

GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 000

Contractor Document Requirements

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00	01/2012	First issue
Rev.	Date	Purpose of the revision

Owning entity: DSO/TEC	Managing entity: DSO/TEC/INS
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1. Scope

This specification defines the minimum requirements for the Instrument engineering documents to be prepared during the Basic Engineering (FEED) phase of a project.

This specification is not applicable to detailed engineering phase.

2. Reference documents

The design shall satisfy the requirements and regulations of the country of installation and specific standards referred to in this specification.

Where national regulations exist, their provisions and those of the standards and codes to which they refer shall apply, supplementing or amending the provisions of this document.

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
IEC 61511 (All parts)	Functional safety - Safety instrumented systems for the process industry sector - All parts

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP EXP 157	Operator Training Simulator
GS EP INS 101	Instrumentation Design
GS EP INS 102	Instrumentation Identification
GS EP INS 103	Instrument Database Management
GS EP INS 106	Instrument Installation
GS EP INS 108	Instrumentation for the design of plant rooms and control rooms
GS EP INS 109	Instrument cabinets
GS EP INS 110	Instrumentation for package units
GS EP INS 111	Design and supply of liquid custody transfer metering units
GS EP INS 112	Design and supply of gas custody transfer metering units
GS EP INS 114	Instrument Tubing and Fittings

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Reference	Title
GS EP INS 115	Instrument Earthing
GS EP INS 116	Instrument Cables
GS EP INS 118	Instrument Troubleshooting Loop Diagrams (TSLDs)
GS EP INS 120	Control and Choke Valves
GS EP INS 125	Safety Relief Valves and Rupture Discs
GS EP INS 131	Standard Functions and Functional Analysis Development Requirements
GS EP INS 134	Design and supply of integrated control and safety system
GS EP INS 135	Cybersecurity Requirements for Industrial Information Systems (SII)
GS EP INS 137	On/Off Valve Control Panels and Actuators
GS EP INS 138	Electric Operated ON/OFF Valve Actuators
GS EP INS 140	Instrumentation for monitoring packages
GS EP INS 141	Analysers
GS EP INS 143	Fire and Gas Detectors and Associated Detection Systems
GS EP INS 146	Generation and Distribution of Hydraulic Energy
GS EP INS 147	Wellhead Control Panels
GS EP INS 150	Design method for system configuration - Standard functions
GS EP INS 156	Human Machine Interfaces (HMI)
GS EP INS 158	I/O Assignment Principles
GS EP INS 196	Input and Output Standard Functions
GS EP INS 197	Process Standard Functions
GS EP INS 198	Safety and Fire & Gas Standard Functions
GS EP INS 307	POB, E-Mustering and E-Tracking
GS EP INS 309	Access Control Systems
GS EP INS 900	Instrument Hook-up diagrams
GS EP TEC 007	Obsolescence and Lifetime Cycle Management
GS EP TEC 260	HIPS Design, Implementation and Life Cycle

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3. Terminology and Definitions

There are five types of statements in this specification, the “shall”, “should”, “may”, “can” and “must” statements. They are to be understood as follows:

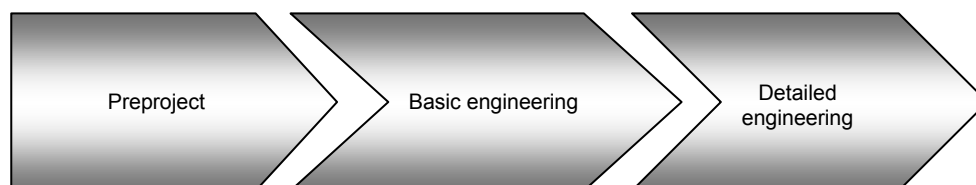
Shall	Is to be understood as mandatory. Deviating from a “shall” statement requires derogation approved by Company.
Should	Is to be understood as strongly recommended to comply with the requirements of the specification. Alternatives shall provide a similar level of protection and this shall be documented.
May	Is to be understood as permission.
Can	Is to be understood as a physical possibility.
Must	Expresses a regulatory obligation.
Company	TOTAL E&P or any TOTAL E&P subsidiary.
Contractor	Any Party that has signed a Contract with Company for the Engineering, Procurement, Construction, and Installation in part(s) or in full of a project.
Vendor	The package Vendor sub-contracted by the Contractor or by Company.
Supplier	The Party that manufactures or supplies equipment, either individually or as a Packaged unit for the project.

3.1 Abbreviations

ESD	Emergency Shutdown (System)
FGS	Fire and Gas System
FCW	Full Control of Wells
HIPS	High Integrity Protection System
ICSS	Integrated Control and Safety System
ISDB	International Supplier DataBase
I/O	Input / Output
ITR	Instrument Technical Room
OCWR	Overall Control of Wells and Risers
OTS	Operator Training Simulator
PCS	Process Control System
PDS	Process Data Server
PSS	Process Safety System
PLC	Programmable Logic Controller
WHCP	Well Head Control Panel

4. Instrumentation Project Engineering Cycle

The main stages during engineering studies of an instrumentation project can be illustrated as follows:



Each stage shall be considered as a technical basis for the next one.

Stage	Objectives
Pre-project	Consolidate the conceptual phase study. Determine what is required, what will be needed. The study has to be flexible and adapted to the local context. Determine a clear understanding of the vision of the instrumentation, control and safety systems. Define an overview of the Industrial Information Systems architecture principles. Preliminary estimations of I/O, power consumption, ... Pre-project study is also based on Operating philosophy and Safety concept of the global project, site survey results (typically for extension and revamping projects).
Basic Engineering	Definition and clarification of standards, codes, laws and relevant documents that shall be followed by the project. Definition of specifications: • Design, sizing, manufacturing, testing, packing criteria of instruments and systems • Installation, operation and maintenance requirements • Numbering system • Data management system • Etc. Definition of drawing and layouts, data sheets, lists. Definition of requirements of specific dossiers (Obsolescence, HIPS, Cyber security, etc.). Selection of critical equipment e.g. ICSS.
Detailed Engineering	Updating of basic documents. Detailed specification of the equipment, instruments and systems. Develop detailed plans to tie-in to existing facilities and utilities when applicable. Installation and construction requirements and details. Requisitions, Technical bid analyses.