Summary record of the 17th Standing Committee Meeting of transmission system planning of Northern Region held in NREB on 10th August 2004.

List of participants is enclosed at Annex.

Item 1- Confirmation of the minutes of the 16th SCM on power system planning in NR held on 24.3.04 at NREB, New Delhi.

Chief Engineer (SP&PA), CEA welcomed the participants of the 17th Standing Committee Meeting. He stated that the agenda for the meeting covers the hydro generation projects in Northern region which are likely to come during 11th plan time frame. Most of these projects were accorded TEC/ on the process of accordance of TEC by CEA.

He informed that the minutes of the 16th Standing Committee Meeting were circulated on 15.04.04 and the subsequent corrigendum to the minutes were also issued in 14.05.04. No objection from any utility regarding the minutes have been received so far except from Himachal Pradesh. He stated that in the corrigendum issued for the minutes of the meeting for 16th standing committee, it was stated that "Creation of 400/220 kV pooling point at a location close to the alignment of Chamera-Jullundhar and Parbati-Amritsar lines. In the Chamera-III time frame, this would be only 220kV switching station which would be upgraded to 400kV in future". However, HPSEB feel that the above information regarding the location of pooling point does not clearly define the location of the pooling point which may shift outside the boundary of HPSEB.

Director (Planning), HPSEB stated that in the 16th SCM it was decided that in Chamera III time frame there would be only 220 kV switching station, which would be upgraded to 400 kV in future by creation of 400/200 kV pooling point at a suitable location near Hamirpur and so stated in the original minutes. However, in the subsequent corrigendum issued in May 2004, the location of the substation had not been specified and it could be located anywhere even outside Himachal Pradesh.

Director (AI), CEA stated that spirit of the statement in the corrigendum issued was not to shift the location of the 400/220 kV pooling station outside Himachal Pradesh. However, for the specific assurance of Himachal Pradesh, it might be noted that in Chamera III time frame there would be only 220 kV switching station, which would be upgraded to 400 kV in future by creation of 400/200 kV pooling point (matching with Parbati III time frame) at a suitable location near Hamirpur.

The members of the Committee agreed for the same. CE (SP&PA) stated that since there was no objection from any of the member on any other issues of the minutes of the 16th Standing Committee Meeting so, the minutes of the 16th SCM along with the corrigendum issued with amendment regarding location of the pooling point near Hamirpur might be taken as confirmed.

Item 2- 10th and 11th plan transmission programme of State utilities in NR and schedule for completion of various transmission works

Chief Engineer (SP&PA) stated that during 10th and 11th plan the generation capacity addition have been envisaged under State/Private/Central Sector to meet the load growth in Northern region. He stated that Secretary (Power) in a meeting desired that the state power utilities might identify their transmission requirement at 400kV, 220kV, 132kV and 66 kV level during 10th and 11th plan for absorption of power from the generation projects under State/Private/Central Sector and intimate the same to CEA, so that proper development of the transmission system could be possible. He further stated that without the information from state utilities regarding their plan for development of the transmission network it would be very difficult for the central agency to plan their investment on transmission system required at the regional level. He stated that CEA had already requested all the state transmission utilities in May 2004 to furnish the details of transmission and transformation works at 400kV, 220kV, 132kV and 66 kV to be executed by the states during 10th and 11th plans and subsequent reminders were also sent. HPSEB, RVPNL, HVPN and UPCL had made available the data relating to their 10th and 11th plan works to CEA. This information is essentially required for coordinated development of the transmission system and the States like UP through which transmission and transformation system from many generating projects were planned have not furnished any data so far. Due to the lack of information regarding the development of their downstream network it would be difficult for CEA to carry out further studies/ assessment regarding strengthening requirement in the transmission system of the Northern Region. He requested all the agencies, which had so far not furnished their data, to send the same by 10th of September.

All the representatives from the States agreed for the same,

Item III- Evacuation system from Loharinag Pala HEP (4x150 MW)

Chief Engineer (SP&PA) stated that lot of hydro generation projects were being identified in Uttaranchal. On request from UPCL, studies were carried out by CEA for evacuation of power from these generating stations and a report thereon was forwarded to UPCL. UPCL had entrusted these generation projects to different agencies for implementation. Loharinag Pala and Tapovan HEP had been allocated to NTPC for execution. He stated that Loharinag Pala HEP was located in the upstream of Tehri and another project Pala Maneri HEP was also envisaged in the close vicinity to Loharinag Pala HEP. He further stated that there were other generation potential identified by CEA in Uttar kashi district of Uttarnachal. Accordingly, an integrated evacuation system from these projects needed to be evolved considering the scarcity of R-O-W in hilly terrain and optimization of the existing/under construction/planned transmission network. He stated that the CEA had carried out study for evacuation of power from Loharinag Pala HEP corresponding to 11th plan condition, considering the generation at Pala

Maneri, Koteshwar HEP and Tehri stage-I & II. As per the study, following evacuation system were evolved: -

- Generation of Loharinag Pala HEP power at 400 kV level
- Loharinag Pala HEP – Koteshwar Pooling Point 400 kV D/C line
- Koteshwar Pooling Point – Meerut 765 kV S/C line (considering the other lines from Koteshwar pooling point – Meerut line charged at 765 kV)
- 765/400 kV, 3x333 MVA ICT at Koteshwar Pooling Point and at 765/400 kV Meerut S/S

Considering most of the hydro projects envisaged in the Bhagarathi basin to be run of the river scheme, during low generation condition, with 3 nos. lines from 765 kV Koteshwar pooling point to Meerut, high voltage problem would arise due to heavy MVAR injection by the lines in to the system. It was therefore found pragmatic to evacuate the power from Loharinag Pala to Koteshwar pooling point through 400 kV D/C line and then to Meerut through Koteshwar pooling point – Meerut 2xS/C 765 kV lines charged at 400 kV along with provision for series compensation on the line as well as Dynamic VAR compensation at 400/220 kV Meerut S/S, instead of constructing 3rd 765 kV circuit from Koteshwar pooling point to Meerut. He asked POWERGRID to indicate if they had carried out study regarding the quantum of series compensation as well as the SVC requirement at Meerut.

DGM, POWERGRID stated that study carried out by POWERGRID shows that 50% series compensation on the Koteshwar pooling point to Meerut line and dynamic compensation to the tune of about 400 MVAR at 400/220 kV Meerut S/S would be adequate. However studies to optimize requirement of dynamic compensation were yet to be carried out.

CE (SP&PA) stated that NTPC had recently submitted the project report for Loharinag Pala for accord of TEC of CEA and the same was under process. NTPC in the project report had indicated that the beneficiary from the project would be states of the Northern Region. However, it was proposed by NTPC that the generating station would be operated as a Merchant plant. He stated that NTPC should clarify their stand regarding identification of beneficiaries and their shares of power so that evacuation system required for transmitting the power to the proposed beneficiaries could be finalised.

ED(Engg) POWERGRID stated that if NTPC did not sign any BPTA with the states for purchase of power, it would be very difficult for POWERGRID to frame the associated transmission system.

HOD (Elect), NTPC stated that Northern Regional constituents are likely to be the beneficiaries of power from the project. For evacuation of power the transmission line between Loharinag Pala to Koteshwar pooling point had to be constructed whether NTPC followed long term open access system or short term open access system. Further, from Koteshwar the power could be evacuated through already constructed Tehri system. For development of transmission system requirement beyond Meerut, NTPC would identify the beneficiaries within a period of six months and intimate the same to CEA. He stated that NTPC would prefer to have both short term as well as long term agreement with the beneficiaries.

Director (SP&PA), (NR) stated that recently CEA have received the project report from Uttaranchal for ADB funding of the transmission system form the generation projects in Uttaranchal and the evacuation system form Loharinag Pala was one of those. He stated that it should be clarified whether NTPC would develop the project as stand alone or as regional project.

MS, NREB stated that if Uttaranchal were interested in construction of transmission line upto their state boundary and beyond which the power would be taken through the regional system then it would be a welcome step and the Uttaranchal should be encouraged for the same.

CE (SP&PA) stated that considering construction of lines in hilly terrain was difficult, Uttaranchal should look forward for feasibility of construction of the evacuation system matching with the generation project, availability of finance and transmission corridor.

HOD (Elect.), NTPC stated that they would start work for construction site of the Loharinag Pala project very soon, therefore, decision regarding the transmission system from project switchyard to Meerut should be freezed. The evacuation system beyond Meerut could be evolved once the project beneficiaries were identified.

CE (SP&PA) stated that the evacuation system from Loharinag Pala would also be required for evacuation of power from Pala Maneri HEP as well as other hydro projects in the upstream of Loharinag pala. Therefore, a consolidated transmission system needs to be developed. Considering this, he stated that the line from Loharinag Pala to Koteshwar pooling point should be constructed with 3x0.5 conductor as D/C line. For evacuation of power from Koteshwar pooling point to Meerut the system agreed with Tehri St I could be utilized along with addition of 50% series compensation on Koteshwar - Meerut line and dynamic VAR compensation at Meerut S/S. Further evacuation arrangement beyond Meerut S/S could be decided after the confirmation of beneficiaries and their share of power from the Loharinag Pala project of NTPC.

Item IV - Evacuation system from Tapovan Vishnugad HEP (4x130 MW)

CE (SP&PA) stated that Tapovan - Vishnugad HEP was one of the projects in Alaknanda basin being taken up by NTPC. The proposal of the project is under consideration in CEA for accord of TEC. The project was expected in 11th plan time frame and similar to Loharinag Pala HEP, NTPC had informed that in long term they would like to utilize the project as a merchant plant.

HOD (Elect), NTPC stated that like Loharinag Pala HEP beneficiaries of power from Tapovan- Vishnugad HEP would be constituents of Northern Region and name of beneficiary states with their share of power would be intimated to CEA within six months.

CE (SP&PA), CEA stated that considering the geographical location of Tapovan Vishnugad HEP and its close proximity to the Vishnuprayag HEP (400 MW) being executed by M/s. Jaypee Industries, it was found prudent to utilize the redundancy that would be available in Vishnuprayag system. However, considering the frequent occurrence of land slide in that region it would be preferable to have evacuation corridor from the project in different direction. He stated that the same would depend on when and how long benefits from Srinagar HEP materialized, proposal for development of other projects in Alaknanda basin and the commissioning schedule of other generation projects envisaged around Tapovan Vishnugad area. CE (SP&PA) stated that considering the above factor the following evacuation system from Vishnuprayag HEP had been proposed.

(i) Stepping up the generation from Tapovan Vishnugad HEP at 400 kV.
(ii) Creation of pooling station near Kuwari Pass
(iii) Tapovan Vishnugad - Kuwari Pass 400 kV D/C line with 3x0.5 conductor
(iv) LILO one of the line from Vishnuprayag - Muzaffarnagar at Kuwari Pass

He stated that considering other generation projects envisaged near Karanprayag, lines at 400 kV from Kuwari Pass to Rampur with 400 kV S/S at Karanprayag and Almora have been envisaged. However the association of the line with any project would depend on the development of other project proposal in this area and their firm-commissioning schedule.

HOD (Elect), NTPC stated that NTPC would like to know that whether it was possible to take the power from Tapovan Vishnugad to Koteshwar pooling point by constructing a 400 kV D/C line.

CE (SP&PA) stated that it would not be advisable to load Koteshwar pooling point any further by bringing power from projects located in other basin. However, the transmission system could be finalised after the identification of beneficiaries and their share of power from Tapovan Vishnugad HEP of NTPC.

Item V - Evacuation system from Kishenganga HEP in J&K

CE (SP&PA),CEA stated that the Kishenganga project would be located in the sensitive region near LOC and was expected to be completed by the end of 11th plan time frame. The project would be constructed by NHPC and considering the difficult terrain/location, 4 nos of 220 kV line bays have been considered for evacuation of 330 MW of power. He stated that one 220 kV D/C line from the project would be taken to the existing 220 kV Zainkote S/S of J&K and another to the 220 kV new Wanpoh S/S of PDD, J&K. He stated that both these lines would be LILOed at 220/132 kV Alistang S/S as and when the same was commissioned. Further he informed that MoP had already given consent for construction of 220 kV S/C line from Leh to Alistang. So when the S/S would be commissioned the power from Kishenganga HEP could be fed to J&K, Leh/ Ladak area and to rest of the Northern grid through displacement.

The proposal was agreed to by all constituents.

Item VI - Power evacuation system from Uri II HEP (240 MW)

CE (SP&PA) stated that Uri II HEP was considered in the 16th SCM of NR wherein the following system were agreed:-

(i) Stepping up the generation at 400 kV Uri II
(ii) LILO of one of the existing circuit from Uri I - Wagoora D/C line at Uri II

On the apprehension shown by the committee regarding the possibility of bottling of power from Uri I and Uri II in the event of tower outage, it was decided that NHPC would explore the possibility of availability of 400 kV bays at Uri I/Uri II for construction of one additional line from Uri to Wagoora. NHPC later on confirmed the availability of one no. of 400 kV bay at Uri I and accordingly following system was proposed:-

(i) Stepping up the generation at 400 kV Uri II
(ii) LILO of Uri I - Wagoora 3rd ckt at Uri II
(iii) 1x315 MVA ICT along with 2 nos. of 220 kV line bays at Wagoora S/S by POWERGRID.

CE (SP&PA) stated that 2 nos. of 315 MVA ICT was existing at Wagoora. 3rd 1x315 MVA ICT was agreed as a part of strengthening work. 4th ICT at Wagoora would be required to meet the winter load of the valley during 11th plan period when the availability of power would be less, whereas the demand for power would increase. It was therefore found necessary to make provision for 4th, 1x315 MVA transformer along with 2nos. of 220 kV line bays for J&K.

DGM, POWERGRID stated that whether the provision of the transformer would be required at Wagoora since the existing 3 nos. ICT seems to be adequate.

The matter was deliberated at length and it was decided that except for the provisions for 1x315 MVA ICT along with 2 nos. of 220 kV bays the provision proposed from Uri II

HEP was agreeable to the members. However, it was decided that the proposal for the requirement of 4th 315 MVA ICT along with 2 nos. of additional 220 kV bay would again be reviewed after carrying out load flow studies for winter condition in J&K.

Item 7 - Transmission system associated with Unchahar III TPS (1x250 MW)

CE (SP&PA) stated that the issues regarding Unchahar III TPS were put forward in the 16th SCM. As no representative from UPPCL were present in that meeting the matter was deferred for the next meeting and as such the same had again been put forward to the committee for deliberation. He stated that the issue hangs around construction of 220/132 kV S/S at Rai Bareilly by UPPCL and in the agenda two proposals had been put forward for consideration. He asked the representatives from UPPCL to furnish their views in this regard. Executive Engineer from UPPCL stated that they would like to go for the second option wherein it was stated that Rai Bareilly S/S and the associated LILO of Unchahar - Lucknow line at Rai Bareilly and Unchahar - Rai Bareilly line would be a part of the regional scheme.

The members of the committee also agreed to the proposal.

Item 8 - <u>Additional Agenda</u>

A. Construction of 400 kV line from Nalagarh – Kunihar along with 400/220 kV S/S at Kunihar

CE (SP&PA) stated that Member Secretary NREB had put up the issue regarding high voltage condition at Nalagarh during light load condition with only one machine on bar at Nathpa Jhakri HEP to CEA and requested to take up the matter in the 17th SCM of transmission system planning in Northern Region. He stated that due to very low drawal at Nalagarh, the voltage at Nalagarh remains very high during light load condition. The construction of Nalagarh - Kunihar 400kV D/C line was envisaged about 9 years back and the same had not been taken up by HPSEB even until now. He stated that under present condition the load growth at Kunihar did not warrant the need for 400 kV S/S at Kunihar and load demands of Kunihar could be easily met by drawing 220 kV D/C line from Nalagarh instead of construction of 400 kV S/S at Kunihar.

Director (Planning), HPSEB stated that Himachal Pradesh was in the process of construction of 400 kV line and some money had already been spent on the project. He informed that the 400 kV S/S at Kunihar would be required to meet the upcoming industrial load of Baddi.

CE (SP&PA) stated that load at Baddi could be supplied from Nalagarh at 220 kV and in that process heavy spending on construction of 400 kV S/S could be saved. As such, he suggested that Himachal Pradesh should consider construction of 220 kV line from Nalagarh to Kunihar instead of 400kV as proposed.

Director (Planning), HPSEB stated that to resolve the issue a meeting between HPSEB, NREB, CEA and POWERGRID would be required.

After deliberation it was decided that meeting between CEA, NREB, HPSEB and POWERGRID be arranged to further deliberate and decide on the issue.

B. Augmentation of transformer capacity at (i) 400/220 kV Moga S/S by installation of IVth 1x250 MVA ICT. (ii) 400/220 kV Ludhiana S/S

ED, Powergrid informed that loading on existing 3x250 MVA, 400/220 kV Moga S/S touched a load of 757 MVA during June 2004 necessitating augmentation of transformation capacity. POWERGRID proposed to install fourth transformer of 1x250 MVA capacity.

Director (Plg), PSEB stated that PSEB was facing problem in drawing power from Moga, 400/220 kV S/S due to insufficient transformation capacity. He further stated that PSEB have already laid four 220 kV circuits with twin moose conductor for drawal of power from 400 kV S/S Moga to 220 kV Moga S/S. He pleaded for augmentation of transformation capacity at 400/220 kV Moga with 1x250 MVA ICT as proposed by POWERGRID. He further stated that in the 14th Standing Committee meeting the capacity of Ludhiana 400/220 kV was proposed as 3x315 MVA while in the minutes of the 16th Standing Committee meeting the capacity has been reduced to 2x315 MVA.

CE (SP&PA), CEA stated that considering the overloading of Moga 400/220 kV S/S as pointed out by POWERGRID and PSEB the proposal for augmentation of 400/220 kV Moga S/S by installation of 4th 1x250 MVA ICT could be agreed. But in respect of the proposal of 3rd ICT or 400/220 kV Ludhiana S/S, the load flow studies carried out in CEA indicates loading of 450 - 500 MW, for which the transformation capacity of 2x315 MVA, as agreed in 16th SCM, was justified. However, the requirement of the third ICT at Ludhiana as requested by PSEB could be reviewed at a later date when the power flow through the Ludhiana 400/220 kV substation necessitated the same.

All the participants agreed for augmentation of 400/220 kV ICT at Moga under regional strengthening project.

17th Standing Committee meeting of CEA held on 10.8.2004 at NREB, New Delhi.

List of participants

CEA

1. Shri V. Ramakrishna , Chief Engineer
2. Shri S.K. Thakral, Director
3. Shri A.K. Asthana, Director
4. Shri Goutam Roy, Dy. Director
5. Shri Navin Seth, Dy. Director

NTPC

1. Shri S.N. Goel, AGM (C)
2. Shri A.K Gupta, HOD (Elect)

NREB

1. Shri B K Mishra, Member Secretary
2. Shri A.K. Malik, SE (Operation)
3. Shri Prahlad , EE
4. Smt Sarita Sewak, AEE

PGCIL

1. Shri R.N. Nayak, ED (Engg.)
2. Shri Y.K. Sehgal, DGM(Engg.)
3. Shri Mukesh Khanna, CDE(Engg.)

NPCIL

1. Shri NSM Rao, CE
2. Shri Rajesh Laad, Dy. CE

RVPNL

1. Shri Y.K. Raizada, ACE (PP&M)
2. Shri L.N. Nimawat, XEN

UPCL

1. Shri Mahesh Chander, DGM

UPPCL

1. Shri S.K. Garg, EE
2. Shri V.P. Tiwari, EE

HPSEB

1. Shri E.V.D Sharma. Director

NHPC

1. Shri Rajkumar, GM (Design E&M)

HVPN

1. Shri T.K. Dhingra, SE

PSEB

1. Shri I.S. Anand, Director (Planning)