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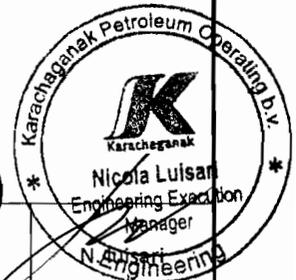
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Title: Test & Inspection of Goods Purchased for Piping Valves, Pipes, Fittings, Flanges, Gaskets & Bolts

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1.0 SCOPE

This document describes the required tests, certification and selection of items for additional testing and inspection.

This procedure is the primary reference guide for the testing and inspection of goods purchased which includes piping valves, pipes, fittings, flanges, gaskets and bolts.

This shall be read in conjunction with all the other referenced and or specified KPO and international standards and specifications / approved project documents.

2.0 REFERENCE DOCUMENTS

KP0-00-ENG-FRM-00001-E

KP0-00-ENG-SPC-00001-E

KP0-00-ENG-SPC-00008-E

KP0-00-ENG-SCH-00001-E

KP0-00-PIP-SPC-00005-E

KP0-80-PI P-SPC-00005-E

23858-00L-3PS-W000-00013

23858-00L-3PS-P000-00008

NACE MR017511S015156

KPO Valve Datasheets

Manufacturers QCP approved by COMPANY

All Relevant / Referenced International Standards

3.0 DEFINITIONS / ABBREVIATIONS

AIA (Authorized Inspection Authority) means personnel or their representative hired by the COMPANY to perform a quality assurance function.

A LOT shall consist of valve or components of the same nominal size, made from the same batch/heat of material, and heat treated (metallic) or moulded/sintered (non-metallic) together.

A LOT is limited as follows:

25 pieces for ON > 400mm (16")

50 pieces for 200mm (8) < ON < 400 (16")

100 pieces for ON < 200mm (8")

COMPANY means KPO (Karachaganak Petroleum Operating bv) and its designated representatives

FAT means Factory Acceptance Test

HIC means Hydrogen Induced Cracking

LTT means Low Temperature Testing

MANUFACTURER means any seller, provider or supplier of goods to the COMPANY

MPE means Magnetic Particle Examination

MTL means Material

PMI means Positive Material Identification

PO means Purchase Order

QCP means Quality Control Plan

QAIQC means Quality Assurance/Quality Control

TE means Technical Evaluation

UT means Ultrasonic Test

4.0 LEVELS OF INSPECTION

4.1 Inspection Level 1 - Full Inspection and Quality Control

This will include but not limited to on-site inspection visits to the production / manufacturing site, including subcontractors / suppliers through the production phase with reports issued.

Witness of Intermediate tests during manufacture shall be reflected in the QCP approved by KPO +Final Inspection, Review of Certification, Packing Inspection. Inspection visits will be documented and include the status of all related information, including all related documentation from the supplier.

Inspections shall include checking of materials against specifications, QA/QC activities, cross checking of supplier documentation, quantity control check, testing certification (example LTT) and verification of materials' certification.

All documentation shall be checked and stamped. Where possible each item shall be indelible marked / cross referenced to the proper certification.

AIA shall perform a Final Inspection which includes visual & dimensional checking of materials against KPO specifications, cross checking of supplier documentation, quantity control check and verification of materials certification, tagging, marking check & review of the certification.

Once documentation and quantities are accepted and quality checked, AIA shall issue a signed Inspection Release Note to COMPANY Warehouse, COMPANY Expediting Section and COMPANY Logistics & Customs Specialist.

Deliverable of the AIA: Inspection

Reports

Signed and stamped materials certificates

Signed and stamped Packing list

Inspection Release Note

4.2 Inspection Level 2 - Final Inspection

Final Inspection, Review of Certification, Packing Inspection Packing Inspection includes Packing list review & packing check.

This final inspection shall include checking of materials against COMPANY specifications, cross checking of supplier documentation, quantity control check and verification of materials certification.

The AIA shall perform a final acceptance inspection to make sure the goods comply with specifications required.

All documentation shall be checked and stamped. Where possible each item should be indelible marked / cross referenced to the proper certification.

Once documentation and quantities are accepted and quality checked, AIA shall issue a signed Inspection Release Note to COMPANY Warehouse, COMPANY Expediting Section and COMPANY Logistics & Customs Specialist.

Deliverable of the AIA

Inspection Reports

Signed and stamped materials certificates

Signed and stamped Packing list

Inspection Release Note

5.0 REQUIRED TESTS

5.1 VALVES

The required tests for valves are specified on the respective valve datasheets, requested for by means of the TE and finally the approved QCP could include the following;

LTT- All valves & their actuators, except check valves shall be subject to LTT testing, test and acceptance criteria per KPO standard document KPO-00-ENG-SPC-00008-E

Valve Operation Torque Test- All valves, acceptance criteria per KPO standard document KPO-ENG-SPC-00001-E, Para 6.3 & 13.8

Impact Test- All valves, acceptance criteria per KPO standard document KPO-00-ENG-SPC-00001-E, Para 6.9

Hardness Test- All valve bodies, acceptance criteria per KPO standard document: KPO-00-ENG-SPC-00001-E, Para 11.1.1

PMI -All stainless steel, alloy and nickel alloy material, acceptance criteria per the chemical composition of the relevant ASTM and NACE standards.

General Pressure Testing- All (100%) valves are inherently pressure tested as part of their FAT. The FAT certificate/s shall be presented to the KPO AIA for acceptance and approval. Acceptance criteria are per valve ratings, standards of manufacture and the relevant valve datasheets.

HP Backseat Test (Liquid/Gas)- Where specified on valve datasheet and approved QCP, acceptance criteria per valve manufacture standard

HP Closure Test (Liquid/Gas) -Where specified on valve datasheet and approved QCP, acceptance criteria per valve manufacture standard

LP Closure Test (Gas)- Where specified on valve datasheet and approved QCP, acceptance criteria per valve manufacture standard

Casting Quality Examination;

Per KPO standard document KPO-00-ENG-SPC-00001-E, Para 14.0 includes the following tests;

Visual Examination, acceptance criteria per MSS-SP-55

Magnetic Particle Examination (MPE), ASTM E709, acceptance criteria ASME 816.34, App II

Dye Penetrant Examination (DPE) -this should be conducted where MPE is not feasible.
ASTM E165, acceptance criteria ASME 816.34, App III

Radiographic Examination - For valve casting critical areas per ASME 816.34 Sect 8.3. Acceptance per ASME 816.34, Annex 8

Ultrasonic Examination -this may be carried out by agreement where radiographic examination is not feasible. Criteria as specified in KPO standard document KPO-00-ENG-SPC-00001-E, Para 14.2.2 f

5.2 PIPES, FITTINGS & FLANGES

PMI -All stainless steel, alloy and nickel alloy material, acceptance criteria per the chemical composition of the relevant ASTM and NACE standards.

Impact Test- All carbon steel low temp material, acceptance criteria per the relevant ASTM standard

5.3 GASKETS & BOLTS

PMI -All stainless steel, alloy and nickel alloy material, acceptance criteria per the requirements of the relevant ASTM and NACE standards.

Impact Test- Bolts, All carbon steel low temp material, acceptance criteria per the relevant ASTM standard

5.4 ADDITIONAL REQUIREMENTS API SA 10000 PSI/60K MATERIAL

5.4.1 Valves

In addition to the test requirements mentioned in Para 5.1 above, the following tests override such previously mentioned;

Pressure Test- Acceptance criteria API 6A and KP0-00-ENG-SPC-00001 App E

Impact Test- Acceptance criteria API 6A and KP0-00-ENG-SPC-00001 App E

5.4.2 Pipe, Fittings and Flanges

Test requirements per standard KP0-00-PIP-SPC-00005, App F

General;

Impact Test- Acceptance criteria per KPO standard document KP0-00-PIP-SPC-00005, App F, Para 1.3

Materials for Sour Service;

Hardness Test -Acceptance criteria per KPO standard document KP0-00-PIP-SPC-00005, App F Table 1, 2, 3 or 4 and associated notes respectively.

NACE HIC Test- Acceptance criteria per KPO standard document KP0-00-PIP-SPC-00005, App F Table 1 or 4 and associated notes respectively.

UT Plate Test -Acceptance criteria per KPO standard document KP0-00-PIP-SPC-00005, App F Table 2 or 4 and associated notes respectively.

6.0 SELECTION CRITERIA OF ITEMS FOR ADDITIONAL TESTING AND INSPECTION

The following methods shall be used in determining which items and the quantity, (*Number of pieces*) shall be selected for Testing & Inspection;

6.1 VALVES

Valves shall be tested and inspected in accordance with;

- a) Approved QCP
- b) Inspection level
- c) Selection criteria as described below

6.1.1 For valves rated CL150 to CL300 & CL800 socket weld, screwed or socket weld x screwed

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 20% per LOT with a minimum of one.
- b) A quantity of 20% per PO line item with a minimum of one.

For inspection the following criteria shall be apply;

Criteria of Selection for Inspection:

- a) 100% of tested items shall be inspected

6.1.2 For valves rated CL600 to CL2500

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 30% per LOT with a minimum of one.
- b) A quantity of 30% per PO line item with a minimum of one.

For inspection the following criteria shall be apply;

Criteria of Selection for Inspection:

- a) 100% of tested items shall be inspected

6.1.3 For valves rated above CL2500

For testing and inspection selection the following criteria shall apply;

Criteria of Selection for Testing:

- a) 100% of valves shall be tested

Criteria of Selection for Inspection:

- a) 100% of valves shall be inspected.

6.2 PIPES, FITTINGS & FLANGES

Pipes, fittings and flanges shall be tested and inspected in accordance with;

- a) Approved QCP / ASTM Standards
- b) Inspection level
- c) Selection criteria as described below

6.2.1 All pipes and fittings

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 20% per LOT with a minimum of one.
- b) A quantity of 20% per PO line item with a minimum of one.

For inspection the following criteria shall be apply;

Criteria of Selection for Inspection:

- a) 100% of tested items shall be inspected

6.2.2 All flanges rated CL150 to CL2500

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 20% per LOT with a minimum of one.
- b) A quantity of 20% per PO line item with a minimum of one.

For inspection the following criteria shall be apply;

Criteria of Selection for Inspection:

- a) 100% of tested items shall be inspected

6.2.3 For flanges rated above CL2500

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 50% per LOT with a minimum of one.
- b) A quantity of 50% per PO line item with a minimum of one.

For inspection the following criteria shall be apply; Criteria
of Selection for Inspection;

- a) 100% of tested items shall be inspected

6.3 GASKETS AND BOLTS

Gaskets and bolts shall be tested and inspected in accordance with;

- a) Approved QCP / ASTM Standards
- b) Inspection level
- c) Selection criteria as described below

6.3.1 All gaskets and bolts

For testing selection, one of the following criteria may be used;

Criteria of Selection for Testing:

- a) A quantity of 20% per LOT with a minimum of one.
- b) A quantity of 20% per PO line item with a minimum of one.

For inspection the following criteria shall be apply;

Criteria of Selection for Inspection:

- a) 100% of tested items shall be inspected