



Government of India
Ministry of Power
Central Electricity Authority
Power System Planning & Appraisal Division-II
Sewa Bhawan, R. K. Puram, New Delhi-110066
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No. 81/4/2016/PSPA-II/

Date: 18th Jan., 2017

To,

1	The Member (PS), Central Electricity Authority, SewaBhawan, R. K. Puram, New Delhi-110066	8	Engineer-in-Chief Power & Electricity Department, Govt. of Mizoram, Tuikhuahtlang, Aizawl (Mizoram) Fax:0389-2320861/2320862
2	The Member Secretary, North Eastern Regional Power Committee(NERPC), NERPC Complex, Dong Parmaw Lapalang, Shillong – 793006 (Meghalaya) Fax: 0364 – 2534040/2520030	9	The Chief Engineer (Power), Electricity Department, Keisampat, Imphal (Manipur) - Fax: 0385 – 2220702/2220143
3	The Director (Projects), Power Grid Corp. of India Ltd., "Saudamini", Plot No. 2, Sector-29, Gurgaon-122001 Fax 0124-2571760/2571932	10	The Chairman-cum-Managing Director, Tripura State Electricity Corporation Limited, Bidyut Bhavan, Banamalipur, Agartala, Tripura. Fax: 0381 – 2319427
4	The Managing Director, Assam Electricity Grid Corporation Limited, BijuleeBhawan; Paltan Bazar, Guwahati (Assam) – 781001. Fax: 0361 – 2739513 & 0361 – 2739989	11	The Chairman and Managing Director, North Eastern Electric Power Corporation Ltd, Brookland Compound, Lower New Colony, Shillong (Meghalaya) – 793003. Fax: 0364 – 2226417
5	The Chairman-cum-Managing Director, Meghalaya Energy Corporation Limited, LumJingshai, Short Round Road, Shillong (Meghalaya) – 793001. Fax: 0364 – 2590355	12	Director (Projects), National Thermal Power Corp. Ltd.(NTPC), NTPC Bhawan, Core-7, Scope Complex, LodhiRoad,New Delhi-110003 Fax 011-24360912
6	The Chief Engineer (Power), Vidyut Bhawan, Department of Power, Zero Point Tinali, Itanagar (Arunachal Pradesh) – 791111. Fax: 0360 – 2217302	13	CEO, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi – 110016. Fax: 011 – 26852747 / 26524525/ 26536901
7	The Chief Engineer, Department of Power, Nagaland, Kohima Fax: 0832 – 2426986/2222354		

Sub: Minutes of the meeting of 6th Standing Committee on Power System Planning of North Eastern Region (6th SCSPNER).

Sir,

The 6th Standing Committee Meeting on Power System Planning of North Eastern Region was held on 03.10.2016 at Hotel Classic Grand, Imphal, Manipur. The minutes of the meeting has been uploaded on CEA Website (www.cea.nic.in) at the following link –Home page-wing specific document-power systems-Standing Committee Meeting on Power System planning -North Eastern Region).

Yours faithfully,

(Rishika Sharan)
Director

Minutes of the 6th Meeting of Standing Committee on Power System planning of North Eastern Region

- 1.0 List of the participants is enclosed at Annexure-I.
- 2.0 Chairperson / Member (PS), CEA welcomed the participants to the meeting. He said that Power sector is growing in all other parts of the country to meet the increasing energy requirement of industries and other sectors of economy. He stressed the need for development of power sector in North Eastern Region. Towards this, Government of India has sanctioned about Rs. 10,000/- crores for two schemes viz. “comprehensive scheme for strengthening of transmission and distribution system in Arunachal & Sikkim” and “North Eastern Region Power System Improvement Scheme”. Implementation of these scheme will help in meeting energy requirement of all parts of North Eastern States. He said that due to rapid urbanisation and increasing land prices, a lot of right of way problems are being encountered in development of transmission system. He added that Government of India has already revised the norms of compensation for laying of transmission lines and has also constituted a committee to address RoW problems faced in implementation of transmission in urban areas. He said that today we are having one nation one grid which has enabled exchange of power across states / regions in the country. He requested all partner states and stake holders to deliberate the agenda for the meeting to arrive at optimal system. He requested Chief Engineer, CEA to conduct further proceeding of the meeting.
- 3.0 Chief Engineer, CEA again welcomed the participants to the meeting and requested Director, CEA to take up the agenda items.
- 4.0 **Confirmation of the minutes of 5th Standing Committee Meeting on Power System planning of North Eastern Region.**
 - 4.1 Director, CEA stated that the minutes of the 5th meeting of the Standing Committee on Power System Planning held on 8th August, 2015 at Imphal, Manipur were circulated vide CEA letter no. 81/4/2015-SP&PA/70-87 dated 28th Aug., 2015 and a corrigendum was issued vide letter of even no. dated 23-09-2015 based on comments received from MePTCL. He requested constituents to confirm the minutes of the meeting along with the corrigendum.
 - 4.2 The minutes of the meeting along with corrigendum were confirmed.
- 5.0 **LILO of one circuit of 132kV Biswanath Chariali (PG) – Itanagar at Gohpur – Agenda by Assam**
 - 5.1 Director, CEA stated that Biswanath Chariali (PG) – Pavo (AEGCL) 132kV D/C line is meeting the loads in Pavo, Gohpur and Depota areas of Assam. This line is carrying more than 135MW during peak hours. Studies have been carried out for 2018-19 time-frame for both high hydro and low hydro conditions.
 - 5.2 He added that it has been observed that with the LILO of one circuit of 132 kV Biswanath Chariali (PG) – Itanagar D/c line at Gohpur, the power flow on the Biswanath Chariali (PG) – Pavo (AEGCL) 132kV D/c line gets reduced by about 30MW. Thus, it is proposed to LILO one circuit of Biswanath Chariali (PG)

- Itanagar 132kV D/c line at Gohpur. The LILO along with bays at Gohpur would be implemented by AEGCL.
- 5.3 GM, POWERGRID said that the existing 132 kV sub-station at Gohpur has single main bus switching arrangement, which can impact reliability of the system. DGM, AEGCL said that to improve reliability, the switching scheme at Gohpur 132 kV S/s would be modified from single main bus to double main bus scheme.
- 5.4 Chief Engineer, CEA stated that Biswanath Chariali (PG) – Itanagar 132kV D/c line is an ISTS line being implemented as a part of NERSS-II through TBCB and LILO of an ISTS line should preferably be implemented as ISTS work. He requested AEGCL to confirm the availability of space for 2 no. 132 kV bays at Gohpur for the proposed LILO and implementing double main bus switching scheme at Gohpur.
- 5.5 DGM, AEGCL stated that the availability of space for 2 no. 132 kV bays at Gohpur and implementing double main bus switching scheme at Gohpur would be informed to CEA after the site visit.
- 5.6 GM, POWERGRID informed that RfP for the scheme NERSS-II Part-B and NERSS-V has been issued in Sep. 2016 and bidders are to be informed about the change in scope before the bid submission date.
- 5.7 After further discussion, it was decided that the LILO of one circuit of Biswanath Chariali (PG) – Itanagar 132kV D/c at Gohpur (AEGCL) would be implemented through TBCB as ISTS work as a part of NERSS-II Part-B and the scope of works of NERSS-II Part-B would be modified accordingly. It was also decided that AEGCL would implement the double main bus switching scheme at Gohpur 132 kV S/S along with 2 no. 132 kV bays at Gohpur before Dec., 2019.
- 5.8 Subsequently, AEGCL vide its letter no. AEGCI/MD/13th Plan/Tech -593/2014-15/9 dated 30-11-2016 (copy enclosed at Annexure-II) has informed that due to space constraint at Gohpur for accommodating double main bus switching scheme, they have proposed to switch over from AIS to GIS at Gohpur 132 kV S/S along with implementation of 2 no. 132 kV GIS bays for the LILO of one circuit of Biswanath Chariali (PG) – Itanagar 132kV D/c at Gohpur (AEGCL).

6.0 Strengthening of evacuation system of Pare HEP of NEEPCO

- 6.1 Director, CEA stated that Pare HEP by NEEPCO is expected to be commissioned by Dec., 2016. Evacuation system from Pare HEP consist of
- i) LILO of Ranganadi-Naharlagun / Nirjuli 132 kV S/C line at pare HEP
 - ii) LILO of one circuit of Ranganadi-Itanagar 132 kV D/C line at Pare HEP.
- 6.2 He added that out of four 132 kV lines evacuating from Pare HEP, two are connected to Ranganadi HEP and remaining two to the load centres viz. Naharlagun and Itanagar. System studies have been carried out for 2018-19 time-frame corresponding to high hydro and low hydro conditions. It is observed that Ranganadi HEP injects power at Pare HEP through Pare – Ranganadi 132kV 2xS/c lines, thereby leaving only 2 no. 132kV S/c lines i.e. Pare – Itanagar and Pare – Naharlagun / Nirjuli for evacuation of 110MW power

from Pare HEP and additional power injected at Pare HEP from Ranganadi HEP. This causes overloading of Pare – Naharlagun / Nirjuli 132kV S/c line (Pare – Naharlagun: 129MW, Naharlagun – Nirjuli: 91MW). In order to overcome this situation, following transmission system modification is proposed to be implemented as NERSS-IX:

- (i) Bypassing of LILO of Ranganadi - Naharlagun / Nirjuli at Pare HEP so as to form direct Ranganadi - Naharlagun / Nirjuli 132 kV S/C line - ISTS by NEEPCO
 - (ii) Pare HEP (From LILO point) – North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra conductor) – along with 2 no. 132 kV bays at North Lakhimpur ISTS through TBCB
 - (iii) LILO of one circuit of Pare HEP – North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra) at Nirjuli substation – ISTS through TBCB
 - (iv) Re-conductoring of LILO portion at Pare end (of Ranganadi – Naharlagun / Nirjuli 132kV S/c line) with HTLS (HTLS equivalent to ACSR Zebra) along with modification of 132kV bay equipment at Pare HEP – by NEEPCO.
- 6.3 DGM, NEEPCO stated that 132 kV bay equipment at Pare HEP had already been erected.
- 6.4 Director, CEA stated that to recover additional investment in the transmission and bay equipment modification as suggested above, M/s NEEPCO may file revised tariff petition in CERC. He enquired about the availability of space at North Lakhimpur 132 kV S/S for termination of Pare-North Lakhimpur 132 kV D/C line and at Nirjuli for LILO of one circuit of Pare-North Lakhimpur 132 kV D/C line.
- 6.5 DGM, AEGCL informed that space for two number 132kV line bays at North Lakhimpur is available. GM, POWRGRID also confirmed the availability of space for 2 no. 132 kV line bays at Nirjuli S/S.
- 6.6 After further discussion, following additional / modification in the transmission system associated with Pare HEP was agreed as a part of NERSS-IX.
- a. Bypassing of LILO of Ranganadi - Naharlagun / Nirjuli at Pare HEP so as to form direct Ranganadi - Naharlagun / Nirjuli 132 kV S/C line – ISTS by NEEPCO.
 - b. Pare HEP (from LILO point) – North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra conductor) along with 2 no. 132 kV line bays at North Lakhimpur – ISTS (implementation through TBCB/RTM to be decided by empowered committee).
 - c. LILO of one circuit of Pare HEP – North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra) at Nirjuli substation – ISTS (implementation through TBCB/RTM to be decided by empowered committee).
 - d. Re-conductoring of LILO portion at Pare end (of Ranganadi – Naharlagun / Nirjuli 132kV S/c line) with HTLS (HTLS equivalent to ACSR Zebra) along with modification of 132kV bay equipment at Pare HEP – ISTS by NEEPCO

- e. 2 no. 132 kV bays at Nirjuli S/S for termination of LILO of one circuit of Pare HEP – North Lakhimpur (AEGCL) 132kV D/c line (with ACSR Zebra) – ISTS by POWERGRID.

7.0 Augmentation of 2x30MVA, 220/132kV substation at Mokokchung (PG)

- 7.1 Director, CEA stated that Mariani (PG)-Mokokchung (PG) 220 kV D/C line supplies power to 2x30 MVA 220/132 kV S/S at Mokokchung (PG) SS, which in turn feeds power to Mokokchung & other downstream areas of Nagaland. Thus, Mokokchung (PG) substation is a vital node for supplying power to Nagaland. He added that under N-1 contingency of ICT at Mokokchung the other ICT would be over loaded and loading has to be restricted to 30 MW. So it was proposed to enhance the transformation capacity at Mokokchung (PG) by installation of third 220/132 kV ICT of 30MVA (3x10MVA) single phase units.
- 7.2 Director, CEA stated that Mokokchung (PG) belongs to POWERGRID, so augmentation should be done by POWERGRID. The tariff policy in vogue does not exempt implementation of augmentation of sub-station from TBCB. Empowered Committee will take the decision whether the project will be done by POWERGRID or it goes through TBCB.
- 7.3 GM, POWERGRID informed that the Mokokchung is a GIS station.
- 7.4 After further discussions, augmentation of 220/132 kV Mokokchung (PG) S/S by 30 MVA (3x10 MVA single phase) was agreed to be implemented as ISTS work with GIS bays as a part of NERSS-VIII. Executing agency for the augmentation would be decided by the Empowered Committee on transmission.

8.0 Conversion of 2 nos. 63 MVAR Line Reactors at Bishwanath Chariali end of Biswanath Chariali – Lower Subansiri 400kV (1st) D/c line to Bus Reactors

- 8.1 Director, CEA stated that power evacuation system from Lower Subansiri HEP inter-alia, consist of Lower Subansiri - Biswanath Chariali 400 kV 2xD/C lines along with 4x80 MVAR line reactors at Biswanath Chariali. POWERGRID has informed that due to delay in the commissioning of Lower Subansiri HEP, construction of Lower Subansiri - Biswanath Chariali lines have been deferred and the 4 nos. 420kV, 63MVAR line reactors at Biswanath Chariali of the lines are not being used at this moment.
- 8.2 He added that due to high voltages observed at 400kV level at Biswanath Chariali, Balipara and Ranganadi substations, numbers of 400 kV lines from Bongaigaon, Balipara, Biswanath Chariali, Ranganadi are being kept open in off peak hours to maintain the nodal voltages within stipulated limits.
- 8.3 He also said that presently 420 kV 2x80MVAR Bus Reactors are in service at Biswanath Chariali. So, in order to contain high voltage in upper Assam and Arunachal Pradesh, POWERGRID has proposed that two out of four 63 MVAR Line Reactors at Biswanath Chariali may be utilized as Bus Reactors.
- 8.4 GM, POWERGRID suggested that in order to have better control of the over voltages all the four line reactors may be converted as bus reactors.

- 8.5 CE, CEA said that already there are 2 no. 80 MVAR bus reactors in service at Biswanath Chariali and two more 63 MVAR would be converted as bus reactor. Thus there would be 2x80+2x63 MVAR bus reactors at Biswanath Chariali.
- 8.6 AGM, NLDC stated that prima facie, it appears that due to low fault level at Biswanath Chariali, conversion of 2 no. 63 MVAR line reactors as bus reactors would be adequate to control the over voltages.
- 8.7 After further discussions, the proposal to convert two no. 63 MVAR line reactors at Biswanath Chariali to bus reactors was agreed to be implemented by POWERGRID.

9.0 Installation of 80MVAR Bus Reactor at Ranganadi (NEEPCO) with GIS Bay – Agenda by NEEPCO

- 9.1 Director, CEA stated that installation of 420 kV 80MVAR bus reactor at Ranganadi by NEEPCO was agreed in the previous meeting of standing committee of NER, to address high voltage problem at 400kV level at Ranganadi. He added that there are space constraints at Ranganadi HEP and now it is proposed to install the 80MVAR Bus Reactor at 400kV Ranganadi Bus with GIS bay instead of AIS by NEEPCO.
- 9.2 GM, NEEPCO stated that they have initiated the process for procuring the reactor and it would be take about 18 months for commissioning the same.
- 9.3 After discussion, installation of 80 MVAR bus reactor with GIS bay was agreed at Ranganadi HEP by NEEPCO. The works would be completed by March 2018.

10.0 Replacement of existing 220/132kV, 4x33.33 MVA single phase unit transformers by 220/132kV, 1x160MVA 3-phase unit and augmentation by another 1x160 MVA transformer and other works at 220/132kV Dimapur (PG) substation

- 10.1 Director, CEA stated that presently the transformation capacity of the 220/132 kV Dimapur (PG) substation is 2x100 MVA and it is catering to the loads of Dimapur and Kohima in Nagaland and Bokojan in Assam. Maximum loading observed at Dimapur (PG) is 100 MW. Out of the two transformers one is three phase unit and other is bank of single phase units (4x33.3 MVA incl. one spare), which is 25 years old. The anticipated loading at Dimapur (PG) substation for both Nagaland and Assam is of the order of 260 MW. To meet the anticipated load demand, it is proposed to replace the existing 220/132kV, 4x33.33MVA single phase unit transformers by 220/132kV, 1x160MVA 3-phase unit and add another three phase 1x160 MVA transformer. With this the final transformation capacity at Dimapur (PG) would be 1x100+2x160 MVA.
- 10.2 He said that this capacity enhancement has already been discussed and approved in the 16th NERPC meeting held on 29th – 30th Jan 2016. In view of Dimapur (PG) S/s being 25 years old, upgradation of substation from AIS to GIS (SAS) along with following scope of works has been approved in the 16th NERPC meeting:

- a) Replacement of existing 4x33.33MVA, 220/132kV Single phase unit transformers by 2x160 MVA, 220/132kV 3-phase unit for capacity enhancement.
 - b) Conversion of 132kV Bus Bar Scheme from Single Main and Transfer to Double Main GIS along with future provision.
 - c) Conversion of 220kV Switchyard from AIS to GIS to accommodate additional transformer and also creation of space for future provision
- 10.3 He added that in addition to the scope mentioned above, provision of tertiary loading for auxiliary supply from 160 MVA ICT is also proposed.
- 10.4 GM, POWERGRID stated that earlier 100MVA transformers had no provision for tertiary loading for auxiliary supply whereas, the new 160MVA transformers has provision for tertiary loading for auxiliary supply. On a query whether tertiary of both 160 MVA transformers will be loaded or of only one transformer will be loaded. GM, POWERGRID said that tertiary of both the transformer will be connected for auxiliary supply and only one will be used at a time through proper switching arrangement.
- 10.5 After further discussions, members agreed for following works to be implemented at Dimapur substation by POWERGRID as a part of NERSS-VIII:
- (a) Replacement of existing 4x33.33MVA, 220/132kV Single phase unit transformers by 1x160 MVA, 220/132kV 3-phase unit and addition of new 1x160 MVA 3 phase transformer at Dimapur (PG). Thus, the final transformation capacity would be 220/132kV, 1x100MVA + 2x160MVA.
 - (b) Conversion of 132kV Bus Bar Scheme from Single Main and Transfer to Double Main GIS along with future provision.
 - (c) Conversion of 220kV Switchyard from AIS to GIS to accommodate additional transformer and also creation of space for future provision.
 - (d) Provision of tertiary loading for auxiliary supply from 160MVA ICTs

11.0 LILO of 132 kV Jiribam (PG) – Aizwal (PG) line at Tipaimukh substation (MSPCL) – Agenda by MSPCL

- 11.1 Director, CEA stated that MSPCL has informed that massive electrification of villages in Tipaimukh is being carried out under RGGVY and DDUGJY. At present Tipaimukh is fed through 11 kV feeder from 33/11 kV substation at Thanlon (MSPCL), which is around 120 km away from Tipaimukh and partly from 33/11 kV S/S at Shivapurikhal through long 11 kV lines. Further, 33/11 kV Thanlon (MSPCL) is about 150 km away from the nearest feeding point of 132/33 kV substation at Churachandpur (MSPCL). Because of long LT lines, the area experiences very low voltage. MSPCL has taken up the construction of 2x12.5 MVA 132/33 kV S/s at Tipaimukh. Construction of new 132 kV line from Jiribam (PG) or Churachandpur (MSPCL) is not possible because of involvement of forest and RoW problem. The Jiribam (PG)-Aizawl (PG) 132 kV line is presently carrying about 20 MW, which is going to reduce further after the commissioning of Silchar – Melriat 400 kV D/c (initially operated at 132 kV).

The Jiribam (PG) – Aizawl (PG) 132 kV S/C line, owned by POWERGRID passes through Tipaimukh area. Therefore, it is proposed to construct LILO of 132 kV Jiribam (PG) – Aizawl (PG) line at Tipaimukh (MSPCL) 132/33 kV, 2x12.5 MVA substation by MSPCL.

11.2 MD, MSPCL stated that the load demand at Tipaimukh would not go beyond 3 MW. The reason for this proposal was to give quality supply only to Tipaimukh area. He added that the POWERGRID line is passing very near to the proposed 132/33 kV S/S at Tipaimukh and the LILO length would be about 500m. The work is expected to be completed by Nov, 2016.

11.3 After discussion, members agreed to the proposal of MSPCL for LILO of 132 kV Jiribam (PG) – Aizawl (PG) line at Tipaimukh substation by MSPCL.

12.0 Installation of 132/33kV Transformers for station supply at Jiribam, Aizawl, Kumarghat and Haflong sub stations during upgradation to GIS as approved in 16th NERPC Meeting

12.1 Director, CEA stated that Jiribam, Aizawl and Haflong are 132kV switching-stations and Kumarghat is 132/33kV 5MVA substation of POWERGRID, which have completed 25 years of service. In the 16th NERPC meeting held on 30-01-2016 at Guwahati, the upgradation of these 132kV substations of POWERGRID viz. Jiribam, Aizawl, Kumarghat and Haflong from AIS to GIS with incorporation of Double Bus Arrangement, LBB & Bus Bar Protection and associated works has been approved. On conversion to GIS, more space would be created at these sub-stations for future expansion.

12.2 He added that these substations are part of the 132kV back-bone of the transmission system in NER and considering remoteness of these stations with poor availability of Auxiliary Power, it is proposed to install 132/33kV transformer in said stations during up-gradation. The 132/33kV ICTs shall be utilized to feed local loads as well as provide reliable auxiliary power supply at these substations.

12.3 GM, POWERGRID stated that with the provision of ICTs at Jiribam, Aizawl, Kumarghat and Haflong sub-stations, states can draw power at 33 kV to meet their local loads in addition to supplying power to station auxiliaries. For example, Tripura can draw power from 33 kV feeder from Kumarghat. Similarly, other states can also draw power from these stations.

12.4 Director, TSECL, said that they don't have any need to draw power from Kumarghat. MD, MSPCL, stated that Manipur doesn't want any power from Jiribam. Also, MSPCL can give power supply to Jiribam Substation for their auxiliary power need. They can install a transformer, if required, at the substation.

12.5 AGM, NLDC said that in CEA's "Technical Standards for Connectivity to the Grid" Regulations, 2007 Part-III clause (6) (a), it is mentioned that power supply to Sub-Stations Auxiliaries for 66 kV and below 220 kV sub-stations shall be from one HT supply and one diesel generating source. The auxiliary supply sources should not be beyond the technical standards.

- 12.6 GM, POWERGRID said that if states do not need power from these substations and they are ready to provide HT source of supply for auxiliary requirement from their substations, then proposal for installation 132/33 kV transformers at these sub-stations can be dropped.
- 12.7 DGM, AEGCL stated that Haflong is a very remote area. In the event of any contingency, Haflong area can be supplied power from the 132/33 kV ICT at Haflong sub-station of POWERGRID. Two no. 33 kV bay would be required at Haflong and AEGCL can construct a 33 kV line from Haflong (PG) to Haflong (Assam). He also proposed to increase the transformation capacity of the transformer to be installed at Haflong from 10 MVA to 25 MVA.
- 12.8 GM, POWERGRID said that they will provide 2 no. line bays and transformer at Haflong. Line will be constructed by AEGCL.
- 12.9 CE, CEA stated that 132 kV and 33 kV line should not be operated in parallel. Therefore, it would be appropriate for AEGCL to construct another 132 kV line from Haflong(PG) to Haflong (Assam).
- 12.10 After further discussions, members approved the up-gradation of Jiribam, Aizawl, Kumarghat and Haflong substations of POWERGRID from AIS to GIS with incorporation of Double Bus Arrangement, LBB & Bus Bar Protection and associated works without 132/33 kV ICT at Jiribam, Aizawl and Kumarghat as a part of NERSS-VIII to be implemented by POWERGRID. It was also decided that the requirement of 132/33 kV ICT at Haflong would be decided in a separate meeting of CEA, CTU and AEGCL.
- 12.11 Subsequently, a meeting was convened by Chief Engineer, CEA on 04-11-2016 in CEA to decide about providing 132/33 kV ICT at Haflong S/S of POWERGRID. In the meeting DGM, AEGCL informed that at present Haflong (PG) is connected with Haflong (AEGCL) through 132 kV S/c line. AEGCL is drawing ISTS power from Haflong (PG) through the 132 kV line. Haflong (AEGCL) is having 2x10 MVA 132/33 kV transformer and Haflong (PG) is drawing auxiliary power from Haflong (AEGCL) through 33 kV S/c line. Haflong (AEGCL) 132/33 kV S/S is remotely located and in the case of line fault or fault at 132 kV bus at Haflong (AEGCL) the area becomes dark. It takes about two days for the maintenance staff to attend the fault. If 16 MVA 132/33 kV ICT is provided at Haflong (PG), then in the event of outage of line or 132 kV bus at Haflong (AEGCL), power can be supplied to Haflong area at 33 kV. In the meeting it was agreed that AEGCL would install 16 MVA 132/33 kV ICT at Haflong (PG) along with associated bays at 132kV and 33kV at Haflong (PG). The ICT at Haflong (PG) by AEGCL was agreed for giving supply to Haflong area during contingency only. Operation methodology of 132/33 kV 16 MVA ICT would be finalised mutually between POWERGRID and AEGCL. However, preferably the 132kV and 33kV line may not be operated in parallel. Minutes of the above meeting are enclosed at Annexure-III.
- 13.0 High Capacity India-Bangladesh AC Corridor and formation of second 400kV node in NER-ER Corridor**

- 13.1 Director, CEA stated that new interconnection between India and Bangladesh has been planned with high capacity AC link (765kV line to be initially operated

at 400kV) to interconnect Bangladesh with Eastern Region (ER) as well as North Eastern Region (NER). This link is in lieu of earlier planned HVDC bipole line connecting Rangia (NER) – Barapukuria (Bangladesh) – Muzaffarnagar (NR) 7000MW HVDC bipole line with 1000MW terminal at Barapukuria. This scheme has been agreed in the 11th meeting of Joint Steering Committee (JSC) /Joint Working Group (JWG) on India-Bangladesh cooperation in power sector held on 13th July 2016.

13.2 He said that in the 5th meeting of Standing Committee on Power System Planning of NER, it was agreed that there is a need for 2nd 400kV AC node in NER for interconnection with national grid to address the case of any eventuality at Bongaigaon S/s. The same has been taken into account, while planning new interconnection between India and Bangladesh.

13.3 He added that the scheme would be implemented in two phases. The Phase-I broadly covers following scope of works in India and Bangladesh:

In India:

- a. Establishment of 400kV sub-station at Bornagar in Assam (upgradable to 765 kV), about 50 km away from Bongaigaon, through LILO of Bongaigaon – Balipara 400kV D/c (quad) line and extension of Alipurduar-Bongaigaon 400kV D/c line to Bornagar substation by bypassing Bongaigaon.
- b. Establishment of a new 400kV substation at Katihar (near Purnea) (upgradable to 765 kV) through LILO of both ckts of Rajarhat-Purnea D/c line (one ckt via Gokarna and other ckt via Farakka).
- c. Bornagar - Parbotipur (in Bangladesh) – Katihar 765 kV D/C line (initially op. at 400 kV)

In Bangladesh:

- d. Establishment of 1x500 MW HVDC Back to Back sub-station at Parbotipur
- e. Establishment of a new 400/230kV substation at Parbotipur (upgradable to 765 kV).

13.4 He further said that in Phase-II, this interconnection would be upgraded to 765kV for transfer of about 1000MW power to Bangladesh along with upgradation of associated AC substations at Bornagar, Katihar and Parbotipur and augmentation of HVDC terminal at Parbotipur with another block of 500MW. The Phase-II would be taken up for implementation after availability of sufficient generation in NER or with the commissioning of hydro projects in Arunachal Pradesh

13.5 GM, POWERGRID stated that at present Bongaigaon 400 kV sub-station is gateway to NER. If any, contingency occurs at Bongaigaon, the NER will not remain synchronously connected with the national grid. So, it is proposed to make a new substation at Bornagar. He added that as directed by JSC/JWG in the 11th meeting, DPR for Phase-I works in currently under preparation.

13.6 AGM, NLDC said that Balipara-Bongaigaon 400 kV D/C quad line has been provided with 30% fixed series compensation (FSC) at Balipara end. The LILO of this line at Bornagar may overcompensate the Balipara-Bornagar 400 kV D/C

line depending upon its length after the LILO. Further, with the extension of Alipurduar-Bongaigaon 400 kV D/C line to Bornagar after disconnection / bypassing at Bongaigaon, 2 no. 400 kV bays would become spare at Bongaigaon. He inquired whether there is any plan for utilization of these bays.

- 13.7 GM, POWERGRID said that Balipara-Bongaigaon 400 kV D/C line is about 300 km and with the LILO of this line at Bornagar, the Balipara-Bornagar line length would become around 250 km and consequential series compensation on Balipara-Bongaigaon 400 kV D/C would change from 30% to 36%. The vacant 400 kV bays at Bongaigaon would be utilized in future.
- 13.8 SE, NERPC stated that the location of Bornagar should be chosen away from Bongaigaon to avoid any natural calamity affecting both Bongaigaon and Bornagar. GM, POWERGRID stated that Bornagar S/s is expected to be about 50-60km east of Bongaigaon and would be finalised in consultation with Assam. Assam may suggest a suitable location for Bornagar S/s, so as to take care of the above mentioned apprehension of a natural calamity leading to simultaneous outage of both Bongaigaon and Bornagar substations
- 13.9 Regarding sharing of cost of Bornagar (India)-Parbotipur (Bangladesh)-Katihar (India) 765kV D/C line, which would partly lie in India and partly in Bangladesh, it was informed that this would be decided by Govt. of India jointly with Bangladesh.
- 13.10 After further discussions, members agreed to the scope of work given at Annexure-IV.

14.0 Establishment of 400/220 kV S/s at Rangia and requirement of 2 no. 220kV additional line bays for Assam

- 14.1 Director CEA stated that in the previous meeting of the SCPSPNER, the proposal for establishment of 2x500 MVA 400/220 kV S/s at Rangia by LILO of both circuits of Balipara-Bongaigaon 400kV D/C (twin moose conductor) line along with 2x80MVAR bus reactors was agreed to be implemented by AEGCL. The proposed 400kV S/s at Rangia was meant to feed both the existing Rangia 220kV S/s and new Amingaon 220kV S/s of AEGCL. As part of "Transmission system for Phase-I generation projects in Arunachal Pradesh", implementation of new 400/220kV, 2x500 MVA substation at Rangia/Rowta in Assam along with LILO of both circuits of Balipara-Bongaigaon 400kV D/C (Twin Moose) line has been taken up for implementation as part of ISTS through TBCB route. In view of above, AEGCL has deferred implementation of proposed 400kV substation at Rangia and will utilize new ISTS substation at Rangia/Rowta to feed both existing Rangia 220kV S/s and new Amingaon 220kV S/s through LILO of both circuits of Rangia-Amingaon 220 kV D/C line.
- 14.2 He added that Assam has informed that they are upgrading their existing 132/33kV Rowta substation to 220kV level and plan to interconnect Rowta (AEGCL) S/s to proposed 400/220kV ISTS S/s at Rangia/Rowta. Hence, Assam has requested for 2 no. of 220kV line bays at Rangia/Rowta 400/220kV ISTS S/s for Rangia/Rowta (400/220kV) – Rowta (AEGCL) 220kV D/c line. Thus, AEGCL would require 6 no. 220 kV line bays at 400/220kV ISTS S/s at Rangia/Rowta. Accordingly, the scope of the TBCB scheme "Transmission

System for Phase-I generation projects in Arunachal Pradesh would be modified.

14.3 Members agreed for providing 6 no. 220 kV line bays at proposed Rangia / Rowta 400/220 kV ISTS S/S.

15.0 Downstream 220kV or 132kV system development by STUs from the various commissioned and on-going ISTS substations

15.1 Director, CEA stated that the list of ISTS sub-stations under various stages of implementation for which downstream network is to be implemented in matching time-frame by respective state utilities is given below. He requested the state utilities to update status of the down linking system to be built by them.

Sl. No	ISTS S/s	Voltage ratio, Trans. Cap	Voltage level (kV)	Total No of Bays	Lines emanating from S/s	No. of circuit	Status of Lines	Remarks
1	Biswanath Chariali	400/132kV, 2x200MVA	132	2 - Existing	Biswanath Chariali- Pavoi	2	Existing	
				2 - Under Board Approval	Biswanath Chariali – Itanagar	2	Under TBCB	NERSS-II-B
2	Bongaigaon	400/220kV, 1x315MVA +1x315MVA	220	4 - Awarded	Bongaigaon-Salakati	2	U/C by POWERGRID	NERSS-III (Exp. Comm. Dec 2017)
					Not identified	2	State to update	
3	Surajmaninagar	400/132kV, 2x315MVA	132	4 - To be awarded	Surajmaninagar (TSECL) – Surajmaninagar (TBCB)	2	State to update	NERSS-V
					Not identified	2	State to update	
4	P. K. Bari	400/132kV, 2x315MVA	132	4 - To be awarded	P. K. Bari (TSECL) – P. K. Bari (TBCB)	2	State to update	NERSS-V
					Not identified	2	State to update	
5	New Mariani	400/220kV, 2x500MVA	220	4 (AEGCL scope)	New Mariani – Mariani	2	State to update	NERSS-VI
					New Mariani - Samaguri	2	State to update	
6	New Kohima	400/220kV, 2x500MVA	220	4 - To be awarded	New Kohima (TBCB) – New Kohima (Nagaland)	2	State to update	NERSS-VI

					Not identified	2	State to update	
7	Rangia	400/220kV, 2x500MVA	220	4 - To be awarded	Rangia (TBCB) – Rangia (Assam)	2	State to update	Trans. Sys. for Phase-1 IPPs in Arunachal Pradesh
					Rangia (TBCB) - Amingaon (AEGCL)	2	State to update	

- 15.2 DGM, AEGCL said that at present they have no plan for utilisation of the remaining two 220 kV bays in Bongaigaon. Meghalaya is drawing power from Agia 220 kV s/s of AEGCL and may be requested to utilise the same.
- 15.3 CE, CEA said that four no. 220 kV bays at Bongaigaon have already been awarded and Meghalaya cannot construct Agia-Bongaigaon 220 kV D/C line as Meghalaya is not an ISTS license.
- 15.4 Members discussed and agreed that issue of utilisation of remaining two 220 kV bays at Bongaigaon can be discussed separately with Assam.
- 15.5 In this regard a special meeting was convened by Chief Engineer, CEA on 04-11-2016 at CEA, wherein DGM, AEGCL informed that they are planning construction of Agamoni S/s about 60km from Bongaigaon (POWERGRID) S/s. It was suggested that Assam may utilize 2 no. 220kV line bays at Bongaigaon for construction of Bongaigaon-Agamoni 220kV D/c line. However, DGM, AEGCL informed that the proposed line would pass through Bodoland area where, it is difficult to construct transmission line due to various issues.
- 15.6 Accordingly, in the special meeting, it was decided that POWERGRID would explore the possibility of dropping construction of 2 no. 220kV line bays at their Bongaigaon sub-station
- 15.7 Director CEA stated that for the Surajmaninagar 400/132 kV substation two no. 132 kV bays has been identified for Surajmaninagar (TSECL)- Surajmaninagar (TBCB) 132 kV D/C line. Similarly two no. 132 kV bays has been identified for P.K. Bari 400/132 kV substation for P.K. Bari (TSECL)- P.K. Bari (TBCB) 132 kV D/C line. He requested TSECL to indicate usage of other 2 no. 132 kV bays at Surajmaninagar and P.K. Bari. Director, TSECL said that Tripura intends to utilise remaining two 132 kV bays for supplying power to industries via direct connection with ISTS.
- 15.8 CE, CEA said that TSECL can make a substation and then take supply from ISTS for supplying power to Industries. He also pointed out that TSECL cannot connect industrial load directly to ISTS.
- 15.9 GM, POWERGRID said that if the bays are lying vacant then according to the new regulation of CERC (IEGC) (Fourth Amendment) Regulations, 2016, dated 6/4/16 under 5.4 Proviso (iii), TSECL will bear the charges. TSECL have to indicate the time frame for the usage of the bays if they are going to use them.

- 15.10 Director, TSECL said that they have already intimated usage of two no. 132 kV bays at Surajmaninagar and P. K. Bari. At present, they have no plan for utilisation of remaining two no. 132 kV bays at Surajmaninagar and P. K. Bari.
- 15.11 GM, POWERGRID said that if the bays are not to be used by Tripura then the scope of NERSS-V through TBCB need to be modified.
- 15.12 Director, CEA said that scope of NERSS-V can be modified accordingly to drop the remaining 2 nos. 132 kV line bays at both Surajmaninagar and P.K. Bari and space for 2 no. additional 132 kV line bays at both Surajmaninagar and P.K. Bari substations can be increased by 2 number for future usage of TSECL.
- 15.13 Members agreed for the same.
- 15.14 Director, CEA said that in the previous meeting of SCPSPNER, following 220 kV connectivity was agreed from New Mariani 400/220 kV S/S:
- (i) New Mariani (PG) – Mariani (AEGCL) 220 kV D/C line with high capacity conductor by AEGCL.
 - (ii) Termination of 220 kV Samaguri - Mariani 2xS/C lines from Mariani to New Mariani by AEGCL.
- 15.15 He requested POWERGRID and AEGCL to provide updated status of 400/220 kV New Mariani S/S and its 220 kV connectivity.
- 15.16 GM, POWERGRID said that the time frame of the New Mariani substation is Dec, 2019 and the scope of work does not include 4 no. 220 kV bays for 220 kV connectivity with Samaguri and Mariani sub-stations of AEGCL. From the minutes of the previous SCPSPNER, it is not clear whether the 220 kV bays are in the scope of POWERGRID or AEGCL. Accordingly, it was decided that the matter shall be discussed in separate meeting between CEA, CTU and Assam.
- 15.17 A meeting was convened by Chief Engineer, CEA on 04-11-2016 in CEA, wherein, DGM, AEGCL requested for revising the 220 kV connectivity of New Mariani (AEGCL). He proposed following revised 220 kV connectivity of Mariani (AEGCL).
- a. Kathalguri-Mariani (AEGCL) 400 kV S/C (op. at 220 kV) – existing
 - b. New Mariani (PG)-Mariani (AEGCL) 220 kV D/C line with twin moose conductor – by AEGCL
 - c. Termination of one of the 220 kV Samaguri - Mariani (AEGCL) 2xS/C lines from Mariani (AEGCL) to New Mariani (PG) thus forming Samaguri-New Mariani (PG) 220 kV S/C line and Samaguri-Mariani (AEGCL) 220 kV S/C line - by AEGCL
- 15.18 In the special meeting Director, CEA stated one no. 220kV bay would be released with 400kV operation of New Mariani (POWERGRID)-Misa 400kV line, which could be utilised for termination of one of the 220kV Samaguri - Mariani (AEGCL) 2xS/c lines from Mariani (AEGCL) to New Mariani (POWERGRID) as proposed by AEGCL. Thus, there would be requirement of only 2 no. additional 220kV line bays at New Mariani (POWERGRID) for the

New Mariani (POWERGRID) - Mariani (AEGCL) 220kV D/c high capacity conductor line.

- 15.19 Accordingly, it was decided to include 2 no. new 220kV line bays at New Mariani (POWERGRID) 400/220kV S/S to be implemented by POWERGRID as part of NERSS-VI. The revised scope of work for POWERGRID portion under NERSS-VI is given at 18.6.
- 15.20 Regarding New Kohima, Department of Power, Government of Nagaland intimated that at present they have no plan for utilisation of remaining two number 220 kV bays.
- 15.21 GM, POWERGRID said that the scope of NERSS-VI (TBCB) has to be modified accordingly.
- 15.22 Minutes of the meeting held in CEA on above subject on 4.11.2016 is given at Annexure-III.
- 15.23 Members agreed to delete the 2 no. 220 kV bays at New Kohima 400/220 kV S/S and space for future 220 kV bays to be increased by 2 number at New Kohima.
- 15.24 Regarding Rangia / Rowta 400/220 kV S/s, as discussed above, members agreed to increase the number of 220 kV line bays from four to six.

16.0 Mismatch of network at the time of Date of Commercial Operation (DOCO)

- 16.1 GM, POWERGRID stated that CERC vide some of its recent orders has strongly commented against assets mismatch noticed at the time of declaration of DOCO & has advised the following:

"In case of cost plus, the mismatch between Generation / Downstream network / Upstream network, Transmission licensee will not burden the consumers and the charges would be compensated through the IA between the parties".

- 16.2 He said that CERC vide its orders has not included such assets in PoC and in cases of declaration of DOCO, it has been directed to recover transmission charges from concerned Generator / STU / Discoms. He added that following has been mentioned in the CERC (IEGC) (Fourth Amendment) Regulations, 2016, dated 6/4/16 under 5.4. Proviso (iii):

"Where the transmission system executed by a transmission licensee is required to be connected to the transmission system executed by any other transmission licensee and both transmission systems are executed in a manner other than through tariff based competitive bidding, the transmission licensee shall endeavour to match the commissioning of its transmission system with the transmission system of the other licensee as far as practicable and shall ensure the same through an appropriate Implementation Agreement."

- 16.3 In view of the above, he requested STUs to ensure utilisation of 220 / 132 kV bays and sign implementation agreement for the same. If terminal bays lie / remain vacant then DIC will have to bear the charges for the same.

16.4 Members note the same.

17.0 Construction of 2nd 220kV bay at Balipara (PG) 400/220/132kV S/s by AEGCL for Balipara – Samaguri 220kV D/c line

17.1 Director, CEA stated that AEGCL (Assam) had planned construction of a substation at Tezpur along with Samaguri – Tezpur 220kV D/c line and POWERGRID was to construct Balipara (POWERGRID) – Tezpur 220kV D/c line. The two transmission lines were constructed, however, Tezpur S/s could not be constructed by AEGCL. Thus, the two lines were joined to form Balipara – Samaguri 220kV link. Further, both circuits of Balipara – Samaguri 220kV D/c line are bunched and connected to one 220kV line bay at Balipara end. The Balipara – Samaguri 220kV D/c line is being LILLOed at under-construction Sonabil S/s (AEGCL) by AEGCL. In this regard, a meeting was held on 09-10-2015 in CEA, New Delhi for construction of 2nd 220kV line bay at Balipara end for termination of Balipara – Sonabil – Samaguri 220kV D/c line into separate bays.

17.2 He added that the following decisions were taken in the above meeting:

- (i) AEGCL shall construct a 220kV bay at Balipara (POWERGRID) S/s for termination of one ckt of Balipara – Sonabil/Samaguri 220kV D/c line at its own cost. The bay would be constructed as per the standards and practices followed by POWERGRID.
- (ii) POWERGRID will carry out the O&M of the 220kV bay at Balipara on behalf of AEGCL. AEGCL will enter into necessary agreements with POWERGRID for the same.

17.3 DGM, AEGCL said that POWERGRID is providing consultancy services for construction of 220 kV bay at Balipara. He added that except control panel, all equipment is already procured. The project will be completed within six months.

17.4 Members noted the same.

18.0 POWERGRID works associated with North-Eastern Region Strengthening Scheme-VI (NERSS-VI)

18.1 Director, CEA stated that in the last Standing Committee Meeting of NER held on 8th Aug 2015, following transmission elements have been decided to be implemented under NERSS-VI scheme:

NERSS-VI – (to be implemented TBCB):

- (i) Establishment of 2x500 MVA 400/220kV S/s at New Kohima along with 4 no. 400kV line bays, 2x125 MVAR bus reactor and 4 no. 220kV line bays
- (ii) Imphal – New Kohima 400kV D/C line
- (iii) New Kohima – New Mariani 400kV D/c line

NERSS-VI – Being implemented by POWERGRID through RTM:

- (i) 420kV, 1x125 MVAR bus reactor (2nd) at Imphal (PG)
- (ii) Up-gradation of New Mariani substation to 400/220kV with 2x500MVA transformer along with associated bays

- (iii) 2 no. 400kV line bays at New Mariani for termination of Misa-New Mariani 400kV D/c at 400kV (existing line operated at 220kV)
- (iv) Termination of Misa-New Mariani section of existing LILO of Kathalguri-Misa 400 kV D/C line (circuit-1) (op. at 220 kV) at New Mariani from 220 kV to 400 kV
- (v) Disconnection of Kathalguri - Mariani (AEGCL) - Misa line from Mariani (AEGCL) S/s and LILO of the same at New Mariani (POWERGRID) with Misa-New Mariani section connected at 400kV and Kathalguri – New Mariani section connected at 220kV at New Mariani
- (vi) 2 no. 400 kV line bays (GIS) at Misa for termination of New Mariani – Misa 400kV D/c line at 400kV (existing line operated at 220kV)
- (vii) *Operation of New Mariani – Misa 400kV D/c line (presently charged at 220kV) at 400kV along with termination at Misa at 400kV
- (viii) Operation of New Mariani – Kathalguri 400kV D/c line (presently charged at 220kV) at 220kV
- (ix) # 2 no. 125MVAR 420kV Bus Reactors at New Mariani
- (x) 2 no. 400kV line bays at Imphal (PG) S/s for termination of Imphal – New Kohima 400kV D/c line (line under TBCB)
- (xi) 2 no. 400 kV line bays at New Mariani S/S for termination of New Kohima-New Mariani 400 kV D/C line (line under TBCB)

Note:

Provision of bus reactors at New Mariani 400/220 kV substation was inadvertently missed while planning the subject scheme. Accordingly, in order to control the voltage profile, it is proposed to install 2 nos. 125 MVAR, 420kV bus reactors at New Mariani 400/220 kV sub-station.

* 2 nos. 420kV, 50MVAR fixed line reactors installed at Misa end of the line are also required to be charged at rated voltage level of 400kV.

- 18.2 He said that NERSS-VI scheme is being implemented through TBCB. RfP of the project has been issued on 02nd Aug 2016. Considering about 3 to 4 months of processing time from RfP to transfer of SPV, the time schedule for implementation of scheme under TBCB works out to be April/May 2020 (3-4 months + CERC time-line of 40 months for 400kV D/c Twin Moose line in Hilly Terrain).
- 18.3 He added that POWERGRID's scope of works at sl. no. (ii) to (ix) involves upgradation of New Mariani substation of POWERGRID and operation of New Mariani – Misa 400kV D/c line section at its rated voltage. This will form first 400kV substation in Upper Assam area and increase power drawl capacity of Assam (through New Mariani – Mariani 220kV D/c twin moose line and New Mariani – Khumtai / Samaguri 220kV D/c line). The works mentioned at sl. no. (ii) to (viii) above under POWERGRID scope can be implemented early, independent of the works covered under TBCB for NERSS-VI scheme.
- 18.4 GM, POWERGRID said that the scope mentioned at the sl. no. (ii) to (ix) could be completed by 2018-19. Accordingly, AEGCL has to implement 220 kV

downlinking system from New Mariani 400/220 kV sub-station in the matching time frame. Also, AEGCL has to indicate the utilisation of 2 no. 220 kV bays at Misa, which will become vacant after 400 kV operation of New Mariani – Misa 400 kV D/c line.

- 18.5 AEGCL informed that 2 no. 220kV line bays vacated at Misa (POWERGRID) S/s after 400kV operation of Misa – New Mariani line is proposed to be utilised for Misa – Sankardeb Nagar 220kV D/c line.
- 18.6 In view of revised connectivity proposed by AEGCL at Mariani (AEGCL) & New Mariani (POWERGRID) substations, requirement of 220kV line bays at New Mariani as mentioned at Item 15 above and reactive compensation at New Mariani, members approved the revised scope of works being implemented by POWERGRID portion under NERSS-VI as mentioned below:

NERSS-VI (being implemented by POWERGRID through RTM):

- (i) 420kV, 1x125 MVAR bus reactor (2nd) at Imphal (PG)
- (ii) Up-gradation of New Mariani substation to 400/220kV with 2x500MVA transformer along with associated bays
- (iii) Disconnection of Mariani (AEGCL) – Misa 400kV line (presently operated at 220kV) from Mariani (AEGCL) and termination of the same at New Mariani (POWERGRID) and operation of the resultant Mariani (POWERGRID) – Misa line (ckt-1) at 400kV
- (iv) Operation of existing Misa – New Mariani (POWERGRID) 400kV (presently operated at 220kV) line (ckt-2) at rated voltage level of 440kV
- (v) 2 no. 400kV line bays at New Mariani for termination of Misa - New Mariani 400kV D/c line [formed after (iii) and (iv)]
- (vi) 2 no. 400 kV line bays (GIS) at Misa for termination of New Mariani – Misa 400kV D/c line [formed after (iii) and (iv)]
- (vii) 420kV, 2x125MVAR bus reactors at New Mariani
- (viii) 2 no. 220kV line bays at New Mariani for termination of New Mariani – Mariani (AEGCL) 220kV D/c twin moose line (line under AEGCL scope)
- (ix) 2 no. 400kV line bays at Imphal (PG) S/s for termination of Imphal – New Kohima 400kV D/c line (line under TBCB)
- (x) 2 no. 400 kV line bays at New Mariani S/S for termination of New Kohima- New Mariani 400 kV D/C line (line under TBCB)

Note:

- (a) * 2 no. 420kV, 50MVAR fixed line reactors installed at Misa end of the Misa – New Mariani line are required to be charged at rated voltage level of 400kV in view of 400kV operation of the Misa – New Mariani D/c line.
- (b) With 400kV operation of Misa – New Mariani D/c line, 2 no. 220kV line bays vacated at Misa shall be utilised by AEGCL for Misa – Sankardeb Nagar 220kV D/c line (line under AEGCL scope)

(c) With 400kV operation of Misa – New Mariani (ckt-2) at 400kV, the 220kV bay vacated at New Mariani shall be utilised by AEGCL for termination of one of the 220kV Samaguri - Mariani (AEGCL) 2xS/C lines from Mariani (AEGCL) to New Mariani (POWERGRID) thus forming Samaguri-New Mariani (POWERGRID) and Samaguri-Mariani (AEGCL) 220kV S/C lines

18.7 Further, members agreed to the early commissioning of scope of works mentioned at sl. no. (ii) to (vii) under section 18.6 by POWERGRID.

18.8 The diagram of the above arrangement is given below:



19.0 Utilization of 132/33kV, 10MVA ICT released from Nirjuli substation as regional spare

19.1 Director, CEA stated that POWERGRID has replaced existing 132/33kV 2x10MVA ICT by 132/33kV 2x50MVA ICT at Nirjuli substation as part of NERSS-II (Part-A) scheme. In the 122nd OCC meeting on the 9th June, 2016 at Guwahati, it was decided that one no. 132/33kV 10MVA ICT at Nirjuli S/s which has become spare after replacement by 132/33kV 50MVA ICT may be kept at Nirjuli substation. In the 123rd OCC meeting held on 12th July 2016 at Guwahati, Tripura has requested for the use of 132/33kV 10MVA spare ICT kept at Nirjuli at Gournagar. TSECL vide its letter date 20-07-2016 has requested CEA for in-principle approval for shifting of the 10MVA transformer from Nirjuli to Gournagaar S/S in view of increased load anticipated during Durga Puja festival. CEA has given in-principle approval for shifting of the transformer from Nirjuli to Gournagar by TSECL in coordination with POWERGRID and cost of towards transportation etc. will be borne by TSECL.

19.2 GM, POWERGRID informed that the transformer was not transported as Mizoram has also requested for it.

19.3 Chief Engineer, CEA stated that CEA has given in-principle approval looking at the urgency of the matter. The 132/33kV 10MVA spare ICT kept at Nirjuli was
Minutes of 6th SCM of NER at Imphal on 03-10-2016

allowed to be given to Tripura based on the emergency owing to Durga Puja. But, the transformer was not transported to Tripura. As the Durga Puja season is almost over, Tripura may not be requiring the spare transformer.

- 19.4 NERPC informed that they have prepared the guidelines / modalities for usage of spare transformer by the constituents, which would be finalised in ensuing NERPC meeting.
- 19.5 Tripura informed that now they don't need the spare ICT at Nirjuli as the Durga Puja session is over.
- 19.6 After further discussion, it was decided that usage of spare transformer would be as per the guidelines / modalities to be approved by NERPC.

20.0 Loop-in and loop-out on the existing Silchar - Imphal(PG) 400kV D/c line (charged at 132kV) at 400/132kV substation at Thoubal for supplying power to 132kV bus - Agenda by MSPCL

- 20.1 Director, CEA stated that MSPCL vide their letter no.14/6(SCM)/GM(PD)2016-MSPCL/2451-52 has informed that in order to manage the estimated peak demand of 400-500MW in next 4-5 years in Manipur, MSPCL has taken up the construction of 4x105MVA, 400/132kV substation with single phase transformer including one spare at Thoubal along with the construction of 400kV D/c line from Imphal (PG) to Thoubal via Nambol. The works are in advance stage of construction with target completion in October 2016 along with arrangement for power evacuation to different existing 132kV substations from the 132kV Bus at 400/132kV Thoubal substation. With the objective of flexibility and reliability in the management of intrastate power supply system, MSPCL intends to energize 400kV Substation at Thoubal. However, the upgradation of 2x50MVA, 132/33kV Substation at Imphal (PG) to 7X105MVA, 400/132kV along with construction of 400kV bays at Silchar substation (GIS) is expected by May 2018.
- 20.2 He added that in order to energize the Thoubal S/S at 132 kV, MSPCL has proposed to connect their Imphal (PG)-Thoubal 400 kV D/C line by LILO of one circuit of existing Silchar-Imphal (PG) 400kV D/c line (charged at 132 kV) till the commissioning of 400kV Substation at Imphal (PG). This LILO point is in Konthoujam village at the existing tower location No. 372/0 of Silchar – Imphal (PG) D/C line.

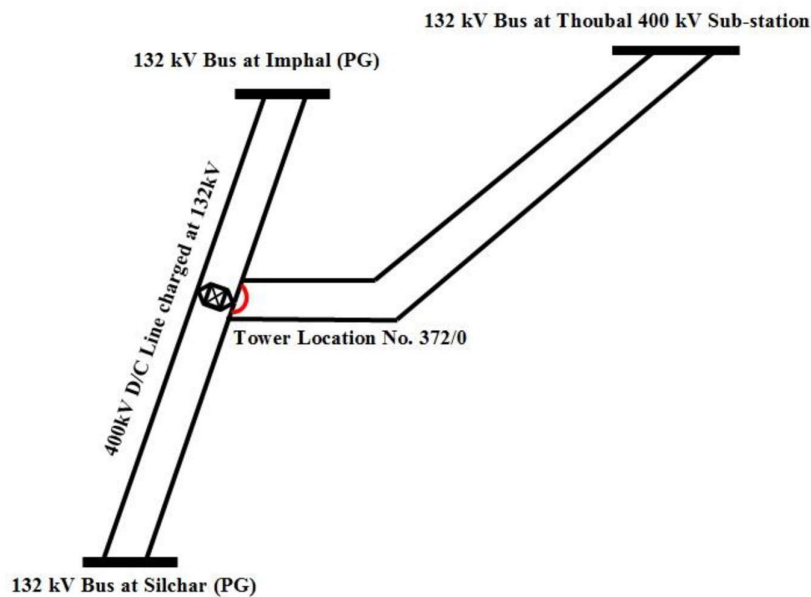


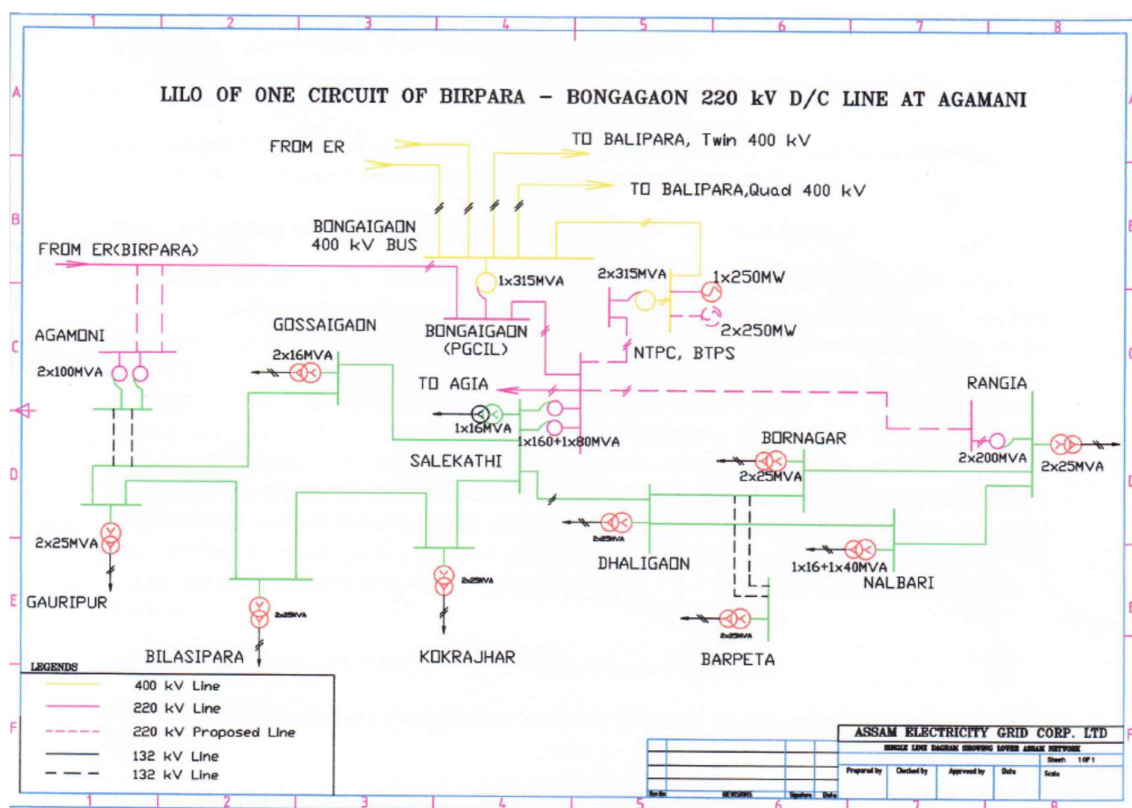
Figure: 400kV Transmission Line

- 20.3 MD, MSPCL said that the LILo arrangement can be charged at 132kV and 400/132 kV transformer can be back charged, if required. The charging of Thoubal S/S at 132kV will also help in meeting the loads of Thoubal and Kongba in Manipur. MSPCL informed that LILo of Kakching – Kongba 132kV S/c line at Thoubal is being constructed by MSPCL. Further, under NERPSIP scheme stringing of 2nd circuit of Kakching – Kongba 132kV S/c on D/c line along with LILo of the 2nd circuit at Thoubal is being implemented.
- 20.4 AGM, NLDC suggested that this LILo arrangement may be made as permanent arrangement i.e., LILo of Silchar-Imphal (PG) 400kV D/c line at Thoubal, instead of Imphal-Thoubal 400 kV D/C line. This would save 2 no. 400 kV line bays at Imphal (PG).
- 20.5 MD, MSPCL said that the provision suggested can be discussed separately.
- 20.6 After further discussion, members agreed to LILo of one circuit of existing Silchar – Imphal (PG) 400kV D/c line (presently charged at 132kV) at 400/132kV substation at Thoubal S/s by MSPCL as an interim arrangement till commissioning of 400kV level at Imphal and 400kV operation of Silchar – Imphal line. MSPCL was further directed to ensure commissioning of either 132kV drawl lines from Thoubal or 132/33kV ICTs at Thoubal in matching time-frame of interim arrangement so as to provide anchoring to Thoubal S/s.

21.0 LILo of one circuit of Birpara – Bongaigaon 220 kV D/c line at Agamoni – Agenda by AEGCL

- 21.1 Director, CEA stated that AEGCL vide letter no. AEGCL/MD/13th Plan/Tech-593/2014-15/6 dated 5th Aug., 2016 has informed that at present, AEGCL has only two numbers of 220/132kV substations in the North Bank of Lower Assam Districts, one is Salekathi 220/132/33 kV and other is 220/132 kV substation at Rangia. The Salekathi S/S is drawing power at 220 kV from 400/220 kV Bongaigaon (PGCIL) S/S and NTPC's BTPS generating stations through the

Bongaigaon S/s of PGCIL. Under NERPSIP, tranche-1, there will be one more 220/132 kV substation at Amingaon (North Bank of Guwahati City) and will be connected radially to Rangia. The Salekathi substation is catering load of 132 kV to 7 (seven) numbers of 132kV substations i.e. Kokrajhar, Bilasipara, Gauripur, Gossaigaon, Dhaligaon, APM (Jogighopa) and Bornagar, as such, for any outage in 220 kV or 132 kV Salekathi bus, the area fed by the above 132/33kV substations will be out of power. To address the above problem, AEGCL has proposed Agamoni 220/132/33kV, 2x100MVA sub-station, which is in Dhubri district, in the 13th Plan. Its 220 kV connectivity is proposed through LILO of one circuit of Birpara / Alipurduar (ER) - Bongaigaon (NER) 220kV D/c line at Agamoni. For evacuation of power at 132kV level, LILO of existing Gossaigaon – Gauripur 132kV S/c line at Agamoni has been planned. The LILO would be done by AEGCL. As the Birpara / Alipurduar (ER) - Bongaigaon (NER) 220kV D/c is an ISTS line, approval of SCPSPNER is required for the LILO. The schematic of the scheme is given below:



- 21.2 Chief Engineer, CEA said that this will be a LILO of an ISTS line, how it will be taken care in the PoC mechanism as it will be shared with state.
- 21.3 GM, POWERGRID said that Bongaigaon(PG) is about 60 km from Agamoni and suggested that AEGCL should construct 220 kV D/C line from Bongaigaon to Agamoni. In this way 2 no. 220 kV bays at Bongaigaon would also be utilized.
- 21.4 DGM, AEGCL stated that they are already drawing power from Bongaigaon through Bongaigaon-Salekathi 220 kV D/C line. The LILO arrangement would connect them to two different sources of power.

- 21.5 After discussion, it was decided that the issue would be resolved in a separate meeting between CEA, CTU, NERPC and AEGCL. The decision of the meeting would be reflected in the minutes of the SCPSPNER meeting.
- 21.6 In this regard a meeting was convened in the office of Chief Engineer, CEA on 04.11.2016. In the meeting DGM, AEGCL informed that it would be difficult to construct the Bongaigaon-Agamoni 220 kV D/C line as the line would be traversing through Bodoland area. Accordingly, POWERGRID was suggested to explore the possibility of dropping construction of 2 no. 220 kV bays at their Bongaigaon sub-station.
- 21.7 In order to improve the reliability of power supply in the North Bank of Guwahati City, the establishment of 220/132 S/S at Agamoni by LILO of one circuit of it Birpara / Alipurduar (ER) - Bongaigaon (NER) 220kV D/c ISTS line was agreed. The Agamoni S/S and the LILO would be implemented by AEGCL. Minutes of the above meeting are enclosed at Annexure-III.

22.0 Transmission system for integration of Solar power projects in Arunachal Pradesh and Nagaland

- 22.1 Director, CEA stated that a meeting was held in CEA on Jan, 2016 to discuss issues for integration of 100MW solar park at Tezu, Arunachal Pradesh and three solar power parks of total 60MW capacity in Nagaland and to plan transmission system for evacuation of their power into the grid. In Nagaland, three solar power parks of total 60MW capacity are envisaged at Jalukie, Distt. Peren (30MW), Ganesh Nagar, Distt. Dimapur (20MW) & Zhadima, Distt. Kohima (10MW) in Nagaland in next 2-5 years' time frame. In the meeting, Director (DNRE) has informed that location of New Peren solar park is shifted to Jalukie town and Ganesh Nagar is envisaged to be an industrial growth center & SEZ in near future.
- 22.2 Director, CEA said that in the meeting following transmission system for was proposed for the three solar parks in Nagaland.

Jaluki solar park (30MW):

- (i) Jalukie solar park – Jalukie 2xD/c 33kV interconnection
- (ii) Charging of Peren – Jaluki – Dimapur line at 132kV level. (This line has been agreed as a part of comprehensive scheme for strengthening of Transmission and Distribution system in Nagaland, to be implemented under Tranche II or III of NERPSIP scheme, to be charged at 33kV level)

Ganeshnagar (Dimapur) solar park (20MW):

- (i) Ganesh Nagar solar park – Ganesh Nagar D/c 33 kV interconnection

Zhadima solar park (10MW):

- (i) LILO of 33kV Kohima- Zhadima line at Zhadima solar park at 33kV.

- 22.3 Director, CEA also said that for Solar Park in Arunachal Pradesh, 100 MW of Solar Power Project at Tezu, Arunachal Pradesh, is planned to be implemented by Arunachal Pradesh Energy Development Agency (APEDA). As no one is representing Arunachal Pradesh in the meeting, transmission system for

evacuation of power from the Solar Park in Arunachal Pradesh can be taken up later date.

- 22.4 Chief Engineer, CEA asked Nagaland about the status of the solar parks.
- 22.5 Nagaland responded that they are not aware of the time frame and the investment interest from the companies implementing the Solar Parks. Ganeshnagar is an industrial area, so the 14-15 MW power generation from Ganeshnagar (Dimapur) solar park can be easily consumed locally. Power from Zhadima solar park (10MW) can also be easily utilized locally. Prima facie, the transmission system for integration of the proposed Solar Parks appears to be in order.
- 22.6 After further discussion, member agreed to the proposed transmission system associated with the three Solar Parks in Nagaland. The transmission system would be implemented by the Department of Power, Government of Nagaland as state transmission system.

23.0 Construction of 220 kV D/C Transmission line from Dimapur to Zhadima

- 23.1 Director, CEA stated that Nagaland is undertaking 220 kV D/C Transmission line from Dimapur to Zhadima with 220/132 kV Substation at Zhadima and the transmission line at LILO point at Dimapur requires crossing of inhabited land and marshy river banks leading to very high cost for erection of transmission line.
- 23.2 He added that DoP, Nagaland reconducted the survey changing the tapping point location to another place located at Kashiram, Dimapur at 220 kV Misa(PG)- Dimapur(PG) line tower location No. 155 or 156. As per the revised survey report the line from the LILO point shall be crossing a little portion of Assam in Nagaland- Assam border behind Rangapahar cantonment Dimapur. The proposed line falling under Assam would be around 5.50 km. DoP, Nagaland has requested PGCIL to implement the said portion of the line on deposit work basis.
- 23.3 Nagaland informed that RoW issues have been resolved with the local people and they are going ahead with the implementation of the line.
- 23.4 Members noted the same.

24.0 LILO of Silchar-Dullavcherra 132 kV S/C line at Hailakandi as temporary measure – agenda by NERPC

- 24.1 Director, CEA stated that for evacuation of power from Palatana project LILO of Panchgram - Dullavcherra 132 kV S/C line at Silchar was agreed in the 3rd SCM of NER until Silchar- Hailakandi 132 kV D/C line is ready. NERPC has informed that in view of delay in implementation of Silchar- Hailakandi 132 kV D/C line, AEGCL has intimated that they have completed their Hailakandi 132 kV sub-station and in order to draw Palatana power from Silchar at Hailakandi, AEGCL has proposed Silchar –Dullavcherra 132 kV S/C line at Hailakandi as a temporary measure.

24.2 He added that in a meeting held at NERPC on 16-09-16, it was decided to allow AEGCL to LILO of Silchar–Dullavcherra 132 kV S/C line at Hailakandi as a temporary measure for drawing Palatana power from Silchar due to the delay in implementation of a portion of Silchar-Hailakandi 132 kV D/C line.

24.3 GM, POWERGRID informed that Silchar- Hailakandi 132 kV D/C line is expected to be completed by Feb, 2017.

24.4 Members noted the temporary arrangement for Hailakandi.

25.0 Signing of Transmission Service Agreement (TSA) by Long Term Transmission Customers (LTTTC) for the transmission scheme North Eastern Region Strengthening Scheme (NERSS) – VI – Agenda by PFCCL

25.1 Director, CEA stated that MoP vide gazetted notification dated November 17, 2015 has appointed PFC Consulting Limited (PFCCL) as Bid Process Coordinator for selection of Bidder as Transmission Service Provider (TSP) to establish transmission NERSS-VI through tariff based competitive bidding process. The scope of works covered under the scheme is given below:

- Establishment of 400/220 kV, 2x500 MVA S/S at New Kohima
- Imphal – New Kohima 400 kV D/C line -120 km
- New Kohima – New Mariani 400kV D/C line -110 km

25.2 He added that PFCCL vide its letter dated August 18, 2016 has requested to the following 7 nos. Long Term Transmission Customers (LTTTC) for signing of the Transmission Service Agreement (TSA).

- (i) Department of Power, Arunachal Pradesh
- (ii) Assam Electricity Grid Corporation Limited
- (iii) Manipur State Power Distribution Company Limited
- (iv) Meghalaya Energy Corporation Limited
- (v) Department of Power, Govt. of Nagaland
- (vi) Department of Power & Electricity, Govt. of Mizoram
- (vii) Tripura State Electricity Corporation Limited

25.3 He further said that at present, only 2 LLTCs namely Manipur State Power Distribution Company Limited and Department of Power, Government of Nagaland have telephonically agreed to sign the TSA.

25.4 Chief Engineer, CEA stated that according to the tariff policy in vogue, all ISTS has to be built under TBCB. Recently, CERC has given direction to BPC that TSA should be signed at the RfP stage itself. Therefore, in order to avoid delay in award of the scheme, it is requested that all the LTTTC should sign the TSA at the earliest. The members agreed to expedite signing of TSA.

26.0 Modification in scheme for additional ± 800 kV HVDC Corridor in the chicken neck area under North East – Northern/Western Interconnector Project

26.1 POWERGRID informed that three additional corridors in the Chicken Neck area has been constructed along with Biswanath Chariali – Agra HVDC line, keeping in view the future requirements. The chicken neck area is extremely theft prone

and the line cannot be kept without anti-theft charging. Accordingly, it was planned to string conductor on the additional corridors to keep them charged and avoid theft. However, during the course of execution of HVDC transmission line in chicken neck area, it has been observed that anti-theft charging of additional corridors through 132kV line is quite difficult. Further, the additional corridors are crossing the existing 400kV lines in the area. Also, regulation 44 (6) of CEA (Measures relating to Safety and Electrical Supply) Regulations, 2010 states that "There shall not be tapping of another transmission line from the main line for 66kV and above class of line". Foundation and tower erection has been completed in all three additional routes in the chicken neck area and the purpose of occupying corridor has been achieved.

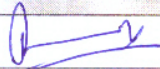


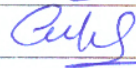





- 26.2 Accordingly, POWERGRID proposed to modify the scope of original scheme by deleting stringing and anti-theft charging of additional corridors. However, to avoid theft of tower members from erected towers in the three corridors in the chicken neck area, POWERGRID has proposed to carry out Tack Welding up to Cross Arm Level.
- 26.3 On a query about the status of HVDC bipolar line, GM, POWERGRID informed that HVDC line and along with converter terminals at Biswanath Chariali and Agra have already been commissioned and the line has been tested for bidirectional flow to the tune of 1000MW. In the absence of envisaged generation in NER, presently about 150-200 MW power is flowing from Biswanath Chariali to Agra.
- 26.4 After further discussion, members agreed to POWERGRID proposal of deleting stringing and anti-theft charging of other three corridors in the chicken neck area and agreed for only Tack Welding up to Cross Arm Level on the towers erected in three additional corridors in the chicken neck area to avoid theft of tower members.

The meeting ended with the thanks to Chair.

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LIST OF DELEGATES FOR 6TH SCM MEETING

SL No	NAME OF THE ORGANISATION	NAME OF THE DELEGATE	SIGNATURE
1	NERLDR	T S Singh	
2	POSOCO, NLDC	S. R. Narasimhan	
3	POSOCO, NERLOC	A. Mallik	
4	NERPC	L.B. MURTHY	
5	MSPCL	NG. SARAT SINGH	
6	MSPCL	M. Jaganmouli Singh	
7	P&E Deptt, Mizoram	F. Rualgakhuma	
8	P&E, Deptt Mizoram	VANLALREMA	
9	-do-	DAVID RAMVUNSANGA	
10	-do-	ZORANDINA	
11	Dep Nagaland	Rokozhahie Arzani	
12	-do-	Et. Shikato Sema	
13	POWERGRID	Ashok Pal	
14	-do-	Ramchandra	
15	-do-	Manish Ranjan Keshari	
16	"	Ajoy Patil	
17	"	P. Kanungo	
18	CEA	Sanjay Anand Kumar	
19	AEGCL	Utsav nande Bera	
20	"	Karuna Saran	
21	NTPC	UTPAL CHAKRABARTI	
22	NTPC	A.K. Bhattacharjee	
23	NTPC	P. R. Jena	
24	NEEPCO	B. Bhattacharjee	
25	NEEPCO	A. K. DAS	
26	NERLDC, POSOCO	V. KAIKHOCHAN	
27	PFC	SANJAY NAYAK	
28	PFC	H. K. DAS	
29	MSPCL	L. PRIYOKUMAR	
30	MePTCL	H. P. Shroffhony	
31	NERLDC	R. Subradhan	
32	MePTCL	F. E. KHARSHING	

SL No	NAME OF THE ORGANISATION	NAME OF THE DELEGATE	SIGNATURE
33	BEL Bhandra AEGCL	B. C. Bhandra CGM	
34	Uttarakhand	R. Syam	
35	M.K. Choudhary TSECL	P. K. Choudhury, Zing (Tech)	
36	Ramesh Gupta, CEA		
37	Pandey Indul, CE (CEA)		
38	S. D. Debroy (PS), CEA		
39	P. K. Mishra MS, NEPC		
40	N. SARAT BANERJEE	MD MSPCL	
41	L. PATELVAU.	Zinc PEDMiz	
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ASSAM ELECTRICITY GRID CORPORATION LIMITED

Annexure-2

OFFICE OF THE MANAGING DIRECTOR

Regd. Off.: BIJULEE BHAWAN (FIRST FLOOR) PALTANBAZAR; GUWAHATI - 781001

CIN: U40101AS2003SGC007238

PHONE: 0361-2739520 FAX NO.0361-2739513

Web: www.aegcl.co.in Email: managing.director@aegcl.co.in

No. AEGCL/MD/13th Plan/ Tech-593/2014-15/9

dated 30/11/2016

To,
The Director,
Central Electricity Authority, PS & PA-II
3rd Floor, Sewa Bhawan, R.K. Puram
New Delhi-110066

Kind Attn: Mr. Ravinder Gupta, Chief Engineer

Sub: LILO of one ckt of Biswanath Chariali (Power Grid) - Itanagar 132 kV D/C Line at Gohpur Substation.

Ref:

- i) AEGCL/MD/13th Plan/ Tech-593/2014-15/7 dated 05/08/2016
- ii) RECTPCL/NER II B & V/RFP/2016-17 dated 03/11/2016
- ii) Agenda for 6th Standing Committee Meeting on Power System planning of North Eastern Region.

Sir,

With reference to the above subject, AEGCL proposed for LILO of one ckt of Biswanath Chariali (Power Grid) - Itanagar 132 kV D/C Line at Gohpur Substation to improve the security and reliability of the Grid and the same has been included in the NER System Strengthening Scheme-II (Part-B) and V.

However, in the Standing Committee Meeting, It was proposed to upgrade the switching system of Gohpur Substation from Single Main to Double Main. But in AIS System, Space is not available to accommodate Double main. As such AEGCL proposes to Switch over from AIS to GIS.

It may be noted that (vide letter No. under reference (ii)), the proposed bays will be under the Scope of AEGCL and as we are proposing for switchover from AIS to GIS, so these two may be kept under AEGCL Scope.

This is for favour of your kind information and necessary action.

Yours faithfully

(Signature)
30/11/16

Managing Director
AEGCL, Bijulee Bhawan

Memo No. AEGCL/MD/13th Plan/ Tech-593/2014-15/9(a) dated 30/11/2016

Copy To:

1. The Addl. CEO, REC Transmission Projects Company limited, 12-21, Upper Ground floor, Antriksh Bhawan, 22, KG marg, New Delhi-110001 for favour of your kind information and necessary action.
2. The Secretary, NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006 for favour of your kind information and necessary action.

Managing Director
AEGCL, Bijulee Bhawan

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भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केंद्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग-II



[ISO:

9001:2008]

Power System Planning & Appraisal Division-II

सेवा भवन, रा. क.पुरम , नयी दिल्ली -110066

Sewa Bhawan, R. K. Puram, New Delhi-110066

No: CEA/PSPA-II/84/1/2016 / 4 58-58

Dated: 10.11.2016

To

As per the address list.

Subject: Minutes of the meeting regarding issues related to Assam raised in 6th Standing Committee Meeting on Power System Planning of NER.

Sir/Madam,

A meeting was held on 04.11.2016 at 11.00 AM in the Office of Chief Engineer PSPA-II, Room No-310, Sewa Bhawan, R. K. Puram, New Delhi to resolve the issues related to Assam raised in 6th meeting of Standing Committee on Power System Planning of NER. Minutes of the meeting is enclosed at Annexure-I.

Yours faithfully,

Rishika Sharan
21/11/2016
(Rishika Sharan)
Director (PSPA-II)

Address List

1. The Managing Director, Assam Electricity Grid Corporation Limited, Bijulee Bhawan, Paltan Bazar, Guwahati (Assam) – 781001. Fax: 0361 – 2739513 & 0361 – 2739989	2. The Member Secretary, North Eastern Regional Power Committee (NERPC), NERPC Complex, Dong Parmaw Lapalang, Shillong – 793006 (Meghalaya) Fax: 0364 – 2534040/2520030
3. COO(CTU-Plg), Power Grid Corp. of India Ltd. "Saudamini", Plot No.2, Sector-29, Gurgaon 122 001, Haryana. FAX : 95124-2571932	4. CEO, POSOCO, B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016

Minutes of the meeting regarding issues related to Assam raised in 6th Meeting of Standing Committee on Power System Planning of NER.

- 1.0 List of participants is enclosed at Annexure-II.
- 2.0 Chief Engineer PSPA-II welcomed the participants to the meeting.
- 3.0 **LILO of one circuit of Birpara – Bongaigaon 220 kV D/c line at Agamoni and Downstream 220kV or 132kV system development by STUs from Bongaigaon**

- 3.1 DGM(CTU-PIg), PGCIL informed that four no. 220kV line bays have been awarded by PGCIL at 400/220 kV Bongaigaon sub-station of POWERGRID. Two line bays are utilized for 220 kV Bongaigaon-Birpara Line and the remaining two line bays can be utilised by AEGCL for providing direct connectivity to Agamoni from Bongaigaon.
- 3.2 DGM, AEGCL stated that for construction of Bongaigaon-Agamoni 220 kV D/C line, which is about 60km in length, the right of way (RoW) involves Bodoland Territorial Council (BTC) area. It is very difficult to construct line in BTC area. Also, the construction of LILO of one of the circuit of 220kV Birpara-Bongaigaon D/c line is much easier and economically cheaper option. Endorsing, the views of DGM AEGCL, Member Secretary(NERPC) cited the difficulty faced in construction of Bongaigaon-Salekathi 220 kV D/C line.
- 3.3 Chief Engineer, PSPA-II said that Birpara-Bongaigaon 220 kV D/C is an ISTS line, whereas the LILO portion of one circuit would belong to STU and inquired about the sharing of the POC charges of a line, whose one section is ISTS and remaining section belongs to STU. DGM, POWERGRID stated that this is not the first case of an ISTS line being LILO by STU. He cited the example of Silchar-Bongaigaon 400 kV D/C line being LILO at Byrnihat and Azara by STUs.
- 3.4 Regarding the status of 2 no. 220 kV bays at Bongaigaon, DGM, POWERGRID informed that civil works are in progress and they were awaiting for equipment to reach at the site.
- 3.5 Chief Engineer, CEA stated that in view of non-utilisation of these two no. 220 kV bays at Bongaigaon, CERC may not approve the tariff for these 220 kV bays. He requested POWERGRID to explore the possibility of deleting these 2 no. 220 kV bays at Bongaigaon, as it may remain unused.
- 3.6 In view of involvement of BTC area in construction of Bongaigaon-Agamoni 220 kV D/C line, it was agreed to LILO of one circuit of Birpara – Bongaigaon 220 kV D/c line at Agamoni by AEGCL. It was agreed that POWERGRID would explore the deletion of 2 no. 220 kV bays at Bongaigaon from their scope.

4.0 Installation of 132/33kV Transformer at Haflong Sub-Station of POWERGRID

- 4.1 Chief Engineer, CEA stated that at present 132kV S/C line is existing between Haflong (PG) and Haflong (AEGCL) and there is 2x10MVA 132/33kV transformer existing at Haflong (AEGCL) for supplying power to Haflong area. Haflong (PG) is also taking its auxiliary supply from Haflong (AEGCL) through 33kV line, which is about 1.2km in length. AEGCL informed that Haflong is a remote area and it takes about two days for their maintenance staff to reach Haflong to restore supply, in case of any breakdown at 132 kV Haflong bus or 132 kV line. To supply power to Haflong area, in the event of outage at 132 kV Haflong (AEGCL) bus or 132 kV line, AEGCL proposed 10 MVA 132/33 kV transformer at Haflong (PG).

Chief Engineer, CEA informed that in CEA's "Technical Standards for Connectivity to the Grid" Regulations, 2007 Part-III clause (6) (a), it is mentioned that power supply to Sub-Stations Auxiliaries for 66 kV and below 220 kV sub-stations shall be from one HT supply and one diesel generating source. In view of this, 132/33 kV ICT cannot be provided for auxiliary supply, as Haflong (PG) is already getting its auxiliary supply at 33 kV from Haflong (AEGCL).

- 4.2 After discussion, it was agreed that 132/33 kV 10MVA ICT at Haflong (PG) by AEGCL may be provided for giving supply to Haflong area and auxiliary power to Haflong (PG) during contingency only. Operation methodology of 132/33 kV 10 MVA ICT would be finalised mutually between POWERGRID and AEGCL.

5.0 Downstream 220kV or 132kV system development by STUs from New Mariani, Assam.

- 5.1 Chief Engineer, CEA stated that power evacuation from Kathalguri gas based generating station of NEEPCO, interalia, consist of Kathalguri-Misa 400 kV D/C line (charged at 220 kV). One circuit of this line was LILO at Mariani S/s of AEGCL and the other circuit is LILO at New Mariani S/s of POWERGRID. In the previous meeting of SCPSPNER, 400 kV operation of a section of this line from New Mariani (PG) to Misa was agreed. Accordingly, following 220 kV connectivity was agreed from New Mariani (PG).

- (i) New Mariani (PG) – Mariani (AEGCL) 220 kV D/C line with high capacity conductor by AEGCL.
- (ii) Termination of 220 kV Samaguri - Mariani 2xS/C lines via Khumtai from Mariani to New Mariani by AEGCL

- 5.2 DGM, AEGCL informed that in the above configuration, their Mariani S/S is not directly connected with Kathalguri. Now they are proposing revised 220 kV connectivity with New Mariani (PG). In the revised connectivity, Mariani (AEGCL) would be connected as below:

- a. Kathalguri-Mariani (AEGCL) 400 kV S/C (op. at 220 kV) – existing
- b. New Mariani (PG)-Mariani (AEGCL) 220 kV D/C line with high capacity

c. Termination of one of the 220 kV Samaguri - Mariani (AEGCL) 2xS/C lines from Mariani (AEGCL) to New Mariani (PG) thus forming Samaguri-New Mariani (PG) 220 kV S/C line and Samaguri-Mariani (AEGCL) 220 kV S/C line - by AEGCL

5.3 Chief Engineer (PSPA-II), CEA stated that with the revised connectivity as proposed by AEGCL, there would be requirement of 4 no. 220 kV bays at New Mariani (PG). Out of this 2 no. 220 kV bays would be released due to 400 kV operation of New Mariani (PG)-Misa D/c line. Thus, POWERGRID is required to construct 2 no. 220 kV bays at their New Mariani (PG) sub-station.

5.4 After further discussion, revised connectivity of Mariani (AEGCL) was agreed.

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Annexure-II

Sl. No.	Name of the Participant	Designation	Organization
1	P K Mishra	Member Secretary	NERPC
2	Pardeep Jindal	Chief Engineer, (PSPA-II)	CEA
3	Ravinder Gupta	Chief Engineer	CEA
4	Rishika Sharan	Director, (PSPA-II)	CEA *
5	Uma Mahesh Rao	Dy. Director, (PSPA-II)	CEA
6	Suyash Ayush Verma	Asstt. Director-I, (PSPA-II)	CEA
7	Ramachandra	DGM, CTU-Plg	CTU (POWERGRID)
8	Karuna Sarna	DGM	AEGCL

Scope of Works for the scheme
“Interconnection of Northern part of Bangladesh with Indian Grid”

1.0 Indian Side

1.1 Transmission Lines

- (a) Katihar (ER) – Parbotipur (Bangladesh) 765kV D/c line (to be initially operated at 400kV) – Indian Portion only
- (b) LILO of both ckts of New Purnea - Rajarhat 400kV D/c (triple snowbird) line (one ckt via Gokarna and other ckt via Farakka) at Katihar
- (c) Parbotipur (Bangladesh) - Bornagar (NER) 765kV D/c line (to be initially operated at 400kV) – Indian Portion only
- (d) LILO of both circuits of Balipara – Bongaigaon 400kV D/c (quad) line at Bornagar substation
- (e) Disconnection of Alipurduar – Bongaigaon 400kV D/c (quad) line from Bongaigaon and extension of the same to Bornagar with 400kV D/c (quad) line so as to form Alipurduar – Bornagar 400kV D/c (quad) line

1.2 Substation

(a) 400kV new substation at Katihar (Bihar) - upgradable to 765kV later

- **400 kV Line bays: 6 nos.**
 - 2 nos. for Katihar (ER) – Parbotipur (Bangladesh) 765kV D/c line to be initially operated at 400kV
 - 4 nos. for LILO of both ckts of Purnea - Rajarhat 400kV D/c (Triple Snowbird) line at Katihar (one ckt via Gokarna and other ckt via Farakka)
- **Reactive Compensation**
 - 420kV Bus Reactor alongwith associated bays: 2x125 MVAR
 - Shifting of 2 nos. 420kV, 80MVAR switchable Line Reactors at Purnea end of Purnea – Gokarna/Rajarhat 400 kV D/c (Triple) line from Purnea to Katihar end of Katihar - Gokarna/Rajarhat 400 kV D/c (Triple) line [1.1(b)]
- **Space for future 765kV switchyard**
 - 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays
 - 765kV Line bays (including space for sw. line reactor): 8 nos.
 - 765kV, 2x330MVAR (7x110 MVAR) Bus Reactors
- **Space for future 400kV switchyard**
 - 400kV Line bays (including space for sw. line reactor): 6 nos.

- 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays
- 400/200kV, 3x500MVA ICTs along with associated bays
- **Space for future 220kV switchyard**
 - 400/200kV, 3x500MVA ICTs along with associated bays
 - 10 nos. 220 kV line bays

(b) 400kV new substation at Bornagar (Assam) - upgradable to 765kV later

- **400 kV Line bays: 8 nos.**
 - 2 nos. for Parbotipur (Bangladesh) - Bornagar (NER) 765kV D/c line to be initially operated at 400 kV
 - 2 nos. for Siliguri/Alipurduar – Bornagar 400kV D/c (quad) line
[Formed after shifting of Siliguri/Alipurduar – Bongaigaon 400kV D/c (quad) line from Bongaigaon to Bornagar at 1.1(e)]
 - 4 nos. for LILO of both circuits of Balipara - Bongaigaon 400kV D/c (quad) line
- **Reactive Compensation**
 - 420kV Bus Reactor alongwith associated bays: 2x125 MVAR
 - 420kV, 63MVAR switchable line reactor at Bornagar end on each line of Parbotipur (Bangladesh) - Bornagar (NER) 765kV D/c line to be initially operated at 400 kV [1.1(c)]
 - Shifting of 2 nos. 420kV, 80MVAR Line Reactors from Bongaigaon end of Siliguri/Alipurduar – Bongaigaon 400 kV D/c (Quad) line to Bornagar end of Alipurduar – Bornagar 400kV D/c (Quad) line [1.1(e)]
 - Shifting of 2 nos. 420kV, 63MVAR Line Reactors from Bongaigaon end of Balipara – Bongaigaon 400kV D/c (Quad) line to Bornagar end of Bornagar – Balipara 400kV D/c (Quad) line [1.1(d)]
- **Space for future 765kV switchyard**
 - 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays
 - 765kV Line bays (including space for sw. line reactor): 8 nos.
 - 765kV, 2x330MVAR (7x110 MVAR) Bus Reactors
- **Space for 400kV switchyard**
 - 400kV Line bays (including space for sw. line reactor): 6 nos.
 - 765/400kV 3x1500MVA ICTs (10x500MVA Single Phase Units) along with associated bays
 - 400/220kV, 3x500MVA ICTs along with associated bays

- **Space for 220kV switchyard**
 - 400/220kV, 3x500MVA ICTs along with associated bays
 - 10 nos. 220kV line bays

2.0 Bangladesh Side

2.1 Transmission Lines

- (a) Katihar (ER) – Parbotipur (Bangladesh) 765kV D/c line (to be initially operated at 400kV) – Bangladesh Portion only
- (b) Parbotipur (Bangladesh) – Bornagar (NER) 765kV D/c line (to be initially operated at 400kV) – Bangladesh Portion only

2.2 Substation

(a) 400/230kV new substation at Parbotipur - upgradable to 765kV later

- **500MW Back-to-Back HVDC Station**
- **400kV Line bays: 4 nos.**
 - 2 nos. 400kV line bays for Parbotipur (Bangladesh) – Katihar (ER) 765kV D/c line to be initially operated at 400kV
 - 2 nos. 400kV line bays for Parbotipur (Bangladesh) – Bornagar (NER) 765kV D/c line to be initially operated at 400kV
- **Reactive Compensation**
 - 420kV, 2x125 MVAR Bus Reactor alongwith associated bays
 - 420kV, 63 MVAR Switchable Line Reactor at Parbotipur end on each line of Parbotipur (Bangladesh) – Katihar (ER) 765kV D/c line to be initially operated at 400kV [2.1(a)]
 - 420kV, 63 MVAR Switchable line Reactor at Parbotipur end on each line of Parbotipur (Bangladesh) – Bornagar (NER) 765kV D/c line to be initially operated at 400kV [2.1(b)]
- 400/230kV, 2x600MVA (7x200MVA single phase units) ICTs along with associated bays
- **Space for future 765kV switchyard**
 - 765/400kV, 2x1500 MVA ICTs (7x500 MVA Single Phase Units) along with associated bays
 - 765kV Line bays: 8 nos.
 - 765kV, 2x330 MVAR (7x110 MVAR) Bus Reactors
- **Space for future HVDC / 400kV / 220kV switchyard**
 - 500MW HVDC Back-to-Back 2nd block at Parbotipur
 - 765/400kV, 2x1500 MVA ICTs (7x500 MVA Single Phase Units) along with associated bays

- Capacity enhancement of 400/230kV Parbotipur substation by 750MVA (3x250MVA single phase ICTs) alongwith associated bays
- 400kV Line Bays: 4 nos.
- 230kV Line Bays: 8 nos. [including 2 nos. line bays for Parbotipur – Bogra – Kaliakoir 400kV (to be energized at 230kV) D/c line]

3.0 Schematic Diagram

