North Eastern Regional Power Committee

MINUTES OF SYSTEM STUDIES (SS) MEETING

Date : 17/12/2015 (Thursday)

Time : 14:00 hrs

Venue : "Hotel Gateway Grandeur", Guwahati.

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

Shri P.K. Mishra, Member Secretary, NERPC requested Shri B. Lyngkhoi, Director/SE(O) to continue & take up the System Studies Agenda.

1. Review of SPS I, II, III & SPS IV related to Palatana GBPP, OTPC after commissioning of Palatana Module II

Out of the four (4) System Protection Scheme (SPS) associated with generating Unit-1 (363.3MW) of OTPC at Palatana, three (3) SPS have already been implemented:

SPS II (implemented w.e.f 23.02.15):

In case of tripping of 400 kV Palatana- Silchar D/C lines (with Module I & II generation of Palatana, OTPC), load will be disconnected by tripping of the following elements:

132 kV Silchar - Srikona D/C
132 kV Silchar - Panchgram
132 kV Badarpur - Panchgram
132 kV Silchar - Dullavcherra - Dharmanagar

And Generation of Palatana, OTPC will be reduced to around 20 MW excluding their auxiliary consumption.

OTPC informed that D/T signal from Silchar end is required to implement the changes in SPS-2, POWERGRID agreed to do the needful. The Sub-Committee requested OTPC to implement the changes in SPS-1, as decided in 38th PCCM and SPS-2 before next PCC meeting.

Deliberation of the sub-Committee

OTPC informed that the changes in SPS – 1 were completed on 18.11.2015.

The Sub-committee noted as above.

2. Submission of Detailed scheme and Schematic diagram of each SPS in NER:

SPS document of NER is updated on monthly basis for which details of SPS scheme, Date from which it is effective, Schematic Diagram of SPS are required. At present 9 no of SPS are in service in NER grid which can be categorized as:

a. Tripping of critical line(s) / corridor:

i. Tripping of 400 kV Silchar- Palatana D/C lines
ii. Tripping of 400 kV Silchar – Azara S/C and 400 kV Silchar – Byrnihat S/C lines with no generation in Palatana
iii. Tripping of 132 kV Umiam Stg-I to Umiam St-III D/C lines
iv. Tripping of 400/132 kV, 2x200 MVA ICTs at Silchar (PG)

Deliberation of the sub-Committee

Sr. Engineer (SO-II), NERLDC informed that diagram for no. iv above is not yet received. He requested NERTS to submit the schematic diagram at the earliest.

The Sub-committee noted as above.

Action: NERTS.

b. Safe evacuation of generation:

i. Tripping of 400 kV Silchar – Azara S/C and 400 kV Silchar – Byrnihat S/C lines with 1st Module Palatana CCGT
ii. Generation evacuation of AGTPP

Deliberation of the sub-Committee

Sr. Engineer (SO-II), NERLDC informed that diagram for no. ii above is not yet received. He requested NEEPCO to submit the schematic diagram at the earliest.

The Sub-committee noted as above.
Action: NEEPCO.

c. Overloading of Transformers / Critical line(s):

i. Overloading of 220 kV Salakati – BTPS D/C lines
ii. SPS associated with more than 60 MW loading from LV to HV side of Azara ICTs

Deliberation of the sub-Committee

Sr. Engineer (SO-II), NERLDC informed that diagrams for both i & ii above are not yet received. He requested AEGCL to submit the schematic diagram at the earliest.

The Sub-committee noted as above.

Action: AEGCL.

d. For Reliable operation of Grid:

i. Tripping of 1st Module of Palatana CCGT

Deliberation of the sub-Committee

Sr. Engineer (SO-II), NERLDC informed that diagrams for from Pallatana have been received. He further requested OTPC to intimate any changes in the schematics to NERLDC, as and when such changes are done in the interest of Grid Operation.

3. Review of SPS at AGTPP:

Tripura wanted to review the SPS of AGTPP as below:

SPS based on

a. Generation reduction of AGTPP (up to 40 MW)
b. Monarchak- Unit-I (up to 30 MW)
c. Opening of 132 KV P K Bari Silchar D/C line
d. Generation Reduction of Baramura Unit –V (15 MW)

In case of tripping of any one of the following lines:

i. 132 kV AGTPP –Kumarghat line/ 132 KV Dhalabil –Agartala line/ 132 KV Baramura –Gamaitila line.

ii. And even in case of tripping of 132 KV Dhalabil – Kamalpur line/ 132 KV Kamalpur- PK Bari line & 132 KV Gamaitila- Ambassa/ 132 Ambassa- P K Bari line.

It has been observed from study results that after commissioning of Palatana 2nd Module, Monarchak Unit I, AGTPP Unit 5 & 6 and charging of 132 KV P K Bari – Silchar D/C lines, 132 kV AGTPP –Kumarghat, 132 kV Dhalabil –Agartala, 132 kV Baramura-Teliamura & 132 kV Teliamura Ambassa lines will be highly loaded.

Deliberation of the sub-Committee

Since no representative from TSECL (Tripura) was present, the issue could not be discussed and the committee decided to drop the above agenda.

The Sub-committee noted as above.

4. Dynamic Simulation data for Generator in NER Grid:

The CERC's Procedure for Grant of Connectivity to generators makes in mandatory for new generators requesting connection to the Grid to furnish Dynamic Simulation data as per Schedule-VI of the Procedure for Generators and for Excitation system.

The data to be furnished as per CERC's Procedure for Grant of Connectivity includes complete data for the Generator model, complete Excitation system data alongwith Laplace Domain block diagram.

The CERC's Procedure for Grant of Connectivity does not make in mandatory for generators to furnish dynamics modelling data for Governors, Power System Stabilizer, Over-excitation limiter (OEL) and Under-excitation limiter (UEL), and any other control equipment.

The CEA's Manual on Transmission Planning criteria (Section 6.2.2, 6.3 and 6.4) also speaks of simulation in the Transient state for evaluation of stability under N-1-1 contingency criteria, for which working dynamics model data for all generators in the Grid are mandatory.

The dynamic simulation data from only IGSS are available with NERLDC as of now. The data available with NERLDC as of now are listed below:

i) Generator Model:

For the generator model, GENROU model has been considered for Thermal generators and GENSAL model considered for Hydro generators (Salient Pole) by NERLDC in absence of any concrete information from generating utilities.

- Palatana (GTG I, GTG II, STG I & STG II- except S(1.0) & S(1.2))
- BgTPP (Unit 1, 2 & 3- except S(1.2))
- AGBPP (Unit 1,2,3,4,5,6, 7, 8 & 9)
- AGTPP (Unit 1, 2,3 & 4 - only D-axis data)
- Monarchak (GT I- only D-axis data)
- AGTPP Extension (Unit 1 & 2- except S(1.0) & S(1.2))
- Doyang (Unit 1,2 & 3- only Xd, Xd' & Xd'')
- Kopili (Unit 1,2,3 & 4- except T''d0, T''q0, S(1.0) & S(1.2))
- Khandong (Unit 1 & 2 - except T"q0, D, Xl, S(1.0) & S(1.2))
- Kopili Stg II (except T"q0, D, Xl, S(1.0) & S(1.2))
- Ranganadi (Unit 1, 2, & 3, - except T''q0, H, D, S(1.0) & S(1.2))
- Loktak (Unit 1,2 & 3- except T''d0, T''q0, D, X'd, Xl, S(1.0) & S(1.2))

ii) Excitation system model:

- AGBPP (Unit 1,2, 3 & 4- partially given)
- Palatana (Only block diagram of Exciter given)
- BgTPP (Only block diagram of Digital AVR given)
- Monarchak (Only block diagram of Exciter given)
- Loktak (only Exciter data given; needs validation as values out of range as per setting of PSSE)

iii) Governor system model:

No data furnished by any generating utility.

iv) PSS model:

No data furnished by any generating utility.

v) Excitation limiters (OEL and UEL) model:

No data furnished by any generating utility.

Non-availability of dynamics simulation data makes it difficult to perform converged dynamic simulation for assessment of Contingencies or for study of efficacy of System Protection Schemes and Islanding Schemes.

Deliberation of the sub-Committee

The Sub-Committee decided that a Special Meeting would be conducted with all the generating entities along with NERLDC and NERPC. The date and venue would be intimated later on.

Sr. Engineer (SO-II) requested all generating utilities of NER Grid to pursue with manufacturers for furnishing of Dynamic Simulation data as per list of parameters for simulation circulated by NERLDC in earlier meetings. He also intimated that NERLDC will circulate a format to all generating utilities for furnishing of manufacturer details (Make, Year of Manufacture, Type etc.) of all equipments required for Dynamic Modelling.

Representative of generating utilities agreed to submit the data as per format circulated by NERLDC.

The Sub-committee noted as above.

Action: NERLDC and NERPC

5. Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

SLDCs of NER are requested to assess the above on monthly basis, 5 months in advance (eg: TTC/TRM/ATC for the month of November to be calculated by 15th of July), for further assessment of TTC, ATC and TRM of NER–ER corridor, group of control areas, individual control areas with the region and state-control-area to state-control-area by NERLDC, if required.

SLDCs are also requested to send study results for Peak (Export & Import) & Off Peak (Export & Import) along with assumptions in details and 6 nos ".sav" case files (Base Case for Peak & Off Peak, Off Peak & Peak Export & Off Peak & Peak Import)

to NERLDC by 15th of the month for the fifth month. All India ".sav" case files have been sent to SLDCs. SLDCs are requested to use this ".sav" case files while computing TTC, ATC & TRM for their state control area.

The study results for assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) have not been received from any SLDC of NER.

Updated Base Cases have been already mailed to all the SLDCs on 08.12.15. All the SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) and submit the cases to NERLDC for the month of April'16 by 15th December, 2015.

Deliberation of the sub-Committee

Sr. Engineer (SO-II) requested all SLDCs of NER to compute their state control area-wise TTC figures and corroborate the same with NERLDC.

He also informed that NERLDC have calculated the State-wise Transfer Capability for NER states for April 2016 scenario, considering available information at NERLDC. The figures as assessed by NERLDC for the states of NER Grid were circulated to all for comments / checking.

Import Capability

Sl.No	State	OFFPEAK Case		PEAK Case	
		Contingency	Total Transfer Capability	Contingency	Total Transfer Capability
1	Arunachal Pradesh	N-1 of 132/33 kV, 1x20 MVA Transformer at Naharlagun	165	N-1 of 132/33 kV, 1x20 MVA Transformer at Naharlagun	165
2	Assam	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai	1410	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai	1370
3	Manipur	N-1 of 132/33 kV, 2x50 MVA Transformers at Imphal (PG)	285	N-1 of 132/33 kV, 2x50 MVA Transformers at Imphal (PG)	285

4	Meghalaya	N-1 of 132 kV Killing-Epip II D/C	270	N-1 of 132 kV Killing-Epip II D/C	275
5	Mizoram	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei	110	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei	110
6	Nagaland	N-1 of 132/66 kV, 100 MVA ICT at Dimapur (Nagaland)	95	N-1 of 132/66 kV, 100 MVA ICT at Dimapur (Nagaland)	95
7	Tripura	N-1 of 132 kV Palatana - Udaipur S/C	190	N-1 of 132 kV Palatana - Udaipur S/C	150

The figures for state-wise TTC as above, would be considered as Final if no comments are received from any SLDCs of NER by 20.01.2016.

SLDCs of NER requested to hold a separate meeting pertaining to state control area wise ATC/TTC calculation at NERLDC, Shillong. It was agreed to hold such meeting on a suitable date.

The Sub-committee noted as above.

Date and Venue of next SS

It is proposed to hold the 12th SS meeting of NERPC in the second week of January, 2016. The exact venue will be intimated in due course.

The meeting ended with thanks to the chair

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Annexure-I

List of Participants in the 11th SS Meeting held on 16/12/2015

SN	Name & Designation	Organization	Contact No.
1.	**No Representative**	Ar. Pradesh	
2.	Sh. T.N. Sarma, DGM, SLDC	Assam	09435007369
3.	Sh. J.K. Baishya, AGM	Assam	09435041494
4.	Sh. B.C. Borah, AGM,SLDC	Assam	09435119248
5.	Sh. J.P. Choudhury, AGM	Assam	09954055295
6.	Sh. K. Sarma, AGM, AEGCL	Assam	09435013532
7.	Sh. A.N. Dev Choudhury, AGM, APDCL	Assam	09954055295
8.	Sh. T. Jigdung, Dy. Manager, SLDC	Assam	09707134351
9.	Sh. N. Patir, Dy. Manager, SLDC, AEGCL	Assam	09707380294
10.	Ms. Laishram Ritu, Manager, SLDC	Manipur	09612882984
11.	Ms. Khoisnam Steela, Manager (Sys. Cont.)	Manipur	-
12.	Sh. F.E Kharshiing, SE (SLDC)	Meghalaya	09863066960
13.	Sh. B. Wankhar, EE (MOD)	Meghalaya	09436105914
14.	Sh. Lalduhawma, EE, SLDC	Mizoram	09436144113
	No Representative	**Nagaland**	
	No Representative	**Tripura**	
15.	Sh. M. Mancal, Sr. Manager	NERLDC	09436335243
16.	Sh. Anupam Kumar, Sr. Engineer	NERLDC	09436335379
17.	Sh. Rahul Chakrabarti, Sr. Manager	NERLDC	09402507543
18.	Sh. B.K. Chakraborty, DGM (E)	NEEPCO	09436309730
19.	Sh. Bhaskar Goswami, Sr. Manager (E/M)	NEEPCO	09436163983
20.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
	No Representative	**NTPC**	
21.	Sh. Atanu Nath, Associate Manager	ENICL	09547808241
22.	Sh. Suraj Kumar Gupta, Engineer (E)	NHPC	09402880218
23.	Sh. Thakor Prasad Pandey, DGM (O&M)	OTPC	08794718423
24.	Sh. P.K. Mishra, MS	NERPC	
25.	Sh. B. Lyngkhoi, Director/S.E (O)	NERPC	09436163419
26.	Sh. S. Mukherjee, AD-I/AEE	NERPC	08794277306
27.	Sh. Shaishav Ranjan, AD-II/A.E	NERPC	08794276168