



Exploration & Production

GENERAL SPECIFICATION

INSTRUMENTATION

GS EP INS 700

Technical Assessment of Control Valves Manufacturers

00	01/2012	First issue
Rev.	Date	Notes

Owner: DEV/TEC	Managing entity: DEV/TEC/INS
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1. Scope

This General Specification defines Company practices and tools to use to perform technical assessment of Control Valves Manufacturers.

2. 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	

Other documents

Reference	Title
Not applicable	

**Total General Specifications**

Reference	Title
GS EP INS 120	Control Valves
GS EP PVV 142	Valves
GS EP PVV 150	Valves in cryogenic service

3. Technical assessment process of Control Valves Manufacturers

The technical assessment process of a Control Valves Manufacturer is part of the global assessment process of a Supplier, lead by the E&P Purchasing Division.

3.1 Step 1: Gathering of information

To start the technical assessment process, Appendix 1 of this document (Technical Information Analysis Form) shall be sent to the Control Valves Manufacturer, by the Company.

The Control Valves Manufacturer shall fill and send back this Form, to the Company, with all the others necessary documents requested.

3.2 Step 2: Data Analysis of Appendix 1 and following actions

After data analysis of Appendix 1, the INS discipline of E&P Technology Division, shall take a decision to proceed or not to the next step of the Manufacturer technical assessment process.

3.2.1 Case 1: Negative result given by the data analysis of Appendix 1

In case of negative result given by the data analysis of Appendix 1, the technical assessment process shall stop at this step. The technical assessment result of the Manufacturer is negative.

3.2.2 Case 2: Positive result given by the data Analysis of Appendix 1 - Audit of Manufacturer production site mandatory

Following positive result of Appendix 1 data analysis, an audit of the Manufacturer production site is deemed mandatory by the INS discipline of E&P Technology Division.

This audit shall be performed by the INS discipline of E&P Technology Division, or by its representative, and will give final result of the Manufacturer technical assessment.

3.2.3 Case 3: Positive result given by the data Analysis of Appendix 1 - Audit of Manufacturer production site not necessary

Following positive result of Appendix 1 data analysis, an audit of the Manufacturer production site, is not deemed necessary, by the INS discipline of E&P Technology Division, to complete the technical assessment process. The technical assessment result of the Manufacturer is positive.



3.3 Step 3: Assessment notification to the Manufacturer

The outcome of step 2 analysis (negative, positive...) is consolidated by the authorized Company entity, together with others parameters (financial, contractual and social responsibility, quality, HSE...) for final decision.

Then, the authorized Company entity will notify the Manufacturer of the outcome of global assessment.



Appendix 1 Technical Information Analysis Form: Control Valves Manufacturer - EXCEL spreadsheet



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Appendix 1

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Quick guidelines to use this document : the objective of the following indications, are to the help user to fill the **Technical Information Analysis Form**.

This document has to be sent to the manufacturer to start technical assessment process before any survey at manufacturer location.
The manufacturer has to fill all information requested in all tables.

1) "Production Range" card :

On this card, the manufacturer has to indicate all its production ranges submitted for approval.

After technical assessment, Total or its representative, is able to indicate for which production ranges the manufacturer is finally approved.

2) "Theme I to Theme III" cards :

The manufacturer has to fill all tables of each cards, in order to have a better understanding of its production capacities.

After analysis of manufacturer answers, Total or its representative, can make comments, in blue column, for each manufacturer answers.

3) "Global Synthesis" cards :

On this card all general information (name, address, contact of manufacturer, date of audit, assessment report n°, Total specifications linked,...) written will be automatically pasted in all the others cards.

First section of this card has to be filled by the manufacturer by indicating general informations : name, address, contact, process concerned,...

The three others sections have to be filled by Total of its representative to summarize result and decision after analysis of the **Technical Information Analysis Form**.

In the last section, the signature of Total or its representative will be done, in order to validate the analysis result of this Form.



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MANUFACTURER			
Manufacturer Name xxx	Activity and Process of Audited Workshop xxx	Audit Date xxx	
Manufacturer Head Office Address xxx	Manufacturer contacts (name, function, email, phone,...) 		
Name & Address of Audited Workshop xxx			
TOTAL OR REPRESENTATIVE COMPANY TEAM - TO BE FILLED BY TOTAL OR REPRESENTATIVE			
Total Project Concerned xxx	Total or Representative Responsible for Technical Information Analysis (Name, Function, Service) 		
Objectives of the Technical Information Analysis			
TECHNICAL INFORMATION ANALYSIS / TECHNICAL ASSESSMENT RESULT (FOR THE PRODUCTION RANGE CONSIDERED) -			
Result of Information Analysis of GS EP INS 700 - Appendix 1, filled by the Manufacturer			
	Yes / No	Comments	
Level of information is appropriate			
On site Audit Requested			
Result of Technical Assessment of Manufacturer (to be filled if on site audit is not deemed necessary)			
	Decision *	Comments	
Satisfactory			
Reserves to close to be satisfactory			
Not satisfactory			
Notes : * : Tip when appropriate			
CONCLUSIONS OF TECHNICAL INFORMATION ANALYSIS / GENERAL COMMENTS			
SIGNATURE OF TOTAL OR REPRESENTATIVE TEAM			
NAME	DATE	NAME	DATE



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

ACTUAL PRODUCTION RANGE / APPROVED PRODUCTION RANGE OF THE MANUFACTURER

To list all the actual production ranges of the manufacturer and select and comment the approved ones.

			To be completed by the manufacturer		To be completed by Total or Company representative	
Type	Code	Designation as per GS EP INS 120	Maxi valves production/ year (pieces)	Actual maximum capacities * and base materials **	Approved maximum capacities * and base materials **	
Control Valves	1621-01-01 - Globe Valves - Single Seated Type					
		Regular Service				
		Cryogenic Service				
		Lethal-Toxic Service				
		Double ported				
		3-Way				
	1621-01-02 - Globe Valves - Cage Guided Type					
		Regular Service				
		Severe Service				
		Cryogenic Service				
		Lethal-Toxic Service				
	1621-01-03 - Butterfly Valves					
		Regular Service				
		Cryogenic Service				
		Lethal-Toxic Service				
	1621-01-04 - Microflow Valves					
		Microflow valves				
	1621-01-05 Segmented Ball Valves					
		Regular Service				
		Cryogenic Service				
		Lethal-Toxic Service				
	1621-01-06 Eccentric Rotary Valves					
		Eccentric Rotary Valves				
	1621-01-07 Special Valves Types					
		Chemical Applications				
		E&P Applications				
	1621-01-09 Axial Flow Valves					
		Regular Service				
		Severe Service				
		Cryogenic Service				
		Lethal-Toxic Service				



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

ACTUAL PRODUCTION RANGE / APPROVED PRODUCTION RANGE OF THE MANUFACTURER

To list all the actual production ranges of the manufacturer and select and comment the approved ones.

			To be completed by the manufacturer		To be completed by Total or Company representative	
Type	Code	Designation as per GS EP INS 120	Maxi valves production/ year (pieces)	Actual maximum capacities * and base materials **	Approved maximum capacities * and base materials **	
Choke Valves	1621-01-08 Choke Valves					
		Angle Type				
		Angle Type API-6A				
		Axial Flow Type				
		Axial Flow Type API-6A				
Self-Acting Pressure Regulators	1623 Self-Acting Pressure Regulators					
	1623-01	Direct Operated				
	1623-02	Pilot Operated				
Control & Accessories	1621-02 Positioners					
	1621-02-01	Electro-Pneumatic				
	1621-02-02	Pneumatic				
	1621-02-03	Filter regulator				
	1621-04 Control Valve Actuators (4-20 mA)					
	1621-04-01	Electric Type				
	1621-04-02	Hydraulic Type				

* Maximum Capacities to indicate : Maximum diameter per valve model and per pressure class, CV, weight. List all intended product series.

** Base Materials to consider : carbon steel, LT carbon steel, low-alloy steel, Cr-alloy steel, Ni-alloy steel, stainless steel, clad steel, Ni-alloys, Cu-alloys, Titanium, other materials,...



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Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

THEME I - GENERAL ORGANIZATION

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 1.1 - General Organization - Surface area (Plot plan to be joined if available)			
Zone	Surface area (m ²)	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Overall			
Covered areas			
Offices			
Manufacturing workshops			
Laboratory			
Testing workshops			
Warehouses			

Table 1.2 - General Organization - Manufacturer Management : organization chart to join			
Position	Names	Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Managing Director			
Sales Manager			
Plant Manager			
Production Manager			
Quality Assurance Manager			
Design/Engineering Manager			
Quality Control Manager			
Head of welding department			
HSE Manager			
Logistic Manager			
Others			



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Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
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THEME I - GENERAL ORGANIZATION

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Table 1.3 - General Organization - Personnel					
Quality of Employees	Staff Quantity (manufacturer's personnel)	Contracted Personnel Quantity (personnel from external company which are working at the manufacturer)	Average years of service (staff)	Personnel qualification level (curriculum vitae)	Comments <i>To be filled by TOTAL or Company representative</i>
Commercial department					
Administration					
Project Management					
Engineering / R&D					
Production methodes office					
Procurement					
Expediting / Shipment					
Fabrication : qualified welders					
Fabrication : machining					
Fabrication : assembling					
Fabrication : testing					
Fabrication : painting					
Quality Inspector (for testing : NDT, DT,...)					
Quality Inspector (on line)					
Quality for in-coming materials/parts					
Quality assurance					
Management					
Shop supervision					
Number of persons dedicated to customer site intervention					
Total number of Employees					

Table 1.4 - General Organization - Communication With Customer / Working Documents Language				
	Language used with customer : YES / NO ?	Which department team (engineering, commercial, production,...) and how many people are able to discuss in other language than mother tongue ?	Documents (testing procedures, drawing, control procedures,...) available in which language ?	Comments <i>To be filled by TOTAL or Company representative</i>
English				
French				
Others				



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THEME I - GENERAL ORGANIZATION

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Table 1.5 - General Organization - Work Load Status		
Items to check	Comments / Description	Comments <i>To be filled by TOTAL or Company representative</i>
Ownership		
Annual turnover in M\$ or M€ (3 previous year)		
Men hour capacity		
Work shift : normal, 2x8, 3x8		
Present and future work load (%)		
Future investment (tools, building, human resources,...)		

Table 1.6 - General Organization - References on similar jobs									
Year built	Customer	Country of installation	Quantity of valves	Design code	Type of valves	Material grade	Diameter (inch)	Rating	Comments <i>To be filled by TOTAL or Company representative</i>

Type of licences or patents	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>



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THEME I - GENERAL ORGANIZATION

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Table 1.7 - General Organization - List of documents to be send by the Manufacturer, to Total, in English language, with all Tables filled out, before on-site technical review			
List of documents (refer to GS EP INS 120 for design, calculation, testing)	Documents received : YES / NO ?	Documents available in English language : YES / NO ?	Comments <i>To be filled by TOTAL or Company representative, incl. conformity/deviations from GS EP INS 120</i>
Plot plan, layout of the plant			
General organization chart			
Quality Control Organization Chart			
Process flow chart			
Manufacturing procedures			
Assembling procedures			
Products catalogue: valve series concerned			
Products catalogue: pneumatic actuators			
Products catalogue: hydraulic actuators			
Products catalogue: control accessories			
Design note: severe service			
Design note: cryogenic service			
Design note: lethal-toxic service			
Calculation method: regular service			
Calculation method: severe service			
Calculation method: cavitating service			
Calculation method: 2-phase flow			
Testing procedure: hydrostatic press. test			
Testing procedure: helium press. test			
Testing procedure: seat leakage test			
Testing procedure: dimensional inspection			
Testing procedure: deformation inspection			
Testing procedure: functional tests			
Testing procedure: cryogenic test			
Testing procedure: regulator setpoint test			
Testing procedure: packing test			
Testing procedure: fugitive emissions test			



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THEME I - GENERAL ORGANIZATION

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Testing procedure: capacity (Cv) test			
Testing procedure: vacuum test			
Testing procedure: API-6A choke valves			
Repairing procedures : welding, ...			
Control procedures : DT, NDT, ...			
Painting & preparation procedures			
Packaging and preservation procedures			
Non-conformities management procedures			
In-coming material inspection procedures			
Example of valves drawing with BOM			
Sub-contractor evaluation, follow-up and audit procedures			
Quality manual			
ISO, API, ATEX certificates, others,....			
IMO approval certificates (BV, DNV, etc)			
HSE policy			
Example of manufacturer's documents retranscribing the client's requirements			
Example of audit report : audit made by customer manufacturer or audit made by manufacturer on its sub-suppliers			



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THEME II - ENGINEERING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 2.1.a - Engineering / Design Capacity - Sub-contracting

	Yes / No	Sub-contractor name (external company which are working for the manufacturer, but outside the manufacturer)	Facilities of the sub-contractor (hardware, software, human resources,...)	Comments <i>To be filled by TOTAL or Company representative</i>
Design				
Drawing				
Calculation				
Validation				

Table 2.1.b - Engineering / Design Capacity - Construction codes used, availability and updating of codes and standards

Code	Date of Revision	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
GS EP INS 120			
GS EP PVV referential			
GS EP COR 350			
IEC 60534-2-1 & 2-3			
IEC 60534-3-1 & 3-2			
IEC 60534-4			
IEC 60534-8-3 & 8-4			
ISO 15848-1			
ASME B16.10			
ASME V			
ASTM A352			
ASTM A703			
ISA 75.01.01			
ISA 75.02			
ISA 75.19			
ISA RP75.23			
API-6A / ISO 10423			
API-6D / ISO 14313			
API-609			
FCI 70-2			
FCI 91-1			
MSS SP-55			
MSS SP-61			
Others (manuf. to complete)			



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
XXX	XXX	XXX

THEME II - ENGINEERING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 2.1.c - Engineering / Design Capacity - Calculation Facilities (Software for design calculation : finite element, thermal, flow, stress, hydrostatic, others...)				
Type of Design (refer to GS EP INS 120)	Design Codes or GS referential	Computer Programs	Sub-contracted (if any)	Comments <i>To be filled by TOTAL or Company representative</i>
Cv sizing equations				
Cavitation factor				
Severe service				
Erosional / 2-phase flow				
Noise prediction				
Noise prediction				
Others (manuf. to complete)				

Table 2.1.d - Engineering / Design Capacity - Drawing Facilities					
Number of CAD Work Stations	Computer Program Names	Number of permanent Staff	Staff Qualifications	Sub-contracted (if any)	Comments <i>To be filled by TOTAL or Company representative</i>

Number of Drawing Boards	Number of Permanent Staff	Staff Qualifications	Sub-contracted (if any)	Comments	Comments <i>To be filled by TOTAL or Company representative</i>

Table 2.3.a - Engineering & Design Validation Testing - Inhouse Design Validation Test Equipment				
Inhouse Test Equipment	Medium	Max. Valve Size per ANSI Class	Max. Flowrate	Comments <i>To be filled by TOTAL or Company representative</i>
Flow Capacity Test Loop	Air			
	Gas			
	Liquid			
	Steam			
	Two-Phase			
Test Bench for Regulators				
Liquid-filled Pit/Bath for Gas/Helium Press. Test	Helium Gas			
Cryogenic Cold Box				
Test Bench for Fugitive Emissions	Helium Gas			



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MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

THEME II - ENGINEERING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 2.3.b - Engineering & Design Validation Testing - Design Validation Testing					
Type of Validation Test	Validation Test by inhouse test facilities		Validation Test by Accredited 3rd Party		Comments <i>To be filled by TOTAL or Company representative</i>
Cv validation test Regular Service Valves	Date?	*	Date?	* & **	
Cv validation test Severe Service Valves	Date?	*	Date?	* & **	
Cv validation test 3-Way Valves	Date?	*	Date?	* & **	
Validation test Cavitation/Flashing Service	Date?	*	Date?	* & **	
Pressure Regulator Flow Capacity / Setpoint	Date?	*	Date?	* & **	
Cryogenic test Stem Torque/Thrust	Date?	*	Date?	* & **	
Cryogenic test Seat leakage	Date?	*	Date?	* & **	
Validation test Fugitive Emissions	Date?	*	Date?	* & **	
Others					

* List all valve types and max. size/rating tested, and state clearly which trim model & Cv rating; attach all test report available
 ** State which 3rd party (laboratory) and attach all 3rd party test reports available



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

THEME III - MANUFACTURING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 3.1 - Workshop General Organization : Manufacturing, assembling and testing locations

Activity	Sub-contracted outside manufacturer workshop : YES / NO / PARTIAL (complete table 3.11)	Plant name (list all possible plants for each valve model and components separately)	Plant address	Comments	Comments To be filled by TOTAL or Company representative
Casting		see table 3.2			
Forging		see table 3.3			
Welding					
Machining					
Mat. inspection					
Mat. testing					
Funct. testing					
Assembling					
Pneu. actuator manufacturing					
Hydr. actuator manufacturing					
Positioner manufacturing					
Other control components					
Others					

Table 3.2 - Casting plants list and description

Casting plant name (list all possible casting plants for each valve model and components separately)	Casting plant address	Material (carbon, stainless steel, ...)	Sand or WAX casting	Size range of casting	Number of pieces / year	Tonnage / year	Number of furnaces



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

THEME III - MANUFACTURING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 3.3 - Forging plants list and description							
Forging plant name <i>(list all possible forging plants for each valve model and components separately)</i>	Forging plant address	Material (carbon, stainless steel, ...)	Size range of forging	Number of pieces / year	Tonnage / year	Number of furnaces	Number of press

Table 3.4.a - Welding - Description of Welding Process in Place (permanent process only)									
Welding Process	Manual	Automatic	ASME P-number	Impact Test	PWHT	ASME IX	ISO 15614	Other standard	Comments <i>To be filled by TOTAL or Company representative</i>
SMAW									
SAW									
GMAW									
GTAW									
FCAW									
Weld Overlay Processes									

Table 3.4.b - Welding - Description of Equipment in Place (permanent equipment only)					
Equipment	Number	Max Capacity (tons)	General Maintenance Condition	Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Manual Welding Positioners					
Manual Shell Turning Rolls					
Others					



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MANUFACTURER

Name & Address of Audited Workshop	Activity and Process of Audited Workshop	Audit Date
xxx	xxx	xxx

THEME III - MANUFACTURING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 3.4.c - Welding - Description of Qualified Welding Procedures in Place (by approximate numbers)									
Welding Process	Manual	Automatic	Material P n°	Impact Test	PWHT	ASME IX	ISO 15614	Other standard	Comments <i>To be filled by TOTAL or Company representative</i>
SMAW									
SAW									
GMAW									
GTAW									
FCAW									
Weld Overlay Processes									

Table 3.4.d - Welding - Description of Welding Staff : numbers of welders qualified per welding process and material grade										
Welding Process	ASME IX	EN 287	Carbon Steel P1	Cr Alloyed steel P4/P5	Stainless steel P8	Duplex stainless steel P10	Ni Alloys (P43 to P45)	Cu-Ni	Ti	Others
SMAW										
SAW										
GMAW										
GTAW										
FCAW										
Others										

Table 3.4.e - Welding - Description of Welding Staff : number and qualifications (to be joined)				
	Number	Type of Qualification	Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Welding Engineer				
Welding Supervisor				



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xxx	xxx	xxx

THEME III - MANUFACTURING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 3.5 - Heat Treating after Welding - Description of Equipment in Place					
	Furnace n°1	Furnace n°2	Furnace n°3	Furnace n°4	Comments <i>To be filled by TOTAL or Company representative</i>
Heating source (Fuel, Gas, Electric)					
Inside dimensions (Height x Width x Length) (m)					
Automatic control or manual					
Maximum number of thermocouples per charge					
Number of readings recorded per charge					
Method of loading					
Maximum temperature					
Maximum load at maximum temperature					
Cooling equipment					

Table 3.6 - Machining - Description of Equipment in Place					
Equipment	Type / Number	Max. Capacity	General maintenance condition	Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Boring Mills					
Milling					
Lathes					
Drilling machines					
Lapping machines					
Others					

Table 3.7 - Assembling - Description of Equipment in Place					
Equipment	Type / Number	Max. Capacity	General maintenance condition	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Handling					
Pneumatic screwing machine					
Dynamometric keys					
Working desks					
Others					



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MANUFACTURER

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THEME III - MANUFACTURING

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 3.8 - Pickling / Passivation - Description of Equipment in Place

	Type	Characteristics	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Pickling	chemical			
Pickling	mechanical			
Passivation				
Recycling				
Waste treatment				

Table 3.9 - Testing Facilities

Test type	Test sub-contracted outside manufacturer workshop : YES / NO / PARTIAL	Fluid Medium	Range of diameter	Max Pressure (bars) or Max Flow (Nm3/hr)	Quantity of valves tested by hour by bench	Water supply with a controlled chloride content ? <i>If yes, indicate the maximum chloride content</i>	Number of test bench	Comments / Description (% of sub-contracted tests, test description,...)
Hydrostatic pressure test								
Helium pressure test								
Vacuum pressure test								
Seat leakage test								
Regulator setpoint test								
Capacity (Cv) test								
Fugitive emissions test								
Packing test								
Functional tests								
Cryogenic								
Others								



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THEME III - MANUFACTURING

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Table 3.10 - Coating - Description of Equipment in Place					
	Type	Description	Max Capacity	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Manual shot-blasting					
Automatic shot-blasting					
Painting inside workshop					
Painting outside workshop					

Table 3.11 - Sub-contracting : List of sub-contracted manufacturing operations					
Manufacturing Operations	Sub-contractor (name, address,...)	Under which conditions : thickness range, material grade, diameter, weight, ... (for which reasons) ?	% of sub- contracting	Comments (follow-up, supervision, proximity of workshop...)	Comments <i>To be filled by TOTAL or Company representative</i>
Casting	see table 3.2				
Forging	see table 3.3				
Welding and/or repairs					
Heat treating					
Machining					
Assembling					
Pickling / Passivation					
Pressure testing					
Coating					



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MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

THEME IV - PRODUCTS MANAGEMENT (CONTROL, TESTING, INSPECTION, STORAGE)

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Table 4.1.a - In-coming Material Management - Material Storage			
Type of Storage	Dimension	Comments / Description (material stored,...)	Comments <i>To be filled by TOTAL or Company representative</i>
Covered storage yard			
Open storage yard			
Warehouse			

Table 4.1.b - In-coming Material Management - Storage Conditions		
Storage Conditions for :	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Small material		
Fragile material		
Welding consumables		
Dye penetrant products		
Gaskets		
Others		

Table 4.2.a - Inspection, Testing and Quality Control - Quality Control (Inspection) Organisation (attach an organization chart)					
Function or Qualification	Staff (number/quantity of people)	Contracted (number/quantity of people)	Qualification level	Qualification referential	Comments <i>To be filled by TOTAL or Company representative</i>
QC Manager					
Workshop inspector					
Radiographic Inspector					
Radiographic Operator					
UT Inspector					
MPI Inspector					
DP Inspector					
Others					

Table 4.2.b - Inspection, Testing and Quality Control - Non Destructive Testing and Control Equipment							
Type of Inspection	Type of Equipment	Number of Equipment	Calibration of Equipment updated (yes/no) ?	NDT procedures (availability, issuance, updating)	Number of tests per year	Sub-contracted testing : Yes / No / Partial ?	Comments / Names of sub-contractor / Description of Capacity
X-rays							
Gamma rays							
Ultrasonic Testing							
Magnetic particle							
Liquid penetrant							



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MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

THEME IV - PRODUCTS MANAGEMENT (CONTROL, TESTING, INSPECTION, STORAGE)

All facilities described herein are meant to be permanent in-house facilities only. Any sub-contracted activity must be clearly indicated showing the names and addresses of related Subcontractors. The number, type and status of all listed equipment are subject to thorough checks by the COMPANY representative in charge of the Plant Survey during his visit of the facilities.

Interpretation devices (densitometer, viewing facilities)							
Hardness							
Ferrite tester							
PMI							
Leak test (helium,...)							
Spectrometer							
Dimensional control devices (control gage)							
Others							

Table 4.2.c - Inspection, Testing and Quality Control - Destructive Testing Equipment							
Type of Inspection	Type of Equipment	Number of Equipment	Calibration of Equipment updated (yes/no) ?	DT procedures (availability, issuance, updating)	Number of tests per year	Sub-contracted testing : Yes / No / Partial ?	Comments / Description of Capacity
Tensile Testing							
Bending Facilities							
Impact Testing (Charpy V Notch,...)							
Hardness Testing							
Macro -micrography							
HIC facilities							
Chemical analysis							
Others							

Table 4.3.a - Finished Goods Management - Goods Storage			
Type of Storage	Dimension	Comments / Description (material stored,...)	Comments <i>To be filled by TOTAL or Company representative</i>
Covered storage yard			
Open storage yard			
Warehouse			

Table 4.3.b - Finished Goods Management - Storage Conditions		
Storage Conditions for :	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Small goods		
Fragile goods		
X-ray films		
Others		



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MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

THEME IV - PRODUCTS MANAGEMENT (CONTROL, TESTING, INSPECTION, STORAGE)

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Table 4.4 - Procurement Practices - Manufacturer's Suppliers List / Source of Materials				
Material	Suppliers	Number of audits / year	Comments (follow-up procedures, approval,...)	Comments <i>To be filled by TOTAL or Company representative</i>
Plates and pipes				
Flanges				
Forgings plant 1				
Forgings plant 2				
Forgings plant 3				
Castings plant 1				
Castings plant 2				
Castings plant 3				
Castings plant 4				
Bolting				
Gaskets				
Packings				
Others				