

### Comprehensive Audit:

1. Name of the Sub-Station: Depota
2. Voltage level: 132/33 KV
3. Owner: AEGCL
4. Date of Audit: 17/11/21
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	SHIVAM (HATURVEDI)	AE	NERPL	Milam.
2.	Ankur Vash	DGM	POWERGRID	Ankur
3.	Abhi K. Vaghase	AM	NERLDC	Abhi
4.	Revatee Mohan Phadkar	AM	AEGEL	Phadkar

6. Representatives of the Sub-station/Generating Station assisting the auditing team:

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# Observations/Recommendations:

Sl.No.	Parameters	Yes/NO	Remarks
1	Whether redundant supply for station auxiliaries is available?	Yes	33/0.433 kV, 250 kVA 1 DG set 100 kVA
2	Whether SCADA system is present?	Yes	
3	Whether SAS has been implemented? If no, whether panels are SAS compliant?	Yes	
4	Whether protection relays for transformers/ICTs/reactors are operational?	Yes	
5	Whether reliability by way of Bus-Bar scheme is present in 132kV station?	Yes	Single bus bar with sectionalizer
6	Whether Double Main Arrangement is present in 220kV Station? If yes, whether operational or not?	NA	
7	Whether Bus Bar Protection is available for the 220kV and above station?	NA	
8	Whether protection relays for emanating lines are operational?	Yes	Distance - main OLC, E/F - B/V
9	Whether time synchronisation facility is available in the Sub-station?	Yes	1 minute time delay
10	Whether existing RTUs are healthy and reporting?	Yes	
11	Whether existing communication via PLCC or OPGW? If PLCC then healthiness of PLCC panels	PLCC	All lines are PLCC except Depota - Bwta which is OPGW. / Healthy

*Asigh*  
17/11/21

*Milana*  
17/11/21

*Asad*

*Spandan*  
17/11/21

*Shrey*  
17/11/2021

12	In case of OPGW connectivity to the station, whether end equipments are available and functional?	Yes	
13	Whether all analog/digital points are reporting in local SCADA?	<del>Yes</del> Partial	Except for two 33kV bay & one 132kV bay (T/F bay)
14	Healthiness of Protection coupler/Coupling device?	Partial	Except for Depota - Dhekiaguli and Depota - Ghatamari all protection couplers are working
15	Whether sufficient lighting is available in the switchyard?	<del>Yes</del> No	
16	DC Supply- Whether two DC sources are available?	Yes	110V - 2 set / Negative earth fault in 100V 48V - 2 set ↳ Not earthed
17	Earthing System in the switchyard: Whether as per IS?	Yes	
18	List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?		as attached.
19	Whether firefighting provision is available in the station?	Partial	50 mVA ICT has NIFPS 31.5 mVA ICT does not have.
20	Whether Protection Audit has ever been carried out before? If yes then compliance status of Audit Observations/Recommendations	Yes	as attached
21	Whether all relay settings have been submitted in PDMS? If no, then compliance status		Compliance asked from the site
22	Whether CTs, PTs/CVTs of sufficient accuracy is present in the station?	No	0.5s accuracy class <del>not matching</del> PT accuracy → 0.5 - 3P

Any other specific observations/recommendations:

- Control room flooring needs to be maintained and all the cables needs to be properly arranged.
- AC to be installed in battery room,
- DC ELF is persistently ~ 110V DC ( +116, -0 )
- 48V DC System +ve terminal not Earth.
- Trafa Body parts are wired to DC. Provision to be made for DR triggering of Diff Relay in case of operation of Body Part.
- CB open position not configured in Diff. Relay for DR purpose in ICTs
- BCVR of 33kV Dhekiaguli and Airforce feeder is faulty since 2019.  
Mishra 17/11/21



- SAS servers are not in sync. GPS is available
- AC is to be provided in Battery Room (VRBA)
- Some Numerical Relays are not reporting in SAS.
- Many unwanted / Normal State Signals are configured for alarm generation in SAS.
- B/B Prot. is not available
- ICT #2 has been taken out and its BCB has been kept off. This may cause issue with I/L condition
- Many <sup>line</sup> E/S status are coming as close whereas lines are in service
- A/R function is available in Distance Relays whereas the function is kept off
- During one fault in 132kV Dhekiaguli line, after tripping CB open status not came in DR of 7SAG1
- Bus E/S is not available in the scheme.
- Bus sectionalisation is done through Isolator. Site informed that for any Busbar related work, whole station is to be switched off.

*[Signature]*  
17/11/21

Mirum.  
17/11/21

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17/11/2021

Station Name: 132/33kV Depota GSS Audit Report

Sl No.	Observations/Recommendations during Protection Audit 2013	Status as on 06.08.18 (Attended/Not Attended)	If Not complied, target date of completion
1	MT switching scheme may be implemented	(Attended/Not Attended)	
2	old CB and SA may be replaced	Attended	Not attended
3	.No of CT cores inadequate,CTs of suitable ratio and accuracy to be provided,old CTs to be replaced if required	Attended	
4	PT,CVT accuracy class not per CEA regulations.Old CVT/PT may be replaced if required.		Not attended
5	2 sets of 110 V battery with charger and 2 sets 48 V telecom battery with charger required	Attended	
6	DG set available,same of suitable capacity may be provided	Not Available	DG set available (100 kVA)
7	DR,EL,TSE,BC&PU,SAS,SCADA not available	Not Attended	Attended
8	PT,CVT accuracy class not per CEA regulations.Old CVT/PT may be replaced if required.	Attended,CVT not attendend	
9	Bus PT used for both protection and metering of transformer and lines.Dedicated CVT needed for distance protection	Attended	
10	No LBB and Bus Bar Protection available		LBB available / No BB protection
11	Protection scheme as per CEA regulations needed for lines,ICT.static/EM realy to be replaced by numerical relay	Not Attended	Attended
12	Telecom link may be established	Yes	
13	2 sets of numerical relays to replace EM relays used for back up protection required.Protection scheme as per CEA regulations for lines,ICT required.		Attended
14	Earthing system needs improvement.	Yes	
15	No standard maintenance practice.Diagnostic tools inadequate,to be provided as per CEA regulations.	Yes	
16	Gravel not visible/covered with grass.Earthing system needs improvement.		Attended
17	No soak pit/oil collecting pit and FF wall between transformers separated by less than 15 m.No hydrant system/NIFPS except Co2 cylinder and sand bucket.Foam type and portable type extinguisher.Fire protection as per CEA recommendation may be provided	No	NIFPS → SCMVA available Rest Not attended 15meter not possible due to Space constraint
18	No standard maintenance practice.Diagnostic tools inadequate,to be provided as per CEA regulations.	Yes	As

→ Area cons fravrits

DG set available (100 kVA)

LBB available / No BB protection

Signature  
17.11.24

17/11/2024  
Depota



Sl No.	Observations/Recommendations during Protection Audit 2017	Status as on 06.08.18 (Attended/Not Attended)	If Not complied, target date of completion
1	Manual/drawing of C& R panel and equipments not available	No	Not available in CR. Present in the office.
2	Manual/drawing of C& R panel and equipments not available		
3	PLCC panel available at sight but not in operation, no earthing in PLCC panel.	Yes	
4	Firefighting system not installed in switchyard equipments	Yes	
5	WTI/OTI indication of all the transformers to be calibrated	Yes	
6	Most of the cooling fans in 132/33 kV, 31.5 MVA ICT 1 and 2 are not working	No	External fan kept for cooling
7	No line CVT or wavetrapped installed in 132kV Depota-Rowta 1 feeder.	No	
8	No busbar or LBB protection		LBB enabled/ Busbar NA
9	No REF relay in 132/33 kV ICT2	Yes	
10	No DG set installed, only DC emergency light is available	Yes	
11	No phase and equipment marking in switchyard		No
12	No proper ventilation battery room	No	No
13	CBs of HV side of 132 kV, 31.5 MVA ICT1 and LV side of 132 kV, 31.5 MVA ICT2 not operating properly, complete overhauling of breakers needed	No	Yes [31.5 MVA 132 kV & CT has been attended to for overhauling. 5/5]
14	No earthing in 48V and 110V battery banks. No redundancy	No	Negative earthing.
15	Silica gel of both 132/33kV ICT needs to be changed.	Yes	
16	Insufficient illumination in the switchyard	No	No
17	MOG level of 132 kV, 31.5 MVA ICT 2 is very low	No	Yes
18	RTU not available for data communication	Yes	
19	Most of the cooling fans in 132/33 kV, 31.5 MVA ICT 1 and 2 are not working	No	Same as 6
20	No proper ventilation battery room	No	No
21	Manual/drawing of C& R panel and equipments not available	No	
22	Oil leakage in 132/33 kV, 31.5 MVA ICT 1 and 2	No	Yes
	Common recommendation		

Report  
17.10.21  
K. S. Narayana  
Depota, Rowta

17/11/2021  
A. M. Depota

# 14C. VARIOUS PROVISION IN SUBSTATION / SWITCHYARD

Sl. No.	VARIOUS PROVISION	Availability
		(Y/N)
1	Soak Pit for transformer / reactors of 10MVA and above rating or with oil capacity more than 2000ltrs	Y
2	Oil Collecting pit for transformer / reactors	Y for 50,MVA transformer
3	CO2 and sand buckets	Y
4	Foam type fire extinguisher	Y
5	Portable type fire extinguisher	Y
6	Hydrant Type	N
7	High Velocity Water Spray (HVWS) System	N
8	Nitrogen Injection Based Fire Protection System (NIFPS)	Y(for 50MVA
9	Both HVWS system & NIFPS	Y(NIFPS ONLY)
10	Fire Fighting wall between Transformers (if distance between transformers < 15m)	Y
11	Direct Lightning Protection	
	(a) Using Over Head Ground Wire(OHGW)	Y
	(b) Using Spikes	N
	(c) Using Lightning Masts(LMs)	N
	(d) Combination of OHGW + LM	N(OHGW ONLY)
	(e)Combination of OHGW + Spikes	N(OHGW ONLY)
12	Condition of Earthing System	
	(a) Gravels Spread ove Pre-Stressed Concrete (PCC)	Y
	(b) Only Gravels	N(GRAVELS ON TOP
	(c) Gravels are visible	Y
	(d) Gravels coverd with grass / soil	N
13	Operation of On Load Tap Changer (OLTC)	
	(a) As and when required	Y
	(b) Never operated	N
14	Operation of Off Load Tap Changer	
	(a) As and when required	N
	(b) Never operated	N
15	DG Set	
	If Yes, Rating (Nos., Voltage level, KVA capacity)	Y(100kVA)

*Rphukan*  
17.11.21  
AGM, AEGCL Depot AGCS

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17/11/2021  
AGM, AEGCL, Depots



# 14B. AVAILABILITY OF VARIOUS DIAGNOSTIC TOOLS

Sl. No.	DIAGNOSTIC TOOLS	Avail-ability	If Yes (i.e. if Available)	
		(Y/N)	Make	Model
1	Winding resistance meter			
2	Transformer Voltage Ratio test meter	N		
3	Insulation Resistance (IR) tester			
	(a) 5 kV			
	(b) 10 kV	Y		
4	Capacitance & Tan delta Measurement Instrument	N		
	(a) Automatic			
	(b) Manual			
5	Break Down Voltage (BDV) Test kit for oil	Y	Udeyraj Electricals Pvt. Ltd.	AD-10
6	Dissolved Gas Analyser	N		
7	Sweep Frequency Response Analysis (SFRA) test kit	N		
8	Partial Discharge (PD) Measuring Instrument	N		
9	CB operational Analyser	N		
10	DCRM test kit	N		
11	SF6 Gas leakage detector	Y	STARTEK	
12	Dew point measuring instrument	N		
13	SF6 Gas Handling Plant (for Evacuation, filling, filtering of gas)	N		
14	Static Contact Resistance Measuring instrument	N		
15	Leakage Current Meter (LCM)	N		
16	Earth Tester	Y	FLUKE	
17	Automatic Realy test kit	N		
18	Thermovision camera for detection of hot spots	Y	FLUKE	
19	Thermal Scanner (for Transformer / Reactor)	N		
20	Transmission line Response Analyser	Y	TAURUS	
21	Puncture Insulator Detector (PID)	N		
22	On line Partial Discharge (PD) monitoring of GIS	N		
	If Yes			
	(a) Using Ultra High Frequency (UHF) technique			
	(b) Using Acoustic technique			
22	Any On line diagnostic tools	N		
	If Yes, List the instruments			
	(a)			
	(b)			
	(c)			

*Rphukan*  
12.11.21  
AM, AEGCL, Depta GGS

*P*  
17/11/2021  
AGM, AEGCL, Depta





User: AEGCL1  
Login Logout

12/11/2021 11:59:36.988 33kV\_EMD\_4\_UNIVERSITY ICU  
12/11/2021 12:30:32.887 33kV\_EMD\_2\_MISSAMARY CIVIL ICU

Substation Overview Network Events CH Events Reports TMOF RT MOF Trend Alarms Arcview Pm Logout Explorer

132/33 KV DEPOTA (TEZPUR) SUBSTATION  
11 CH SHING CHANG/D  
17 CH SHING CHANG/D

11/11/2021 8:32:52 PM  
RAISED  
RAISED

SIEMENS MASTER  
HMI-02

132kV Overview  
33kV Overview  
AUX BCU  
RELAY ONLINE  
FO ONLINE

ROWTA

DHEKIAULI

OVER ALL VIEW

SOHABIL

GHORAMARI

BUS PT-1

74.99	A
16.69	MW
132.42	kV
1.00	Pf

87.31	A
20.27	MW
132.51	kV
1.00	Pf

174.43	A
-38.93	MW
132.07	kV
-1.00	Pf

176.47	A
28.06	MW
132.35	kV
-1.00	Pf

75.01	A
17.09	MW
132.51	kV
0.98	Pf

75.01	A
17.09	MW
132.51	kV
0.98	Pf

VRV	132.51	kV
HZ	49.89	Hz

VRV	132.51	kV
HZ	49.89	Hz

TRAFO-1	0
TRAFO-2	0
TRAFO-3	5

0.00	A
0.00	MW
0.00	kV
0.00	Pf

65.85	A
13.00	MW
1.21	kV
132.41	kV
0.99	Pf

VRV	132.51	kV
HZ	49.89	Hz

TRAFO-3

132/33KV TRAFO-3  
50MVA

TRAFO-1

132/33KV TRAFO-1  
31.5MVA

TRAFO-2

132/33KV TRAFO-2  
31.5MVA

BUS PT-2

299.84	A
-17.09	MW
-3.10	kV
32.73	kV
-0.98	Pf

0.00	A
0.00	MW
0.00	kV
0.00	Pf

263.17	A
-12.96	MW
-0.47	kV
32.74	kV
-0.99	Pf

VRV	32.74	kV
HZ	49.89	Hz

VRV	32.73	kV
HZ	49.89	Hz

89A	52
89L	89L

89A	52
89L	89L

89A	52
89L	89L

89A	52
89L	89L

89A	52
89L	89L

TEZPUR-3

PORUWA

TMC

MISSAMARY CIVIL

MISSAMARY ARMY

LAXMAN MARG

UNIVERSITY

TEZPUR TOWN

DHEKIAULI

AIRFORCE

61.17	A
3.48	MW
32.74	kV
0.98	Pf

112.12	A
6.45	MW
32.75	kV
0.98	Pf

5.32	A
0.30	MW
32.75	kV
0.94	Pf

26.34	A
1.56	MW
32.76	kV
1.00	Pf

58.29	A
3.20	MW
32.75	kV
0.99	Pf

43.05	A
2.34	MW
32.74	kV
0.94	Pf

12.70	A
0.60	MW
32.73	kV
0.92	Pf

110.35	A
6.22	MW
32.73	kV
0.97	Pf

0.00	A
-0.01	MW
0.00	kV
0.00	Pf

0.00	A
-0.01	MW
0.00	kV
0.00	Pf



User: AEGCL1  
Login Logout

15/11/2021 05:34:07:158 33kV CRP-1 PORUWA OCUT  
16/11/2021 05:34:07:158 33kV CRP-1 PORUWA OCUT

100% INITIATION  
LBB PICKUP

RAIYU D  
CLEARED

11/16/2021 6:34:32 AM

SIEMENS  
HMI-02 MASTER

# 132/33 KV DEPOTA (TEZPUR) SUBSTATION

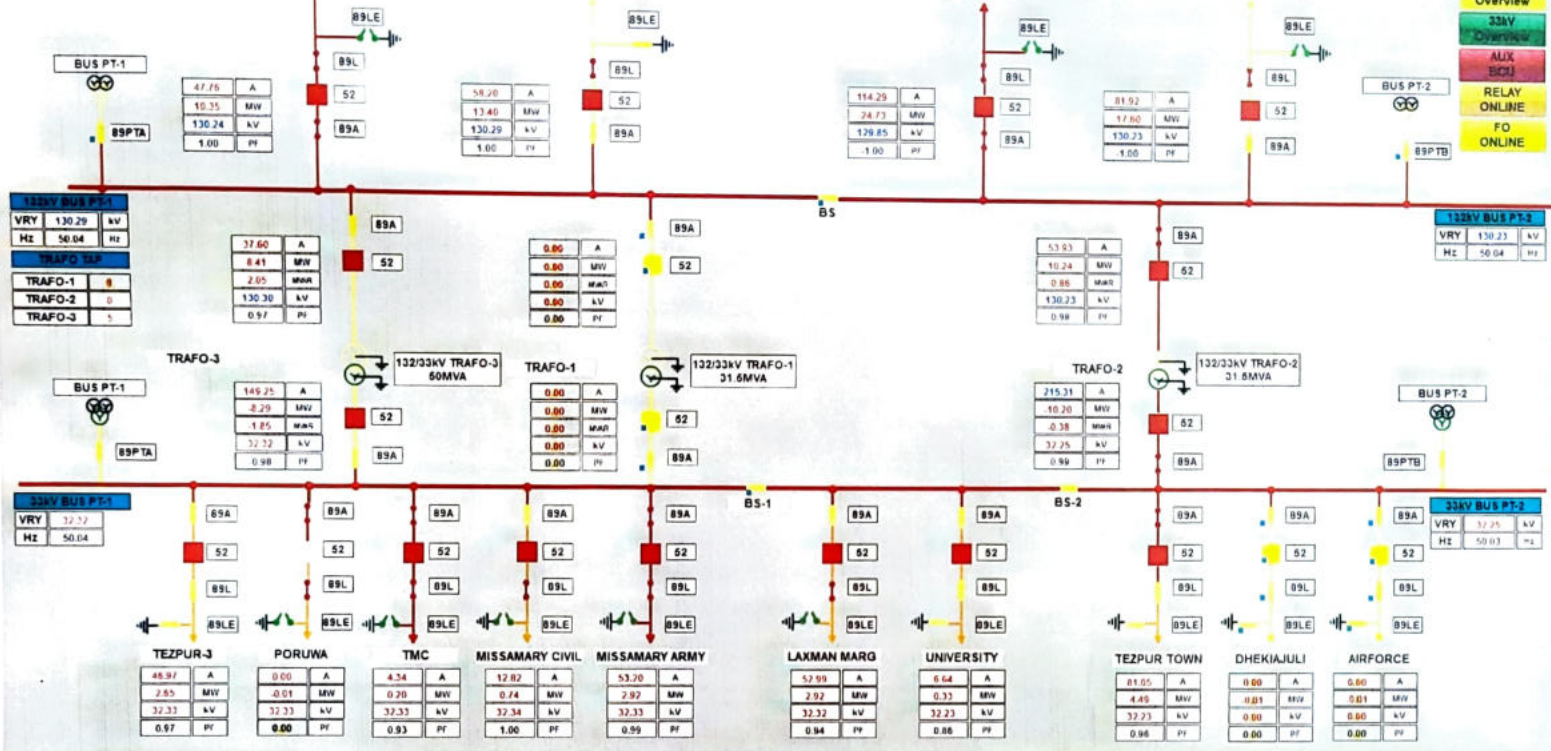
ROWTA

DHEKIAJULI

OVER ALL VIEW

SONABIL

GHORAMARI



- 122KV Overview
- 33KV Overview
- AUX BCU
- RELAY ONLINE
- FO ONLINE

132KV BUS PT-1

VRY	130.29	kV
HZ	50.04	Hz

TRAFO-1

TRAFO-1	0
TRAFO-2	0
TRAFO-3	1

37.60	A
0.41	MW
2.05	MVAR
130.30	kV
0.97	PI

0.00	A
0.00	MW
0.00	MVAR
0.00	kV
0.00	PI

114.29	A
24.73	MW
129.85	kV
1.00	PI

81.92	A
17.60	MW
130.23	kV
1.00	PI

132KV BUS PT-3

VRY	130.23	kV
HZ	50.04	Hz

149.25	A
8.29	MW
1.85	MVAR
12.72	kV
0.98	PI

0.00	A
0.00	MW
0.00	MVAR
0.00	kV
0.00	PI

53.63	A
10.24	MW
0.86	MVAR
130.23	kV
0.99	PI

215.31	A
10.20	MW
0.38	MVAR
32.25	kV
0.99	PI

33KV BUS PT-2

VRY	32.25	kV
HZ	50.04	Hz

TEZPUR-3

48.97	A
2.55	MW
32.33	kV
0.97	PI

PORUWA

0.00	A
0.01	MW
32.33	kV
0.00	PI

TMC

4.34	A
0.20	MW
32.33	kV
0.93	PI

MISSAMARY CIVIL

12.82	A
0.74	MW
32.34	kV
1.00	PI

MISSAMARY ARMY

53.20	A
2.92	MW
32.33	kV
0.99	PI

LAXMAN MARG

52.99	A
6.64	MW
32.32	kV
0.94	PI

UNIVERSITY

6.64	A
0.33	MW
32.23	kV
0.86	PI

TEZPUR TOWN

81.05	A
4.45	MW
32.23	kV
0.96	PI

DHEKIAJULI

0.00	A
0.01	MW
0.00	kV
0.00	PI

AIRFORCE

0.00	A
0.01	MW
0.00	kV
0.00	PI