



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 000

Minimum Contractor Document Requirements

00	01/2012	First issue
Rev.	Date	Notes

Owner: DEV/TEC

Managing entity: DEV/TEC/INS



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1. Purpose

The purpose of this document is to assist project teams in the definition of instrumentation documents to be provided during the different project stages.

2. Scope

This document shall be considered as a minimum for the development of the document deliverables to be prepared by the contractor during the following engineering phases:

- Conceptual stage¹
- Pre-project stage¹
- Basic engineering stage
- Detailed engineering stage.

3. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

¹ Conceptual and Pre-project documents are more often developed by Company

**Other documents**

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP INS 101	Instrumentation engineering, supply and construction general requirements
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	Cyber Security requirements for design and supply of ICSS and Package systems
GS EP SAF 260	Design of High Integrity Protection systems (HIPS)
GS EP SAF 261	Emergency Shutdown and Emergency De-Pressurisation (ESD & EDP)
GS EP TEC 007	Obsolescence and lifetime cycle management

4. General

Any deviation to the Instrument general specifications shall be subject to Company approval.

All documents shall have a date, a revision number and a clear explanation of the revision (issued for comment, issued for review, etc.).

The revised portion of the document shall be highlighted.

All documents shall be in a standardized format, the recommendation is ISO A0, A1, A2, A3 and A4.

Native files format shall be as per project requirements.

Units shall be from SI.

On all drawings, a legend shall give a clear explanation of all symbols and marking used.

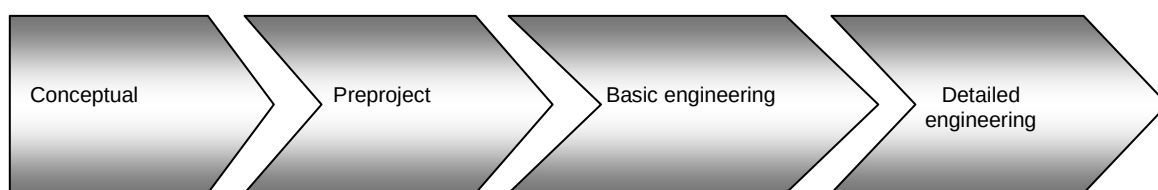
5. Abbreviations

DVT	Design Validation Test
ESD	Emergency and Shutdown
EWS	Engineering Work Station
FAT	Factory Acceptance Test
F&GS	Fire and Gas system

FCW	Full Control of Wells
HIPS	High Integrity Protection System
ICSS	Integrated Control and Safety System
I/O	Input / Output
IFAT	Integrated Factory Acceptance Test
ITR	Instrument Technical Room
ETR	Electrical Technical Room
OCWR	Overall Control of Wells and Risers
OTS	Operator Training Simulator
OWS	Operator Work Station
PCS	Process and Control System
PDS	Process Data Server
PSS	Process Safety System
PLC	Programmable Logic controller
SIL	Safety Integrity Level
SOR	Statement of requirements
WHCP	Well Head Control Panel

6. 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
Conceptual stage	Define a concept and provide an overview of the project design in term of instrumentation and control systems. Highlight specific points that shall be carefully addressed. Select the Instrumentation-related utilities. Manage the obsolescence issue in close cooperation with the Affiliate in case of brown field. Identify and propose alternative solutions. This phase is based on SOR document, screening study if available.

Stage	Objectives
Pre-project stage	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 ICSS architecture principles. Identify the impact on the production in case of ICSS upgrade or extension. 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 stage	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.). Technical clarifications with Contractor.
Detailed engineering stage	Finalize the basic engineering study. Continuous updating process of basic documents study. Detailed specification of the equipment, instruments and systems. Develop detailed plans to tie-in to existing facilities and utilities when applicable. Requisitions, Technical bid analyses.

7. Type of documents

Instrumentation and Control systems philosophy	This document describes the basic requirements for the instrumentation, the control and safety systems overview of the project. The Instrumentation and Control philosophy shall be completed, updated and detailed by Contractor during basic engineering stage.
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Architecture and Interface principles	This document shows, in a block diagram format, the main components of the ICSS and interfaces with the other systems. The document shall also identify where each component is physically located (Control room, ITR, ETR, etc.) Hardwired and communication links between the different components shall be clearly specified.
Specifications	Specifications define the technical and quality requirements, the applicable codes or standards to be used to design, manufacture, test and install equipment. Specifications shall be in accordance with Company General Specifications. These documents include also deviations and/or amendments to the Company General Specifications. Specifications shall be subject to Company approval.
Functional Analysis	It describes the functionalities to be performed by systems such as: • PCS and PSS for the process part corresponding to an equipment, subsystem or package • ESD and F&G systems • HIPS • Packages. The following information shall be provided as a minimum: • Simplified diagrams of the process & utilities system or equipment • Brief description of the functions to be performed • List of inputs/outputs and associated typicals • PACKAGES interfaces. Package process detailed description shall be provided by the relevant vendor. Refer to GS EP INS 131 for more details.
Drawings and layouts	Derived directly from plant facility plans, layouts define the optimal placement of junction boxes, instruments, cabinets, etc. Drawings define also the general arrangements of a system components.
Data sheets	The data sheets present the engineering data for the instrument requisition. They shall be completed by Contractor to provide sufficient details to allow a vendor to select and propose the appropriate instrument or equipment. Data sheets shall be approved by Company before Purchase Order.
Lists	Documents that make an inventory of I/O, instruments, cables etc and generally present data on table format.

Requisitions	Requisitions or purchase enquiries are formal written requests intended to Vendor. Specifications shall be included in requisitions.
Technical Bids	The bid evaluation sheet shall include the technical characteristics of the instrument and all the vendor deviations to the specifications.
Dossiers	List of documents required by specific systems (e.g. HIPS), or issue (e.g. Cyber security, Obsolescence)

8. List of documents

A schedule of instrumentation documents shall be prepared by Contractor for each engineering stage and submitted to Company for approval.

Documents shall be updated periodically.

The following list is not exhaustive and must be adapted / reduced / extended as per specifics of the project which can be:

- A complete new plant (onshore plant, FPSO, FPU, ...)
- A simple extension of existing facilities
- A revamping of an existing plant
- etc.

Document	Conceptual design	Pre-project design	Basic design	Detailed design
Overall Instrumentation & control system philosophy	*	*	*	
Architecture and Interface principles				
Electrical/Instrumentation interface principles		*		
ICSS architecture		*	*	*
I/O segregation principles			*	
Packages/ICSS interface principles		*	*	
HVAC/Addressable fire detection system/ICSS interface principles			*	
Subsea system / ICSS interface principles		*	*	
External systems / PDS / PCS interface principles		*	*	
Telecom/Instrumentation interface principles		*	*	
Specifications				
Annulus Vent Gas monitoring system (VGS)			*	*
Condition Monitoring Management System			*	*