

Minutes of the 18th Meeting of the Standing Committee on Transmission System Planning in Northern Region held in Dalhousie on 6th June 2005.

List of the participants is enclosed at Annex - I.

Shri A.K. Asthana, Chief Engineer (SP&PA) welcomed the participants and thanked NHPC for making excellent arrangement for the meeting at Dalhousie. Shri Navin Singh, GM, NHPC made a presentation on their projects in Ravi Basin.

Thereafter the agenda items were taken up for discussion.

1. Confirmation of the minutes of 17th meeting of the Standing Committee held on 10.08.2004 at NREB, New Delhi.

- 1.1 Chief Engineer (SP&PA), CEA stated that the minutes of the 17th meeting of Standing Committee on Power System Planning in Northern Region held on 10.08.2004 at New Delhi, were circulated vide CEA letter No. 1/9/2004-SP&PA/ 749-764 dated 25.08.2004. No Comments from any constituent states have been received.
- 1.2 Thereafter the Minutes of 17th meeting as circulated were taken as confirmed.

2. Roorkee - Meerut 400 kV S/C line

- 2.1 Chief Engineer (SP&PA), CEA stated that in the 16th SCM the proposal for strengthening of transmission system around Roorkee area was discussed, it was agreed that the 400/220 kV Roorkee S/S would be created by LILO of Rishikesh - Muzaffarnagar - Muradnagar S/C line and the section between Roorkee - Muzaffarnagar would be opened from Muzaffarnagar end and would be extended to Meerut so as to form Roorkee - Meerut S/C line. However, subsequently UPPCL had suggested a review.
- 2.2 Shri A.K. Rastogi, CGM, UPPCL stated that after LILO of Rishikesh - Muzaffarnagar line at Roorkee, the 400 kV line section from Roorkee to Muzaffarnagar together with 400 kV Meerut- Muzaffarnagar S/C line (provided under Tehri transmission scheme) would provide required connectivity between Roorkee and Meerut. It emerged that with this the requirement of separate line between Roorkee and Meerut may not be there.
- 2.3 After discussions it was decided that the proposal for Roorkee - Meerut 400 kV S/C line would be deferred at this stage and if necessary, could be re-studied in conjunction with some future requirement.

3. Evacuation system from Chamera III HEP (231 MW)

- 3.1 Chief Engineer (SP&PA), CEA stated that evacuation system from Chamera III HEP was discussed in the 16th meeting of the standing committee and creation of 400/220 kV pooling station at the location close to the alignment of Chamera - Jalandhar and Parbati - Amritsar lines was proposed. Power from Chamera III and also from Kutehar/other upstream projects in Ravi Basin was proposed to be pooled at this pooling station through 220 kV lines.

However during the route survey carried out by POWERGRID for the transmission lines, it was observed that the direct shortest route for taking the line from Ravi Basin towards

Hamirpur, was through high altitude, Dhauladhar hill ranging from 4500-6000 mtrs height and as such it would be difficult to construct line through that route. Another route via Chamba - Jot area was feasible, but only one R-O-W would be possible through Jot area. Accordingly, it was proposed by POWERGRID to develop a 400/220 kV S/S at a location close to Chamera II or at Chamba for pooling power from Chamera III and the other upstream projects located in Ravi basin and transmit the power to Jalandhar through a 400 kV D/C line. Further during the site visit by engineers from CEA, POWERGRID and NHPC near Chamera II, it was found that there was sufficient land was available near Chamera II switchyard for accommodating the 400/220 kV GIS S/S. However for that one or two 400 kV tower would need to be shifted.

- 3.2 Shri R.N. Nayak, ED (Engg), POWERGRID stated that for evacuation of power from Chamera III and other upstream projects in Ravi Basin, pooling station at site near Chamera II/Chamba was a better option as compared to pooling station near Hamirpur. The connectivity of the pooling station was proposed through 400 kV Chamba pooling station - Jullundhar D/C line and LILO of Chamera I - Chamera II circuit.
- 3.3 Shri S.K. Soni, Chief Engineer, HPSEB stated that they do not have any objection to the proposal as such, however there need to be a provision for at least 4 nos. of 220 kV feeders at the pooling station for connection to their transmission system. He also stated that HPSEB would prefer to have their own 220 kV evacuation system upto their load centers.
- 3.4 Shri Raj Kumar, GM, NHPC stated that proposal for LILO of the existing Chamera II to Chamera I line at the pooling station might create protection problem at their generation switchyards. As such, this aspect was required to be looked into and possibly some alternate interconnecting station may be evolved.
- 3.5 Accordingly, after deliberation following evacuation system was agreed from Chamera III HEP :-
- (i) Creation of Chamba 400/220 pooling station near Chamera II or Chamba
 - (ii) Step up of Chamera III at 220 kV
 - (iii) 220 kV D/C line from Chamera III to Chamba pooling point
 - (iv) Chamba Pooling station - Jalandhar 400 kV D/C line
 - (v) Provision for 4 nos. of 220 kV bay at Chamera pooling station for HPSEB.

With regard to inter-connecting the pooling station with Chamera II, it was decided that NHPC would analyse the protection issue and if LILO of Chamera I- Chamera II was to pose difficulty, they would suggest some alternate solution.

[Subsequently, the issue was discussed between CEA, NHPC and POWERGRID and it emerged that alternate solution for interconnecting between pooling station and Chamera II would be to have a 400 kV S/C line between pooling station and Chamera II and POWERGRID may formulate the scheme accordingly.]

3.6 **Evacuation system for Budhill project**

ED (Engg), POWERGRID informed that a 70 MW Budhil HEP is also taken up in the vicinity by an IPP for which they had applied for Long Term Open Access to POWERGRID. The generation project was likely to materialize by 2008-09, which would

be earlier than Chamera III HEP. For evacuation of power from Budhil project, looking innot the severe R-O-W constraints, it was proposed that power from the Budhil project be pooled at Chamba pooling station at 220 kV level. Considering that Budhil HEP would be matarialising earlier than Chamera III, for onwards transmission of Budhil power, two options were suggested. One option was to advance the establishment of the 400/220 kV Chamba pooling station along with connectivity to Chamera II and the other option was to advance the Chamba pooling station - Jullundhar 400 kV D/C line and charge it at 220 kV.

It was deliberated that the first option, ie, advancing the establishment of 400/220 kV Chamba pooling station along with its connectivity to Chamera II, could be adopted as this would be optimal solution, as the cost of the other option would be very high. It was further agreed cost of 220 kV D/C line from Budhil to pooling station would be in the scope of the generator and full transmission charges for 400/220 kV pooling station and its 400 kV connectivity to Chamera II would have to be borne by the beneficiaries of the Budhil project/generator till the time Chamera III materialize.

4. Power evacuation system from Uri II HEP

4.1 Chief Engineer (SP&PA) stated that the following evacuation system from Uri II HEP was agreed in the 16th SCM

- (i) Uri II - Wagoora 400kV S/C line
- (ii) Uri I – Uri II 400 kV S/C line

He stated that normally bays at generating stations are covered under the generation scheme. However, in this case, the bays at Uri I were required for evacuation system from Uri II. As such, the bays at Uri I were required to be covered under transmission scheme of POWERGRID.

The Members of the Committee agreed for the same.

5. Evacuation system from Rampur HEP

5.1 Chief Engineer (SP&PA) stated that Rampur HEP is being constructed by M/s. Satluj Jal vidyut Nigam Ltd in Himachal Pradesh. The project envisages installation of 6x68.67 MW units and the power from the project would be stepped up at 400 kV. The proposed evacuation system from the project as per studies done by POWERGRID included (i) LILO of both circuits of Nathpa Jhakri - Nalagarh 400 kV D/C at Rampur; (ii) Abdullapur - Patiala 400 kV D/C line; (iii) LILO of Patiala -Hissar 400 kV line at Kaithal; and (iv) LILO of Nalagarh - Kaithal 400 kV line at Patiala

He stated that with this arrangement both the line from Nalagarh to Hissar would be LILOed at Patiala and Kaithal. The 400 kV Abdullapur - Patiala 400kV D/C line would ultimately forms a part of long term proposal for creation of a link from Roorkee or Meerut S/S to Malerkotla.

5.2 Shri K.S. Bakshi, CE, PSEB stated that the power flow on Abdullapur - Patiala line as per the case studies circulated with agenda, were not sufficient enough to justify this line at this state. Sh. I.S. Anand, DCE, PSEB further explained that the studies had shown overloading on Ludhiana - Malerkotla section, which required to be strengthened. After further analysis of the study cases, it was observed that 400 kV line between Patiala and Ludhiana would provide the required strengthening optimally.

- 5.3 The matter was discussed in detail and the following evacuation system for Rampur HEP was agreed:-
- (i) LILO of Nathpa Jhakri - Nalagarh 400 kV D/C at Rampur HEP
 - (ii) Ludhiana - Patiala 400 kV D/C
 - (iii) LILO of Patiala -Hissar 400 kV line at Kaithal
 - (iv) LILO of Nalagarh - Kaithal 400 kV line at Patiala

6. System Strengthening in Northern Region to augment the 400/220 kV transformer capacity of the regional system.

- 6.1 Chief Engineer (SP&PA) stated that requirement of one additional 400/220 kV transformers each at Ludhiana (3rd), Hissar (3rd) and Maharani Bagh (3rd), converting switching station at Bareilly and Agra to 400/220 kV S/S and new 400/220 kV S/S at Gurgaon and Bhinmal had been identified based on the feedback given by the Northern Regional constituents regarding their requirement for augmentation of transmission and transformation in their state for absorption of power from the various projects located in NR/import of power from other regions. He requested the representatives from the states for confirmation regarding strengthening requirement of the states along with target dates.
- 6.2 CGM, UPPCL stated that the proposals in respect of U.P. could be discussed in the next meeting.
- 6.3 CE, PSEB confirmed the requirement of 3rd transformer at Ludhiana. It was decided to take up this work with a target of 2008-09.
- 6.4 Shri T.K.Dhingra, SE, HVPN stated that 400 kV S/S at Gurgaon was required as loads in Gurgaon area were growing fast and this substation would help in delivery of inter-state power into their system at the appropriate place. He also confirmed the requirement of additional transformation capacity at Hissar. It was decided to take up the work of development of 400/220 kV S/S at Gurgaon in 2007-08 time frame and augmentation of transformer at Hissar in 2009-10 time frame. It was also decided that as the cost of the land in Gurgaon was very high, Gurgaon would be an underground GIS S/S, so as to optimize the overall cost.
- 6.5 Shri A K Tak SE, PDD, J&K stated that presently the demand of Kashmir valley were being met by imposing heavy cuts. However unrestricted demand for the valley would be around 1200 MW, for meeting the same there was only 2x315 MVA, 400/220 kV transformers existing and 3rd had been agreed in the 15th meeting of the standing committee. Besides this, they would require a total of 8 nos. of 220 kV bay for terminating their 220 kV line at Wagoora out of which 4nos. were existing, 2 nos. agreed with 3rd ICT and as such they would require additional 2 nos. of bay along with 4th ICT at Wagoora. He requested that Committee to consider the above requirement and provide the 4th ICT and two nos. additional 220 kV bays under evacuation system of Uri II.

GM (NR-II), POWERGRID stated that at Wagoora there might not be additional space available within the 400 kV S/S premises and additional space might be required for augmenting the transformer capacity. ED (Engg), POWERGRID stated that he would look into the aspect of space at Wagoora S/S and if available the 4th transformer could be accommodated within the existing premises of the Wagoora S/S. However if required, PDD J&K might help POWERGRID for acquiring additional space adjoining the existing S/S for augmenting the capacity.

SE, PDD, J&K agreed for the same. He further stated that in Jammu region the existing Kishenpur S/S with a transformer capacity of 2x315 MVA was not adequate and with the coming of additional generation at Baglihar HEP, Sawalkote, Pakhaldul and Bursar HEP there would be need for additional transformation capacity at Jammu and as such 400/220 kV S/S needs to be created for absorption of power at Jammu. The matter was discussed in length and it was decided that PDD J&K would sent a proposal to CEA for addition of transformation capacities and other new S/S at Jammu and space availability at the existing S/S vis-à-vis requirement/feasibility for a new S/S would be examined by CEA/POWERGRID and the would be discussed in the next standing committee meeting

- 6.6 Shri Y K Raizada, ACE, RVPNL confirmed the requirement of Bhinmal S/S. It was decided to take up Bhinmal S/S with a target of 2009-10, matching with programme of Kankroli-Zarda 400 kV D/C line, one circuit of which would to be LILOed at Bhinmal.
- 6.7 Proposal for 3rd transformer at Maharaniabag could not be discussed as DTL representative were not present in the meeting. Proposals for new 400 kV S/S at Saharanpur and Khetri were discussed and deferred for reconsideration at a future date.
- 6.8 Summarizing the agreed proposals CE, SP&PA, CEA stated that POWERGRID may formulate the following Northern Regional System Strengthening Schemes

NRSSS-VI: Target 2007-08

- 400/220 kV underground GIS (2x315 MVA) S/S at Gurgoan by LILO of Samaypur – Bhiwadi 400 kV S/C line

NRSSS-VII: Target 2008-09

- 3rd transformer at Ludhiana
- 4th transformer at Wagoora (POWERGRID would interact with PDD, J&K to resolve the space issue so as to establish the feasibility of required extension at Wagoora).

NRSSS-VIII: Target 2009-10

- 400/220 KV ,2x315 MVA S/S at Bhinmal by LILO of one circuit of Kankroli – Zarda 400 kV D/C line

The members of the Committee agreed for the above schemes.

7. Transmission system for evacuation of power from Subansiri HEP (2000 MW), North Karanpura (1980 MW) and Maithon RB (1000 MW)

7.1 Chief Engineer (SP&PA) informed that Northern as well as Western region both were power deficit region and would require heavy import of power to meet their demand. On the other hand power would be available in Eastern and North Eastern regions. For enhancing the required transfer of power, transmission system was needed. Comprehensive transmission requirement had been assessed and system evolved based on studies, had been circulated with the agenda. Comprehensive transmission system for the 11th plan end i.e 2011-12 time frame had been evolved and components associated with specific generation scheme or group of generation scheme had been identified. The generation projects were Subansiri HEP (2000 MW), Kameng HEP (600 MW), Siang Middle (1000 MW,) Bhareli Dam (600 MW), Monarchak CCGT (280 MW) in North Eastern Region and North Karanpura (1980MW) and Maithon RB (1000 MW) in Eastern Region. As the power generated in NER was ultimately to be absorbed in the Northern region as well as Western region, the transmission option of having a pooling station in NER and transmitting the power through HVDC bi-pole to Agra had worked out to be optimum solution. He informed that for Subansiri power NHPC had already signed a MoU with the beneficiaries from ER, but utilization of this power would be through trading, as ER was already surplus in power. Ultimately, the power from NER would need to be evacuated to Northern/Western regions. Considering the limited transmission corridor available in the chicken neck area, the evacuation of power form NER had to be through high capacity transmission system. Besides this, the Maithon RB (1000 MW) of DVC expected during 11th plan period would also benefit NR constituents and the power from N. Karanpura (1960 MW) of NTPC was also likely to be allocated to the beneficiaries of Northern, Western and Eastern regions. Hence an integrated transmission system had been evolved.

Thereafter, the transmission system as proposed in the agenda note were discussed.

7.2 Transmission system for Subansiri HEP (2000MW)

7.2.1 The following transmission system was proposed in the agenda note.

- i) Biswanath Chariyali to be developed as a pooling station in NER
- ii) Subansiri – Biswanath Chariyali 400kV 2xD/C Quad lines.
- iii) Biswanath Chariyali – Agra, HVDC Bipole, +/- 600kV, 4000 MW. Transmission charges to be shared by the constituents of NR and WR in 50: 50 ratio and the sharing of transmission charges within the regional beneficiaries to be as per existing method of regional transmission system for the respective region.

7.2.2 Chief Engineer(SP&PA) stated that for the options of 765 kV vis-à-vis HVDC were considered. Due to transmission distance exceeding 2500 kms, the 765 kV option would require a number of 765kV s/s leading to higher cost and would also have problem of over voltage, particularly during low hydro generation months. A hybrid of HVDC along with high capacity AC transmission system was found to be optimum transmission alternative. The HVDC option would also address the issue of RoW constraints in the chicken neck area besides minimizing of transmission losses. He informed that for the transmission lines between Subansiri and Biswanath Chariyali, the transmission charges were proposed to be shared by the beneficiaries from Subansiri project, whereas for the HVDC bipole

from Bishanath Chariyali to Agra, the transmission charges were proposed to be shared by the constituents of NR and WR in the ratio of 50: 50.

- 7.2.3 ED (Engg.) POWERGRID stated that they were studying the option of using higher size conductor so as to build the Subansiri - Bishanath Chariyali 400 kV 2xD/C lines with triple conductors instead of quad. He also stated that the Bishanath Chariyali - Agra HVDC line should be built with ± 800 kV specifications so that the line/terminal stations could be later upgraded to ± 800 kV, 6000 MW capacity. CE(SP&PA),CEA stated that proposal for conductor optimization for Subansiri – Biswanath Chariyali lines could be examined by POWERGRID. In regard to designing the HVDC line for ± 800 kV specification, he stated that as this would involve addition cost, the proposal needs to be studied based on cost benefit analysis.
- 7.2.4 CE(SP&PA) CEA, further stated that the proposal for 50 : 50 sharing of transmission charges of Bishanath Chariyali - Agra HVDC link by NR and WR together with Agra - Gwalior 765 kV lines which were also having 50 : 50 sharing of transmission charges between NR and WR basically meant that the NR and WR grids would be extended upto Bishanath Chariyali in NER
- 7.2.5 CE(SP), HPSEB stated that the transmission charges for NER-Agra HVDC line should be paid by only those who have allocation from the generation projects in NER or those who import power. ACE (PP&M),RVPNL stated that the concept of regional pooled transmission tariff was to pool all transmission charges and as proposal was that the NR grid would be extended up to NER, the transmission charges should be pooled in the regional tariff. Other constituents also generally agreed to this view. CE(SP&PA), CEA stated that as the HVDC link would have additional transmission capacity that could be used for open access and as the pooled charges would be based on regional ratios irrespective of actual import of power over the link by specific beneficiary, it would be fair that the short term open access charges for this link are kept at the same rate as that for the long term committed beneficiaries.
- 7.2.6 The issues were further deliberated and the following decisions were arrived at:
- (a) The members agreed to the technical requirement of the proposal and also for the proposed sharing of transmission charges.
 - (b) CEA would take-up the proposal for consideration in the standing committee of the Western Region and if WR constituents were also agreeable, POWERGRID would formulate the scheme and proceed to execute the project after firming up the technical specifications in respect of the conductors, voltage etc., in consultation with CEA.
 - (c) It was decided that POWERGRID, at the time of approaching CERC on tariff for Biswanath Chariyali – Agra HVDC link, or at earlier opportunity, would take-up with CERC the issue of short-term open access charges to be at the same rate as that for the long-term committed beneficiaries.

7.3 Transmission system for North Karanpura (1980 MW) and Maithon RB (1000MW)

7.3.1 CE(SP&PA) stated that for evacuation of power from North Karanpura and Maithon RB, the following transmission system was proposed:

With North Karanpura:

- (i) North Karanpura – Sasaram 765kV S/C line with 2x1500MVA, 765/400kV s/s at Sasaram
- (ii) North Karanpura – Ranchi 400kV D/C line
- (iii) North Karanpura – WR pooling Station near Sipat 765kV S/C line with 2x1500MVA, 765/400kV s/s at WR pooling station near Sipat
- (iv) WR pooling station near Sipat – Sipat 765kV S/C line
- (v) WR pooling station near Sipat – Seoni 765kV S/C line

With Maithon RB:

- (vi) Maithon RB-Maithon PG 400kV D/C line
- (vii) Maithon RB – Ranchi 400kV D/C line
- (viii) Biharsharif – Sasaram 400kV D/C line

With North Karanpura or Maithon RB for the Northern Region:

- (ix) Sasaram-Fatehpur-Agra 765kV S/C lines with 765kV s/s at Agra having 2x1500 MVA 765/400kV transformers and 765/400kV s/s at Fatehpur having 2x1500 MVA 765/400kV & 2x315 MVA 400/220 kV transformer and LILOs of Singrauli/Allahabad – Kanpur/Mainpuri 400kv lines at Fatehpur.

If N. Karanpura comes first:

With N.Karanpura: Sasaram-Fatehpur-Agra 765kV charged at 400kV; 400/220kV 2x315 MVA s/s at Fatehpur; LILO of Singrauli-Kanpur 400kV S/C and LILO of one circuit of Allahabad-Kanpur 400kV line at Fatehpur

With Maithon RB: Charging of Sasaram-Fatehpur-Agra line at 765kV with upgrading Fatehpur and Agra s/s by providing 2x1500 MVA 764/400kV transformers; LILO of Allahabad-Mainpuri 400kV D/C line at Fatehpur

If Maithon RB comes first:

With Maithon RB: Sasaram-Fatehpur-Agra 765kV charged at 400kV; 400/220kV 2x315 MVA s/s at Fatehpur; LILO of Singrauli-Kanpur 400kV S/C and LILO of one circuit of Allahabad-Kanpur 400kV line at Fatehpur

With N.Karanpura: Charging of Sasaram-Fatehpur-Agra line at 765kV with upgrading Fatehpur and Agra s/s by providing 2x1500 MVA 764/400kV transformers; LILO of Allahabad-Mainpuri 400kV D/C line at Fatehpur

- (x) Sasaram–Balialia 400kV D/C (quad) line (with N.Karanpura or Maithon RB whichever comes first)
- (xi) Agra – Gurgaon 400kV D/C line (with N.Karanpura or Maithon RB whichever comes first)

Regarding sharing of the transmission charges for the above lines it was proposed that works at (i), (ix), (x) and (xi) to be basically part of NR transmission system to be shared by NR constituents as their regional transmission system, works at (iii), (iv) and (v) to be basically part of WR transmission system to be shared by WR constituents as their regional transmission system, works at (ii) to be shared by beneficiaries having allocation of power from North Karanpura and works at (vi), (vii) and (viii) to be shared by beneficiaries having allocation from Maithon RB power.

7.3.2 The representatives of the NR constituents agreed with the above proposal.

8. Evacuation system form Kishenganga HEP in J&K

- 8.1 Chief Engineer (SP&PA) stated that evacuation system from Kishenganga HEP was deliberated in the 17th Standing Committee Meeting of NR and 220 kV Kishenganga - New Wanpoh and Kishenganga - Zainkote D/C lines were agreed. Both the above lines were to be LILOed at 220/132 kV Alistang S/S of PDD J&K. Subsequently, PDD, J&K covered the works of 220/132 kV Alistang S/S and 220 kV Alistang - Zainkote D/C line under special package scheme given by Central Government for development of transmission/distribution system in J&K. Accordingly, the proposal under Kishenganga transmission system required necessary revision.
- 8.2 SE, PDD, J&K stated that one 220kV D/C line could be constructed as Kishenganga-Alistang-New Wanpoh and the other 220 kV D/C line from Kishenganga could be taken to Amargarh instead of to Alistang/Zainkote, as PDD, J&K was developing a 220 kV S/S at Amargarh and the line from Amargarh to Zainkote was also been covered under special package scheme to J&K. The Committee agreed to the proposal and stated that PDD, J&K might ensure that the 220/132 kV S/S as well as the line from Amargarh to Zainkote was taken up for construction by PDD, J&K under special package scheme given by Central Government for development of transmission/distribution system in J&K.
- 8.3 In view of the above, it was agreed that the transmission system under Kishenganga evacuation system would be as following:-
- Kishenganga – Alistang - New Wanpoh 220 kV D/C line
 - Kishenganga - Amargarh 220kV D/C line.

9. **Transmission system from hydro projects in Uttaranchal**

9.1 **Tehri PSP (1000 MW), Loharinagpala (4x150 MW) and Pala Maneri (416 MW)**

Chief Engineer (SP&PA) stated that the transmission system for evacuation of power from Tehri PSP, Loharinagpala and Pala Maneri was proposed to as following:

- (i) Tehri - Tehri pooling station 400 kV S/C (Quad)
- (ii) Loharinagpala – Tehri pooling station 400kV D/C (triple)
- (iii) LILO of one circuit of Loharinagpala – Tehri pooling station 400kV D/C line at Pala Maneri
- (iv) LILO of both circuits of Bareilly - Mandaula 400 kV D/C line at Meerut
- (v) Charging of Tehri pooling station - Meerut 765kV 2xS/C line at 765 kV by establishment of 765/400 kV s/s at Tehri pooling station and Meerut and modification of series capacitors on the lines for 765kV operation.
- (vi) Meerut – Agra 765kV S/C line.

CE (SP&PA) stated that works at (i), (ii) and (iii) were to be tied up with specific generation projects where as works at (iv) and (v) were to be taken up matching with first of the three generation projects and the work at (vi) were to be tied-up with last of the three generation project. Further, the 765/400kV transformer capacities at Tehri pooling station and Meerut were also be optimised in term of size, numbers and phasing. ED(Engg), Powergrid stated that it would be better to adopt the standardized size of 1500 MVA for the 765/400kV transformers and provide three transformer each at Tehri and Meerut.

The above proposals were agreed by the constituents.

9.2 **Lata Tapovan (108 MW), Tapovan Vishnugad (4x130 MW) and Srinagar (4x82.5 MW)**

The proposed transmission system for the above projects was also discussed. POWERGRID suggested that Development of Kuwaripass 400/132kV s/s by UPCL and evacuation system for Lata Tapovan at 132 kV as was proposed earlier would be a better option. Shri V.P. Tiwari, Executive Engineer, UPPCL stated that they had signed MoU with M/s. Duncan Power LTd for purchase of power from Srinagar HEP and evacuation system for the project had also been worked out between UPPCL and UPCL. Shri B.M.Verma, JMD, UPCL stated that UPCL was considering to develop the transmission system in Uttranchal as a comprehensive project. CE (SP&PA), CEA stated that if UPCL was intending to develop regional transmission system that would meet inter-state transmission needs, they would need to approach CERC.

10. The meeting ended with a vote of thanks.