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
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

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Website: www.nerpc.nic.in

No. NERPC/SE (O)/OCC/2020/***4806-4843*** 13th March, 2020

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, Secure Office Bldg. Complex, South Block, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
15. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
16. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
17. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
18. ED, NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
19. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
21. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
22. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
23. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
24. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer (NPC), NRPC Complex, Katwaria Sarai, SJSS Marg., New Delhi - 110016

Sub: Minutes of Special Meeting on "SPS, Islanding Schemes".

Sir/Madam,

Please find enclosed herewith the Minutes of Special Meeting on "SPS, Islanding Schemes" held at Guwahati on the **20th February, 2020** for your kind information and necessary action.

Any comments/observations may kindly be communicated to NERPC Secretariat at the earliest.

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.

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF SPECIAL MEETING ON SPS, ISLANDING SCHEMES

Date : 20/02/2020 (Thursday)

Time : 10:00 hrs

Venue : "Hotel Nandan", Guwahati.

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

Shri A.K. Thakur, Member Secretary, NERPC welcomed all the participants to the Special Meeting on SPS, Islanding Schemes. He stated that the items in the Agenda were pending for discussion for a long time and hoped for fruitful discussions in the forum. Thereafter he requested Sh B. Lyngkhoi, Director, NERPC to take up the agenda items for discussion.

A. I T E M S FOR DISCUSSION

A.1 Implementation of revised SPS-3 scheme

As per the Minutes of 20th TCC & 20th NER Power Committee Meetings held at Guwahati on 12th September, 2019 (Agenda No. D 20), the said SPS is to be discussed again in OCC and it is to be put up in the 21st TCC/RPC Meeting.

In 162nd OCCM Director, NERPC recounted the deliberations of the 20th TCC/NERPC meeting, wherein it was decided that the scheme of SPS-3 with generation reduction for Palatana to be reviewed in OCC forum.

OTPC representative stated that 400kV corridor is tripping prone and this triggers SPS-3 condition frequently. Due to this machines come under tremendous stress and their health is affected.

ED, NERLDC stated SPS-3 is necessary for secure operation of the NER Grid. As the generation in the southern NER pocket remains high for most of the time of the day, generation reduction is the only option for successful operation of SPS 3. He stressed upon the forum to implement revised SPS-3 scheme based on flow based scheme at the earliest to ensure reliable and secure operation of NER Grid. Until the implementation of revised scheme, existing SPS-3 to be kept in service as per the real time requirements.

As per deliberations in the previous meeting(s), NERTS updated the following status w.r.t. implementation of revised SPS-3:

- Budgetary offer received from M/s GE, amount approximately Rs 1 Cr.
- Detailed breakup yet to be submitted by M/s GE.

Deliberation in the meeting

Sr. Manager, OTPC informed that the combination of various GTG & STG considered in proposed SPS 3 scheme needs review. Sr.GM(Group-in-Charge), NERTS stated that M/S GE has given technical offer based on proposed SPS 3 scheme and if any change is done the same need to be sent to M/S GE for revised technical and commercial offer. Till now, no commercial offer is submitted by M/S GE. The forum decided to review the scheme through a committee taking the inputs from both NERLDC & OTPC and finalize the scheme once for all for necessary implementation.

Further, NERTS informed that SPS-3 signal is being sent from Silchar over 400kV Palatana Line-I Channel -2 Code-2.

The forum noted as above.

Action: NERTS.

A.2 Mock Test for SPS in NER

Decision as per previous meeting(s):

a. Periodic Mock test (frequency once in six months) to be conducted for all SPS. However, the scope would not cover physical tripping of elements/generating units. Prior to a Mock Test the modalities and objectives for testing to be determined by Sub-group.

b. Mock Test to be conducted in Feb'20 after finalization of modalities in the Special Meeting to be held on Feb'20.

Deliberation in the meeting

After detailed deliberation the following were decided:-

a. No physical tripping of elements to be done as part of Mock Test.
b. Upon disconnection of wires to the trip relay for SPS, the signals have to be checked with proper wiring to the contacts of SCADA/DCS.
c. Simulated SPS conditions with the timings logged in SCADA to be used for verification.

The forum decided that SPS-2, 3 would be tested in Mar'20 tentatively.

The forum noted as above.

Action: NERPC/NERLDC.

A.3 <u>Review of existing SPS-5 to SPS-9:</u>

Due to the recent developments in the NER power system, following 5 nos. of existing Special Protection Schemes needs to be reviewed:

SPS No.	SPS Logic		Stations Involved	SPS Signals Involved	Remarks	Utilities
	Input	Output				
SPS-5	Power flow reaches 60 MW from 220 kV to 400 kV side through 400/220 kV, 2x315 MVA ICTs at Azara (PG)	Tripping of 400/220 kV, 2x315 MVA ICTs at Azara (AEGCL).	Azara (AEGCL)	Logic configured at Azara		AEGCL
SPS-6	Tripping of both 132 kV Umiam Stg-I to Umiam St-III D/C lines	Load reduction (Mawphlang area)	Umiam Stage I & Umiam Stage III (MePTCL)	Signal from Umiam Stage III to stage I power station; & load reduction by tripping of Mawphlang feeder- 1 & 2 at Stage-I power station	As informed by MePTCL in subgroup meeting, system configuration has been changed. Scheme needs review.	MePTCL
SPS-7	Overloading of 220 kV Salakati – BTPS D/C lines (more than 600 Ampere current per circuit) in Salakati – BTPS direction	Tripping of 132 kV BTPS – Dhaligaon I & II lines	BTPS(AEGCL)	Logic configured at 220 kV BTPS(AEGCL)	220 kV BTPS-Rangia D/C added to the system. Scheme needs review.	AEGCL
SPS-8	Tripping of any one of 400/132 kV, 2x200 MVA ICTs at Silchar (PG)	Load reduction of South Assam area	Silchar (PG) & Badarpur (PG)	Logic locally configured at Silchar	3rd ICT added at Silchar. Scheme needs review.	POWER GRID

SPS-9	N-1 contingency of 132 kV AGTCCPP – Kumarghat S/C (kept in service, if generation is more than 84 MW)	Tripping of GTG-3 at AGTCCPP	AGTCCPP (NEEPCO)	Logic locally configured at AGTCCPP	AGTCCPP - Agartala D/C reconductoring done. Scheme needs review	NEEPCO

Deliberation in the meeting

After detailed deliberation; following were decided:

Name of the existing SPS	Decided Recommendation/ Modification	Action(s) to be taken	Name of the utility
SPS-1 (*Tripping of both modules of Palatana GBPP*)##	To be removed/de-commissioned as no longer deemed necessary	To be de-activated and channels to be freed at both Paltana & Silchar	OTPC/NERTS
SPS-2 (*Tripping of 400kV Palatana-Silchar D/C when both modules of Palatana in service*)##	Similar scheme as before. Tripping of 2x125MVA ICTs at Palatana	SPS loading part of SPS-2 at Silchar to be removed.	NERTS
SPS-3 (*Tripping of both 400kV Silchar-Azara & 400kV Silchar-Byrnihat when both modules of Palatana in service)*	Pls refer to discussion in item **A.1**		

SPS-4 (*Tripping of both 400kV Silchar-Azara & 400kV Silchar-Byrnihat when both modules of Palatana not in service)##*	To be removed/de-commissioned as no longer deemed necessary	To be de-activated and channels to be freed at Silchar	NERTS
SPS-5 (*When reverse power flow greater than 60MW from LV to HV side of 400/132kV ICT at Azara)*	Similar scheme as before.	-	-
SPS-6 (When 132kV Umiam Stg-I to Umiam Stg-III D/C line trips)	Increase in loading of 132kV Umiam Stg-III to Stg-I lines. Additional load shedding required. Existing configured loads are not radial presently. Modified Scheme: 1) For tripping of double circuit of 132 kV Umiam Stg-I to Umiam St-III D/C lines, **30 MW** load shedding is to be done near Umiam I 2) For tripping of single circuit of 132 kV Umiam Stg-I to Umiam St-III D/C lines, **20 MW** load shedding is to be done near Umiam	Identification load up to 30 MW near Umiam.	MePTCL

SPS-7 *(When 220kV BTPS-Salakati D/C gets overloaded OR in case of outage of one circuit the other circuit gets overloaded(i.e loading greater than 600A*)	Since Dhaligaon load is not radial presently, following modification is required: a) Wiring for tripping of 132 kV BTPS-Dhaligaon D/C at BTPS to be removed. b) In case of over loading, a signal to be sent from BTPS to Agia to trip 220 kV Agia – Azara S/C and 220 kV Agia – Boko S/C, both circuits at Agia end.	Feeders near Stg-I to be identified for additional 30MW load shedding.	MePTCL
SPS-8 (*When one ICT of the two 400/ 132kV ICTs at Silchar (PG) trips*)	De-commissioned after installation of 3rd ICT at Silchar		
SPS-9 (*Tripping of 132kV AGTCCPP – Kumarghat line*)**	Triggering condition of the SPS to be modified to: Tripping of both 132kV AGTCCPP-Agartala D/C line	Generation reduction quantum 84MW to be implemented	-

**After implementation of the SPS in the event of shutdown/outage of any one circuit of 132kV AGTCCPP-Agartala D/C, there shall be no generation reduction of AGTCCPP.

Director, NERPC opined that most of the SPS are designed for N-2 contingency while the Planning Criteria specifies that SPS has to implemented only considering N-1-1 contingency. This implicitly hints at deficiency in transmission system planning and same has to be addressed in proper forum. He requested NERLDC to follow the procedure and submit proposals accordingly to NERSCT/NERPCTP/CEA.

The forum decided to remove SPS-1, part of SPS-2 (load shedding at Silchar) & SPS-4 for the following reasons:

a. Since, load of the Southern part of Assam Power System has increased, so it is not desirable to keep 3 lines viz 132 kV Lumshnong – Panchgram line, 132 kV Jiribam – Pailapool line & 132 kV Dharmanagar – Dullavcherra line in open condition.

b. To manage the Inter-Regional line flow in case of tripping of both modules at Palatana resulting in violation of NER-ER TTC/ATC, load shedding is required to be carried out in real time as advised by NERLDC.

c. In case of outage of both Palatana Modules, import towards Southern Part of NER Grid remains to the tune of 300-500 MW and load shedding by SPS-1 cannot ensure survival of the Southern Part of NER Grid.

The forum noted as above.

Action: NERTS, OTPC, AEGCL, MePTCL, NEEPCO, NERLDC.

A.4 Implementation of New SPS for reliable & secure operation of Generators:

a. SPS related to secure & reliable operation of BgTPP

At present, BgTPP is connected to rest of NER Grid through 400 kV BgTPP - Bongaigaon I & II lines and 400/220 kV, 2x315 MVA ICTs at BgTPP.
After commissioning of 3rd Unit of BgTPP

- For the safe and secure operation of BgTPP, SPS related to generation reduction to 600 MW is to be designed & implemented in case of tripping of 400 kV BgTPP – Bongaigaon I & II lines.

b. SPS related to secure & reliable operation of Monarchak

- At present, Monarchak is connected to rest of NER Grid through 132 kV Monarchak – Rokhia line & 132kV Monarchak- Udaipur line.
- Allowable line loading of these evacuation lines as per TSECL: 65 MW
- In case of tripping of 132 kV Monarchak – Rokhia line or 132kV Monarchak-Udaipur line, other line will be overloaded.
- Under this scenario, SPS related to generation reduction to 65 MW is to be designed & implemented.

Deliberation in the meeting

a. SPS at BgTPP:

The forum approved the proposal and requested NTPC to implement and submit the schematics to NERPC/NERLDC.

b. SPS related to secure & reliable operation of Monarchak:

NEEPCO agreed to explore the generation reduction to 65MW and revert back.

The forum noted as above.

Action: NTPC, NEEPCO.

B. ITEMS- STATUS REVIEW

B.1 Implementation of SPS schemes w.r.t transfer of power to Bangladesh:

In the 8th OCC meeting of India –Bangladesh Interconnection held on 23.01.20, it was agreed to implement 4 nos. of SPSs to ensure reliable power supply to South Comilla and Tripura by March, 2020.

Agreed brief details of the scheme is given below:

Sl. No.	Contingency	SPS Action
1	Outage of one ICT out of 400/132 kV, 2x125 MVA ICTs at Palatana	60 MW Load disconnection at South Comilla area of Bangladesh. Followed by shifting of 60 MW load to main Grid of Bangladesh Grid till restoration of the element.
2	Outage of 400 kV Palatana – Surajmani Nagar line (Charged at 132 kV)	Entire load disconnection of South Comilla area of Bangladesh. Followed by shifting of entire load of South Comilla area to main Grid of Bangladesh Grid till restoration of the element.
3	Outage of one circuit of 400 kV Surajmani Nagar - South Comilla line (Charged at 132 kV)	30 MW Load disconnection at South Comilla area of Bangladesh. Followed by shifting of 30 MW load to main Grid of Bangladesh Grid till restoration of the element.
4	Outage of both 400/132 kV, 2x125 MVA ICTs at Palatana	Entire load disconnection of South Comilla area of Bangladesh. Followed by shifting of entire load of South Comilla area to main Grid of Bangladesh Grid till restoration of the element.

The detailed schematic for implementation of the SPS is attached at **Annexure-B.1.**

Deliberation in the meeting

The forum noted that the scheme has already been approved in TCC/RPC forum and requested NERTS to implement the same by March, 2020.

NERLDC informed that since, for SPS 2 and 4, it is agreed that tripping can be done at Indian side, it is expected that these two schemes out of the four schemes can be implemented on immediate basis.

The forum noted as above.

Action: NERTS.

B.2 Installation of additional UFRs under Islanding Scheme-II:

Decisions as per previous meeting(s):

- Additional UFR based shedding of 100MW required under this scheme.
- Identification of feeders done as per recommendations of Joint Committee visit as under:

Name of Substation	Feeders identified	Load Relief		Recommended UFR settings
		Peak	Off Peak	
132/33/11 kV Ambassa	1. 33 kV Gandacherra	3.48	3	48.8 Hz, 500 msec
	2. 33 kV Salema	2.2	1.7	
	3. 33 kV Manu	6.2	5.5	
	4. 7.5 MVA, 132/33/11 kV Transformer	3	2	
132/33/11 kV P.K Bari	1. 132 kV Silchar(PG) - P.K Bari D/C at Silchar(PG)			
	2. 33 kV Kanchanpur	3.1	2.1	
	3. 11 kV Darchawi	2.3	1.1	
	4. 11 kV Fatikroy	1.3	1.1	
	5. 11 kV kanchanbari	1.1	0.89	
132/33/11 kV Dhalabil	1. 33 kV kalyanpur	2.6	0.13	
	2. 33 kV Tulashikar	2.6	2.3	
	3. 33 kV Ampura	1.09	1.35	
	4. 15 MVA, 132/11 kV Transformer	5.9	2.3	
132/66/33/11 kV Udaipur	1. 66 kV Bagafa	9.1	6	
	2. 33 kV Udaipur Town	4	3.6	
	3. 33 kV Rani	7.1	4.8	
	4. 33 kV Killa	0.95	0.5	
132/66/11 kV Rokhia	1. 66 kV Badarghat	5.8	4	
	2. 66 kV Rabindranagar	20.5	13.5	
	3. 66 kV Boxanagar	3.8	2	

Total identified load	86.12	57.87
Total Load to be identified as decided in PCC	100	70

NERPC vide letter dated. 11.10.2019 has written to CMD, TSECL for procurement & installation of UFRs.

Deliberation in the meeting

The status could not be updated due to absence of TSECL representative.

NERLDC informed that since, 132 kV P.K Bari – Dharmanagar - Dullavcherra link is kept closed now-a-days, it is proposed to install new UFR by TSECL in 132 kV P.K Bari – Dharmanagar line at P.K Bari with settings 48.8 Hz, 500 msec for formation of Island.

The forum noted as above.

Action: TSECL.

B.3 Reactivation of SPS -1

The SPS-1 associated with tripping of generation of both Modules of Palatana CCGT (2 x 363.3 MW) is de-activated at present. The same needs to be activated to Avoid Violation of ATC of NER-ER Corridor.

Status as per previous meeting(s):

- SPS-1 is already turned ON at Silchar
- Scheme at Silchar shared with OTPC by NERTS
- OTPC to turn ON by Jan'20

Deliberation in the meeting

Pls refer to discussion in item No. **A.3**

The forum noted as above.

B.4 SPS for RHEP-Pare:

As per discussions in previous OCC meetings the following SPS scheme was approved for RHEP-Pare:

SPS Triggering condition	**SPS Action when all three units at RHEP in service**	**SPS Action when all three units at RHEP in service and both units at Pare in service**
Tripping of any one 400/132 kV 360 MVA ICT at RHEP	One unit of RHEP to be tripped.	One unit of RHEP to be tripped and one unit of Pare to be tripped.

In 54th PCCM NEEPCO informed the forum regarding the SPS scheme for RHEP-Pare:

1. When all three units at RHEP in service, one unit of RHEP to be tripped with time delay, same will be confirmed by OEM.
2. When all three units at RHEP and both units at Pare in service, tripping of ICT one unit of RHEP and one unit of Pare with time delay, same will be confirmed by OEM.

Deliberation in the meeting

NEEPCO informed the following scenarios:

Generation from RHEP/Pare HEP	**Loading on one ICT(in case of shutdown/outage of other ICT)**	**SPS Action required**
100%	129%	Tripping of one unit RHEP
110%	144%	Tripping of one unit RHEP + tripping of one unit Pare HEP

With consideration of the above scenario, the following scheme has been designed:

Loading in any one ICT	Action
130%	Signal to Trip one unit of RHEP
145%	Signal to trip one unit RHEP + one unit Pare HEP

The SPS logic would be configured in one relay of ICT at RHEP.

Sr.GM (Group-in-Charge), Misa, NERTS opined that ICTs are designed for 150 % overloading and Tripping is always based on temperature. Hence, tripping based on load would be unreliable operation. Rise of temperature should be used for SPS operation.

After due deliberation the forum approved the design of NEEPCO and requested to increase the time delay to 2s.

The forum noted as above.

Action: NEEPCO

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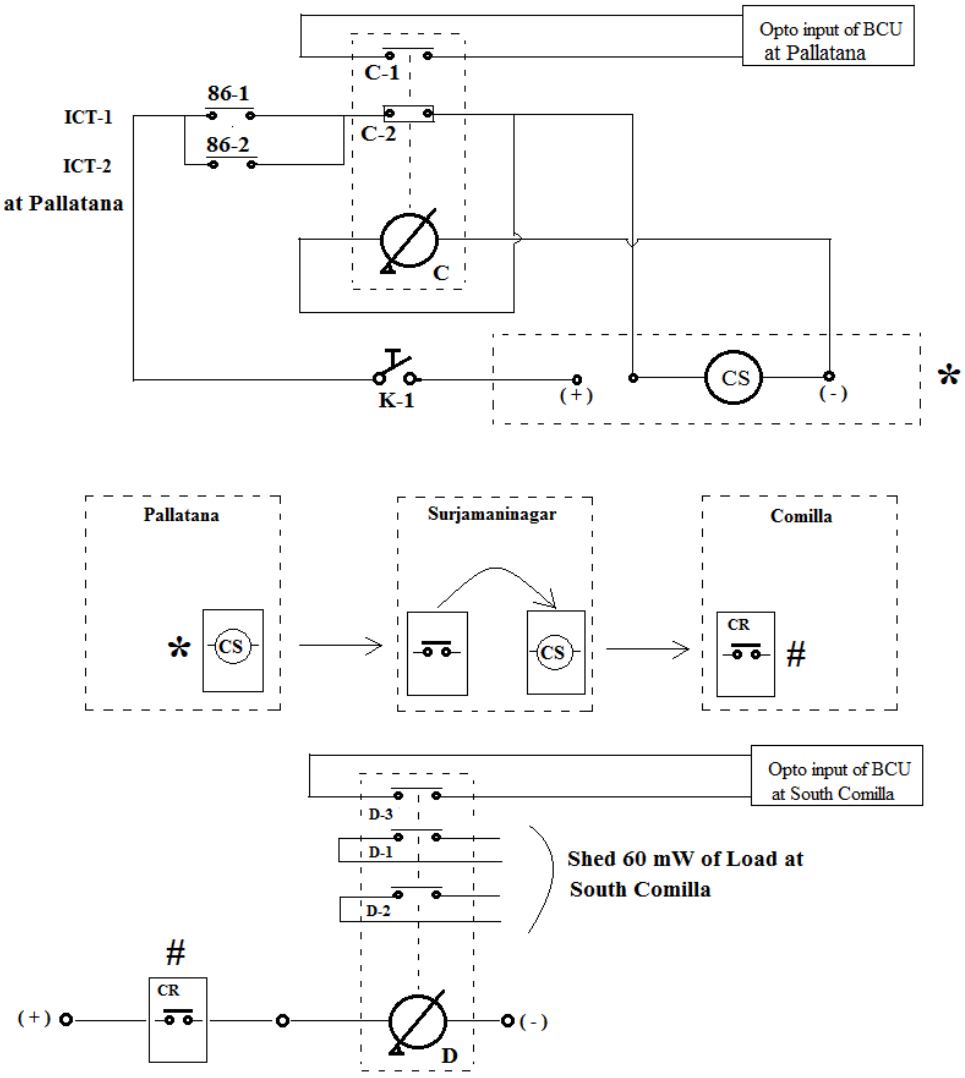
Annexure-I

List of Participants in the Special Meeting held on 20th February, 2020

SN	Name & Designation	Organization	Contact No.
	No Representatives	**Ar. Pradesh**	-
	No Representatives	**Assam**	-
1.	Sh. Roshan Oinam, Manager, MSPCL	Manipur	09863895218
2.	Sh. B. Narry, AEE	Meghalaya	09089000911
3.	Sh. A.G. Tham, AEE	Meghalaya	09774664034
4.	Sh. C.W. Chen, AEE	Meghalaya	09863093311
5.	Sh. A. Shullai, AEE	Meghalaya	09436334458
6.	Sh. R. Kharmawphlang, AE	Meghalaya	08787693359
7.	Sh. H.K. Malngiang, AE	Meghalaya	09774459674
	No Representatives	**Mizoram**	-
	No Representatives	**Nagaland**	-
	No Representatives	**Tripura**	-
8.	Sh. Bhaskar Mazumder, Manager (E/M)	NEEPCO	09612079362
9.	Sh. Sunder Moni Mohan, Manager (E/M)	NEEPCO	09436898604
10.	Sh. Ashim Kr. Sarmah, Manager (E/M)	NEEPCO	09435078860
11.	Sh. Nayan Jyoti Das, Manager (E/M)	NEEPCO	09435577727
12.	Sh. P. Kamungo, Sr. GM	NERTS	09436302823
13.	Sh. V. Suresh, ED	NERLDC	09449599156
14.	Sh. R. Sutradhar, CGM (SO-I)	NERLDC	09436302714
15.	Sh. Jerin Jacob, Dy. Manager	NERLDC	09402120113
16.	Sh. Palash Jyoti Borah, Dy. Manager	NERLDC	08761093397
17.	Sh. Subhajit Ganguly, AM	OTPC	07980010258
18.	Sh. Dinesh Laha, AM	OTPC	08918720645
19.	Sh. A. Mustafa Choudhury, AGM (C&I)	NTPC	09650994553
20.	Sh. Anvesh Chula, Mgr. (EMD)	NTPC	09401073326
21.	Sh. Gopal Patodia, Manager (EMD)	NTPC	-
22.	Sh. D.K. Sarma, Sr. Consultant	NETC	09471001032

23.	Sh. A.R. Sah, DGM	NETC	09999055047
24.	Sh. A.K. Thakur, Member secretary	NERPC	-
25.	Sh. B. Lyngkhoi, Director	NERPC	09436163419
26.	Sh. S. Mukherjee, Dy. Director	NERPC	08794277306
27.	Sh. Sadiq Imam, AD-I	NERPC	07004133772

Condition : When one ICT at Pallatana trips



- Switch K1 at Pallatana shall be kept closed to keep the SPS in service.

- When ICT-1/ICT-2 at Pallatana trips, the trip relay NO contact 86-1/86-2 will make and extend the DC + to Carrier send relay CS of protection coupler as well as to the newly installed High Speed trip relay C through it's own NC contact C-2.

- CS will send a code through PLCC to Surjamaninagar.

- Relay C will operate and it's NC contact C-2 will open there by preventing continuous operation of CS.

- NO contact C-1 shall be wired to one binary input of one BCU at Pallatana to log the event with time stamping.

- At Surjamaninagar, the carrier receive contact of Pallatana protection coupler will be used to operate the carrier send relay of the protection coupler for South Comilla direction. Thus the code will be transferred to South Comilla.

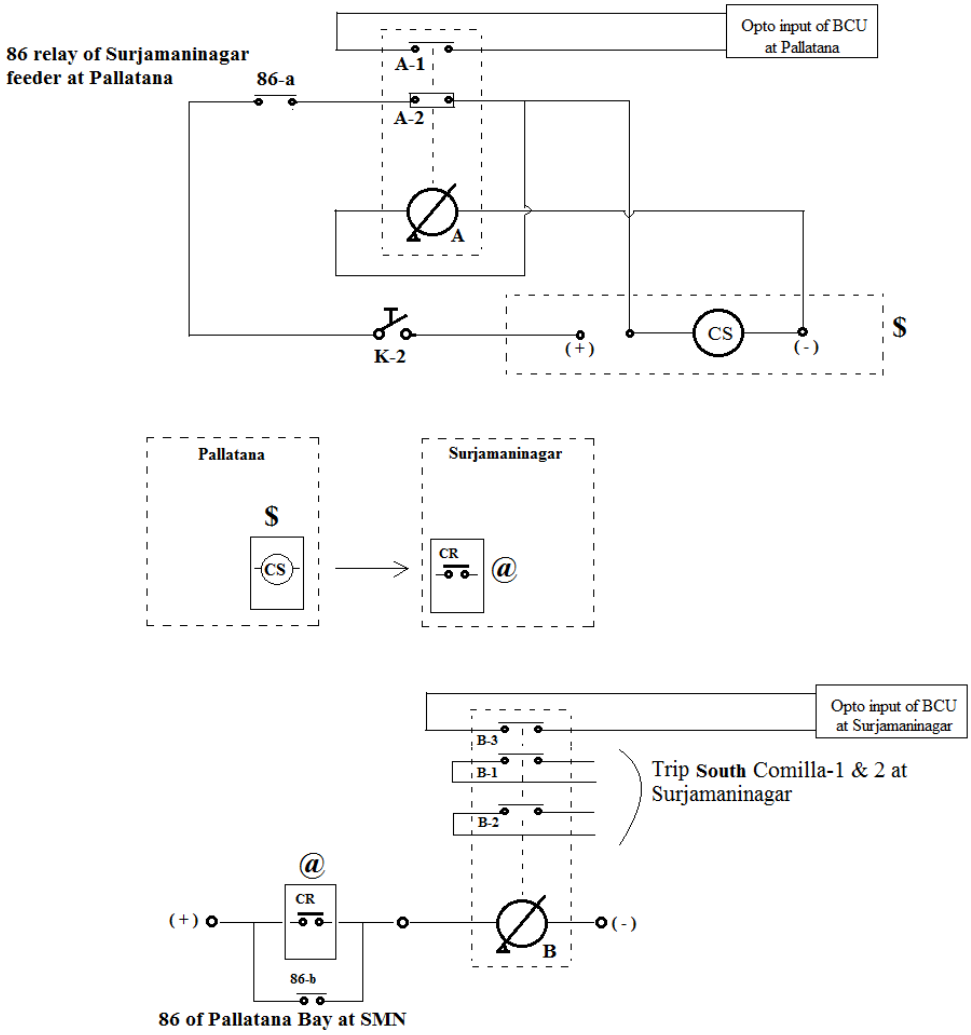
- At South Comilla, the Carrier receive contact CR will make and this contact will be used to operate a newly installed High Speed Trip Relay D at South Comilla.

- NO contacts D-1 and D-2 of relay D shall be used to shed 60 MW of load at South Comilla.

- NO contact D-3 shall be wired to one binary input of one BCU at South Comilla to log the event with time stamping.

Condition : When both 400/132kV ICTs trip at Palatana OR

Condition : When Pallatana-Surjamaninagar trips



Alternatively Pallatana may send Direct Trip command to Surjamaninagar in case of three phase trippng

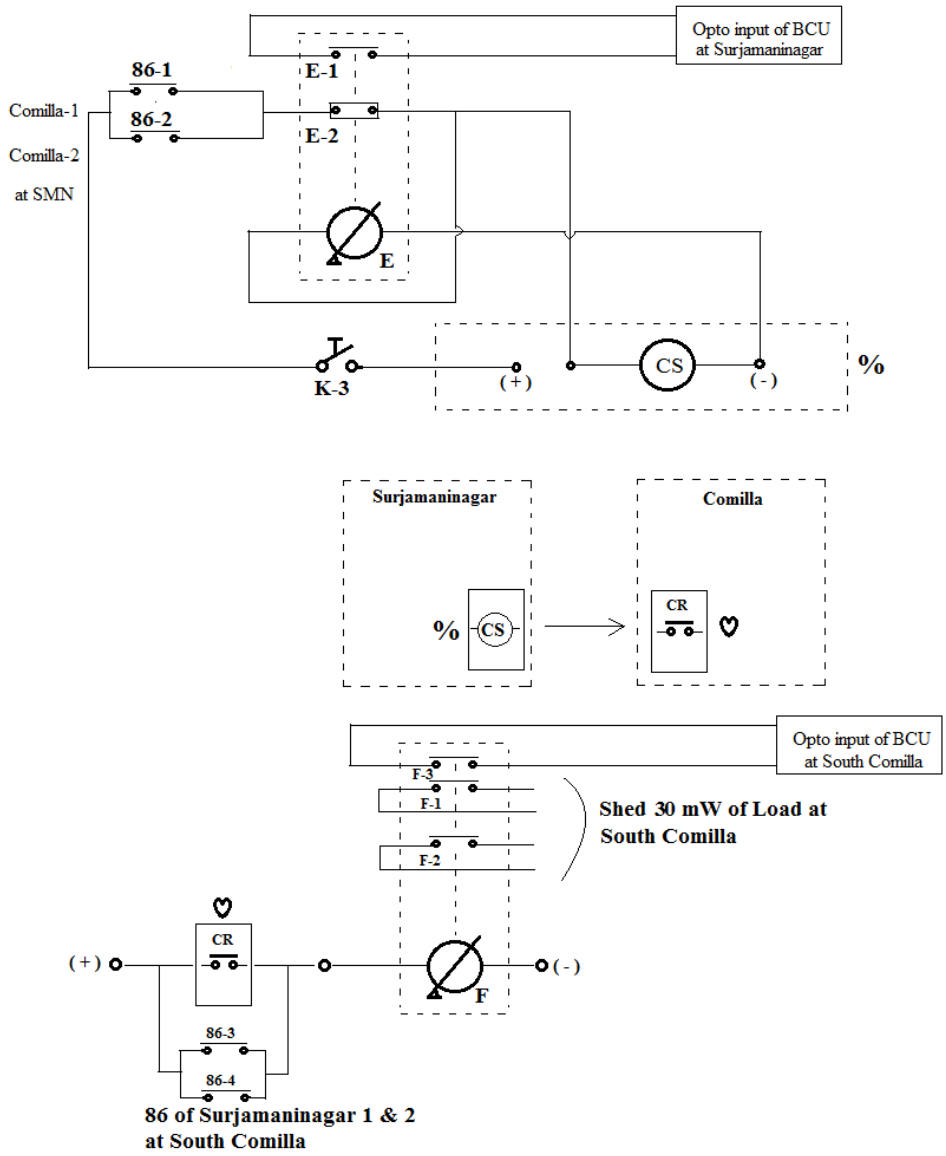
- Switch K2 at Pallatana shall be kept closed to keep the SPS in service.
- When Surjamaninagar line at Pallatana trips, it's trip relay NO contact 86-a will make and extend the DC + to Carrier send relay CS of protection coupler as well as to the newly installed High Speed trip relay A through it's own NC contact A-2.
- CS will send a code through PLCC to Surjamaninagar. Relay A will operate and it's NC contact A-2 will open there by preventing continuous operation of CS.
- NO contact A-1 shall be wired to one binary input of one BCU at Pallatana to log the event with time stamping.

- At Surjamaninagar, the carrier receive contact of Pallatana protection coupler CR will be made parallel with one NO contact 86-b of the trip relay for Pallatana Feeder and shall be used to operate a newly installed High Speed Trip Relay B at Surjamaninagar

- NO contacts B-1 and B-2 of relay B shall be used to trip South Comilla-1 and South Comilla-2 feeders.

- NO contact B-3 shall be wired to one binary input of one BCU at Surjamaninagar to log the event with time stamping.

Condition : When one Ckt of Surjamaninagar-Comilla trips



- Switch K3 at Surjamaninagar shall be kept closed to keep the SPS in service.

- When South Comilla-1/2 line at Surjamaninagar trips, it's trip relay NO contact 86-1/ 86-2 will make and extend the DC + to Carrier send relay CS of protection coupler as well as to the newly installed High Speed trip relay E through it's own NC contact E-2.

- CS will send a code through PLCC/OPG to South Comilla. Relay E will operate and it's NC contact E-2 will open there by preventing continuous operation of CS.

- NO contact E-1 shall be wired to one binary input of one BCU at Surjamaninagar to log the event with time stamping

- At South Comilla, the carrier receive contact of Surjamaninagar protection coupler CR will be made parallel with one NO contact 86-3 and 86-4 of the trip relays for Surjamaninagar – 1 & 2 Feeder and shall be used to operate a newly installed High Speed Trip Relay F at South Comilla.

- NO contacts F-1 and F-2-2 of relay F shall be used to shed 30 MW of load at Comilla.

- NO contact F-3 shall be wired to one binary input of one BCU at South Comilla to log the event with time stamping.