

Third Party Protection Audit Observations of Powergrid Sub-stations in Eastern Region

Sl. No	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Subhashgram 400 kV - Powergrid	18-12-2012	1. PLCC channel-II (BPL-9505 property of WBPDCCL) of 400 kV Subhashgram-Sagardighi line is not working	A	POWERGRID had taken action for rectification of the said problem and called M/S BPL service Engineer. The problem has already been rectified on dtd 09.11.2013
			2. PLCC of 220 kV Subhashgram(PG)-Subhashgram (WBSETCL) for protection is not commissioned. (Property of WBSETCL)	A	Carrier blocking scheme has already been implemented with the help of PLCC as a contingency measures.
			3. Static relays of Subhashgram-Sagardighi 50 MVAR line reactor protection are expected to be replaced with numerical relays by January	B	MICOM P442 has already been installed on dtd 24.05.2014
2	Durgapur 400 kV - Powergrid	19-12-2012	1. Static relays may be replaced with numerical relays	B	Complied
3	Malda 400 kV - Powergrid	29-12-2012	1. Event Logger is under repair	A	Complied
			2. Static relays may be replaced with numerical relays	B	Complied
			3. Some numerical relays are not synchronized with GPS clock	A	Complied
			4. BPL made PLCC panels are being replaced with ABB made PLCC panels	B	Complied
			5. 50 MVA ICT-I and II are being replaced with 160 MVA for capacity enhancement	B	Complied
4	Gaya 765 kV - Powergrid	28-12-2012	1. Auto reclosing and carrier aided tripping features for 220 kV lines are not in service due to problem at remote end (BSPTCL).	A	Auto reclose at Gaya end is available but kept in off condition due to problem at remote end (BSTPCL).
			2. PLCC panels for channel-II are not available. Order has been placed.	B	The same has been commissioned now.
			3. Voice communication to RLDC is not available	B	Voice communication has been established. VOIP no. 20330037
5	Patna 400 kV - Powergrid	29-12-2012	1. Auto reclosing feature for 220 kV lines is not in service due to problem at remote end (BSPTCL).	A	Auto reclose at Patna end is available but kept in off condition due to problem at remote end (BSTPCL).
			2. PLCC for 220 kV lines not in service due to problem at remote end (BSPTCL).	A	PLCC panels commissioned at both end. Relay configuration which incorporates intertripping is not done by BSTPCL.
			3. Voice communication to RLDC is not available	B	Voice communication has been established. VOIP no. 20330038
6	Biharsharif 400 kV - Powergrid	30-12-2012	1. Static relays may be replaced with numerical relays	B	Replacement of all the 04 nos. static relays installed completed.
7	Muzaffarpur 400 kV - Powergrid	30-12-2012	1. Voice communication to RLDC is not available	B	Voice communication has been established. VOIP no. 20330050
8	Jamshedpur 400 kV - Powergrid	29/01/2013	1. Main-I Static relays available for line protection may be replaced with numerical relays	B	Replaced
			2. PLCC speech channels of Rourkela line-1 and Durgapur line are not working	A	Rectified. Presently in working condition.
			3. Remote Oil Temperature Indicators of 315 MVA, 400/138/34.5 kV ICTs and 50 MVAR bus reactors are not available in control room	A	As per the scheme, there is no provision of remote OTI for ICTS and reactors in the control room. Remote WTI is available in the control room.

9	Ranchi 400 kV - Powergrid	30-01-2013	1. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs are not available	B	Implemented at Ranchi Substation.
10	Maithon 400 kV - Powergrid	21-01-2013	1. Static relays may be replaced with numerical relays	B	Complied
11	Bolangir 400 kV - Powergrid	31-01-2013	1. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	Complied
12	Jaypore 400 kV - Powergrid	28-01-2013	1. Static relays may be replaced with numerical relays	B	Complied
			2. PLCC of 220 kV lines is not working	A	Line belongs to OPTCL. No Action required from Powergrid.
13	Indravati 400 kV - Powergrid	30-01-2013	1. Static relays may be replaced with numerical relays	B	Complied
14	Rengali 400 kV - Powergrid	02/01/2013	1. Static relays may be replaced with numerical relays	B	Complied
			2. PLCC for 220 kV lines is not available	A	Line belongs to OPTCL. No action required from POWERGRID.
			3. Auto reclosing feature not available in 220 kV lines	A	Line length about 500m. Pilot wire protection available in this line.
			4. Disturbance recorder and fault locator not available for 220 kV lines	B	Complied
			5. Overload alarm for 315 MVA ICTs is not available	B	Complied
15	Rourkela 400 kV - Powergrid	22-01-2013	1. Static relays may be replaced with numerical relays	B	Complied
			2. Only one PLCC channel is available for 220 kV line protection	A	Line belongs to OPTCL. No action required from POWERGRID.
16	Baripada 400 kV - Powergrid	23-01-2013	1. Static relays may be replaced with numerical relays	B	Complied
17	Banka 400 kV - Powergrid	02/06/2013	1. Overload alarm for 2x200 MVA, 400/138/34.5 kV ICT-I & II are not available	B	Not provided as per scheme.
			2. Voice communication to RLDC is not available	B	Voice communication has been established. VOIP no. 20330044
18	New Purnea 400 kV - Powergrid	02/07/2013	1. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs is not available	A	Available as per report. For 220Kv system it is not provided as per scheme.
			2. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	Available as per report.
			3. Old bus bar protection (obsolete) is available in 220 kV Sub-station	B	ALSTOM make bus relay (Type: MFAC) commissioned in 2013.
			4. Static relays of main protection in 220 kV Sub-station may be replaced with numerical relays	B	Static relays have been replaced with numerical relays.
19	Binaguri 400 kV - Powergrid	30-01-2013	1. Static relays of main protection may be replaced with numerical relays	B	Complied
			2. SCADA system is not time synchronized with GPS	A	Complied.
20	Pusauli 765 kV HVDC - Powergrid	30-01-2013	1. Overload alarm not available for 1500 MVA, 765/400 kV Transformers	B	Not provided as per scheme.
21	Talcher HVDC - Powergrid	29-12-2012	Nil		
22	Birpara 220 kV - Powergrid	28-01-2013	1. PLCC panels are not available for protection of 132 kV lines	A	LINE belong to WBSEB. No action required from Powergrid.
			2. SCADA & Automation system is not time synchronized with GPS	A	Complied.
			3. Static relays of main protection may be replaced with numerical relays	B	Complied.
			4. Overload alarm for 100 MVA ICT is not available	B	Not available as per old scheme. Being replaced with 160 MVA ICT under ERSS-XII by DEC-2015.

			5. Event Logger is not available	B	Done under NTAMC project through BCU on August 2015
			6. Busbar protection is not available for 132 kV level	B	Busbar protection installed in December 2015
23	Dalkhola 220 kV - Powergrid	22-01-2013	1. Event Logger is not available	B	Being done under NTAMC project through BCU, to be completed by Mar'2017
			2. Static relays of main protection may be replaced with numerical relays	B	Complied.
24	Ara 220 kV - Powergrid	19-03-2013	1. Voice communication to RLDC is not available	B	Voice communication has been established. VOIP no. 20330039

4	Barh 400 kV - NTPC	02/05/2013	5. Data and Voice communication to ERLDC is not available	B	Data communication made available & working properly. For voice communication, optical fiber cable laying & commissioning has been done by PGCIL in Aug 2015.
6	Sagardighi 400 kV - WBPDC	28-12-2012	4. PLCC of Sagardighi-Farakka 400 kV line is not working	B	Complied

Note:

1. Bold indicates the observations which are not complied till date
2. As per CERC order dated 21st Feb 2014 protection deficiencies are categorised as,
Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of NTPC Sub-stations in Eastern Region

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Farakka STPP 400 kV - NTPC	28-12-2012	1. Static relays may be replaced with numerical relays	B	Already replaced in November, 2014.
			2. Time synchronizing equipment is not available	B	Time synchronizing equipment has been installed.
			3. Replacement of PLCC panels by PGCIL is in progress	B	Fkk-Berhampore Ch-1&2, Durgapur-1 Ch-1&2 and Malda-1 Ch-1&2 PLCC panels replaced by PGCIL.
			4. Voice communication to RLDC is not available	B	Complied
			5. Farakka-Durgapur 400 kV line-II and Farakka-Kahalgaon 400 kV line-I and II are not connected to Event Logger	A	M/s Hathaway make EL restored and put into service. Complied
2	TSTPS, Kaniha 400 kV NTPC	29-12-2012	1. PLCC facility for protection is not available for 220 kV lines	B	OPTCL is the owner of the associated PLCC system of the 220 kV Lines. The scheme for PLCC aided tripping for 220 Kv Lines is in place at Kaniha but non functional due to absence of protection coupler in associated PLCC system.
					OPTCL may be perused to provide protection coupler in the associated PLCC system
			2. Auto reclosing feature is not available in all 220 kV lines	B	The scheme of Auto reclosing function for 220 Kv lines is in place at Kaniha end. This feature is non-functional due to absence of protection coupler in the associated PLCC system.
					OPTCL may be perused to provide protection coupler in the associated PLCC system
			3. Static relays may be replaced with numerical relays	B	Complied.
4. Earth switches are not provided for Talcher-Rourkela 400 kV line I & II and Talcher-Rengali 400 kV line I & II to facilitate earthing during maintenance	A	The line earthing is achieved through the corresponding Tie bay isolators.			
3	Kahalgaon 400 kV - NTPC	02/06/2013	1. Some numerical relays and Event Logger are not time synchronized with GPS due to interfacing problem	B	New GPS unit has been installed and commissioned in our switchyard. 02 nos of REL316 relays & ABB make event logger of our stage-I whose time synchronization was pending have now been time synchronized with GPS on 15th March'.2014.
			2. PLCC equipment for line protection of 132 kV lines is not available	A	PLCC protection channel is not envisaged in 132 KV lines at Kahalgaon STPP. Hence point is complied
4	Barh 400 kV - NTPC	02/05/2013	1. Time Synchronizing Equipment is installed and it is under commissioning.	A	Complied.
			2. Main-I & II distance relays for line protection are of same make.	A	Main-I & II distance relays for line protection are of same make but of different series. It is approved by NTPC corporate office. Hence point is complied
			3. Overload alarm for 2x200 MVA, 400/132/33 kV ICT is not available	A	The alarm is made available for over current for 110% of full load. Complied.
			4. Reactor backup protection is not available for 80 MVAR Bus Reactor	A	Backup protection is available in AREVA P141. Complied
			5. Data and Voice communication to ERLDC is not available	B	Communication made available. Complied.

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Third Party Protection Audit Observations of DVC Sub-stations in Eastern Region

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Mejia TPS 400 kV - DVC	20-12-2012	1. Deviation in R-ph CVT voltage of Mejia-Maithon 400 kV line-I . R-N 228 kV, Y-N 245 kV and B-N 245 kV (Primary values)	B	The CVT was changed and commissioned for line 411 On 23.05.13.
2	Durgapur STPS 400 kV - DVC	20-12-2012	1. PSB unblocking time needs to be reviewed	A	The PSB time of 2 sec has been implemented.
3	Koderma 400 kV -DVC	31-01-2013	1. Data and Voice communication to RLDC is not available	A	Already implemented and data transfer is in service.
			2. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	Already implemented
			3. Remote Winding and Oil Temperature Indicators of 315 MVA, 400/138/34.5 kV ICTs and 50 MVAR bus reactors are not available	A	All transducer-based signals including WTI have been incorporated in SAS. However, for OTI, hourly readings from the local panel are being noted down.
			4. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs is not available	A	Implemented
4	Raghunathpur 400 kV - DVC	22-01-2013	1. ABB REL 670 installed as a main protection for Ranchi 400 kV line is not in service	B	Complied
5	Tisco (BPRS) 400 kV - DVC	28-01-2013	1. Voice and Data communication to RLDC is not available	A	Already implemented and data transfer is in service and effective.
			2. Event Logger is commissioned but not in service due interfacing problem	A	Already commissioned and is in service and effective.
			3. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs are not available	B	Overload alarm was inadvertently not implemented in the scheme. However, avenue towards implementation of overload through overcurrent feature of relays is been ventured and it will be implemented by July 2014 as matter is being taken up with M/s. Tisco.
6	Mejia 220 kV - DVC	04/09/2013	1. Stand alone Event Logger is not available	B	Common Event Logger will be installed while changing the relays. (Being taken up, expected to be installed by Sep' 2016)
			2. Static relays of main protection may be replaced with numerical relays	B	Replacement of existing micro-processor-based SHPM(QuadraMho) relays by communicable relays is being taken up, expected to be installed by Sep' 2016
			3. 220 V, 860 AH DC source +ve is having grounded	A	Investigated and isolated the Ground.
			4. Auto reclosing feature is not in service	A	Auto reclosing feature is kept out of service to safeguard generating units.
			5. Time Synchronising Equipment is not available	B	Will be installed while changing of relays. (Being taken up, expected to be installed by Sep' 2016)
7	Parulia 220 kV - DVC	04/09/2013	1. Stand alone Event Logger is not available	B	Common Event Logger will be installed while changing of balance static relays.(Being taken up, expected to be installed by Sep' 2016)
			2. Static relays of main protection may be replaced with numerical relays	B	Numerical Relays already commissioned in two lines. Being taken up for the rest 7no. of lines, expected to be installed by Sept'2016. Numerical Transformer Differential relay is available for one Transformer out of two. The 2nd one is expected to be replaced by March 2016.
			3. Only single set of 220 V DC source is available	B	Two sets of chargers and two different DC distribution feeders are provided. Due to space constraint, only new substations are being provided with two sets of battery banks.
			4. Auto reclosing feature is not in service	A	Auto reclosing feature is kept out of service since the lines are connected to generating stations and since it is out at the generating station end, hence it is out at this end.
			5. Time Synchronising Equipment is not available	B	Will be installed by March'2016

8	Kalyaneswari 220 kV - DVC	04/10/2013	1. Stand alone Event Logger is not available	B	Common Event Logger will be installed while changing of balance SHPM relays.(Being taken up, expected to be installed by Sept '2016)
			2. Static relays of main protection may be replaced with numerical relays	B	Four out of eight lines are equipped with numerical relays. Being taken up for the rest 4 no. of lines, expected to be installed by Sept '2016. Retrofitting of Transformer differential relays by numerical one have already been completed.
			3. Only single set of 220 V DC source is available	B	Two sets of chargers and two different DC distribution feeders are provided. Due to space constraint, only new substations are being provided with two sets of battery banks.
			4. Auto reclosing feature is not in service	A	Auto reclosing feature is kept out of service since the lines are connected to generating stations and since it is out at the generating station end, hence it is out at this end.
			5. Installaion of main protection RED 670 for differential protection of Kalyaneswari-Maithon hydral station is in progress	B	Work completed and the Protection has been put to service on 28.05.13
			6. Major oil leakage observed from 150 MVA, 220/132 kV Auto Transformer -I	A	Oil leakage has been arrested.
			7. Silica gel in all transformers needs to be replaced	B	Replacement already completed.
			8. FAN & Pump control of all Transformers are in Manual Mode	A	Complied by putting on Auto-mode. [Old ATR#2 replaced, ATR#1 is also under replacement by Dec'2015]
9	Bokaro 220 kV - DVC	04/11/2013	1. Stand alone Event Logger is not available	B	Standalone event logger is not present. However, event logger is present in individual numerical relays in whichever lines its is installed.
			2. Static relays of main protection may be replaced with numerical relays	B	All Line protection relays are replaced by numerical ones. Retrofitting of Transformer Differential Relays shall be completed by March
			3. Major oil leakage observed from 150 MVA, 220/132 kV Auto Transformer -I	A	complied
			4. Few surge counters and leakage current indicators are showing zero	A	Replaced for most of them based on availability of shutdown
			5. FAN & Pump control of all Transformers are in Manual Mode	A	Will be complied by Sept'2015
10	Jamshedpur 220 kV - DVC	04/10/2013	1. Stand alone Event Logger is not available	B	Standalone event logger is not present. However, event logger is present in individual numerical relays in whichever lines its is installed.
			2. Over fluxing relay and Overload alarm are not available for 150 MVA, 220/132 kV Transformers	B	Shall be implemented during retrofitting of transformer differential relays by numerical one-expected to be completed by March 2016.
			3. Time synchronizing equipment is available but relays are not time synchronized. Work is in progress with ABB.	A	Already commissioned and put to service
			4. Local Breaker Backup is not available	A	Since 220KV is a single bus arrangement hence the LBB protection was not considered.
			5. DG set is not available	B	Till date DG set has not been provided in any DVC Substations and requirement of DG set could not be ascertained. Alternate A.C supply from nearby TISCO S/stn is available
			6. Bus Bar protection is not available	A	Since 220KV is a single bus arrangement hence the Bus bar protection was not considered
			7. Only single set of 220 V DC source is available	B	Two sets of chargers and two different DC distribution feeders are provided. Due to space constraint, only new substations are being provided with two sets of battery banks

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Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of WBSETCL/WBPDCL Sub-stations

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Kharagpur 400 kV - WBSETCL	19-12-2012	1. Time Synchronizing Equipment is installed, yet to be commissioned.	A	Already commissioned.
			2. Stand alone Event Logger is installed, but not commissioned.	A	Necessary activities towards procurement started. Presently events are logged through ULDC scheme at central station(ULDC). Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			3. Zone reach and trip delay settings of Main-I and Main-II Distance relays of line protection are different.	A	Has been rectified
			4. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	DEF will be enabled in next available shutdown.
2	Kolaghat 400 kV - WBPDCL	19-12-2012	1. Event Logger is not synchronized with GPS clock.	A	Complied.
			2. Bus Bar protection is not available for all voltage levels	B	a) 400 kV completed on 2nd Dec 13. b) 220 kV completed on July, 2014 c) 132 kV One main Bus & two transfer Bus, so B/B protection not applicable.
			3. Static relays may be replaced with numerical relays	B	Complied
			4. Available numerical relays are not synchronized with GPS clock	A	400 KV Main2 Relays are not time synchronized,will be done within 1 year.
			5. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	Settings will be implemented on opportunity basis during shutdown
			6. Over fluxing protection for all 150 MVA, 220/132 kV transformers is not installed	B	Procurement is under process.Pre-bid discussion will be held on 04.09.15.
3	Jeerat 400 kV -WBSETCL	20-12-2012	1. Event Logger is not available.	B	Necessary activities towards procurement started. Presently events are logged through ULDC scheme at central station(ULDC). Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			2. Synchronizing trolley is under repair	A	Synchronizing trolley repaired.
			3. Two sets of batteries are not available for 220 kV and 132 kV protection system	B	Necessary activities towards procurement started. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			4. Bus Bar protection is not available at 200 kV and 132 kV levels	B	Necessary activities towards procurement started. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			5. Static relays may be replaced with numerical relays	B	Complied.
			6. Time synchronizing equipment is not available	B	Complied.
			7. Local Breaker Backup protection is not available at 220 kV and 132 kV levels	B	Procurement process initiated. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
4	Bidhannagar 400 kV - WBSETCL	19-12-2012	1. RTU is not available	B	RTU commissioned.
			2. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	DEF will be enabled in next available shutdown.
			3. Auto reclosing feature is not in service	A	Complied except PPSP feeders.
			4. Time Synchronizing Equipment is installed, yet to be commissioned.	B	Complied
5	Bakreswar 400 kV - WBPDCL	27-12-2012	1. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	B	Relay Installed & settings to be provided on opportunity basis during shutdown.
6	Sagardighi 400 kV - WBPDCL	28-12-2012	1. Main-I and II distance relays for line protection are of same make and model	B	400 KV Parulia 1, Behrampore1 & Behrampore2 Distance protection relays(Main1 & Main2) are of different models but same make. Rest of the feeders distance protection are same models.

			2. Voice communication to SLDC is not available	B	SgTPP- Gakarna voice communication through EPBAX (upto Gokarna S/s) is ok and EPBAX is configured for SLDC communication. Other PLCC routes are within the scope of WBSETCL so they should look after at their end for SLDC communication.
			3. PLCC channel-I of Sagardighi-Subashgram 400 kV line is not working	A	Complied.
			4. PLCC of Sagardighi-Farakka 400 kV line is not working	B	Complied.
			5. PLCC channel-II of Sagardighi-Gokarna 220 kV line is not working	A	PLCC channel made operational.
7	Arambagh 400 kV - WBSETCL	24-01-2013	1. Event Logger is not available	B	Necessary activities towards procurement started. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			2. DG set is not available	B	Necessary activities towards procurement started. Material will be available by Mar, 2016 and excepted to be commissioned by July, 2016.
			3. Static relays may be replaced with numerical relays	B	Completed.
			4. Single set of 220 V DC battery supply is available and relays are not segregated into two groups for 220 kV line protection	B	Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			5. Bus bar protection is not available for 220 kV level	B	Complied.
			6. Auto reclosing feature is disabled	A	Complied except PPSP feeders.
			7. Time Synchronizing Equipment is not available.	A	Complied
			8. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	DEF will be enabled in next available shutdown.
			9. Only one PLCC protection coupler is provided for 220 kV lines	A	This is as per our normal practice.
			10. LBB is not provided for 132 kV level	B	Necessary activities towards procurement started. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			11. Overload alarm for 315 MVA, 400/138/34.5 kV ICT-I and 160 MVA, 220/132/33 kV ICT-I and II are not available	B	Complied.
8	Bidhannagar 220 kV - WBSETCL	21-01-2013	1. Event Logger is not available	B	Protection panel replacement work is going on. EL is present in individual numerical relays. We have planned it with triggering differnt GPS synchronized IEDs through GOOSE transfer. However, procurement is started for stand alone EL. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			2. Bus Bar protection is not in service for 220 kV level	A	Complied
			3. DG set is not available	B	Necessary activities towards procurement started. Material will be available by March, 2016 and excepted to be commissioned by July, 2016.
			4. Synchronizing facility is not available	B	Complied
			5. Only single set of 220 V DC source is available and protection relays are not segregated into two groups	B	Procurement process started for 2nd set of D.C source. Relays will be segregated accordingly. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			6. Static relays may be replaced with numerical relays	B	Complied.
			7. LBB is not available	B	Local Breaker Back up protection available for 220 kV. Procurement process going on for 132 kV. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.
			8. Auto reclosing feature not in service	A	Could not be incorporated as Protection Couplers are not available. However Procurement process started for Protection Couplers. Material will be available by March, 2016 and excepted to be commissioned by July, 2016.
			9. PLCC equipment for line protection is not available	B	Procurement process started for Protection Couplers. Material will be available by March, 2016 and excepted to be commissioned by July, 2016.
			10. Time synchronizing equipment is not available	B	Complied

			11. Only one numerical relay is available, no backup relay is available for Santaldih, Waria and Bakreswar 220 kV line protection	B				
			12. Over fluxing relay and Overload alarm are not available for 160 MVA, 220/132/33 kV Transformer-I and II	B				
9	Santaldih 220 kV - (WBPDCL)	23-01-2013	1. PLCC facility for protection is not available	B	All issues will be taken care of during Switchyard Automation System(SAS) Installation.DPR Prepared & order may be placed on M/S PGCIL within 6 months.			
			2. Auto reclosing feature not available in all 220 kV lines	A				
			2. Event Logger is not available	B				
						3. Synchronizing facility is not available	B	
						4. Voice and data communication to SLDC is not available	A	Voice and data Communication through PLCC is available
						5. Single set of 220 V DC battery supply is available.	B	All issues will be taken care of during Switchyard Automation System(SAS) Installation.DPR Prepared & order may be placed on M/S PGCIL within 6 months.
						6. Static relay of 100 MVA, 220/132 kV ICT may be replaced with numerical relays	B	
						7. Time Synchronizing Equipment is not available.	B	
						8. Overload alarm not available for 130 MVA and 100 MVA ICTs	B	
			9. LBB is not provided for 132 kV level	B				
10	Howrah 220 kV - (WBSETCL)	26-03-2013	1. LBB is not available	B	LBB is available for 132kV and procurement is started for 220kV. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.			
			2. Busbar protection is not available	B	Complied.			
			3. Event Logger is not available	B	Necessary activities towards procurement started. Presently events are logged through ULDC scheme at central station(ULDC). Material will be available by December, 2015 and excepted to be commissioned by March, 2016.			
			4. Synchronizing facility is not available	B	Synchronizing trolley is available			
			5. DG set is not available	B	Necessary activities towards procurement started. Material will be available by March, 2016 and excepted to be commissioned by July, 2016.			
			6. Single set of 220 V DC battery supply is available.	B	Procurement for 2nd set batteries is initiated. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.			
			7. Auto reclosing feature is not available	A	Could not be incorporated as Protection Couplers are not available.However Procurement process started for Protection Couplers along with CR panels. Material will be available by March, 2016 and excepted to be commissioned by July, 2016.			
			8. Time Synchronizing Equipment is not available.	B	Complied.			
			9. Overfluxing protection is not available for 160 MVA, 220/132kV Transformers.	B	Procurement is in process for replacement of relay panel with over-fluxing relay. Material will be available by December, 2015 and excepted to be commissioned by March, 2016.			
22	Birpara 220 kV - Powergrid	28-01-2013	1. PLCC panels are not available for protection of 132 kV lines	A	LINE belong to WBSEB. No action required from Powergrid.			

Third Party Protection Audit Observations of NHPC Sub-stations in Eastern Region

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Teesta-V 400 kV - NHPC	25-02-2013	1. Voice communication to ERLDC is not available	B	Voice communication between ERLDC & Teesta-V power station (Express speech communication) was installed on 25.01.2012 and the same is working satisfactorily.

Note: 1. Bold indicates the observations which are not complied till date
2. As per CERC order dated 21st Feb 2014 protection deficiencies are categorised as
Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of OPTCL/OHPC Sub-stations

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Meeramundali 400 kV - OPTCL	30-12-2012	1. Event Logger is not available for 220 kV lines	B	Event Logger has been commissioned.
			2. Event Logger for 400 kV lines is not synchronized with GPS clock	B	The present ABB make inductive 425 event logger is defective. Numerical relay events are used. The relays are synchronised with GPS.
			3. Static relays may be replaced with numerical relays	B	Complied.
			4. Auto reclosing feature is not enabled for all 220 kV lines	A	The feature is enabled for four circuits. OPGW cable laying & procurement of end equipment for protection interface is in progress. After carrier protection feature AR will be enabled.
			5. PLCC channel-II is not available for all 220 kV lines	A	Will be enabled with fibre optic (OPGW). Procurement of terminal equipment is in progress.
2	Mendhasal 400 kV - OPTCL	28-12-2012	1. Event Logger is not available	B	Grid is equipped with all Numerical Relays having Automation scheme which is in function. Hence EL is not required.
			2. Bus Bar protection is not in service for 220 kV level	B	New Siemens busbar protection commissioned on 23rd June 2017
			3. Mendhasal-Baripada 400 kV line-I & II relays are not synchronized with GPS clock and carrier aided inter tripping feature is disabled.	B	Relays have been time synchronised with GPS. Concerned C/R panel is under control of PGCL.
			4. Operation aspects of Mendhasal-Baripada 400 kV line-I & II are not being looked after by OPTCL. During tripping of the line, line charging is being delayed as Powergrid staff coming from Bhubaneswar for charging the line	A	At present OPTCL is looking after operation of the Bays and there are no issues regarding delay in charging.
			5. PLCC facility is not available for all 220 kV lines	A	PLCC facility is presently available for speech communication only. The existing PLCC equipments (BPL make) are not compatible for carrier protection. Protection shall be extended through fibre optic terminal equipments for which procurement is under process.
3	Indravati 400 kV - OHPC	30-01-2013	1. Static relays may be replaced with numerical relays	A	Numerical relay (Make-ALSTOM) is available for distance protection of 400 kV feeder (Main-I).
			2. Main-II of Indravati(PG) line is not in service	B	Complied
			3. Event logger is installed but not working	B	Complied
			4. Auto reclosing feature is not in service	A	Auto reclosing feature is not kept in service to safe guard generating units in the event of multiple reclosures.
			5. Overload alarm for 315 MVA ICT is not available	A	Through over load alarm is not available, over current trip facility for 315 MVA ICT is available. IDMT type overcurrent relay has been used for 315 MVA ICT. The output of this relay is fed to trip circuit.
4	Theruvalli 220 kV - OPTCL	29-01-2013	1. Auto reclosing feature is not in service	A	Auto-Reclosure facility available in 220kV Narendrapur - I & II and Indravati III & IV. OPGW cable laying & procurement of end equipment for protection interface is in progress. After carrier protection feature AR will be enabled.
			2. Static relays may be replaced with numerical relays	B	Complied.
			3. Restricted earth fault and over fluxing relays are not available for all 100 MVA, 220/132/33 kV ICTs	B	Numerical Diff relay having facility of REF and over fluxing relay has been commissioned.
			4. Pressure Relieve Device, Low Oil level alarm, Overload alarm are not available for all 100 MVA, 220/132/33 kV ICTs	B	The Transformers are old and there is no provision of the said facilities. The overload alarm and trip has been provided using numeral relay.
			5. Event Logger is not available	B	Event Logger has been commissioned.
			6. Synchronizing facility is not available	B	Manual facility is available.

5	Jaynagar 220 KV - OPTCL	28-01-2013	1. Event Logger is not available	B	Event Logger has been installed.
			2. LBB not available	B	Bus bar and LBB scheme has been commissioned.
			3. Static relays may be replaced with numerical relays	B	All static DP relays have been replaced with numerical relays.
			4. Auto reclosing feature is not available	B	OPGW cable laying & procurement of end equipment for protection interface is in progress. After carrier protection feature AR will be enabled.
			5. PLCC facility for protection is not available	B	OPGW work is going on.
			6. Synchronizing facility is not available	B	Manual facility available.
			7. Over fluxing relay and overload alarm are not available for 100 MVA, 220/132/33 KV ICTs	B	Complied.
6	Tarkera 220 KV - OPTCL	21-01-2013	1. Local Breaker Backup is not available	B	Commissioned.
			2. Event Logger is not available	B	Event Logger has been installed.
			3. Synchronizing facility is not available	B	Manual facility is available.
			4. Static relays may be replaced with numerical relays	B	All static DP relays have been replaced with numerical relays.
			5. Bus Bar protection is not available	B	Bus bar protection has been commissioned.
			6. Circuit breakers are not suitable for auto reclosing.	A	Old circuit breakers have been replaced by new SF6 breakers having provision of single phase auto reclosing.
			7. PLCC equipment for line protection is not available	A	OPGW cable laying & procurement of end equipment for protection interface is in progress. After carrier protection feature AR will be enabled.
			8. Over fluxing relay and Restricted earth fault relay are not available for 100 MVA, 220/132 KV Transformer I and III	B	Complied.
			9. Pressure relieve device and Overload alarm are not available for all 100 MVA, 220/132 KV Transformers	B	Transformers are very old and does not have the said facilities. The over load alarm and trip are provided using O/C protection as well as WTI, OTI protection are provided.
			10. Time synchronizing equipment is available but relays are not time synchronized	A	AMC already awarded to service provider for GPS time synchronising unit.
7	Joda 220 KV - OPTCL	22-01-2013	1. Local Breaker Backup is not available	B	Commissioned.
			2. Event Logger is not available	B	Event Logger has been installed.
			3. Synchronizing facility is not available	B	Manual facility is available.
			4. DG set not in service	B	DG set is service.
			5. Earthing switches are not provided to facilitate earthing of outgoing transmission lines for maintenance	B	Facility is not available, being very old isolators. During maintenance of outgoing transmission lines precautions are being taken by using EHV detectors and local earthing devices like discharge rods.
			6. Static relays may be replaced with numerical relays	B	Complied.
			7. Bus Bar protection is not available	B	Commissioned.
			8. Over fluxing relay, Restricted earth fault relay, Low oil level alarm, Pressure relieve device and Overload alarm are not available for 100 MVA, 220/132 KV Transformers	B	The same have been incorporated in 3rd ICT. Other two transformers are old and does not have the said facilities.
			9. Auto reclosing feature is not available.	B	Complied.
			10. Time synchronizing equipment is available but relays are not time synchronized	A	AMC already awarded to service provider for GPS time synchronising unit.
			11. PLCC equipment is not available	A	OPGW cable laying & procurement of end equipment for protection interface is in progress.
8	Ib TPS 220 KV - OPGC	04/12/2013	1. Event Logger is not available	B	Ib Thermal-OPGC is having its own sequence of event recording system integrated with DCS. This system is having all the facilities of event logger. Few of the contacts are not configured presently in sequence of event recording system. We have a plan to configure all the required points in our forthcoming annual shutdown in December, 2014.
			2. Static relays may be replaced with numerical relays	B	Complied
			3. Auto reclosing feature is not in service.	A	Presently, OPTCL is implementing carrier communication system in all four lines of IB Thermal Power Station. Subsequently, single phase auto-reclosing scheme will be commissioned. Job is expected to be completed by December, 2014.
			4. Time synchronizing equipment is available but relays are not time synchronized	A	Job is expected to be completed by December, 2014.
			5. PLCC protection panels are not in service	A	Presently, OPTCL is implementing carrier communication system. Job is expected to be completed by December, 2014.

9	Budhipadar 220 kV - OPTCL	04/11/2013	1. Event Logger is not available	B	Event Logger has been installed.
			2. Synchronizing facility is not available	B	Available
			3. Bus Bar protection is available but out of service due to increase of bays. For new Bus Bar protection order has been placed to Siemens and work is in progress.	B	Bus bar protection has been commissioned.
			4. Overload alarm is not available for 160 MVA, 220/132 kV Transformers	B	Over loading protection is being taken care by O/C protection as well as WTI, OTI protection.
			5. Time synchronizing equipment is available but some relays are not time synchronized	A	Complied
12	Jaypore 400 kV - Powergrid	28-01-2013	2. PLCC of 220 kV lines is not working	A	Line belongs to OPTCL.
14	Rengali 400 kV - Powergrid	02/01/2013	2. PLCC for 220 kV lines is not available	A	Line belongs to OPTCL
15	Rourkela 400 kV - Powergrid	22-01-2013	2. Only one PLCC channel is available for 220 kV line protection	A	Line belongs to OPTCL
2	TSTPS, Kaniha 400 kV - NTPC	29-12-2012	1. PLCC facility for protection is not available for 220 kV lines	B	OPTCL is the owner of the associated PLCC system of the 220 kV Lines. The scheme for PLCC aided tripping for 220 Kv Lines is in place at Kaniha but non functional due to absence of protection coupler in associated PLCC system. OPTCL may be perused to provide protection coupler in the associated PLCC system
			2. Auto reclosing feature is not available in all 220 kV lines	B	The scheme of Auto reclosing function for 220 Kv lines is in place at Kaniha end. This feature is non-functional due to absence of protection coupler in the associated PLCC OPTCL may be perused to provide protection coupler in the associated PLCC system

Third Party Protection Audit Observations of BSEB Sub-station

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Bodhgaya 220 kV - BSPTCL	28-12-2012	1. Local Breaker Backup is not available	B	Under PSDF, the tender has been floated.
			2. Event Logger is not available	B	Under PSDF, the tender has been floated.
			3. Synchronizing facility is not available	B	Under PSDF, the tender has been floated.
			4. Voice and data communication to RLDC is not available	B	Data and voice communications are available at RLDC through SLDC Patna Exchange
			5. Bus Bar protection is not available	A	There is single bus bar at Bodhgaya and having no bus section breaker
			6. Earthing switches are not provided to facilitate earthing of outgoing transmission lines for maintenance	B	Under PSDF, the tender has been floated.
			7. Auto reclosing feature is not available.	A	Under PSDF, the tender has been floated.
			8. PLCC is not installed.	B	PLCC with respect to Gaya (PG), Chandauti are in function.
			9. Time Synchronizing Equipment is not installed.	B	RTU is synchronised with SLDC, Patna through GPS installed at SLDC, Patna
2	Biharshariff 220 kV - BSPTCL	21-03-2013	1. Static relay are to be replaced with numerical relays	B	Complied
			2. Auto reclosing feature is not available.	A	Under PSDF, the tender has been floated.
			3. Synchronizing facility is not available	B	Under PSDF, the tender has been floated.
			4. Time Synchronizing Equipment is not installed.	B	RTU is synchronised with SLDC, Patna through GPS installed at SLDC, Patna
			5. Bus Bar protection is not available for 132 kV level	A	There is single bus bar at Biharshariff.
			6. Overfluxing protection is not available for 150 MVA, 220/132kV Transformers.	A	Overfluxing protection has been activated in Micom relay for 150 MVA Transformer
			7. PLCC panels are available but not working.	A	PLCC with respect to Hathidah, Baripahari and Rajgir are in function. Other PLCC are in scope of PSDF
4	Gaya 765 kV - Powergrid	28-12-2012	1. Auto reclosing and carrier aided tripping features for 220 kV lines are not in service due to problem at BSPTCL end .	A	
5	Patna 400 kV - Powergrid	29-12-2012	1. Auto reclosing feature for 220 kV lines is not in service due to problem at remote end (BSPTCL).	A	
			2. PLCC for 220 kV lines not in service due to problem at remote end (BSPTCL).	A	There is no problem at Patna end. For BSPTCL end PLCC panels supplied. To be commissioned by Sept'13.

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Category-A : The deficiencies which can be corrected without any procurement.
Category-B : The deficiencies involving procurement of equipments.

Third Party Protection Audit Observations of JUSNL Sub-stations

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	Ramchandrapur 220 kV - JSEB	29-01-2013	1. Local Breaker Backup is not available	B	Completed with BUS BAR protection on 04/10/2013 and kept in service on 11/11/2013.
			2. Event Logger is not available	A	Features are enabled in Numerical Relay Micom P441/430 C .
			3. Synchronizing facility is available, but not in service	A	Complied.
			4. Voice and data communication to SLDC is not available	B	Made available.
			5. Bus Bar protection is not available	B	Complied
			6. Earthing switches are not provided to facilitate earthing of outgoing transmission lines for maintenance	B	In our system at the time of shutdown separate earthing arrangement usually being arranged.
			7. Auto reclosing feature is not available.	A	A/R features are available and enabled.
			8. PLCC panels are not in service	A	Now in service.
			9. Static relays may be replaced with numerical relays	B	Complied
			10. Only single set of 220 V DC source is available and protection relays are not segregated into two groups	B	Second source of DC has been put in service.C&R panels are old and segregation is not viable
			11. Only one numerical relay is available for Chandil 220 kV line protection, No backup.	B	Micom relay with LBB have been commissioned and in service.
			12. Remote indicators of Winding and Oil temperature for all three ICTs of 150 MVA, 220/132/33 kV are not available	B	Complied
			13. Low oil level alarm and over load alarm are not available for all three 150 MVA, 220/132/33 kV ICTs	B	Complied
			14. Time Synchronizing Equipment is not installed.	B	Made available.
			15. High voltage (238 kV to 248 kV) observed from August 2012 reported by Sub-station representative	A	Matter reported to ERLDC time to time. Issue has been resolved.
2	Chandil 220 kV - JSEB	29-01-2013	1. Local Breaker Backup is not available	B	Complied
			2. Event Logger is not available	A	Available in Numerical relay
			3. Synchronizing facility is not available	A	Complied
			4. Voice and data communication to SLDC is not available	B	Complied
			5. Bus Bar protection is not available	B	Only single 220 kV main bus is available. LBB has been provided.
			6. Earthing switches are not provided to facilitate earthing of outgoing transmission lines for maintenance	B	In our system at the time of shutdown separate earthing arrangement usually being arranged.
			7. Auto reclosing feature is not available.	A	A/R features are available.
			8. PLCC panels are not available	B	Now in service.
			9. Static relays may be replaced with numerical relays	B	Complied for all feeders
			10. Only single set of 220 V DC source is available and protection relays are not segregated into two groups	B	Second source of DC has been put in service. C&R panels are old and segregation is not viable
			11. Remote indicators of Winding and Oil temperature for all three ICTs of 100 MVA, 220/132/33 kV are not available	B	Complied
			12. Low oil level alarm and over load alarm are not available for all three 100 MVA, 220/132/33 kV ICTs	B	Complied

			13. Oil leakage observed in ICT-I and II; oil level indicator for ICT-I is not working	B	Complied
			14. Time Synchronizing Equipment is not installed.	B	Installed but out of order. Purchasing new one.
			15. No line protection is available for Chandil-Ramchandrapur 220 kV line	B	Provided.
			16. Restricted earth fault and over fluxing relays for are not available all three 100 MVA, 220/132/33 kV ICTs	B	Complied
3	TVNL 220 kV - TVNL	04/12/2013	1. Stand alone Event Logger not available	B	M/S Alstom T&D have been requested for supply & commissioning work vide Letter no. 57 dated 28.06.2013 (enclose)
			2. Time Synchronising Equipment is not available	B	M/S Alstom T&D have been requested for supply & commissioning work vide Letter no. 57 dated 28.06.2013 (enclose)
			3. PLCC Protection coupler is not available, auto reclosing feature and carrier tripping features are disabled.	B	PGCIL has already been working for commissioning of 400 KV S/S in which all these features will be available (expected time Dec, 2013)

Third Party Protection Audit Observations of IPP Sub-stations in Eastern Region

Sl. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Category	Compliance/Action plan
1	GMR 400 kV - GMR	29-12-2012	1. Voice communication to RLDC is not available	B	It will be available by Sep, 13
2	Maithon RB 400 kV - MPL	22-01-2013	1. PLCC channel-II of protection is not working	A	It has been rectified by PGCIL, Maithon. PLCC protection of both channels now are in service for MRBL-2
3	Sterlite 400 kV - Sterlite	27-02-2013	1. Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	A	It is activated
			2. Overfluxing, Backup overcurrent and earth fault relays are not available for 80 MVA station transformers.	A	Except Overfluxing all other protections are available in the relay and same is in service
			3. Remote OTI and WTI for all transformers are not available in control room	B	Provision has been made for display of OTI and WTI on the monitor of control room.

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