

North Eastern Regional Power Committee

Agenda For

29th PCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 22nd January, 2015

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 28th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

The minutes of 28th meeting of Protection Sub-committee held on 5th December, 2014 at Dimapur were circulated vide letter No. NERPC/SE (O)/PCC/2014/3255-3290 dated 15^h December, 2014.

No observations or comments were received from the constituents. The Sub-committee may discuss & confirm minutes of 28th PCCM of NERPC.

ITEMS FOR DISCUSSION

A.1 Implementation of 3-phase Auto Reclosure Scheme in all lines connected to Khandong and Kopili HEP:

For reliable operation of Power system it is required to implement 3-Phase Auto Reclosure Scheme in all the 132kV lines connected to Kopili and Khandong HEP of NEEPCO. The lists of such lines are:

- a) 132kV Khliehriat – Khandong # 1
- b) 132kV Khliehriat – Khandong # 2
- c) 132kV Haflong – Khandong
- d) 132kV Kopili – Khandong # 1
- e) 132kV Kopili – Khandong # 2

During 28th PCC meeting, NEEPCO representative stated that 3-phase auto-reclosure scheme is expected to be implemented by December 2014 in the following line: -

- a) 132kV Khliehriat –Khandong #1
- b) 132kV Khandong – Haflong
- c) 132kV Kopili – Khandong # 1

DGM, NERTS informed that 3phase auto-reclosure scheme is already implemented in 132kV Kopili – Khandong # 2 and 132kV Khliehriat–Khandong#2.

NEEPCO may intimate the latest status and committee may like to discuss.

A.2 Implementation of 3-Phase Auto Reclosure Scheme of Radially fed 132kV Lines connected to Ranganadi HEP:

At present, the power flows to Nirjuli, Gohpur and Ziro radially from Ranganadi HEP and any transient fault in line causes undesirable outages. Hence, to avoid outages during transient fault it is essential to implement 3- Phase Dead Line charging of following 132kV Lines.

- a) 132kV Ranganadi – Nirjuli Line (Dead Line Charging at RHEP)
- b) 132kV Nirjuli – Gohpur Line (Dead Line Charging at Nirjuli)
- c) 132kV Ranganadi – Ziro Line (Dead Line Charging at RHEP)

During 28th PCC meeting, NEEPCO representative again informed that the work will be started once the design cell clears the drawing.

DGM, NERTS stated that no major work is required for the scheme, only some minor wiring has to be done, hence, the issue of approving the drawing from design cell may not be required. Regarding the item “b” above, he suggested that the issue may be finalized jointly by NERLDC, NERPC, NERTS & NEEPCO during the next Standing Committee Meeting scheduled on 13th December, 2014. Member Secretary I/C, NERPC also suggested accordingly.

NEEPCO may intimate the latest status and committee may like to discuss.

A.3 Implementation of the recommendations of the Protection Audit:

As per Sl. no 9.1.1 & 9.1.4 of Report on Enquiry Committee on Grid Disturbance in Northern Region on 30th July 2012 and in Northern, Eastern & North-Eastern Region on 31st July 2012, thorough Third Party protection audit needs to be carried out periodically along with independent audit of Fault Recording Instruments.

Last Protection audit of NER was carried out w.e.f. November, 2012 to March, 2013. It is now required to carry out Third party protection audit along with independent audit of Fault Recording Instruments.

In the last PCC meeting of NERPC, Member Secretary (I/C), NERPC stated that the 3rd Party Protection Audit of NER is to be carried out shortly. The Sub-committee suggested NERPC to chalk out the plan in line with the last Protection Audit and start Audit at the earliest.

Further, it is decided to send the standard formats to all the stations of NER for advance filling of data so that the Audit can be conducted without investing much time unnecessarily.

Further, so far as compliance of earlier Audit is concerned, MS (I/C), NERPC suggested NERPC Secretariat to prepare a progress monitoring chart showing the activities of earlier audit and review the same from time to time in every PCC Meeting.

In this line, standard format at **Annexure – A.3** as per Model Setting calculations for typical IEDs Line Protection setting guidelines protection system audit check list recommendations for protection management may be used for second 3rd Party Protection Audit of NER.

Members may like to discuss.

A.4 Implementation of Auto Reclosure Scheme in 132kV Jiribam (PG) - Loktak and 132kV Imphal (PG) - Loktak Line:

The external Auto Reclose Relay Type VARM and MGA are already obsolete and without service support from OEM. At Loktak HEP, the AR Relay Type VARM and MGA of 132kV Jiribam (PG) and 132kV Imphal (PG) are not tested since 2008 and so healthiness could not be ensured. Further, during March'14 NHPC has installed Numerical DPR Type P442 of M/S Alstom Make in the said feeders. Further, the Old / Obsolete CBs are already replaced with SF6 CB. Hence, Auto Reclosure Scheme may be implemented in 132kV Jiribam (PG) - Loktak and 132kV Imphal (PG) – Loktak Line immediately by activating internal Auto Reclosure of Numerical DPR to avoid use of obsolete Auto Reclose Relay Type VARM and MGA.

During 28th PCC meeting, NHPC representative stated that procurement of control cable is under process and SPAR will be implemented within January, 2015. Day time shutdown will be sought accordingly for implementation of the same.

NHPC may kindly intimate the status.

A.5 Standardization of Disturbance Recorder Channels:

Disturbance Recorders on Transmission elements are necessary for post disturbance analysis, and identification & rectification of any protection mal-operation. As per CBIP's manual on Protection of Generators, GT, Transformers and Networks, it is recommended to have minimum 8(eight) analog signals and 16(sixteen) binary signals per bay or circuit. Also, it should have a minimum of 5 sec of total recording time, minimum pre-fault recording time of 100 msec and minimum post-fault recording time of 1000 msec.

As per sl no A7 of MOM of 28th PCCM of NERPC, the forum requested NERTS to help NERLDC to finalize the DR Channels and NERLDC will present the same in next PCC Meeting

The Channels at 400 kV lines may be selected as per followings:-

Analog Channel: $I_R, I_Y, I_B, I_N, V_{RN}, V_{YN}, V_{BN}, V_{OD}$

Digital Channel: Main 1 Carrier receive, **Main 1 Trip**, Line O/V Stage I/Stage II, **Reactor Fault Trip**, Stub Protection Optd., **Main II Trip**, Main II Carrier Receive, **Direct Trip CH A/B**, CB I Status R PH, **CB I Status Y PH**, CB I Status B PH, **CB II Status R PH**, CB II Status Y PH, **CB II Status B PH**, Bus Bar trip, Main/Tie CB LBB Optd., DEF

The Channels at 220 kV lines may be selected as per followings:-

Analog Channel: $I_R, I_Y, I_B, I_N, V_{RN}, V_{YN}, V_{BN}, V_{OD}$

Digital Channel: Main 1 Carrier receive, **Main 1 Trip**, Stub Protection Optd., **Main CB Status R PH**, Main CB Status Y PH, **Main CB Status B PH**, TBC CB Status R PH, **TBC CB Status Y PH**, TBC CB B PH, **Bus Bar trip**, Main/TBC CB LBB Optd., DEF

The Channels at 132 kV lines may be selected as per followings:-

Analog Channel: $I_R, I_Y, I_B, I_N, V_{RN}, V_{YN}, V_{BN}, V_{OD}$

Digital Channel: Main 1 Carrier receive, **Main 1 Trip**, Stub Protection Optd., **Main CB Status R PH**, Main CB Status Y PH, **Main CB Status B PH**, BC CB Status R PH, **BC CB Status Y PH**, BC CB B PH, **E/F & O/C**

Members may like to discuss.

A.6 System Protection System (SPS):

Due to commissioning of 400 kV Silchar-Azara S/C, System Protection Schemes (SPS) associated with tripping of Palatana needs to be modified.

SPS 3 (Tripping of 400 kV Silchar- Byrnihat line (with generation from OTPC's plant at Palatana)) and SPS 4 (Tripping of 400 KV Silchar -Byrnihat line (without generation from OTPC's plant at Palatana)) need to be modified to include 400 kV Silchar-Azara tripping case.

During 28th PCC meeting, DGM, NERTS informed that the necessary modification of SPS – 3 & SPS – 4 will done by December 2014.

NERTS may kindly intimate the current status.

A.8 Issues related to protection and relay setting co-ordination:

As per section 5.2.I of IEGC, provision of protections and relay settings shall be co-ordinated periodically throughout the Regional Grid, as per plan to be separately finalized by the Protection sub-committee of the RPC.

It has been observed that number of multiple elements tripping increases. It is required to review Protection and relay setting co-ordination to minimize multiple elements tripping.

During 28th PCC meeting of NERPC, PRDC have given presentation on Protection Database on Transmission System (Protection Management System). The forum may procure Protection System Data Base Software for this purpose.

Members agreed to send the details of bus fault level and back-up relay settings for 132 kV and 220 kV lines. The data will further be reviewed by PCC forum for finalizing the protection schemes.

Committee may like to discuss.

A.9 Implementation of activities as decided in joint meeting amongst NERLDC, NERPC & constituents of NER on 29.12.2014:

A meeting was held at NERLDC between NERPC, NERLDC and constituents of NER as per directive of Hon'ble CERC in response to Petition No. 113/MP/2014 on 29.12.14:

The constituents of NER agreed upon the following:

- a. Testing of all existing relays and schemes within 2 months by all constituents to assess the healthiness of existing protective relays.
- b. Review of relay settings based on history of tripping.
- c. Availability of Distance Protection scheme.
- d. Attempts would be made to avoid any tripping on account of vegetation growth, which is frequent in NER.
- e. Single Phase / Three phase Auto Reclose Scheme of transmission lines of voltage level 132 kV and above under List of Important Grid Elements of NER are to be adopted, wherever available. The status of implementation will be monitored in monthly OCC/PCC meetings.

It is requested to power utilities of NER to intimate the latest status of the above activities.

A.10 Furnishing of Event Logger (EL) & Disturbance Recorder (DR) output of event:

As per section 5.2.r of IEGC, information/data including Disturbance Recorder & Event Logger output is to be sent to NERLDC **within 24 hrs** of occurrence of any event.

The DR files (Comtrade format), EL files, Sequential Event Recorder outputs and any other protection related information may be sent to nerldcprotection@gmail.com

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Also as per section 5.9.6 of IEGC, written report of any events by constituents is to be sent to NERLDC with the following details:-

Time and Date of Event, **Location**, Plant and/or equipment directly involved, **Description and cause of event**, Antecedent conditions of Load and Generation including frequency, **voltage and the flows in the affected area at the time of tripping including weather condition prior to the event**, Duration of interruption and Demand and/or generation (in MW and MWh) interrupted, **all relevant system data including copies of records of all recording instruments including Disturbance Recorder, Event Logger, DAS etc**, Sequence of tripping with time, **Details of Relay Flags**.

DR & EL outputs of the following events have not been received after the joint meeting of NERPC, NERLDC and all constituents of NER held on 29.12.14 is as Follows :

1. 132 kV Dimapur – Kohima line at Dimapur (PG) – occurred at 1330 Hr on 02.01.15

A.11 Grid Incidences during December, 2014:

The following numbers of Grid Disturbances (GD) occurred during the period **w.e.f 24th November, 2014 to 31st December, 2014** :-

SI No	Control Area	Grid Disturbance in nos	
		24 th Nov (till 31 st Dec)	Jan'14 to Dec'14(till 31st)
1	Palatana	0	8
2	AGBPP	0	6
3	AGTPP	0	10
4	Ranganadi	0	1
5	Kopili	0	2
6	Khandong	0	5
7	Doyang	0	2
8	Loktak	0	6
9	Arunachal Pradesh	1	16
10	Assam	1	41
11	Manipur	0	49
12	Meghalaya	1	17
13	Mizoram	0	14
14	Nagaland	0	22
15	Tripura	0	15

SI No	Category of GD	Grid Disturbance in nos	
		Nov'24 (till 31 st Dec)	Jan'14 to Dec'14(till 31 st)
1	GD 1	2	121
2	GD 2	0	14
3	GD 3	0	2
4	GD 4	0	3
5	GD 5	0	2
	Total	2	142

This is for information to the members. Remedial actions are to taken by the concerned power utilities of NER

A.12 Root cause analysis of tripping of multiple elements:

- i. At 0117 Hrs on 15.12.14, 132 kV Khliehriat (PG)- Khliehriat II (Khliehriat(PG) : DP, ZIII, R-Y-B & Khliehriat : No tripping), 132 kV NEHU-NEIGRIHMS (Tripped on Distance Protection), 132 kV NEIGRIHMS-Khliehriat (NEIGRIHMS : DP, ZI, R-Y-B & Khliehriat : DP, ZII, R-Y-B) and 132 kV Lumshnong- Khliehriat (Lumshnong : DP, ZI, R-Y-B & Khliehriat : DP, ZII, R-Y-B) lines tripped.

Due to tripping of these elements, there was Load loss of 41 MW in Meghalaya.

Category as per CEA Standards: GD-I

Analysis of events:

It was suspected that fault was in 132 kV NEHU - NEIGRHIMS line. 132 kV Lumshnong- Khliehriat line supplies radial loads in Lumshnong area of Meghalaya. It is not clear from the relay flags.

Me. PTCL may elaborate.

Any other item:

Date and Venue of next PCC

It is proposed to hold the 30th PCC meeting of NERPC on second week of February, 2015. The exact venue will be intimated in due course.
