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**TECHNICAL JOB  
SPECIFICATION**

**641/1**

**REVISION 0**

**DATE 05/04/2011**

# **HIGH PRESSURE (HP) TRANSMISSION SYSTEMS**

## **STATION CONTROL PANELS**

**QUALITY ASSURANCE PAGE**

**CHANGES LOG**

**REVISIONS LOG**

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**REFERENCE DOCUMENTS**

Job Spec. No. 970/2  
[Shop Inspection of Equipment and Materials for NGT Project]  
EU DIRECTIVE 2004/108/EC EMC  
[Electromagnetic Compatibility Directive]  
EU DIRECTIVE 94/9/EC ATEX  
[Equipment Explosive Atmospheres Directive]  
ELOT EN 60297  
[Mechanical structures for electronic equipment - Dimensions of mechanical structures of the 482,6 mm (19 in) series]  
ELOT EN 60529  
[Degree of Protection Provided by Enclosures (IP Code)]  
EN ISO 11064-5  
[Ergonomic design of control centres - Part 5: Displays and controls]  
IEC 60801-3  
[Electromagnetic Compatibility for industrial process measurement and control equipment - Part 3: Radiated electrostatic field requirements]  
ISO 5807  
[Flow Chart Symbols for Information Processing]  
ISA S18.1  
[Annunciator Sequences and Specification]

**1.0** **SCOPE**

**1.1** **ITEM**

Station Control Panel (SCP) containing process control equipment and circuits, indicating, recording and alarm facilities, transducers and relay modules for various functions.

Both the design and the equipment supply pertaining to SCP shall cover all requirements of the project, as shown on the P&IDs.

**1.2** **APPLICATION(S) (CONTROL OF)**

Gases and Fluids as associated with natural gas pipelines, including metering and regulating stations.

**2.0** **GENERAL REQUIREMENTS**

**2.1** **PROCESS DATA**

Refer to the applicable Project documents for the relevant process data of process control equipment.

**2.2** **UNITS**

Metric unless specifically stated otherwise.

**2.3** **LEGISLATION AND STANDARDS**

- EU DIRECTIVE 2004/108/EC EMC
- EU DIRECTIVE 94/9/EC ATEX
- EL0T EN 60297
- ISO 5807
- IEC 60801-3

**2.4** **CONSTRUCTION REQUIREMENTS**

**2.4.1** **GENERAL**

The SCP shall be cabinet type panel, free standing, with panel base for floor mounting and swingframes for front access, designed for 50cm standard racks. Transparent, lockable front doors are required.

The SCP shall have a high quality corrosion resistant surface, with a colored finish to RAL 7032.

The SCP shall be designed and constructed for easy repair and replacement of components, including easy access to cables and panel wiring.

None of the components included in the SCP may generate any interference signals which may cause electronic equipment failure and fault condition. The materials shall conform to the **European Directive 2004/108/EC** relevant to electromagnetic compatibility.

The SCP shall have a logical and clear build-up with suitable location of components.

The SCP shall be adequately ventilated.

Forced ventilation (with redundant fans) is preferred, but natural ventilation may be

used in case of low thermal load.

Components mounted in the front of the SCP shall be at least 150 mm above the panel base.

All components in the front of and inside the SCP shall be clearly marked with a permanent, durable label, giving an unambiguous identification of the component and function.

The SCP shall be provided with a pocket inside containing equipment layout and complete wiring diagrams.

The SCP shall have a 25% spare space capacity for future expansion.

Indicators, recorders, and operating equipment including switches and push buttons shall be mounted at the most convenient and accessible height, for easy operation and reading.

**2.4.2** **ENCLOSURE PROTECTION**

Shall be to a minimum of IP 52 (**ELOT EN 60529**).

**2.4.3** **VENTILATION**

Natural ventilation louvers or redundant fans, as necessary.

**2.4.4** **WIRING**

Wiring installation shall be neat and workmanlike, and in a manner preventing unacceptable electrical interference and stray pickup influences.

Cable duct filling factor shall be less than 50%.

Wiring shall run in ducts with removable covers.

The ducts shall be installed in a way providing easy access after installation.

A.C. power wiring shall be separate from D.C. and signal wiring, and shall not run in the same ducts.

Wiring for intrinsically safe circuits shall run in separate blue colored ducts.

All wire ends shall be fitted with sleeve type identification markers.

**2.4.5** **TERMINAL BOARDS**

The SCP shall be provided with terminal strips for termination of all incoming and outgoing cable cores and all cable cores/wires between different panel sections.

The terminal strips shall be located in a convenient and accessible location allowing easy connection and disconnection of cable cores.

The terminals shall be line-up terminals of the snap-on type for rail mounting with facilities for latching between terminals.

The terminals shall be of the screw clamp type and have separation facilities for loop test purposes.

Terminals in intrinsically safe circuits shall be blue and separated through a physical barrier from other terminals.

Earth terminals shall be yellow with green stripes.

The terminals shall be clearly identified with permanently marked terminal numbers.

There shall be minimum one terminal for each cable core, screen, and braid, and a sufficient number of earth terminals.

The SCP shall be provided with minimum 15% spare terminals.

**2.4.6**

**ALARM SYSTEMS**

Alarm systems shall be of the dedicated type with visual indication for each alarm point and common audible alarm. The visual alarms shall be indicated on a common alarm annunciator operated by solid state electronic devices.

Each alarm (point) shall be identified by illuminating a translucent, backlighted nameplate describing the alarm in question.

The alarm light shall be activated upon actuation of the corresponding alarm point.

The alarm sequence shall be according to **ISA S18.1 (ISA Sequence type F1A) or EN ISO 11064-5**.

Acknowledge push-button shall have a timing function that will perform automatic acknowledge of the horn only, if manual acknowledge has not been performed within 5 minutes to 1 hour (adjustable).

The alarm unit shall have the (optional) facility of accepting remote Ack, Test and Reset signals (SPOT, free voltage contacts, rating of 2A at 24 VDC) from the SCADA system.

It shall be possible to test the alarm lights by means of a common lamp test pushbutton.

Operation of the alarm system shall be via the 24 volt D.C. supply.

**2.4.7**

**INTERFACE UNITS FOR INTRINSICALLY SAFE CIRCUIT**

The SCP shall contain interface units for all intrinsically safe circuits. The interface units shall be of a type that provides physical separation (e.g. opto-isolation) between the safe area terminals and the hazardous area terminals.

The interface units shall be approved by an Accredited Inspection Body for use with the field equipment specified.

Intrinsically safe circuits shall be connected to the common equipotential earthing system.

**2.4.8**

**INTERNAL POWER SUPPLY DISTRIBUTION**

The SCP shall be supplied, with 230 VAC, 50HZ from UPS

24 VDC will be made available and distributed by the appropriate power supply modules inside SCP.

Inverter units, where used, must not generate any interference signals which may cause electronic equipment failure or fault conditions.

Each instrument loop shall have its own power disconnect device (terminal strip type disconnectable terminal preferred), and its own overload protection device (terminal strip type fuse terminal preferred), both easily accessible and clearly labeled for easy identification.

**2.4.9 OVERVOLTAGE PROTECTION EQUIPMENT**

The SCP shall be equipped with overvoltage protectors to protect against lightning overvoltage phenomena in the incoming signal lines.

All overvoltage which could cause damage to the SCP or associated equipment shall be diverted to earth.

Proper grounding and lightning protection systems shall be provided according to technical specifications 783/2 and 783/3.

**2.4.10 RELAY SYSTEMS**

All incoming alarms shall be transmitted via relay modules to the alarm panel, the data logging and the telemetry systems.

The transmission of alarms shall have an adjustable delay built-in in order to prevent transmission of spurious alarms.

**2.4.11 FRONT PANEL INSTRUMENTS**

See individual Material Requisition.

**2.5 TESTING AND APPROVAL****2.5.1 FACTORY ACCEPTANCE TEST**

The Station Control Panel shall undergo a witnessed factory acceptance test which as a minimum shall include:

- Check of switchboard construction.
- Check of performance of components and control systems.
- Check of location and marking of components.
- Check of wiring system and documentation consistency.
- Check of quality of component materials and surface treatment.
- Function check of components.
- Function check of control system to the extent possible.
- Test of electrical insulation with a test voltage of min. 2.5 kV.

**2.5.2 SITE ACCEPTANCE TEST**

The Station Control Panel shall undergo a functional test on site.

This test shall be carried out by the Supplier to the extent deemed necessary to demonstrate the full and proper functioning of the SCP.

The Supplier shall provide all necessary instruments, equipment, transport and personnel.

**2.6 CERTIFICATION****2.6.1 ELECTRICAL COMPONENTS AND EQUIPMENT**

All electrical equipment and components shall have Manufacturer's Test Certificates according to EU Directives requirements.

All electrical equipment and components used in "intrinsically safe" circuits shall have EEx-i electrical approval according to the requirements of **EU Directive 94/9/EC ATEX**.



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#### 2.6.2 STATION CONTROL PANEL

Manufacturer's statement of compliance with specifications and drawings etc. inclusive of approvals from authorities etc.

#### 2.6.3 STATION CONTROL PANEL CERTIFICATION PACKAGE

Manufacturer's Test Certificates for all components and equipment used in "Intrinsically Safe" circuits.

EEx electrical approval and conformity certificates for all equipment and components used in "Intrinsically Safe" circuits.

Manufacturer's statement of compliance together with approvals from Notified Body.

### 3.0 INSPECTION AND CERTIFICATION

Inspection will be performed by an Accredited Inspection Body appointed by Owner.

Inspection requirements are defined in the following documents.

- a. Material Requisition.
- b. **Job Specification No. 970/2.**
- c. Relevant project specifications.
- d. Inspection clauses of applicable Standards.

### 4.0 COMPLIANCE WITH THE EU DIRECTIVES

Instrumentation that complies with the "New Approach" directives shall be provided with:

- a. A physical CE marking and other information as required by the relevant directives.
- b. A declaration of conformity which lists all the directives with which the product complies.
- c. Any other information specified by the directive, e.g. user instructions.