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1.0 PURPOSE
This document provides guidelines for compliance to UTC’s UPPAP, for members of the NORDAM supply chain. QSS-100 is a standalone document to be used in place of UTC’s ASQR 9.2. The UPPAP Workbook (available at http://www.utc.com/Suppliers/Pages/UPPAP-Toolbox.aspx) shall be used to document the activities described herein.

2.0 SCOPE
This document contractually applies to certain members of the supply chain providing components for PWC programs. The NORDAM purchase order shall invoke UPPAP, where applicable.

3.0 REFERENCES
ASQR 9.2 UTC Production Part Approval Process
AS9100 Quality Management Systems
AS9102 Aerospace First Article Inspection Requirement
AS9103 Variation Management of Key Characteristics
MN-TNG-QA-02 NORDAM Supplier Quality Manual
AIAG PPAP Reference Manual
AIAG FMEA Reference Manual
AIAG APQP Reference Manual
AIAG MSA Reference Manual
AIAG SPC Reference Manual
SAE J1739 Potential Failure Mode and Effects Analysis in Design/Process

4.0 DEFINITIONS & ACRONYMS
Commercial Off The Shelf/Industry Standard Parts
Commercially available items intended by design to be procured and utilized without modification (e.g., common fasteners).

Cpk
The capability index for a stable process, typically defined as the minimum of capability upper or lower indices (see AIAG SPC Reference Manual for further explanation).

Feature
Any characteristics, dimensions, notes, specifications, or embedded requirements found on the drawing or drawing related documents.

Intraclass Correlation
An assessment of consistency or reproducibility of quantitative measurements made by different observers measuring the same
<table>
<thead>
<tr>
<th>Key Characteristic (KC)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient (ICC)</td>
<td>quantity.</td>
</tr>
<tr>
<td>Kappa</td>
<td>A statistical measure of inter-rater agreement for qualitative (categorical) items. It takes into account the agreement occurring by chance. (See AIAG MSA Reference Manual for further explanation)</td>
</tr>
<tr>
<td>Key Characteristic (KC)</td>
<td>An attribute or feature whose variation has a significant influence on product fit, performance, service life, or producibility; that requires specific action for the purpose of controlling variation. KCs may be identified by NORDAM and/or the Supplier. - KCs for a part, subassembly, or system are those selected geometrical, material properties, functional and/or cosmetic features; which are measurable, whose variation control is necessary in meeting Customer requirements and enhancing Customer satisfaction. - Process KCs are those selected measurable characteristics of a process whose control is essential to manage variation of part or system KCs. - Substitute KCs may be identified when a Customer-defined KC is not readily measurable within the production/maintenance setting and other characteristics may need to be controlled to ensure conformance. Source: For further detail refer to AS9103.</td>
</tr>
<tr>
<td>Part Family</td>
<td>A group of similar parts that have similar features, material, manufacturing process steps and are used for similar applications.</td>
</tr>
<tr>
<td>Process Family</td>
<td>A manufacturing process applied using similar machines, with similar tools and fixtures, with similar set-ups and programs and used to produce similar features.</td>
</tr>
<tr>
<td>Submission Level</td>
<td>Defines the required documentation that shall be submitted to the appropriate NORDAM representative for review.</td>
</tr>
<tr>
<td>UPPAP File</td>
<td>A collection of data and documents at the Supplier’s location documenting compliance to UPPAP requirements for each part number. The file contains living documents, maintained and updated by the Supplier for the life of the part. This includes any supporting documentation for any level of its supply chain.</td>
</tr>
<tr>
<td>UPPAP Package</td>
<td>A submission by the Supplier containing evidence that the UPPAP Elements corresponding to the required submission level have been satisfied which is provided to the NORDAM representative for review.</td>
</tr>
</tbody>
</table>
review and disposition. The package represents the UPPAP File at the point of submission.

**Acronyms**

- **APQP**: Advanced Product Quality Planning
- **DFMEA**: Design Failure Mode and Effects Analysis
- **FAIR**: First Article Inspection Report
- **Gage R&R**: Gage Repeatability & Reproducibility
- **ICC**: Intra-class Correlation Coefficient
- **IPS**: Initial Process Studies
- **KC**: Key Characteristic
- **KPC**: Key Product Characteristic
- **MSA**: Measurement Systems Analysis
- **NDT**: Nondestructive Test
- **P/T**: Precision-to-Tolerance
- **PFMEA**: Process Failure Mode and Effects Analysis
- **PO**: Purchase Order
- **PRI**: Process Robustness Index
- **SPRD**: Supplementary Product Requirement Document(s)
- **SPC**: Statistical Process Control
- **TPM**: Total Productive Maintenance
- **UPPAP**: UTC Production Part Approval Process
- **UTC**: United Technologies Corporation
- **VPC**: Vendor Part Configuration
5.0 **UPPAP PLAN**

Upon notification of a UPPAP requirement and prior to the start of manufacturing, a NORDAM representative will schedule a meeting with the supplier to create a “UPPAP Plan”. As a team, the supplier and NORDAM will work together to determine the scope of the UPPAP project. A UPPAP Plan should contain the following:

- **Applicability** – Which of the 19 elements apply to the supplier (for example, only Design Responsible suppliers are required to complete a DFMEA).
- **Sub-Tier Applicability** – Determination of applicability to sub-tier suppliers. Those supplying detail components to support assembly at the supplier’s facility may require a UPPAP package of their own.
- **Alternative Methods of Compliance** – Any alternative techniques used by the supplier will be evaluated and described in the UPPAP Plan (i.e. short run SPC).
- **Definition of Process Variations** – Determination of the “process variations” that will be targeted during Initial Process Studies (element 9) and when selecting parts for Dimensional Reporting (element 12).
- **Identification of Part Families** – Identification of parts that will be grouped into families for certain elements to eliminate redundancy (items marked with * on the Approval Criteria table in section 8)
- **Timeline** – Estimation of the timeline for completion of UPPAP items and identification of target dates for UPPAP Submission.

The UPPAP Plan shall be maintained in the UPPAP File. Any changes to the UPPAP Plan shall be approved by NORDAM.

*Note: The UPPAP Plan should show development of the UPPAP Elements (e.g. Process Flow Diagrams, DFMEA, PFMEA and Control Plans) as early as possible in the part design and manufacturing process development phases.*
6.0 UPPAP FILE

The Supplier shall create a part number specific UPPAP File documenting its development of the UPPAP Elements early in design and/or process development. The supplier shall maintain these records for 10 years after the last production shipment.

The Supplier shall collect supporting data to demonstrate that it has met the requirement of each UPPAP Element and include it in the UPPAP File as the data is produced. For all elements of UPPAP data collection, evaluations, analysis and assessments shall be completed with the tools, machines, instructions, methods, operators and processes used in delivering production parts. Data from non-production tooling or processes may only be used in the UPPAP File when approved and documented in the UPPAP Plan.

The Supplier shall maintain the UPPAP File as living documents and continually review and update the UPPAP File to reflect the current process based on any change to the design or process. Where evidence of process instability occurs after UPPAP approval (SPC data, yield, non-conformances, escapes etc.), a review and analysis of applicable UPPAP Elements shall be completed as part of the root cause and corrective action activity to determine the impact on these elements. Updates shall be incorporated and implemented where appropriate.

If any of the following changes occur after Full Approval is obtained, submission of QSS-100 Form 2 “Change Notification” shall be required:

- A change in design characteristics affecting fit, form, or function of the part.
- A change in manufacturing source(s), process(s), inspection method(s), locations of manufacture, tooling or materials that can potentially affect fit, form or function.
- A change in numerical control program or translation to another media that can potentially affect fit, form or function.
- A natural or man-made event, which may adversely affect a manufacturing process.
- A lapse in production for two years shall require an update for any UPPAP Elements that may be impacted by the inactivity or as specified by the Customer.

Disposition of QSS-100 Form 2 shall be obtained prior to shipping production parts after the implementation of any such changes.

Note: This requirement is in addition to all other change notice obligations (AS9102, NORDAM Supplier Quality Manual, etc.).
7.0 SUBMISSION & DISPOSITION

The Supplier shall complete QSS-100 Form 1 to reflect the status of the UPPAP File at the time of submission (the “UPPAP Package”). By signing this form, the Supplier is certifying that the form is current, complete and accurate.

The default is Submission Level 3 unless otherwise specified by the NORDAM representative.

<table>
<thead>
<tr>
<th>Submission Levels</th>
<th>Required Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>QSS-100 Form 1 only</td>
</tr>
<tr>
<td>Level 2</td>
<td>QSS-100 Form 1 with limited supporting data</td>
</tr>
<tr>
<td>Level 3</td>
<td>QSS-100 Form 1 with complete supporting data for all Elements submitted to appropriate NORDAM representative</td>
</tr>
<tr>
<td>Level 4</td>
<td>QSS-100 Form 1 with complete supporting data for all Elements reviewed by a NORDAM representative at the Supplier’s manufacturing location</td>
</tr>
</tbody>
</table>

Regardless of the Submission Level, the Supplier shall complete and maintain documentation for all applicable UPPAP Elements in its UPPAP file.

Before the first production part is shipped, the Supplier shall submit QSS-100 Form 1 with the UPPAP Package to the appropriate NORDAM representative for formal disposition. The Supplier shall include the QSS-100 Form 1 from all applicable levels of its supply chain in the UPPAP package.

In very limited circumstances, a written request for deferral may be submitted to the appropriate NORDAM representative to authorize the shipment of production parts prior to achieving Interim or Full Approval.

Note: The Supplier should allow sufficient time to permit timely review and disposition.
The Supplier will receive a signed copy of QSS-100 Form 1 from the NORDAM representative with disposition based on the following criteria:

<table>
<thead>
<tr>
<th>Element #</th>
<th>Element Name</th>
<th>Full Approval</th>
<th>Interim A</th>
<th>Interim B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Released Production Drawings or Definition</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Supplementary Product Requirement Documents</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Production Purchase Order</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>Design Risk Analysis</td>
<td>X</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>5</td>
<td>Process Flow Diagram</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>PFMEA</td>
<td>X</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>7</td>
<td>Process Control Plan</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>Process Robustness Index</td>
<td>X</td>
<td>X</td>
<td>X*</td>
</tr>
<tr>
<td>9</td>
<td>Initial Process Studies</td>
<td>X</td>
<td>Cpk &gt; 1.0</td>
<td>Insufficient Data</td>
</tr>
<tr>
<td>10</td>
<td>Measurement Systems Analysis</td>
<td>X</td>
<td>X</td>
<td>P/T Ratio &gt; 20%*</td>
</tr>
<tr>
<td>11</td>
<td>Engineering Frozen Planning/Engineering Source Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>Dimensional Reports</td>
<td>5 Dimensional Reports w/ zero non-conformances</td>
<td>At least 2 Dimensional Reports completed</td>
<td>At least 1 Dimensional Report completed</td>
</tr>
<tr>
<td>13</td>
<td>Functional Testing Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Special Process &amp; NDT Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>15</td>
<td>Material Certification Documentation</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Member Defined Raw Material Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>17</td>
<td>Part Marking Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>18</td>
<td>Packaging, Preservation, and Labeling Approval</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>19</td>
<td>Review and Sign-Off</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X - Full Compliance to element requirement, no open actions exist.
* - Submitted but open actions or mitigation plans exist and are approved by the appropriate NORDAM representative.

Interim Approval indicates a gap between the UPPAP requirements and the Supplier’s current status. All UPPAP Package submissions that do not receive “Full Approval” from the NORDAM representative shall contain a plan to achieve closure of any open item(s) including the commitment of actions, target dates and owners to achieve “Full Approval”.

If the disposition is “Not Approved”, the Supplier shall complete any required actions and resubmit QSS-100 Form 1 with the revised UPPAP package to obtain an Interim or Full Approval.

Upon completion of open action items, the Supplier shall resubmit the UPPAP Package and obtain a formal “Full Approval” disposition from the NORDAM representative.
8.0 **UPPAP ELEMENTS**

1. Released Production Drawings or Definition
2. Supplementary Product Requirement Documents
3. Production Purchase Order
4. Design Failure Mode and Effects Analysis*
5. Process Flow Diagram *
6. Process Failure Mode and Effects Analysis *
7. Process Control Plan *
8. Process Robustness Index *
9. Initial Process Studies
10. Measurement Systems Analysis *
11. Engineering Frozen Planning/Engineering Source Approval
12. Dimensional Reports
13. Functional/Acceptance Testing Approval
14. Special Process and NDT Approval
15. Material Certification Documentation
16. Member Defined Raw Material Approval
17. Part Marking Approval
18. Packaging, Preservation and Labeling Approval *
19. Review and Sign-Off

* Element may be satisfied using a part or process family methodology but all unique characteristics shall be evaluated and accounted for by part number. Part families shall be defined in the UPPAP Plan.

**Note 1:** The numbering sequence of UPPAP Elements does not reflect the order of execution.

**Note 2:** All product and process KCs (along with any supplier identified KCs) should be reflected in UPPAP Elements 4, 5, 6, 7, 9 and 10.
8.1 Element 1 - Released Production Drawings or Definition

The Supplier shall ensure the product is manufactured to a production released design definition and the drawing revision aligns with the PO requirement.

The Supplier shall include a copy of the verified product drawings in the UPPAP File. Where digital product definition is applicable, the revision of the model shall be verified and documented in the UPPAP File.

Design responsible suppliers shall include their current drawing, bill of material and the associated NORDAM drawing/specification in the UPPAP File.

Applicable internal and external specifications shall be readily available.

8.2 Element 2 - Supplementary Product Requirement Documents (SPRD)

UTC SPRDs are not applicable to NORDAM suppliers. In some cases a Vendor Part Configuration (VPC) will be attached to the NORDAM Purchase Order. VPCs are used to flow down instructions to suppliers on exceptions to the engineering or contract (i.e. omit holes, leave excess material, etc.) If applicable, include the VPC in the UPPAP File.

8.3 Element 3 - Production Purchase Order

The Supplier shall ensure that the product is manufactured to a production PO and all product definition revisions align with those referenced on the PO. The Supplier shall include a copy of the production PO in the UPPAP File, along with the anticipated peak production rate as communicated by the NORDAM buyer.

8.4 Element 4 - Design Failure Mode and Effects Analysis (DFMEA)

Design Responsible Suppliers shall ensure that a Design Failure Modes and Effect Analysis (DFMEA) related to performance, durability, reliability, assembly and manufacturability is executed and appropriate mitigation activities are identified, prioritized and completed. See SAE J1739 and the AIAG FMEA Reference Manual for guidance.

Product Key Characteristics (KCs) resulting from the DFMEA shall be identified in the released engineering (element 1) and the Control Plan (element 7).

The Supplier shall include the DFMEA in the UPPAP File. Build-to-Print Suppliers shall review the NORDAM engineering definition for applicable KCs.

Note: DFMEAs may be derived from part families as long as any unique product characteristics have been reviewed and included. Part families shall be defined in the UPPAP Plan.
8.5 Element 5 - Process Flow Diagram

The Supplier shall create a Process Flow Diagram to facilitate the development of a robust PFMEA and Control Plan. The process steps in this diagram should originate from the production planning.

Each process step shall be numbered (i.e. 10.00, 10.01…20.00, 20.01), corresponding to the operation numbers in the planning.

The Process Flow Diagram shall include:

- Production process steps and sequences from issuing material from stock to shipment of end product
- Standardized flowchart symbols
- Alternate process paths and formal rework loops (if applicable)
- Outside operations
- Transportation and handling
- Identification of steps that impact Product or Process KCs
- Key Product Outputs – Significant product related characteristics that can affect safety, regulatory compliance, appearance, function, performance, reliability, or subsequent product manufacturing. They are a direct output of a given manufacturing operation.
- Key Process Inputs – Unique process related characteristics that can affect the ability of the manufacturing process to meet Significant Product Characteristics. These are inputs to a given manufacturing operation.

The Supplier shall include the Process Flow Diagram in the UPPAP File.

Note 1: Process Flow Diagrams may be derived from part families as long as any unique processing steps and characteristics have been reviewed and included. Part families shall be defined in the UPPAP Plan.

Note 2: The Supplier should consider the peak production rate as communicated by the NORDAM buyer to define the process flow.
8.6 Element 6 - Process Failure Mode and Effects Analysis (PFMEA)

The Supplier shall ensure risks associated with the manufacturing or assembly process have been identified and mitigated using a PFMEA. See SAE J1739 and the AIAG FMEA Reference Manual for guidance.

The Supplier shall develop, document and maintain the part or assembly PFMEA and ensure consideration of the following:

- Process Flow Diagram alignment
- Product features, tolerances, KCs etc.
- Features identified in the DFMEA
- Supplier identified process KCs
- Product family quality history, including but not limited to non-conformances, escapes and lessons learned.

The Supplier shall include the PFMEA in the UPPAP File.

Note: PFMEAs may be derived from part families as long as any unique product characteristics and/or processing steps have been included. Part families shall be defined in the UPPAP Plan.

8.7 Element 7 - Process Control Plan

The Supplier shall ensure any manufacturing risks are adequately controlled by developing a Process Control Plan. The Process Control Plan shall be used to ensure sustained process control throughout the manufacturing life of the part and/or assembly. The Process Control Plan shall identify the product and process KCs (including those identified by the supplier), Key Process Inputs (KPIs) and associated controls.

The Process Control Plan shall include:

- Operation/process step where any product or process KC is measured
- Specification/tolerance for all product and process KCs
- Measurement system used
- Sample size and frequency
- Control method (type of control chart, set-up inspections, etc.)
- Reaction Plans
- Process Flow Diagram and PFMEA alignment

The Supplier shall include the Control Plan in the UPPAP File.

Note: Control Plans may be derived from part families as long as any unique product characteristics and/or processing steps have been included. Part families shall be defined in the UPPAP Plan.
8.8 Element 8 - Process Robustness Index (PRI)

The Supplier shall ensure its manufacturing process will meet the production requirements at projected full demand rate by completing a Process Robustness Index representing all levels of its supply chain that includes:

- Manufacturing process steady state - tools, fixtures, manufacturing equipment and gages
- Operation work instructions
- Process control methods
- Gage suitability (discrimination, applicability etc.)
- Total Productive Maintenance (TPM) program
- Supply Chain management
- Prevention, detection and removal of foreign objects

The Supplier shall include a copy of the PRI in the UPPAP File.

Note 1: A PRI may be performed with a NORDAM representative or as a self-evaluation based on the mutually agreed upon UPPAP plan.

Note 2: PRI’s may be derived from part family PRI’s as long as any unique product characteristics and/or processing steps have been included. Part families shall be defined in the UPPAP Plan.
8.9 Element 9 - Initial Process Studies (IPS)

The Supplier shall conduct an initial capability study of the manufacturing processes used to produce all product and process KCs. The UPPAP File shall contain documented evidence that initial process studies have been conducted for all product and process KCs, as well as any Supplier identified process KCs.

Data shall be captured from a minimum of 25 consecutive parts representing process variation as described in the UPPAP Plan. Any out-of-tolerance or out-of-control conditions shall be addressed by the Supplier.

*Note 1: Process variation includes variability associated with piece to piece, setup to setup, machine to machine, time to time and lot to lot. Targeted process variations will be described in the UPPAP Plan.*

The Supplier shall use the following as acceptance criteria for evaluating initial Process Study results.

<table>
<thead>
<tr>
<th>Results</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cpk ≥ 1.33</td>
<td>The process currently meets requirements. After approval, begin volume production and follow Control Plan.</td>
</tr>
<tr>
<td>1.00 ≤ Cpk &lt; 1.33</td>
<td>The process is currently acceptable, but may require some improvement. Acceptable to submit for Interim Approval A. This may require changes to the Control Plan, if not improved prior to start of volume production.</td>
</tr>
<tr>
<td>Cpk &lt; 1.00</td>
<td>The process does not currently meet the acceptance criteria. Contact the appropriate NORDAM representative for a review of the study’s results.</td>
</tr>
</tbody>
</table>

Process capability indices shall only be calculated after the process is determined to be stable, in statistical control and the requirements of Element 10 (MSA) have been met.

The capability indices shall be calculated using the appropriate distribution that the process represents (normal, exponential, Weibull, etc.).

Variable data shall be used wherever feasible. If using attribute data (pass/fail), complete a minimum of 45 consecutive observations over sufficient time to capture variability associated with, piece to piece, set up to set up, time to time, and lot to lot variation with no non-conformances detected.

*Note 2: With prior agreement of the approach and source of data, use of short run SPC techniques (e.g. target, group, part family charts) may be allowed to meet the 25 part minimum...*
requirement (where full production run is less than 25 parts or 25 parts will take an unreasonable amount of time). Acceptance of alternate SPC techniques shall be documented in the UPPAP Plan.

Note 3: Supplier should continue to monitor Cpk throughout production to ensure process stability is maintained. Any out of control conditions should be addressed accordingly.

8.10 Element 10 - Measurement Systems Analysis (MSA)

The Supplier shall ensure adequacy and applicability of the measuring systems used to evaluate and monitor product and process KCs (including Supplier identified KCs), as well as any other items listed in the Control Plan.

The UPPAP File shall contain copies of the Measurement Systems Analysis (including Gage R&R) conducted on all instruments used for measuring all product and process KCs. For custom designed gaging, evidence of inspection and acceptance testing (gage inspection, tooling reports, etc.) shall also be included in the UPPAP File. Any Gage R&R studies shall have a Precision-to-Tolerance (P/T) ratio ≤ 20% unless a lower maximum ratio is specified in the UPPAP Plan.

When P/T ratio is not achieved, or when other deficiencies are identified such as bias, stability, linearity, repeatability, or discrimination, the Supplier shall provide a mitigation plan which ensures conformity of product. NORDAM acceptance of any mitigation plan is required.

Where attributes are used to assess feature acceptability (e.g. pass/fail criteria) the evaluation of measured variable data is not possible. The following criteria shall be used to determine acceptance of the measurement system:
Pass/Fail: Kappa >= 0.8. Ordinal: ICC >= 0.75.

Note: MSA’s may be derived from part families as long as any unique product characteristics and/or processing steps have been included. Part families shall be defined in the UPPAP Plan.

8.11 Element 11 - Engineering Frozen Planning/Engineering Source Approval

This element is not applicable to NORDAM suppliers. See the NORDAM Supplier Quality Manual for requirements regarding notification of changes.
8.12 Element 12 - Dimensional Reports

The Supplier shall perform a 100% inspection on a minimum of 5 production parts. These parts will be strategically selected over a sufficient time to capture variability associated with piece to piece, setup to setup, machine to machine, time to time and lot to lot variation considering all unique process streams. Any out-of-tolerance, out-of-control or trending towards out-of-tolerance conditions shall be addressed by the Supplier.

QSS-100 Form 4 shall be used to record the results of each inspection. This record shall include 100% of the design features. Dimensions recorded in QSS-100 Form 3 should match those recorded in the AS9102 First Article Inspection Report (FAIR).

The UPPAP File shall contain a copy of any approved FAIRs and Delta FAIRs, as well as the QSS-100 Form 3.

Note: In-process gaging or automated inspection may be used to capture this data.

8.13 Element 13 – Functional/Acceptance Testing Approval

Design Responsible Suppliers shall validate that any required Functional/Acceptance test procedures meet all applicable requirements and have been approved by NORDAM.

The approved/released procedure and product test results shall be included in the UPPAP File.

8.14 Element 14 - Special Process and NDT Approval

The Supplier shall validate that all Special Process and NDT Approval requirements are met.

The Supplier shall include in the UPPAP File a record of the source qualification for special processes/NDT that references the special process/NDT Supplier name.

8.15 Element 15 - Material Certification Documentation

The Supplier shall validate that all Material Certification requirements are met.

The Supplier shall include in the UPPAP File:

- Record of the source qualification for the raw material supplier
- The raw material supplier’s Certification Documentation including Certificates of Conformance, Lab Test Results, etc.
8.16 Element 16 – Member Defined Raw Material Approval

This element is not applicable to NORDAM suppliers. Raw materials defined by NORDAM (or Design Responsible Supplier) such as castings, forgings, etc. shall be processed in accordance with AS9102 to ensure all design requirements are met.

8.17 Element 17 - Part Marking Approval

The Supplier shall ensure adherence to all part marking requirements including those stated in the approved Product Definition, the NORDAM Supplier Quality Manual, and any other contractual documents.

The Supplier shall include a photograph of the approved part marking in the UPPAP File.

8.18 Element 18 - Packaging, Preservation and Labeling Approval

The Supplier shall verify that the production intended packaging is adequate to prevent damage during shipping. At a minimum, packaging shall meet the requirements of the NORDAM Supplier Quality Manual, as well as any other contractual documents.

The Supplier shall include in the UPPAP File a photograph of the intended production packaging along with the procedure or industry standard used.

8.19 Element 19 - Review and Sign-Off

The Supplier shall:

- Verify all measurement and test results show conformance with NORDAM requirements
- Ensure all required documentation is available and maintained within the UPPAP File
- Review all applicable data for content and accuracy before submitting the UPPAP Package for approval
- Upon a satisfactory internal review, complete QSS-100 Form 1 and submit to the appropriate NORDAM representative for approval along with the necessary UPPAP Package based on the Submission Level (Submission Level 4 may require an onsite review).
- Complete a separate QSS-100 Form 1 for each part number unless otherwise approved and documented in the UPPAP Plan.
- Approve the submission of UPPAP Packages and any deviations to the requirements of this procedure for all levels of its supply chain (if required by UPPAP Plan).
- Include the QSS-100 form 1 from all levels of its supply chain in the UPPAP Package (if required by UPPAP Plan).
## 9.0 CHANGE HISTORY

<table>
<thead>
<tr>
<th>REV DATE</th>
<th>REV LEVEL</th>
<th>DESCRIPTION OF CHANGE</th>
<th>CHANGED BY</th>
</tr>
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<tr>
<td>5/2/2011</td>
<td>IR</td>
<td>Initial Release</td>
<td>Randy Holt</td>
</tr>
<tr>
<td>10/22/2012</td>
<td>A</td>
<td>Corrected reference to appendix in section 4.4.2, 4.7.1, 5.0 and in table 1 of Appendix 3 from &quot;A&quot; to &quot;3&quot;. Changed &quot;Table&quot; to &quot;Appendix&quot; in section 6.3.4.4. Removed reference to obsolete document, MIL-STD-1629A Administrative, formatting, grammar, punctuation, and spelling changes throughout the document.</td>
<td>Randy Holt</td>
</tr>
<tr>
<td>7/1/2015</td>
<td>B</td>
<td>Complete Re-write of QSS-100 Manual</td>
<td>Angelo Valeri</td>
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<tr>
<td>7/23/2015</td>
<td>C</td>
<td>Revised: 8.5.4 Process Flow, 8.5.6 Note: 2, 8.6.b)Interim Class,</td>
<td>Angelo Valeri</td>
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<tr>
<td>8/8/2016</td>
<td>D</td>
<td>Complete Re-Write to align with ASQR 9.2.</td>
<td>Adam Stokes</td>
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