



Exploration & Production

GENERAL SPECIFICATION

ELECTRICAL

GS EP ELE 941

Technical Assessment of Power Transformers Manufacturers

00	01/2012	First issue
Rev.	Date	Notes

Owner: DEV/TEC	Managing entity: DEV/TEC/ELE
----------------	------------------------------



Contents

1. Scope	3
2. Reference documents.....	3
3. Technical assessment process of Power Transformers Manufacturers.....	4
3.1 Step 1: Gathering of information	4
3.2 Step 2: Data Analysis of Appendix 1 and following actions	4
3.3 Step 3: Assessment notification to the Manufacturer.....	4
Appendix 1 Technical Information Analysis Form: Power Transformers Manufacturer - EXCEL spreadsheet.....	5



1. Scope

This General Specification defines Company practices and tools to use to perform technical assessment of Power Transformers 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 141	Power transformers



3. Technical assessment process of Power Transformers Manufacturers

The technical assessment process of a Power Transformers 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 Power Transformers Manufacturer, by the Company.

The Power Transformers 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: Power Transformers Manufacturer - EXCEL spreadsheet



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012

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 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.

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

The three other sections have to be filled by Total or its representative to summarize results and decisions 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.



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer		GS EP ELE 941 Appendix 1
			Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		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 941 - 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 - TO BE FILLED BY TOTAL OR ITS REPRESENTATIVE			
SIGNATURE OF TOTAL OR REPRESENTATIVE TEAM			
NAME	DATE	NAME	DATE



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

MANUFACTURER		
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>

Type	Code	Designation	Transformer type *	Standards	To be completed by the manufacturer		To be completed by Total or representative Company	
					Actual maximum range capacities **		Approved maximum range capacities **	
Power Transformers	2321-01	HV/HV oil immersed power transformer						
	2321-02	HV/LV oil immersed power transformer						
	2321-03	Dry type power transformers						
	2321-04	Small power and lighting transformers (P<=250 KVA) dry type						
	2321-05	Transformers for diodes rectifiers						
	2321-06	Transformers for others electronic equipments						
	2321-07	Earthing transformers						
	2321-08	Special transformers						

* Transformer type : Hermetic, breathing, dry, oil immersed, ONAN, ONAF, OLTC, certified for hazardous area, ...

** Maximum Capacities to indicate : Power, Voltage range,



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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			
Metallurgical laboratory			
Material / component testing laboratory			
Material R&D laboratory			
Material life time and endurance laboratory			
Testing workshop			
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			
Customer care & change manager			
Industrial transfer project manager			
HSE Manager			
Logistic Manager			
Others			



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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

THEME I - GENERAL ORGANIZATION
<i>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.</i>

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 / laboratory					
Procurement					
Expediting / Shipment					
Fabrication					
Testing					
Quality control					
Quality for in-coming material					
Quality assurance					
Management					
Number of Supervisory Personnel / 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				



	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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.e - General Organization - Work Load Status and Commercial data		
Items	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	Transformer Type	Cooling type	Ambient temperature range	Offshore / Onshore Application	Hazardous area Atex IECEx	Power in MVA	Primary and Secondary Voltage in Volt	Coupling



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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.g - General Organization - Transformers Technology		
Items	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
Ambient temperature range capability		
Dry type transformer power range in kVA		
Dry type transformer voltage range in kV		
Use of impregnated or pre impregnated technology		
Use of cast resin technology		
Oil type transformer power range in kVA		
Oil type transformer voltage range in kV		
Type of dielectric used		
Use of copper conductor		
Use of aluminium conductor		
Type and name of insulation material		
Type of cooling capability (ONAN, ONAF,....)		
Capability to provide transformer fitted with OLTC		
Capability to provide transformer suitable for hazardous area		
Type of connection HV & LV		
Capability to design and manufacture 18 pulse transformer		
Capability to design and manufacture 24 pulse transformer		
Average induction design level in Tesla		
Transformer internal/external coating		
Seismic constrains experiences and capability		

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



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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 - 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 transformer 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			

Total Confidential

printed 12/10/2011

Page 5 de 5

This document is the property of Total. It must not be stored, reproduced or disclosed to others without written authorisation from the Company.



	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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.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			
Standards	Date of Revision	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
IEC 60726			
IEC 60378			
Atex Directive			
IEC Ex			
GS EP ELE 141			
Others			

Table 2.1.c - Engineering / Design Capacity - Deviation list to GS EP ELE 141				
Item	Clause	Description	TOTAL requirement	Manufacturer Proposal
1				
2				
3				
4				

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

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

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



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

MANUFACTURER		
Name & Address of Audited Workshop XXX	Activity and Process of Audited Workshop XXX	Audit Date 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.a - Workshop General Organization - Manufacturing Organization		
Items	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>
List of tests and controls during manufacturing process		
Painting procedure		
Type of paint used		
Paint thickness possibilities		
Certification of personal in charge of tests		
Manufacturing surface area		
Crane and handling capability in tons		
Type and thickness of steel used in the magnetic core		
Cast resin manufacturing procedure		
Impregnated and pre impregnated manufacturing procedure		
Welder certification		

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



	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

MANUFACTURER

Name & Address of Audited Workshop XXXX	Activity and Process of Audited Workshop XXXX	Audit Date XXXX
---	---	-------------------------------

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 4.2.a - In-coming Material Management - Material 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 4.2.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		
Others		

Table 4.3.a - Transformer Testing - Facilities Description					
Type of test / control	Description of equipment : type, quantity, range capability	Calibration of equipment (certification, expired date)	Testing procedures and IEC standards (availability, issuance, updating)	Testing sub-contracted ? If yes, indicate the name of sub-contractor	Recording and measurement capability
Winding resistance					
Voltage ratio / phase displacement					
No load losses and no load current					
Short circuit impedance and load losses					
Dielectric routine test					
Partial discharge measurements					
Temperature rise					
Noise measurement					
Lightning impulse test					
Short circuit withstand test					
Voltage range test					
Power range test					
Others					



Exploration & Production

General Specification

Date : 01/2012

GS EP ELE 941

Rev : 00

Appendix 1

	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

MANUFACTURER

Name & Address of Audited Workshop XXXX	Activity and Process of Audited Workshop XXXX	Audit Date XXXX
---	---	-------------------------------

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 4.5.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 4.5.b - Finished Goods Management - Storage Conditions		
Storage Conditions for :	Description / Comments	Comments <i>To be filled by TOTAL or Company representative</i>

Table 4.5.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				



	Technical Information Analysis Form : Power Transformers Manufacturer	GS EP ELE 941 Appendix 1
		Revision 00 Date : January 2012
According Total specifications : GS EP ELE 141		Assessment report N° :

MANUFACTURER

Name & Address of Audited Workshop XXXX	Activity and Process of Audited Workshop XXXX	Audit Date XXXX
---	---	-------------------------------

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>
Silicium steel sheet				
Transformer tank & oil conservator tank				
Radiator				
Bare copper wire				
Enameled wire				
Silk covered wire				
NOMEX covered copper wire				
Bare aluminium wire				
Hot rolled steel plate				
Rectangular tube, flat bar angle				
Cold plate roll				
Hot rolled steel plate, channel steel				
Insulating material for dry type transformer				
Paint				
Transformer oil				
Impregnated varnish				
Epoxy resin				
Pressure relief valve, Moisture absorber				
Multifonction relay (gaz, pressure and temperatures)				
Oil level indicator				
Buchhol Relay				
Rubber sealing strip				
Tap changer				