

 <b>Eskom</b>	<b>Standard</b>	<b>Transmission</b>
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Title: INSPECTION SHEETS FOR  
SUBSTATION EQUIPMENT TO BE  
TAKEN OVER BY THE ASSET  
OWNER

Document Identifier: **41-141**

Alternative Reference  
Number:

Area of Applicability: **Transmission**

Functional Area: **Transmission Grids**

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Disclosure  
Classification: **Controlled Disclosure**

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Date: 18/02/15

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Date: 18/02/15

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## Introduction

The South African Grid Code, System Operations and Transmission Grids requires assurance and documentation to the effect that new plant connected to the Transmission system meets the technical specifications, has been correctly installed and can be energised safely and put on load.

## Supporting Clauses

### Scope

This document provides inspection sheets for substation equipment to be taken over by the asset owner based on equipment standards.

### Purpose

To ensure that all new equipment connected to the Transmission system meet the technical specifications has been correctly installed and taken over by the asset owner.

### Applicability

These inspection sheets are applicable to all substations throughout Transmission Group where work of a construction nature is performed.

## Normative/Informative References

Parties using this Inspection List shall apply to the most recent edition of the documents listed below.

### Normative

ISO 9001 Quality Management Systems.

□ TPC41-140 - SECONDARY PLANT COMMISSIONING OF TRANSFORMERS AND REACTORS

□ TPC41-139 - SECONDARY PLANT COMMISSIONING OF CURRENT TRANSFORMERS

□ TPC41-180 - SECONDARY PLANT COMMISSIONING OF EHV OR HV FEEDER BAY

TPC41-446 - PROTECTION MAINTENANCE OF BUS COUPLERS AND BUS SECTIONS

TST41-877 - TRANSMISSION SUBSTATIONS DESIGN EARTHING STANDARD

TST41-877 - TRANSMISSION SUBSTATIONS DESIGN EARTHING STANDARD

TST41-642 - CONTINUITY MEASUREMENT OF TRANSMISSION SUBSTATION EARTH MAT SYSTEM

TPC41-547 – Commissioning of Isolators

TPC41-129 - Capacitor Banks

TST41-655 Specification for the design, manufacture and installation

TPC41-145 Commissioning of Shunt capacitors

TPC41-139 Commissioning of current Transformers

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## Informative

- 240-69120191 Process Control Manual for Manage Project Delivery
- 240-44460228 Process Control Manual for Finalise Engineering Work
- 240-43170220 Process Control Manual for Technical Assurance

## Definitions

Definition	Explanation
<b>Asset owner</b>	Transmission Grid shall be the asset owner
<b>Asset creator</b>	Capital Expansion Department or other entity entrusted with work of a capital expenditure nature in an HV switchyard belonging to Transmission.
<b>Consolidated Engineering Work Handover Pack</b>	The consolidate engineering work handover pack may include the following: Updated Defect List, Final Handover Safety Clearance, Performance test certificate, Project Design Manual (PDM), Validation Report, Engineering Change Register, Final Design Package, As Built Drawings and Final Drawing Register, the As Commissioned plant performance data.
<b>Project leader</b>	An appointed person who is overseen the project execution
<b>Inspection sheet Template / Form</b>	A predetermined format defining the information required for a specific purpose and space for the provision of the information:  A Template is a pre-developed page layout used to create new pages from the same design, pattern or style.  A Form is a document with blank spaces for information to be inserted  It could include: Authorisations and Approvals, Assessments, Certificates, Forms, Checklists, Meeting documents, Registers, Reports and Statements.
<b>Grid representative</b>	Contractor issues a signed take over certificate to the project manager, project manager signs and prepares hand over certificate to client/owner and ensure all required signatures are on the take-over certificate. The conditional acceptance terms are captured and all project administration is closed out
<b>Equipment Hand-over Certificate</b>	A Person/s appointed by the grid that will represent the grid during the taking over phases of the project as stipulated in this document.
<b>Accredited Sanctioner</b>	A person accredited to sanction equipment to service (new or existing plant)

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Abbreviations

Abbreviation	Explanation
QITP	Quality Inspection and Test Plan
PCM	Process Control Manual
CT	Current Transformer
VT	Voltage Transformer
CVT	Current Voltage Transformer
HV	Transformer
Tx	Transmission
NCR	Non-conformance report
kA	Kilo Amp
OEM	Original Equipment Manufacturer
MVa	Megavolt ampere
MPa	Mega Pascal
MV	Medium Voltage
LV	Low Voltage
OLTC	On Load Tap changer
HVE	High Voltage Engineering
PCB	Polychlorinated Biphenyl
kV	Kilovolt
PRV	Pressure Release Device
CD	Compact Disk
kPa	Kilo Pascal
SFRA	Swept Frequency Response Analysis
SLDG	Design Guide for power Line Carrier Coupling Equipment
SF <sub>6</sub>	Sulphur Hexafluoride gas
sec	second
m Ohm	Milli-ohm
GIS	Gas Insulated Switchgear
NCT	Neutral Current Transformer
PI	Post Insulator
HSE	Health & Safety Environmental
EC	Earthing Conductor
OLM	Overhead Light Mast
DB	Distribution Board
LT	Line Trap
Ø	Phase
KHz	Kilohertz

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### **Roles and Responsibilities**

- Grid Managers are to ensure that the requirements of this standard are met before the energisation of new plant is sanctioned.
- The hand-over file with all relevant inspection sheets, as required in this standard, must be compiled per bay / equipment type, by the project leader and signed off by the Grid representative as per defined requirements.
- The accredited sanctioner shall only sanction new equipment to service after all signatures were obtained as required by the “Hand-over certificate” – Annex A and all critical NCRs are closed-out.
- All site-specific NCRs not closed-out shall be managed and closed out by the project leader and monitored by the relevant Grid representative.

### **Process for Monitoring**

N/A

### **Related/Supporting Documents**

N/A

### **Acceptance**

This document has been seen and accepted by:

<b>Name</b>	<b>Designation</b>
B Ntshangase	Corporate Consultant - HV Switchgear (Technology)
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C van Coppenhagen	Grid Manager - Northern Grid
K Munsamy	Grid Manager - North East Grid
S Maya	Grid Manager – Northern Cape
S Mvana	Grid Manager - North West Grid
V Shikoana	Grid Manager - Central Grid
L Mothata	Grid Manager – Free State
T Tshikalange	Apollo DC

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**INSPECTION SHEETS SUBSTATION  
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<b>Name</b>	<b>Designation</b>
T Tshikalange	Apollo DC
A Kotze	Asset Management - Centre of Excellence
B Murfin	Quality Assurance

**Revisions**

<b>Date</b>	<b>Rev.</b>	<b>Compiler</b>	<b>Remarks</b>
June 2005	1	HJ de Bod	New Document
December 2014	2	AH Aylward & H de Bod	Revised and/or added new inspection sheets

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## **Acknowledgements**

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## Annex A - Equipment Handover Certificate

Substation:	Feeder / Panel:	Date:

Table 1 – Component & Authorisation Requirements

Required (Yes / No)	File Section	Description	Reference Document	Tx Discipline accountability	Grid Representative (Name & Signature)	Project Leader (Name & Signature)
Yes	COVER SHEET	Equipment Handover Certificate - Transmission	Annex A	N/A	N/A	N/A
Yes	A	Outstanding NCRs (Non critical defects are outstanding) Listed in Table 4	(Annex A) Table 4	HV Plant Secondary Plant		
Yes	B	In & Out Commissioning Sheets	Annex B	HV Plant Secondary Plant		
	C	Earth mat and tails	Annex C	HV Plant Secondary Plant		
	D	Isolators / Pantographs & Earthing Switches	Annex D	HV Plant Secondary Plant		
	E	Power Transformers & Reactors	Annex E	HV Plant Secondary Plant		
	F	Instrument Transformers (CTs, VTs & CVTs)	Annex F	HV Plant Secondary Plant		
	G	Surge Arrestors / Composite Long Rod	Annex G	HV Plant		

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		Insulators (Stringers) & Post Insulators		Secondary Plant	
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**Table 1 – Component & Authorisation Requirements (Continued)**

Required (Yes / No)	File Section	Description	Reference Document	Tx Discipline accountability	Grid Representative (Name & Signature)	Project Leader (Name & Signature)
	H	Live Tank Circuit Breakers	Annex H	HV Plant		
				Secondary Plant		
	I	Dead Tank Circuit Breakers	Annex I	HV Plant		
				Secondary Plant		
	J	Capacitor Banks	Annex J	HV Plant		
				Secondary Plant		
	K	Civil Works & Buildings	Annex K	HV Plant		
				Secondary Plant		
	L	Stringing & Cabling	Annex L	HV Plant		
				Secondary Plant		
	M	Line Traps	Annex M	HV Plant		
				Secondary Plant		

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Table 2 - Documentation

Required (Yes / No)	File Section	Description	Reference Document	Tx Discipline accountability	Grid Representative (Name & Signature)	Project Leader (Name & Signature)
YES	N	Operating Diagram	??			
YES	O	Commissioning Procedure	??			
YES	P	Earthing Procedure (e.g. Capacitor Bank)	??			
YES	Q	Network Contingency Plan	??			
YES	R	Execution Programme	??			

Table 3 - Tools and Spares

Required (Yes / No)	File Section	Description	Reference Document	Tx Discipline accountability	Grid Representative (Name & Signature)	Project Leader (Name & Signature)
	S	Production Equipment (Special Tools)		HV Plant		
				Secondary Plant		
	T	Spares (Maintenance / Critical Spares)		HV Plant		
				Secondary Plant		

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Table 4 - Non Conformances

OUTSTANDING NON CONFORMANCES (NCR's) ISSUED		
NCR No	NCR Description	Date NCR to be closed out

Table 5 – Sanction (Sanction to go Operational)

Accredited Sanctioner (Tx)		
Name	Signature	
Designation:	Date:	

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## Annex B - IN AND OUT COMMISSIONING SHEETS

	<b>Power Transformer In/Out Commissioning Sheet</b>				Unique Identifier				
					Doc No:				
					Revision				
					Effective date				
Grid									
CLN									
Substation									
Bay									
Plant Slot Application:									
Cost Centre:				Project No:					
Reason for Decommissioning:				Decommissioning Date					
Reason for Commissioning:				Commissioning Date					
<b>EXISTING EQUIPMENT DATA</b>									
Manufacturer						Model No			
Serial Number	RØ			WØ			BØ		
KV Ratio	HV			LV			Ter/ Aux		
Full Load Amps	HV			LV			Ter/ Aux		
kA Rating						Manufacturing Year/Date			
Neutral Earth	Yes		No		Oil Quantity(Main Unit)				
Removed Equipment will be:	Scrapped			Repaired			Moved to new position		Stores
<b>NEW EQUIPMENT DATA</b>									
Manufacturer						Model No			
Serial Number	RØ			WØ			BØ		
KV Ratio	HV			LV			Ter/ Aux		
Full Load Amps	HV			LV			Ter/ Aux		
kA Rating						Manufacturing Year/Date			
Neutral Earth	Yes		No		Oil Quantity(Main Unit)				
Replacement Equipment is:		New			Obtained from another position				

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<b>POWER TRANSFORMER</b>												
<b>Cooling</b>												
Air Natural				Oil Forced Air Forced				Oil Forced Water Forced				
Oil Natural Air Forced				Oil Natural Air Natural								
<b>Open or Sealed Unit</b>												
Open Unit				Sealed Unit								
<b>Single Phase or Three Phase</b>												
Single Phase				Three Phase								
<b>Vector (Primary/Secondary)</b>												
11YY0		31DY1		32YD1		32YD9		33YZ1		33YZ11		
41DY11		41DY3		42YD11		AAND1		DY1		DY11		
DY3		DY9		DYN1		DYN11		Interstar		YD1		
YD11		YD7		YN		YN0		YNA		YNA0		
YNA0D1		YND1		YND11		YND7		YNY0		YNYN0		
YNZ1		YNZ11		YNZ7		YY0		YY0YD1		YYN0		
YYN0D1		YYN0Y ND1		YZ1		YZ11		YZ7		YZN11		
ZNY11		ZY11		ZYN								
<b>Notes:</b>												
	<b>Name</b>			<b>Signature</b>					<b>Date</b>			
<b>Data provided by</b>												
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	Power Reactor In/Out Commissioning Sheet				Unique Identifier				
					Doc No:				
					Revision				
					Effective date				
Grid									
CLN									
Substation									
Bay									
Plant Slot Application:									
Cost Centre:				Project No:					
Reason for Decommissioning:				Decommissioning Date					
Reason for Commissioning:				Commissioning Date					
<b>EXISTING EQUIPMENT DATA</b>									
Manufacturer					Model No				
Serial Number	RØ			WØ			BØ		
KV Ratio	HV			LV			Ter/ Aux		
Full Load Amps	HV			LV			Ter/ Aux		
kA Rating					Manufacturing Year/Date				
Neutral Earth	Yes		No		Oil Quantity(Main Unit)				
Removed Equipment will be:	Scrapped			Repaired		Moved to new position		Stores	
<b>NEW EQUIPMENT DATA</b>									
Manufacturer					Model No				
Serial Number	RØ			WØ			BØ		
KV Ratio	HV			LV			Ter/ Aux		
Full Load Amps	HV			LV			Ter/ Aux		
kA Rating					Manufacturing Year/Date				
Neutral Earth	Yes		No		Oil Quantity(Main Unit)				
Replacement Equipment is:		New			Obtained from another position				

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<b>POWER REACTOR</b>							
<b>Cooling</b>							
<b>Air Natural</b>		<b>Oil Forced Air Forced</b>		<b>Oil Forced Water Forced</b>			
<b>Oil Natural Air Forced</b>		<b>Oil Natural Air Natural</b>					
<b>Open or Sealed Unit</b>							
<b>Open Unit</b>		<b>Sealed Unit</b>					
<b>Single Phase or Three Phase</b>							
<b>Single Phase</b>		<b>Three Phase</b>					
<b>Notes:</b>							
	<b>Name</b>	<b>Signature</b>				<b>Date</b>	
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	<b>Bushing In/Out Commissioning Sheet</b>		Unique Identifier		
			Doc No:		
			Revision		
			Effective date		
Grid					
CLN					
Substation					
Bay					
Plant Slot Application:					
Cost Centre:			Project No:		
Reason for Decommissioning:			Decommissioning Date		
Reason for Commissioning:			Commissioning Date		
<b>EXISTING EQUIPMENT DATA:</b>					
Manufacturer				Model No	
Serial Number	RØ		WØ		BØ
KV Rating				Manufacturing Year/Date	
Nominal Current					
Removed Equipment will be:	Scrapped		Repaired		Moved to new position
					Stores
<b>NEW EQUIPMENT DATA:</b>					
Manufacturer				Model No	
Serial Number	RØ		WØ		BØ
KV Rating				Manufacturing Year/Date	
Nominal Current					
kA Rating					
Replacement Equipment is:		New		Obtained from another position	
<b>INSULATION MEDIUM</b>					
Air		Gas Insulated Switchgear		Oil	SF <sub>6</sub> Gas
Notes:					
	Name	Signature			Date
Data provided by					
Erected by					

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	<b>Tap Changer In/Out Commissioning Sheet</b>		Unique Identifier				
			Doc No:				
			Revision				
			Effective date				
Grid							
CLN							
Substation							
Bay							
Plant Slot Application:							
Cost Centre:				Project No:			
Reason for Decommissioning:			Decommissioning Date				
Reason for Commissioning:			Commissioning Date				
<b>EXISTING EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number		RØ		WØ		BØ	
kA Rating				Manufacturing Year/Date			
ON Load Tap Changer		Yes		No		OFF Load Tap Changer	Yes
							No
Number of Taps				Oil Quantity			
Removed Equipment will be:		Scrapped				Moved to new position	
							Stores
<b>NEW EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number		RØ		WØ		BØ	
kA Rating				Manufacturing Year/Date			
ON Load Tap Changer		Yes		No		OFF Load Tap Changer	Yes
							No
Number of Taps				Oil Quantity			
Replacement Equipment is:		New				Obtained from another position	

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TAP CHANGER			
Operating Medium			
Oil		Vacuum	
Notes:			
	Name	Signature	Date
Data provided by			
Erected by			
Handed Over by			
Handed Over to			

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	<b>Current Transformer In/Out Commissioning Sheet</b>		Unique Identifier		
			Doc No:		
			Revision		
			Effective date		
Grid					
CLN					
Substation					
Bay					
Plant Slot Application:					
Cost Centre:				Project No:	
Reason for Decommissioning:			Decommissioning Date		
Reason for Commissioning:			Commissioning Date		
<b>EXISTING EQUIPMENT DATA:</b>					
Manufacturer				Model No	
Serial Number	RØ		WØ	BØ	
KV Rating				Manufacturing Year/Date	
kA Rating				Nominal Current	
No of Buszone cores			No of Meter cores		No of Protection cores
Removed Equipment will be:	Scrapped		Repaired		Moved to new position
					Stores
<b>NEW EQUIPMENT DATA:</b>					
Manufacturer				Model No	
Serial Number	RØ		WØ	BØ	
KV Rating				Manufacturing Year/Date	
kA Rating				Nominal Current	
No of Buszone cores			No of Meter cores		No of Protection cores
Replacement Equipment is:		New		Obtained from another position	
<b>CURRENT TRANSFORMER</b>					
<b>Insulation Medium</b>					
Oil/Paper			SF <sub>6</sub> Gas		
Notes:					
	Name	Signature			Date
Data provided by					
Erected by					
Handed Over by					

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**INSPECTION SHEETS SUBSTATION  
EQUIPMENT TO BE TAKEN OVER BY THE  
ASSET OWNER**

Document

**41-141**

Identifier:

Revision:

**2**

Page:

**24 of 154**

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	CVT In/Out Commissioning Sheet				Unique Identifier		
					Doc No:		
					Revision		
					Effective date		
Grid							
CLN							
Substation/Line							
Plant							
Plant Type:							
Cost Centre:				Project No:			
Reason for Decommissioning:				Decommissioning Date			
Reason for Commissioning:				Commissioning Date			
<b>EXISTING EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number	RØ		WØ		BØ		
KV Rating				Manufacturing Year/Date			
kA Rating							
Replacement Equipment is:		New		Obtained from another position			
Removed Equipment will be:		Scrapped		Repaired		Moved to new position	
						Stores	
<b>NEW EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number	RØ		WØ		BØ		
KV Rating				Manufacturing Year/Date			
kA Rating							
Replacement Equipment is:		New		Obtained from another position			
<b>CURRENT VOLTAGE TRANSFORMER</b>							
<b>Insulation Medium</b>							
GIS		Dead Tank Breaker CT		SF <sub>6</sub> Gas		Solid resin	
Notes:							
	Name		Signature			Date	
Data provided by							

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Erected by			
Handed Over by			
Handed Over to			
	<b>Voltage Transformer In/Out Commissioning Sheet</b>	Unique Identifier	
		Doc No:	
		Revision	
		Effective date	
Grid			
CLN			
Substation			
Bay			
Plant Slot Application:			
Cost Centre:		Project No:	
Reason for Decommissioning:		Decommissioning Date	
Reason for Commissioning:		Commissioning Date	
<b>EXISTING EQUIPMENT DATA:</b>			
Manufacturer		Model No	
Serial Number	RØ	WØ	BØ
KV Rating		Manufacturing Year/Date	
kA Rating			
Removed Equipment will be:	Scrapped	Repaired	Moved to new position
			Stores
<b>NEW EQUIPMENT DATA:</b>			
Manufacturer		Model No	
Serial Number	RØ	WØ	BØ
KV Rating		Manufacturing Year/Date	
kA Rating			
Replacement Equipment is:	New	Obtained from another position	
<b>MAGNETIC VOLTAGE TRANSFORMER</b>			
<b>Insulation Medium</b>			
Air	Gas Insulated Switchgear	Oil	SF <sub>6</sub> Gas
<b>Notes:</b>			
	Name	Signature	Date

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**INSPECTION SHEETS SUBSTATION  
EQUIPMENT TO BE TAKEN OVER BY THE  
ASSET OWNER**

Document

**41-141**

Identifier:

Revision:

**2**

Page:

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	Surge Arrestor In/Out Commissioning Sheet		Unique Identifier				
			Doc No:				
			Revision				
			Effective date				
Grid							
CLN							
Substation							
Bay							
Plant Slot Application:							
Cost Centre:				Project No:			
Reason for Decommissioning:				Decommissioning Date			
Reason for Commissioning:				Commissioning Date			
<b>EXISTING EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number	RØ		WØ		BØ		
KV Rating				Manufacturing Year/Date			
kA Rating				Creepage Level (mm/kV)		Deflection Specification (Nm)	
Removed Equipment will be:	Scrapped		Repaired		Moved to new position		Stores
<b>NEW EQUIPMENT DATA:</b>							
Manufacturer				Model No			
Serial Number	RØ		WØ		BØ		
KV Rating				Manufacturing Year/Date			
kA Rating				Creepage Level (mm/kV)		Deflection Specification	
Replacement Equipment is:		New		Obtained from another position			
<b>SURGE ARRESTOR</b>							
<b>Internal design</b>							
Metal Oxide Varistor				Silicon carbide			
Notes:							
		Name		Signature		Date	

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Data provided by			
Erected by			
Handed Over by			
Handed Over to			
	<b>Earthing Switch In/Out Commissioning Sheet</b>	Unique Identifier	
		Doc No:	
		Revision	
		Effective date	
Grid			
CLN			
Substation			
Bay			
Plant Slot Application:			
Cost Centre:		Project No:	
Reason for Decommissioning:	Decommissioning Date		
Reason for Commissioning:	Commissioning Date		
<b>EXISTING EQUIPMENT DATA</b>			
Manufacturer	Model No		
Serial Number			
KV Rating	Manufacturing Year/Date		
kA Rating	Full Load Amp		
Removed Equipment will be:	Scrapped	Repaired	Moved to new position
			Stores
<b>NEW EQUIPMENT DATA</b>			
Manufacturer	Model No		
Serial Number	RØ	WØ	BØ
KV Rating	Manufacturing Year/Date		
kA Rating	Full Load Amp		
Replacement Equipment is:	New	Obtained from another position	
<b>EARTH SWITCH</b>			
<b>Insulation Medium</b>			
Air	Gas Insulated Switchgear	Oil	SF <sub>6</sub> Gas
Notes:			

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	Name			Signature			Date					
Data provided by												
Erected by												
Handed Over by												
Handed Over to												
		Isolator In/Out Commissioning Sheet			Unique Identifier							
					Doc No:							
					Revision							
					Effective date							
Grid												
CLN												
Substation												
Plant												
Plant Slot Application:												
Cost Centre:					Project No:							
Reason for Decommissioning:				Decommissioning Date								
Reason for Commissioning:				Commissioning Date								
<b>EXISTING EQUIPMENT DATA</b>												
Manufacturer					Model No							
Serial Number (Base)		RØ			WØ			BØ				
Serial Number		RØ			WØ			BØ				
Serial Number		RØ			WØ			BØ				
KV Rating					Manufacturing Year/Date							
kA Rating												
Removed Equipment will be:		Scrapped				Repaired				Moved to new position		
<b>NEW EQUIPMENT DATA</b>												
Manufacturer					Model No							
Serial Number (Base)		RØ			WØ			BØ				
Serial Number		RØ			WØ			BØ				
KV Rating					Manufacturing Year/Date							
kA Rating												
Replacement Equipment is:		New				Obtained from another position						
<b>ISOLATOR</b>												
<b>Insulation Medium</b>												
Air		Gas Insulated Switchgear		Oil		SF <sub>6</sub> Gas						
<b>Isolator Type</b>												
Centre Break		Centre Pivot		Ganged		Knee Type						
Pantograph		Side Pivot		Single		Vertical Break						

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Operating Method									
Hydraulic		Manual		Motor		Pneumatic			
Solenoid		Spring		Weight					
Notes:									
	Name		Signature				Date		
Data provided by									
Erected by									
Handed Over by									
Handed Over to									
			<b>Breaker In/Out Commissioning Sheet</b>			Unique Identifier			
						Doc No:			
						Revision			
						Effective date			
Grid									
CLN									
Substation									
Bay									
Plant Slot Application:									
Cost Centre:					Project No:				
Reason for Decommissioning:				Decommissioning Date					
Reason for Commissioning:				Commissioning Date					
EXISTING EQUIPMENT DATA:									
Manufacturer						Model No			
Serial Number		RØ			WØ			BØ	
KV Rating						Manufacturing Year/Date			
kA Rating									
Removed Equipment will be:		Scrapped				Repaired			
						Moved to new position			
								Stores	
NEW EQUIPMENT DATA									
Manufacturer						Model No			
Serial Number		RØ			WØ			BØ	
KV Rating						Manufacturing Year/Date			
kA Rating									
Replacement Equipment is:		New				Obtained from another position			
BREAKER									

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<b>Arc Quenching Medium</b>							
Air		Oil		SF <sub>6</sub> Gas		Vacuum	
<b>Insulation Medium</b>							
Air		Bulk Oil Volume		Gas Insulated Switchgear		SF <sub>6</sub> Gas	
SF <sub>6</sub> Gas Dead Tank		Small Volume Oil		Vacuum			
<b>Operating Method</b>							
Hydraulic		Manual		Motor		Pneumatic	
Solenoid		Spring		Weight			

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BREAKER MECHANISM									
New Equipment Data									
Manufacturer					Model No				
Serial Number	RØ		WØ		BØ				
KV Rating					Manufacturing Year/Date				
kA Rating									
Replacement Equipment is:	New				Obtained from another position				
Existing Equipment Data									
Manufacturer					Model No				
Serial Number	RØ		WØ		BØ				
KV Rating					Manufacturing Year/Date				
kA Rating									
Motor Voltage									
Coil Voltages									
30 Volt dc		50 Volt dc		110 Volt dc		220 Volt dc			
Operating Method									
Hydraulic		Manual		Motor		Pneumatic			
Solenoid		Spring		Weight					
Heaters Present		Yes				No			
Point on Wave Switching		Yes				No			
Notes:									
	Name		Signature			Date			
Data provided by									
Erected by									
Handed Over by									
Handed Over to									

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**ANNEX C - EARTH MAT AND TAILS**

		<b>INSPECTION SHEETS FOR EARTH MAT AND TAILS</b>			
Substation:		Feeder:			
Order No :		Contractor:			
No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Soil Resistivity Test Report available?				
2	Earth mat Drawing? (Old & Revised)				
3	Trenches for Earth mat +/- 1m deep?				
4	Earthing run intervals with the main columns? 330 & 400kV = 20 or 24m 220 & 275kV = 16 or 18m 88 & 132kV = 12 or 15 44 & 66kV = 8 or 10m				
5	Bay earthing as per Bay Layout Drawing?				
6	Earth mat copper rods as per standard?( 2x10mm or 50 x 3mm)				
7	Copper Joints brazed as per standard? (see * page 2)				
8	Earth tails 150mm below ground level at the foundation?				
9	Earth tail properly welded to steelwork (see * page 2)				
10	Earth fault level earthing connections. For 16, 20 & 25kA two connection per support? For 31.5 & 40kA 3 connections per support? For 50 & 63kA 4 connections per support?				

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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**EARTH MAT AND TAILS - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks		
		Yes	No	NCR			
11	Copper rods 150mm into Bund area?						
12	Flat copper strap 50 x 3mm used for earth-switch, CVT & Surge Arrestors?						
13	Is the connection to the steelwork coated with petroleum jelly?						
14	Is there Anti-oxidising grease between dissimilar metals?						
15	Yard Stone layer as per standard?						
16	Stone size as per standard?						
17	Earth mat Test Report? (TST41-642 & TST41-877)						
18	Earth mat test results to standard? (TST41-642 & TST41-877)						
19	A filled in and signed-off QITP						
<b>NON CONFORMANCES (NCR's) ISSUED</b>							
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>			
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>							
Name		Signature					
Designation:		Date:					
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>							
Name		Signature					
Designation:		Date:					

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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## Annex D – ISOLATORS PANTOGRAPHS AND EARTH SWITCHES

	<b>INSPECTION SHEETS FOR ISOLATORS, PANTOGRAPHS AND EARTH SWITCHES</b>
---	--

<b>Substation:</b>		<b>Supplier:</b>	
<b>Feeder:</b>			
<b>Order No:</b>		<b>Erected by:</b>	
<b>Isolator / Pantograph</b>			
<b>Manufacturer:</b>		<b>Voltage:</b>	
<b>Type:</b>		<b>Amp rating:</b>	
<b>Serial No:</b>		<b>kA rating:</b>	
<b>Mechanism</b>			
<b>Manufacturer:</b>		<b>Motor Voltage:</b>	
<b>Type:</b>			
<b>Serial No:</b>			
<b>Earth Switch</b>			
<b>Manufacturer:</b>			
<b>Type:</b>			
<b>Serial No:</b>			

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## ISOLATOR, PANTOGRAPH AND EARTHSWITCH DELIVERY AND STORAGE INSPECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Delivery note with supporting documentation?				
2	Correct off-loading?				
3	Damage to crates?				
4	Sling positions for lifting?				
5	Correct packaging and storage?				
6	All delivered items checked as per packaged list?				
7	Material shortages and discrepancies?				
8	Any visible defects - corrosion, paint flaking and chipped porcelain etc.?				
9	OEM factory test results and related documentation included?				
10	Is there any visible rust, corrosion or traces of moisture ingress in the mechanism box?				
11	All OEM documentation delivered?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name				Signature	
Designation:				Date:	
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name				Signature	
Designation:				Date:	

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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## ERECTION OF ISOLATOR

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Structure Alignment</b>					
1	Horizontal level phases A, B and C?				
2	Horizontal level between phases?				
3	All steelwork; straight and bolted?				
4	Base assembly dimensions checked as per A4 drawing?				
5	All insulator bases level?				
6	Phase distance correct as per drawing?				
<b>Insulators</b>					
1	All insulators clean and correct?				
2	All flanges and grouting checked for defects?				
3	All bolts fitted and torque according to specification?				
4	All bolts having a minimum of 1.5 threads protruding out of the nut?				
5	All contact assemblies bolted and torque?				
6	Verticality of insulators correct?				
<b>Current Paths</b>					
1	All holding down bolts greased and torque according to specification?				
2	All contacts fitted correctly and bolts torque according to specification?				
3	All the contacts lubricated with the approved lubrication? (Male and Female)				
4	Penetration checked – correct?				
5	All locknuts tighten in correct position?				
6	Approved lubrication used between dissimilar metals?				
7	Horizontal level of current path correct?				
8	Correct operation of bus-transfer contacts? (arcing-device)				
9	Are dead end positions correctly reached?				

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**ERECTION OF ISOLATOR - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Mechanisms</b>					
1	All bolts fitted, greased and torque?				
2	Check correct installation of mechanism?				
3	Correct functioning and operation of the auxiliary switch?				
4	Padlock facility correct?				
5	Correct functioning of anti-condensation heating checked?				
6	Electrical operations correct?				
7	Correct operation of interlocking device? Electrically and mechanically?				
8	Is there any visible rust, corrosion or traces of moisture ingress in the mechanism box?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**ERECTION OF ISOLATOR - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Miscellaneous					
1	Earth connections to the substation earth mat correct?				
2	Connection points on the structure for portable earths correct?				
3	All base frames and structures earthed?				
4	All inter- phasing and inter – connecting rods correct? ( Lock-nuts, discharge springs and ball-ends lubricated)				
5	Correct mechanical interlocking operation between isolator and earth switch?				
6	Flexible earths secured between inter-connecting rod and structure?				
7	Name plate attached to the isolator providing relevant information?				
8	All bolts fitted and torque according to specification?				
9	All parts correctly lubricated?				
10	Taper washers fitted correctly?				
11	All split pins and locknuts fitted correctly?				
12	Isolator operates freely and correct?				
13	All adjustment points fixed with locking-nuts or drilled and pinned?				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE				
Name			Signature	
Designation:			Date:	
INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE				
Name			Signature	
Designation:			Date:	

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## ERECTION OF PANTOGRAPH

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Structure Alignment</b>					
1	All steelwork; straight and bolted?				
2	Base assembly dimensions checked as per A4 drawing?				
3	All insulator bases level?				
<b>Insulators</b>					
1	All insulators clean and correct?				
2	All flanges and grouting checked for defects?				
3	All bolts fitted and torque according to specification?				
4	All bolts having a minimum of 1.5 threads protruding out of the nut?				
5	Verticality of insulators correct?				
<b>Current Paths</b>					
1	All holding down bolts greased and torque according to specification?				
2	All contacts assemblies fitted correctly and bolts torque according to specification?				
3	All the contacts lubricated with the approved lubrication? (Male and Female)				
4	Correct alignment position between main fixed and moving contacts?				
5	Alignment of trapezium and scissors correct?				
6	Are dead end positions correctly reached?				
7	All locknuts tighten in correct position?				
8	Correct lubrication used between dissimilar metals?				
9	Correct operation of bus-transfer contacts? (arcing-device)				

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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**ERECTION OF PANTOGRAPH - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Mechanisms</b>					
1	All bolts fitted, greased and torque?				
2	Check correct installation of mechanism				
3	Correct functioning and operation of the auxiliary switch?				
4	Padlock facility correct?				
5	Correct functioning of anti-condensation heating checked?				
6	Electrical operations correct?				
7	Correct operation of interlocking device? Electrically and mechanically?				
8	Is there any visible rust, corrosion or traces of moisture ingress in the mechanism box?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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## ERECTION OF PANTOGRAPH - CONTINUED

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Miscellaneous					
1	Earth connections to the substation earth mat correct?				
2	Connection points on the structure for portable earths correct?				
3	All base frames and structures earthed?				
4	All inter- phasing and inter – connecting rods correct? ( Lock-nuts, discharge springs and ball-ends lubricated)				
5	Correct mechanical interlocking operation between isolator and earth switch?				
6	Flexible earths secured between inter-connecting rod and structure?				
7	Name plate attached to the isolator providing relevant information?				
8	All bolts fitted and torque according to specification?				
9	All parts correctly lubricated?				
10	Taper washers fitted correctly?				
11	All split pins and locknuts fitted correctly?				
12	Isolator operates freely and correct?				
13	All adjustment points fixed with locking-nuts or drilled and pinned?				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name			Signature	
Designation:			Date:	
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>				
Name			Signature	
Designation:			Date:	

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## ERECTION OF EARTH SWITCH

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Structure Alignment</b>					
1	Horizontal level phases A, B and C?				
2	Horizontal level between phases?				
3	All steelwork; straight and bolted?				
4	Base assembly dimensions checked as per A4 drawing?				
5	All insulator bases level?				
6	Phase distance correct as per drawing?				
<b>Insulators</b>					
1	All insulators clean and correct?				
2	All flanges and grouting checked for defects?				
3	All bolts fitted and torque according to specification?				
4	All bolts having a minimum of 1.5 threads protruding out of the nut?				
5	All contact assemblies bolted and torque?				
6	Verticality of insulators correct?				
<b>Current Paths</b>					
1	All holding down bolts greased and torque according to specification?				
2	All contacts fitted correctly and bolts torque according to specification?				
3	All the contacts lubricated with the approved lubrication? (Male and Female)				
4	Travelling and alignment correct?				
5	Contact pressure correct?				
6	Penetration checked – correct?				
7	All locknuts tighten in correct position?				
8	Correct lubrication used between dissimilar metals?				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**ERECTION OF EARTH SWITCH - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
<b>Mechanisms</b>					
1	All bolts fitted, greased and torque?				
2	Check correct installation of mechanism				
3	Correct operation of the auxiliary switch?				
4	Padlock facility correct?				
5	Correct functioning of anti-condensation heating checked?				
6	Correct operation of interlocking device? Electrically and mechanically?				
7	Is there any visible rust, corrosion or traces of moisture ingress in the mechanism box?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

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**ERECTION OF EARTH SWITCH - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Miscellaneous					
1	Earth connections to the substation earth mat correct?				
2	Connection points on the structure for portable earths correct?				
3	All base frames and structures earthed?				
4	All inter- phasing and inter – connecting rods correct? ( Lock-nuts, discharge springs and ball-ends lubricated)				
5	Correct mechanical interlocking operation between isolator and earth switch?				
6	Flexible earths secured between inter-connecting rod and structure?				
7	Name plate attached to the isolator providing relevant information?				
8	All bolts fitted and torque according to specification?				
9	All parts correctly lubricated?				
10	Taper washers fitted correctly?				
11	All split pins and locknuts fitted correctly?				
12	All adjustment points fixed with locking-nuts or drilled and pinned?				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name			Signature	
Designation:			Date:	
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>				
Name			Signature	
Designation:			Date:	

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## ISOLATOR, PANTOGRAPH AND EARTHSWITCH ACCEPTANCE SHEETS

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Manual operation checked?				
2	Travelling and alignment of current path correct?				
3	Resistance test done and recorded on current paths? (Clamp-Clamp)				
4	Resistance test done? ( Earth Switch)				
5	Motor running currents recorded?				
6	Motor running time recorded?				
7	Supply voltage matches mechanism voltage?				
8	Operating linkages have achieved the over lock position?				
9	Mechanical interlock is correctly assembled if the isolator is equipped with an earth switch?				
10	Acceptance of special tools, lifting gear and spares?				
11	A filled in and signed-off QITP				
<b>Documentation made available</b>					
1	Factory test results handed over?				
2	Maintenance manuals handed over?				
3	Safety manual handed over?				
4	Drawings handed over?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			

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**INSPECTION SHEETS SUBSTATION  
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## ISOLATOR, PANTOGRAPH AND EARTHSWITCH COMMISSIONING SHEETS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Test done as per Secondary Plant Procedure?				
2	Functional operation completed by Secondary Plant?				
3	Dead Testing Certificate issued?				
<b>Remarks / Concessions</b>					
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name			Signature		
Designation:			Date:		
<b>INSPECTED AND ACCEPTED BY SECONDARY GRID REPRESENTATIVE.</b>					
Name			Signature		
Designation:			Date:		

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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## Annex E - POWER TRANSFORMERS AND REACTORS

	<b>INSPECTION SHEETS FOR POWER TRANSFORMERS AND REACTORS</b>
---	--

EQUIPMENT TYPE	TRANSFORMER	REACTOR
----------------	-------------	---------

Substation:		Feeder:	
Order No:		Erected by:	

EQUIPMENT NAMEPLATE INFORMATION			
Manufacturer:		Voltage:	
Type:		MVA(r) rating:	
Serial No:		HV kA rating:	
		MV kA rating:	
		LV kA rating:	

### EQUIPMENT DELIVERY INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Parts correctly packed and secured?				
2	Obvious damage and defects on parts and main tank?				
3	Corrosion damage to parts and main tank?				
4	All flanges correctly blanked off?				
5	Impact recorded fitted to main tank?				
6	Impact recorder positive indication?				
7	Main tank and relevant parts transported under positive pressure?				
8	Record pressure in main tank – minimum				kPa

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	20 kPa				
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<b>NON CONFORMANCES (NCR's) ISSUED</b>				
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE</b>				
Name		Signature		
Designation:		Date:		

**TRANSFORMER / REACTOR OFF-LOADING AND POSITIONING ACCEPTANCE**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Main tank</b>				
1	Installation position confirmed?				
2	Base touch-up paintwork completed?				
3	Main tank paintwork complying with corrosion specification?				
4	Dampcourse or conveyor belt installed? (Dampcourse to be used for permanent installations and conveyor belt for storage)				
5	Impact recorder data provided?				
6	Impact recorder data reviewed?				
7	Transformer main tank connected to substation earth mat?				
8	Core insulation test performed?				
9	SFRA test performed and data compared with factory fingerprint?				
10	Dew-point test performed?				

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**TRANSFORMER / REACTOR ASSEMBLY ACCEPTANCE**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Bushings</b>				
1	All insulators clean and undamaged?				
2	Impact indicators inspected?				
3	Impact indicators operated?				
4	Test point covers secured and sealing properly?				
5	Bushing terminal sizes correct?				
6	Bushing terminals tinned / silver plated?				
7	Corona rings / shields fitted and secured?				
8	Bushing insulation test performed before installation?				
9	Tan delta test points facing main tank?				
10	Bushing internal electrical connection inspected by HVE?				
11	All bushings connected to earth by induction earths?				

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Cooling System</b>				
1	Cooling equipment inspected for obvious damage?				
2	Radiator galvanising thickness complying with corrosion specification?				
3	Cooling fan air-flow direction correct?				
4	Oil pump flow direction correct?				
5	Bleed points inspected for damage, proper sealing and corrosion?				
6	All radiator braces and supports installed?				

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**TRANSFORMER / REACTOR ASSEMBLY ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Conservator tank and pipe work</b>				
1	Conservator tank and pipe work inspected for obvious damage and corrosion?				
2	Conservator tank and pipe work complying with corrosion specification?				
3	All pipe work correctly installed and secured?				
4	All pipe work and expansion devices in good condition and correctly aligned?				
5	Main tank breather complying with specification?				
6	OLTC breather complying with specification??				
7	Breathers fitted correct height?				
8	Oil sample points provided and labeled according to specification?				
9	Valves correctly blanked off?				
10	Conservator tank bleed points (tank and bag leak detector) pipes and valves fitted?				
11	Conservator tank and bag leak detector bleed valve temper proof devices installed / fitted?				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**TRANSFORMER / REACTOR ASSEMBLY ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Transformer main tank</b>				
1	Transformer correctly assembled?				
2	Dew point test performed?				
3	Internal inspection performed by HVE?				
4	Transformer leak test performed?				
5	Oil quality test results approved by HVE before filling?				
6	Vacuum and oil treatment comply with specification??				
7	Oil quality test results approved by HVE after filling?				
8	All valves in service position?				
9	Main tank and OLTC oil levels correct?				
10	Bushing oil levels correct?				
11	All trapped air bled from transformer and OLTC?				
12	On-line oil moisture removal system complying with specification?				
13	On-line dissolved gas monitoring equipment complying with specification?				
14	Cables correctly routed and secured?				
15	All cables lugged and terminated?				
16	All cables bottom or side entry?				
17	Cables for on-line drying and gas monitoring equipment correctly terminated and secured?				
18	Transformer correctly earthed?				
19	Marshalling kiosk clean?				
20	Electrical connections sound?				

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**TRANSFORMER / REACTOR ASSEMBLY ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
21	Marshalling kiosk door sealing properly and door seal in good condition?				
22	Marshalling kiosk and tap changer motor drive heaters connected and functional?				
23	Heater thermostat setting confirmed (30°C)?				
24	Correct name and diagram plate fitted?				
25	PCB free sticker fitted?				
26	LV (11 & 22 kV) conductors and clamps insulated with approved material?				
27	Touch-up paintwork completed as per specification?				
28	Transformer maintenance and operation training provided?				

<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>			
Name		Signature	
Designation:		Date:	
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE. (HV PLANT)</b>			
Name		Signature	
Designation:		Date:	

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**Documentation Acceptance**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Transformer parts list provided?				
2	Transformer factory test results provided?				
3	Bushing factory and site tan delta results provided (hard copy and electronic format)?				
4	Transformer and OLTC maintenance manuals provided?				
5	Transformer schematic diagrams provided?				
6	Transformer erection and installation manual provided?				
7	Transformer and OLTC wiring manuals provided?				
8	Buchholz Relay calibration certificates provided?				
9	Temperature indicator calibration certificates provided?				
10	PRD calibration certificate provided?				
11	Five complete transformer manuals and one CD provided?				
12	A filled in and signed-off QITP				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.**

Name		Signature	
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## TRANSFORMER / REACTOR COMMISSIONING

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Commissioning testing carried out as per Secondary Plant procedure? TST41-140				
2	Dead test certificate provided (Secondary plant)?				
<b><i>NON CONFORMANCES (NCR's) ISSUED</i></b>					
NCR Description		NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE. (SECONDARY PLANT)</b>					
Name		Signature			
Designation:		Date:			

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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## Annex F - INSTRUMENT TRANSFORMERS

	<b>INSTRUMENT TRANSFORMERS - INSPECTION SHEETS FOR CT'S, VT'S &amp; CVT'S</b>
---	---

<b>EQUIPMENT TYPE</b>	CT	VT	CVT
-----------------------	----	----	-----

Substation:		Feeder:	
Order No:		Erected by:	

EQUIPMENT NAMEPLATE INFORMATION			
Manufacturer:		Voltage:	
Type:		Current rating:	
Serial No (R-ph):		kA rating:	
Serial No (W-ph):			
Serial No (B-ph):			

## EQUIPMENT DELIVERY INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Correct off-loading procedure followed?				
2	Equipment inspected for obvious damage?				
3	Impact indicator devices fitted and visible from outside?				
4	Impact indicator devices operated?				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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<b>NON CONFORMANCES (NCR's) ISSUED</b>				
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		

### **EQUIPMENT INSPECTION AFTER OPENING OF CRATES**

No	Inspection List I	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Any corrosion, paint flaking, damaged porcelain / composite insulator?				
2	OEM factory test results provided?				
3	Handling and erection documentation provided?				
4	Maintenance manuals provided?				
5	Insulators clean and undamaged?				
6	Any gas or oil leaks visible?				
7	Transport pressure correct?				
8	Coating as per specification?				

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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<b>NON CONFORMANCES (NCR's) ISSUED</b>				
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		

### **EQUIPMENT SITE ACCEPTANCE**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	All holding down bolts lubricated, fitted and torqued?				
2	Equipment earthed to substation earth mat?				
3	Corona rings / shields fitted and secured?				
4	Gas / oil level correct?				
5	Alarm signal set correctly?				kPa
6	Trip signal set correctly?				kPa
7	All transport securing devices removed?				
8	Earthing of secondary cores correct?				
9	Terminal box closed and secured?				
10	Correct nameplate fitted?				
11	Nameplate properly secured?				

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**INSPECTION SHEETS SUBSTATION  
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12	A filled in and signed-off QITP				
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### COMMISSIONING ACCEPTANCE

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Commissioning testing carried out as per Secondary Plant procedure?  CT: 41-139  VT: 41-227				
2	Dead test certificate provided (Secondary plant)?				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name		Signature	
Designation:		Date:	

### INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE. (SECONDARY PLANT)

Name		Signature	
Designation:		Date:	

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## Annex G – SURGE ARRESTORS

	<b>INSPECTION SHEETS FOR: SURGE ARRESTORS, COMPOSITE LONG ROD INSULATORS (STRINGERS) AND POST INSULATORS</b>		

<b>Substation:</b>		<b>Bay:</b>	
<b>Order No:</b>		<b>Erected by:</b>	

EQUIPMENT NAMEPLATE INFORMATION			
<b>Manufacturer:</b>		<b>Voltage:</b>	
<b>Type:</b>		<b>Current rating:</b>	
<b>Serial No (R-ph):</b>		<b>kA rating:</b>	
<b>Serial No (W-ph):</b>			
<b>Serial No (B-ph):</b>			

## EQUIPMENT DELIVERY INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Delivery note with supporting documentation?				
2	Correct off-loading procedure followed?				
3	Damage to crates?				
4	Impact devices fitted and visible from outside?				
5	Impact devices operated?				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature

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INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.			
Name		Signature	
Designation:		Date:	

INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.			
Name		Signature	
Designation:		Date:	

### **SURGE ARRESTOR INSPECTION AFTER OPENING OF CRATES**

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	All delivered items checked as per packaged list?				
2	Correct packaging and storage?				
3	Material shortages and discrepancies?				
4	Any corrosion, paint flaking, chipped porcelain, damaged insulation material etc.?				
5	Installation manual on site				
6	No damage to insulator surface				
7	No damage to metal parts				
8	Surge arrester body not bending (perpendicular)				
9	Grading ring (if installed) exactly perpendicular to surge arrester body				
10	Copper Earth connected from the earth tail, at the bottom of the structure, continuously, to the bottom of the surge arrester.				
11	Where applicable, Earth to be separated from the structure with stand-off insulators.				
12	Where applicable, Surge arrester mounted on an insulated base (220kV and above).				
13	A filled in and signed-off QITP				

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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**COMPOSITE LONG ROD INSULATORS (STRINGERS) INSPECTION  
AFTER OPENING OF CRATES**

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	A filled in and signed-off QITP				
2	No damage to insulator surface				
3	No damage to metal parts				
4	Corona rings installed (220kV and above, both on live and dead ends; 132kV live end only)				
5	Hardware rings installed at the live end (275kV and above)				

**POST INSULATORS INSPECTION AFTER OPENING OF CRATES**

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	A filled in and signed-off QITP				
2	No damage to insulator surface				
3	No damage to metal parts				
4	Corona ring (if installed) exactly perpendicular to surge arrester [for 400kV and above]				
5	Copper Earth connected at the earth tail at the bottom of the structure.				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.**

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## **EQUIPMENT SITE ACCEPTANCE**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	All holding down bolts lubricated, fitted and torque?				
2	Equipment installed in vertical position? (Not used as a supporting insulator )				
3	Insulated bases provided and installed				
4	Grading rings fitted and secured correctly as per erection documentation?				
5	Protective distance of surge arrester to transformer or terminal equipment as per attached SLDG specification Appendix 1?				
6	Equipment connected to earth mat, as per earthing standard ( <b>TST41-877</b> )?				

### **NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### **INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

### **INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

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## Annex H – CIRCUIT BREAKERS

	<b>INSPECTION SHEETS FOR CIRCUIT BREAKERS</b>
---	---

<b>Substation:</b>		Supplier:	
Feeder /Panel :			
Order No:		Erected by:	
<b>Circuit Breaker</b>			
Manufacturer:		Voltage:	
Type:		Amp rating:	
Serial No:		kA rating:	
<b>Mechanism</b>			
Manufacturer:		Motor Voltage:	
Type:			
Serial No:			
Number of mechanism	One	Three	

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## CIRCUIT BREAKER DELIVERY AND STORAGE INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Damage to crates?				
2	Impact sensors fitted and visible from outside?				
3	Impact sensors operated?				
4	Delivery note with supporting documentation?				
5	Heater connections available?				
6	Sling positions clearly marked for lifting?				
7	Correct off-loading?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
NCR Description		NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name				Signature	
Designation:				Date:	
<b>INSPECTED AND ACCEPTED BY LOCAL GRID REPRESENTATIVE.</b>					
Name				Signature	
Designation:				Date:	

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**CIRCUIT BREAKER INSPECTION OF CRATES AFTER OPENING**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Contents as per list?				
2	Condition of Porcelains or Composites?				
3	SF6 Transport pressure correct?				
4	Where applicable, damage to Grading Capacitors or Pre-insertion Resistors?				
5	OEM manual included?				
6	OEM Schematic drawings included?				
7	Any damages on Mechanism box?				
8	Any damage to paint work?				
9	Is there visible corrosion on parts?				
10	Is there moisture in the mechanism box?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/SITE SUPERVISOR.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

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### CIRCUIT BREAKER ERECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Structural assembly INSPECTIONS</b>				
1	Base assembly dimension as per drawing?				
2	Horizontal level phases A, B and C?				
3	Support Insulator bases level?				
4	Are all locking nuts torqued?				
5	Anchor bolts and support structure bolts torqued as per OEM specification				

	<b>Mechanisms box</b>				
1	Are all the mechanism(s) fitted level, torqued and as per OEM erection instruction?				
2	Are the couplings between the mechanism and poles greased and torqued as per OEM Specifications?				
3	Are seals on doors and other locations intact and functional?				
4	Is the name plate fixed to circuit breaker mechanism as per Eskom Specification				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**CIRCUIT BREAKER ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Miscellaneous</b>				
1	Are the earth connections bonded to the substation earth mat?				
2	All earthing connections properly made as per OEM manual?				
3	All parts correctly lubricated as per OEM erection manual?				
4	Taper washers fitted correctly?				
5	All split pins and locknuts fitted correctly?				
6	All SF6 piping connected correctly?				
7	Density monitors connected?				
8	If the damper is fitted with an oil level indicator, is oil level correct?				
9	Any oil leaks on Damper?				
10	Correct SF6 pressure?				
11	Nameplate fixed to Circuit Breaker and showing all information as per Eskom spec.? no gluing allowed				
12	Is the name plate fixed to circuit breaker poles as per Eskom Specification				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/CONTRACTOR.**

Name		Signature	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID HIGH VOLTAGE PLANT REPRESENTATIVE.**

Name		Signature	
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**INSPECTION SHEETS SUBSTATION  
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ASSET OWNER**

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## CIRCUIT BREAKER SITE ACCEPTANCE

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Manual operations of circuit breaker correct?				
2	Operating of anti-condensation heating checked?				
3	Electrical operations correct?				
4	Supply voltage matches mechanism voltage?				
5	Motor running time recorded?				
6	SF6 gas pressure as per specification MPa?				
7	Any gas leaks?				
8	Low gas alarm correct?				
9	Lockout gas) correct?				
10	(%) Percentage volume SF6 measured?				
11	SF6 moisture (Dew Point) measured				
12	Opening speed within limits?				
13	Closing speed within limits?				
14	Where applicable, closing resistor with pre-insertion timing within specification and in a healthy state?				
15	Where applicable, clutch slip measured?				
16	Insulation tests done on primary circuit of metal clad circuit breakers?				
17	Main contact resistance measured?				
18	Main opening coil resistance measured?				
19	Back-up opening coil resistance measured?				
20	Close coil resistance measured?				
21	Main coil contact timing measured?				
27	Back-up coil contact timing measured?				
28	Close coil contact timing measured?				
29	Auxiliary contact timing measured on opening?				
30	Auxiliary contact timing measured on closing?				
31	Motor spring rewinding time measured?				
32	Motor maximum current measured?				
33	A filled in and signed-off QITP				

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**CIRCUIT BREAKER SITE ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Documentation</b>				
1	Factory test results handed over?				
2	Pre-commissioning test results handed over?				
3	OEM manuals handed over?				
4	OEM drawings handed over?				
5	Safety manual handed over?				
Special tools, OEM manuals, drawings and transport covers handed over to substation staff?					
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT SITE SUPERVISOR.</b>					
Name			Signature		
Designation:			Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE/HV /SECONDARY PLANT.</b>					
Name			Signature		
Designation:			Date:		

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### CIRCUIT BREAKER COMMISSIONING

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Test to be done as per Secondary Plant Procedure.				
2	Functional Tests completed by Secondary Plant? (Y/N)				
3	Dead Testing Certificate issued? (Y/N)				
<b>Remarks</b>					
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	
<b>INSPECTED AND ACCEPTED BY SECONDARY PLANT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY PRIMARY PLANT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			


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## Annex I - DEADTANK CIRCUIT BREAKERS

		<b>INSPECTION SHEETS FOR DEADTANK CIRCUIT BREAKERS</b>	
<b>Substation:</b>			
Feeder / Panel		Contractor	
Order No:		Erected by:	
Date Erected			
<b>Circuit Breaker</b>			
<b>Interrupter</b>			
Manufacturer:		Voltage:	
Type:		Amp rating:	
Serial No:	R phase W phase B phase	kA rating:	
<b>Mechanism</b>			
Manufacturer:		Control & Motor Voltage:	
Type:			
Total number of mechanisms installed:			
Serial No's:	R phase W phase B phase		

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## CIRCUIT BREAKER DELIVERY AND STORAGE INSPECTION LIST

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Sling positions clearly marked for lifting?				
2	Correct off-loading?				
3	Impact sensors fitted and visible from outside?				
4	Impact sensors operated?				
5	Delivery note with supporting documentation?				
6	Materials received checked against the packing list?				
7	Any damages found on equipment?				
8	Heater connections available and connected?				
9	Transport gas pressure as per OEM manual?				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name		Signature	
Designation:		Date:	

### INSPECTED AND ACCEPTED BY LOCAL GRID REPRESENTATIVE.

Name		Signature	
Designation:		Date:	

❖ If no result is available enter N/A in the "Test Results/ Remarks" column

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**CIRCUIT BREAKER INSPECTION AFTER DELIVERY**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Contents as per list?				
2	Breaker poles and bushings inspected for any damage?				
3	Breaker tanks inspected for any damage?				
4	Breaker mechanism box inspected for any damage?				
5	Is there moisture in the mechanism box?				
6	Current transformer inspected for any damage?				
7	Pole and main control cabinet inspected for any damage?				
8	Is there visible corrosion on parts?				
9	Is the paint as per specification?				
10	Damages reported to supplier?				
11	OEM Factory test reports included?				
12	OEM Schematic drawings included?				
13	Special tools and spares handed over to substation staff as per contract?				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/SITE SUPERVISOR.**

Name		Signature	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

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### CIRCUIT BREAKER ERECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Frame assembly</b>				
1	Anchor bolts position verified as per drawing.				
2	Base assembly dimensions as per drawing.				
3	Alignment in accordance with requirements?				
4	Bolts tightened as per recommended torques as per OEM manual.				
	<b>Tank and Poles assembly</b>				
1	Grease applied between Frame and Tank as per OEM manual.				
2	Breaker levelled and properly anchored?				
2	Correct lifting procedure followed?				
3	Phases positioned as per drawing?				
4	Pole tanks de-pressurized by venting the dry nitrogen gas to the atmosphere through the vacuum/fill valve where applicable.				
5	Pole tank side covers removed as per manual?				
6	<b>Pole tank (interrupter unit) not been exposed to moisture?</b>				
7	Interrupter inspected through the open tank-side cover ports for damage?				
8	Desiccant bags replaced pole tanks? (Required number as per OEM manual)				
9	Pole tank side covers replaced as per manual?				
10	Interrupter support rod removed as per manual (without damage to the plug-in connection on the interrupter unit) where applicable				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**CIRCUIT BREAKER ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Tank and Poles assembly</b>				
11	Bolts that fasten the plug-in connection to the interrupter re-torqued?				
12	Plug-in connections cleaned and greased as per manual?				
13	Bushings installed as per manual with new O-ring seals.				
14	Corona shields installed on composite bushings?				
15	Bolts tightened as per recommended torques?				
	<b>Earthing</b>				
1	Pole tanks earthed to the structural frames?( <b>as per OEM installation manual</b> )				
2	Pole cabinet earth stud connected to earth pad on frame?				
3	Are the earth connections bonded to the substation earth mat?				
4	All earthing connections properly made as per manual?				
5	Bolts installed with flat washers? (Torque as per OEM manual ) ).				
<b>Remarks</b>					

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**CIRCUIT BREAKER ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Mechanisms box</b>				
1	Are bolts greased and torqued as per OEM manual?				
2	Hydraulic oil level correct where applicable?				
3	Any hydraulic oil leaks visible where applicable.				
4	Operating of anti-condensation heaters for all control cabinets (pole and main) checked?				
5	Anti-pumping circuit checked refer to secondary plant procedure				
6	Charging motor brush retaining clips checked for proper positioning?(Refer to the Mechanism module for details)				
7	Limit Switches settings as per Mechanism module?				
8	Nameplate fixed to Circuit Breaker and showing all information as per Eskom spec.? No gluing allowed.				
<b>Remarks</b> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>					

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**CIRCUIT BREAKER ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Miscellaneous</b>				
1	Are seals on doors and other locations intact and functional?				
2	Are the connection points on the structure for portable earths fixed?				
3	All modifications completed?				
4	All parts correctly lubricated?				
5	Taper washers fitted correctly?				
6	All split pins and locknuts fitted correctly?				
7	All SF6 piping connected correctly?				
8	Density monitors connected?				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/CONTRACTOR.**

Name		Signature	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID HIGH VOLTAGE PLANT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

❖ If no result is available enter N/A in the "Test Results/ Remarks" column

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### CIRCUIT BREAKER SITE ACCEPTANCE

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>SF6 Leak test</b>				
1	Tube connections and fittings leak check correct?				
2	SF6 gas density monitors leak check correct?				
3	SF6 gas plumbing leak check correct?				
4	Rupture disks leak check correct?				
5	Bushing flanges leak check correct?				
6	Rear tank heads leak check correct?				
7	Front tank heads leak check correct?				
8	Tank side covers leak check correct?				
9	Pole tank sections leak check correct?				
10	Seal and actuator assemblies in the OPEN and CLOSED positions leak check correct?				
	<b>Acceptance INSPECTIONS</b>				
1	Manual operations of circuit breaker correct?				
2	Operating of anti-condensation heating checked?				
3	Electrical operations correct?				
4	Supply voltage matches mechanism voltage?				
5	Motor running time recorded?				Sec.
6	SF6 gas pressure as per specification MPa?				
7	Low gas alarm (S1) correct?				MPa
8	Lockout gas (S2) correct?				MPa
9	All wiring rung out and tested?				
10	(%) Percentage volume SF6 measured?				
11	SF6 moisture (Dew Point) measured				
12	SF6 decomposition measured?				
13	Opening speed within limits?( OEM Spec )				
14	Closing speed within limits? ( OEM Spec)				
15	Closing resistor with pre-insertion timing within specification and in a healthy state?				

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**CIRCUIT BREAKER SITE ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
16	Insulation test done on Primary circuits done?				(M ohms)
17	Insulation test done on Secondary circuits done?				(M ohms)
18	Contact resistance terminal to terminal measured?				(Max 250 micro ohms)
19	Main Trip coil resistance measured?				Ohms
20	Back-up Trip coil resistance measured?				Ohms
21	Close coil resistance measured?				Ohms
22	Coil's Operating voltage measured				
23	Main Trip coil contact-timing measured?				msec
24	Back-up coil contact timing measured?				msec
25	Close coil contact timing measured?				msec
26	Auxiliary contact timing measured opening?				msec
27	Auxiliary contact timing measured closing?				msec
28	Motor running times measured?				Sec
29	Motor maximum current measured?				Amps
30	A filled in and signed-off QITP				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT SITE SUPERVISOR.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE/HV /SECONDARY PLANT.</b>					
Name		Signature			
Designation:		Date:			

❖ **If no result is available enter N/A in the "Test Results/ Remarks" column**

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**CIRCUIT BREAKER SITE ACCEPTANCE - CONTINUED**

	<b>Documentation</b>				
1	Factory test results handed over?				
2	Maintenance manuals handed over?				
3	Safety manual handed over?				
4	Drawings handed over?				
5	Signed QITP?				
<b>Remarks</b>					
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	
<b>INSPECTED AND ACCEPTED BY PROJECT SITE SUPERVISOR.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE/HV /SECONDARY PLANT.</b>					
Name		Signature			
Designation:		Date:			

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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### **CIRCUIT BREAKER COMMISSIONING**

No	Items Inspected	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Test to be done as per Secondary Plant Procedure.				
2	Functional Tests completed by Secondary Plant? (Y/N)				
3	Dead Testing Certificate issued? (Y/N)				

### **CURRENT TRANSFORMER COMMISSIONING**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Commissioning tests performed as per <b>TPC41-139</b>				
2	Dead Testing Certificate issued? (Y/N)				

### **NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### **INSPECTED AND ACCEPTED BY SECONDARY PLANT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

### **INSPECTED AND ACCEPTED BY PRIMARY PLANT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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## INSPECTION AND INSPECTION LIST FOR GIS EQUIPMENT

<b>Substation:</b>		<b>Supplier:</b>	
<b>Feeder:</b>			
<b>Order No:</b>		<b>Erected by:</b>	
<b>Circuit Breaker</b>			
<b>Manufacturer:</b>		<b>Voltage:</b>	
<b>Type:</b>		<b>Amp rating:</b>	
<b>Serial No:</b>	R phase W phase B phase	<b>kA rating:</b>	
<b>Isolator</b>			
<b>Manufacturer:</b>		<b>Voltage:</b>	
<b>Type:</b>		<b>Amp rating:</b>	
<b>Serial No:</b>	R phase W phase B phase	<b>kA rating:</b>	
<b>Mechanism Circuit Breakers</b>			
<b>Manufacturer:</b>		<b>Motor Voltage:</b>	
<b>Type:</b>			
<b>Serial No:</b>	R phase W phase B phase		

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**INSPECTION AND INSPECTION LIST FOR GIS EQUIPMENT -  
CONTINUED**

<b>Mechanism Isolators</b>			
Manufacturer:		Motor Voltage:	
Type:		Amp rating:	
Serial No:	R phase W phase B phase	kA rating:	
<b>CT's</b>			
Manufacturer:		Voltage:	Cores:
Type:		Amp rating:	Accuracy class:
Serial No:	R phase W phase B phase	kA rating:	Ratios:
<b>VT's</b>			
Manufacturer:		Voltage:	
Type:		Amp rating	
Serial No:	R phase W phase B phase	kA rating	

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**GIS ITEMS DELIVERY AND STORAGE INSPECTIONS**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Damage to crates?				
2	Impact sensors fitted and visible from outside?				
3	Impact sensors operated?				
4	Delivery note with supporting documentation?				
5	Heater connections available for mechanism boxes?				
6	Sling positions clearly marked for lifting?				
7	Correct off-loading?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY LOCAL GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**GIS ITEMS INSPECTION OF CRATES AFTER OPENING**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Contents as per list?				
2	Condition of Porcelains or Composites?				
3	Transport pressure correct?				Positive pressure
4	OEM Factory test results included?				
5	OEM Schematic drawings included?				
6	Any damages on Mechanism box?				
7	Is the paint as per specification?				
8	Is there visible corrosion on parts?				
9	Is there visible moisture on any parts?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/SITE SUPERVISOR.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

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## GIS ERECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Structural assembly inspections</b>				
1	Base assembly dimension as per design drawing				
2	Bus ducts levels, horizontal & vertical?				
3	Locking nuts secured and locked?				
4.	Are seals on doors and other locations intact and functional?				
	<b>Mechanism</b>				
1	Are bolts greased and torqued as per OEM manual?				
2	Levelling and alignment correct?				
3	Oil levels correct where applicable?				
4	Are all marshalling kiosks earthed as per specification				
	<b>Miscellaneous</b>				
1	Are the earth connections bonded to the substation earth mat?				
2	Are the connection points on the structure for portable earths fixed?				
3	All modifications completed?				
4	All parts correctly lubricated?				
5	Gas compartment clearly identified?				
6	Taper washers fitted correctly?				
7	Locknuts fitted correctly?				
8	All SF6 piping connected correctly?				
9	Density monitors connected?				
10	Correct SF6 pressure?				
11	Was the correct SF6 filling procedure followed?				
12	Gluing on name Plate (NB!! not allowed)?				
13	Is SF6 gas according to the specification?				
14	Are the earth connections bonded to the substation earth mat?				
15	All earthing connections properly made as per earthing design				

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**GIS ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Mechanisms</b>				
1	Are bolts greased and torqued as per OEM manual?				
2	Travelling, levelling and alignment correct?				
3	Oil levels correct?				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE/CONTRACTOR.</b>				
Name		Signature		
Designation:		Date:		
<b>INSPECTED AND ACCEPTED BY GRID HIGH VOLTAGE PLANT REPRESENTATIVE.</b>				
Name		Signature		
Designation:		Date:		

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## GIS BREAKERS & ISOLATORS SITE ACCEPTANCE

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Manual operations of circuit breaker & Isolator correct?				
2	Operating of anti-condensation heating checked?				
3	Electrical operations correct?				
4	Supply voltage matches mechanism voltage?				
5	Motor running time recorded?				
6	SF6 gas pressure as per specification MPa?				
7	Any gas leaks?				
8	Low gas alarm (S1) correct?				MPa
9	Lockout gas (S2) correct?				MPa
10	All wiring tested and rung-out?				
11	(%) Percentage volume SF6 measured?				
12	SF6 moisture (Dew Point) measured				
13	SF6 decomposition measured?				
14	Opening speed within limits?				
15	Closing speed within limits?				
16	Opening speed of Auxiliary contacts correct?				
17	Closing speed of Auxiliary contacts correct?				
18	Clutch slip measured where applicable?				
19	Insulation test done on Primary circuits done?				(M ohms)
20	Insulation test done on Secondary circuits done?				(M ohms)
21	Resistance measured (Contact Resistance measurement) Primary breaks?				(micro ohms)
22	Main coil resistance measured?				
23	Back-up coil resistance measured?				
24	Close coil resistance measured?				
25	Main coil contact timing measured?				
26	Back-up coil contact timing measured?				
27	Close coil contact timing measured?				
28	Coil's operating voltage tested?				

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**GIS BREAKERS & ISOLATORS SITE ACCEPTANCE - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
29	Closing resistors tested?				
30	Auxiliary contact timing measured opening?				
31	Auxiliary contact timing measured closing?				
32	Motor spring rewinding measured?				
33	Motor maximum current measured?				
34	A filled in and signed-off QITP				
	<b>Documentation</b>				
1	Factory test results handed over?				
2	Maintenance manuals handed over?				
3	Safety manual handed over?				
4	Drawings handed over?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT SITE SUPERVISOR.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE/HV /SECONDARY PLANT.</b>					
Name		Signature			
Designation:		Date:			

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### GIS COMMISSIONING

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1.	Test to be done as per Secondary Plant Procedure.				
2.	Functional Tests completed by Secondary Plant? (Y/N)				
3.	Dead Testing Certificate issued? (Y/N)				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY SECONDARY PLANT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY PRIMARY PLANT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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## Annex J – CAPACITOR BANKS



### INSPECTION SHEETS FOR CAPACITOR BANKS

<b>Substation:</b>		<b>Supplier:</b>	
<b>Feeder:</b>			
<b>Order No:</b>		<b>Erected by:</b>	
<b>Capacitors:</b>			
<b>Manufacturer:</b>		<b>Voltage:</b>	
<b>Type:</b>		<b>kVAr rating:</b>	
<b>Capacitance:</b>		<b>Insulation level:</b>	
<b>Varistors:</b>			
<b>Manufacturer:</b>		<b>Cont. voltage rating:</b>	
<b>Rated voltage:</b>			
<b>Serial number:</b>			
<b>Reactor:</b>			
<b>Manufacturer:</b>		<b>Type:</b>	
<b>Inductance:</b>		<b>Rated current:</b>	
<b>Serial No:</b>			

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## DELIVERY AND STORAGE INSPECTIONS FOR CAPACITOR BANKS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Inspections to be done</b>				
1	Off-loading done correctly?				
2	Impact sensors operated?				
3	Any damage to crates?				
4	All delivered items as per packaged list. Special tools and spares?				
5	Terminals of capacitors shorted out?				
6	Packaging and storage correct?				
7	All materials checked for defects e.g. Corrosion, paint flaking and chipped porcelain?				
8	All documentation delivered; Delivery notes, erection / maintenance manuals, drawings, inventory list etc.?				
9	All spare components delivered to site? (Units, Insulators, Instrument Transformers etc.)				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
	<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
	Name		Signature		
	Designation:		Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.(HV PLANT)</b>					
	Name		Signature		
	Designation:		Date:		

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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### INSPECTIONS DURING ERECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Structure</b>				
1	Each phase horizontally level?				
2	Horizontally level between phases?				
3	All steelwork; straight and bolted?				
4	Base assembly dimensions checked as per A4 drawing?				
5	Insulator bases level?				
6	Galvanising / Paint thickness according to specification?				
7	Phase distance correct as per drawing?				
	<b>Insulators</b>				
1	All insulators clean and correct?				
2	Flanges checked for defects?				
3	All bolts torque to correct settings?				
4	All bolts have 1.5 threads protruding below nut?				
5	All holding down bolts greased, fitted and torque?				
6	Any signs of cracks or chips?				
7	All insulators aligned & level?				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**INSPECTIONS DURING ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Damping Reactor</b>				
1	All clamps secured?				
2	Details on name plate correct?				
3	Coating correct?				
4	Correct lubrication between dissimilar metals?				
	<b>Varistor</b>				
1	All bolts fitted, greased and torque?				
2	All insulators in good condition?				
3	All connections correct & secure?				
4	Details on name plate correct?				
	<b>Capacitor Units</b>				
1	Types and ratings correct?				
2	Any sweating / leaks?				
3	Any cracks or chips on insulators?				
4	Paint coating to specification?				
5	Properly secured to frame?				
6	Name plates attached?				
7	Connections torque to correct value?				
8	Any signs of rust / corrosion?				
9	Nameplate details as per specification/design?				

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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**INSPECTIONS DURING ERECTION - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Miscellaneous</b>				
1	Earth connections to the substation earth mat correct?				
2	Connection points on the structure for portable earths correct?				
3	All base frames and structures earthed?				
4	All bolts fitted and tightened?				
5	JBs neat and correctly labelled?				
6	Aluminium busbar secured at one point only & the rest able to slide?				
7	Any place for water entrapment?				
8	All split pins and locknuts fitted correctly?				
9	Capacitance String				
10	Unit Stringing done properly (In Line)				
11	Final Torque Check on Units & Connections				
12	Visually Inspection for oil leaks, mid-point connections, bank configuration				
13	Bird Caps fitted				
14	Safety Earthing Numbers & Studs fitted as per drawings				
15	Confirm all equipment nameplates to be as per design				
16	Confirm all electrical & safe working clearances are maintained				
17	Neutral Earthing & equipment (CT & Neutral Capacitors) connected as per design including PI & P2 Connections on the NCT				
18	Unit Bracket connections secured				
19	Predictive Neutral Unbalance Current (Calculated)				
20	All cables screened as per design requirements				
21	A filled in and signed-off QITP				

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NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.				
Name		Signature		
Designation:		Date:		
INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.(HV PLANT)				
Name		Signature		
Designation:		Date:		

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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### EQUIPMENT ACCEPTANCE TESTING

	<b>Documentation</b>				
1	Factory test results handed over?				
2	Maintenance manuals handed over?				
3	Safety manual handed over?				
4	Safety earthing procedure in place?				
5	Drawings handed over?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			

❖ **If no result is available enter N/A in the “Test Results/ Remarks” column**

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## COMMISSIONING TESTS

No	Inspection List	Status		Inspection Complete	Sign
		Yes	No		
1	Test done as per Secondary Plant Procedure.				
2	Auxiliary contacts correct? (Breaker and Isolator requirement?)				
3	All connections done properly?				
4	Functional tests done by secondary plant?				
5	Testing and Operating Inspections against ESKOM specification and OEM routine test results?				
6	Bank balanced as per specification?				
7	Commissioning done as per Secondary Plant Procedure				
<b>Remarks</b> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>					
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name		Signature			
Designation:		Date:			
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.(SECONDARY PLANT AND HV PLANT)</b>					
Name		Signature			

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Designation:		Date:	
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❖ If no result is available enter N/A in the “Test Results/ Remarks” column

### **EQUIPMENT COMMISSIONING**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Commissioning tests performed as per standard for Capacitor Banks - TPC41-129				
2	Tan-delta / PI tests performed and results provided?				
3	Dead test certificate provided?				
4	HV polarity correct?				

### **NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

#### **INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name		Signature	
Designation:		Date:	

#### **INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE. (SECONDARY PLANT)**

Name		Signature	
Designation:		Date:	

❖ If no result is available enter N/A in the “Test Results/ Remarks” column

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## Annex K – CIVIL WORKS AND BUILDINGS

	<b>INSPECTION SHEETS FOR CIVIL WORKS AND BUILDINGS</b>
---	--

Substation		Grid	
Project description			
Project order no.			
<b>Site preparation and earthworks</b>			
Contractor			
Order no.			
<b>Roads and Runways</b>			
Contractor			
Order no.			
<b>Buildings</b>			
Contractor			
Order no.			
<b>Earthing</b>			
Contractor			
Order no.			
<b>Foundation</b>			
Contractor			
Order no.			
<b>Cable trench</b>			
Contractor			
Order no.			
<b>Fencing</b>			
Contractor			
Order no.			
<b>Steelwork</b>			
Contractor			
Order no			
<b>Oil Dam</b>			

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<b>Contractor</b>	
<b>Order no</b>	

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<b>Yard Stone ✓</b>	
<b>Contractor</b>	
<b>Order no</b>	
<b>Perimeter Lights ✓</b>	
<b>Contractor</b>	
<b>Order no</b>	

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**SITE PREPARATION AND EARTH WORKS INSPECTIONS**

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Eskom approved drawings issued to site personal and contractor?				Drawings Required.
2	Contractors approved HSE and Quality files on site?				Documents Required.
3	Establish existing services?				Documents/Drawings Required.
4	Establish Eskom site office area?				
5	Establish contractor's site office area?				
6	Establish ablution areas?				
7	Establish lay down area?				
8	Setting out perimeter pegs as per site drawing?				
9	Site clearance as per site drawing?				
10	Removal and stockpiling of topsoil in lay-down area for rehabilitation as per site drawing?				
11	Set out survey grid as per layout drawing?				
12	Cut to fill as per level and drainage drawing?				
13	Blasting of hard rock material as per site drawing (If required)?				
14	Carting of spoil material to lay-down area?				
15	Material classification and separation at lay-down area?				
16	Import of suitable material for construction of platform as per site drawing (If required)?				Test certificate results required.
17	Platform compaction as per layout drawing?				Test certificate results required.

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature

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INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.			
Name:		Signature:	
Designation:		Date:	
INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.			
Name:		Signature:	
Designation:		Date:	

## ROADS AND RUNWAYS INSPECTIONS

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Main access road setting out and level as per level and drainage drawing?				
2	Radius of corners as per site plan drawing?				
3	Main access road excavation and compaction as per layout drawing?				Test certificate results Required
4	Main access road shutter, rail installation and reinforcing as per foundation layout drawing?				
5	Main access road concrete specifications as per layout drawing?				Test certificate results Required
6	Main access road surface according to design specification as per site plan drawing?				
7	Service road setting out as per level and drainage drawing?				
8	Service road trimming as per level and drainage drawing?				
9	Service road shutter and reinforcing as per foundation layout drawing?				
10	Service road concrete specifications as per layout drawing?				Test certificate results Required
11	Service road surface according to design specification as per site plan drawing?				
12	Culvert setting out and level as per level and drainage drawing?				
13	Culvert excavation and foundation compaction as per layout drawing?				Test certificate results Required
14	Culvert foundation reinforcing as per foundation layout drawing?				
15	Culvert foundation concrete				Test certificate results

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	specifications as per layout drawing?				Required
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**ROADS AND RUNWAYS INSPECTIONS - CONTINUED**

16	Culvert backfill and compaction as per site drawing?				Test certificate results Required
17	Drainage setting out and level as per level and drainage drawing?				
18	Drainage excavation and compaction as per level and drainage drawing?				Test certificate results Required
19	Drainage bedding and haunching as per level and drainage drawing?				
20	Drainage pipes installed and levelled as per level and drainage drawing?				
21	Drainage backfill and compaction as per level and drainage drawing?				Test certificate results Required
22	Sleeves for future requirements installed and indicated as per site plan drawing?				
23	Sleeves provided with draw wires as per foundation layout drawing?				
24	Runway setting out and level as per foundation layout drawing?				
25	Runway excavation and compaction as per foundation layout drawing?				Test certificate results Required
26	Runway shutter, rail installation and reinforcing as per foundation layout drawing?				
27	Runway concrete as per foundation layout drawing?				Test certificate results Required
28	Runway surface according to design specification as per site plan drawing?				
29	A filled in and signed-off QITP				

**NON CONFORMANCES (NCR's) ISSUED**

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name:		Signature:	
Designation:		Date:	

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**BUILDINGS INSPECTIONS**

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Setting out and levels as per Foundation layout drawing?				
2	Foundation concrete cast to Eskom specifications as per layout drawing?				Test certificate results Required
3	Building brickwork constructed to Eskom specifications and built as per drawing?				
4	Building roof trusses installed to Eskom specifications and as per drawing?				
5	Building gutters installed to Eskom specifications and as per drawing?				
6	Building roof slab installed to Eskom specifications and as per drawing?				
7	Building roof slab waterproofing installed to ESKOM specifications and as per drawing?				
8	Building roof sheeting to ESKOM specifications and installed as per drawing?				
9	Building airconditioning units and extractor fans to ESKOM specifications and installed as per drawing?				
10	Building window frames to ESKOM specifications and installed as per drawing?				
11	Building doors and frames to ESKOM specifications and installed as per drawing?				
12	Building suspended ceiling to ESKOM specifications and installed as per drawing?				
13	Building raised access floor to ESKOM specifications and installed as per drawing?				
14	Building earthing to ESKOM specifications and installed as per drawing?				
15	Building water supply to ESKOM specifications and installed as per drawing?				
16	Building plaster to ESKOM specifications and installed as per drawing?				
17	Doors open outwards as per Control room/Switch room detail drawings?				
18	Doors correct height?				
19	Rainwater channels provided?				
20	Unistruts and wire trays fitted?				
21	Cable trench covers correctly fitted and Painted?				
22	Electrical installation work done by contractor inspected and passed? (including emergency lights)				

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**BUILDINGS INSPECTIONS - CONTINUED**

23	Sewer soak away and septic tank in accordance with local authority requirements?				
24	Ducting for telephone?(where applicable)				
25	Paintwork in accordance with specifications?				
26	Vermin proofing? (Sealing of all possible points of entry likely to be accessible to rodents.				
27	Building tiles to ESKOM specifications and installed as per drawing?				
28	Building toilet to ESKOM specifications and installed as per drawing?				
29	Building door handles to ESKOM specifications and installed as per drawing?				
30	Building washing basins to ESKOM specifications and installed as per drawing?				
31	Building shower doors to ESKOM specifications and installed as per drawing?				
32	Building plaster to ESKOM specifications and installed as per drawing?				
33	External paving to ESKOM specifications and installed as per drawing?				
34	Water tank to ESKOM specifications and installed as per drawing?				
35	Water pump to ESKOM specifications and installed as per drawing?				
36	External canopies to ESKOM specifications and installed as per drawing?				
37	Ramps to ESKOM specifications and built as per drawing?				
38	External steps to ESKOM specifications and built as per drawing?				
39	A filled in and signed-off QITP				

**NON CONFORMANCES (NCR's) ISSUED**

<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>

**INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.**

Name:		Signature:	
Designation:		Date:	

**INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.**

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**BUILDINGS INSPECTIONS - CONTINUED**

No	Inspection List	Status			Test Results/ Remarks		
		Yes	No	NCR			
	<b>Battery Room</b>						
1	Battery room provided with explosion-proof light and extractor fans as per battery room detail drawing?						
2	Acid-proof flooring provided and installed/applied in accordance with Specification?						
3	Emergency shower or hand held spray provided?						
4	Washing basin to ESKOM specification and drawings?						
5	Floor sloped towards water outlet channel?						
6	Maintenance equipment provided?						
7	Safety equipment provided as per battery room detail drawing?						
8	Extraction fans and air inlets with filters positioned correctly?						
9	Battery cable ducting positioned correctly?						
10	Warning signs and notices in accordance with specification?						
11	Washable air vents and frame in position?						
12	Air filters fitted to inside of doors?						
13	Hand railings and steps as per specification?						
14	Battery stands to ESKOM specifications and installed as per drawing?						
15	Door locks and handles to ESKOM specifications and installed as per drawing?						
16	A filled in and signed-off QITP						
<b>NON CONFORMANCES (NCR's) ISSUED</b>							
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>			
<b>Inspected and Accepted By Project Representative.</b>							
Name:		Signature:					
Designation:		Date:					
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>							

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## EARTHING INSPECTIONS

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Earth mat setting out as per earth mat layout drawing?				
2	Earth mat excavation as per earth mat layout drawing?				
3	Earth mat material in accordance with earthing specification TST41-877				
4	Earth mat crimping done in accordance with earthing specification TST41-877?				
5	Earth mat resistivity tests done in accordance with earthing specification TST41-877				Test certificate results Required
6	All gates earthed at both sides with 50mm x 3 mm flat copper?				
7	All structural steel buildings including car ports earthed with 50mm x 3 mm flat copper?				
8	Substation fence earthed as per earth mat layout drawing and specification TST41-877				
9	All equipment steel structures, EC and OLM earthed as per earth mat layout drawing and specification TST41-877				
10	Terminal tower bonded as per drawing and earth mat layout?				
11	A filled in and signed-off QITP				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature

INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.			
Name:		Signature:	
Designation:		Date:	

INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.			
Name:		Signature:	
Designation:		Date:	

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## FOUNDATION INSPECTIONS

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Foundation setting out and level as per foundation layout drawing and specifications?				
2	Foundation excavation and compaction as per foundation layout drawing?				Test certificate results Required
3	Foundation base reinforcing and starter bars as per base drawing?				
4	Foundation base concrete as per base drawing and specifications?				Test certificate results Required
5	Foundation plinth reinforcing as per base drawing?				
6	Foundation holding down bolts and shuttering as per base drawing?				
7	Foundation plinth concrete as per base drawing and specifications?				Test certificate results Required
8	Foundation surface according to design specifications and base drawing?				
9	Foundation backfill and compaction as per base drawing?				Test certificate results Required
10	A filled in and signed-off QITP				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name:		Signature:	
Designation:		Date:	

### INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.

Name:		Signature:	
Designation:		Date:	

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### CABLE TRENCH INSPECTIONS

No	Inspection List:	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Cable trench setting out and level as per foundation layout drawing?				
2	Cable trench excavation and compaction as per foundation layout drawing?				Test certificate results Required
3	Cable trench wall slabs (kerb) as per foundation layout drawing and specifications?				
4	Cable trench bedding and haunching as per foundation layout drawing and specifications?				
5	Cable trench lid as per foundation layout drawing and specifications?				
6	A filled in and signed-off QITP				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
NCR Description		NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
Name:			Signature:		
Designation:			Date:		
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>					
Name:			Signature:		
Designation:			Date:		

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## FENCING INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Fencing</b>				
1	Fence (internal, external and electric) setting out as per Fence layout drawing?				
2	Non-lethal fence post excavation as per Fence layout drawing?				
3	Non-lethal fence post concrete as per Fence layout drawing?				Test certificate results Required
4	Electric fence ant-barrowing and post excavation as per Fence layout drawing?				
5	Electric fence ant-barrowing and post concrete as per Fence layout drawing?				Test certificate results Required
6	Fence galvanizing as per specification?				
7	Fence posts as per fence detail drawings?				
8	Non-lethal fence earthing as per Fence layout drawing?				
9	Electric fence strands as per Fence layout drawing?				
10	Electric fence Stingers as per Fence layout drawing?				
9	Fence struts as per fence detail drawings?				
10	Fence rods as per fence detail drawings?				
11	Fence gates as per fence detail drawing?				
12	Joints and strain points as per fence detail drawing?				
13	Gates alignment as per fence detail drawing?				
14	Clearances as per fence detail drawing?				
15	Gates lockable as per fence detail drawing?				
16	Flat wrap as per fence detail drawing?				
17	Correct wire thickness and galvanized as per detail drawing?				
18	A filled in and signed-off QITP				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>	

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Name:		Signature:	
Designation:		Date:	

### MISCELLANEOUS INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Miscellaneous</b>				
1	Chains on gates as per fence detail drawing?				
2	Fire protection and oil drainage in accordance with standard specification?				
3	All excess material removed and site Cleaned?				
4	All labelling of Equipment as per spec. (TSP41-655)				
5	Warning signs and notices as per layout drawing?				
6	Site spoil inspected and approved by Eskom environmentalists?				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

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## STEELWORK INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Steelwork</b>				
1	All steel structure levelled and straight?				
2	Steelwork correctly assembled and all nuts torque?				
3	All bolts and nuts galvanized and correct sizes?				
4	All steelwork galvanized as per specification?				
5	Beams at correct levels as per general arrangement and station elevations?				
6	Beams correctly installed as per general arrangement and station elevation?				
7	Phase centres correct as per general arrangement and station elevation?				
8	Working clearance correct as per specification?				
9	All ladders on the OLM structures to be galvanized and installed as per ESKOM specifications?				
10	All ladder cages on the OLM structures to be galvanized and installed as per ESKOM specifications?				
11	All safety lines on the OLM structures to be installed as per ESKOM specifications?				
12	A filled in and signed-off QITP				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
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Designation:		Date:			
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## OIL DAM INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Oil dam setting out and level as per specifications and Oil dam layout drawing?				
2	Oil dam excavation and compaction as per specifications and Oil dam layout drawing?				Test certificate results Required
3	Oil dam foundation reinforcing and shutter for foundation as per specifications and Oil dam layout drawing?				
4	Oil dam foundation concrete as per specifications and Oil dam layout drawing?				Test certificate results Required
5	Oil dam water bar as per specifications and Oil dam layout drawing?				Manufacturers Specification Required.
6	Oil dam shutter and reinforcing of walls and steps as per specifications and Oil dam layout drawing?				
7	Oil dam walls and steps concrete as per specifications and Oil dam layout drawing?				Test certificate results Required
8	Oil dam safety grid as per specifications and Oil dam layout drawing?				Manufacturers Specification Required.
9	A filled in and signed-off QITP				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name:		Signature:	
Designation:		Date:	

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## YARD STONE INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Import of yards stone as per layout drawing?				Grading and compressive strength test results required
2	Levelling of yard stone to 100mm thickness as per layout drawing and specifications?				
3	Spot inspections of layer thickness as per specifications?				
4	A filled in and signed-off QITP				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
	<b>NCR Description</b>	<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
	Name:		Signature:		
	Designation:		Date:		
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## PERIMETER LIGHTS INSPECTIONS

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Set-out light post positions as per Perimeter lights layout drawing?				
2	Lights post excavation as per Perimeter lights layout drawing?				
3	Light post, housing and bulbs as per ESKOM specification?				Manufacturers Specification Required.
4	Setting-out of electrical supply position between light posts as per Perimeter lights layout drawing?				
5	Excavation of electrical supply between light post as per Perimeter lights layout drawing?				
6	Backfill of trenches as per Perimeter lights layout drawing?				
7	Installation of light post with soil-crete or concrete as per Perimeter lights layout drawing?				Test certificate results Required
8	Installation of photocell controllers (day and night sensor) as per Perimeter lights layout drawing?				Manufacturers Specification Required.
9	Connect perimeter lights into Security Building DB.				
10	A filled in and signed-off QITP				

### NON CONFORMANCES (NCR's) ISSUED

NCR Description	NCR No	Defect repaired	Defect closed out	Signature

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name:		Signature:	
Designation:		Date:	

### INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.

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## Annex L – STRINGING AND CABLING

	<b>INSPECTION SHEETS FOR CIVIL WORKS AND BUILDINGS</b>
---	--

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Stringing					
1	Rollers used for the running out of conductors?				
2	Approved method of lifting of personnel and equipment at all times?				
3	All stranded conductor busbars specified and shown on the Key Plan erected				
4	All earth-wire specified and shown on the Key Plan and/or Earth-wire Arrangement erected?				
5	Strain clamps facing downwards.				
6	Conductor size correct for busbars and Droppers?				
7	Correct lugs crimped to droppers, copper to copper, and aluminium to Aluminium?				
8	Non-oxide grease used on lugs and Clamps?				
9	Come-along conductor clamps used for all sizes of conductors?				
10	Tension of droppers correct?				
11	Phasing correct as per electrical layout drawing/ General arrangement?				
12	All electrical clearances correct as per specification?				
13	All conductors, undamaged, smooth and free from 'bird-caging' and kinks?				
14	Stringing for future bays made off just beyond the strain clamps?				
15	Are spacer clamps fitted as per kA rating (Dog-bones)?				
16	Are first off crimp tested and accepted?				
17	All clamps correct type and bolts tighten to recommended torque values and in correct sequence?				
18	Is the gap between the clamping cover and the base of the clamps uniform?				
19	Are clamps fitted on equipment stems to correct dept?				
20	Compression unit complete with the necessary dies, compression head, hose and pump as per specification?				
21	All crimping of compression connections must be done as per specification?				

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## Annex L – STRINGING AND CABLING - CONTINUED

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
22	Compression sequence from the conductor side towards the bolted clamp body?				
23	Adequate operational lighting in yard as per general arrangement?				
24	Excess material removed and site cleaned?				
25	A filled in and signed-off QITP				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.				
Name		Signature		
Designation:		Date:		
INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.				
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## STRINGING AND CABLING INSPECTIONS- CONTINUED

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Cabling					
1	Cables installed as per specification?				
2	Rollers used for the running out of cables?				
3	Correct cable routes followed as per block diagram?				
4	All cable glands of self-centering conical bush type, with weatherproof shroud?				
5	Is cable armouring expose to elements?				
6	No conductors cut during making off process?				
7	Removable blank plates provided of adequate size to accommodate the necessary glands?				
8	All exposed metal surfaces resulting from the cutting or drilling of the plates re-coated with a similar and/or compatible covering?				
9	Cable gland earth tags fitted where cable glands are fixed to non-metallic or painted gland plates.				
10	All joints for power cables, as indicated on the relevant drawings, carried out in accordance with an accepted jointing procedure?				
11	All cable terminations as per Eskom drawing?				
12	All cables tagged as per specification?				
13	Are slip-on interlocking type ferrules used?				
14	Ferrules fitted as to read the right way up on the cable terminal strips and to read from left to right?				
15	All cable tails terminated with pre-insulated crimped or approved compression type connectors?				
16	Correct crimping tool used as per specification?				
17	All cables in the ground shall be laid in trenches at a depth of 500 mm?				
18	A layer of sand or sifted earth approximately 50 mm thick placed in the trenches and the cables installed as level as possible?				
19	All cable holes in floors and walls sealed as per specification?				

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## STRINGING AND CABLING INSPECTIONS- CONTINUED

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
Cabling					
20	All painting and galvanizing of cable boxes joint boxes and additional steelwork as per specification?				
21	All cable test to be done as per specification?				
22	Are cable drum schedules available?				
23	A filled in and signed-off QITP				

NON CONFORMANCES (NCR's) ISSUED				
NCR Description	NCR No	Defect repaired	Defect closed out	Signature
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>				
Name			Signature	
Designation:			Date:	
<b>INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.</b>				
Name			Signature	
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## Annex M – LINE TRAPS

		<b>INSPECTION SHEETS FOR LINE TRAPS</b>	
<b>Substation:</b>		<b>Supplier:</b>	
<b>Feeder:</b>			
<b>Order No:</b>		<b>Erected by:</b>	
<b>Line Details:</b>			
<b>Feeder Number</b>		<b>Line number</b>	
<b>Line Voltage</b>		<b>Line Name</b>	
<b>Conductor Configuration:</b>			
<b>Single</b>	<b>Twin</b>	<b>Trip</b>	<b>Quad</b>
<b>Tower Type:</b>			
<b>Flat Horizontal</b>		<b>Vertical</b>	
<b>Giraffe</b>		<b>Double circuit</b>	
<b>Delta,</b>		<b>Inverted Delta</b>	
<b>Cross rope Horizontal</b>		<b>Other (Specify)</b>	

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## INSPECTIONS DURING ERECTION

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
	<b>Structure</b>				
1	All steelwork; straight and bolted?				
2	Base assembly dimensions checked as per A4 drawing?				
3	Galvanising / Paint thickness according to specification?				
	<b>Insulators</b>				
1	All insulators clean and correct?				
2	All bolts torque to correct settings?				
3	All bolts have 1.5 threads protruding below nut?				
4	All holding down bolts greased, fitted and torque?				
5	Any signs of cracks or chips?				
6	All insulators aligned & level?				

### INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.

Name		Signature	
Designation:		Date:	

### INSPECTED AND ACCEPTED BY GRID REPRESENTATIVE.(HV PLANT)

Name		Signature	
Designation:		Date:	

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### LINE TRAP SITE ACCEPTANCE

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Line phasing - Looking towards the line				Ø
2	Line Trap Make				
3	Line Trap Type				
4	Serial Number				
5	Phases on which the LTs are installed				
6	Line Trap Type				mH
7	Continuous Current				Amps
8	Fault Current				kA
9	Blocking Band				KHz
10	Check the top and bottom fibre glass rings for flaking				
11	Check the cross arms of the line traps for corrosion.				
12	Have the cross arms of the linetraps been drilled for water drainage.				
13	Are there any visible flash or burn marks on the line traps and insulators				
14	Check the structures (Steel work) for damage or corrosion				
15	Check the structures for earthing				
16	Ensure that the HV droppers are not in contact with the outer rings of the line traps.				
17	Check that the supporting rods of the line traps are not broken				
18	Check the condition of the bird barriers of the Line traps				
19	Check the pedestal of the line traps for damage or cracks				
20	Check the Line traps stress rings for cracks or damage				

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## EQUIPMENT COMMISSIONING TESTING

No	Inspection List	Status			Test Results/ Remarks
		Yes	No	NCR	
1	Testing and Operating inspections against ESKOM specification and OEM routine test results?				
2	Bank balanced as per specification?				
3	Commissioning done as per Secondary Plant Procedure				
<b>Documentation</b>					
1	Factory test results handed over?				
2	Maintenance manuals handed over?				
3	Safety manual handed over?				
4	Safety earthing procedure in place?				
5	Drawings handed over?				
<b>NON CONFORMANCES (NCR's) ISSUED</b>					
<b>NCR Description</b>		<b>NCR No</b>	<b>Defect repaired</b>	<b>Defect closed out</b>	<b>Signature</b>
<b>INSPECTED AND ACCEPTED BY PROJECT REPRESENTATIVE.</b>					
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