
TITLE**Flight Safety Part Program**

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1. PURPOSE & SCOPE

This document defines unique requirements for suppliers and their sub-tiers for the control of Flight Safety Parts (FSP). It supplements but does not replace other UTC Business Entity requirements. Additional PW unique requirements are contained in the Addendum of this document.

Note: *Process Sheets / Supplier Documentation previously approved by UTC Business Entities need not be re-submitted, for new approval, until such time as the supplier's process / documentation is revised.*

*** 2. APPLICATION**

Supplier quality requirements defined in this document are agreed upon by and applicable to the following UTC Aerospace Business Entities (also known as Members):

Collins Aerospace	Collins
Pratt & Whitney	PW
Pratt & Whitney Canada	P&WC

Note: *These identifiers include all Original Equipment Manufacturing (OEM) and Aftermarket Operations (AO).*

3. DEFINITIONS

*** 3.1 Flight Safety Part (FSP):** For the purpose of this document the term Flight Safety Part (FSP) is synonymous with:

- PW Prime Reliable Part
- PWC Critical Rotating Part
- PWC Critical Part
- PWC Engine Structural Integrity Program (ENSIP) Critical Part
- HS Flight Safety Part
- SAC Flight Safety Part Program

* Revised

3.2 Critical Characteristic (CC): Any dimension, tolerance, finish, material, installation, assembly, manufacturing or inspection process or other mechanical feature or electrical attribute of a FSP which, if nonconforming, could result in an unsafe condition.

For the purpose of this document the term critical characteristic is synonymous with:

- HS Flight Safety Characteristics (FSC)
- SAC Flight Safety Critical Characteristic
- PWC ENSIP Critical Location (ECL)

4. REQUIREMENTS

4.1 General FSP Identification

4.1.1 FSPs are identified on the drawing, drawing related documents or Purchase Order (PO). A solid black five pointed star (★) on the drawing denotes a CC.

For FSP (finish part configuration) drawings without black stars, all characteristics are considered critical.

Notes:

- *HS Flight Safety Part drawings without black stars have no FSCs.*
- *For PW Flight Safety Parts (Prime Reliable Parts), CC is defined per [ASQR-20.1](#).*
- *For PWC ENSIP Critical Parts, all CCs are identified on the drawing as an ENSIP Critical Location (ECL).*
- *Sikorsky drawings will have solid five pointed stars but they may not always be black.*
- *Sikorsky drawings S61XX-XXX or 61XXX do not contain FSP Characteristic identification. Identification for these parts is contained on an SA 5193 form, which is an integral part of the purchase order.*

4.1.2 For supplier designed parts, the supplier and the applicable Member Engineering organization jointly identify the FSP and CCs.

4.1.2.1 Supplier shall identify CCs with a solid black five pointed Star (★) on the detail part and assembly drawings and then submit to the applicable Member Engineering organization for approval.

Note: *The applicable Member Engineering organization identifies the FSP CC on their procurement control drawings.*

4.1.2.2 After CC identification, suppliers shall ensure that applicable CC data is incorporated into their maintenance instructions.

4.2 Process Control

- * **4.2.1** For any process that affects a CC, the supplier shall:
- Provide traceability to the source by maintaining a list of sub-tier sources, including special process sources utilized in the manufacturing / processing / inspection of CCs.
 - Identify the facility location where work is performed.
 - Identify the manufacturing and inspection process operations, (i.e., feeds, speeds, equipment, tools and gages) to the extent required by the Member.
 - Ensure only sources qualified / approved by the Member are used for special processes. Other processes that affect CCs will be subject to approval as required by the Member.
 - Identify documents related to FSP processing “Flight Safety Part”, “Prime Reliable Part”, “Critical Rotating Part”, “Critical Part” and “ENSIP Critical Part” as applicable. Such documents include at a minimum:
 - Operation sheets
 - Purchase Orders (PO)
 - Inspection records
 - Shop travelers / Routers
 - Obtain Member initial approval for the process prior to initial delivery and all subsequent changes prior to delivery.
- * **4.2.2** When subcontracting any operation that affects CCs, supplier shall ensure that the PO to the sub-tier supplier identifies the part as a “Flight Safety Part”, “Prime Reliable Part”, “Critical Rotating Part”, “Critical Part” or “ENSIP Critical Part”, (as applicable), and invokes ASQR-09.1.

4.3 Process Documentation

- 4.3.1** Process documentation shall be written and maintained in English per [ASQR-01](#).
- * **4.3.2** Operation sheets / inspection checklists or equivalent shall include the following:
- A statement at the beginning: “FLIGHT SAFETY PART”, “PRIME RELIABLE PART”, “CRITICAL ROTATING PART”, “CRITICAL PART” “ENSIP CRITICAL PART”, (as applicable) Contains Critical Characteristics, critical processes and cannot be revised or alternate material used, without prior written approval from the Member.
 - Identification of all CCs or critical processes or inspections using a solid black five pointed star (★) or other method approved by the Member. If no specific characteristic is identified on the drawing, all operations are considered critical.
 - Supplier company name and location.
 - Part number and revision letter.

* Revised

- e) Provisions for recording CC inspection results including variable data for characteristics designated as critical per [ASQR-20.1](#).
- f) Inspection method(s) and equipment used for CC inspections including supplier's subordinate work instruction that affect CCs by number and revision.
- g) Equipment used during manufacture of a FSP that affect CCs including but not limited to tools, gauges, and fixtures.
- h) Name and location of all sub-tier suppliers performing operations that affect CCs noted in the appropriate step of the operation sheet.
- i) Reference(s) to drawing notes. When drawing notes are identified by a solid black five pointed star (★), the text of the note shall be included.

4.4 Initial Process Approval

Operation sheets and / or inspection checklists for operations that affect CCs shall be submitted for approval to the appropriate Member per PO requirements.

Note: Approval may require on-site source/part/process verification as determined by Member.

4.5 Process Revisions

4.5.1 Changes (including changes to sequence of operation) made to an operation sheet, inspection checklist or related approved documentation shall be submitted to the Member per PO requirements for review and approval prior to incorporation. Approval may require on-site evaluation as determined by the Member.

4.5.2 When relocating a process, within a facility or to a different facility, prior notification of the relocation to the Member is required. Approval may require on-site evaluation as determined by the Member.

4.6 Process Approval Notification

Suppliers will be notified of process approval by the applicable Member form.

4.7 Manufacture of Flight Safety Parts

Manufacture and inspect parts in accordance with approved process sheets including sequencing of all operations and steps within those operations. Deviations from the approved process are not allowed.

4.8 Part Traceability

4.8.1 Parts shall be identified at the earliest possible opportunity in their manufacturing process to maintain traceability. Documents shall provide traceability throughout the manufacturing process.

4.8.2 When specified by the forging drawing or any other purchaser document, the supplier's traceability procedure and records shall ensure each forging can be tracked to its original:

- forging lot
- heat treat batch
- location within the billet / bar
- location of the billet / bar relative to the entire ingot / heat

4.9 Inspection

4.9.1 Inspection plans for finished parts or assemblies shall be in accordance with the requirements of [ASQR-20.1](#).

4.9.2 Sampling per [ASQR-20.1](#) may be applied to raw material characteristics of parts which require further processing (e.g. casting, forgings, and sonic shapes, etc.) unless characteristics are identified with a solid black five pointed star (★), wherein 100% inspection will apply.

4.9.3 Supplier inspection personnel accepting CCs shall be designated by the Member.

4.9.4 Perform and document all First Article Inspection (FAI) per SAE AS9102 as required by [ASQR-01](#). Inspections of CCs shall be performed by an inspector designated by the Member. A Member may perform an on-site validation of the FAI.

4.9.5 Product acceptance and release subsequent to FAI shall be per PO or Member requirements. FSPs or services that affect CCs require, for each shipment, documentation of the revision letter / date of the approval process used.

4.10 Sub-tier Supplier Audits

4.10.1 Except for Nondestructive Inspection (NDI) / Nondestructive Testing (NDT), suppliers shall conduct annual "on-site" audits at all sub-tier sources involved in the manufacturing / processing of FSPs.

4.10.1.1 These audits shall be conducted and documented per applicable Member audit checklist. Reports shall be made available for review by Members, upon request.

4.10.1.2 Audits are not required when the sub-tier source can provide documented evidence that a Member FSP audit of their facility has been conducted within the past 12 calendar months.

4.10.2 Audit of NDI/NDT sources will be the responsibility of the Member.

Note: *Per HS requirements, HS conducts audits at all sub-tier sources involved in the manufacture/processing of HS Flight Safety Parts.*

4.11 Early Alert Notification

4.11.1 In the event a significant issue (e.g., NDI indications, metallurgical or chemical non-conformance, parts manufactured to other than the approved process, etc.) has occurred, the supplier must notify the applicable Member representative in writing within 24 hours as to the nature of the issue.

4.11.2 Early Alert notification shall be generated for issues whether or not they affect CCs and shall provide sufficient detail to allow for segregation of any potentially affected hardware pending a comprehensive investigation. Ref: [ASQR-01](#).

5. RECORDS/FORMS

5.1 Completed Quality records generated electronically or on paper shall be retained per the requirements of [ASQR-01](#).

* **5.2** Maintain records of CCs inspection results including recording of variable data where applicable.

5.3 When a supplier of CC items is going out of business or no longer intends to manufacture the part, the supplier must notify all applicable Members for instructions with respect to records.

* **6. REFERENCES**

6.1 It is the responsibility of the supplier to obtain copies of non-UTC documents specified herein. These include, but may not be limited to the following:

Document	Title
SAE AS9102	Aerospace First Article Inspection Requirements

6.2 Member specifications needed, shall be requested from the applicable Member's Procurement organization. Documents referenced in this specification include but may not be limited to:

Document	Title
ASQR-01	Aerospace Supplier Quality Requirements
ASQR-20.1	Supplier Sampling Requirements
HS15000	Requirements for Flight Safety Parts – Hamilton Sundstrand
SS 9211	Flight Safety Parts Approval, Quality and Test Requirements – Sikorsky Aircraft

* Revised

7. NATURE OF CHANGE

This document has been revised. Major changes include the following:

- Removed reference to UTC Power and UTC Human Space Flight Program as they no longer apply
- Added reference to “PWC Critical Parts” to paragraphs 3.1, 4.2.1, 4.2.2 and 4.3.2
- Editorial changes made throughout document, renumbering subsequent paragraphs
- PW Addendum Paragraph 3 – revised process approval requirements to reflect current per PW requirements
- PW Addendum Paragraph 5 (Inspection Requirements) deleted – Will follow requirements in ASQR-20.1

Addendum - Pratt & Whitney

1. Application

FSP applies when PW Quality Assurance Data Sheet (QAD) specifies Dimensional Control Standard for Prime Reliable Parts, DCS 178.

2. Definitions

Prime Reliable Parts (PRP): The definition for PRP is contained in DCS 178.

Disks, Rotors, Hubs, Integrated Bladed Rotors, Major Rotating Seals and Spacers which function or operate within a PW engine are examples of PRP.

Failure of these parts may cause substantial damage and could potentially result in an engine failure and possible loss of aircraft.

3. Requirements*** 3.1 Process Sheet Approval**

Process sheets shall be approved per Engineering Source Approval, PWA 370 requirements prior to shipment.

*** 3.2 First Article Inspection (FAI)**

Responsibility for performing a second independent inspection is determined utilizing PW Form 8006, 10% Random Selection Table, provided by the PW SQA Representative.

Rules for form usage are as follows:

P = Requires PW SQA Representative to witness or perform inspection

N = Supplier personnel shall conduct second inspection

Characteristics / features required to be inspected shall be those designated "in writing" by the PW SQA Representative.

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3.4 Yield Data Reporting

Suppliers shall maintain monthly yield data reports, utilizing Major Rotor Parts / Prime Reliable Parts Trend Data Form, MCL423.

Forms shall be retained by suppliers and available for review upon request.

3.5 Sub-Tier Source Lists

Suppliers shall submit annually a PW Form 7985, PRP Sub-tier Source List (per form instructions), listing sub-tier sources (e.g., forging, manufacturing, processing, etc.) utilized in the manufacture of PW PRPs.

NOTE: Mill sources are not required to be listed on PW Form 7985.

* Revised

*** 3.6 Sub-Tier Annual Audits**

Annual audits of sub-tier sources shall be performed utilizing PW Form 7990, PRP Subcontractor Audit Checklist. Forms shall be retained by suppliers and available for review upon request.

Annual audit exceptions apply when:

- mill sources, forging sources, and sources who perform only rough machining / machining to sonic configuration of forgings, or Nondestructive Testing (NDT)
- PW Module/Parts Centers are used as sub-tier sources
- evidence is available to show that PW has conducted a Quality Systems/FSP audit of the sub-tier source, within the past 12 calendar months

*** 4. References**

The following references support the implementation of requirements in this Addendum.

Document	Title
DCS 178	Dimensional Control Standard for Prime Reliable Parts
PWA 370	Engineering Source Approval

***** End of Document *****

* Revised