DESFA
Hellenic Gas Transmission System Operator

HELLENIC GAS TRANSMISSION SYSTEM OPERATOR

357-359, MESSOGION AVE.,
115 25 ATHENS, GREECE
Tel.: 210 6501258
Fax : 210 6501551

TECHNICAL JOB SPECIFICATION
131/1
REVISION 0
DATE 05/04/2011

HIGH PRESSURE (HP) TRANSMISSION SYSTEMS

CONDENSATE COLLECTORS

QUALITY ASSURANCE PAGE

CHANGES LOG

REVISIONS LOG

0	05-04-2011	FIRST ISSUE	PQ DPT	VG
Rev. No	Rev. Date	REASON FOR CHANGE	Made By	Approved By

CONTENTS

REFERENCE DOCUMENT

EU Directive 97/23/EC "of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment" (PED)

Job Spec. No. 199/5
[Corrosion protection of field joints and uncoated pipeline components]
Job Spec. No 831/1
[Insulating Coating Materials]
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-00-11-03
[Condensate Collectors Sections and Details]

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 1591-1
[Flanges and their joints - Design rules for gasketed circular flange connections – Part 1: Calculation method]

ELOT EN 10204 (harmonised with EU Directive 97/23/EC- PED)
[Metallic products - Types of inspection documents]

ELOT EN 12560
[Flanges and their joints - Gaskets for class-designated flanges]

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 ISO 8501-1
[Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings]

SCOPE

1.0 ITEM

Condensate collectors.

1.1 SERVICE

Sweet natural gas with sporadic passage of water and glycol.

1.2 APPLICATION

The condensate collector shall collect condensates from the natural gas piping system.

1.3 ADDITIONAL INFORMATION

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

Vendor shall be responsible to design collectors and their components in accordance with requirements of applicable documents. In no event however, are thickness, 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, drawings, Standards and DATA SHEETS 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

Pressure vessels shall be designed, constructed and tested in accordance with:

a) **EU Directive 97/23/EC**

b) **ELOT EN 13445** (this European standard is mandated to EU Directive 97/23/EC).

c) Requirements mandatory as accepted by the National or Local Authorities where the collector is to be located.

d) Insurance requirements.

2.1.1 DESIGN DATA

Refer to Data Sheet and Standard Drawing.

2.1.2 CALCULATIONS

Shall comply with the design Standard. Maximum stress value in design calculations shall be defined as per applicable Standards.

Reinforcement pads, not less than Standard 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 following:

- New vessel subject to testing condition with no corrosion allowance.
- Vessel subject to design conditions with corrosion allowance specified in the 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

General layout as per **Std Drawing No. STD-00-11-03.** Vessel shells and caps shall have minimum thickness of not less than the requirements of Standard.

In any event the minimum thickness, shall not be less than 5 mm for carbon and low-alloy steel vessels, excluded of corrosion allowance specified.

2.5.2 CAPS

End caps shall conform to **ELOT EN 13445.** Caps shall be spun or pressed from blanks of sufficient thickness, to obtain the minimum thickness as shown on drawings.

2.5.3 FLANGES (if any)

Flange facing shall be raised face, according to **ELOT EN 13445**, **ELOT EN 1092-1** and **ELOT EN 1514 series**. Flanges shall be of weld neck type unless otherwise specified. Bolt holes shall straddle the centerline of the collector.

2.5.4 GASKETS (if any)

Gaskets shall be asbestos free and be resistant to natural gas and gas condensates and they shall be specified on the drawings.

All flanges shall have gasket surfaces finished in accordance with **ELOT EN 13445**, **ELOT EN 1092-1**, **ELOT EN 1514 series** and **ELOT EN 12560** as follows:

FLANGE FACE	GASKET TYPE	FACE FINISH
Raised & flat face	1.5 mm soft ring	"Stock"
Raised face	Spiral wound	Smooth (>3,6μm Ra)
Raised face	Metal jacketed	Very smooth (<1,6μm Ra)

2.6 MATERIALS

2.6.1 GENERAL

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

Materials shall conform to **ELOT EN 13445-2** requirements, unless otherwise specified on drawings or Data Sheets.

Substitution of materials, shapes and dimensions for those specified, shall be made only after written approval of Owner.

2.6.2 IMPACT TESTS

On all pressure retaining components impact tests shall be performed according to **ELOT EN 13445** on each material used, 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 as follows:

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.

2.7 FABRICATION

2.7.1 GENERAL

Pressure vessels shall be manufactured in accordance with the requirements of the **EU Directive 97/23/EC**, **ELOT EN 13445** and any additional requirements stated in this Specification. Tolerances on out of roundness of vessels shall conform to **ELOT EN 13445** and Owner requirements.

All tolerances must be referred to the completed vessel, after heat treatment if required.

2.7.2 HEAT TREATMENT

Cold-formed dished heads shall after forming undergo appropriate heat treatment.

Any heat treatment operations performed by vessel fabricator and intended to enhance mechanical properties, shall obtain Owner approval. When normalized and tempered materials are specified, the tempering shall be performed prior to any welding unless specifically otherwise authorized in writing by Owner. The tempering temperature shall be 10°C higher than that required for PWHT, unless otherwise specified.

Vessels which have been submitted to post weld heat treatment shall have a large warning notice painted on shell at convenient locations stating: STRESS RELIEVED VESSEL. NO WELDING PERMITTED.

2.7.3 WELDING PROCEDURES/WELDERS QUALIFICATIONS

Welding procedures and welders qualifications shall be as per **ELOT EN 13445**.

2.7.4 WELDING

Hardness of the weld seam and the heat affected zone may nowhere exceed 300 HV 10.

Arc burns are not permitted.

2.7.5 REPAIR BY WELDING

Only permitted in welds. Repair procedure shall be approved by a Notified Body.

2.8 NON DESTRUCTIVE EXAMINATION

All joints, except for nozzle weld seams with sizes below DN 100, shall be 100% radiographed and found acceptable in accordance with **ELOT EN 13445**. However, where radiography is unfit for detection of defects, joints shall be ultrasonically examined.

2.8.1 NOZZLES < DN 100

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

2.8.2 RT EXAMINATION

As per **ELOT EN 13445.** All weld seams shall be 100% RT examined.

2.8.3 PLATES

Plate material shall be ultrasonically inspected and shall satisfy the requirements of **ELOT EN 13445**.

2.8.4 WELDING ENDS

The finished welding ends on branches shall be ultrasonically examined to a minimum distance of 50 mm from, and including the bevel, and shall satisfy **ELOT EN 13445**.

2.9 TESTING

2.9.1 HYDROSTATIC TEST

Each unit shall be hydrostatic tested with a minimum test pressure of 2.0 x design pressure. Minimum hold time is 60 minutes.

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

Field hydrostatic testing for shop-fabricated items will be made, unless otherwise specified in Data Sheet

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 vessel shall be delivered in primed condition. Before the application of primer, surfaces shall be cleaned of dirt, millscale, weld spatter, grease and oil. Sharp edges shall be rounded to radius > 2 mm. Thereafter the surfaces shall be grit or sandblasted to degree Sa 2 1/2 as per **ELOT EN ISO 8501-1** (near white).

Priming shall be carried out with a solvent-based polyamide cured epoxy primer of best quality, that does not contain chromate or lead based anti-corrosive pigments.

The method of application shall be as recommended by the paint supplier. A uniform thickness and proper adhesion shall be ensured.

The dry film thickness of the epoxy primer shall be as per paint supplier's recommendation, however, not less than 50 μm.

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.

When required in order to allow for over-coating after 6 months of stocking on site. 1 coat (nominal 40 μm) of vinyl primer sealer shall be applied. The sealer shall have a color deviating from the color of the primer. Machined surfaces shall not be painted.

Item shall be grit blasting cleaned, according to **ELOT EN ISO 8501-1** (near white) followed by coating, according to **Job Specification No. 831/1.**

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

Job Spec. No. 199/5 shall dictate corrosion protection required.

2.10.2 INTERNAL

As per Data Sheet.

2.11 MARKING

The condensate collector shall be fitted with a stainless steel identification plate riveted to a hanaer and containing the item number and the information required by **EU Directive 97/23/EC** and **ELOT EN 13445**. The TEXT SHALL BE IN ENGLISH.

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 Document Control department.

3.2.1 WITH TENDER

Dimensional drawings with list of parts, including overall weight.
Completed Data Sheets (if not completed).

Statement regarding materials used for all parts with reference to material standards.

3.2.2 AFTER AWARD OF CONTRACT (BEFORE PRODUCTION)

Preliminary outline detailed drawings and calculations shall be furnished within 3 weeks after telex of intent.

The following documentation shall be provided for the Owner Representative approval:

- Detailed construction drawings including parts list detailing material standard and grade, item description, and certification level eight (8) copies.
- Design calculations eight (8) copies.

- electronic files (word documents and/or AutoCAD documents as applicable) of all Documents and Certificates.
- Description of production including forming, welding, heat- treatment, repair-weld procedure, surface treatment, etc. three (3) copies.
- Non-destructive testing specification three (3) copies.
- Pressure tests specification three (3) copies.
- Identification plate text three (3) copies.

The Vendor Detailed Test and inspection plan, approved copy (BY THE NOTIFIED BODY) shall be forwarded to the Owner as soon as available. The plan should show the main control points at which THE NOTIFIED BODY witnessing/approval is required, as per section 4 herein.

3.2.3 ON DELIVERY

As built drawings sixteen (16) copies.

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

CONDENSATE COLLECTOR CERTIFICATION package as listed above five (5) copies.

Certified drawings required two weeks after return of "For Approval" drawings.

4.0 INSPECTION AND CERTIFICATION

Inspection will be performed a Notified Body.

Inspection requirements are defined in the following documents.

a) EU Directive 97/23/EC

b) Material requisition.

c) Job Spec. No 970/2

d) Relevant project specifications.

e) Inspection clauses of applicable specifications.

Inspection procedures to be followed are detailed in **Job Spec. No 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 piece collector shall be completely equipped with all external attachments before shipment unless otherwise specified on the drawings.

Where necessary collectors and its components shall be supported by temporary stiffeners to avoid distortion 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 all threaded connections (if any) shall be plugged.

7.0 GUARANTEES

For guarantee requirements see the Purchase Order.