

Minutes of Meeting of the Standing Committee on Power System Planning of the North Eastern Region held on 25-06-2008 at Guwahati

1.1 Member (PS), CEA welcomed the participants. He stated that there was need for accelerating the development of transmission system in NER so that benefit from the generation projects under construction envisaged for benefit during the 11th Plan could be realized for increasing the supply of electricity in the region. In this context, requirement of transmission system upto 2011-12 was evolved for power evacuation for the generation projects viz. Subansiri Lower (2000MW), Kameng HEP (600MW), Bongaigaon TPS (750MW), Pallatana GBPP (740MW), and Monarchak GBPS (104MW) as well as transmission system for supply to the load centers of the states in the region. Based on this, the programme for implementation of the schemes should be worked out so that required facilities could be created matching with the generation schemes.

1.2 Chief Engineer (CE), CEA stated the inter-state and intra-state transmission system upto 2011-12 were identified as given in the agenda of which included having inter-state transmission in two parts viz. NER system strengthening for XI plan generation projects and Generation linked transmission system for Subansiri Lower (2000MW), Kameng HEP (600MW), Bongaigaon TPS (750MW), Pallatana GBPP (740MW), and Monarchak GBPS (104MW) and intra-state transmission system strengthening works were identified based on inputs from the states. The system was evolved keeping in view that the states in the region could draw their share from the various projects coming-up in NER. He requested the views of the participants.

2.1 AEGCL representative stated that they had proposed to set-up a 400kV S/S at Kukurmara (near Azara) where 220/132kV S/S was being constructed by Assam under NLCPR funding to meet huge load growth at Guwahati. As such the 400/220kV Azara (New Guwahati) S/S should be envisaged under the intra-state proposal, a proposal was being made by them. He further stated that 220kV level at B. Chariyali PP and 220kV connectivity from there on to the state should also be considered. Regarding intra-state works, he stated that AEGCL had worked out their programme and the same could be adopted. He further stated that space for providing bay for the proposed 220kV Mariani-Mokakchung line may not be available at their Mariani Substation. It was also discussed that LILO of Kathalguri-Misa line to North Lakhimpur would involve crossing of Brahmaputra river at a place where it was extremely wide.

2.2 Member (PS), CEA stated that considering the existing and planned network at 132kV and the proposal of 220/132kV new substation at North Lakhimpur, provision of 400/132kV at B.Chariyali would be better option as compared to 400/220kV.

2.3 After further discussion, it was agreed that:

- (a) The 400kV Azara s/s on one circuit of Silcher-Bongaigaon 400kV D/C line would be covered under intra-state system of Assam;
- (b) In the second phase, 400kV s/s north of Guwahati would be developed at Rangia on one circuit of Balipara- Bongaigaon 400kV D/C line and would be covered under second phase of inter-regional system;
- (c) B. Chariyali would have 400/132kV;

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- (d) A 220kV switching station would be provided under the inter-regional system for the proposed 220kV line to Mokokchung;
- (e) Near North Lakhimpur, a 400/132kV substation would be provided on one circuit of one of the Subansiri Lower- B.Chariyali 400kV 2xD/C lines.
- (f) The intra-state system of Assam would be decided in a follow-up meeting between CEA and AEGCL at New Delhi.

3.1 Participant from Meghalaya participant stated that LILO of 400 kV Pallatana-Bongaigaon D/C line at Byrnihat alongwith Byrnihat 400/220 kV substation should be considered within time frame of 2011-12.

3.2 Member (PS) stated that with 220kV Misa-Byrnihat D/C line and Byrnihat 220kV substation, construction of had already started, requirement for the 400kV s/s at Byrnihat would not be critical at this stage. Nevertheless, the proposal for 400kV Byrnihat s/s was covered under phase-II/III works of SG-I report and would be taken up for implementation at a later date.

4.1 Participant from Nagaland stated that instead of LILO of the 132kV Dimapur (Nagaland)- Kohima (Nagaland) at Dimapur (PG) 220 kV substation, a separate 132kV DC link between Dimapur(PG) and Dimapur(Nagaland) sub-stations might be built. Member (PS) stated that PGCIL may review the 132kV connectivity arrangement for their Dimapur(PG) s/s considering the physical locations, ROW and bay space requirement and resolve this issue with DoP, Nagaland.

4.2 Participant from Nagaland further stated that 220/132kV substation at New Kohima (Chiphubouzou) together with 220kV D/C from Dimapur to New Kohima (Chiphubouzou) should be covered under intra- state system and undertaken by DoP, Nagaland. They had already acquired land for this s/s and had already planned to take-up the works. On query from M(PS) regarding funding arrangement for these works, Nagaland stated that it would be arranged from their own resources.

4.3 Nagaland representative further stated that building of transmission line from Kohima to Imphal might not be feasible due to severe RoW problem. He further suggested that, instead of the 132 kV Kohima-Pfutsero S/C line proposed under intra-state works, Dimapur-Peren 132 kV S/C line with 132/33 kV, 2x10 MVA substation at Peren should be considered.

5.1 Participant from Manipur stated that the scope of works as proposed under inter-state system and intra-state system of Manipur of the agenda note, would meet the State transmission requirements.

6.1 CMD, TECL stated that for power evacuation from Pallatana, mainly, only one 400kV D/C line was proposed. For better reliability and meeting the criticality of tower outage, a parallel 220kV corridor from Surajmani Nagar in Tripura up to Silcher or Badarpur s/s of PGCIL should also be developed as a part of inter-state/regional system. Member (PS) stated that the proposal for transmission corridor from Surjamaninagar to Silcher was also lined to evacuation of power from Monarchak GBPP. CEA had suggested allocation of Monarchak GBPP power to the states of NER so that the inter-state transmission required for transmission of exportable surplus of Tripura can be pooled into Regional transmission.

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However, at this stage, as the entire power from Monarchak GBPP was proposed to be allocated to Tripura, the transmission system required for Monarchak GBPP would become responsibility of the generation developer and Tripura. However, power of Monarchak GPBB would not be fully consumed within Tripura and would need to be evacuated outside. As such, development of transmission corridor would be necessary. CE, CEA stated that in any case, technically, considering the existing 132kV system in the area and the future requirement, the proposed transmission corridor, instead of 220kV, should be 400kV initially operated at 132kV. CMD, TECL suggested that the proposed intermittent station on this route should be at P.K.Bari instead of Dharamnagar. This can be extended further to Silcher as inter-state line.

6.2 CMD, TECL enquired about the transmission system being envisaged for transfer of seasonal surplus power from NER to outside NER. It was clarified that for export of surplus available in NER, strengthening of the grid network was envisaged by providing additional 400kV Bongaigaon-Siliguri D/C line and Purnea-Biharsharif D/C 400 kV line.

6.3 CMD, TECL further stated that intra-state proposal for Tripura should be based on their state plan. It was agreed that these would be discussed in a follow-up meeting between TECL and CEA to be held at New Delhi.

7.1 CE, DoP, Arunachal Pradesh stated that the construction of 132kV loop (via Roing, Tezu, Namsai, Miao, Jairampur, Changlang and Khonsa) proposal would be the essential requirement for the state. In addition, he proposed to build 220 kV Khupi-Seppa-Sagalee line (to be charged at 132 kV) and 220/132 kV Doimukh substation (upgradable to 400 kV) and associated Khupi-Doimukh 132 kV link. Chief Engineer (SP&PA) stated that the transmission system proposed by Arunachal Pradesh included evacuation system for their generation projects which should be evolved based on review of master plan considering the time frame of the generation projects in the area. Member (PS), CEA stated that he had proposed to have a separate meeting with Arunachal Pradesh together with the generation developers. After discussions it was agreed that DoP, Arunachal Pradesh would arrange a separate meeting for review of master plan of transmission system for power evacuation in which the generation developer would also be invited. It was also agreed that as there were a large number of generation projects envisaged for development in Arunachal Pradesh, the meeting would be held basin-wise.

7.2 With regard to proposal in respect of Arunachal Pradesh as per the agenda note, it was agreed that for finalization of transmission programme for inter-state and intra-state system for the 11th Plan, a follow-up meeting would be held between DoP, Arunachal Pradesh and CEA at New Delhi.

8.1 Towards finalization of the programme of 11th Plan covering the inter-state and intra-state transmission system, it was agreed that follow-up meeting with Arunachal Pradesh, Assam and Tripura will be held in CEA and the minutes of the meeting would be issued after follow-up meeting and would include the agreed proposals. Accordingly, follow-up meeting with Assam, Tripura, Meghalaya and Arunachal Pradesh were held in CEA on 10.7.2008. and minutes issued including agreed proposals.

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9.1 PGCIL representative stated that inter-state transmission system in NER proposed to be undertaken by PGCIL should also be funded on the basis of 90% loan and 10% grant as was being done for transmission system being constructed by the States. All the NER States strongly endorsed this view of 90% loan and 10% grant and stressed to pursue it with the Central Govt. Member (PS) stated that the State Govts. would require to take-up/pursue this issue very seriously with the Central Govt. so that the implementation of transmission development program in NER could be accelerated.

9.2 CE, SP&PA, CEA stated that it would be good if all constituents take-up with their respective governments to support the proposal for Central Government funding on 90:10 basis for all the identified requirement including inter-state as well as intra-state system which was estimated to be of the order of Rs 17000 crores. However, it may not be wise to hold all the works till materialization of the proposed funding particularly as the generation projects were to materialize within the 11th Plan. With additional generation capacities being added in NER for benefit to the states of NER, required transmission works must be taken-up for execution matching with the generation projects. CMD, Tripura also stated that while the proposed investment decision being within the purview of Central Govt., it would not be prudent to wait indefinitely.

9.3 Member (PS) stated that the generation projects particularly Pallatana Gas and Bongaigaon TPS, which were programmed to be commissioned during 11th plan, would add substantial energy to improve availability of electricity for NER. Allocation of power from Pallatana was earlier proposed for mostly to states outside NER. But CEA, in context of working out proposal for facilitating transmission development, based on detailed power requirement analysis for states of NER, had taken-up for allocation of power from Pallatana Gas to the states of NER while hydro power from Subansiri Lower and Kameng be partly allocated outside NER. This would provide the much needed base power to NER and also improve the hydro-thermal mix for the region. The efforts had fructified and most of Pallatana power was allocated with NER. Further, NTPC was taking-up Bongaigaon TPS where the works had already started. It was important to ensure timely implementation of required transmission schemes so that the advantage from the opportunity was not lost due to delay in building the associated transmission system.

9.4 OTPC representative stated that implementation of Pallatana-Silcher-Bongaigaon 400kV D/C line was to be taken-up by OTPC to ensure its commissioning matching with the generation project.

9.5 CE, CEA stated that Pallatana-Silcher-Bongaigaon 400kV line envisaged for power evacuation from Pallatana Gas was originally conceived as dedicated line for Pallatana Gas and proposed to be executed by OTPC, a JV created for constructing this line as a transmission licensee. This line would also facilitated utilization of Bongaigaon TPS for benefit of NER states. Together with this line, sufficient inter-state and intra-state system should also be developed to ensure that the electricity to be made available from these generation projects reaches to the people of NER states. He further stated that the energy from these generation project would make taking-up sufficient transmission schemes commercially viable with tariff being within acceptable value of the order of say 35 p/kwh. With component of energy from Subansiri Lower and Kameng HEP allocated to states of NER further adding to the energy base, the incident transmission charges would get further reduced to about 30 p/kwh. This would be fairly comparable to the regional transmission tariff level expected to be in the other regions in the country by that time. In past, States of NER had been paying much higher transmission tariffs as compared to other regions.

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This was due to a number of factors including that due to system being in initial stages of development, higher cost of building transmission lines in NER, and lower energy generation per MW of installed generation capacity for which evacuation system was built. Time had to correct this. The main factor contributing towards this correcting would be the energy availability at higher PLF from Bongaigaon thermal and Pallatana gas projects. To realize the benefit, timely execution of the transmission schemes should be ensured. He suggested that the 400 kV Silcher-Bongaigaon section of Pallatana transmission along with the lines from Silcher to Manipur, Mizoram and Tripura should be taken up to match with time frame of Bongaigaon TPS to facilitate delivery of Bongaigaon power to beneficiaries. The beneficiaries also need to sign the BPTA to agree to pay the transmission charges for this portion on completion. This was agreed.

9.6 ED, Engg, PGCIL stated that recovery of transmission charges for investment in the proposed inter-state transmission proposal would be an issue and constituents of NER would require signing BPTA to enable PGCIL to take-up the schemes.

10.1 It was agreed that the transmission schemes finalized by the Standing Committee would be placed for vetting by the NERPC and all the states would sign the required BPTAs soon thereafter so as to enable start of implementation of the schemes. It was also agreed that the states would take-up intra-state schemes also to the extent possible from within funding available with them with continued efforts to tie-up additional schemes/funds from the currently available channel. All would also take-up with their respective Government/Ministries 90:10 grant/loan funding by Central Government for NER transmission development and further inter-state as well as intra-state schemes would be taken-up accordingly.

10.2 With the above observation/discussion, the Standing Committee concurred the following transmission schemes:

(1) Generation Switchyard Bongaigaon TPS (scope of NTPC):

- Step-up Voltage 400kV
- 400kV line bays : 2 nos.
- 400/220kV, 2x315MVA Transformers at BTPS(NTPC) switchyard
- 220kV connectivity between the switchyards of NTPC and AEGCL

(2) Generation Switchyard Pallatana Gas PS (scope of OTPC):

- Step-up Voltage 400kV
- 400kV line bays : 2 nos. (plus space for future 2 bays)
- 400/132kV, 2x100MVA Transformers at Pallatana switchyard
- 132kV line bays : 2 nos (plus space for future 2 bays)

(3) Transmission lines under the scope of North East Transmission Company (NETC) the JV company for undertaking 400kV transmission line from Pallatana Gas PS to Bongaigaon(PG) s/s:

- 400kV Pallatana-Silcher D/C line (twin moose)
- 400kV Silcher-Bongaigaon(PG) D/C line (twin moose)

(4) Monarchak GBPP under NEEPCO (ATS to be undertaken by TSECL):

- Step-up Voltage 132kV
- Monarchak-Surjamani Nagar 132kV D/C
- Monarchak-Rabindernagar 132kV D/C
- Surjamani Nagar-P.K. Bari 400 kV D/C charged at 132 kV.
- Surjamani Nagar 132 kV S/S upgradable to 400 kV S/S.
- Rabindernagar 132kV S/S.

(5) ATS and System strengthening of inter-state/regional system proposed under PGCIL scope of works (pooled system of NER):

- BTPS(NTPC) –Bongaigaon (PG) 400kV D/C line
 - 400/132kV 2x200MVA substation at Silcher
 - Pallatana-Surjamani Nagar 400kV D/C charged at 132kV
 - Silcher – P.K.Bari (PG) 400kV D/C charged at 132kV
 - 132kV s/s at P.K.Bari (PG) upgradable to 400kV s/s **
 - Silcher – Melriat New (PG) 400kV D/C charged at 132kV
 - 132kV s/s at Melriat New (PG) upgradable to 400kV s/s **
 - Silcher – Imphal 400kV D/C charged at 132kV
 - Mariani (new sw. stn. of PGCIL near Mariani) – Mokokchung 220kV D/C
 - 220/132kV s/s at Mokokchung (PG) **
 - 400kV Rangia s/s by LILO of one ckt of Balipara-Bongaigaon **
 - 132kV Passighat-Roing-Tezu-Namsai line with s/s at Roing and Tezu **
 - NER transmission system for Subansiri Lower and Kameng with transmission charges to be pooled with in the regional system of NER:
 - 2nd 315 MVA, 400/220 kV ICT at Misa (under Kameng ATS scheme)
 - LILO of Deopata-Gohpur 132 kV S/C line at Biswanath Chariyali (under interconnector scheme)
 - 2x200 MVA, 400/132/33 kV transformers. at Biswanath Chariyali (under interconnector scheme)
- ** NOTE: transformer capacity at s/s to be decided by PGCIL in consultation of respective states**
- ATS/Inter-regional System for Subansiri Lower and Kameng HEPs

Transmission system for immediate evacuation of power from Subansiri Lower with transmission charges to be shared by the beneficiaries of Subansiri Lower in proportion to their allocations from the generation project.

- L. Subansiri-B. Chariyali 400 kV 2xD/C line (twin lapwing).

Transmission system for immediate evacuation of power from Kameng with transmission charges to be shared by the beneficiaries of Kameng in proportion to their allocations from the generation project.:

- Kameng-Balipara 400 kV D/C line
- Balipara-Bongaigaon 400 kV D/C line(Quad conductor) with 30% Fixed Series Compensation at Balipara end

North-East-Northern/Western Interconnector-I with transmission charges to be shared by the states of NR and WR:

- Biswanath Chariyali-Agra \pm 800 kV, 6000 MW HVDC bipole line
- Balipara-Biswanath Chariyali 400 kV D/C
- LILO of Ranganadi-Balipara 400 kV D/C line at B. Chariyali
- Establishment of Pooling Station at Biswanath Chariyali.
- HVDC rectifier module of 3000 MW at Biswanath Chariyali
- HVDC inverter module of 3000 MW capacity at Agra.
- Augmentation of 400 kV Agra S/S by 1x315 MVA.

(6) Intra-state system : As per the plan of respective State

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11.1 CE, CEA stated that at Azara 400kV s/s which was decided to be covered under intra-state system of Assam, instead of LILO of one circuit 400kV Silchar- Bongaigaon D/C line, LILO of both circuits should be done as this would improve the reliability as well as loadability/capacity of the system. Also, with this requirement of reactors on the 400kV Silcher-Bongaigaon line should be reviewed. These suggestions were agreed. GM, PGCIL suggested that AEGCL should identify the land for their Azara s/s so that the line could be routed close to same. This was also agreed.

11.2 NTPC representative stated that first and second units of Bongaigaon would be commissioned during August 2010 and December 2010 respectively and the third by April 2011. He also stated that as per the system requirement envisaged under the scope of NTPC, the 400 kV BTPS switchyard provision was frozen. Member (PS) stated that while the share allocation from BTPS was yet to be firmed up by MoP, the major share from this project would be for AEGCL and for that Assam should strengthen their system. He also stated that the issue for early finalization of share allocation from BTPS would be taken up with MoP. He suggested for early commissioning of 400 kV Bongaigaon-Silcher D/C line matching to Bongaigaon TPS schedule.

12. Member (PS) concluded the meeting with summing up of the outcome of the discussion and thanked all the participants.

Summary of the discussions

1. The proposals of NER system strengthening scheme and generation linked transmission schemes as inter-state system and intra-state transmission works of the states were agreed with modifications as proposed by the NER constituents.
2. NER states would take-up and expedite the issue of funding of the inter-state scheme on the basis of 90% grant and 10% loan with the Govt. of India. States would also take-up intra-state schemes to the extent possible from within funding available with them with continued efforts to tie-up additional schemes/funds from the currently available channel.
3. Transmission system as detailed in para 10.2 was agreed.
4. LILO of both the circuits of 400kV Pallatana-Bongaigaon D/C line at 400kV Azara S/S of AEGCL would be done.
5. The extension of 220kV Mariani S/S in respect of the proposed inter-state 220 kV Mariani-Mokokchung (PG) D/C line would not be feasible due to space constraint. A new 220 kV switching sub-station would be provided for proposed 220 kV line to Mokokchung.
6. The establishment of 400/220 kV Byrnihat S/stn in Meghalaya with LILO of 400kV Silchar-Bongaigaon D/C line was agreed to be taken up at a later date.
7. Nagaland and PGCIL would mutually resolve the issue relating to the proposed LILO of the 132 kV Dimapur (Nagaland) - Kohima D/c 132kV line at Dimapur (PG).
8. Nagaland would establish the 220kV Dimapur- Kohima New (PG) D/C line and Kohima (Chiphubouzou) New 220/132kV S/S would be constructed as intra-state system under the State funding.

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9. Manipur agreed that the intra-state and inter-state system proposals was adequate.

10. The 400kV switchyard provision for Pallatana GBP would cover 2nos. 400kV line bays for 400 kV Pallatana-Silchar- Bongaigaon D/C and space for future 2 nos. 400 kV line bays and 2 nos. 132 kV line bays for 400kV Pallatana-Surjamani Nagar (charged at 132kV) D/C lines and space for future 2 nos. 132 kV line bays and 400/132kV, 2x100MVA Transformers along with necessary bays.

11. The 400 kV Silcher-Bongaigon section of Pallatana transmission along with the lines from Silcher to Manipur, Mizoram and Tripura would be taken up to match with time frame of Bongaigaon TPS. The beneficiaries agreed to pay the transmission charges for their portion on completion and sign the BPTA accordingly.

12. Transmission system finalized by the Standing Committee should be placed for vetting by the NERPC and all the states would sign the required BPTAs soon thereafter so as to enable start of implementation of the schemes.