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**TECHNICAL JOB
SPECIFICATION**

192/1

REVISION 0

DATE 05/04/2011

HIGH PRESSURE (HP) TRANSMISSION SYSTEMS

VENT CLOSURES

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QUALITY ASSURANCE PAGE

CHANGES LOG

REVISIONS LOG

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REFERENCE DOCUMENTS

Job Spec. No. 830/1
[External Painting]
Job Spec. No. 970/2
[Shop Inspection of equipment and materials for NGT project]
Job Spec. No. 970/3
[Inspection and Test instructions]

Std Drawing No. STD-00-11-05
[Vent pipe Arrangement with Closure for Pipelines - Sections]

EU DIRECTIVE 97/23 (EC) Pressure Equipment Directive PED

ELOT EN 1092-1 (harmonised with EU Directive 97/23/EC- PED)
[Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, PN designated – Part1: steel flanges]

ELOT EN 1514
[Flanges and their joints - Dimensions of gaskets for PN -designated flanges]

ELOT EN 10208-2
[Steel pipes for pipelines for combustible fluids - Technical delivery conditions - Part 2: Pipes of requirements class B]

ELOT EN 13445-1 (harmonised with EU Directive 97/23/EC- PED)
[Unfired pressure vessels – Part 1: General]

ELOT EN 13445-2 (harmonised with EU Directive 97/23/EC- PED)
[Unfired pressure vessels – Part 2: Materials]

ELOT EN 13445-3 (harmonised with EU Directive 97/23/EC- PED)
[Unfired pressure vessels – Part 3: Design]

ELOT EN 13445-4 (harmonised with EU Directive 97/23/EC- PED)
[Unfired pressure vessels – Part 4: Fabrication]

ELOT EN 13445-5 (harmonised with EU Directive 97/23/EC- PED)
[Unfired pressure vessels – Part 5: Inspection and Testing]

ELOT EN 13480-series (harmonised with EU Directive 97/23/EC- PED)
[Metallic industrial piping]

1.0 **SCOPE**

1.1 **ITEM**

Vent Closures

1.2 **SERVICE**

Sweet natural gas with sporadic passage of water and glycol.

1.3 **APPLICATION**

To allow blow-down of M/R stations, pipeline sections and scraper traps respectively.

1.4 **ADDITIONAL REQUIREMENTS**

Additional information may be given in the Data Sheets and Material Requisition and these documents should be read in conjunction with this material specification.

Vendor shall be responsible to design vent closures and their components in accordance with requirements of applicable documents. In no event, however, are thickness, dimensions etc to be less than those shown on drawings unless specific written approval to the contrary is received from Owner.

Any conflict between requirements of this Specification drawing, Standards and Data Sheet shall be referred to Owner for clarification before proceeding with fabrication of the affected part.

2.0 **GENERAL REQUIREMENTS**

2.1 **DESIGN LEGISLATION AND STANDARDS**

- a) **ELOT EN 13445.**
- b) Requirements mandatory accepted by the National or Local Authorities where the vent Closures is to be located.
- c) Insurance requirements.

Any additional requirements of this specification shall be fulfilled.

2.1.1 **Design Data**

Refer to Data Sheet and Std Drawing **STD-00-11-05.**

2.1.2 **Calculations**

Shall comply with **ELOT EN 13445.**

Reinforcement pads, not less than **ELOT EN 13445** requirements as a minimum, shall be calculated and provided by the Vendor for all openings.

Reinforcement shall be equal to the greater of the requirements obtained from the followings:

- New vent closure subject to testing conditions with no corrosion allowance
- Vent closure subject to design conditions with the Corrosion allowance specified in Data Sheet.

2.2 UNITS

Metric

2.3 OPERATING TEMPERATURE RANGE

As per Data Sheet

2.4 DESIGN PRESSURE

As per Data Sheet

2.5 CONSTRUCTION

2.5.1 General

For information concerning dimensions and general layout, refer to Data Sheet. Pipes and components shall have minimum thickness of not less than the requirements of **ELOT EN 13445**.

In any event the minimum thickness shall not be less than 5 mm for Carbon and Low-alloy steel parts.

2.5.2 Closure

The closure shall be of the quick-closing type equipped with self-sealing gasket.

The closure shall be absolutely tight in closed position. Only silicone based grease may be used for treating the self-sealing gasket.

Gaskets will be of asbestos free type and they shall be specified on the drawings.

The opening mechanism shall be such that pressure equalization is achieved before the closure can be opened.

The closure shall be easily operable by one man. Closures with nominal diameter $D > 200$ mm shall be equipped with balance weight. Closures will be equipped with handles.

If so specified in the Data Sheet, the closure shall be welded on to a pipe stub and a welding neck flange, see Data Sheet. Closures for blow-down of landlines sections shall further be supplied with a venting valve see Data Sheet.

2.5.3 Pipes

According to **ELOT EN 13480**

2.5.4 Flanges

Raised face welding neck flanges in accordance with **ELOT EN 13445**, **ELOT EN 1092-1** and **ELOT EN 1514 series**. Bolt holes shall straddle the centerline of the Vent Closure.

2.5.5 Tolerances

The out of roundness U at butt-welding ends shall not exceed 0.5%.

2.5.6 Valves

The venting valve (optional, see Data Sheet) shall be a plug valve. Only valves manufactured in accordance with **ELOT EN 13445** may be used.

2.6 MATERIALS

2.6.1 General

Plate material according to **ELOT EN 13445**.
Castings will not be acceptable.

Materials shall conform to **ELOT EN 13445 PED 97/23** requirements (when applicable), unless otherwise specified on drawings or Data Sheet. Substitutions of materials, shapes and dimensions for those specified, shall be made only after written approval of Owner.

The steel shall comply with the requirements of **ELOT EN 13445**.

Only steel with specified minimum yield strength not higher than 360 N/mm² shall be used.

Forged steel and pipe material shall be normalized, killed and fine grained.

2.6.2 Impact Tests

On all pressure retaining components impact tests shall be performed on each material used according to **ELOT EN 13445**, consisting of three test specimens from the same heat as the actual delivery.

The test temperature shall be -20°C or lower with acceptance criteria of:

Mean value from 3 tests 28 joules or better with the lowest single value 22 Joules with all test-specimens being removed transverse to the longitudinal axis.

Tolerances on out-of-roundness of equipments shall conform to **ELOT EN 13445** and above-mentioned requirements. All tolerances must be referred to the completed Vent Closure, after heat treatment if required.

2.7 FABRICATION

2.7.1 General

Closures shall be manufactured in accordance with the requirements of the **ELOT EN 13445**.

2.7.2 Heat Treatment

Forged closures with greatest wall thickness exceeding 30 mm, shall be stress relieved after the completion of all forming and welding work.

Any heat treatment operations performed by Vent Closure Vendor and intended to enhance mechanical properties, shall obtain Owner approval.

The tempering temperature shall be 10° C higher than that required for PWHT, unless otherwise specified. Vent closures which have been submitted to PWHT shall have a warning notice painted on it at a convenient location stating:

STRESS RELIEVED NO WELDING PERMITTED.

Cold forming shall be followed by a normalizing.

2.7.3 Beveling

Welding ends shall be bevelled in accordance with **ELOT EN 13445**.
Dimensions of abutting pipe as per Data Sheet.

2.7.4 Repair of Surface Defects

Minor surface defects in the parent material may be removed by grinding, provided min. wall thickness after grinding > calculated min. wall thickness.

2.7.5 Welding Procedures / Welders Qualifications

In accordance with ELOT EN 13445.

2.7.6 Welding

The hardness of the weld seam and the heat-affected zone may not exceed 300 HV 10. Arc burns are not permitted.

2.7.7 Repair by Welding

Repair of weld seams are only permitted provided the repair procedure has been approved by the independent Accredited Inspection Body.

2.8 NON DESTRUCTIVE EXAMINATION

2.8.1 General

All joints on pressure retaining parts, except for nozzle weld seams with sizes below DN 100, shall be 100% radiographed and found acceptable in accordance with ELOT EN 13445. Attachment welds shall be magnetic particle examined.

2.8.2 Nozzles DN < 100

Nozzle weld seams shall be 100% magnetic particle or dye penetrant examines in accordance with ELOT EN 13445.

For weld-on nozzles the affected area of the shell plate shall be ultrasonically examined for laminations before welding. Laminations are not allowed.

2.8.3 Forgings

Forged caps shall be ultrasonically inspected over their whole area according to ELOT EN 13445.

2.8.4 Pipes

The pipes shall be ultrasonically examined according to ELOT EN 13480-5.

2.8.5 Beveled Edges

For all bevelled edges (plate and branches), which are to be welded, the closer 50 mm shall be ultrasonically inspected for laminations and other defects, according to ELOT EN 13445 and ELOT EN 13480 respectively.

Laminations extending into the face of the bevel end having a transverse dimension > 6 mm are not acceptable.

2.9 TESTING

2.9.1 Hydrostatic Test

The closures shall, before delivery, undergo a hydrostatic pressure test at a test pressure as specified in Data Sheets. The test pressure shall be maintained and recorded for at least one hour.

Temperature of water shall never be less than 4°C. Vendor shall take all necessary precautions to avoid brittle fracture of vent closures during the hydrotest.

In addition the equipment shall be immediately drained after hydrotest and carefully dried by blowing with air and an absolute absence of any pocket water must be ensured.

2.10 SURFACE TREATMENT

2.10.1 External

The closures shall be delivered in primed condition. Closures shall be painted as specified on Data Sheet.

Job Spec. No. 830/1 shall dictate surface preparation and painting required.

All parts painted with rich zinc paints or hot dip galvanized shall not be welded to the equipment.

The primer shall allow over-coating after 6 months of stocking on site without any significant reduction in adhesion of the following coats. If necessary this shall be achieved by the additional application of a sealer.

Machined surfaces shall not be painted.

Welding ends shall be capped and protected against corrosion or damage in transit.

2.10.2 Internal

As ordered in Data Sheets.

2.11 MARKING

Vent closures shall be marked with Vendors trade mark, Owner contract number, design pressure in bar, design temperature, test pressure in bar gauge, design factor, manufacturing number, and Independent Accredited Inspection Body's mark.

The text shall be in Greek.

Marking shall be stamped using rounded dies with type at least 4 mm high. The marked area shall be covered with a weather resistant clear lacquer and surrounded with a frame of reflective white paint.

3.0 TECHNICAL DOCUMENTATION

3.1 QUANTITY

Four copies of each inclusive of original for all documents and certificates, except otherwise specified.

Four copies of each inclusive of one reproducible for all drawings, except otherwise specified.

Also electronic files (word documents and/or AutoCAD documents as applicable) of all Documents and Certificates must be submitted by Vendor to the Owner.

3.2 DOCUMENT REQUIREMENTS

All drawings must be marked with Owner purchase order number and to the part number to which they apply.

All drawings (except those with tender) shall be addressed to Owner Central Document Control.

3.2.1 Within Tender

Dimensional standard drawings with list of parts, including overall weight.

Statement regarding materials used for all main parts with reference to material standards as specified herein above.

Completed Data Sheet (if not complete).

3.2.2 After Award of Contact (Before Production)

Preliminary outline drawings, detailed drawings and calculations shall be furnished within eight (8) weeks after telex of intent.

The following documentation shall be provided for the Owner approval:

- Outline drawings, eight (8) copies.
- Detailed construction drawings including parts list detailing material standard and grade, item description, and certification level, eight (8) copies.
- Detailed design calculations, eight (8) copies.
- WPS & PQR, three (3) copies.
- Heat treatment specification, three (3) copies.
- Non-destructive testing specification, three (3) copies.
- Pressure test specification, three (3) copies.
- Surface treatment specification, three (3) copies.
- An approved copy (BY THE INDEPENDENT ACCREDITED INSPECTION BODY) of the Vendors Detailed Test and Inspection plan.

Also electronic files (word documents and/or AutoCAD documents as applicable) of all Documents and Certificates must be submitted by Vendor to the Owner.

The plan should additionally show the control points at which the independent inspectors witnessing/approval is required, as per section 5 herein.

3.2.3 On Delivery

Comprehensive operation, maintenance and reconditioning manuals, thirteen (13) copies.

As built drawings, sixteen (16) copies.

Vent Closure Certification Package as listed above, five (5) copies.

Also electronic files (word documents and/or AutoCAD documents as applicable) of all Documents and Certificates.

4.0 **INSPECTION AND CERTIFICATION**

Certified drawings required two weeks after return of "For Approval" drawings.
Inspection will be performed by an Independent Accredited Inspection Body.
Inspection requirements are defined in the following documents

- a) Material requisition.
- b) Job Spec. No. 970/2.
- c) Relevant project specifications.
- d) Inspection clauses of ELOT EN 13445 and ELOT EN 13480.

Inspection procedures to be followed are detailed in **Job Specification 970/3** "Inspection and Test instructions".

5.0 **SPARE PARTS**

As a minimum two (2) spare gaskets plus 10% bolts and nuts (if any) shall be supplied.

6.0 **SHIPMENT**

One pipe closures shall be completely equipped with all external/internal (if any) attachments before shipment, unless otherwise specified on the drawings.

Where necessary closures and its components shall be supported by temporary stiffeners to avoid destruction and damage during transportation and erection.

All exposed machined surfaces shall be coated with rust preventive. All ends (flanges, welding etc) shall be protected with plastic covers and the threaded connections shall be plugged.

7.0 **GUARANTEES**

For guarantee requirements see the purchase Order.