

Comprehensive Audit:

1. Name of the Sub-Station: Sonabil
2. Voltage level: 220/132 kV
3. Owner: AECL
4. Date of Audit: 18/11/2021
5. Members of Auditing Team:

Sl.No.	Name	Designation	Organization	Signature
1.	Shivam Chaturvedi	AE	NERPL	Mishra.
2	MANASH JYOTI BAISHYA	MANAGER	PGCIL	<u>PGCIL</u>
3.	Abhi K. Vaghese	AM	NERLDC	<u>Abhi</u>

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	DG set 250 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	Main/Transfer
6	Whether Double Main Arrangement is present in 220kV Station? If yes, whether operational or not?	Yes	Double Main/Transfer operational
7	Whether Bus Bar Protection is available for the 220kV and above station?	Yes	Make: Siemens 7SS 52 87BB relay for Samaguri I not functional.
8	Whether protection relays for emanating lines are operational?	Yes	
9	Whether time synchronisation facility is available in the Sub-station?	Yes	energy meter drift correction to be made
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	healthy

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12	In case of OPGW connectivity to the station, whether end equipments are available and functional?	NA	
13	Whether all analog/digital points are reporting in local SCADA?	Yes	
14	Healthiness of Protection coupler/Coupling device?	Yes	
15	Whether sufficient lighting is available in the switchyard?	Yes	
16	DC Supply- Whether two DC sources are available?	No	220 V DC - 2 48 V DC - 1
17	Earthing System in the switchyard: Whether as per IS?	Yes	Earth pit resistance test to be carried out
18	List of diagnostic tools, testing equipments etc. and whether are present in sufficient quantity?	#	As per list attached
19	Whether firefighting provision is available in the station?	Yes	
20	Whether Protection Audit has ever been carried out before? If yes then compliance status of Audit Observations/Recommendations	#	As per list attached
21	Whether all relay settings have been submitted in PDMS? If no, then compliance status		
22	Whether CTs, PTs/CVTs of sufficient accuracy is present in the station?	Yes.	

Any other specific observations/recommendations:

1. All relay setting to be submitted in PDMS
2. 87 BB relay for Samaguri 1 display needs to be maintained
3. DC battery \rightarrow

$$\left. \begin{array}{l} P-N = 220V \\ P-E = 0 \\ N-E = -220V \end{array} \right\} \begin{array}{l} \text{Dead earth fault present.} \\ \text{Needs to be rectified urgently.} \end{array}$$
4. DC Earth fault relay needs to be installed
5. AC to be installed in battery room and additional battery to be procured.

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6. PLCC room AC non functional.

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Station Name: 220/132V Sonabil GSS Audit Report

Remarks.

SL No.	Observations during Protection Audit 2017	Status as on 06.08.18 (Attended/Not Attended)	If Not Attended, Target date of completion
1	No earthing in PLCC panel	Attended	
2	Silica gel in both T/F to be changed	Attended	
3	Fire wall between two 220/132 kV ICTs not present.	Not Attended	Not attended
4	Insufficient illumination in switch yard	Attended	
5	WTI/OTI remote indicatgion not working in control panel	Attended	
6	No redundancy in 220 V and 48 V battery system	Not Attended	Not attended
7	One cell of 48 V battery bank was found damaged.	Attended	
8	Regular annual maintenance of switchyard equipment needed	Yes	
9	Periodic maintenance of 220 V and 48 V needed.	Yes	
10	Identification /marking of earthing plates ans earth resistance pit not done.	Not Attended	Not attended 10-10-2018
11	Realy setting as per RK task force recommendation to be implemnted.	Attended	
12	SLD for AC and DC auxiliary system to be frunished.	Attended	
13	Proper indeitification of PLCC panel required.Only 1 PLCC panel and 1 dpc is available.alarm was observed in PLCC panel	Attended	
14	No earthing of 220 V and 48 V Battery bank	Attended	
15	Not automatic changeover of emergency DC lighing.	Not Attended	Attended.
16	No diagnostic tool at site.Concewrened MRT supposed to submit details of tools.	Yes	

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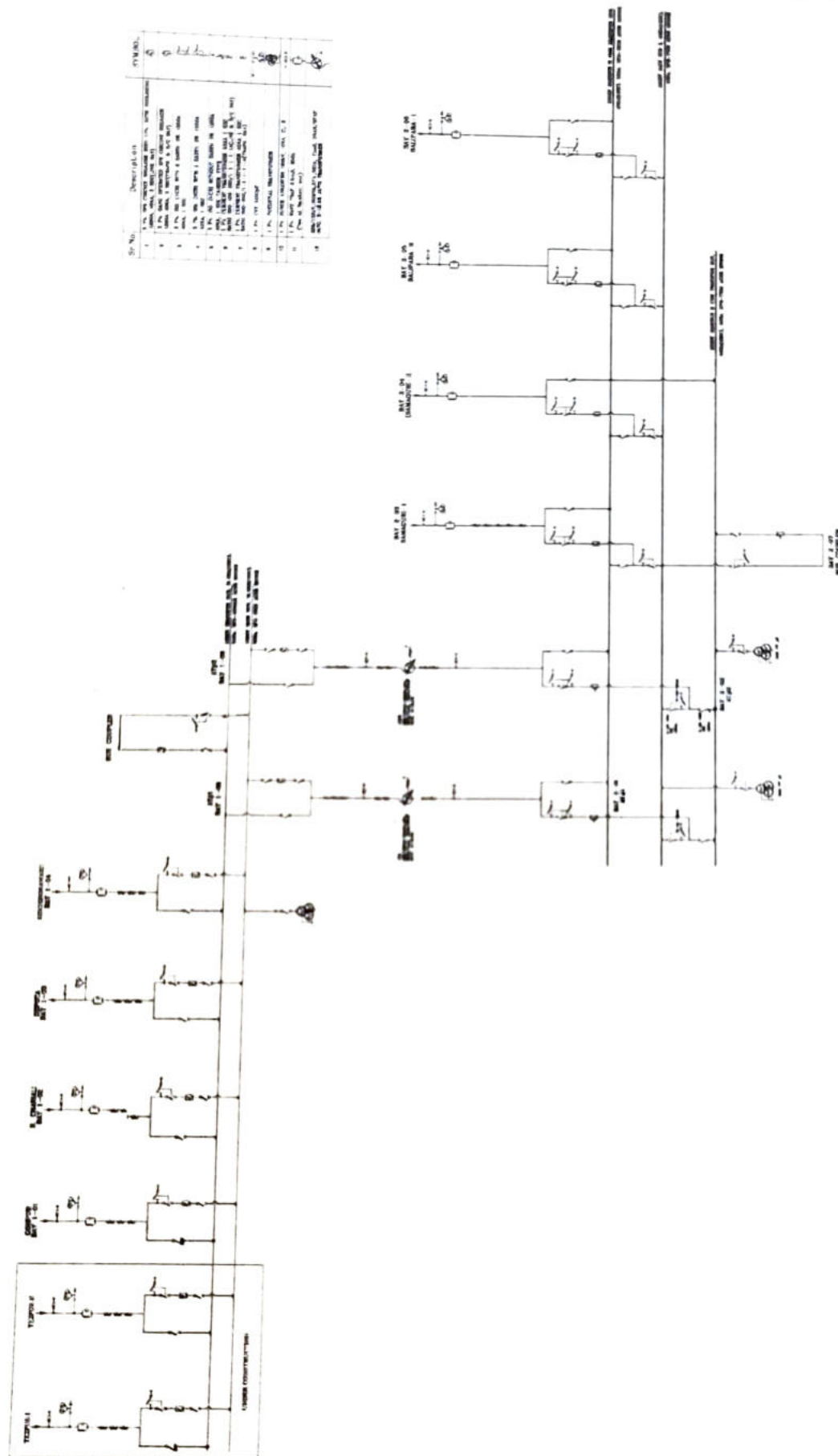
14B. AVAILABILITY OF VARIOUS DIAGNOSTIC TOOLS

Sl. No.	DIAGNOSTIC TOOLS	Avail-ability	If Yes (i.e. if Available)	
		(Y/N)	Make	Model
1	Winding resistance meter	N		
2	Transformer Voltage Ratio test meter	N		
3	Insulation Resistance (IR) tester	N		
	(a) 5 kV			
	(b) 10 kV			
4	Capacitance & Tan delta Measurement Instrument	N		
	(a) Automatic			
	(b) Manual			
5	Break Down Voltage (BDV) Test kit for oil	N		
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	N		
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	N		
17	Automatic Realy test kit	N		
18	Thermovision camera for detection of hot spots	Y		
19	Thermal Scanner (for Transformer / Reactor)	N		
20	Transmission line Response Analyser	N		
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			
	If Yes, List the instruments			
	(a)			
	(b)			
	(c)			

Various Diagnostic tools are available with Depota Maintenance Team.

[Signature]
Resident Engineer
220/132 KV Grid Sub-Station
AEGCL, Sonabil

SINGLE LINE DIAGRAM OF 220/132KV GRID SUB-STATION



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220/132KV GRID SUB-STATION
SHEET: 000001