

**GUMENI SS  
EARTH MAT CONTINUITY  
TEST REPORT  
SEPTEMBER 2015**

**\*\*\* All re-submissions of reports will be additionally charged.**

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<b>Date</b>	:	29 September 2015
<b>Task No</b>	:	TSL84646

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## 1 SUMMARY

The earth mat continuity test was performed during September 2015. The Earth Mat seems to be in a good condition.

## 2 INTRODUCTION

### 2.1 Terms of reference

ESKOM Technology Group, PTM, was requested to perform an Earth Mat Continuity Test at Gumeni SS

## 3 FINDINGS

### 3.1 400kV Marathon No.1 Feeder

Earth tails are not connected to the Earth Switch structure. Readings on the tails are within specifications

## 4 CONCLUSION / RECOMMENDATIONS

None

## 5 READINGS

Reference point	Plant Description Transfer Busbar Supports	Test Result mΩ
BS153	BS161	7.8
	BS162	7.8
	BS163	8.9
	BS152	7.5
	BS153	6.3
	BS154	7.5
	BS143	7.5
	BS144	6.2
	BS145	7.2
BS126	BS134	8.3
	BS135	6.8
	BS136	5.9
	BS125	6.2
	BS126	5.7
	BS127	6.6
	BS116	5.8
	BS117	6.4
	BS118	5.9
BS117	BS107	6.9
	BS108	7.2
	BS109	7.9

Reference point	Plant Description Busbar 2 Supports	Test Result mΩ
BS111	BS101	5.9
	BS102	6.0
	BS103	5.9
	BS110	6.6
	BS111	6.6
	BS112	5.7
	BS119	5.7
	BS120	5.7
	BS121	5.4
BS138	BS128	5.5
	BS129	5.5
	BS130	5.6
	BS137	6.2
	BS138	5.5
	BS139	6.0
	BS146	5.8
	BS147	6.2
	BS148	6.1
BS156	BS155	5.5
	BS156	5.3
	BS157	5.2
	BS164	6.4
	BS165	7.5
	BS166	6.4
Reference point	Plant Description Busbar 1 Supports	Test Result mΩ
BS159	BS167	8.5
	BS168	7.6
	BS169	6.2
	BS158	6.8
	BS159	8.9
	BS160	5.4
	BS149	6.7
	BS150	6.2
	BS151	6.0
BS132	BS140	4.8
	BS141	5.4
	BS142	5.0
	BS131	5.1
	BS132	4.6
	BS133	5.6
	BS122	5.3

Reference point	Plant Description Busbar 1 Supports	Test Result mΩ
BS132	BS123	5.7
	BS124	5.9
BS114	BS113	5.3
	BS114	5.2
	BS115	5.0
	BS104	5.4
	BS105	5.1
	BS106	4.6
Reference point	Plant Description 400kV Bus Coupler A	Test Result mΩ
Busbar Support	JB	5.8
	Busbar 1 isolator red phase	5.7
	Insulator red phase	5.5
	Busbar 1 isolator white phase	5.4
	Insulator red phase	5.9
	Insulator white phase	5.2
	Busbar 1 isolator blue phase	5.4
	Insulator red phase	5.5
	Insulator white phase	5.6
	Insulator blue phase	5.3
	Breaker red phase	5.4
	Breaker white phase	5.3
	Breaker blue phase	5.2
	CT red phase	5.1
	CT white phase	5.7
	CT Insulator blue phase	5.9
	Insulator red phase	4.8
	Insulator white phase	5.0
	Busbar 2 isolator blue phase	5.3
	Insulator red phase	5.6
	Busbar 2 isolator white phase	5.5
	Busbar 2 isolator red phase	5.3
Reference point	Plant Description 400kV Transformer 1	Test Result mΩ
132kV Yard Vehicle Gate	Small gate (transformer entrance)	8.8
	Transformer gate	8.0
	LV Surge Arrestor red phase	6.6
	LV Surge Arrestor white phase	6.0
	LV Surge Arrestor blue phase	6.0
	Transformer	5.9
	Cable structure	6.1
	22kV/380V Aux Transformer	8.6
	Shield	6.2
	TDB	7.8
	Plugbox	8.3
	Earth switch	5.4
	CT red phase	5.1
	CT white phase	5.5
	CT blue phase	4.9

Reference point	Plant Description 400kV Transformer 1	Test Result mΩ
132kV Yard Vehicle Gate	Gantry	7.5
	Light	8.9
	Insulator red phase	6.3
	Insulator white phase	5.6
	Insulator blue phase	5.3
	Shield ( Between transformer and workshop)	6.9
Busbar 2 Support	Breaker red phase	5.7
	Breaker white phase	5.7
	Breaker blue phase	5.5
	Busbar 1 isolator red phase	5.5
	Insulator white phase	5.5
	Insulator blue phase	5.7
	JB	6.4
	Insulator red phase	5.1
	Busbar 1 isolator white phase	5.4
	Insulator blue phase	5.3
	Insulator red phase	5.5
	Insulator white phase	5.4
	Busbar 1 isolator blue phase	5.6
	Insulator red phase	5.4
	Insulator white phase	5.5
	Insulator blue phase	5.5
	Busbar 2 isolator	
	Insulator red phase	5.2
	Insulator blue phase	5.3
	Insulator red phase	5.0
	Insulator white phase	5.4
	Insulator blue phase	5.3
	Insulator red phase	5.5
	Insulator white phase	5.4
	Insulator blue phase	5.4
	Insulator red phase	7.2
	Insulator white phase	5.4
	Insulator blue phase	5.4
	Light Tower	5.3
	Insulator red phase	5.6
	Insulator white phase	5.6
	Insulator blue phase	5.3
	Insulator red phase	5.4
Busbar 2 Support	Insulator red phase	6.6
	Busbar 1 isolator	6.5
	Insulator red phase	6.4
	Insulator white phase	6.6
	Insulator blue phase	6.4
	Insulator red phase	5.8
	Insulator white phase	6.3
	Busbar 2 isolator blue phase	6.5
	Insulator red phase	6.0
	Busbar 2 isolator white phase	6.7
	Insulator blue phase	6.3
	Busbar 2 isolator red phase	8.9
	Insulator white phase	6.5
	Insulator blue phase	7.0
	JB	6.5

Reference point	Plant Description 400kV Hendrina No.1 Feeder	Test Result mΩ
Busbar 2 Support	Breaker red phase	6.8
	Breaker white phase	6.6
	Breaker blue phase	6.6
	Line isolator	5.7
	Insulator red phase	5.7
	Insulator white phase	5.6
	Transfer Busbar Isolator blue phase	5.8
	Insulator red phase	5.5
	Transfer Busbar Isolator white phase	5.7
	Insulator blue phase	5.6
	Transfer Busbar Isolator red phase	5.3
	Insulator white phase	5.6
	Insulator blue phase	5.9
	CT red phase	4.9
	CT white phase	5.6
	CT Insulator blue phase	5.6
	Earth switch	8.4
	Line trap red phase	5.7
	Line trap white phase	5.9
	Insulator blue phase	5.5
	CVT red phase	5.6
	CVT white phase	5.4
	CVT Insulator blue phase	5.8
	Gantry	6.0
	Surge Arrestor red phase	5.6
	Surge Arrestor white phase	5.3
	Surge Arrestor blue phase	5.8
	Fence	5.9
Reference point	Plant Description Busbar 1 Bus Section	Test Result mΩ
Busbar 1 Support	Earth switch	5.2
	CVT red phase	5.5
	CVT white phase	5.1
	CVT Insulator blue phase	5.0
	Plug box	6.1
Reference point	Plant Description Busbar 2 Bus Section	Test Result mΩ
Busbar 2 Support	Earth switch	5.5
	CVT red phase	5.8
	CVT white phase	5.5
	CVT Insulator blue phase	5.7
Reference point	Plant Description 400kV Marathon 1	Test Result mΩ
Busbar 2 Support	Insulator red phase	6.4
	Busbar 1 isolator	6.5
	Insulator red phase	6.8
	Insulator white phase	7.2
	Insulator blue phase	6.7
	Insulator red phase	7.7

Reference point	Plant Description 400kV Marathon 1	Test Result mΩ
Busbar 2 Support	Insulator white phase	7.1
	Busbar 2 isolator blue phase	6.6
	Insulator red phase	6.6
	Busbar 2 isolator white phase	6.8
	Insulator blue phase	6.1
	Busbar 2 isolator red phase	7.8
	Insulator white phase	6.9
	Insulator blue phase	7.4
	<b>JB (Loose)</b>	8.4
	Plug box	8.0
	Breaker red phase	7.1
	Breaker white phase	7.6
	Breaker blue phase	7.4
	Line isolator	6.1
	Insulator red phase	7.1
	Insulator white phase	7.6
	Transfer Busbar Isolator blue phase	7.4
	Insulator red phase	6.9
	Transfer Busbar Isolator white phase	6.7
	Insulator blue phase	7.2
	Transfer Busbar Isolator red phase	8.4
	Insulator white phase	6.8
	Insulator blue phase	7.0
	CT red phase	6.4
	CT white phase	6.6
	CT Insulator blue phase	6.8
	Earth switch	6.8
	Line trap red phase	6.9
	Line trap white phase	6.6
	Insulator blue phase	9.0
	CVT red phase	7.7
	CVT white phase	8.4
	CVT Insulator blue phase	7.9
	Gantry	8.2
	Surge Arrestor red phase	8.5
	Surge Arrestor white phase	8.4
	Surge Arrestor blue phase	8.2
	DB Box	9.8
	Fence	8.1
Reference point	Plant Description Control Room	Test Result mΩ
400kV Yard Small gate	IDF	8.6
IDF	DB 400/230V AC Board	4.7
	Fibre Optic Panel 2	8.2
	Fibre Optic Panel 1	9.9
	D20 Station RTU	5.1
	D400 ERTU	8.0
	Teleprotection Hendriena 1	4.7
	BME Cabinet	4.3
	Fibre optic cabinet	3.6
	Telecomms Bearer cabinet	4.4
	Control Room AC Board	5.2
	50V DC Charger 1 – 220DC Charger 2	3.5




Reference point	Plant Description Control Room	Test Result mΩ
IDF	Marathon 1 Interface panel	3.5
	Marathon 1 Relay panel	3.1
	Hendriena 1 Interface panel	3.7
	Hendriena 1 Relay panel	3.9
	400/132/22kV Coupling Transformer Interface panel	3.6
	400/132/22kV Coupling Transformer Relay Panel	3.4
	Bus Coupler A Interface panel	3.3
	Bus Coupler A Relay panel	4.1
	Bus Zone Interface panel	3.8
	Bus Zone Relay panel	3.8
	Engineering workstation	3.3
	Disturbance recorder	7.0
	Internal Tariff meterting	4.6


**EQUIPMENT:** Chauvin Arnoux

**SERIAL NO:** OOGI 19

#### 6 COMPILED BY

SUBMITTED BY: - Technician		
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#### 8 REPORT DISTRIBUTION

8.1 Amiel J Salim

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