3	I	II	III			AC	RE
2 à/to 8	A	A	A	B	A	2	0	1
9 à/to 15	A	A	B	C	B	3	0	1
16 à/to 25	B	B	C	D	C	5	0	1
26 à/to 50	B	C	D	E	D	8	0	1
51 à/to 90	C	C	E	F	E	13	0	1
91 à/to 150	C	D	F	G	F	20	0	1
151 à/to 280	D	E	G	H	G	32	1	2
281 à/to 500	D	F	H	J	H	50	1	2
501 à/to 1 200	E	G	J	K	J	80	2	3
1 201 à/to 3 200	E	H	K	L	K	125	3	4
3 201 à/to 10 000	F	J	L	M	L	200	5	6
10 001 à/to 35 000	F	K	M	N	M	315	7	8
35 001 à/to 150 000	G	L	N	P	N	500	10	11
150 001 à/to 500 000	G	M	P	Q	P	800	14	15
500 001 et/to plus	H	N	Q	R	Q	1 250	21	22
					R	2 000	21	22

## 17 ANNEX 2 – Paint Verification Template

Résultats Inspection Peinture / Paint Inspection Results									
Numéro PO -- P/O Number									
Total pièces P/O -- Total parts on P/O									
Bon Travail CAE -- CAE W/O									
Qté échantillonnage -- Sampling Qty									
Numéro Pièce -- Part Number									
Critère -- Criteria	Visuel / Visual	Épaisseur / Thickness	Lustre / Gloss	Visuel / Visual	Épaisseur / Thickness	Lustre / Gloss	Visuel / Visual	Épaisseur / Thickness	Lustre / Gloss
Référence -- Reference	MEI 12.1.3	(2-4 mills)	PPS	MEI 12.1.3	(2-4 mills)	PPS	MEI 12.1.3	(2-4 mills)	PPS
Pièce / Part #1									
Pièce / Part #2									
Pièce / Part #3									
Pièce / Part #4									
Pièce / Part #5									
Pièce / Part #6									
Pièce / Part #7									
Pièce / Part #8									
Pièce / Part #9									
Pièce / Part #10									
Pièce / Part #11									
Pièce / Part #12									
Pièce / Part #13									
Pièce / Part #14									
Pièce / Part #15									
moyenne									
Adhérence -- Adhesion (ASTM B3359) Ref -- MEI 12.1.3									
Dureté -- Hardness (ASTM D3363) Ref -- MEI 12.1.3									
Visuel / Visual	Cocher si conforme / Check if conforming								
Épaisseur / Thickness	Enregistrer valeur / Record value								
Lustre / Gloss	Enregistrer valeur / Record value								

Table shown above to be used as reference only.

Please refer at the file attached below for Production verifications:



QMS-CIM-0564-4\_R  
esultats Verification