The Summary record of the 20th meeting of Standing Committee held at Nainital, Uttaranchal on 22nd April 2006.

(i) List of the participants is annexed.

(ii) MD, PTCUL welcomed the participants at Nainital

(iii) Member (PS), CEA welcomed the participants to the 20th meeting of the Standing Committee and thanked PTCUL for organizing the meeting at Nainital. He stated that in the draft National electricity plan (NEP) brought out by CEA for 10th and 11th plan timeframe, it was estimated that power availability from the sources within the Northern Region would heavily fall short of power requirement. The 10th plan was nearing completion and very few additional generations were expected by 10th plan end. During 11th plan period the generations were mostly expected from the hydroelectric projects in Himachal Pradesh and Uttaranchal. These would help to reduce the gap of peaking shortage. However, energy shortage would continue unless the same were met through import of power from Eastern region and North Eastern region. As such for meeting the increasing demand of power, extensive inter-regional transmission capacities were required and the earlier concept of regional self-sufficiency of the grid would not work. Accordingly, Northern grid cannot remain limited within the physical boundaries of the region and would need to extended to other regions towards a national grid concept and we must take advantage of the peak shift as well as power availability/surplus power in other region. Thereafter the agenda items were taken up for discussions.

1. Confirmation of the minutes of the 19th meeting of the Standing Committee on Power System Planning held on 01.10.05 at Amritsar, Punjab.

Chief Engineer (SP&PA), CEA stated that in the 19th Meeting of the Standing Committee held at Amritsar on 1/10/05, the time frame for

commissioning of 3rd 400/220 kV transformer at Hissar was not freezed. The same was now proposed for commissioning for 2009-10 time frame.

Director (Projects), HVPN stated that they had already intimated CEA regarding the requirement for a 400 kV S/S at Panchkula to meet the increasing load demand in that area and in the 19th SCM it was informed that the matter would be taken in the subsequent meeting. As such creation of 400 kV S/S at Panchkula S/S might be included in the Agenda item.

Chief Engineer (SP&PA) stated that in the draft National Electricity Plan framed by CEA it had been indicated that 400 kV regional S/S was to be considered for all those places where that load of 300 MW or more was projected. Accordingly, the creation of 400 kV S/S at Panchkula was a requirement and the same was to be tied up with certain project/scheme and would be taken up in the subsequent Standing Committee meeting.

Chief Engineer, RVNL stated that RVPNL had sought for 400/220 kV S/S at Sikar, Rajasthan for connecting 400 kV Ratangarh S/S with 400 kV Bhiwadi S/S via Sikar. He requested that the proposal might also be included in the Agenda item of the Standing Committee. Chief Engineer (SP&PA) stated that requirement of RVPNL had been noted and the same would be covered in the subsequent Standing Committee meeting.

Thereafter the Minutes of 19th meeting as circulated vide CEA letter no. 1/9/2005-SP&PA/ 749-764 dt. 07.11.2005 were taken as confirmed.

2. Transmission system for evacuation of power from Subansiri Lower HEP and Inter-regional Transmission system for power export from NER to NR/WR

2.1 Chief Engineer (SP&PA) stated that proposal for transmission system for evacuation of power from NER to the beneficiaries in Northern and Western region and also the evacuation system from Subansiri Lower HEP (2000 MW) was taken up in the 19th Standing Committee meeting and agreed in principle. Constituents of Northern Region and Western Region had also agreed to share the transmission charges subject to allocation of power.

For evacuation of power from Subansiri Lower HEP to the pooling station in NER, 400 kV 2xD/C line with higher size conductor had been proposed from Subansiri Lower to Bishwanath Chariyali. The estimated cost for the system would be around Rs. 840 cr. The line would have additional capacity/margin to cater the evacuation requirements of Siang Middle HEP (1000MW) which was proposed to be brought to Subansiri Lower through 400 kV D/C line. Siang Middle was expected by 2012-14 and with the proposal, one third of the capacity as well as the transmission charges for the line between Subansiri Lower to Bishwanath Chariyali would be shared by Siang Middle transmission system.

2.2 For evacuation of power beyond Bishwanath Chariyali the option of hybrid network of HVDC with high capacity 400 kV line was found to be most suitable from cost, corridor and phased development consideration. The length of HVDC line would be approximately 2000 - 2200 kms and it would be build as 800 kV HVDC bipole line from Bishwanath Chariyali in NER to Agra in the NR. The line was programmed for commissioning matching with the time frame Subansiri Lower i.e. 2011-12. The earlier proposal of 4000 MW having 600 kV system upgradable to 800 kV system has been reworked to optimize taking the advantage for development in testing etc, of 800 kV system and in the final proposal it has been firmed up to have 800 kV system from the very beginning. Also, taking advantage of hydro projects coming up in Sikkim and Bhutan the proposal has been further

optimized. The HVDC terminal module would be of 3000 MW capabilities, the transmission line would be for 6000 MW capacity between Bishwanath Chariyali and Agra. The balance capacity of 3000 MW would be used for bringing the power from hydro projects in Sikkim and Bhutan which would be pooled at Siliguri and transmitted to Agra using the same HVDC link by making it multi terminal by addition of 3000 MW rectifier modules at Siliguri and inverter module at Agra.

2.3 In regard to allocation of power to the States of NR and WR, he informed that as per the proposal Chairman, CEA had sent a letter to Secretary , Ministry of Power, suggesting that 70% of the power from Subansiri Lower could be allocated to the States of Northern region and Western region with each of NR and WR getting 50:50 that is 35% each. This would provide 1400 MW of allocated power. In addition, surplus in NER would also be available. Utilization of the HVDC link would further increase with injection of Sikkim/Bhutan hydropower at Siliguri. As such, the transmission charges for the system upto pooling station at Bishnath Chariyali/Siliguri plus HVDC system upto Agra may be around Rs. 1.25 in the beginning and reduce when additional power would be available from Teesta III and other hydro generation projects in Sikkim and Bhutan at Siliguri and from Siang Middle etc at Bishwanath Chariyali. With these additional power, the per unit transmission would come down to around Rs.1.00. He stated that the NR states might concur with the proposal and give a firm commitment to POWERGRID for the above transmission system.

2.4 Managing Director, PTCUL stated that he would like to know the type of commitment that was required to be given to POWERGRID.

2.5 Director (Projects), HVPNL stated that considering the high transmission cost and integrated nature of system culminating to the formation of National Grid, he would suggest that required commitment should be given to POWERGRID so that the proposal could be taken up for its

completion as per schedule and side by side a proposal might be put up to Central Government for creating a common pool fund for developing such projects by levying a transmission cess from the utilities. He stated that this would help in development of our National Grid and meeting the deficit power of Northern/other regions.

2.6 CE, RVPNL stated that their should be some clear cut policy regarding the transmission cost/charges to the beneficiaries with respect to a specific project and also a policy guidelines should be framed for availing power from other regions. Until the same was decided, it will be difficult for the states/constituents to give their firm commitment for the transmission charges.

2.7 Director (Projects), DTL stated that proposal for cess could be put forwarded along with debate regarding long-term ownership of the system and suggested that CEA might call a meeting to decide the issue.

2.8 Member (PS), CEA stated that CEA was not competent enough for issuing guidelines regarding transmission tariff and for this, the proposals needs to be referred to CERC. In regard to proposal for cess for creating fund for development of National Grid, he stated that it might be better if the proposal was put forward by the Utilities to their respective Sate Governments and be taken up with the Center at that level. Convening of meeting by CEA for this might not be fruitful and rather, CEA could also give its recommendation to the Government at an appropriate opportunity. He, however, emphasized that the states should give a firm commitment regarding the transmission charges to enable POWERGRID to take up the transmission system for construction in matching with the commissioning of the generation at Subansiri Lower HEP and if that was not done the transmission project would get delayed with generation stranded up without any benefit.

2.9 After detailed discussion on the above issue, it was concluded that the states were in principle agreed for the above transmission system from Bishwanath Chariyali to Agra with 800 kV HVDC and 3000 MW rectified module at Bishwanath Chariyali and inverter module at Agra for NER power and 3000 MW rectifier module at Siliguri and inverter module at Agra for Sikkim/Bhutan power. It was also agreed that the Members would take up for commitment on transmission charges in their respective organization for which tentative price of power, transmission charges and landed price of power would be indicated by CEA. Accordingly, the indicative estimate has been worked out and enclosed at Annex.

3. **Transmission system for evacuation of power from Tripura Gas 1100 MW (Pallatana CCGT)**

Chief Engineer (SP&PA), CEA stated that Tripura Gas (Pallatana CCGT) with 1100 MW was expected to be commissioned by 2008-09. The project was earlier proposed for 750 MW and now been increased to 1100 MW capacity (1050 MW ex bus). Since this generation project was scheduled for could be commissioning ahead of NER-NR/WR HVDC transmission system planned with Subansiri Lower HEP, a system independent of NER. NR/WR HVDC transmission system would be required for evacuation of power from Tripura gas. He stated that following evacuation system has been proposed for evacuation of power from Tripura gas (Pallatana CCGT):-

- Pallatana (CCGT) - Silcher- Bongaigaon 400 kV D/C with higher size twin conductors
- Bongaigaon-Siliguri 400 kV D/C with higher size twin conductors
- 400/132 kV at Pallatana (CCGT) generation switchyard and 132 kV lines to gird S/S

- 400/132 kV susbstation at Silcher and 132 kV lines connecting to grid S/s

The transmission system of Bongaigaon would be constructed by ILFS Transmission Ltd. a shell company of Tripura Gas generator. Beyond Bongaigaon 400 kV D/C line from Bongaigaon to Siliguri would also required to be constructed for delivery of power beyond NER. The expected cost of the system would be around Rs. 2350 Cr. For onward delivery to the NR, the Eastern Regional Grid need to be strengthened by providing 400 kV D/C quad line between Purnea to Biharshariff which was estimated to cost around Rs. 450 Cr. Beyond Biharshariff the power would require to be wheeled through ER system for delivery to NR. It was proposed that the transmission charges for Purnea to Biharshariff 400 kV D/C line would be pooled within the regional transmission system of ER and NR beneficiaries might seek a long term open access through ER for the capacity equal to the allocation from Pallatana (CCGT). However, if ER constituents were not agreeable for the construction of the 400 kV Purnea - Biharshariff line the same could be built based on the commitment of NR beneficiaries and they could seek a short term open access through ER for using part of the ER system.

DGM POWREGRID made his presentation on open access for transfer of power from Pallatana CCGT (copy enclosed).

The representative from IL&FS also gave their presentation. It was intimated that Pallatana CCGT would be implemented as an ONGC project as the Tripura power Company had been merged into ONGC. The 400 kV Pallatana -Silcher-Bongaigaon line would be implemented by North Eastern Power transmission Company (NEPTC) with a proposed shareholding of POWERGRID 26%, ONGC 15% and rest to be owned by private entity. The cost of pallatana upto Bongaigoan would be Rs. 1904

Crores and Bongaigoan – Siliguri would be Rs. 590 Crores. The point of injection as per Open access application was Bongaigoan and the same was accepted by CTU in meeting held in 12/2005. NEPTC had earlier sought grant under Viability Gap Funding scheme(VGF) in order to reduce the transmission tariff. Subsequently with the increase in the project capacity from 740 to 1100 MW CEA/MoP had suggested to extend the point of injection for Open access from Bongaigoan to Siliguri in order to avail the grant under VGF scheme. In case the VGF for the transmission proposal was accepted the point of injection might be considered at Siliguri otherwise point of injection for Open access would be from Bongaigoan and onward transmission as a part of NR Strengthening.

The members agreed with the proposals

4. Power evacuation system from Kameng HEP (600 MW) (additional agenda)

Chief Engineer (SP&PA), CEA stated that Kameng HEP with 600 MW in Arunachal Pradesh was expected to be commissioned by 2009-10. The power from Kameng had been allocated to NR. Power from Kameng would be brought to Bishwanath Chariyali S/S through a 400 kV D/C line. The 400 kV Bishwanath Chariyali S/S would be created by looping in looping out of both the circuit of Ranganadi - Balipara 400 kV D/C line. Since the generation at Kameng HEP was expected only one year before commissioning schedule of Lower Subansiri HEP so, to reduce the cost of transmission, the system between Bishwanath Chariyali - Balipara - Siliguri could be utilised for evacuation of power from Kamang HEP. As and when the system from Subansiri Lower was available the same would be used for evacuation of power from Kameg HEP.

DGM, PGCIL stated that since the existing 400 kV circuit between Ranganadi - Balipara and Siliguri remains fully loaded, there might be very little margin left for evacuation of Kameng power through the existing system.

CE (SP&PA), CEA stated that since the investment required for building up a separate system for evacuation of Kameng power is huge and considering the criticality of loading of the line would be only for about one year and the expected availability of power from Pallatana CCGT along with Bongaigaon - Siliguri line, the criticality in loading of Balipara – Bongaigoan - Siliguri line might not exceed the line loading limit. However, the system requirement could be reviewed if there was any major change in programme of Pallatana CCGT and the associated transmission system.

The proposal was agreed by the members of the Committee.

7. Creation of 400/220 kV S/S at Loni Road

CE (SP&PA) stated that the existing 400 kV S/S at Mandola was having 4 nos. of 315 MVA transformers and was almost fully loaded. The loading on the S/S was likely to increase further during 11th plan period and no further augmentation possibility exists at Mandola S/S. Accordingly, a new 400/220 kV S/S was required to be created to cater the load requirement of East Delhi as well as Western part of U.P adjoining Delhi. Considering this a 400/220 kV S/S with 2 nos. of 315 MVA ICT was being proposed somewhere at Loni Road by LILO of 400 kV line between NCR Dadri and Mandola as a part of regional scheme.

Director (Operations), DTL stated that Delhi Transco also agree for the creation of a 400kV S/S at Loni Road as the existing Mandola S/S was

getting overloaded but they propose for creation of the 400kV S/S near Loni Road under its own scope of work.

ED (Engg.), POWERGRID stated that they do not agree with the proposal of DTL for creation of the 400 kV Loni Road S/S as a part of transmission work of DTL since it would create operational problem as Dadri - Mandola line belongs to POWERGRID and Dadri being very sensitive power station.

Director (Operation) DTL stated that since the S/S was required only for meeting the load of Delhi and there would be no margins left for supplying power to any other state from the S/S and as such there was no point in creating Loni Road S/S as a part of regional transmission system. However, he stated that if POWERGRID insists on operational/maintenance problem he was ready to take over the maintenance of the line between Dadri and Mandola or otherwise he would like to create the 400 kV Loni Road S/S by taking a direct feed from Mandola S/S and accordingly POWERGRID must arrange for requisite bay for the same.

After further deliberation the matter regarding the ownership for the 400 kV Loni Road S/S remained inconclusive so, Member (PS), CEA stated that in principal the creation of 400 kV Loni Road S/S with 2x315 MVA transformer was agreed. However details regarding the ownership and feeding lines would be decided in a separate meeting between DTL, POWERGRID and CEA.

Members of the Committee agreed on the proposal.

8. Creation of 400/220 kV S/S near New Wangpoh

Chief Engineer (SP&PA) stated that in the 19th Standing Committee meeting held at Amritsar it was decided that the creation of 400/220 kV New Wangpoh S/S was in principally agreed, however PGCIL wanted to ascertain the suitability of the location. He stated that substation would be required as the load in Kashmir valley had increased and the existing 4 nos. of 315 MVA ICT at Wagoora would not be adequate for meeting the peak demand of the valley. He asked POWERGRID to intimate their observation regarding the location of the substation. Since POWERGRID had not finalised the location study as such it was decided that POWERGRID with PDD, J&K should make the survey and finalise the location of the substation.

Chief Engineer, PDD, J&K stated that the load at Jammu was also increasing very fast and as such the existing 400/220 kV 2x315 MVA ICT at Kishenpur S/S might not be adequate for meeting the increased demand of Jammu valley. As such he requested for creation of a new 400 KV substation at Samba sector in Jammu as a part of regional transmission works.

ED, POWERGRID stated that since there were only 2 nos. of transformer at existing Kishenpur S/S and further scope of expansion could exist there, as such the same would need to be examined before zeroing in for a creation of new 400 kV S/S at Samba.

CE (SP&PA) stated that since the power requirement of Jammu had increased and the load at Miran Sahib, Hiranagar, Gladni e.t.c. had exceeded there limit so as per the criteria laid down in the NEP the 400/200 kV S/S was required in that area and the proposal for creation of new 400 kV S/S at Samba could be considered, but the capacity at the

existing facility also required to be exploited fully. As such the requirement for creation of new 400 kV S/S at Samba had been noted and would be considered in the forthcoming meeting of Standing committee of NR.

GM (Electrical), NHPC stated that Dulhasti generation was nearing completion and would be put on bar very soon. Only one 400 kV circuit for evacuation of power from Dulhasti might not be adequate from the contingency point of view as indicated in the transmission planning criteria. He stated that as decided earlier, second 400 kV circuit might be laid from Dulhasti through a different route in Jammu as the area was slide prone. So construction of the second circuit through a different route would give adequate redundancy for evacuation of power from Dulhasti HEP.

Chief Engineer, PDD, J&K stated that other hydro generation like Pakaldul (1000 MW), Berser, (1020MW), Sawalkot(1200 MW) and Baglihar HEP(450 MW) were also envisaged in Chenab basin. As such considering the environmental sensitiveness of that region a 400 kV pooling station at Ramban must be created in order to avoid number of ROW for lines from these projects. The power from Chenab valley project could be pooled into Ramban for onward transmission to Northern Grid.

Chief Engineer (SP&PA) stated that a second 400 kV line from Dulhasti would be taken up considering the transmission requirement of the upstream project of Chenab basin.

Member (PS), CEA expressed his concern regarding the follow up action of the last meeting being not taken by POWERGRID. He further stated that CEA has so far not received the DPR of the Pakaldul (1000 MW), Berser, (1020MW) projects envisaged in the Chenab basin. As such it would be very premature to decide for creation of pooling station at

Ramban. As and when the DPRs were received a decision in this regard would be taken.

The members of the Committee agreed for the same.

9. Utilisation of transformer capacity created under Central Sector

Chief Engineer (SP&PA) stated that it had been observed that matching transmission system at 220 kV level for some of the 400 kV S/S created or under construction in the Central Sector for regional grid have not been provided. Due to non-anchoring of lines at 220 kV, voltage problem as well as line charging problem would be faced for charging long transmission line like 400 kV Muzzaffarpur-Gorakhpur-Lucknow. He stated that following suggestion were forwarded to the committee by CEA for consideration.

- In future schemes, wherever anchoring of the 400 kV S/S is needed from system consideration, LILO of existing 220 kV line of the States' could be done by POWERGRID as a regional scheme. However, this would not include feed to new 220 kV S/S of states.

- The provision for utilizing the existing bays should be transferred to the other desiring state in case the 220 kV bays at the Central Sector station remain unutilized for more than 2 years after completion of the 400 kV S/S, wherever such feasibility exists.

The above matter was discussed and the members were of the view that the first proposal of anchoring of 400 kV S/S by LILO of the existing 220

kV line of the states by POWERGRID under regional scheme would create operational problem. As such could not be agreed. However, the second proposal for transferring of the unutilized 220 kV bays at the Central Sector station to the desiring states whichever remain unutilized for more than 2 years after completion of the 400 kV S/S was agreed.

10. Drawal of HPSEB's share from Central Sector Projects

Since no representative from HPSEB was present, discussion in the matter was postponed for the next meeting of the Standing Committee.