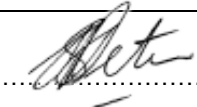
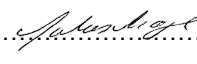
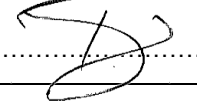
	PTM&C SCOPE OF WORK – Poseidon Substation Spare Transformer	Unique Identifier	240-81398518
		Document Type	SOW
		Revision	1
		Effective Date	12 Aug. 15
		Reference Number	
		Group Technology (PDE)	


PROJECT INFORMATION

PROJECT NAME : Poseidon Temporary Emergency 40MVA 220/66kV Transformer
SUBSTATION NAME : Poseidon
TRANSMISSION GRID : Southern Grid
PROJECT NUMBER : C.TXF0238.C.SO.03F.\$\$LC
DOCUMENT NUMBER : Pos18P15-P-D5
DOCUMENT REVISION : 1

RELATED/SUPPORTING DOCUMENTS

STATION ELECTRIC DIAGRAM : Pos18P15-SE-D6
KEY PLAN : Pos18P15-SE-D9

	<i>Designation</i>	Name	Signature	Date
<i>Compiled by</i>	<i>Project Engineer</i>	Mario Petersen		19/05/2020
<i>Accepted by</i>	<i>SOW Committee Chairman</i>	Quinton Labuschagne		19/05/2020
<i>Approved by</i>	<i>PTM&C Planning & Project Support Manager</i>	Tony Sheerin		22/05/2020

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1. GENERAL BACKGROUND:

1.1 PROJECT DESCRIPTION

The Poseidon 40MVA 220/66kV Transformer 11 failed the HV Bushings Tan Delta test in January 2018. No spare bushings were available as a replacement, therefore the Grid then made the decision to switch this unit out. To manufacture new bushings takes eight months lead time from placing the purchase order.

The situation posed a risk of a possible failure of the remaining Poseidon 80MVA 220/66kV Transformer 13, which is the only feed onto the 66kV busbar. This loss would have resulted in 28MVA unserved power for a very long duration, in the order of thirty days. For this reason, the grid had planned to temporarily place an Emergency Spare Transformer 40MVA 132/66kV between the 132kV and 66kV busbars to supply the Poseidon 66kV load, should Transformer 13 also fail. This additional measure or additional contingency was deemed to be necessary from the grid as the 66kV busbar feeds a municipality (Aberdeen) load that sustains a sewerage plant, which carries a risk of solidification and an ensuing environmental disaster, in the event of loss of power. Further, 5330 customers would be without supply under this Eskom N-2 contingency.

The transformation connection will be achieved via an existing wood-pole bypass, located between the 132kV and 66kV yard, which was originally built at 220kV for the purpose of emergency line-to-feeder reconfigurations on the 220kV busbar. It is noted

The designs for the proposed solution were completed and detailed in design report Pos18P15-SE-D87 rev 1. However the design solution did not materialise and Transformer 11 has since been restored.

This is due to the high cost associated with the solution since this transformer installation may never be used if the above mentioned contingency of Transformer 13 failure does not materialise in the period that Transformer 11 is switched out. It was also indicated by the Grid that once Transformer 11 bushings are restored, and the transformer re-commissioned, then the emergency transformer installation will be dismantled and the emergency spare transformer will be returned to its former storage facility.

Therefore the change in scope from the previous proposed solution only requires a storage plinth to host a spare Transformer 220/66kV 40MVA instead of a 132/66kV 40MVA, the spare transformer will not be operated on the storage plinth but when required will be moved to the position of the failed transformer as a replacement.


The high level scope of work:

- Construction of a Transformer Plinth suitable for a 220/66kV 40MVA unit,
- Inclusion of all associated civil works related to the above mentioned Plinth (Runway, bund wall & connection to emergency oil trap system).

2. PROTECTION:

2.1 220/66KV 40MVA TRANSFORMER (SPARE)

- The spare transformer will not be operated on the storage plinth but when required will be moved to the position of the failed 220/66kV transformer as a replacement.
- No junction box will be installed for this installation only a plug box for heater supply to the marshalling kiosk.
- New cables

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2.8 220kV BUS ZONE

- N/A

2.9 66kV BUS ZONE

- N/A

2.8 CONTROL ROOM

- No Panel will be installed.

2.9 AC RETICULATION

- Install a new 1PB0100 plug box to supply the heater circuits to the marshalling kiosk.

3. METERING & MEASUREMENTS:

3.1 METERING

- Not Required.

3.2 MEASUREMENTS

- Not Required.

4. CONTROL:

1. N/A

5. DC: 220V & 50V

Control Room

220V DC System

- N/A

50V DC System

- N/A

Battery Room


- N/A

6. TELECOMS:

- N/A

7. TELEPROTECTION

- N/A

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COMMON TELEPROTECTION EQUIPMENT

N/A

8. DISTURBANCE RECORDER, TWS and Engineering and Data Concentrator

- N/A

9. GENERAL

9.1 DRAWINGS

Commodity	Main 1		Main 2		Quantity
	Scheme Code	Drwg No	Scheme Code	Drwg No	
Plug Box					1

10. REVISION TRACKING

Rev No	Description	Compiler	Date
1	Initial Scope of Work	Mario Petersen	19/05/2020

11. STAKEHOLDERS

DOCUMENT REVIEWED BY		
Name	Designation	Contact number
Quinton Labuschagne	Senior Consultant – Tele - Control	011-871 2037

DISTRIBUTION LIST		
Name	Designation	Contact number
Pheladi Mamabolo	Project Manager	011-800 4331
Tony Sheerin	PTM&C Planning and Project Support Manager	011-871 3474
Nombuso Msibi	PTM&C Application Design Manager	011-800 5712
Kelebogile Semase	Senior Application Designer	011-800 6646
Luyanda Mfeya	Transmission Settings	011-871 3584