भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
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Website: www.nerpc.nic.in

No. NERPC/SE (O)/PCC/2014/**3255-90** Dated: December 15, 2014

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Managing Director, MSPDCL, Electricity Complex, Keishampat, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
10. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791111
11. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
14. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
15. General Manager, TSECL, Agartala – 799 001
16. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
17. ED, NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
18. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
19. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
21. GM (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
22. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
23. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
24. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066

Sub: Minutes of the 28th PCC Meeting - Reg.

Sir,

The Minutes of the 28th PCC Meeting of NERPC held on 05.12.2014 at "Hotel Acacia", Dimapur is enclosed for favour of kind information and necessary action please**.**

Any comments or observations may kindly be communicated at the earliest.

With warm regards,

Encl: As above

भवदीय / Yours faithfully,

बि. लिंगखोइ / B. Lyngkhoi
निदेशक **/ Director/ SE**

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. Chief Engineer(Elect), Loktak HEP,Vidyut Vihar, Kom Keirap, Manipur- 795124
11. Addl. GM (EED), NTPC Ltd., Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
12. DGM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.

वी. लिंगारेड्डि

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF THE 28th PROTECTION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 05/12/2014 (Wednesday)
Time : 10:00 hrs
Venue : "Hotel Acacia", Dimapur.

The List of Participants in the 28th PCC Meeting is attached at **Annexure – I**

Shri A.K. Bandapadyay, Member Secretary I/C, NERPC welcomed Sh. K. Miachieo, Chief Engineer, Sh. G. Chishi, Addl. Chief Engineer, Dept. of Power, Govt. of Nagaland and all the constituents to the 28th PCC meeting. He thanked Dept. of Power, Nagaland for the excellent arrangement made by them on behalf of NERPC. He briefed about the meeting on the issue of Emergency Restoration System (ERS) taken by Member (PS), CEA on 10.11.2014 wherein, he was impressed that funding for procurement of ERS should be funded from either Central Assistance or PSDF for North Eastern Region. He requested the forum to finalize the requirement so that the issue can be taken up by NERPC with CEA. He also stressed upon the improvement of protection system for safe and reliability of the grid. He requested all the members to actively participate in the meeting for fruitful deliberation. He then requested Chief Engineer, DoP, Nagaland to address the meeting.

Sh. K. Miachieo, CE welcome all the participants and thanked NERPC for hosting the PCC & OCC meetings in Dimapur, Nagaland. He felt that such meeting will bring the engineers of the region closer and this in turn helps the constituent members to carry out the works effectively. He stated that as a region they all should work in unison for the betterment of the region. He mentioned that Govt. of India has now looked towards NER for tapping the huge resources/hydro potential etc., and hence NER should also grab this opportunity to reap the benefits from Central Government to improve not only in power sector but in all round developments. He wished the meeting success.

Thereafter, Member Secretary I/C requested Sh. B. Lyngkhoi, Director/SE(O) to take up the agenda items for discussion.

B. Lyngkhoi, SE (Operation), NERPC thanked Member Secretary I/C for sparing his valuable time to attend the meeting in-spite of his busy schedule and stated that under his leadership many developments have been achieved in the region during the last few months. He also briefed about the CERC hearing held on 27.11.2014 wherein, CERC has taken note about the difficulties faced by the region in implementation of the recommendations of protection audit due to fund constraints. Finally he thanked the team of EE, SLDC, DoP, Nagaland for the pain and efforts for making the meeting successful.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 27th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

The minutes of 27th meeting of Protection Sub-committee held on 12th November, 2014 at Guwahati were circulated vide letter No. NERPC/SE (O)/PCC/2014/2918-2953 dated 19th November, 2014.

The Sub-Committee confirmed the minutes of 27th PCCM of NERPC as No observations or comments were received from the constituents

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

Deliberation of the sub-Committee

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 in132kV Kopili – Khandong # 2 and 132kV Khliehriat–Khandong#2.

The sub-committee noted as above.

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 the 27th PCC meeting, NEEPCO representative stated that drawings for implementing Auto-reclosure schemes in the above lines been finalized. Joint meeting with ED (O&M) and Design cell is expected by 18th November, 2014 for clearance and the same may be expected to be implemented by November, 2014.

POWERGRID informed that 3P Dead Line Charging of 132kV Nirjuli – Gohpur Line at Nirjuli has already been implemented.

Deliberation of the sub-Committee

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.

The sub-committee noted as above.

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

As per para no 27 of CERC order in Petition No. 220/MP/2012 on 21.02.14,the deficiencies, if any, in Category-A (the deficiencies which can be corrected without any procurement) shall be rectified by the concerned STU and CTU within 2 months of issue of the order and compliance report in this regard shall be submitted to NERPC. **All deficiencies of Category-B (deficiencies involving procurement of equipment) shall be rectified within 6 months of issue of the order**. In this regard, reasons of non-availability of fund or delay in procurement process shall not be accepted. The procurement and implementation is to be completed by each STU using their own fund which can be reimbursed through a common request of funding through PSDF forwarded through NERPC as per procedure recently approved by Government of India.

During 26th PCC meeting, DGM, POWERGRID informed that issue of implementation of Bus Bar protection system at Dimapur S/S as recommended under category-B has already been taken up. Target Completion : January, 2015

Deliberation of the sub-Committee

After detailed deliberation, it was agreed that check list may be prepared by NERPC/NERLDC as per protection audit and the same shall be reviewed in every PCC/OCC meetings about the status of progress.

The sub-committee noted as above.

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.

Deliberation of the sub-Committee

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.

The sub-committee noted as above.

A.5 Removal of Obsolete DPR Type THR-3 and SSRR3V from 132kV Jiribam (PG) and 132kV Imphal (PG) Feeder:

As per the existing practice, the protection scheme for 132kV Lines is Single Main and Backup Protection. During March'14 NHPC has already installed Numerical DPR Type P442 of M/S Alstom Make in 132kV Jiribam (PG) and 132kV Imphal (PG) feeders. However, the obsolete DPRs viz. THR-3 and SSRR3V of 132kV Jiribam (PG) and 132kV Imphal (PG) feeders have not been disconnected from the scheme which is unsafe so far as reliable protection is concerned considering the probability of mal-operation of the obsolete relays. There are instances of undesirable tripping of 132kV Jiribam (PG) – Loktak Line on account of mal-operation of old DPR at Loktak HEP. NHPC should disconnect the Old and Obsolete DPRs immediately.

Deliberation in the Meeting

NHPC representative informed that the relays have been replaced for the above feeders and old relays have already been removed from service.

The sub-committee noted as above.

A.6 Rectification of CT Switching relays of 220kV Bus Bar Protection Scheme at 400/220kV Balipara Sub Station by AEGCL:

The 220kV Bus Bar Protection Scheme at 400/220kV Balipara Sub Station operated on 28.09.2014 during operation of Bus Transfer Scheme. On investigation it was found that the CT Switching Relay contact of 50MVA ICT Bay was not operating for Zone – B. Matter was referred to AEGCL for necessary rectification.

During 26th PCC meeting, AEGCL representative informed that approval for procurement of VAJH-11 relay from M/s Areva is awaited. The same may be expected to be installed by end of October, 2014.

Deliberation in the Meeting

AEGCL representative stated that installation of relay has already been completed.

The sub-committee noted as above.

A.7 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.

A list of typical signals (Analog / Binary) that are required to facilitate post-event analysis, may be finalized after discussion among constituents of NER. It is also felt necessary to finalise the nomenclature being used for Analog / Binary channels in order to enable easy comprehension.

Extracts from CBIP's Manual on Protection of Generators, GT, Transformers and Networks, is attached as **Annexure A-7** for reference.

Deliberation in the Meeting:

DGM, NERTS informed that the standardization of Channels will vary depending on system voltage level having different Bus Bar Scheme. The same needs to be finalized accordingly for different voltage level. The forum requested NERTS to help NERLDC to finalize the DR Channels and NERLDC will present the same in next PCC Meeting.

A.8 Third Party 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 Nov12 to Mar13. It is now required to carry out third party protection audit along with independent audit of Fault Recording Instruments.

Deliberation in the Meeting:

Member Secretary (I/C), NERPC stated that the 3rd Party Protection Audit of NER is to be carried out shortly. He also informed that ER is about to start the 3rd Party Protection Audit in their Region. 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 officials to prepare a progress monitoring chart showing the activities of earlier audit and review the same from time to time in every PCC Meeting.

The Sub-committee noted as above.

A.9 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.

Deliberation in the Meeting:

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

The Sub-committee noted as above.

A.10 Issues related to protection and relay setting co-ordination:

As per section 5.2.l 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.

Deliberation in the Meeting:

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.

The sub-committee noted as above.

A.11 Grid Incidences during November, 2014:

The following numbers of Grid Disturbances (GD) occurred during the period **w.e.f 27th October, 2014 to 23rd November, 2014** :-

Sl No	Control Area	Grid Disturbance in nos	
		Nov'14 (till 23rd)	Jan'14 to Nov'14(till 23rd)
1	Palatana	0	8
2	AGBPP	0	6
3	AGTPP	1	10
4	Ranganadi	0	1
5	Kopili	0	2
6	Khandong	0	5
7	Doyang	0	2
8	Loktak	0	6
9	Arunachal Pradesh	5	15
10	Assam	2	40
11	Manipur	4	49
12	Meghalaya	0	16
13	Mizoram	0	14
14	Nagaland	4	22
15	Tripura	1	15

Sl No	Category of GD	Grid Disturbance in nos	
		Nov'14 (till 23rd)	Jan'14 to Nov'14(till 23rd)
1	GD 1	13	119
2	GD 2	0	14
3	GD 3	0	2
4	GD 4	0	3
5	GD 5	0	2
	Total	**13**	**140**

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 **1148 Hrs on 28.10.14**, AGBPP Unit 5 tripped on reverse power protection. It was reported that 220 kV AGBPP- Mariani (PG) S/C tripped **(AGBPP-LBB operation & Mariani(PG)- Not furnished)** and 220 kV AGBPP- Tinsukia I also tripped **(AGBPP-LBB operation & Tinsukia- Not furnished)**. AGBPP Unit 1, 3, 7 & 8 also tripped. At 1153 Hrs AGBPP Unit 2, 4 & 6 tripped.

Category as per CEA Standards: GI-II

Analysis of events:

AGBPP Unit 5 tripped just after synchronization due to reverse power protection operation. Subsequently several elements connected to 220 kV AGBPP bus tripped due to operation of LBB relay. 220 kV Bus Coupler tripped separating Bus-I & Bus-II. 220 kV AGBPP - Mariani(PG), 220 kV AGBPP - Tinsukia I, AGBPP U-1,3,7 & 8 tripped due to tripping of Bus I. At 1153 Hrs Power supply to Gas Compressor water supply system failed and all running GC tripped due to high engine jacket water temperature. AGBPP U-2, 4 & 6 tripped immediately due to low fuel gas pressure. LBB relay operation must have occurred due to non-operation of breaker in one / more elements connected to 220 kV AGBPP bus. It is to be investigated further.

Deliberation in the Meeting:

NEEPCO representative informed that they have already attended the problem and rectified the same.

ii. At **2035 Hrs on 06.11.14**, 132 kV Dimapur (PG) – Kohima tripped **(Dimapur (PG) – Dir. Over-current & Kohima- Not furnished)** and 132 kV Imphal (PG) - Imphal (MSPCL) I & II line also tripped **(Imphal (PG)-Earth Fault & Imphal (MSPCL) - Not furnished)**.

Due to tripping of these elements, there was Load loss of 81 MW in Manipur & 16 MW in Nagaland.

Category as per CEA Standards: GD-I

Analysis of events:

132 kV Dimapur (PG) – Kohima (Nagaland) S/C supplies radial load to Kohima area of Nagaland, while 132 kV Imphal (PG) – Imphal (MSPCL) I & II lines supply radial loads in Capital area of Manipur. Relay flag details at Imphal (MSPCL) was not furnished. Since the two lines are feeding different radial sections of load, it appears that two separate faults/incident existed in those radial sections. It is to be investigated further.

Deliberation in the Meeting:

The Sub-committee felt that the tripping might have occurred incidentally since both the lines are radial loads; the same will be monitored and reviewed if such incidences occur again.

iii. At 1102 Hrs on 16.11.14, 132 kV Imphal (PG) - Imphal (MSPCL) I line tripped **(Imphal (PG)-Not furnished & Imphal (MSPCL)- Earth Fault)** and 132 kV Imphal (PG) - Imphal (MSPCL) II line also tripped **(Imphal (PG)-Not furnished & Imphal (MSPCL)- Earth Fault)**.

Due to tripping of these elements, there was Load loss of 53 MW in Manipur.

Category as per CEA Standards: GD-I

Analysis of events:

132 kV Imphal (PG) – Imphal (MSPCL) I and II lines supply radial loads in Capital area of Manipur system. Relay flag details at Imphal (PG) was not furnished. It is suspected that fault was in 132 kV Imphal (PG) – Imphal

(MSPCL) section, or downstream feeders in MSPCL system. Directional feature of relays at Imphal (MSPCL) end may be checked. The incident needs further investigation after furnishing of relay details by POWERGRID.

Deliberation in the Meeting:

DGM, NERTS informed that the Earth Fault Relay operated at PG end for both the lines due to downstream fault in Manipur System.

iv. At 1608 Hrs on 22.11.14, 132 kV Agartala- AGTPP I & II lines tripped(**Agartala-Earth Fault & AGTPP- Dir. Earth Fault)**, 132 kV Agartala- Rokhia I tripped (**Agartala-No Tripping & Rokhia- Earth Fault)**, 132 kV Agartala- Rokhia II tripped (**Agartala-Earth Fault & Rokhia- Earth Fault)** and 132 kV Agartala-Dhalabil tripped **(Agartala- Earth Fault & Dhalabil- No Tripping)**. 132 kV AGTPP- Kumarghat was already under shutdown from 1051 Hrs on 22.11.14. AGTPP Unit 1, 2 & 3 tripped due to loss of evacuation path.

Due to tripping of these elements, there was loss of 57 MW generation of AGTPP and load loss of 20 MW in Tripura.

Category as per CEA Standards: GD-I

Analysis of events:

Tripping of 132 kV AGTPP – Agartala I and II on Dir.E/F from both ends of the line indicates fault in these lines. Also, 132 kV Rokhia – Agartala II tripped on both ends of the line on Dir. E/F. It is suspected that there was some fault in 132 kV AGTPP – Agartala D/C section. It is to be investigated where fault persisted in the system and whether Directional E/F feature in elements of TSECL system operated properly.

Deliberation in the Meeting:

DGM, NERTS informed that both the relays at Agartala I & II will be replaced soon and the same will be reviewed again if problem persist.

A.13 Protection Database on Transmission System:

PRDC have given presentation on Protection Database on Transmission System (Protection Management System) covering the followings:

1. PRDC Software based Protection Management System: Application / Necessity in Transmission System Operations.
2. PRDC's Protection Management Suit: Introduction / Features
3. Protection Database Management System & Protection Setting Calculation Tool:
    a. Description / Features of the application
    b. Benefits
    c. Stakeholders ownership and responsibilities
    d. Role base Management
    e. Software and hardware requirement
    f. Implementation Strategy
4. Live demo of point 3 on sample data
5. Presentation & Live Demonstration of Automatic Fault Analysis System. The Presentation on Protection Database on Transmission System attached at **Annexure – A.13.**

Date and Venue of next PCC

It is proposed to hold the 29th PCC meeting of NERPC on second week of January, 2015. The exact venue will be intimated in due course.

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Annexure-I

List of Participants in the 28th PCC Meetings held on 05/12/2014

SN	Name & Designation	Organization	Contact No.
1.	Sh. M.K. Bordoloi, CGM,SLDC	Assam	09435203996
2.	Sh. A.K. Saikia, DGM,LDC, AEGCL	Assam	09401026118
3.	Sh. G.K. Bhuyan, AGM	Assam	09854015601
4.	Sh. J.P. Choudhury, AGM (Com), APDCL	Assam	09954055295
5.	Sh. J.K. Baishya, AGM, LD-Com, AEGCL	Assam	09435041494
6.	Sh. Reza Mahmud, System Analyst, APDCL	Assam	
7.	Sh. N. Jasobanta Singh, Manager, MSPCL	Manipur	09612255562
8.	Sh. S. Sanjeet Singh, Manager, MSPCL	Manipur	09856190818
9.	Sh. H.F. Shangpliang, EE, Me. PTCL	Meghalaya	09863315562
10.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
11.	Sh. B. Narry, AEE, PLCC	Meghalaya	09089000911
12.	Sh. Vanlal Rema, SE,SLDC	Mizoram	09436140353
13.	Sh. Zoramdina, AE, SLDC	Mizoram	08415901755
14.	Sh. K. Miachieo, CE (Power)	Nagaland	09436000977
15.	Sh. G. Chishi, Addl. CE	Nagaland	09436012325
16.	Sh. Bendang Longkumer, SE (E),DMR	Nagaland	09436004642
17.	Sh. V. Kezo, EE (E), O/o CE (P)	Nagaland	09436002732
18.	Sh. Shikato Sema, EE (T), MG	Nagaland	09436003338
19.	Sh. A. Jakhalu, EE(T), DMR	Nagaland	09436002696
20.	Sh. N. Wotsa, EE (Transmission-I)	Nagaland	09436004928
21.	Sh. Kasho Chishi, EE (T), Kohima	Nagaland	09436005430
22.	Sh.T. Lithrichum Sangtam, EE (E), Store	Nagaland	09436430807
23.	Sh. Imsenkaba, EE (E)	Nagaland	09436003805
24.	Sh. B. Tiamerin Ao, EE (M/S)	Nagaland	09436260852
25.	Sh. Rokobeito Iralu, SDO (Trans.)	Nagaland	09436832020
26.	Sh.Namheu Khate, SDO (E)	Nagaland	09436000800
27.	Sh. H.R. Venkatesh, GM, PRDC	Nagaland	09845009162
28.	Sh. U. Debbarma, DGM	Tripura	09436462842
29.	Sh. D. Pal, Sr. Manager	Tripura	09436500244
30.	Sh. N. R. Paul, DGM (SO-I)	NERLDC	09436302723

SN	Name & Designation	Organization	Contact No.
31.	Sh. Anupam Kumar, Sr. Engineer	NERLDC	09436335379
32.	Sh. Amaresh Mallick, DGM(SO-II)	NERLDC	09436302720
33.	Sh. R.C. Murry, DM (E/M)	NEEPCO	09436063630
34.	Sh.S.Patton, SM (E)	NEEPCO	09436434913
35.	**No Representatives**	**NETC**	
36.	Sh.J. Bhattacharya, AGM (O&M)	NTPC	09435720036
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Protection Suite

Protection Management system

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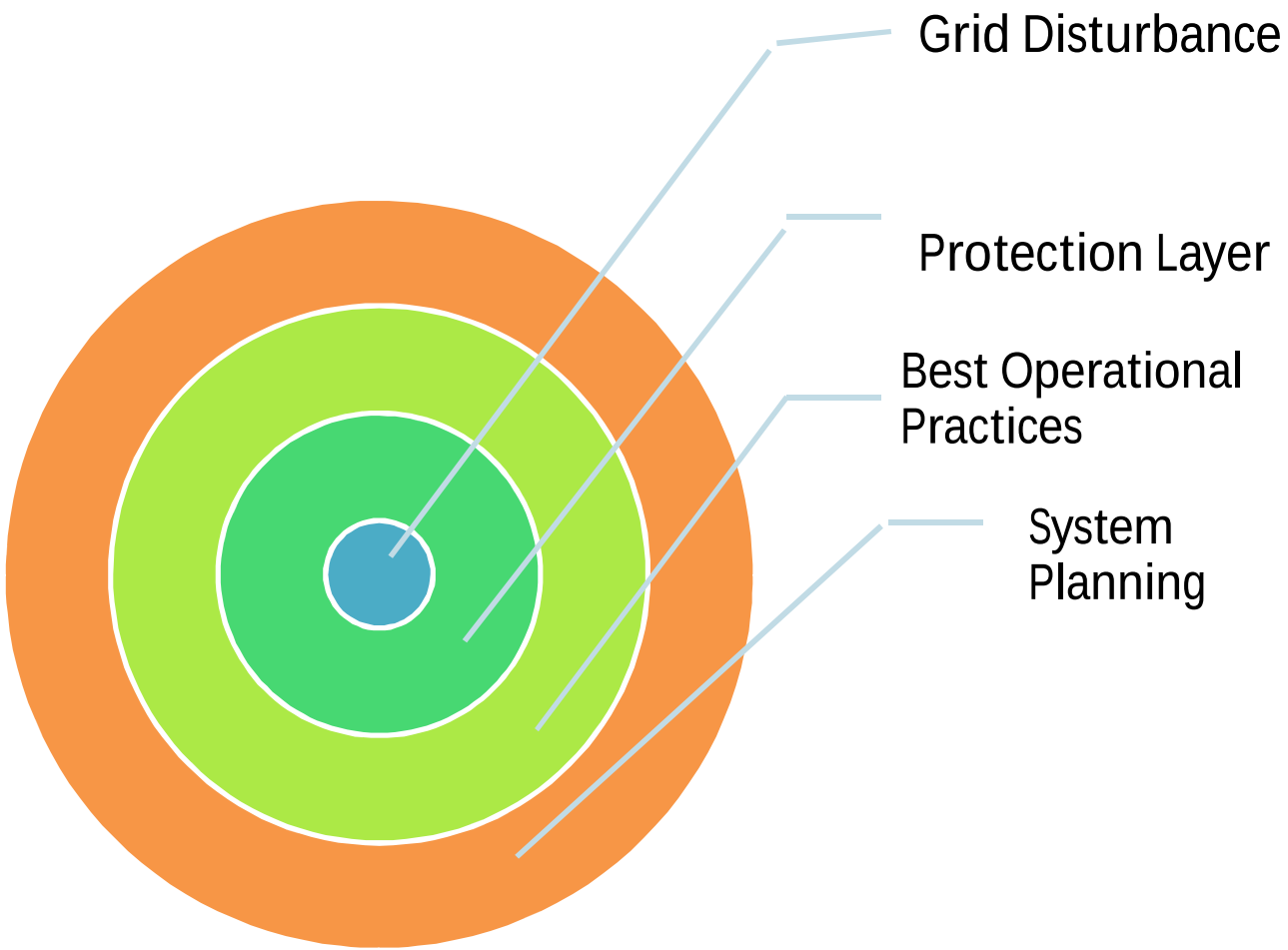
Contents

Introduction

Protection issues:

- Technical issues
- Management issues

It is not easy to achieve Grid Collapse!!!



Observations interacting with various Utilities

It is seen that there is not much emphasis on the system studies to arrive at the relay setting.

Lack of relay setting documentation indicates that lack of resources at the utilities to handle the protection system

Protection Suite

Package with essential components required to operate robust power system

a sophisticated manufacturer independent protection equipment modeling framework, life-cycle log and tracing mechanism for the protection template and settings, industry standard settings calculation support integrated with analysis tools.

Existing Practice

Hard copy

Spread Sheets

Database (combination of the above)

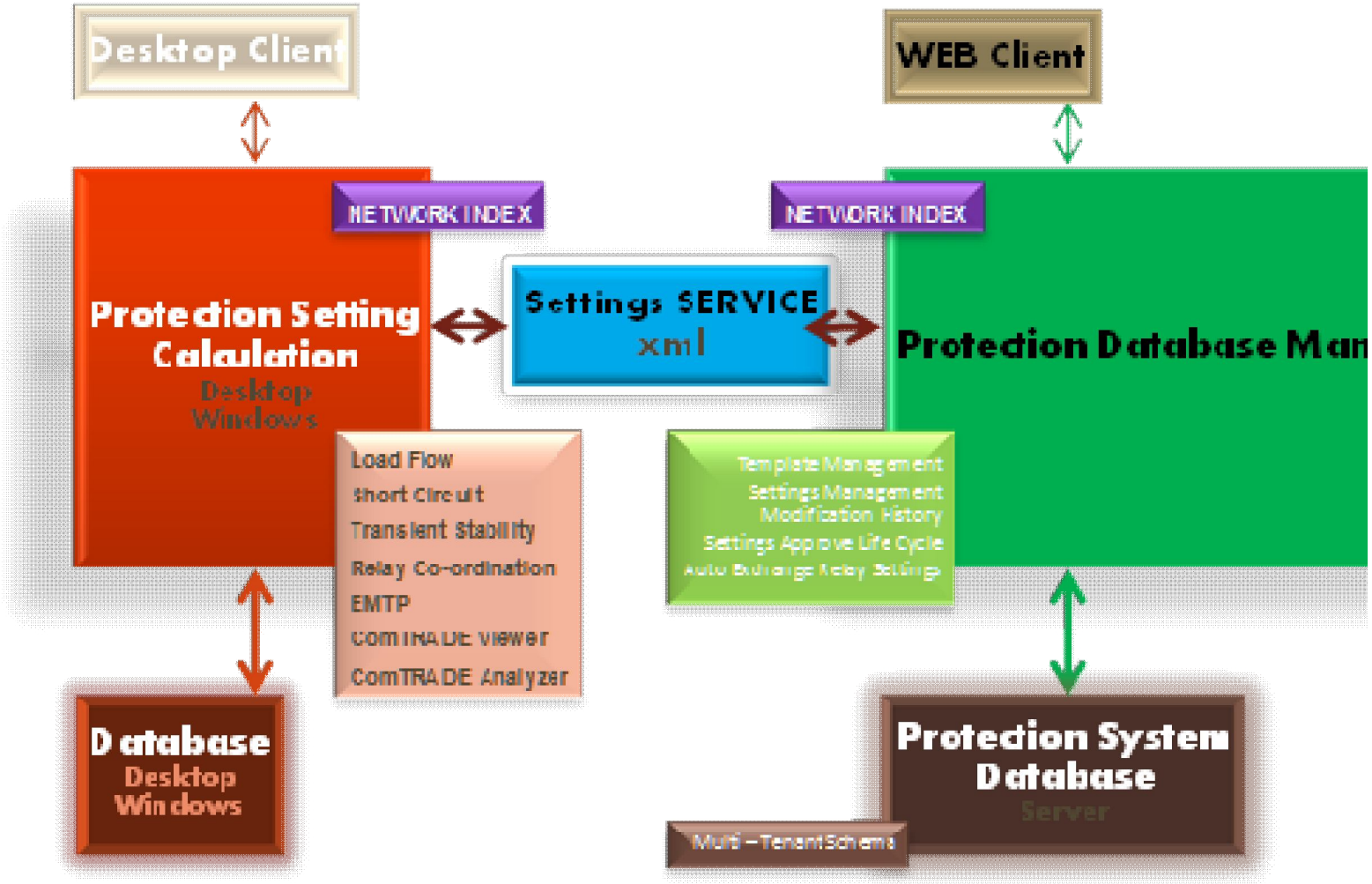
Typical Issues

- Time consuming
- No inbuilt validation/error checking
- No user management
- No traceability and accountability for the settings

PMS Components

- Protection Database Management System
- Protection Setting Calculation Engine
- Settings service
- Protection System Database and Network database

Protection Suite Components



Protection Database

- Facility to store all types of relay settings irrespective of the manufacturer
- Capture the life cycle of protection settings and template
- Interface with Relay Setting Calculation engine
- Remotely accessible
- Role based access control
- Reporting

Protection Database

Manufacturer independent relay setting database

The data for all the relays stored in common format so that it is easily accessible to the calculation software

User Role Management

- Administrator
- Read and Write, edit roles
- Read Only
- Keep track of changes made to relay and also relay setting calculation

Relay & Setting life cycle management

- Data Repository – central location
- Reports – based on various filter criteria
- Linking to analysis engine

Relay & Setting life cycle management

Relay Setting computed – done by

Settings verified – verified by

Apply the settings in the field – approved by

The whole process can be captured and it moves to the next phase only after completion of the previous process.

Advantages

Protection management system can have the following advantages

- Accountability of settings (track changes, ownership of the process)
- Save time (in accessing the relevant data)
- Central repository of protection settings
- Define processes to maintain data

Live Demo

Discussions

Thank You