QNP	**United Technologies Procedure, OP-82-02 Rev B**
United Technologies Procedure	Effective Date: 7-28-20 Owner Approval by Raymond Greco, QA Manager, on 7-28-20 Management Approval by Craig O. Garneau, President on 7-28-20 *Printed copies of this document are for information purposes only and are uncontrolled. Printed copies are not valid after the date of printing.*

1. PURPOSE

To define those product and quality system requirements specific to United Technologies (UTC) Supplier Quality System Requirements outlined in ASQR-01 and related specifications**.**

2. SCOPE

This procedure applies to all Quality Name Plate, Inc (QNP Inc.) orders where ASQR-01 is invoked.

3. APPLICABLE FORMS OR REFERENCES

The table below identifies the code number and title of documents and references applicable to this procedure;

Form/Reference Number	Title	Owner - Publisher
AS9100	Quality Management Systems - Requirements for Aviation, Space and Defense Organizations	SAE International
ASQR-01	Supplier Quality System Requirements	UTC
ASQR-07.5	Control of Software	UTC
ASQR-15.1	Foreign Object Damage/Debris Prevention, Handling, Storage, Packaging, Preservation and Delivery	UTC
ASQR-20.1	Supplier Sampling Requirements	UTC
ANSI/NCSL Z540.3	Requirements for the Calibration of Measuring and Test Equipment	ANSI
AS9102	Aerospace First Article Inspection Requirement	UTC
ASQR-01 Form 3	Supplier Communication (SRI)	UTC

CPW10	Identification Marking - Items, Castings and Forgings	Pratt & Whitney - Canada
PWA 301	Raw Material and Process Substitution	Pratt & Whitney - US
PWA 310	Identification Marking Materials and Items	Pratt & Whitney - US
HS333	Identification of Parts Subassemblies and Assemblies	Collins Aerospace/Hamilton Sundstrand
OP-75-01	Control of Documented Information	QNP
OP-87-01	Control of Nonconforming Outputs	QNP
FM-71-01	Annual Eye Exam Form	QNP

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4. - Responsibilities

4.1 - The Quality Manager, or designee, is responsible for maintaining a documented quality system assuring compliance to ASQR-01 and all related customer quality specifications.

5. Specific Requirements

5.1 - QNP is responsible for satisfying all UTC purchase order requirements and ensuring the quality of all articles purchased by UTC. QNP facilities, systems, procedures, and work instructions are subject to UTC's inspection and/or approval. This approval shall not be used as evidence of effective control of quality. In addition, this approval does not absolve QNP of the responsibility to provide acceptable product or preclude subsequent rejection by UTC.

5.2 - Changes that may affect quality or product form, fit or function will be documented and communicated to UTAS members through ASQR-01 Form 2, and/or per specific member requirements. Examples of changes that may affect quality include changes in ownership, senior management, manufacturing location, and process or inspection equipment or techniques.

5.3 - Should there be a change in QNP AS9100 registration status; QNP will notify UTC in writing of such change within two business days.

5.4 - All documents, records, gaging, or other customer supplied product will be returned to UTC upon written notification from UTC member or when business with the UTC member has ceased.

5.5 - QNP must perform First Article Inspection (FAI). FAI shall be performed in accordance with SAE AS 9102 and the additional requirements below.

- A replication of product part marking (via photograph or sample) that represents production marking must be included within the FAI Report.
- QNP is responsible for assuring completion of the FAI Report for all finished part characteristics.

- At any time, a UTC member may request a complete FAI to be performed in lieu of a partial (delta) FAI.
- Additional requirements for AS 9102 FAI Form 1:
    - Field 11, Supplier Code: Record UTC Member assigned Supplier Code.
    - Field 12, P.O. Number: Record UTC Member Purchase Order Number.
- Additional requirements for AS 9102 FAI Form 3:
    - Field 14, for each characteristic: Record FAI Inspection Measuring Equipment used as a media of inspection. Record FAI inspector identification (e.g., signature, stamp, electronic authorization, etc.) used to signify the person that accomplished the inspection.

5.6 - Sampling Plan: Moved to 17.

5.7 - Functional performance/test data, when required, will conform to the requirements found in ASQR- 01.

5.8 - Verification of Purchased Product

5.8.1 QNP will provide raw materials test reports / certification results / laboratory analysis requirements (e.g., tensile strength, stress rupture, hardness, chemical composition, etc.), as defined by the product definition and/or the purchase order.

5.8.2 Where test reports are used to verify purchased product, the data in those reports shall be acceptable per applicable specifications. QNP shall periodically validate test reports for raw material.

5.8.3 Upon receipt of a UTC Member purchase order requiring Government oversight QNP shall notify the Government Representative

5.9 – Nadcap Requirement: When imposed by the Purchase Order, Drawing or Member specification, all special process suppliers in the supply chain shall be Nadcap accredited for the following special processes:

- Chemical Processing
- Coatings
- Heat Treating
- Material Testing Laboratories
- Non-conventional Machining and Surface Enhancements
- Nondestructive Testing
- Welding

5.10 – Moved to 18.4

5.11 - For documents containing technical data, QNP shall add prior to submission to the member, a statement at the beginning of the document indicating its technical data. Documents that do not contain technical data shall be identified as not containing technical data.

5.12 - QNP shall comply with the current revisions of ASQR, UTCQR, and other member specific quality requirements. QNP shall perform a gap analysis of the requirements of the documents and attempt to establish compliance within 60 days of the document effective dates.

6. Supplier Request for Information (SRI)

6.1 - QNP shall submit to the applicable procurement personnel a Supplier Request for Information (SRI) ASQR-01 Form 3 for the following items:

- An anomaly noted in a drawing or specification that could result in a nonconformance.
- Clarification or interpretation of a drawing, specification or requirements not requiring formal approval.
- A request for an alternate method to a quality system requirement.

Note: SRIs are not to be used for processing non-conformances.

6.2 - QNP will comply with established SRI's contained on the listing provided by the UTC Member. When a specific Approval of Supplier's Alternate Procedure (ASAP) is no longer required, the UTC Member will be notified.

6.3 - Verbal agreements and instructions are not allowed. QNP shall only accept agreements and instructions in writing (purchase orders, supplements/amendments, ASQR-01 forms, etc.). Verbal agreements and instructions shall not be construed as UTAS approval.

Email is not to be used to accept non-conformances or exceptions. All official communications must be made through the official forms.

All communications with UTC customers must be written in the English language. These communications include Quality Systems Manual and Procedures and process documentation which require approval or source qualification by UTC customer.

6.4 - QNP will comply with any UTC Member's material requirements for material and/or special processes when they are referenced in a specification, drawing, or when a purchase order stipulates ""Process Approval", e.g., UTAS Report 80/85 etc. lab testing will be performed in accordance with the UTC Member's requirements and approved sources as required.

6.5 - QNP will use only the applicable UTC Member's approved sources to perform NDT inspections specified on the Member's purchase order, engineering drawing, or any other technical data considered part of the contract. The NDT source shall be listed on the packing slip as appropriate.

6.6 - QNP will ensure that personnel, equipment, and processes are certified, where required on a UTC specification, engineering drawing, or purchase order. All employees will receive training appropriate to their job function as necessary.

6.7 - QNP will provide samples when available and inspection results for review when requested by a UTC member. If an inspection review is deemed unsatisfactory, corrective action will be implemented in a timely manner.

6.8 - Product not controlled to UTC purchase order requirements or received by a UTC member with authorized non-conformances shall be subject to rejection. In addition, QNP's processed used to meet the purchase order requirements are subject to UTC disapproval. An investigation will be conducted when notified by UTC that discrepancies or potential discrepancies have been found in the company's systems, processes, or product. The results of this investigation will be reported to the appropriate UTC Member's Quality Assurance within the time frame indicated, or 15 days when no time frame is specified.

7. Marking Requirements

7.1 - Product manufactured for UTC, or UTC end use, will be marked in accordance with the applicable UTC Member's requirements, unless otherwise specified on the engineering drawing or purchase order, e.g., PWA 310, CPW 10, HS 333.

7.2 - Product manufactured for UTC or UTC end use, will be marked with the appropriate acceptance symbol, when it conforms to all purchase order and engineering drawing requirements.

7.3 - QNP shall ensure the UTC registered trademarks is only applied to UTC end use articles. Product identified with a UTC Acceptance Symbol will only be shipped to UTC or a UTC approved destination.

7.4 - When material substitutions are made as permitted in PWA 301, the material used to produce the article shall be noted on the packing slip.

7.5 - Corrections to work instructions or documents must be recorded, dated and signed in ink by a qualified/authorized person. Original data must still be legible after the correction has been made. Electronic entries will be recorded; original data shall be legible and retrievable after the change.

7.6 - When purchasing material / product from a supplier for a UTC member's end use, QNP's purchase order will stipulate that the order is for the applicable member's end use. All applicable purchase order requirements will be flowed down to the supplier (i.e., ASQR-01).

7.7- A copy of the UTC purchase order, less pricing data, will be supplied to suppliers whenever UTC Source Inspection is requested on the purchase order to the supplier.

8. Eye Examinations

8.1 - Eye examinations (to include visual acuity and color vision, Jaeger Type 2 or equivalent) will be administered to all individuals performing visual inspection by a medically trained person. These examinations shall be administered on an annual basis (as a minimum) and the results of these examinations will be retained as quality records.

8.2 - Individuals failing to meet the minimum vision requirements shall have their job assignment reviewed by supervision to ensure that their inspection duties can be efficiently and effectively performed.

8.3 - Results of eye examination will be verified against criteria specified in ASQR-01 listed below

- Color Perception testing is required one time only. Individuals shall be capable of adequately distinguishing and differentiating colors used in the method for which certification is required, the process being performed or inspection activity. Documentation shall be retained. Records shall be retained for each individual.
- Individuals performing visual inspection (i.e. calibration, non–weld, in–process, layout, dimensional) shall be compliant with near vision requirements of Snellen 14/18, (20/25), Jaeger at not less than 12 inches.

Note: Vision tests may be substituted for the options listed above providing the equivalence is verified and documented by a licensed optometrist.

9. Detection and Removal of FOD

9.1 - QNP's FOD Program is documented in OP-85-01. This program is designed to be compliant with the requirements of AS/EN/JISQ 9146.

9.2 - Foreign Object Damage (FOD) – Damage to product caused by a foreign object

9.3 - Foreign Object Debris (FOD) – Foreign particles which could potentially cause damage to a product

9.4 - Examples of FOD may include:

- Food and beverage control;
- Part processing and assembly;
- Proper cleaning on internal cavities;
- Tool and small part accountability;
- Critical part openings;
- Loose objects;
- Oils or process residue.

9.5 - ASQR-15.1 defines requirements for Foreign Object Damage/Debris Prevention. Handling, Storage, Packaging, Preservation and Delivery of product, material, or services supplied to a UTC member company.

9.6 - At every step in the process, employees will perform a visual inspection to ensure parts are free from FOD. These areas include:

- In-process inspection
- Packing
- Final inspection
- Dispatch and shipping

9.7 - Should FOD be detected, the employee will take appropriate action commensurate to the nature and degree of debris or damage found. Such disposition may include:

- Removing and discarding damaged parts
- Removing contaminants via sorting and/or cleaning processes
- Rejecting the parts

9.8 - FOD occurrences shall be documented.

9.9 - All employees must maintain their work areas in a clean, 5S environment. Employees shall take steps to clean the immediate area after work is completed on one job and before another job is started to prevent co-mingling of parts and other items leading to FOD.

10. Packaging, Handling & Storage of Product

10.1 - All employees shall be trained to assure compliance with packaging, handling, shipping and storage requirements.

10.2 - Materials used in the packaging, handling, shipping and storage which have intimate contact with the part shall be free of contamination.

10.3 - Parts shall be packaged in a manner that will preclude any chance of one item making contact with another during normal handling operations.

10.4 - Protective and packaging materials shall be chosen based on the ability to adequately protect and prevent tearing from either internal or external sources.

10.5 - The following packaging materials are prohibited for UTAS Members.

- Miscellaneous wadding such as newspaper or rags and loose fill packing material such as plastic “chips” or “peanuts”.
- Polystyrene (Styrofoam),
- Foam-in-place
- Packaging material that disintegrates on the surface thus producing dust and debris which could then lead to Foreign Object Damage (FOD).
- Materials considered Non-recyclable by UTAS Members

10.6 - Volatile Corrosion Inhibitor (VCI) paper shall be stored in such a manner that is shall remain clean and not lose its VCI properties though open air evaporation per manufacturer’s instructions.

10-7 - Unit packaging for UTAS Members should not bear any other supplier markings or identification (logos, stamps, printed tape, etc.)

11. Measuring Equipment

11.1 - Calibration frequency may be adjusted based on results of previous calibrations. The certification shall be reviewed for indication of wear in comparison to the prior calibration. When a visible trend is identified, the calibration interval may be adjusted to compensate.

11.2 - The calibration interval must meet a minimum reliability target of 95% for measuring and test equipment in-tolerance at the end of their interval schedule.

11.3 - The significant out of tolerance condition limit is 200% of that specified by the manufacturer of the piece of equipment and/or inspection measuring and test equipment exceeds 25% of the product tolerance.

11.4 - QNP generally selects inspection measuring and test equipment with an accuracy ratio of 10 to 1 (product tolerance to equipment tolerance), unless otherwise specified. A minimum ratio of 4 to 1 (product tolerance to equipment tolerance) is required unless otherwise specified or UTAS member approval is received.

11.5 – Any Significant-Out-Of-Tolerance condition that has allowed product to be delivered, shall be evaluated for impact on quality and the appropriate UTAS members shall be notified within 24 hours through ASQR-01 Form 6.

11.6 - Potentially affected product shall be determined through the review of receiving/in-process/final inspection records that list the out-of-tolerance equipment's serial number. Residual stock from the same batch, if any, is rechecked using equipment verified to be accurate and proper disposition is made based upon results. Non-conforming product shall be processed per OP-87-01, Control of Nonconforming Outputs.

11.7 - Calibration procedure is in accordance with ANSI Z540.3

12. Nonconforming Product

12.1 - QNP shall use root cause and corrective action process consistent with the 8D Methodology in AS13000 for UTAS members.

12.2 - Product that has left QNP's quality control system and is known or suspected to be nonconforming will be handled per OP-87-01, Control of Nonconforming Outputs, and be reported to UTC procurement personnel. This notification report shall be made within 24 hours or the next business day after the defect was found. Reports shall be transmitted in a manner directed by UTC, and shall include, as a minimum, the part number, article nomenclature, the nature of the defect, and any other information necessary to isolate and control all articles involved. (Example: ASQR-01 Form 6)

12.3 Product for UTAS members that has been identified as nonconforming or potentially nonconforming shall be tagged/marked per OP-87-01, Control of Nonconforming Outputs, and contained in a secure location by quality department personnel to ensure that it cannot be used until properly investigated and dispositioned by the MRB (Material Review Board).

12.4 - Upon implementation of corrective action, to ensure effectiveness, QNP shall ensure that 100% over-inspection is performed on the deviated characteristics for a minimum of the next three consecutive manufactured lots.

12.5 - Articles deemed scrap will be handled as indicated in OP-87-01, Control of Nonconforming Outputs. Articles deemed scrap must be clearly identified and rendered unusable within 30 days of final disposition unless otherwise instructed, in writing, by the applicable Member. (Rendered unusable means the material cannot be returned into production by reword, salvage, or re-identification)

12.6 - Non-conforming product shall not be shipped to a UTAS member, unless a positive quality notification authorization is granted for the concession request submitted. (Example: a written QN number with disposition from P&WC - submitted through the P&WC supplier portal through the eQN system).

12.7- Nonconforming product dispositioned for rework shall be controlled with documented work instructions. All characteristics affected by the rework shall be 100% over-inspected after the rework is completed.

13. Quality Records

13.1 - Quality Records will be maintained as indicated in OP-75-01, Control of Documented Information

13.2 - Record retention periods are defined per the table below:

Part Type	Applicable to QNP	Retention Period
Flight Safety, Flight Critical Parts	NO	40 years
Manned Space Program Hardware	NO	30 years
All other parts	Yes	10 years

Record retention requirements are to be flowed down to sub-tiers as necessary on purchase order documents or SR-84-01 Supplier Quality Requirements.

Paper records shall be stored in a secure, dry location where they are protected from damage or deterioration. Electronic records shall be backed up on storage media that is maintained off-site.

Products made by QNP do not require radiographs or images, so retention periods are non-applicable.

14. Control of Software

14.1 - Control of Software is per ASQR-07.5.

14.2 - Coding standards shall be defined and include, but are not limited to:

- Software naming conventions (e.g. modules and executable software)
- Naming conventions, including developmental and production file names
    - Header information with a unique identifier and revision at a minimum

14.3 Changes in code shall be traceable to requirements. The change history for modifications shall be documented in the program header or supporting version control system.

14.4 Provide the operator (Test, Manufacturing or Engineering) with the ability to verify that the correct software has been loaded. This can be done by verifying the following type of software identification software:

- Name or unique identifier
- Version
- Date
- Time

15. Product Verification Testing

15.1 - On a semi-annual basis the Quality Manager will select, at random, a sample piece of raw material to be sent out to an approved laboratory for verification.

15.2 - At a minimum the testing shall include the following:

- Material Specification, Revision, Designation or Type
- Temper (if applicable)
- Testing Specification
- Request for Chemical Analysis
- Request for Mechanical Properties identification (e.g. Hardness, Tensile, Yield Strength, etc)

15.3 – Material Testing Laboratories used shall be Nadcap, A2LA or ILAC accredited.

16. Work Transfers

16.1 - QNP shall notify UTAS member through ASQR-01 Form 4 for any planned work transfers prior to implementation. As required, UTAS member approval shall be obtained for any planned work transfers.

16.2 - QNP does not typically perform planned work transfer for UTAS members. Should the need for a planned work transfer arise, a controlled process shall be developed to meet the specific UTAS member requirements and ASQR-01.

17. Sampling Plan

17.1 - All inspection sampling for UTC will be performed in accordance to ASQR 20.1 Supplier Sampling Requirements. Product acceptance inspection shall be 100% for all characteristics until the inspection requirements of ASQR-01 have been achieved.

17.2 - Unless indicated otherwise, all characteristics on nameplates and products manufactured by QNP are considered “Minor” with an AQL of 2.5%.

17.3 - Sampling plans have a “zero acceptance” number (C=0) and require 100% inspection of any deviating characteristic.

17.4 Sampled parts are to be selected randomly and should representative of the population of the lot. No additions or exchanges are to be made on the original sample.

17.5 - A minimum of 25 pieces must receive 100% inspection with no non-conformances and have an acceptable FAI on file before sampling can be applied.

17.6 - Should a different sampling method be used, UTAS member approval must first be obtained by submitting ASQR-01 Form 3.

17.7 - Sampling is not applicable to parts affected by a repair or rework disposition. All characteristics affected by the rework/repair are to undergo 100% inspection.

18. Inspection

18.1 - The table below outlines general inspection policies for UTAS member parts:

Characteristics to be inspected	All dimensions on the blueprint applicable to the part. Additional requirements specified on the purchase order, nameplate data sheet or other applicable documents.
Tolerances	Dimensional tolerances typically determined by the blueprint. Additional requirements specified on the purchase order, nameplate data sheet or other applicable documents.
ASQR-20.1 classification (Critical/Major/Minor)	All MINOR unless otherwise noted
ASQR-20.1 applied characteristic AQL	All 2.5 unless otherwise noted

Equipment/Gauge Type per characteristic type	
Length, width, hole span, hole to edge, printed features (text height, pad dimensions, etc.)	Caliper and/or Keyence IMM
Hole diameter	Pin gauge and/or Keyence IMM
Rounded corners	Corner gauge and/or Keyence IMM
Material Thickness	Micrometer
Angles	Angle Gauge and/or Keyence IMM
Surface Roughness	Surface Roughness Comparator
Color	Color Standard Swatch Books

18.2 - Visual acceptance criteria is determined by WI-86-07 Visual Inspection Acceptance Standard and member specifications. See the table below for examples;

Member	Visual Inspection Standard
Pratt & Whitney Canada	CPW543
Pratt & Whitney US	VIS-Master
Hamilton Sundstrand/Raytheon Tech.	HS12719

18.3 - Visual acceptance inspection is to be performed on parts after all manufacturing operations have been completed. Visual acceptance inspection is to be performed on 100% of parts (no sampling).

18.4 - Part marking is to be inspected on 100% of parts for accuracy and legibility.

18.5 - The illumination where parts are inspected shall be of a fixed white fluorescent light and a minimum of 100 foot candles at the surface of inspection

18.5.1 – Lighting conditions shall be verified once a month with a calibrated white light meter to ensure white light intensity is a minimum of 100 foot candles.

18.5.2 - Portable, adjustable lighting cannot be used to meet minimum lighting intensity, but may be used to additional lighting to minimum requirements for directional aid purposes.

18.6 - A Full Inspection Release (FIR) report for each production lot is required for the release of pre-production hardware against an Advanced Procurement purchase order. This report shall be made available upon member request.

19. Records/Objective Evidence

The retention duration for records referenced in this procedure are available on-line in the FM-75-01 Master Document List with Revision History.

Records are maintained in accordance with OP-75-01 Control of Documented Information.

20. Revision History

Revision, approved date, effective date, and a document change summary for this document is located on-line in the FM-75-01 Master Document List with Revision History.

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