



Supplier Quality Requirements

Document No: SQR-1

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INTRODUCTION

This document contains the quality requirements for Safran Water & Waste Division suppliers. All suppliers of items used in the production of shippable product are required to meet these supplier quality requirements. In addition, suppliers to Safran Water & Waste Division must meet the applicable requirements of the Tooling Manual SQR-4 (latest revision). Compliance with the requirements in this document are demonstrated via an audit to a supplemental questionnaire, SQR-2, which is performed as necessary to maintain supplier approval status. Compliance with SQR-4 will be shown via the supplier audit forms which will be supplied to each individual supplier as applicable.

1. POLICY

- 1.1. The contractual obligations of SAFRAN WATER & WASTE DIVISION and the highly competitive and technical nature of the aviation industry, cause quality control requirements to assume a most vital role. The proportion of the SAFRAN WATER & WASTE DIVISION product fabricated by suppliers, the complexity of many such components, and the level of reliability make it impractical or impossible to adequately assure product quality by inspections and controls at SAFRAN WATER & WASTE DIVISION plants alone.
- 1.2. In order to assure product quality, appropriate inspections must be made, controls initiated, and/or data gathered for each phase of the product, from the refining and compounding of raw materials to customer service.
- 1.3. Therefore, since SAFRAN WATER & WASTE DIVISION is obligated to assure and certify the overall quality of the end product, including its service reliability, SAFRAN WATER & WASTE DIVISION must verify that each supplier of material going into the end product is aware of, is enforcing, and is recording the accomplishment of adequate quality controls.
- 1.4. This requires that all work performed pursuant to a SAFRAN WATER & WASTE DIVISION purchase order shall be subject to "Right of Entry" for purposes of inspection, surveillance, test and Quality Control audit by SAFRAN WATER & WASTE DIVISION, as well as SAFRAN WATER & WASTE DIVISION' customer or FAA when required, at all reasonable times, including the period of performance, and at all places, including the plant or plants of the supplier or any of its sub-tier suppliers engaged in the performance of work to fulfill the SAFRAN WATER & WASTE DIVISION purchase order and to documented information (e.g., documents, records), at any level of the supply chain.
- 1.5. This document or any part thereof referenced on the SAFRAN WATER & WASTE DIVISION purchase order shall be applicable to either foreign or domestic procurement.

2. SCOPE

- 2.1. This document contains requirements for the maintenance of a Quality Control system by the supplier to assure that materials and services meet the quality standards required by SAFRAN WATER & WASTE DIVISION. This Quality Control system shall be based upon considerations of complexity of design, interchangeability, reliability requirements, and manufacturing techniques. The system shall assure that adequate control of quality is maintained throughout the entire process of manufacturing, including receiving, packaging, and shipping. Objective evidence of inspections made to assure the maintenance of this system shall be available to SAFRAN WATER & WASTE DIVISION at all times. When requested, supplier shall make specified quality data and/or approved design data available in the English language.
- 2.2. This document is contractual with the suppliers when referenced in the purchase order specification or subcontract.

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3. AUTHORITY AND RESPONSIBILITY OF SAFRAN WATER & WASTE DIVISION QUALITY ASSURANCE AND CONTRACT REPRESENTATIVES

The SAFRAN WATER & WASTE DIVISION Quality Assurance representatives shall have the supplier's cooperation and perform the following:

- 3.1. Conduct initial and periodic quality control surveys to assure that the supplier has a quality control system that meets the requirements of this document and the purchase order.
- 3.2. Conduct a continuous planned review of all phases of the approved quality control system to assure compliance. If deficiencies are found, request the supplier to take corrective action.
- 3.3. Assist the supplier in obtaining interpretation of SAFRAN WATER & WASTE DIVISION quality, purchase order, drawing and specification requirements.
- 3.4. Conduct "First Article" inspection and planned inspections of components, assemblies and processes as judged necessary in time to determine that the products meet the Quality and Engineering requirements of the purchase order.
- 3.5. Conduct justified inspection to assure the incorporation of engineering changes, planning changes and other configuration changes.
- 3.6. Enter into Material Review activities at the supplier's facilities, either as a consultant or as a member, as determined by the purchase order requirements. Assist the supplier in obtaining SAFRAN WATER & WASTE DIVISION Material Review action on discrepant articles.
- 3.7. Coordinate reports of unsatisfactory material conditions received from the supplier and ascertain that the supplier establishes the root cause of such discrepancies and takes prompt and complete corrective action. Performance of the above by the SAFRAN WATER & WASTE DIVISION Quality Control representative does not relieve the supplier of his contractual Quality Control responsibilities.

4. PUBLICATION OF REQUIREMENTS

4.1. Procedure

The supplier shall establish and maintain written procedures defining his Quality Control system. These procedures shall be subject to the right of disapproval by SAFRAN WATER & WASTE DIVISION and shall include but are not limited to the following:

- 4.1.1. Management responsibility for the Quality Control function will be set on the supplier's organization chart. The responsibility for the Quality Control function will be placed so that schedules and cost will not compromise quality.
- 4.1.2. Requirements for a regular periodic review of the supplier's written quality control procedures and their quality control system. These procedures shall also include instructions for revising the procedures and system as the need for changes is discovered.
- 4.1.3. Copies of all forms and other records used by the supplier to record the quality status of the supplier's products purchased by SAFRAN WATER & WASTE DIVISION.
- 4.1.4. A description of the method by which the supplier indicated inspection action through the use of acceptance authority media such as stamps, signatures or initials, passwords, any other acceptance authority media recognized by the supplier QMS and including replica of stamp impressions.



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- 4.1.4.1. The supplier shall control the application of acceptance authority media (AAM) to retained document information as personal warranty of compliance and conformity that a task was completed as scheduled (sequenced), as planned (documented), and when performed (timely).
- 4.1.4.2. Supplier shall ensure that the use of AAM is clearly defined within its Quality Management System (QMS).
- 4.1.5. Complete procedures to provide control of the quality of all materials, processes, and/or tests, either produced within the supplier's plant or procured by him from other sources.
 - 4.1.5.1. If supplier is manufacturing assemblies with their own technical specifications/drawings, and those assemblies contain electronic components, supplier shall comply with SAFRAN WATER & WASTE DIVISION documents P017-11, P017-12, P017-13, and P-77001-1, if notified to do so by SAFRAN WATER & WASTE DIVISION.
- 4.1.6. A system of adequate inspection records covering the control, manufacture, processing, testing, and acceptance of parts or assemblies in the sequence of their manufacture, including provisions for split orders.
- 4.1.7. A system that will provide instructions for the detection of discrepancies together with a system of corrective action to prevent recurrence.
- 4.1.8. A requirement that the supplier may be required to submit a quality program plan for approval which is applicable to the product furnished to SAFRAN WATER & WASTE DIVISION.

4.2. Drawings and Specifications and Changes

- 4.2.1. The supplier shall maintain a system for the control of experimental, engineering, manufacturing, tooling, and test drawings and specifications. Such a system shall guarantee that only latest revision drawings and changes are available to operating personnel.
- 4.2.2. Whether design is the SAFRAN WATER & WASTE DIVISION' or supplier's responsibility and that design requires SAFRAN WATER & WASTE DIVISION approval prior to qualification and/or production, product and/or process definition changes shall not be made in design or manufacture without written approval by SAFRAN WATER & WASTE DIVISION engineering and/or Quality Assurance. Supplier shall inform SAFRAN WATER & WASTE DIVISION in writing of any and all proposed changes to the Product, processes and or tools used to make the product, or drawings defining the Product prior to implementing a change. This applies for both Class I changes (changes affecting form, fit, function, qualification documentation, top assembly drawings, and/or CMMs) and Class II changes (changes not affecting form, fit, function, qualification documentation, top assembly drawings, and/or CMMs). For all proposed changes, supplier shall provide all affected detail drawings, and an engineering analysis supporting the classification and impact of the change in a format specified by SAFRAN WATER & WASTE DIVISION. (The "Engineered Product Change Proposal" form may be requested from the assigned Buyer/Supplier Quality Engineer at SAFRAN WATER & WASTE DIVISION). If SAFRAN WATER & WASTE DIVISION disagrees with implementing a change or its classification, SAFRAN WATER & WASTE DIVISION shall inform supplier within thirty (30) days of supplier submittal. For Class I changes, supplier shall not implement the change without prior SAFRAN WATER & WASTE DIVISION written approval. If such approval is granted, all part numbers and the originals of all drawings and data shall be revised accordingly.



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Supplier shall not sub-contract to a non-US country any SAFRAN WATER & WASTE DIVISION contracted part without prior SAFRAN WATER & WASTE DIVISION written approval. Supplier shall not sub-contract any Category 1 or 2 parts (as defined in the FAA Category Parts List) without prior SAFRAN WATER & WASTE DIVISION written approval.

4.2.2.1. Additionally for these types of product, the supplier shall inform SAFRAN WATER & WASTE DIVISION prior to any major industrial change. This may include plant location or layout change, transportation method, ERP system change, top level organizational change, quality management representative change, major process change, and major supplier change.

4.2.2.2. Supplier shall ensure there are no duplicate serial numbers for the same basic part number. In all cases where a serialize procured product is undergoing a part number change (first or second dash), but the fundamental part is the same and being used in the same application, the supplier shall ensure no serial numbers from the previously shipped units with the same basic design or same basic part number are duplicated.

4.2.3. When the supplier is manufacturing to SAFRAN WATER & WASTE DIVISION' design, no deviation from the drawing and/or specification shall be made unless specifically authorized by Engineering and/or Quality Assurance and in writing on the purchase order and/or contract. If the supplier wishes to propose a design change to a SAFRAN WATER & WASTE DIVISION design, it shall be submitted via a form specified by SAFRAN WATER & WASTE DIVISION (The "Engineering Change Request" form may be requested from the assigned Buyer/Supplier Quality Engineer at SAFRAN WATER & WASTE DIVISION). In no event shall the supplier implement a change without SAFRAN WATER & WASTE DIVISION' express written authorization. Supplier shall inform SAFRAN WATER & WASTE DIVISION of nonconforming product and obtain SAFRAN WATER & WASTE DIVISION' disposition. The supplier shall notify SAFRAN WATER & WASTE DIVISION of changes in product and/or process, changes of suppliers, changes of manufacturing location, and obtain SAFRAN WATER & WASTE DIVISION', approval prior to implementation. SAFRAN WATER & WASTE DIVISION shall make available all drawings and specifications to the supplier's production and quality control personnel to fabricate and verify that the product meets the SAFRAN WATER & WASTE DIVISION purchase order requirements. If the supplier finds they do not have the latest revisions called out on purchase orders or drawings, it is supplier's responsibility to request the latest revision documents. This shall be done at time of order acceptance.

5. RECORDS AND STAMPS

5.1. Records

The supplier shall maintain, on file at the supplier's facility, records traceable to the conformance of product delivered to SAFRAN WATER & WASTE DIVISION. These records shall include but are not limited to the following:

5.1.1. Evidence of inspection to assure adherence to applicable drawings and specifications, which includes evidence of inspection for change incorporation. Complete results of the inspection of the first parts manufactured for qualification or production shall be recorded.

5.1.2. Evidence of complete liability for adherence to contractual Quality Control requirements. Evidence shall be furnished to SAFRAN WATER & WASTE DIVISION as specified in the contract and/or purchase order.



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- 5.1.3. Periodic inspection and control of inspection records, forms, precision tools, instruments and gauges calibration.
- 5.1.4. Evidence of statistical control (such as measurement data, SPC control charts, capability study, use of hard tooling to control variables, etc.) on all Key Characteristics defined on drawing(s) (see Appendix A).
- 5.1.5. Evidence of in-process control through rejection report including repetitive discrepancy control. In-process inspection records shall not be used to eliminate the final inspection or test of the end item.
- 5.1.6. Control and care of SAFRAN WATER & WASTE DIVISION and SAFRAN WATER & WASTE DIVISION customer owned materials, gauges, tools, and equipment.
- 5.1.7. Test records of all tests performed. Such test records will be traceable to acceptable tested material.
- 5.1.8. Certifications of personnel, material, and processes (heat-treating, plating, anodizing, welding, etc.) when and as required by specification, contract and/or purchase order.
- 5.1.9. Interchangeability and replaceability requirements.
- 5.1.10. Control of inspection stamps.
- 5.1.11. Discrepancy control and discrepancy disposition records. Quality control records shall be maintained on file and available to authorized SAFRAN WATER & WASTE DIVISION representatives.
- 5.1.12. The supplier shall retain such records for the remainder of the calendar year in which they were created plus an addition ten (10) years.
- 5.1.13. The supplier shall also ensure such records of the supplier's subcontractor(s) shall remain on file by the supplier's Subcontractor(s) or the supplier for the same retention period.
- 5.1.14. The supplier shall make such records available to SAFRAN WATER & WASTE DIVISION and its authorized representatives, its customers, and regulatory authorities.
- 5.1.15. When requested by SAFRAN WATER & WASTE DIVISION, the supplier shall make specified records available in the English language.
- 5.1.16. At any time during the identified retention period, at SAFRAN WATER & WASTE DIVISION' request, the supplier will deliver such records or any part thereof in format / media and within a time frame as agreed to by both parties, to SAFRAN WATER & WASTE DIVISION, at no additional cost to SAFRAN WATER & WASTE DIVISION.
- 5.1.17. At expiration of the retention period, the supplier shall notify SAFRAN WATER & WASTE DIVISION in writing. SAFRAN WATER & WASTE DIVISION reserves the right to request delivery of such records. In the event SAFRAN WATER & WASTE DIVISION chooses to exercise this right, the supplier shall promptly deliver such records to SAFRAN WATER & WASTE DIVISION at no additional cost on media agreed to by both parties. If SAFRAN WATER & WASTE DIVISION does not request the records, expired hardcopy records related to SAFRAN WATER & WASTE DIVISION shall be shredded. Expired electronic records shall be permanently deleted.



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5.2. Inspection Stamps

Inspection stamps shall be designed to identify the supplier and the supplier's inspector who affixes the stamp. When direct use of the inspection stamp is impracticable because of size, construction, finish or number of parts, the stamp shall be applied to an attached tag, label, sticker, or plate, or to the package containing the material. Stamps shall be used to control in-process manufacturing operations, tests and Materials Review. The supplier's final acceptance stamps shall indicate acceptance by the supplier of end items to be delivered to SAFRAN WATER & WASTE DIVISION.

6. FACILITIES

6.1. Measurement and Test Equipment

- 6.1.1. Measurement and test equipment includes all types of instruments, gauges, meters, calibrators, fixtures and other devices used to check, evaluate, verify and control the quality of materials or processes or used to verify the accuracy of other measurement or test equipment.
- 6.1.2. All measurement and test equipment shall be subjected to a visual, dimensional and operational inspection as applicable when initially received and at periodic intervals thereafter.
 - 6.1.2.1. Each piece of equipment shall have a record of the date by which the next inspection is required and the stamp or signature of the person who made the last inspection.
 - 6.1.2.2. The same information covering date of next inspection, stamp, or signature shall be physically attached to each piece of equipment.
 - 6.1.2.3. The necessity for and/or frequency of periodic inspection shall be based on objective evidence of the stability and continued accuracy of the equipment.
 - 6.1.2.4. The supplier's Quality Control procedures describe how the supplier's quality control system maintains and enforces the requirements.
- 6.1.3. All test and measurement equipment used to check product components and systems, to check materials that are used in a product, or to check control of the processing of a product, shall be checked against a standard that has greater accuracy.
- 6.1.4. The required accuracy of shop test and measurement equipment is the accuracy required to evaluate the most precise tolerances of any item required to be checked by the equipment.
- 6.1.5. The standards against which test and measurement equipment is periodically checked shall have their accuracy verified directly by or through a precise comparison with legal standards traceable to the N.I.S.T..

6.2. Tooling

- 6.2.1. The supplier must establish a system which will provide records for liability, identification and maintenance of tooling. Tooling that is required for producing product should be called out on shop traveler, process record or manufacturing plan.
- 6.2.2. Tools must be given periodic inspections to verify their continued accuracy and the results of such inspections must be recorded.



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- 6.2.3. Tools must be properly stored and controlled to prevent misuse, damage, and deterioration. Tools in storage shall be periodically checked for condition and preservation.

6.3. Foreign Object Damage

- 6.3.1. The supplier shall create and maintain a Foreign Object Damage prevention program in accordance with AS9146.

7. PROCUREMENT CONTROL

7.1. Supplier Control

SAFRAN WATER & WASTE DIVISION controls and monitors the performance of its suppliers, including on-time and quality performance.

7.2. Procurement by the Supplier

- 7.2.1. The supplier shall assume the responsibility for the quality of all purchased materials, articles, and services unless otherwise directed by SAFRAN WATER & WASTE DIVISION in writing. This responsibility includes:
 - 7.2.1.1. Selection of qualified procurement sources.
 - 7.2.1.2. Transmission of all SAFRAN WATER & WASTE DIVISION' purchase order requirements, including design, reliability, and quality requirements, to procurement subcontracts and purchase orders.
 - 7.2.1.3. Evaluation of procured articles against purchase order requirements.
 - 7.2.1.4. Effective provisions for early information feedback and correction of deficiencies.
 - 7.2.1.5. Providing technical assistance and training to suppliers when necessary to achieve required reliability and quality levels.
- 7.2.2. The supplier shall include in his subcontracts provisions necessary to allow SAFRAN WATER & WASTE DIVISION to determine and verify the quality of work and materials at any place, including the plant of any supplier, and at all production stages, of materials intended for incorporation into SAFRAN WATER & WASTE DIVISION products. Such investigations by SAFRAN WATER & WASTE DIVISION will be performed with the knowledge of and jointly with the supplier.
- 7.2.3. The supplier must have objective evidence on file, subject to review and acceptance by SAFRAN WATER & WASTE DIVISION Quality Assurance Representatives, to show that all materials and processing received by the supplier to be incorporated into SAFRAN WATER & WASTE DIVISION products meet the SAFRAN WATER & WASTE DIVISION purchase order requirements.
- 7.2.4. The supplier's organization having responsibility for quality control shall have authority to disapprove the use of sources which do not have a quality control system to meet the procurement requirements.

7.3. Receiving Inspection

- 7.3.1. All incoming materials shall be inspected by a SAFRAN WATER & WASTE DIVISION approved statistical quality control plan or 100 percent. Such inspection shall include visual, dimensional, functional, hardness, magnetic particle, penetrant, etc., or other methods necessary to affirm required material composition and quality.

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- 7.3.2. Material test reports shall be checked 100 percent against the purchase order requirements. Material certifications and test reports shall be filed and available upon request.
- 7.3.3. Laboratory facilities equipped to perform required tests shall be used by the supplier when testing material, either within the supplier's plant or independent laboratories.
- 7.3.4. An identification system shall be provided to preclude the use of wrong materials during manufacture.
- 7.3.5. All materials shall be properly stored to prevent damage, corrosion, etc., and will be properly segregated. Material will be used on a "first-in-first-out" basis and shelf life sensitive controls maintained.
- 7.3.6. Materials shall be stored in such a manner as to prevent withdrawal by unauthorized personnel.
- 7.3.7. Supplier's Receiving Inspection acceptance shall be based on the requirements of the supplier's purchase orders.
- 7.3.8. A list of supplier approved sources, along with supporting objective evidence of the capability of both manufacturers and process facilities, shall be available.
- 7.3.9. Records shall be kept of all functional or qualification tests conducted or certifications received on supplier purchased equipment.
- 7.3.10. A system shall be maintained to assure and record action to correct and prevent recurrence of discrepancies noted on supplier purchased items.

7.4. Validation of Raw Material Test Reports

- 7.4.1. Suppliers shall comply with section 7.3 as directed by SAFRAN WATER & WASTE DIVISION.
- 7.4.2. When supplier utilizes test reports to accept purchased raw material, the following requirements apply:
 - 7.4.2.1. Test reports shall be checked 100% against Supplier's requirements and applicable specifications
 - 7.4.2.2. Supplier shall periodically validate test reports for raw material accepted on the basis of test reports. That validation shall be accomplished by supplier or other independent party through periodic, scheduled tests of raw material samples. Schedules for frequency of tests will be established by Supplier based on historical performance of the raw material supplier.
 - 7.4.2.3. Supplier shall retain test reports provided by the raw material supplier, as well as Supplier's validation test results as quality records traceable to product conformance.

8. PROCESS CONTROL

- 8.1.1. The supplier's quality control system shall monitor all processing operations and shall enforce all applicable process requirements. Suppliers manufacturing to SAFRAN WATER & WASTE DIVISION detail drawings and specifications shall use SAFRAN WATER & WASTE DIVISION process specifications unless SAFRAN WATER & WASTE DIVISION Engineering and Quality Assurance approves an equivalent.



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- 8.1.2. Special process suppliers and/or supplier's subcontract special processes must use a vendor from the SAFRAN WATER & WASTE DIVISION Approved Special Process Vendor List. Special process suppliers and subcontracts shall comply with the applicable Engineering drawing specifications.
- 8.1.3. Process control shall not eliminate the requirements for final inspection and test of the end item, but it may be used to reduce these requirements. Records of process controls used as acceptance devices shall be retained as inspection records.

9. PRODUCT CONTROL

9.1. Proprietary Design

- 9.1.1. The requirements included under this heading apply to all non-SAFRAN WATER & WASTE DIVISION designs. The term "non-SAFRAN WATER & WASTE DIVISION designs", used in this document, means all supplier proprietary designs including those based on SAFRAN WATER & WASTE DIVISION or Government "form, fit, and function" specifications, but excludes all SAFRAN WATER & WASTE DIVISION designs.
- 9.1.2. The supplier will have available drawings, specifications, and special process descriptions for each item submitted to SAFRAN WATER & WASTE DIVISION Engineering and/or Quality Assurance for approval at the time that the item is submitted. These drawings, specifications, and process descriptions shall be adequate for the supplier to produce the items on a production line basis. This requirement is to assure that all production requirements have been considered in the design submitted for qualification and approval.
- 9.1.3. The supplier shall have production and inspection records to verify acceptance of the configuration and performance of the submitted article.
- 9.1.4. The supplier shall correct all workmanship and design deficiencies found in the submitted article and shall assure that appropriate drawing and/or specification changes are made to cover such corrections, following the requirements regarding changes in this document.
- 9.1.5. After acceptance by the supplier's Quality Control system, SAFRAN WATER & WASTE DIVISION Quality Control shall verify that the first production article meets the final design and quality requirements established as a result of first article approval.
- 9.1.6. SAFRAN WATER & WASTE DIVISION Quality Control will continue to verify that satisfactory quality levels are maintained during production by receiving inspection at SAFRAN WATER & WASTE DIVISION plant. If needed, it may request an inspection at the supplier's plant that may include verification, testing and equipment evaluation to assure its suitability for incorporation into SAFRAN WATER & WASTE DIVISION products from the standpoint of conformance to specification, workmanship and product reliability and safety.

9.2. Corrective Actions

- 9.2.1. The supplier shall provide details of corrective action in a timely manner as specified on SAFRAN WATER & WASTE DIVISION' Corrective Action Request (CAR) in a format specified by SAFRAN WATER & WASTE DIVISION CAB 8D Worksheet.
- 9.2.2. Any Corrective Action responses not received within the time specified may result in any or all the following: Escalation in the supplier's management chain, rejection of follow-on orders, and/or stop-payment of outstanding invoices.
- 9.2.3. Supplier may request an extension for completing a CAR. Extension requests shall be submitted to SAFRAN WATER & WASTE DIVISION' buyer, or designated Quality Engineer.



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Extension requests shall be submitted no later than one week prior to the CAR response due date, and will only be considered for valid reasons such as difficult or on-going extensive investigations, where supplier can show adequate progress has been made to date.

9.3. Manufacturing Control and Inspection

- 9.3.1. The supplier's quality control system shall assure compliance with Engineering drawings, manufacturing process specifications and quality standards during fabrication and testing of prototype, first article, or production articles, regardless of whether the articles are built to supplier or other specifications.
- 9.3.2. Quality requirements shall be specified on all work orders or process cards. Adequate measures shall be provided for the control of process inspections, such as: SPC, heat treat, magnetic particle, x-ray, etc. Results of the inspection shall be recorded.
- 9.3.3. Manufacturing Plan, shop traveler or process record shall show Part Number, Revision, description, P.O./Work Order number outlining process steps including identification and final inspection. This process record is to remain with parts at all times until stocked/shipped.
- 9.3.4. Requirements for the functional and physical interchangeability and replaceability shall be so specified in the purchase order. These requirements cannot be deviated from by Materials Review Board action. Any deviation from these requirements requires a contract change.
- 9.3.5. Completed materials shall be given final dimensional inspections before the application of protective finishes if so indicated by the drawing/specification. Materials shall be given final inspection after protective finish for part number, final acceptance inspection, stamps, satisfactory finish, etc. "Check Fits" will be accomplished when required by contract. Supplier inspection should assure full compliance with the SAFRAN WATER & WASTE DIVISION purchase order, blueprint and specification at the time of final inspection, either by reference to the purchase order, blueprint, specification or to the supplier's internal paper reflecting SAFRAN WATER & WASTE DIVISION purchase order requirements.
- 9.3.6. When supplier delegates product verification to improve the overall efficiency and product quality of processes considered stable and capable of fulfilling all requirements, the Operator Self-Verification Program (OSV) shall be comply with the requirements of AS9162.

9.4. Shipping, PO Quality Clauses, Inspection Requirements, Paperwork Delivery

- 9.4.1. In all cases, suppliers are required to perform in process and final inspections necessary to ensure the product meets all the requirements of the drawing and specification.
- 9.4.2. In all cases, suppliers are required to submit a Certificate of Conformance (C of C) with the shipment for production parts, whether of SAFRAN WATER & WASTE DIVISION design or purchased catalog items.
 - 9.4.2.1. The supplier's quality control system shall provide and enforce procedures for the proper inspection of shipments for completeness of manufacture, and to assure that the shipments meet all requirements for marking, packing and packaging, and for the presence of properly completed packing sheets and certification of conformance. Certificate of Conformance (C of C) for production parts, whether of SAFRAN WATER & WASTE DIVISION design or purchased catalog items, must be submitted at the time of shipment. Parts procured to SAFRAN WATER &



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WASTE DIVISION approved design, subsequent to SAFRAN WATER & WASTE DIVISION First Article approval, must include on the face of the C of C, all relevant material and process cert.'s traceable to those material and process cert.'s that are held on file and available for SAFRAN WATER & WASTE DIVISION' review.

9.4.3. Suppliers shall adhere to the Quality Clause called out on the Purchase Order as follows:

Q1 – Source Delegated Approval (Dock to Stock)

Q2 – Source Inspection Required

Q3 – SAFRAN WATER & WASTE DIVISION receiving inspection required

Q3IR – SAFRAN WATER & WASTE DIVISION receiving inspection required, AND supplier is required to submit a supplier inspection report

Q4 – First Article with material & process certificates required

9.4.3.1. In the case of Q1, the supplier must meet all the requirements outlined in this document under “Delegation of SAFRAN WATER & WASTE DIVISION Verification Authority to the Supplier.” Supplier is to create and retain the inspection records on file at the supplier’s facility.

9.4.3.2. In the case of Q2, the inspection records and the product will be presented to a SAFRAN WATER & WASTE DIVISION source inspector prior to shipping the product.

9.4.3.3. In the case of Q3, the supplier shall create and retain all the required inspection records at the supplier’s facility, and provide them to SAFRAN WATER & WASTE DIVISION upon request.

9.4.3.4. In the case of a Q3IR, the supplier shall submit all necessary inspection records with the delivery of the product.

9.4.3.5. In the case of Q4, the supplier shall deliver a completed First Article or Delta First Article package, in a format that meets the latest AS9102 First Article Inspection Requirements, with the delivery of the product.

9.4.3.6. Supplier may request sample forms for the Inspection Report and First Article Inspection Reports from the assigned Buyer/Supplier Quality Engineer at SAFRAN WATER & WASTE DIVISION.

9.4.4. Evidence of First Article, along with all material and process certifications, are required on first run parts, engineering and/or tooling changes.

9.4.4.1. Such documented First Article Inspection Report (FAIR) shall be per the latest AS9102 standard, and include:

- a) Conformance of each item of the bill of material with attached FAIR for each.
- b) On each FAIR, conformance to the respective (attached) raw material by reference number, traceable to the material certification (by heat number, test report number or other suitable means).
- c) Conformance specified by process type as called out on each drawing note.
- d) A complete listing of each specified dimension, allowable tolerance and a separate column for recording the actual condition for each.
- e) For hardware items (nuts, bolts, screws, etc.), itemize in a) above, reference to the P.O. for that item, and copy of which shall be attached C of C for each included in the FAIR package.



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- 9.4.4.2. Delta FAIR may be required to document compliance difference resulting from a revision change. Such delta FAIR shall reference the previously submitted FAIR for the earlier revision.
- 9.4.5. Where required by contract and/or P.O., evidence of capability shall be provided with product on designated critical items and key characteristics defined by SAFRAN WATER & WASTE DIVISION Engineering drawings (see Appendix A).
- 9.4.6. Verification by SAFRAN WATER & WASTE DIVISION or SAFRAN WATER & WASTE DIVISION' customer shall not absolve the supplier of the responsibility to provide acceptable product, nor shall it preclude subsequent rejection by SAFRAN WATER & WASTE DIVISION.
- 9.4.7. For in-process and final inspection, Supplier shall perform either 100% inspection, or inspect to a sampling plan in accordance with AS9138. Characteristics identified on the drawing as "Critical" must be 100% inspected on the 1st production run and thereafter per the following sample table:

Table 1
99% Initial Reliability

Lot sizes	Sample sizes
up to 100	50 (or all, if lot is less than 50)
101 to 200	58
201 to 300	62
301 to 400	64
401 to 500	65
501 to 1000	67
1001 to 5000	68
5001 and up	69

SAFRAN WATER & WASTE DIVISION reserves the right to disallow a supplier's statistical method for specific sites, programs, parts, or characteristics. In addition, SAFRAN WATER & WASTE DIVISION reserves the right to reinstate 100% inspection for characteristics identified on the drawing as "Critical".

- 9.4.8. Shipments to SAFRAN WATER & WASTE DIVISION containing ESD sensitive components must have warning labels on the outside of the shipping box to alert the handler that proper precautions for ESD sensitive devices must be observed.
- 9.4.9. Supplier must comply with Boeing Note T88 in regards to products made or manufactured with ozone depleting substances.

10. FUNCTIONAL TEST

- 10.1. The supplier shall assure that all functional equipment delivered has been tested and accepted to applicable functional requirements. Records shall be maintained to indicate the results of such testing. The supplier's functional test equipment shall be periodically checked to assure continued accuracy and records shall be maintained of such periodic checking.



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- 10.2. Testing of supplier procured items shall be accomplished by one or more of the following methods:
 - 10.2.1. Tests conducted in the plant of the supplier under the inspection control of the supplier's own personnel.
 - 10.2.2. Tests conducted outside the supplier's plant and witnessed by an inspector employed by the supplier who verifies test acceptance by stamping the tested item and related records.
 - 10.2.3. Tests conducted by a certified independent laboratory that will certify that the items meet test requirements.
- 10.3. Functional tests shall be performed strictly in compliance with the drawing, specifications, and other functional test data required by SAFRAN WATER & WASTE DIVISION purchase orders.

11. SPECIAL PROCEDURES

11.1. Discrepancy Controls

- 11.1.1. The quality control procedures will assure that nonconforming materials, tools, or test equipment will be identified as discrepant, segregated, and reviewed for disposition.
- 11.1.2. The supplier's Quality Control system shall assure that adequate records of Material Review actions on discrepant material are maintained and kept available for review and analysis. These records shall show the cause and responsibility for the discrepancy, the way in which the discrepancy was corrected, and shall note what action was taken to prevent its recurrence.
- 11.1.3. The supplier, manufacturing to SAFRAN WATER & WASTE DIVISION design, is not authorized to hold formal Material Review on any discrepant material. They shall submit his request for action to the SAFRAN WATER & WASTE DIVISION Quality Assurance Representative directed through SAFRAN WATER & WASTE DIVISION on an Advance Rejection Tag. Materials covered by such a request shall be withheld from production and delivery until SAFRAN WATER & WASTE DIVISION has completed the Material Review and advised supplier as to the material's disposition.
- 11.1.4. The supplier may request the Advance Rejection Tag and instructions, MS-4.6.6 form, for filling it out from the assigned Buyer/Supplier Quality Engineer at SAFRAN WATER & WASTE DIVISION .
- 11.1.5. The supplier cannot conduct Material Review actions on SAFRAN WATER & WASTE DIVISION design items unless and until specific authorization for such actions has been received from SAFRAN WATER & WASTE DIVISION. The supplier may request authority from SAFRAN WATER & WASTE DIVISION to hold formal Material Review action by establishing adequate procedures to be approved by SAFRAN WATER & WASTE DIVISION, and designating qualified Quality Control and Engineering personnel to act on the Material Review as authorized by SAFRAN WATER & WASTE DIVISION. Material Review decisions are binding upon all members of the supplier's organization. When the supplier is approved to hold Material Review actions, SAFRAN WATER & WASTE DIVISION reserves the right to reject the decisions of the supplier.
- 11.1.6. Suppliers of proprietary designed articles cannot conduct Material Review action on a discrepancy which will result in departure from the requirements of the SAFRAN WATER & WASTE DIVISION drawing and/or specification as noted on the purchase order or blueprint. Such departures must be authorized by SAFRAN WATER & WASTE DIVISION Material Review Board action.

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11.2. Reliability

The supplier's quality control system shall incorporate provisions for the assurance of required reliability and for the collection and transmission of reliability data as specified by SAFRAN WATER & WASTE DIVISION.

11.3. Single Standard Quality Control

Single Standard Quality Control is a policy of the SAFRAN WATER & WASTE DIVISION. There shall be no distinction between the quality level required for an item intended for aircraft use and an identical or similar item intended for commercial use.

11.4. Statistical Quality Control

11.4.1. Where required by SAFRAN WATER & WASTE DIVISION contract or P.O., and as called out on the engineering drawing, each key characteristic shall be subject to flow down of Advanced Quality Systems (AQS), control of variation, and must exhibit evidence of capability in accordance with SQR-1.

11.4.2. Statistical Quality Control applications used in acceptance of materials and/or processes by the supplier shall be approved by SAFRAN WATER & WASTE DIVISION Quality Assurance. While the supplier is being evaluated, use of published statistical control plans are permissible provided it is based on AS9138 or other generally recognized and accepted statistical control system, except any lot with known defects must be rejected (c=0).

11.5. Training

The supplier shall develop, implement, and document training programs as necessary by the supplier's management to maintain acceptable areas of performance in quality control, purchasing and manufacturing. Training programs shall include, as needed, familiarization with parts, components, equipment, systems, inspection and test equipment; and instruction in techniques and methods for procuring, processing, fabrication, inspection, test, checkout, quality control, statistical quality control, packaging and handling. Importance shall be given to the function and mission of the end item, to new articles, and to new or sensitive fabrication processes or materials. The training program shall include sufficient training to ensure personnel skill, knowledge and ability and a means of determining the level of professionalism of persons completing the courses. Inspector training programs shall, where practical, include the inspection of appropriate articles with known deficiencies in order to evaluate the inspector's skill.

11.6. Delegation of SAFRAN WATER & WASTE DIVISION Verification Authority to the Supplier

11.6.1. Suppliers granted authority to conduct product verification on behalf of SAFRAN WATER & WASTE DIVISION cannot further delegate that authority without written approval. If written approval is attained, suppliers must comply with the requirements of AS9117 for delegation of product verification.

11.6.1.1. Only suppliers that have their quality system found compliant by an on-site audit are subject to supplier delegation authority.

11.6.2. Suppliers granted authority to conduct product verification on behalf of SAFRAN WATER & WASTE DIVISION shall have procedure for:

- a) Identifying qualified delegate(s);

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- b) Maintaining the qualification of designated delegate(s);
 - c) Describing the process by which delegate(s) will accept product on behalf of SAFRAN WATER & WASTE DIVISION.
- 11.6.3. Ratings of exceptional suppliers with high performance high standards based on product history are required as well as an on-site audit of the supplier's quality system prior to granting delegated authority.
- 11.6.4. Only suppliers who have maintained less than 1% rejection rate over a period of 12 months and has demonstrated a high level of system and product quality may be considered.
- 11.6.5. Delinquent or absence of response to corrective action requests issued by the Quality Department shall result in immediate disqualification of delegation source approval.
- 11.6.6. Suppliers are to notify SAFRAN WATER & WASTE DIVISION immediately within 3 days after the day of discovery of any suspected problems with previously delivered product.
- 11.6.7. Product with known defects that cannot be reworked to drawing or specification must be submitted to SAFRAN WATER & WASTE DIVISION Engineering and Quality Assurance prior to shipping.
- 11.6.8. Delegated source responsibility does not apply to first articles, part revision due to engineering change or parts produced from a new tool or process change.
- 11.6.9. In those instances, parts shall be routed for SAFRAN WATER & WASTE DIVISION receiving inspection. Vendor shall submit a first article report as well as material and process certification.
- 11.6.10. Suppliers of "preferred" status shall implement the requirements of SQR-1.

11.7. Quality Control Audit Program

- 11.7.1. The supplier shall audit the adequacy of quality program procedures, inspections, tests, process controls, and certifications performed in each area on a timely basis. The audit shall be performed by an impartial team familiar with written procedures and standards applicable to the areas being audited, but not having specific line responsibilities in those areas.
- 11.7.2. The audit shall include examination of all quality operations and documentation, comparison with established requirements, notification of required corrective action, and follow up to assess results of corrective action. An example of an examination of an inspection operation would include, but not be limited to:
- a) A re-inspection of work accepted by the inspectors in the area.
 - b) An investigation of the availability of all required documents.
 - c) A determination of the familiarity of personnel concerned with required documents.
 - d) A review of discrepant material and corrective action taken.
 - e) An evaluation of the adequacy of acceptance and rejection documents.

11.8. Control of Industrial Changes



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11.8.1. The following is a list of what Safran Water & Waste Division considers "Industrial Changes". This list is not all inclusive. If as a supplier to Safran Water & Waste Division, any of the listed changes are being considered, they must first be communicated to Safran Water & Waste Division Purchasing Department so that they may be properly transmitted to Safran Water & Waste Division's customers as applicable.

- a) Plant location or layout change
- b) Transfer of Work or Production to another location
- c) Transportation Procedures (Including Incoterms)
- d) Major Enterprise Resource Planning (ERP) Changes
- e) Top level organization or personnel changes at key positions
- f) Major process changes
- g) Major supplier changes (including subcontractors)

11.8.2. All reported industrial changes must include information on the product impacted, a description of the change, a rationale for the change, risks and mitigation plans associated with the change, as well as a proposed schedule for the change.

11.9. Flow Down

The supplier shall flow down to external providers (i.e., suppliers) applicable requirements including customer requirements.

11.10.Obsolescence

11.10.1. Supplier shall be aware and proactively monitor all items and material used in the manufacture of orders for impending obsolescence issues. If obsolescence issues are identified, the supplier shall provide immediate notification to the buyer and impacted personnel, describing the obsolete item, reason for obsolescence, estimated date the product will no longer be available, and any proposed alternatives. Timely notification is imperative to allow sufficient time to identify alternates for the affected parts, and perform any necessary certifications, which may involve regulatory agencies.

11.10.2. The supplier shall procure or will maintain, during the performance of the orders, sufficient components and materials necessary to perform the orders, including obtaining commitments from its suppliers required to meet all requirements.

11.10.3. The supplier shall flow down and manage this requirement with its suppliers to ensure they can meet the supplier's obligations.

11.10.4. The supplier agrees to maintain an obsolescence policy/procedure adequate to ensure that the supplier and its suppliers can provide the buyer adequate notice that components and material necessary to supply additional new-order quantities can be purchased through the supplier by placing an order within 90 days of receiving said notice. Further, the supplier agrees to supply SAFRAN WATER & WASTE DIVISION with such additional products or components of which are due to be discontinued subject to an agreement to compensate the Supplier for its reasonable cost plus profit for such additional orders.

11.11. Control of Suspect or Counterfeit Product



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12. Document Revision History

Rev	Description of Change	Date	Approver(s)
A	Initial Release	7-Nov-03	ASD
	Added Introduction		
	3.4 – grammar update		
	3.7 – “cause” to “root cause”		
	4.2 - Changed Title to add “and Changes”		
	4.2.2 – Added detail on Supplier change control		
	4.2.3 – Added detail on Supplier change control		
	4.2.4 – Clarification on supplier responsibility for requesting necessary drawings		
	5.1.4 – Clarified SPC requirement		
B	9.2 – renumbered to create stand-alone section on Corrective Actions. Added detail in subsection on requirements and repercussions for CARS	13-Dec-10	GFL
	9.3 – Changed Title to add “Inspection”		
	9.3.5 – added clarification “if required by drawing/spec”		
	9.4 – Changed Title from “Shipping” to “Shipping, PO Quality Clauses, Inspection Requirements, Paperwork Delivery” Added detail regarding PO Quality Clauses		
	9.4.4.1 – added AS9100 std for FAI form		
	11.1.3 / 4 – Removed Figure 2. Refer to forms on web-site		
	Note – Figure 1 & 2 removed due to non-use or other source for form.		
C	4.2.2.1 – added control of industrial change 4.2.2.2 – added duplicate serial number control 9.4.3.5 – changed standard from AS9100 to AS9102	2/16/11	KPJ
D	11.6.5 Changed 3% threshold to minimum 1%	3/15/12	K.J.
E	Introduction – Added “Zodiac Water and Waste”, added “most current revision” statement 2.1 – added provision about documents in the English language 4.2.2 – added work transfer notification conditions	1/9/14	M.F.G.

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	4.2.2.1 – added “quality management representative” change notification 5.1.12 – Changed record retention period from 7 to 10 years 7.2.1 – added “Monogram” approved 7.3 – new section 8.2 – special process vendors no longer simply subject to Monogram quality approval; they must come from Monogram list 9.4.4.1 – Corrected statement, AS9102 was AS9100 9.4.7 – new section 9.4.8 – new section 11.6.1 – updated to call out AS9015 for delegation approval flow down		
F	Added Section 11.8 – Control of Industrial Changes	5/5/14	M.F.G.
G	Added Section 9.4.9 – Ozone depleting substances 11.4.2 – changed reference to MIL-STD-105 to SAE ARP9013	8/15/14	M.F.G
H	Revised Introduction section to add requirement for compliance to ZA-Q-1030. 9.4.4.2 – changed “is” to “may be”	10/29/14	M.F.G.
I	Update 5.1.12 to calendar plus 10 years for record retention	11/6/14	E.F.
J	Added section 4.1.5.1	6/13/17	M.F.G
K	Updated Introduction, section 6.3	6/4/18	L.S.
L	Added sections 5.1.13- 5.1.17, 7.1, 11.9, 11.10, 11.11, and 11.12 to comply with AS9100D requirements.	9/13/18	G.L.
M	Changed reference from ARP9013 to AS9138 which supercedes it.	5/10/22	S.J.
N	Header – Updated the title “SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION” to “SAFRAN WATER & WASTE DIVISION” Body – Update “SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION” to “SAFRAN WATER & WASTE DIVISION” throughout the document Introduction – Grammar updates and removed complimentary specification ZA-Q-1030 4.1.4 – Grammar update to include acceptance authority media requirements 4.1.4.1 – Added to reference acceptance authority media requirements 4.1.4.2 – Added to reference acceptance authority media requirements 4.2.2. – Grammar update and removed the website reference. Added details to obtain the “Engineered Product Change Proposal” form 4.2.3. – Grammar update and removed the website reference. Added details to obtain the “Engineering Change Request” form 6.1.5. – Grammar update 7.4.1. – Grammar update 7.4.2. – Grammar update 8.1.2. – Grammar update to reference comply on special processes specs. 9.2.1. – Added the CAB 8D Worksheet to reference the what	5/24/2022	J.R.

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	form to use 9.2.3. – Grammar update 9.3.6. – New section to reference AS9162 requirements 9.4.3.1. – Grammar update 9.4.3.6. – Removed the website reference. Added details to obtain the sample IR/FAIR forms 9.4.9. – Clarified the statement 11.1.4. – Removed the website reference. Added details to obtain the “Advance Rejection Tag” form 11.6.1. – Update standard from AS9015 to AS9117 for Delegated Product Release Verification 11.6.7. – Grammar update to specify notification time 11.10.2./11.10.3./11.10.4. – Grammar update 11.11.2b. – Grammar update		
P	Introduction – Removed the supplier registration certificate and omitted questions sentences. 11.4.1 – Removed “Appendix A of this document” note. 11.6.1.2 – Removed section as it is not applicable. 11.6.3 – Removed section as it is not applicable. 11.6.11 – Removed “Appendix A, and Section 4.20, AQS flow down” note. Removed SQR-1 Figure 1, 2, and 3.	10/10/2022	Scott Johnson
Q	Modified Critical Item inspection criteria to align with requirements of P021 (Inspection)	12/13/2022	Anusha Karunaratne
R	Introduction – Updated audit review requirements 4.1.2 – Grammar update	5/8/2023	Anusha Karunaratne
S	11.6.2.d – Removed per revision “P” removal of Figure 1. 11.6.9 – Removed “supplier shall not use acceptance tag” as statement is no longer applicable; changed “is to” to “shall” submit first article. 12.0 – Changed “Appr./Initials” column to “Approver(s)” in Document Revision History Table.	10/23/2023	Jimmy Rustrian / Robert Vann / Jack Creech



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SUPPLIER QUALITY REQUIREMENTS

APPENDIX A

ADVANCED QUALITY SYSTEMS



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STATISTICAL PROCESS CONTROL ("SPC") SUPPLIER REQUIREMENTS

The objective of the Supplier SPC program is to have all Suppliers to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION, utilize SPC as a means for reducing cost and improving product quality and service life. This will allow both the Supplier and SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION to shift away from detecting product defects to preventing them. This means preventing defects not only in products ready to be delivered to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION, but also preventing in-process defects in products or detail parts Supplier delivers to its in-house customers.

I. REQUIREMENTS SUMMARY:

- A. The requirements described herein are designed to establish the system framework that is necessary for successful Statistical Process Control ("SPC") implementation. Recognizing that successful SPC systems vary, it is the intention of SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION to use flexible requirements. SPC implementation should be continuous, focused on reducing the variability of the process, and should provide improvement in product quality. The application of SPC methods to key manufacturing processes shall provide statistical control of the processes to reduce the variability of their outputs and to directly or indirectly control product characteristics.

The SPC focus should be on the process and its ability to run consistently over time. This will require the use of statistical charting on continuous runs. Short-run charting techniques are recommended for any process which cannot be considered a continuous run process.

The off-line analysis will focus on process variation (lot to lot) for different part numbers, (lot to lot) for the same part numbers, shift to shift, operator to operator, and part to part in order to better isolate causes of process variation.

- B. Supplier shall not be entitled to an equitable adjustment, under the "Changes" clause or otherwise, in the price or fee of any P.O. which this Appendix 'A' applies, for performance of any task or effort required by or contemplated by this Appendix 'A'.
- C. Supplier shall not be entitled to recover from SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION, under any P.O. to which this Appendix 'A' applies, any amount paid by Supplier to any of its subcontractors which relates to an equitable adjustment, under the "Changes" clause or otherwise, for any task or effort required by or contemplated by the SPC requirements required to be flowed down by Supplier to its subcontractors.

II. DEFINITIONS

- A. Attribute Data - Data that must be counted (good/bad, or defect counting) for recording and analysis, such as the presence of a required identification, the installation of all the required fasteners or the absence of errors on a report. They can also be characteristics that are inherently measurable but the decision has been made to determine acceptability using a go/no-go gage.

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- B. Capability - When the process average plus and minus the 3 standard deviations (3 sigma) spread of the distribution is contained within the specification tolerance for variables data, or when at least 99.73% of individual products produced by the process meet specification for attributes data, the process is considered to be capable. Capability can only be determined after the process is in statistical control.
- C. Capability Indices - A measure of the capability of a process; Cp is the inherent capability of a process and is defined as the ratio of the specification tolerance divided by the process variation; the process variation is expressed as 6 sigma.
- $$Cp = (USL - LSL) / 6 \text{ sigma}$$
- Cpk is the capability of a process considering the distance between the process average and the closest specification limit. It is the ratio of the process average minus the closest specification limit divided by 3 sigma.
- $$Cpk = \text{The smaller of } CpkU \text{ and } CpkL,$$
- $$CpkU = (USL - \bar{X}) / 3 \text{ sigma}, CpkL = (\bar{X} - LSL) / 3 \text{ sigma}$$
- D. Characteristic - A distinguishing feature of a process or product on which variables data or attributes data can be collected.
- E. Common Cause - A source of variation that affects all the individual values of a process output; in control chart analysis it appears as random process variation.
- F. Control Characteristics - Those characteristics which directly or indirectly affect product quality - a control characteristic may be a key characteristic of the finished part, a characteristic of a detail part or a process parameter. A control characteristic may be controlled by Supplier's subcontractor.
- G. Control Chart - A special chart used to create a graphic display of values of an important characteristic of a process over time - the x axis is time and the y axis is a value - there is a center line based upon the average of the process variation and there are upper and lower lines (control limits) both based upon the historical variation of the process - a valid control chart must graphically display easily discernible variation.
- H. Control Plan - A document for reporting important information about key characteristics and control characteristics to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION - See Attachment C.
- I. Key Characteristic - A feature whose variation has the greatest affect on the fit, form, performance or service life of a finished part.
- J. Key Processes - Those processes which, when controlled, minimize variation in key characteristics or control characteristics - also, those processes responsible for high rejection rates or high quality costs - key processes may be performed by a Supplier's subcontractor.
- K. Process - The combination of people, equipment, materials, methods, measurements and environment that produce output of a product or service.

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- L. Process Parameter - A process feature (input) that is important to reducing variation in the process output. Key Characteristics may be monitored and controlled as an indicator of process condition when it is not possible to monitor Process Parameters.
- M. Special Cause - A source of variation that is intermittent, unpredictable, unstable; sometimes called an assignable cause - on a control chart it is a point beyond the control limits or a non-random pattern or trend within the control limits.
- N. Statistical Control - The condition describing a process from which all special causes of variation have been eliminated and only common causes of variation remain; evidenced on a control chart by the absence of points beyond the control limits and by the absence of non-random patterns or trends within the control limits.
- O. Statistical Process Control - The use of statistical methods or techniques, such as control charts, to analyze a process or its outputs and the actions taken to achieve and maintain a state of statistical control and to improve the process capability.
- P. Variable Data - Quantitative data, where measurements are used for monitoring and analyzing a process.
- Q. Variation - The inevitable differences among individual outputs of a process; the sources of variation can be grouped into two major classes: Common Causes and Special Causes.

III. SPC SYSTEM APPROVAL REQUIREMENTS:

Required prior to the issuance of SPC System Certification

The SPC System Approval requirements are as follows:

- A. Supplier shall submit to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION a written SPC procedure signed by an authorized representative. The SPC Procedure shall address as a minimum all of the following:
 1. Policy/Scope including Supplier's general policy for applying SPC, and its specific goals and commitments regarding SPC.
 2. SPC Structure which outlines departmental responsibilities and ownership.
 3. A training plan or procedure outlining the training of personnel in SPC techniques, philosophy and goals to ensure that employees are provided with sufficient training to fulfill their role in SPC implementation - the qualification and re-qualification of personnel shall be considered.
 4. A procedure for determining key processes, key characteristics and control characteristics - this should be based upon Supplier's knowledge of process parameters, product characteristics, and repetitive failures responsible for high rejection rates or high quality costs.
 5. Types of control charts and other statistical methods to be utilized as well as the criteria to be used for determining an out of control condition.



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- 6. The method by which process capability studies will be performed on each manufacturing process where SPC is applied. A valid capability study will use enough data to accurately represent the process distribution and to indicate with confidence that the process is in statistical control.
- 7. A continuous improvement plan to improve all key processes, especially those that are not in statistical control or not capable. It shall identify causes of variation and the associated corrective action.
- 8. A written local corrective action procedure outlining action to be taken by the operator upon an out-of-control condition or an out of tolerance part.
- 9. An SPC Milestone Plan indicating the steps necessary to meet the requirements for SPC System Certification and/or SPC Product Certification in the form of a Gantt chart.

B. Upon receipt, SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall review Supplier's SPC Procedures for completeness against Section III. If SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION deems Supplier's SPC procedures to be incomplete, SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall inform Supplier of the deficiencies and Supplier shall submit the remaining requirements. When Supplier's SPC procedures are complete, SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall notify Supplier in writing of SPC System Approval.

IV. SPC SYSTEM CERTIFICATION REQUIREMENTS:

Required prior to the issuance of a production request for bid or the award of a production P.O. by the agreed upon certification schedule.

- A. SPC System Certification allows Supplier to receive a request for quotation and purchase orders for any product to be produced using the certified system. SPC System Certification will be granted when Supplier has demonstrated a documented, functioning and effective SPC System made evident by the following:
 - 1. Management commitment to SPC.
 - 2. Assignment of SPC implementation to an individual or group, and a system for monitoring SPC progress in each manufacturing and assembly area.
 - 3. Documented SPC procedures.
 - 4. An adequate SPC training program for employees is in place.
 - 5. All manufacturing and assembly processes are identified in a list or flow chart form indicating which processes are utilizing SPC, and has an established and proven procedure for identifying key processes, key characteristics and control characteristics.
 - 6. Key manufacturing and assembly processes are documented, are being controlled with SPC, and reflect Supplier's selection criteria.

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7. An established procedure for calculating process capability that is acceptable to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION, and Supplier has evaluated the capability of a majority of key processes. A valid capability study will use enough data to accurately represent the process distribution and to indicate with confidence that the process is in statistical control.
8. A written continuous improvement plan for key processes or a written procedure describing the actions required for key processes where a Cpk of 1.33 or a 99.9% conformance to specification has not been achieved.
9. Appropriate SPC charting practices.

B. When Supplier has met the requirements of Section IV.A., it shall submit a written request for SPC System Certification.

1. An on-site review of Supplier's SPC system will be performed by SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION representative who will determine whether or not Supplier is in compliance with Section IV.A.
2. Prior to performing the on-site review, SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION' representative will require from Supplier, copies of the following: A current SPC Self-Evaluation, a flow diagram or list of all manufacturing and assembly processes indicating which processes are utilizing SPC, a sample process capability study including a control chart(s) showing that the process studied is in control, a continuous improvement plan, a summary of SPC training topics, and the written request for an audit.
3. When SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION has determined that Supplier is in compliance with Section IV.A., SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION will confirm in writing that the Supplier's SPC system is certified.

V. CONTINUED SPC SYSTEM CERTIFICATION REQUIREMENTS:

The Supplier shall maintain and make available for SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION' review a quarterly report, required after SPC System Certification has been awarded. Typically the report is updated in January, April, July, and October for the prior calendar quarter.

- A. Continued SPC System Certification is subject to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION' periodic review of Supplier's performance. The report shall consist of any minutes of meetings, training, current Control Plans on all processes/key characteristics being produced and capability results. Supplier shall use the attached forms (or equivalent). The quarterly report shall include all SPC applications utilized in Supplier's manufacturing and assembly areas. SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION may specify unique program requirements be addressed in the quarterly reports. SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall have the right to withdraw SPC System



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Certification anytime a review of Supplier's SPC system reveals a non-compliance with SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION' SPC System Certification requirements. SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION expects Supplier to continuously improve its SPC system.

- B. If SPC System Certification is withdrawn, Supplier becomes ineligible for additional procurement from SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION until Supplier regains SPC System Certification by complying with Section IV.A. SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall notify Supplier in writing if SPC System Certification is withdrawn, and shall delineate the action items required for re-certification.

VI. PRELIMINARY CONTROL PLAN AND FLOW DIAGRAM REQUIREMENTS:

Required when control plans are revised by adding or deleting key or control characteristics, or when requested by SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION.

- A. Supplier shall submit a preliminary SPC Control Plan, prepared in accordance with Attachment A hereof. Supplier shall use the attached form or computer generated form from the SQC software (or equivalent).
1. Supplier shall fill in the preliminary SPC Control Plan completely and shall include the key characteristics and control characteristics it has identified in accordance with Paragraph IV.A.5. Any key characteristics that have been identified to Supplier by SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION shall be included in the control plan.
 2. The submittal shall also include a block-to-block type flow diagram indicating the sequence of manufacturing operations and identifying key processes.
 3. SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION understands that key characteristics and control characteristics may not reflect the Cpk or percent conformance required for SPC Product Certification immediately after the award of SPC System Certification and that some key characteristics and control characteristics may change over time.
 4. When the capability of a key characteristic or control characteristic using variable data is below the required 1.33 Cpk, Supplier should perform a gage capability study, also known as a gage repeatability and reproducibility study, to determine what percentage of the key characteristic or control characteristic specification limits is being used by Supplier's measurement variation. Supplier must determine what percentage is acceptable for the particular application. Industry standards for acceptability vary from 10% to 30%. Supplier must take action to achieve the process capability of 1.33 Cpk. This may require improving the gage capability. In most cases a gage capability of 10% or less will be necessary.
 5. One of the most powerful tools for reducing variation in processes is design of experiments (DOE). DOE is particularly effective for identifying process parameters and settings that will lead to reduced variation in key characteristics and control characteristics. Supplier should use DOE at the design stage of both

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products and processes and to solve chronic quality problems where other techniques have failed.

6. Supplier may not delete key characteristics on the control plan without SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION' concurrence except for those key characteristics identified by the supplier. In order for Supplier to delete SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION identified key characteristics from the control plan, SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION concurrence in writing is required.
- B. Supplier shall flow down the SPC requirements of Section VI.A. to its subcontractors who are controlling variation in a key characteristic of a finished part.



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Attachment A

SPC CONTROL PLAN INSTRUCTIONS

The Product Certification SPC Control Plan is a document for reporting important information about key characteristics and control characteristics to SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION.

These instructions are provided to assist in the completion of the SPC Control Plan.

Please note:

- In the case of a key characteristic being produced by Supplier's subcontractor, designate the characteristic with an "(S)". All control plan information must be provided for that characteristic.
- When the control characteristic is the key characteristic, list that characteristic in both columns.
- In the case of a complex assembly, where numerous key characteristics have been identified, individual control plans for component part numbers may be necessary.
- All information must be filled in - please print or type.
- Example Control Plans are available at Supplier request.

The following information is required:

Key Characteristic

Identify the characteristic(s) that are most important to product fit, performance or service life. When the key characteristic is controlled by Supplier's subcontractor, indicate by adding "(S)".

Engineering Specifications

Identify the tolerance allowed by the specification controlling a dimensional or functional characteristic.

Control Characteristic

Identify the characteristic(s) and its value. Multiple characteristics should be grouped as a subset of the Key Characteristic they affect. When the control characteristic is controlled by Supplier's subcontractor, indicate by adding "(S)".

Process Step

Name the process where the control characteristic is being monitored. This should be the earliest point in the manufacturing/assembly sequence where the characteristic can be measured and should also correspond to the manufacturing flow diagram.



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Control Chart Used

Specify the type of control chart being utilized (e.g., X bar R, X-MR, np).

Sample Size

Identify the number of measurements in subgroup recorded on control chart. In the case of attribute data with varying subgroup size, identify the largest and smallest subgroup sizes.

Sample Frequency

Identify the interval between sample measurements recorded on control chart.

Initial Cpk

As a living document, the first will require a capability study to establish baseline data for improvement program. Enter initial Cpk here and on subsequent revisions showing progress. If attribute data is being used, indicate yield. Alternate methods of calculating capability used with non-normal distributions must be indicated with an asterisk (*). Attach description of alternate method to Control Plan.

Type, make and model of gage

Name of measurement method or device (e.g., micrometer, bore gage, visual). Give S/N and model where applicable.

Gage Capability

Provide the values obtained from the Gage Repeatability and Reproducibility Study. The first value will indicate the gage capability which is the six sigma spread due to the combined effect of repeatability and reproducibility. The second value will be in parenthesis and indicate the percent of engineering specification consumed. If gage study has not been performed, so indicate.

Process Step & Operation Number

Record the name of the process and operation number of the work sequence affecting the key characteristic on the process plan (mill, grind, lapping, etc.)

Key Process Parameters

Name of the parameters in the process that has the most impact on the manufacturing of the key characteristic (speed, feed, pressure, etc.)

Process Parameter Settings

List the operation settings for the key process parameter producing the key characteristic (e.g., 500 RPM, 8 in/min., 500 degrees for 1 hour, etc.).

Control Method

Enter the method used to ensure that key process parameters and settings do not change (e.g., new cutter every 10 parts, temperature chart recorder, control chart, etc.).

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DOE

Indicate "yes" if design of experiment was conducted to correlate sources of variation for the characteristic.

Part/Process Name

Description of part or family of parts as identified on purchase order, blueprint or specification.

Part Name

Identified on SAFRAN PASSENGER SOLUTIONS WATER & WASTE DIVISION purchase order or request for quote.

Team Captain

Name of project leader performing initial capability study.

Company Name

Enter name of Supplier.

Used-on Part Number

Next level drawing where part is used.

Date (original)

Date control plan was established.

Revision Number

Number of subsequent revisions.

Revision Date

Date of subsequent revisions.

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Attachment A
Control Plan

Advanced Quality System — Control Plan

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KEY CHARACTERISTIC								GAGE VARIATION		PROCESS VARIATION				
 Characteristic	Engineering Specification	Process step with measurement	Control Chart Used	Sample Size	Sampling Frequency	Initial Cpk	Type, make, and model of gage	Gage Capability	Process Step & Operation Number	Key Process Parameters	Process Parameter Settings	Control Method	DOE ?	

Part/Process Name _____ Team Captain _____ Date (orig) _____
 Part/Process Number _____ Company Name _____ Revision Number _____
 Used-on Part Number _____ Revision Date _____