GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 103

Instrument Database Management

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1. Scope

This specification defines the minimum requirements for the development and administration of an instrument database during the life cycle of a plant. It also details the responsibilities of the different parties who may be involved in developing this database. It shall be applied to all projects developing new installations or extending existing facilities.

The Basic Engineering Contractor shall use this specification as a basis to define the project specific rules for the instrument database which shall be required to be applied throughout the development stage of the project.

2. Reference documents

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
ISA 20	Specification Forms for Process Measurement and Control Instruments, Primary Elements, and Control Valves
ISA 5.4	Instrument Loop Diagrams

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 INS 000	Minimum Contractor Document Requirements
GS EP INS 102	Instrumentation identification
GS EP INS 107	Design and installation of instrumentation links
GS EP INS 134	Design and supply of integrated control and safety system

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3. Definitions

3.1 Parties

Contractor Any party TOTAL E&P has signed a contract with for the Engineering, Procurement, Construction and Installation as part of a project or maintenance contract.

ICSS Supplier The party that supplies the Integrated Control and Safety Systems.

Package Supplier The party that supplies an equipment package.

3.2 Abbreviations

CAD	Computer Aided Design
EPC	Engineering Procurement and Construction
F&G	Fire and Gas
FPSO	Floating Production Storage Offloading unit
FSO	Floating Storage and Offloading unit
FTA	Field Termination Assembly
HIPS	High Integrity Protection System
HMI	Human Machine Interface
I/O	Input output
ICSS	Integrated Control and Safety System
IT	Information Technology
LLI	Long Lead Items
P&ID	Piping and Instrument Diagram
PCS	Process Control System
PLC	Programmable Logic Controller
PSS	Process Safety System
SCU	Subsea Control Unit
SCS	Subsea Control System
SPCS	Subsea Production Control System
SPS	Subsea Production System
TSLD	Trouble Shooting Loop Diagram
UCP	Unit Control Panel
UFR	Umbilical Flow-line Riser

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4. Introduction

An Instrument database is required to organize and manage the large amounts of instrument data required to be defined on a project. The instrument database shall be the common source of data used to produce the engineering deliverables (e.g. instrument data sheet, wiring diagrams, cables list, loop diagrams…).

The instrument database shall be used to identify, specify and quantify the instruments. Furthermore, it shall be capable of attaching relevant associated process data to these instruments as well as provide sorting and filtering capabilities. The instrument database shall continue to be used throughout the lifecycle of the plant as the primary source of instrument data.

The instrument database will be a key input source to the following:

- The ICSS configuration database
- The commissioning database (ICAPS)
- The maintenance database.

The information contained in the instrument database shall be complete, accurate and precise.

Company has validated and standardised on the following instrument database software packages:

- S4I^{R} by Capgemini
- SmartPlant^{R} INtools by Intergraph.

Each project with the assistance of the Company affiliate, who will be the final end user of the facility, shall select the preferred instrument database software from the two above.

The selection shall be made during the pre-project phase with due consideration given to the following:

- Existing instrument database in the affiliate –if any
- Version of the software
- Local support.

5. Databases and Users

The instrument database shall always be considered as a single overall project. Nevertheless, depending on the project organisation, there may be several “subsets” of the overall database.

The following provides an example of project database subsets::

- Drilling platform(s) database
- Processing platform database
- Living quarter database
- FSO (Floating, Storage and Offloading unit) database
- HIPS Database.

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The users of these databases would be:

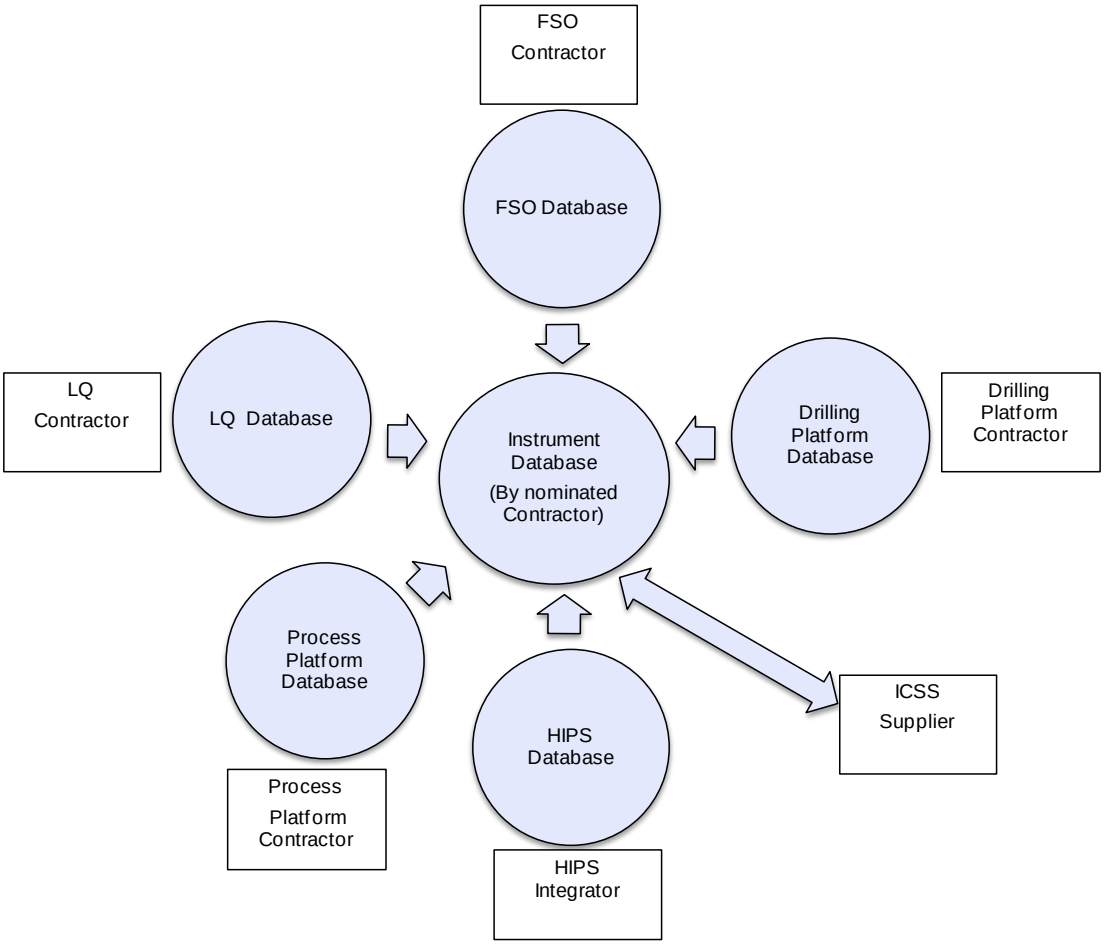
- Drilling platform(s) Contractor
- Processing platform Contractor
- Living quarter Contractor
- FSO Contractor
- HIPS Integrator
- ICSS (Integrated, Control and Safety System) Supplier
- Company.

At the end of the project the different parts of the databases shall be brought together to ensure an overall facility database is provided.

The collation of the databases shall be done under the responsibility of the main EPC Contractor.

Refer to Figure 1 for illustration of a typical database organisation with its associated users.

Figure 1 - Example of instrument database with several subsets and various users



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6. Responsible Parties and Methodology

The development of the instrument database shall commence during the basic engineering phase and continue throughout the project phase. A project specific Instrument database management procedure shall be issued as part of the basic engineering deliverables in accordance with the requirements of GS EP INS 000.

As a general rule, all instruments identified on the P&IDs, F&G Layouts, Causes & Effect matrix, Safety Logic Diagrams, electrical/instrument interface and package interface shall be included in the database.

6.1 Company

Company shall confirm the selected instrument database software to the Contractor at the commencement of basic engineering.

In case of brown-field development, the Company shall define the level of integration of the new database with the existing one, as a minimum the structure of the existing database should be maintained. Also the Company shall give a copy of the current database which will be used as a model.

6.2 Basic engineering Contractor

The basic engineering Contractor shall develop the project specific rules to create, manage and populate the instrument database

The Instrument Database Management Procedure and the Identification & Numbering Procedure will require to be issued at the early stages of basic engineering.

These two documents are closely linked and shall therefore be consistent and coherent.

The Instrument Database Management Procedure shall include as a minimum:

- The database organisation and structure
- The definition of the Instrument Database Administrator
- The detail of the fields including syntax and size
- The database population rules
- Instrumentation data exchange procedure between EPC Contractors, ICSS Supplier and Subsystem Suppliers / Vendors and sub-Contractors (LLI, Package Supplier...).

All necessary information that will facilitate an effective instrumentation data collection from the LLI Vendors shall be included in the LLI Call For Tenders dossiers.

The Basic Engineering Contractor shall establish working rules to guide the other Contractors that may be involved during the execution phase of the project e.g.: Subsea Production System (SPS) and Umbilical Flowline Riser (UFR) Contractors. The purpose is to ensure that all Contractors shall provide instrument information in a coherent, consistent and compatible format.

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