


	SPECIFICATION		I-ET-3000.00-1000-972-1AL-026				
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	Items 2.2, 5.3.3, 5.4, 6.1, 6.2, 7.1.2, 7.3.1, 7.3.2, 9.1 e 9.4 removed.						
	Items 3, 5.1, 6, 6.3, Table 1, 7.1.1, 7.2.1, 7.2.2, 8.1, 8.2 and 9.2 revised.						
B	Items 4, 5.1, 5.4.1 d), 6, 7, 8, 9 e 10 removed.						
	Items 3, 5.3.4 c), 5.4.1 b) and 5.4.1 e) revised.						
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1. PURPOSE

This Technical Specification establishes the minimum quality requirements to be met in the supply of subsea exploration and production equipment for PETROBRAS.

2. SCOPE

The requirements set forth herein are complementary to ET-0000.00-0000-972- 1AL-001 - General Quality Requirement. In case of conflict this Complementary Quality Requirement prevails.

3. REFERENCES

- ABNT NBR ISO 9001 - Quality Management Systems - Requirements;
- ET-0000.00-0000-972-1AL-001 - General Quality Requirement (GQR).

4. INSPECTION PLANNING

For inspection planning, the supplier shall follow the general quality requirement stated in the contract review and additionally the following items.

4.1. In the event the supplier is not required to hire the Accredited Inspection Body (AIB) and has appointed multiple professionals as Responsible for Manufacturing Inspection (RMI), it shall be defined which professional(s) is/are qualified to issue the MRN.

4.2. PIM should only be performed once the Inspections and Test Plan (ITP) of the main equipment is approved by the RMI. It is acceptable for the ITP of subcomponents or subassemblies to be in the preparatory phase.


4.3. For supplies that require manufacturing at construction sites (Yard) due to infeasibility of manufacturing at the supplier's main facility owing to equipment size constraints, the supplier shall maintain a quality structure at Yard compatible with the complexity of the goods to be manufactured.

4.4. When the supplier possesses a system for verifying the traceability and validity of calibration of measuring instruments, the calibration certificates used during the quality control process do not need to be attached to the data book.

4.5. Manufacturing inspection at sub-suppliers rests with the Responsible for Manufacturing Inspection (RMI).

4.6. The Supplier shall maintain archived inspection records, whether original or electronic, for a minimum period equal to the lifetime of the equipment.

4.7. The supplier shall ensure that the signatures of the professionals on the inspection records allow for the tracing of the professional, the company, and the certification (where applicable).

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4.8. Responsible for Manufacturing Inspection (RMI) of facilities that are not required to hire an Accredited Inspection Body (AIB) may carry out inspections on sub-suppliers. In the event of the supplier chooses to carry out the manufacturing inspection on sub-suppliers through an inspection company, the latter shall comply with the AIB requirements established by the GQR.

5. INSPECTION AND TEST PLAN - ITP


5.1. The supplier shall prepare an ITP contained in its Quality Plan, following the standards established by ISO 9001, General Quality Requirement and in this Complementary Quality Requirement.

5.2. The equipment and components shall be classified according to the project standard and other contractual documents, for example: API PSL 3G. The categorization and classification of the equipment according to the contractual documentation shall also be included in the ITP and relevant documentation.

5.3. For each finished subassemblies of the equipment and components supplied (ex.: valves, swivels, electrical system, choke, main structure, flow lines) shall be prepared a specific ITP to be approved by the Responsible for Manufacturing Inspection.

5.4. An ITP shall be developed with critical items, considering at least the following features:

- a) exposure to the production and/or injection fluid and well pressure (pressure containing and/or controlling);
- b) components with standardized characteristics and/or dimensions that have interface with other equipment from other suppliers (interchangeability);
- c) hydraulic control or test circuits exposed to a high level of tension, including fasteners;
- d) main mechanical components of critical equipment and tool systems: connector locking and unlocking system (primary and secondary) and manual valve actuation system;
- e) relevant aspects of the design or manufacturing process, such as: pioneering design, operations or complexity of the manufacturing process and volumetric NDT throughout the manufacturing process;
- f) systems, devices and components for sealing (seals, rings etc.);
- g) items defined in the contractual documents, Technical Specifications and Material Requisitions;
- h) control system equipment: sensors, electrical and hydraulic connectors, electronic components, flowmeters, etc;
- i) main structures of equipment, including Production Adapter Base (PAB) or Tubing Head Spool (THS), Wet Christmas Tree (WCT), Manifold Systems (main structure and main modules), Pipeline and Termination (PLET) and Pipeline and Manifold (PLEM) and others that are exposed to loads that result in high stress levels;
- j) instrumentation valves applied as primary or secondary barrier for process fluid.

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5.5. The supplier shall submit to PETROBRAS the Inspection and Test Plan (ITP) with evidence of approval by the Responsible for Manufacturing Inspection (RMI) and the Project Quality Plan. These documents are subject to comments and shall be submitted to PETROBRAS at least 20 days in advance of the PIM. The documents shall be sent through the Corporate Services Platform (CSP), through a specific service for approval of manufacturing documents.

5.6. PETROBRAS may indicate the extent of its participation in monitoring the inspections and tests to be performed at the Supplier's and/or Sub-Supplier's manufacturing facilities at the time of analysis of the ITP. In cases where Witness or Hold Point activities are indicated by PETROBRAS in the ITP, the supplier shall send notification to PETROBRAS at least 45 calendar days in advance in the case of events abroad, or 15 calendar days in the case of domestic events, to allow sufficient time for travel planning.

6. MINIMUM MANUFACTURING INSPECTION ACTIVITIES



6.1. The steps listed below shall be considered as minimum hold points, in addition to those provided for in the GQR, by the Responsible for Manufacturing Inspection and shall be detailed in the ITP:

- a) Verify compliance with dimensional control, welding, NDT, painting, coating and testing procedures. Ensuring contractual requirements are met and that they have the necessary approvals and qualifications (where applicable);
- b) Incoming inspection (except for items which final inspection will be performed at the sub-supplier site);
- c) Final and intermediate assembly – verify standardized interface jigs application;
- d) Factory Acceptance Test - FAT (including Integrity, Functional and Seal test), as provided for in PETROBRAS contractual Engineering Technical Specifications;
- e) Electrical continuity test;
- f) Mechanical and electrical integration tests (SIT - Systems Integration Testing);
- g) Final inspection (Check list);
- h) Review of all manufacturing records provided in the ITP (MRB - Manufacturing Record Book), including non-conformity reports (NCR) issued during all manufacturing, assembly, testing and final inspection process.

6.2. Other inspection and testing activities required in the contractual documentation shall also be included in the ITP.

6.3. The RMI shall issue the MRN only after release through the FAT Compliance Letter signed by PETROBRAS, as provided for in the contractual technical specifications (where applicable).

6.4. The content of the Data Book and the timing of its issuance shall comply with the requirements outlined in the Technical Specifications or Material Requisitions of

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the equipment. In the absence of specific provision in these documents, compliance with the guidelines established in the GQR shall be ensured.

7. QUALITY MONITORING

7.1. Quality Meeting

7.1.1. Meetings shall be held between PETROBRAS and the Supplier with the purpose of monitoring quality across all manufacturing plants that produce equipment with Q-type inspection.

7.1.2. Meetings shall follow a minimum agenda, as follows:


- a) Presentation of the scope of supply by manufacturing plant;
- b) Pending project qualification issues;
- c) Quality management and performance evaluation of the main sub-suppliers;
- d) Main manufacturing non-conformities in the period, segregated by process;
- e) Non-conformities identified after delivery, especially those that had consequences related to the review of equipment design and/or adjustments in manufacturing processes;
- f) Monitoring of audit non-conformities;
- g) Schedule of tests planned for the next 60 days for critical equipment;
- h) Clarification of doubts about quality requirements and other contractual technical requirements.

7.1.3. The frequency and agenda of meetings may be adjusted throughout the supply, according to the needs of PETROBRAS and the Supplier.

7.2. Manufacturing Nonconformities

7.2.1. The supplier shall have control over all nonconformities generated during manufacturing.

7.2.2. In addition to the GQR, the supplier shall submit a monthly control of manufacturing nonconformities classified as medium, high and severe to PETROBRAS Quality Management. The control shall include the appropriate updates, an investigation schedule and an executive summary with equipment traceability, cause analysis, corrective actions, photos, effectiveness and scope of the actions. PETROBRAS reserves the right to analyze and comment on the procedures applied regarding compliance with contractual and regulatory requirements.

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7.3. Factory Quality Monitoring

7.3.1. PETROBRAS may carry out, at any time, regardless of the events established in the ITP, quality monitoring at the suppliers' and sub-suppliers' facilities with the aim of verifying the compliance of the manufacturing, inspection and testing processes in relation to the contractual requirements and internal procedures of the supplier and its sub-suppliers.

7.3.2. During the factory monitoring, the Supplier shall provide a suitable location for the monitoring team to remain.

7.3.3. During the factory monitoring, PETROBRAS shall have access to the areas involved in the manufacturing processes, documents and applicable procedures.

7.3.4. PETROBRAS may adopt verification lists based on the supplier's contractual requirements and internal procedures.

7.3.5. The supplier shall make representatives from the manufacturing sectors available during factory monitoring activities.


7.3.6. The frequency and/or extent of the manufacturing monitoring activity will be defined by PETROBRAS, considering, among other aspects, the criticality of the asset for operation, complexity of the manufacturing process, supply portfolio, occurrence of divergencies in delivered equipment and performance index.

7.3.7. Any deviations identified during quality monitoring activities shall be recorded and addressed in accordance with the provision of the supplier's quality management system.

8. DISPENSATION FROM HIRING AN AIB

8.1. In addition to the provisions established in the GQR, the supplier may be exempted from hiring an AIB at a specific manufacturing facility only if the following criteria are fully satisfied, including components supplied by sub-suppliers:

- Absence of high or severe non-conformity detected in a quality audit as defined in Table 1 of the GQR;
- Absence of sigh or severe non-conformity detected in quality monitoring as defined in Table 1 of the GQR;
- There shall not have more than three (3) NDO, Notice of Divergence Occurrence, open simultaneously, provided that there are no pending issues on the part of PETROBRAS in making the equipment available for the investigation process, if necessary.

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8.2. In the event of loss the exemption from hiring an AIB at the plant where the good is manufactured, the supplier is required to hire the AIB for a minimum period of 12 months or until the discrepancies are resolved, whichever is longer.

8.3. As an alternative to have approved qualification in the family of material in Supplier Registry, as stated in the GQR, the supplier may have a valid goods contract with PETROBRAS in the family of material subject to the exemption request.


9. QUALITY OF QUALIFICATION PROTOTYPES

9.1. Specific ITPs shall be developed for the manufacturing of mechanical components prototypes of subsea equipment that are subject to a qualification process, in accordance with the contractual requirements. The ITPs shall be prepared by the Supplier or Manufacturer in such a way as to meet, at least, the following guidelines:

- a) Applicable requirements of item 9.1 of the GQR.
- b) The ITP shall be structured into distinct manufacturing and qualification phases, according to the specific applicability of the component subject to qualification. The following is a typical breakdown for mechanical components:
 - Pre-assembly inspection (traceability, certificate analysis, non-destructive testing, dimensional inspection, visual inspection, welding, coating, etc.);
 - Assembly;
 - Hydrostatic Tests;
 - Gas Tests;
 - Tests at maximum/minimum temperature;
 - Hyperbaric tests;
 - Load tests;
 - MCV and MTU seating/coupling tests;
 - Functional tests;
 - Disassembly;
 - Post-disassembly inspection (dimensional, visual inspection, etc.).
- c) PETROBRAS shall be notified to witness without interrupting the manufacturing process (Witness Point) in the assembly activities, maximum/minimum temperature tests, final hyperbaric tests, load tests, seating/coupling tests, functional tests and disassembly. The other inspection events provided for in the ITP shall be considered monitoring points.
- d) PETROBRAS, at its discretion, may indicate the extent of its participation in the qualification process to be carried out.

9.2. The ITP shall be sent for analysis and approval by PETROBRAS Subsea Equipment Engineering 90 days before commencing the tests.

9.3. The schedule for the qualification process shall be provided according to the steps forecasted in the ITP 30 days before commencing tests.

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9.4. The advance notification of inspection is established in item 5.6. However, in cases where there is a PETROBRAS representative residing at the supplier or sub-supplier's facilities, the notification periods may be negotiated directly with the PETROBRAS representative.

9.5. If necessary, the supplier shall provide adequate resources, maintaining the capacity to assess an on-site inspection, which enable monitoring of inspections and tests at the supplier, manufacturer and sub-supplier remotely and in real time.

9.6. For activities whose intervention by PETROBRAS, as indicated in the ITP, is a Hold Point, if they are scheduled in accordance with item 9.2, PETROBRAS will notify the supplier if a representative is unable to be present, releasing the event so that the qualification process is not interrupted. In such cases, the supplier shall send a daily report, informing activity progress, all parameters, photographic records, etc.

9.7. Mechanical component parts resulting from the disassembly of prototypes that are undergoing qualification cannot be discarded without due authorization from PETROBRAS. It is required that such components are maintained and stored properly until PETROBRAS accompanies the inspection or provides specific and formalized instructions by record (email, meeting minutes, etc.) regarding their disposal or reuse. This provision aims to guarantee the integrity of the qualification process and ensure that all stages are strictly complied with in accordance with contractual requirements.

9.8. In the case of remanufacturing a prototype to product, specific Technical Specifications relating to the component to be reused shall be followed. The remanufacturing process shall fully comply with the requirements of the GQR and CQR.

9.9. Items 6, 7 and 8 of the GQR shall be followed for the manufacture of prototypes.