

MINUTES OF SYSTEM STUDIES (SS) MEETING

Date : 10/09/2015 (Thursday)

Time : 14:00 hrs

Venue : "Hotel Nandan", 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.

During 5th SS meeting, OTPC representative informed that they are planning different scheme in place of SPS-II above, since reduction of generation to 20 MW is not possible.

NERLDC stated that 400/132 kV, 125 MVA ICT at Palatana should be tripped under this SPS II for safe, secure & reliable operation of the grid.

During 111st OCC meeting, DGM, OTPC informed that the new scheme planned by them would be sent to NERLDC/NERPC by 31.07.2015.

Deliberation of the sub-Committee

DGM (SO-II), NERLDC informed that new SPS II scheme is proposed by Palatana, OTPC. He stated that the following scheme proposed by Palatana, OTPC may be agreed:-

1. On receipt of trip signal of both 400 kV lines from Silchar end through PLCC or at OTPC end, if both or single 132 kV line available and generation above 120 MW, then trip command generated to ICT HC side breaker to avoid sudden overloading of 132 kV lines. The trip signal will be generated by executing algorithm in DCS.
2. When both 132 kV lines tripped along with 400 kV line, no tripping shall be initiated as all generators breaker tripped on over speed protection on protection class C.

However the following scheme proposed by Palatana, OTPC may not be agreed as 120 MW may not be absorbed by Tripura system under certain scenario.

1. When total generation of OTPC \leq 120 MW, no breaker tripping shall be initiated. As the load reduction done manually subjected to availability of 132 kV lines (if both 132 lines available load reduction not required)

OTPC had informed that total generation shall be varying from 15 MW to 726.6 MW. It is proposed that in case of tripping of 400 kV Palatana – Silchar I & II line, Palatana generation will be reduced to 15 MW through SPS II when both 132 kV lines from Palatana are available.

Action: OTPC

NERLDC informed that since Palatana is now generating more than 500 MW, SPS I, & SPS IV associated with Palatana, OTPC are to be renewed & redesigned:-

SPS I (implemented w.e.f 14.09.13):

In case of tripping of Module I & II of Palatana, OTPC, load disconnection is to be enhanced.

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

In case of tripping of 400 kV Silchar – Byrnihat & 400 kV Silchar- Azra lines (without generation of Palatana, OTPC), load disconnection is to be enhanced.

Study results carried out by NERLDC is attached in **Annexure -1 (a, b, c & d) of earlier minutes.**

During 7th SS meeting, SE(O) informed that present load disconnection is around 80MW during off-peak and 130MW during peak. He enquired from NERLDC the new quantum load disconnection proposed by them.

DGM (SO-II), NERLDC informed that the new enhanced load is around 180 MW/130 MW in both peak/off-peak which is required for safety, secure & reliable operation of the grid.

NERLDC gave presentation on enhancement of load shedding through SPS I/SPS IV related to tripping of Palatana machines. DGM (SO-II), NERLDC informed that Palatana is generating more than 550 MW. In case of tripping of Palatana machine with more than 550 MW generation, SPS I / SPS IV related load disconnection amount is not sufficient for safe, secure & reliable grid operation. It is required to enhance SPS I / SPS IV related load disconnection. SPS I / SPS IV related load disconnection may be enhanced if 132/33 kV, 2x50 MVA transformers at Silchar & 132 kV Aizwal – Lungmual line also disconnected through these SPS.

P&E, Mizoram informed that 132 kV Aizwal – Lungmual line may be opened through SPS I / SPS IV in case of tripping of Palatana machines.

MSPCL is requested to connect radial load of around 35 MW at 132/33 kV, 2x50 MVA transformers at Imphal. NERTS, POWERGRID was requested to explore the implementation of SPS I / SPS IV based load disconnection through these elements also.

AGM, LDC, AEGCL suggested to disconnect the ICT at Silchar instead of increasing the number of feeders to be disconnected and this requires many wiring activities and the scheme may not work properly during real time contingency.

All members agreed to the proposal of Assam and members requested NERLDC to carry out the system study for above proposal. Members also requested NERTS to check the alternate feasibility for additional wiring in case load enhancement by disconnecting at Imphal S/S & Luangmual S/S of POWERGRID is required.

During 8th SS Meeting, GM (AM) added that unless all the links are covered by OPGW it would not be possible to implement SPS through PLCC.

DGM (SOII), NERLDC informed that OPGW work of 400 kV Silchar – Imphal D/C lines (Charged at 132 kV) is under progress.

The Sub-committee requested NERTS to check the feasibility at Silchar so that the scheme can be implemented at the earliest.

DGM (AM) stated that feasibility report above will be sent shortly to NERLDC/NERPC.

Deliberation of the sub-Committee

DGM (AM) stated that scheme was exhausted. DGM (AM) further stated the scheme would be implemented after getting more channels.

Action: NERTS, POWERGRID

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

As per Clause No. 4.1 of 'Detailed Procedure for Relieving Congestion in Real Time Operation', SLDC shall assess TTC, TRM and ATC on it's inter-state transmission corridor considering a mesh intra-state corridor for import or export of power with the Inter-state Transmission system (ISTS).

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 by NERLDC and for assessment of TTC / ATC for a group of control areas, individual control areas with the region and state-control-area to state-control-area by NERLDC, if required.

During 111st OCC meeting, NERLDC requested SLDCs of NER once again for submission of study results of peak & off peak scenarios related to assessment of TTC, TRM & ATC on respective Inter State Transmission Corridor on monthly basis for 5th month by 15th of the month by them. NERLDC requested to identify the persons of each SLDC of NER who will conduct system study of their system.

The names of following officers who are carrying out the system studies were furnished by the constituents.

Constituent	Name of Nodal Officer	Contact No	Email id:
Ar. Pradesh	Domo Kamduk	09436671717	sldcitnagar@gmail.com
Assam	Nabajyoti Patir	09612950771	
Manipur	S.J. Kumar Sharma	09436144113	sldcmanipur@gmail.com
Mizoram	Zoramdina	08415901755	sldc_mizoram@rediffmail.com
Meghalaya	D.J. Lyngdoh	09863063375	davidjeremy123@yahoo.co.in
Nagaland	Rokobeito Iralu	09436832020	sldc.ngl@gmail.com
Tripura	Mrinal Paul	09436137022	mrinalpaulnit@gmail.com

Deliberation of the Sub-Committee

The Sub-committee decided to drop this agenda item, since all the names & contact numbers of Nodal Officer has been received from all constituents. Further, the Sub-committee decided that above Nodal Officers should carry out the study and assess TTC, TRM and ATC on it's inter-state transmission corridor considering a mesh intra-state corridor for import or export of power with the Inter-state Transmission system (ISTS) every month.

NERLDC have assessed TTC of each control area of NER for January'16 which is given below and the same has been emailed to SLDCs of NER. States may check the TTC of their control areas as computed by NERLDC and issue comments, if any by 20th September'15. If no comments received from any states TTC, ATC & TRM figures of States control area and group of control areas will be finalized and may be uploaded in NLDC website, if required.

Sl. No	State	OFFPEAK Case		PEAK Case	
		Contingency	Total Transfer Capability	Contingency	Total Transfer Capability
1	Arunachal Pradesh	N-1 of 132/33 kV, 2x16 MVA Transformers at Deomali	165	N-1 of 132/33 kV, 2x16 MVA Transformers at Deomali	165
2	Assam	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai	1175	N-1 of 220/132 kV, 3x100 MVA transformers at Sarusajai	1295
3	Manipur	N-1 of 132 kV Imphal (PG) - Imphal D/C	260	N-1 of 132 kV Imphal (PG) - Imphal D/C	260

4	Meghalaya	N-1 of 132 kV Killing-Epip II D/C	250	N-1 of 132 kV Killing-Epip II D/C	250
5	Mizoram	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei	98	N-1 of 132/33kV, 12.5 MVA transformer at Luangmual/Zimabawk/Serchip/Lunglei	98
6	Nagaland	N-1 of 132/66 kV, 25 MVA tranformer at Mokokchung	97	N-1 of 132/66 kV, 25 MVA tranformer at Mokokchung	97
7	Tripura	N-1 of 132 kV Palatana - Udaipur S/C	130	N-1 of 132 kV Palatana - Udaipur S/C	126

The Sub-committee requested all the constituents to check the data prepared by NERLDC and give their comments/observations by 20.09.2015, else, the data is taken as final.

3. Load-ability of 132 kV Lumnsnong – Panchgram Line:

It has been observed from system study that 132 kV Badarpur – Khliehriat line will be highly loaded in case of 700 MW Palatana generation. To reduce the loading of 132 kV Badarpur – Khliehriat line, 132 kV Lumnsnong – Panchgram Line is to be connected in loop. However, it has been seen that loading of 132 kV Lumshnong – Panchgram Line will be around 80 MW in case of tripping of 132 kV 132 kV Badarpur – Khliehriat line. Hence, loading capacity of 132 kV Lumnsnong – Panchgram Line is to be enhanced.

It was discussed during 98th, 99th, 100th, 101st & 102nd OCC meetings.

The Sub-committee requested to AEGCL and MePTCL to take up the necessary action accordingly.

Deliberation of the sub-Committee

Members suggested to refer the item to the next 113rd OCC scheduled to be held on 11.09.2015.

4. 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)
- v. Tripping of one of 3x100 MVA ICT at Sarusajai.

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

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

d. For Reliable operation of Grid

- i. Tripping of 1st Module of Palatana CCGT

MePTCL has furnished details of SPS scheme, Schematic Diagram of SPS as in Sl. No. a(iii).

Deliberation of the sub-Committee

AEGCL, POWERGRID & NEEPCO agreed to furnish the information to NERLDC/NERPC soon.

5. Constraint in inter-state corridor & intra-state elements of Tripura System in case of exporting 100 MW power to Bangladesh under certain scenarios:

It has been agreed to provide 100 MW power to Bangladesh through 132 kV Surjamaninagar (TSECL) – Comilla (Bangladesh) D/C lines.

Presently, one circuit of 400 kV Palatana – Surjamaninagar D/C (Charged at 132 kV) & One 400/132 kV, 125 MVA ICT at Palatana are under operation. Other circuit of 400 kV Palatana – Surjamaninagar D/C (Charged at 132 kV) could not be completed yet since the bay originally designated for this line was used by 132 kV Palatana – Udaipur line (which was used by Palatana for drawing start-up power in commissioning phase).

It has been observed from system study results that there will be constraint in inter-state corridor & intra-state elements of Tripura System in case of exporting 100 MW power to Bangladesh under certain scenarios.

To address these constraint, it is required to expedite commissioning of 2nd 400/132 kV, 125 MVA ICT at Palatana & second circuit of 400 kV Palatana – Surjamaninagar(TSECL) D/C (Charged at 132 kV) for short term measures and to commission of 400 kV Palatana – Surjamaninagar (TBCB) D/C line & 400/132 kV, 2x315 MVA ICT at Surjamaninagar(TBCB) & 132 kV Surjamaninagar(TSECL) – Surjamaninagar (TBCB) D/C line with high capacity/HTLS.

During 5th Standing Committee Meeting held at Imphal on 08.08.15, OTPC informed that procurement of 2nd ICT at Palatana is under progress. During 5th Standing Committee Meeting, Director, CEA stated that about 100 MW power is planned to be exported to Bangladesh from Tripura by December, 2015 and for reliable transfer of power to Bangladesh both the circuits from Palatana to Surajmaninagar are required. He requested TSECL to disconnect their 132 kV line to Udaipur from Palatana so that the other circuit of Palatana-Surajmaninagar can be connected. Construction of 3rd 132 kV line bay at Palatana was approved in this meeting.

Deliberation of the sub-Committee

Members suggested to refer the item to the next 113rd OCC scheduled to be held on 11.09.2015.

6. Enhancement of Transformation capacity of 400/132 kV Silchar substation:

Installation of 3rd 400/132 kV, 315 MVA transformer at Silchar along with associated bays in GIS by POWERGRID was approved in 5th Standing Committee Meeting held at Imphal on 08.08.15.

It has been observed from system study that transformation capacity of 400/132 kV Silchar substation is to be enhanced for exporting power to Bangladesh under certain condition.

It is requested to expedite commissioning of 3rd 400/132 kV, 315 MVA transformer at Silchar.

Deliberation of the sub-Committee

DGM (AM) informed that the issue of 3rd ICT above has just been approved in the 5th Standing Committee and subsequently in 15th NERPC meetings, hence, the matter will be intimated and reviewed in due course.

The Sub-committee noted as above.

7. Construction of new lines & re-conducting of the lines for evacuation of power from 4x21+2x25.5 MW AGTPP:

Construction of 132 kV D/C lines with high capacity HTLS conductor (equivalent to single moose) from AGTPP to P. K. Bari (under TBCB) was approved in 5th Standing Committee Meeting held at Imphal on 08.08.15. Re-conductoring of Agartala-Agartala 132 kV D/C lines (by POWERGRID) was approved in 4th Standing Committee Meeting held at Guwahati on 13.12.14.

These lines are required for evacuation of power from 4x21+2x25.5 MW AGTPP. STG I & STG II of AGTPP are under commercial operation.

Deliberation of the sub-Committee

DGM (AM) informed that the issue of construction of 132 kV D/C lines with high capacity HTLS conductor (equivalent to single moose) from AGTPP to P. K. Bari (under TBCB) was approved in 5th Standing Committee Meeting and subsequently in 15th NERPC meetings, hence, the matter will be intimated and reviewed in due course.

The Sub-committee noted as above.

8. Formation of 2nd node of NER-ER corridor:

It was agreed in 5th Standing Committee Meeting held at Imphal on 08.08.15 that there is a need for 2nd 400 kV AC node for interconnection with national grid and detailed studies are required to be carried out to identify the second node and its inter-connection with the national grid. In this meeting, it was proposed to bypass of Balipara-Bongaigaon 400 kV D/C quad line with series compensation at Bongaigaon, connect Bonagigaon – Alipurduar 400 kV D/C quad line after completion of LILO work of 400 kV Bongaigaon – Binaguri 400 kV D/C quad lines at Alipurduar & terminated to Alipurduar.

It is requested to expedite commissioning of LILO work of 400 kV Bongaigaon – Binaguri 400 kV D/C quad lines at Alipurduar.

Deliberation of the sub-Committee

DGM (AM) informed that the issue of construction of 2nd Node of NER-ER corridor was discussed during the 5th Standing Committee Meeting and it was informed that one pole of \pm 800 kV HVDC Biswanath Chariali-Agra line is expected to be

commissioned shortly. This HVDC has the provision of operation in reverse mode also. In the event of outage of Bongaigaon S/s, the power to the NER can be supplied through reverse mode operation of this HVDC. Hence, the matter will be reviewed in due course.

DGM(SOII) requested to monitor the progress of LILO of 400 kV Bongaigaon – Binaguri III & IV lines (Quad lines) at Alipurduar on monthly basis.

The Sub-committee noted as above.

9. Installation Bus Reactor at Ranganadi:

Installation of 80 MVAR Bus Reactor at Ranganadi by NEEPCO was approved in 5th Standing Committee Meeting for VAR compensation at Ranganadi.

It is requested to expedite commissioning of 80 MVAR Bus Reactor at Ranganadi by NEEPCO.

Deliberation of the sub-Committee

Sr. Manager, NEEPCO informed that the estimate has been prepared and submitted to Corporate Office for approval and the status will be intimated in the next meeting.

The Sub-committee noted as above.

10. Up-gradation of Busbar Scheme of Dimapur, Imphal & Aizwal

132 kV Dimapur (PG), 132 kV Imphal (PG), 132 kV Aizawl (PG) are important nodes which cater major loads to Nagaland, Manipur and Mizoram respectively. Presently the Busbar Schemes at these substations are Single Main & Transfer Bus Scheme.

The Busbar Schemes at these substations need to be upgraded to Double Main Bus Scheme, in order to improve reliability of Power System of Nagaland, Manipur & Mizoram respectively as well as NER Grid.

Deliberation of the sub-Committee

DGM (AM) informed that Up-gradation of Double Main Bus Scheme is planned at Aizawl since it has completed more than 25 years of service, whereas, at Dimapur

and Imphal they have to review after 25 years, else CERC will not accept the proposal.

The Sub-committee noted as above.

11. Installation of 220kV, 20 MVAR Bus Reactor at AGBPP

DGM (AM) informed that 220 kV, 20 MVAR Bus Reactor at AGBPP will be installed within 3-4 months.

The Sub-committee noted as above.

Date and Venue of next PCC

It is proposed to hold the 10th SS meeting of NERPC in the first week of October, 2015. The exact venue will be intimated in due course.

The meeting ended with thanks to the chair

Annexure-I

List of Participants in the 9th SS Meeting held on 10/09/2015

SN	Name & Designation	Organization	Contact No.
1.	Sh. Nangkong Perme, EE, SLDC	Ar. Pradesh	09436288643
2.	Sh. G.K. Bhuyan, AGM, AEGCL	Assam	09854015601
3.	Sh. Sanajaoba Singh, Manager, MSPCL	Manipur	09856792770
4.	Sh. G. Tapan Kumar Sharma, Manager	Manipur	08974138850
5.	Sh. S. Saha. AE (SP)	Meghalaya	09436112798
6.	Sh. A.G. Tham, AE (SP)	Meghalaya	09774664034
7.	Sh. C.C. Lalrimawia, SDO, MRT	Mizoram	09436155551
8.	Sh. Zoramdina, AE (SLDC)	Mizoram	08415901755
9.	Sh. A. Jakhalu, EE(TRANS)	Nagaland	09436002696
	No Representative	Tripura	
10.	Sh. A. Mallick, DGM (SO-II)	NERLDC	09436302720
11.	Sh. Suranjan Sarkar, Sr. Manager	NEEPCO	08974009294
12.	Sh. Joypal Roy, Sr. Manager	NEEPCO	09435577726
13.	Sh. Tanya Taji, Sr. Manager	NEEPCO	09436042053
14.	Sh. Shaibal Ranjan Dan, DGM(O)	NTPC	09435325440
15.	Md. Sajid Akhter, Manager	NHPC	09436678603
16.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
17.	Sh. T. Karmakar, Asst. Manager (E)	OTPC	09435239314
18.	Sh. P.K. Mishra, MS	NERPC	09968380242
19.	Sh. B.Lyngkhoi, Director/S.E (O)	NERPC	09436163419
20.	Sh. S. Mukherjee, AEE	NERPC	08794277306
21.	Sh. Shaishav Ranjan, A.E	NERPC	08794276168