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HELLENIC GAS TRANSMISSION SYSTEM OPERATOR

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TECHNICAL JOB SPECIFICATION

OA-7

REVISION 1

DATE 22/09/2011

LIQUEFIED NATURAL GAS PLANTS

AUTOMATIC CRYOGENIC TANK GAUGING

QUALITY ASSURANCE PAGE

CHANGES LOG

- Changes in para 1.3
- Changes in para 2.1
- Changes in para 2.2.1
- Changes in para 2.4.1

REVISIONS LOG

1	22-09-2011	DESFA COMMENTS	PQ DPT	VG
0	03-06-2011	FIRST ISSUE	PQ DPT	VG
Rev. No	Rev. Date	REASON FOR CHANGE	Made By	Approved By

CONTENTS

REFERENCE DOCUMENTS

ELOT EN 1759-1
[Flanges and their joints - Circular flanges for pipes, valves, fittings and accessories, Class designated - Part 1: Steel flanges, NPS 1/2 to 24]

ELOT EN 10088-2
[Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes]

ELOT EN 60079-1
[Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"]

ELOT EN 60079-26
[Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga]

EU DIRECTIVES

LVD 2006/95/EC
[Harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits]

EMC 2004/108/EC
[Approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC EMC]

ATEX 94/9/EC
[Equipment and Protective Systems intended for use in Potentially Explosive Atmospheres]

1.0 GENERAL

1.1 This specification, together with the technical volume and data sheets, covers the requirements of materials, design testing, marking, and shipping for an AUTOMATIC TANK GAUGING SYSTEM.

1.2 The related standard referred to herein and shown below shall be of the latest edition prior to the date of Owner's enquiry.

ELOT EN 60079-1 – "Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures d"

1.3 Field equipment will be located in a hazardous area classified as Zone 1, GAS GROUP IIB, TEMPERATURE CLASS T3, in accordance with **ELOT EN 60079-1**. All field equipment shall, in addition to being suitable for the hazard area classification, be weatherproof. Equipment shall be certified by an Accredited Body and a CE mark shall be affixed and CERTIFICATE shall be included by Vendor with his bid.

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1.4 The remote display units will be located inside an air-conditioned Control room classified as a Non Hazardous area will be performed through a DCS inside the Central Control Room (non Hazardous air conditioned area).

1.5 Vendor shall highlight in his bid all deviations from his specification.

1.6 All conflicts between the requirements of this specification related specifications, technical volume or data sheets shall be referred to the OWNER for clarification before proceeding with manufacture of the effected parts.

2.0 DESIGN

2.1 Each automatic tank gauging tank gauging system shall comprise:

1 – LEVEL GAUGING DISPLACER / TRANSMITTER
1 – LOCAL LEVEL INDICATOR
1 – RESISTANCE BULB AVERAGING TEMPERATURE ELEMENT

Remote level indication and remote temperature indication will be performed by a DCS inside Control Room.

(See Paragraph 2.4 for information on additional indicators).

The present requirement is for two independent tank gauging systems per storage tank. Instrumentation for all tanks is required.

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2.2 FIELD, CONTROL ROOM INTERFACE

2.2.1 [1] Signal transmission from field mounted level transmitter and resistance bulb, shall be certified intrinsically safe, to certification standard **ELOT EN 60079-26** IP65.

2.2.2 Vendor shall provide interface units, to be located in the control room, to provide encoded outputs suitable for use with Distributed Control System interface devices for the level loops. A second output port for communication with another system is desirable.

2.3 GAUGE HEAD TRANSMITTER

2.3.1 Transmitter displacer to be stainless steel X5CrNiMo17-12-2, Number 1.4401 **ELOT EN 10088–2.** Head to be weatherproof and flanged, DN150, class 150, type B (RF) as per **ELOT EN 1759-1** in accordance with data sheets.

2.3.2 Each level transmitter will have integrally fitted 4-off S D P T alarm switches. Contacts shall be of gold plated metal for use in an alarm circuit at 24 Volts DC rated 100mA. Contacts to open on alarm conditions. Winding drum shall be temperature compensated for process services less than -10°C. The alarm switches shall be set to operate at extra low, low high and extra high levels.

2.3.3 Electrical connection shall be threaded DN20 N.P.T.

2.4 LEVEL INDICATION

2.4.1 Local 5-figure digital level indicators will be powered from the gauge head transmitter. Each indicator will have a red vane which shall cover the readout in the event of any malfunction of the transmission system. The locally mounted indicators will be situated at Grade and be [1] weatherproof and suitable ZONE 1 GAS GROUP IIB TEMPERATURE T3 Hazardous area. Level will be displayed on the DCS System via the interface units.

2.5 TEMPERATURE PROBE

2.5.1 A separate temperature measuring probe shall be provided for use with each gauge head. Each probe shall consist of 10 averaging type copper resistance bulbs inserted within a thermo well. Tank vendor will provide the thermo well which shall be stainless steel DN 80 5,49 mm wall thick pipe. For installation details see data sheet. The probes shall be located adjacent to the level displacers.

2.5.2 The RTD shall be for a 3-wire installation, have a weatherproof head, PTFE insulation. A DN 15 NPT connection and locknut shall be provided for installation purposes.

2.6 TEMPERATURE INDICATION

Temperature Indication will be displayed on the DCS in the Control Room from 4-20mA signals from the interface units.

The control room location is a non hazardous area.

2.7 CALIBRATION / ISOLATION FACILITIES

2.7.1 A stainless steel bodied isolating valve and a suitable calibration chamber with DN150, class 150, type B (RF) as per **ELOT EN 1759-1** flanges shall be furnished.

2.8 ACCURACY

a) level measurement within ± (0.7 + 0.11 *L) mm
b) temperature measurement within ± 0.1 °C

* L = Level in meters.

CONTRACTOR shall define all necessary cable requirements, properties and limitations for both the level and transmission systems.

2.9 Available power supply is 230V, 50Hz.

3.0 INSPECTION

3.1 The equipment will be subject to inspection by the OWNER and their appropriate agents at manufacturer Works on completion. Inspection will comprise a visual and functional simulated test. Manufacturer shall allocate adequate time, space facilities and assistance to permit OWNER's inspection and testing to the satisfaction of the inspector.