



Exploration & Production

GENERAL SPECIFICATION

ELECTRICAL

GS EP ELE 961

Technical Assessment of Electrical Cables Manufacturers
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00	01/2012	First issue
Rev.	Date	Notes

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

This General Specification defines Company practices and tools to use to perform technical assessment of Electrical Cables 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 ELE 161	Electrical cables
GS EP ELE 765	Subsea cables



3. Technical assessment process of Electrical Cables Manufacturers

The technical assessment process of an Electrical Cables 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 Electrical Cables Manufacturer, by the Company.

The Electrical Cables 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 ELE 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 ELE discipline of E&P Technology Division.

This audit shall be performed by the ELE 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 ELE 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: Electrical Cables 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 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 IV" 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 or its representative to summarize result and decisions after analysis of the

Technical Information Analysis Form.

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



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Appendix 1

	Technical Information Analysis Form : Electrical Cables Manufacturer	GS EP ELE 961 Appendix 1 Revision 00 Date : January 2012
According Total specifications : GS EP ELE 161, GS EP ELE 765		Assessment report N° :

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 ITS 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) - TO BE FILLED BY TOTAL OR ITS REPRESENTATIVE			
Result of Information Analysis of GS EP ELE 961 - 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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Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

ACTUAL PRODUCTION RANGE / APPROVED PRODUCTION RANGE OF THE MANUFACTURER
<i>To list all the actual production ranges of the manufacturer and select and comment the approved ones.</i>

				To be completed by the manufacturer		To be completed by Total or representative Company	
Type	Code	Standard (IEC, BS,...)	Designation	Maxi cables production/ year (ton)	Actual maximum capacities * and base materials **	Approved maximum capacities * and base materials **	
Cables	2341-01		LV power cables (U ≤ 1000 V)				
	2341-02		LV control cables (U ≤ 1000 V)				
	2342-01		MV power cables (1000 V < U ≤ 35000 V)				
	2342-02		HV and VHV power cables (U > 35000 V)				
	2345		Electrical tracing				
	2346		Special cables				
	2651		Submarine power cables				

* Maximum Capacities to indicate : Length (km), Weight (tons),...

** Base Materials to consider : Copper, Aluminium,...



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MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date 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.a - 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			
Chemical laboratory			
Material and extrusion laboratory			
Metallurgical laboratory			
Electrical laboratory			
Testing facilities			
Warehouses			
Covered storage areas			
Open air storage areas			

Table 1.1.b - 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			
R&D Manager			
HSE Manager			
Logistic Manager			
Others			



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MANUFACTURER

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

THEME I - GENERAL ORGANIZATION

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Table 1.1.c - 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					
Procurement					
Expediting / Shipment					
Fabrication					
Testing					
Quality control / laboratory (inspectors,...)					
Quality for in-coming material					
Quality assurance					
Management					
Shop supervision					
Number of persons dedicated to customer site intervention					
Total number of Employees					

Table 1.1.d - 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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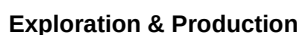
MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX

THEME I - GENERAL ORGANIZATION

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Table 1.1.e - General Organization - Work Load Status and Commercial data		
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)		
Average delivery time		
Men hour capacity		
Work shift : normal, 2x8, 3x8		
Present and future work load (%)		
Future investment (tools, building, human ressources,...)		
Number of international facilities		
Location of international facilities		

Table 1.1. f - General Organization - References on similar jobs (O&G)										
Year built	Customer (Total, others,...)	Country of installation	Conductor Type	U0/U/(Um)	Ambient range temperature	Offshore / Onshore Application	Insulation type	Length (km)	Cross section (range)	Armour type



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THEME I - GENERAL ORGANIZATION

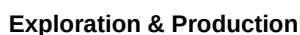
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Table 1 - General Organization - List of documents to send by the manufacturer, to Total, in English (or French, if available) languages, with all Tables filled, before on site technical review			
List of documents	Documents received : YES / NO ?	Documents available in English (or French) language : YES / NO ?	Comments <i>To be filled by TOTAL or Company representative</i>
Plot plan, layout of the plant			
General organization chart			
Quality Control Organization Chart			
Products catalogue			
Process flow chart			
Manufacturing procedures			
Assembling procedures			
Testing procedures			
Repairing procedures			
Control procedures			
Non-conformities management procedures			
In-coming material inspection procedures			
Example of cables drawing with nomenclature			
Sub-contractor evaluation, follow-up and audit procedures			
Quality manual			
ISO certificates, Atex, IECEx certificates for accessories, others,....			
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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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.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				

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

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XXX	XXX	XXX

THEME II - ENGINEERING

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Table 2.1.c - Engineering / Design Capacity - Calculation Facilities (Softwares for design calculation : finite element, thermal, flow, stress, hydraulic, electrical, others...)				
Type of Calculation	Design Codes	Computer Programs (Softwares)	Sub-contracted (if any) at external company	Comments <i>To be filled by TOTAL or Company representative</i>
Electrical				
Thermal				
Magnetic				
Mechanical				
Chemical				
Others				

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

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

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MANUFACTURER

Name & Address of Audited Workshop XXXX	Activity and Process of Audited Workshop XXXX	Audit Date XXXX
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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 3.1.a - Workshop General Organization - Bay and Cranes / Handling facilities							
Bay n°	Bay Dimensions (m x m)	Type of Crane / Handling	Number of Cranes	Capacity (tons)	Height under Hook (m)	Electrical or Manual	Comments (certification date,...)
Reception material							
Conductor							
Insulation material							
Conductor assembly							
Extrusion							
Core assembly							
Armour							
Others							

Table 3.1.b - Workshop General Organization - General Manufacturer Aptitude		
Items to check	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
List of tests and controls during manufacturing process		
Conductor copper and/or aluminium		
Maximum cross section for LV and HV cables		
Conductive layer extruder and/or tape		
Insulation XLPE/EPR/TPR		
Screen type and material		
Type radial field or non radial field		
Type of inner sheaths and fillers		
Inner sheath PE/PCV/Lead sheath		



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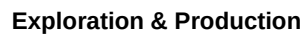
MANUFACTURER		
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THEME III - MANUFACTURING

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.

Armour type and material		
UV ray protection		
Zero halogen cables		
Hydrocarbon protection (aromatic, aliphatic)		
Fire protection		
Metric making type		
Accessories		

Table 3 - Sub-contracting : List of sub-contracted manufacturing operations					
Manufacturing Operations	Sub-contractor (name, address,...)	Under which conditions : length (km), weight (tons)... (for which reasons) ?	% of sub-contracting	Comments (follow-up, supervision, proximity of workshop...)	Comments <i>To be filled by TOTAL or Company representative</i>



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MANUFACTURER

Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX
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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 4.3.a - Finished Goods Management - Goods Storage			
Type of Storage	Dimension (m ²)	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>
LV cables		
HV cables		
Subsea cables		
FO cables		
Control cables		
OHL cables		
Earthing cables		
Others		

Table 4.3.c - Finished Goods Management - Shipping Facilities				
Type	Maximum Dimension	Maximum Capacity	Comments / Description	Comments <i>To be filled by TOTAL or Company representative</i>
Rail				
Road				
Water ways				
Sea				



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Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date XXX
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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 - Procurement Practices - Manufacturer's Suppliers List / Source of Materials				
Material	Suppliers (Normally 2 to 3 suppliers for each items with long term agreement)	Number of audits / year	Comments (follow-up procedures, approval,...)	Comments <i>To be filled by TOTAL or Company representative</i>
Copper wires				
Copper tapes				
Aluminium				
Semi conductive material				
FO				
Insulation material				
Filler material				
Steel wires (armour)				
Steel tapes (armour)				
Aluminium tapes (armour)				
Chemicals (cable additives)				
Accessories				
Others				