Central Electricity Authority
System Planning & Project Appraisal Division
Sewa Bhawan, R.K. Puram, New Delhi – 110066.

No. 51/4/SP&PA-2007/ 625-635 **Date: July 17, 2007**

To

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Sub: 24th meeting of the Standing Committee on Power System Planning of Southern Region
- Minutes of the meeting

Sir,

24th meeting of the Standing Committee on Power System Planning of Southern Region was held on June 18, 2007 at Bangalore. Minutes of the meeting are enclosed.

Your comments and observations, if any, may be sent to us at the earliest.

Yours faithfully,

Encl: Minutes

(Pardeep Jindal)
Director (I/C) (SP&PA-III)
(Telephone No. 011 26732325)

Standing Committee on Power System Planning in Southern Region

Minutes of the 24th Meeting held on June 18, 2007 at Bangalore

- 24th meeting of the Standing Committee on Power System Planning in Southern Region (SCPSP-SR) was held on 18th June 2007 (Monday) at conference hall, SRPC, Bangalore.

- Agenda note for discussion for this meeting was circulated by CEA vide on June 04, 2007 and subsequently, additional agenda note was circulated on June 15, 2007. A copy of the agenda note is given at Annex-I, for reference.

- The meeting was chaired by Member (Power System), CEA.
  The list of participants is given at Annex-II.

Summary Record of Discussions:

1.0 Shri V. Ramakrishna, Member (Power System), CEA welcomed the participants and thanked SRPC for organizing the meeting. He emphasized the need for timely implementation of the decisions taken in meetings of Standing Committee on Power System Planning in Southern Region (SCPSP-SR) and said that monitoring of the progress of implementation would also be discussed in these meetings. He also said that the present standing committee was upgraded to include participation at the level of Member/Director of Corporations, to expedite the decision making and implementation process in transmission development. He, therefore, emphasized that the planning issues discussed and agreed in SCPSP may not be re-opened/ re-discussed in the TCC meetings, and any decision on issues relating to commercial aspects of the proposals may be discussed directly in the RPC forum.

2.0 Confirmation of the minutes of 23rd meeting of the Standing Committee

2.1 Shri A. K. Asthana, CE (SP&PA), CEA said that the minutes of the 24th meeting held on January 22, 2007 at Chennai, were circulated on 21-02-2007 and subsequently, based on observations received from NPCIL, a corrigendum to the minutes was circulated on 19-04-2007. He said that these minutes along with the circulated corrigendum might be confirmed.

2.2 NPCIL representative stated that the circulated corrigendum did not reflect the dissent of NPCIL on the decision taken in the 23rd meeting for implementation of the reactors in Southern Region grid. He said that, at the time of evolving transmission system for Kaiga APP Stage-I & II, no reactor had been envisaged at Kaiga and the over voltage problem in Southern Region had surfaced after addition of major regional power system elements in Southern Grid, that were added subsequently. Therefore, installation of reactors to elevate the high voltage problem in SR should be taken up by POWERGRID. He also mentioned that, in the 2nd SRPC meeting held at Hyderabad on 31-10-2006, it was resolved that a subset of 9 reactors (7 reactors at POWERGRID owned substations, 1 bus reactor at Kaiga and 1 bus reactor at Davangere) will be commissioned by POWERGRID.

2.3 Minutes of the 23rd meeting along with the above note of NPCIL were confirmed.

3.0 Review of Progress of Schemes under construction by POWERGRID:

3.1 Member (PS) asked PGCIL to give status of implementation of various transmission schemes, which were earlier discussed and agreed in the previous meetings of this Standing Committee. AGM (PGCIL) submitted a list giving status on progress of their schemes in Southern Region. The list giving status of Southern Region on-going schemes, as submitted by PGCIL is given at Annexure-III.

3.2 The list includes progress of following schemes and the revised targets of completion of these schemes:

Sl. No.	Name of Scheme	Revised Target
1.	System Strengthening Scheme in Southern Region - V	June 2007
2.	System Strengthening scheme in Southern Region- VI	Dec. 2007
3.	Neyveli TS-II Expansion Transmission System	Feb. 2009
4.	Kaiga U 3&4 Transmission System	Sept. 2007/

		Dec. 2007
5.	Kudankulam Transmission System	Dec. 2008
6.	System Strengthening scheme in Southern Region- VII	Dec. 2008
7.	Up-gradation of transfer capacity of Talcher – Kolar HVDC Bipole	Oct. 2008

3.3 In particular, POWERGRID informed that, because of delay in getting necessary forest clearance, there was delay in completion of the Mysore – Kozhikode 400kV D/C line. Member (PS), asked MD, KPTCL to help in this matter, he also asked POWERGRID to approach CEA with details, if the matter was to be taken up with Ministry of Forest, at CEA' s level.

3.4 APTRANSCO officials said that the Warrangal 400kV S/S might be advanced to meet their requirements. POWERGRID said that this could be done provided APTRANSCO agrees to pay for the period of advancement, because the LILO work and the Warrangal 400kV S/S were associated to NLC TS-II Expansion project, and that, they were matching completion of the transmission works with those of the generation project. CE, APTRANSCO said that, they would take up the matter with their management, and then respond.

3.5 Member (PS) observed that there was considerable time gap between the approval of the Board of PGCIL and the agreement to the scheme in the Standing Committee in respect of certain schemes. He stated that the objective of taking up strengthening schemes was to enable early approval from PGCIL Board and early completion / implementation of the proposals. He suggested that in future PGCIL may take early action to obtain the Board' s approval for strengthening and other projects within the delegated powers of the Board so that the same could be implemented within the stipulated time.

4.0 Status of Augmentation of Talcher-II Transmission Scheme:

CE(SP&PA) informed that the transmission scheme for Augmentation of Talcher II Transmission, which included Talcher II – Rourkela 400kV Quad D/C and Talcher II – Berhampur – Gajuwaka 400kVD/C with switching station at Berhampur, had been identified by the Empowered Committee constituted by Government of India

for execution through tariff based competitive bidding. For steering this process, Government of India has entrusted this project to a Special Purpose Vehicle (SPV) of Rural Electrification Corporation (REC). The competitive bidding process for selecting the developer, was under process.

5.0 Transmission System for North Chennai JV TPS (2x500 MW):

5.1 CE, CEA informed that the in the Associated Transmission System (ATS) for North Chennai JV TPS (2x500 MW), consisted of four numbers of 400 kV outlets provided through LILO of both circuits of Alamathy –Sriperumbudur 400 kV D/C line, a 400/230 kV ICT and provision of 230 kV outlets from the TPS, as agreed in the past meeting. The provision of 230kV level at this TPS had been reviewed in light of requirement of GIS type switchyard due to proximity to sea coast and from cost consideration. NTPC had proposed not to have 230 kV level as the 4 numbers of 400 kV outlets would be sufficient for power evacuation in a reliable manner. In this regard he further said that they had taken up the matter with TNEB. TNEB representatives gave their consent for deletion of provision of 400/230kV ICT and 230kV level outlets from North Chennai JV TPS.

5.2 Members of the committee agreed to this change and accordingly, the revised transmission scheme for evacuation of power from NCTPS would be:

(1) LILO of both circuits of the Alamathy - Sriperumbudur 400kV D/C line at North Chennai JV TPS.

5.3 NTPC representative informed that the first unit at North Chennai JV TPS was expected by June 2010 and to meet requirement of start up power, he wanted that, the LILO works should be completed by PGCIL about 9 months prior to commissioning of the generation projects, i.e. by September 2009. AGM, PGCIL said that they would make efforts to complete it as desired, however NTPC should give the confirmed schedule when it was required and the beneficiaries should agree to pay the transmission charges for the period up to start of generation for which view to be taken at the earliest. Member (PS) said that this issue may be taken up in the next SRPC meeting.

5.4 In regard to the allocation of rest of 25% of power from NC JVTPS, NTPC representative informed that the Joint Venture company had given a tentative allocation. As per this allocation, Tamil Nadu would have 750 MW, Kerala 75 MW,

Pondicherry 50 MW and Karnataka 125 MW. Member (PS), CEA said that this allocation should be got confirmed from the Ministry of Power, GOI.

6.0 Status of Transmission System for Tuticorin TPS (2x500 MW).

6.1 CE, CEA said that the transmission system for Tuticorin TPS (1000 MW) of JV of NLC and TNEB as agreed in the 23rd meeting, included:

i) Tuticorin JV TPS – Madurai 400 kV D/C Quad.

ii) 2x315 MVA 400/230kV ICT at Tuticorin TPS JV.

iii) LILO of 2 nos. of 230 kV circuits at Tuticorin TPS JV.

He said that the Tuticorin JV TPS – Madurai 400 kV D/C Quad line, was to be implemented by POWERGRID, 2x315MVA, 400/230kV ICT was to be provided by Generation Developers and the 230kV LILO lines were to be implemented by TNEB and the commissioning schedule of all the works should be properly matched. AGM, POWERGRID informed that the system would be built matching with commissioning of the generation project. TNEB informed that the 230kV LILO works, which are to be taken up by them, would also be completed matching with generation.

6.2 CE, CEA further said that 75% of power from this project was for TNEB, however, allocation of rest of 25% was yet to be decided. He asked the representatives of NLC and TNEB to decide the allocation of rest of 25% of power at the earliest. He said that based on allocation from Tuticorin JV TPS and North Chennai JV TPS, some new transformation capacities/ new substations could be added in Southern region as system strengthening works. He asked the state representatives to give their recommendations for transformer capacity additions, which could be taken up in the next meeting of the Standing Committee. States agreed to send their requirements.

7.0 Implementation of Reactors to contain over-voltage in Southern Region

7.1 CEA said that based on the decision taken in the 23rd meeting, POWERGRID was to deploy 11 nos. of reactor (7 bus reactors + 4 line reactors), NTPC – 2 nos. of bus reactors, NPCIL – 1 no. of bus reactor, NLC – 2 nos. of bus reactors, APTRANSCO - 4 nos. of reactor (3 bus reactors + 1 line reactors), and KPTCL – 5 nos. of bus reactors. NPCIL and NLC representatives expressed that these works should be implemented by PGCIL as system improvement schemes for Southern Region.

7.2 After discussions it was agreed that the 11 reactors at PGCIL substations would be implemented by PGCIL as system strengthening scheme. The 14 nos. reactors to be implemented by STUs or generation utilities can be implemented by respective utilities/agencies or they can approach PGCIL for their implementation as deposit work of respective STU/Generation utilities.

7.3 NPCIL stated that reactor at Kaiga should also be implemented by PGCIL as a system strengthening scheme as was agreed in 2nd SRPC meeting held at Hyderabad on 31-10-2006. However, this was not agreed in view of practice of provision of switchyard facilities by the generator.

8.0 Switchyard provisions at North Chennai JV TPS and Tuticorin JV TPS

CE (SP&PA), CEA said that as clarified in the 23rd meeting, switchyard equipments at North Chennai JV TPS and Tuticorin JV TPS were to be provided by the respective generation companies in their generation projects as per practice. NTPC, TNEB and NLC representatives agreed to make necessary provisions.

9.0 Establishment of Sunguvarchatram, Sholinganallur and Tirunelveli (Wind) 400/230kV S/Ss and associated transmission systems in Tamil Nadu by TNEB

9.1 CE(SP&PA), CEA asked about progress on the Sunguvarchatram and Sholinganallur 400/230kV S/Ss and associated 400kV and 230kV transmission systems being established by TNEB to meet load requirement of north Tamil Nadu area and the Tirunelveli-TNEB (Wind) 400/230kV S/S and associated transmission system to evacuate power from wind projects in south of Tamil Nadu. He also said that the Pugalur – Sunguvarchatram / Melakottaiyur(PG) 400kV D/C Quad line was agreed to be established by opening the Sunguvarchatram – Melakottaiyur link thus making connection between Pugalur – Sunguvarchatram and Pugalur - Melakottaiyur. He, however, said that, as the Sunguvarchatram – Melakottaiyur link was with Twin conductors and the line coming from Pugalur would be with quad conductors, therefore, might not have desired transmission capacity. He suggested that the 400kV D/C Quad line from Pugalur might be terminated at an intermediate 400kV S/S at Singarapet, from where connections might be established up to Sunguvarchatram / Melakottaiyur.

9.2 It was informed that there might be right-of-way problem in linking Sholinganallur 400kV S/S of TNEB with Melakottaiyur 400kV S/S of PGCIL. The matter was discussed and it was decided that TNEB officials would visit CEA in the 1st week of July with information of feasibility of ROW for required inter-connections and the arrangements would be reviewed in a joint study.

10.0 Transmission Systems for Evacuation of power from Krishnapatnam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR

10.1 CE(SP&PA), CEA informed that the transmission system for evacuation of power from Krishnapatnam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR for was discussed in the 23rd meeting of SR and the agreed transmission system was then discussed in the WR Standing Committee meeting as well as SRPC meeting. He said that based on these discussions, subsequent feed-back and analysis considering proposals for additional generations at Bhopalpalli (500MW), Mettur(500 MW), Tuticorin Stage-IV (1000 MW), North Chennai TNEB (500 MW), Ennore TPS (500 MW) and Nagarjuna TPS (1015 MW) etc and estimated exportable surplus of 6,700 MW (peak) and 12,000 MW (off-peak) corresponding to 2013-14 conditions based on National Electricity Plan-Transmission, the total scheme had been reviewed and revised proposal was given in the agenda.

10.2 CE, APTRANSCO confirmed that they would build the Krishnapatnam (AP) TPS – Chittoor 400kV Quad D/C line as part of the transmission system for evacuation of power from Krishnapatnam (APGENCO) TPS (2x800 MW).

10.3 CE, KSEB said that Kerala should also be given share from Krishnapatnam UMPP. Member(PS), CEA explained that the allocation of shares were decided by Ministry of Power, Government of India, considering the request/demand sent by various States. He said that, it was understood that the allocation for Krishnapatnam UMPP had already been frozen, however, Kerala might approach the Ministry for review.

10.4 After discussions, following transmission schemes were agreed:

Scheme – A : Increasing SR_WR Inter-Regional Transmission Capacity through HVDC back-to-back

Transmission System:

1) Narendra – Kohlapur 400kV D/C line
2) 1000 MW HVDC back-to-back at Kolhapur or Narendra, depending upon the availability of land, of which 500 MW through shifting of equipment from Sasaram.

Transfer of equipment from Sasaram would involve commercial and assets related issues. Transmission charges of the existing scheme at Sasaram for equipment to be shifted as well as unusable and leftover assets, from the date of decommissioning, would be required to be transferred to new scheme and would become payable by SR/WR constituents. The left over assets of land and building, if and when usable at Sasaram, would be credited when utilized in some future scheme.

Transmission Charges:

Transmission charges for this scheme would be shared by SR and WR constituents on 50:50 basis. Transmission scheme would be regional pool scheme of SR and WR.

Target Date:

Target would be to complete the transmission line and shifting HVDC back-to-back module by June 2010 and establish second HVDC back-to-back module by 2010-11.

Scheme – B : Synchronous Inter-connection of SR and WR

Transmission System:

1) Raichur - Sholapur 765kV S/C line-1

Transmission Charges:

Transmission charges for this scheme would be shared by SR and WR constituents on 50:50 basis. Transmission scheme would be regional pool scheme of SR and WR

Target Date:

Target would be to match with the Krishnapatnam UMPP generation project.

Scheme – C : Evacuation System for Krishnapatnam UMPP

Transmission System:

) Krishnapatnam UMPP – Nellore 400 kV, Quad D/C line

2) Krishnapatnam UMPP – Kurnool 400kV, Quad D/C line

3) Krishnapatnam UMPP – Gooty, 400 kV, Quad D/C line

4) Raichur - Sholapur 765kV S/C line-2

5) Sholapur – Pune 765kV S/C line

6) Kurnool – Raichur 765kV S/C line

7) 765kV substations at Kurnool, Raichur, Sholapur and Pune, with 765/400kV 3000 MVA transformers at each of the substations.

8) Inter-linking of Raichur and Kurnool 765kV/400kV (PGCIL) S/S with Southern Region grid through suitable inter-connection.

Transmission Charges:

Transmission charges for this scheme would be shared by all the beneficiaries of Krishnapatnam UMPP in ratio of their shares in Krishnapatnam UMPP.

Target Date:

Target would be to match with the Krishnapatnam UMPP generation project.

Scheme – D : System strengthening in Western Region corresponding to power from Krishnapatnam UMPP

Transmission System:

1) Pune (WR) – Navi Mumbai (WR) 400kV D/C line

Transmission Charges:

Transmission charges for this scheme would be shared by WR.

Target Date:

Target would be to match with the Krishnapatnam UMPP generation project.

10.5 POWERGRID representative informed that for synchronous inter-connection of SR with WR through Raichur-Sholapur 765kV lines, it was desirable that the Raichur – Sholapur 765kV S/C line-1 under Scheme-B and Raichur– Sholapur 765kV S/C line-2 under Scheme-C should be commissioned simultaneously. For this, the Raichur-Sholapur 765kV S/C line-2, which was proposed as part of Krishnapatnam transmission system should also be implemented matching with the line-1. In the event there was delay/deferment of Krishnapatnam generation project, the line-2 should also be considered as part of synchronous inter-connection between SR and WR till Krishnapatnam generation gets materializsed.

10.6 Additional 400/220kV Substations/ Transformer Additions

It was agreed that additional 400/220kV substations would be provided as regional system strengthening scheme. In this regard, Member(PS), CEA asked all the constituents to provide suitable locations for new 400/220kV substations or transformer capacity additions that based on their requirement. State representatives agreed to provide the information after confirmation from their management. TNEB had given their demand for providing a new 400/220kV S/S near Karamadai with 2x315 MVA and a new 400/220kV S/S at Singarpet with 2x315 MVA to be covered as regional system strengthening. These substations were accepted and it was decided that the proposals along with inter-connecting lines would be firmed up in the next meeting.

11.0 Transmission Addition requirements of APTRANSCO

11.1 CE(SP&PA), CEA said that APTRANSCO had proposed Bhoopalapally – Warrangal (PGCIL S/S), 400kV D/C line and Bhoopalapally – Gazwel, 400kV D/C line for evacuation of power from the Kakatiya (Bhoopalapally) TPS (1x500 MW) of APGENCO. The transmission system would to be built by APTRANSCO at their cost. To a query from Member (PS), CEA, APTRANSCO officials informed that there was no proposal for any additional unit at the Bhoopalpalli TPS. In this regard it was felt that the transmission proposal of having four number of 400kV outlets for evacuation of power from 500 MW unit was an over-provision. After discussions, it was decided that APTRANSCO may plan 400kV D/C line to Warrangal, and a 220kV D/C line from Warrangal to Siddipet, which was actually connected to Gajwel by a 220kV D/C line, to optimize the investment in transmission.

11.2 APTRANSCO was also asked to firm up the transmission systems for evacuation of power from Kothagudam Stage-IV TPS (500MW), Lower Jurala HEP (240MW) and Vijayawada-VI TPS (500 MW) generation projects.

12.0 Transmission Addition requirements of KPTCL

12.1 CE, CEA stated that KPTCL had proposed establishment of a new 400kV S/S at Bidadi with 2x500MVA 400/220kV transformer by LILO of Nelamangla – Somanahalli 400kV D/C line at Bidadi, and construction of Bellary TPS – Hiriyur

(PGCIL S/S), 400kV D/C line to evacuate power from expansion project of total 750 MW capacity at Bellary TPS complex. These transmission systems would be built by KPTCL at their cost. He informed that, in this proposal KPTCL had not considered the Bidadi 1400 MW project which was proposed in XI plan. He also said that the choice between LILO of Nelamangla – Somanahalli vis-à-vis Nelamangla – Mysore would depend on right of way feasibility for the LILO. Member(PS), CEA said that additional transmission system beyond Hiriyur and up to Bangalore would be required for effective transmission of power from Bellary complex. Members suggested various alternatives like- LILO of Nelamangla-Mysore or LILO of Nelamangla-Talaguppa for Bidadi or direct line from Nelamangla – Bidadi. Requirement of 400kV S/S at Yelahanka for Bangalore was also discussed and alternative feeding arrangement like- Hiriyur – Yelahanka - Nelamangla or LILO of Gooty – Nelamangla at Yelahanka and also interlinking of Yelahanka with Kolar were discussed.

12.2 Representative of PGCIL informed that Bidadi was located close to the alignment of Nelamangla – Somanahalli D/C line and accordingly he suggested LILO of Nelamangla – Somanahalli D/C line at Bidadi. Director (T), KPTCL suggested that the proposal could be covered under regional system strengthening for drawing their share from North Chennai JV TPS project as well as from Simhadri Stage-II TPS. The proposal was agreed by all the members. Proposal for Yelahanka 400kV S/S to be covered under regional system strengthening scheme was also agreed and it was decided that the interconnection lines would be firmed up in the next meeting based on feedback from PGCIL after route survey. With regard to Bellary TPS – Hiriyur (PGCIL S/S) 400kV D/C line, it was noted that further studies were required to ensure power evacuation of Bellary TPS in all conditions and also considering exportable power of Southern Region. It was decided to take up this in the next meeting after studies to be done by CEA.

12.3 POWERGRID representative informed that it might be difficult to acquire the land for Bidadi 400/220 kV S/S. For this KPTCL representative informed that they had already identified land at Bidadi and KPTCL would help POWERGRID in acquiring the land at Bidadi.

13.0 Transmission Addition requirements of TNEB

13.1 CE, CEA informed that a 400/230kV S/S with 3x315 MVA capacity, near Tirunelveli in south Tamil Nadu, along with Tirunelveli (TNEB) - Tirunelveli (PGCIL) 400kV D/C link, was agreed in the last meeting to help TNEB to evacuate power from nearby wind generation projects. He said that TNEB had now proposed establishment of Kayathar 400kV S/S with 400/220kV transformers of 2x315 MVA and 400/110kV transformers of 2x200 MVA capacity as additional transmission systems to strengthen the transmission network for evacuation of additional wind power. In addition TNEB had also proposed Karaikudi – Kayathar 400kV D/C line, Kanaparthy (Tirnelveli TNEB) – Kayathar 400kV D/C line and 220kV and 110kV interconnections.

13.2 Member(PS), CEA said that the proposed system would inject additional power at Kayathar and strengthening of regional/ state transmission system beyond Kayathar and up to load centers in Chennai area, would be needed. After discussions it was decided that these strengthening requirements would be evolved in the joint studies by CEA, TNEB and POWERGRID. It was decided that these studies would be carried out in the month of July. The scope of studies would also include TNEB transmission proposals for evacuation of power from their North Chennai TPS Stage-II (1x500 MW), Mettur TPS Stage-III (1x500 MW), Ennore (TNEB) TPS (1x500MW) and Tuticorin TPS Stage-IV (2x500 MW) generation projects.

14.0 Shifting of one 315 MVA 400/220kV transformer from Trivandrum to Madakathara

14.1 KSEB representative informed that as the load of Trivandrum district, up to year 2011-12, was expected to be 480 MVA only, therefore the existing 2x315 MVA transformers at Trivandrum 400 kV S/S would be sufficient. He said that the Madakathara 400/220kV S/S with 2x315 MVA which was getting overloaded was not sufficient to meet the load in Trissur district, therefore, he, suggested to shift the third transformer proposed for Trivandrum, to Madakathara S/S. PGCIL representative informed that the existing 400/220kV transformers at Madakathara owned by KSEB, might have different impedance than the transformer that had been procured for Trivandrum. So, there might be circulating current flows among the transformers at Madakathara.

14.2 After discussions, Member (PS) said that KSEB should provide the transformer at Madakathara at their own cost, however, if there was urgency, the Trivandrum transformer could be taken on loan basis by them from PGCIL, for the time being.

CE, KSEB stated that they would send their reply in two weeks time. PGCIL was asked to examine impedance of exiting transformer at Madakathara and that of the new transformer that they had procured for Trivandrum, and report regarding problem due to impedance mismatch, if any. KSEB was asked to give the confirm date when the transformer taken on loan would be returned back.

14.3 POWERGRID representative informed that they had already made expenditure for structure/erection works and foundation at Trivandrum and also investment for transformers. Therefore, the transmission charges for Trivandrum transformer and expenditure made at Trivandrum 400/220kV S/S of POWERGRID should be borne by Southern Region constituents on the delivery of transformer to KSEB. The constituents agreed for the same.

15.0 Termination of Tirunelveli – Edamon 400kV circuit under Kudankulam evacuation system at Edamon

15.1 CE, CEA informed that the transmission system for evacuating power from Kudankulam APP (2x1000 MW) was finalized in the 17th and 18th meetings of the Standing Committee on Power System Planning of Southern region. As per the scheme, out of the four circuits coming from Thirunalveli, Thirunalveli- Cochin - Trissur 400 kV quad D/C line would go directly to Cochin, and the other two circuits, to be operated initially at 220 kV, would terminate at Edamon for establishing connectivity of Tirunelveli to Trivandrum. He stated that KSEB had expressed that as Trivandrum load requirements was being met by 400kV Madurai – Tirunelveli – Trivandrum line, and the Thirunalveli – Edamon 400kV D/C line (operated at 220kV) should be bussed at Edamon itself. AGM, PGCIL said that the arrangement being suggested by KSEB, the power from Kudankulam/Thirunalveli would be restricting proper evacuation of power from the Kayamkulam CCPP.

15.2 After discussions, it was decided that one the circuits of Thirunalveli – Edamon 400kV D/C line (operated at 220kV) would be LILOed into one of the circuits of Edamon-Pothenkode 220kV D/C line and one circuit bussed at Edamon, so as to have one circuit each between Thirunalveli-Edamon, Thirunalveli-Pothenkode and Edamon-Pothenkode. In case there was operational constraint in evacuation of power from Kayamkulam due to this arrangement, the 220kV inter-connection between Tirunelveli to Edamore shall be openied.

16.0 Termination of one circuit of Neyveli(TSII) - Pulgalur 400 kV D/C at Neyveli (TSII Expansion) switchyard by utilizing one circuit of Neyveli(TSII) – Neyveli(TSII Expansion) 400 kV 2xS/C tie-lines

16.1 CE, CEA stated that for evacuation of power from the Neyveli (TSII Exp) project of NLC, the Neyveli(TSII Expansion) was to be interconnected to Neyveli(TSII) through of Neyveli(TSII Expansion) – Neyveli(TSII) 400kV 2xS/C lines and from Neyveli(TSII), the Neyveli(TSII) - Pugalur 400 kV D/C line would be for power evacuation. The interconnection system was evolved as per proposal of NLC. NLC had now proposed to connect one of the circuits of Neyveli(TSII) - Pugalur 400 kV D/C line at Neyveli(TSII Expansion) switchyard directly utilizing one circuit of Neyveli (TSII) – Neyveli(TSII Expansion) interconnection. He said that the proposal could be agreed as this would provide reliability for evacuation of power from Neyveli (TSII Exp) independent of Neyveli (TS II), and would also save for two bays. With this arrangement, the interconnecting section (one 400kV S/C line) would also become part of regional transmission system for power evacuation from Neyveli (TS II Exp).

16.2 NLC representative also requested to transfer NLCTS-II Expansion to NLCTS-II 400 kV S/C inter-connection to NLC, which was being executed by POWERGRID. For this all the constituents agreed. POWERGRID representative informed that since construction activities had already commenced, the transfer of this line from POWERGRID to NLC would be considered as transfer of assets and for any transfer of asset as per Electricity Act 2003 permission of appropriate regulatory commission was required. It was informed that the proposal of transfer was under management approval of POWERGRID and meanwhile POWERGRID shall approach CERC for the permission of transfer of assets. The proposal was agreed.

17.0 Transmission System for Evacuation of Power from Simhadri-II TPS (2x500 MW) of NTPC

17.1 CE(SP&PA), CEA stated that the Simhadri Stage-II TPS of 2x500 MW of NTPC was targeted for 2010-11 and NTPC had informed that tentatively allocation of power from this project, which would be – Andhra Pradesh (398 MW), Karnataka (175 MW), Kerala (77 MW), Tamilnadu (190 MW), Pondicherry (10 MW) and Unallocated (150 MW).

17.2 AGM, PGCIL stated that based on the studies carried out by them, for evolving a transmission system for this project, provision of an interconnection from Simhadri-II

to nearest grid point would be sufficient and no further transmission might be needed. CE, CEA said that as the Simhadir-II TPS was now proposed to be a regional station, it might be connected to Gazuwaka substation of PGCIL. AGM, PGCIL said that this could be decided after confirming availability of required space at Gazuwaka S/S.

17.3 CE, SP&PA, CEA said that part of the transmission capacity of Vizag – Vemagiri – Narsaraopet 400kV D/C line of APTRANSCO would be utilized for power evacuation from Simhadri-II, which, APTRANSCO had built keeping in view 2x525 MW Vizag TPS. As Vizag TPS generation was subsequently rescheduled and was yet to be firmed up, part of the transmission capacity of this line could be utilized for power evacuation of Simhadri-II and when Vizag TPS generation is firmed up, their line could be spared and in case any new generation comes up in that area, another line could be taken up as a regional system strengthening scheme. And, till such time, PGCIL might have to seek open access from APTRANSCO. AGM, PGCIL responded that, being Central Transmission Utility, they could not seek open access from APTRANSCO. He further said that, as this would be for NTPC generation, if required, NTPC might apply for open access from APTRANSCO. Members agreed to the proposal.

17.4 Member(PS), CEA said that, in view of share from Simhadri-II TPS, some new transformation capacity might be needed to be added in regional system. He asked the state utilities to give their suggestions for new 400kV substations. State representatives suggested Pendurthi in Andhra Pradesh, Bidadi in Karnataka, and Singarapet and Karmadai in Tamil Nadu. Representatives from APTRANSCO stated that they would convey their Board's view on allowing open access on APTRANSCO lines till need arises for additional lines to be built by PGCIL.

18.0 Transmission System for Evacuation of Power from Nagarjuna TPS (1015 MW) in Karnataka, of M/s Nagarjuna Power Corporation Ltd

POWERGRID informed that M/s Nagarjuna Power Corp. Ltd. had applied to the CTU, for Long Term Open Access (LTOA) for evacuation of power from their 1015 MW project near Mangalore, Karnataka. For evolving transmission system for evacuation of power from this project in the context of the LTOA application, was discussed. Minutes of these discussions are being circulated by POWERGRID.

Agenda Note for 24th Meeting of
Standing Committee on Power System Planning in Southern Region

1. Confirmation of the minutes of 23rd meeting of the Standing Committee

The minutes of the 24th meeting held on January 22, 2007 at Chennai, was circulated vide our letter No.51/4/SP&PA/2007 dated 21-02-2007.

NPCIL, vide their letter no. NPCIL/GM(Trans.)/2007/M/35 dated March 06, 2007, sent their observations on Item No. 7.0, regarding " Requirement of Reactors to contain over voltages in the Southern Region" . Based on these observations of NPCIL, modifications in Para No. 7.2 and 7.3 of the minutes of the 23rd meeting of the Standing Committee on Power System Planning of Southern Region, were incorporated, and same was circulated vide our letter of even number dated 19-04-2007.

The minutes as circulated vide our letter No.51/4/SP&PA/2007 dated 21-02-2007 along with the corrigendum circulated vide our letter dated 19-04-2007, may be confirmed.

2.0 Review of Progress on Earlier Agreed Transmission Schemes

2.1 Under construction schemes

POWERGRID may give the progress of under construction schemes giving

- Date of firming-up in Standing Committee
- Target as in the standing committee meeting
- Date of FR for the scheme
- Date of approval by PGCIL board or PIB as the case may be
- Date of award of the major part
- Target date as of now
- Reason for delay if any

2.2 Augmentation of Talcher II Transmission scheme

The scheme agreed in the SRPC includes the following works:-

(i) Talcher II – Rourkela 400kV Quad D/C

(ii) Talcher II – Berhampur – Gajuwaka 400kVD/C with switching station at Berhampur

In context of private sector participation in transmission, Government of India has constituted an Empowered Committee to identify transmission projects for execution through tariff based competitive bidding. The Empowered Committee has identified this scheme to be executed through this route and for steering the process, Government of India has entrusted this project to the SPV of REC. The representative of SPV of REC may intimate the progress to the Standing Committee.

2.3 Transmission System for North Chennai TPS (2x500 MW).

The transmission system for North Chennai TPS (1000 MW) of JV of NTPC and TNEB was evolved in the 22nd meeting and revised system as per following was agreed in the 23rd meeting:

i) LILO of Alamathy-Sriperumbudur 400 kV D/C line at Chennai JV TPS.
ii) 2x315 MVA 400/230 kV ICT at Chennai JV TPS.
iii) 4 nos. 230 kV bays at switchyard of Chennai JV TPS.
iv) 230 kV inter connection with existing North Chennai TPS (under scope of TNEB at their cost).

POWERGRID may intimate the progress of the above transmission scheme.

Supplementary scheme is also to be evolved based on allocation of 25% of power from the generation project to beneficiaries other than TNEB. NTPC/TNEB may intimate the position in this respect. It may be noted that delay in this process would effect evacuation of full power of the generation project.

2.4 Transmission System for Tuticorin TPS (2x500 MW).

The transmission system for Tuticorin TPS (1000 MW) of JV of NLC and TNEB was evolved in the 22nd meeting and revised system as per following was agreed in the 23rd meeting:

i) Tuticorin JV TPS – Madurai 400 kV D/C Quad.
ii) 2x315 MVA 400/220kV ICT at Tuticorin TPS JV.
iii) LILO of 2 nos. of 220 kV circuits at Tuticorin TPS JV.

POWERGRID may intimate the progress of the above transmission scheme.

Supplementary scheme is also to be evolved based on allocation of 25% of power from the generation project to beneficiaries other than TNEB. NLC/TNEB may

intimate the position in this respect. It may be noted that delay in this process would effect evacuation of full power of the generation project.

2.5 Requirement of Reactors to contain over voltages in the Southern Region

Based on the decision taken in the 23rd meeting, POWERGRID is to deploy 11 nos. of reactor (7 bus reactors + 4 line reactors), NTPC – 2 nos. of bus reactors, NPCIL – 1 no. of bus reactor, NLC – 2 nos. of bus reactors, APTRANSCO - 4 nos. of reactor (3 bus reactors + 1 line reactors), and KPTCL – 5 nos. of bus reactors. Progress on these deployments may be given by respective utilities.

2.6 Switchyard provisions at North Chennai JV TPS and Tuticorin JV TPS

In the 23rd meeting, it was clarified that switchyard equipments at North Chennai JV TPS and Tuticorin JV TPS is to be provided by the respective generation companies in their generation projects as per the practice already being followed. NTPC/TNEB and NLC/TNEB may inform the progress.

2.7 Establishment of Two Numbers of 400 kV Substations near Chennai in Tamilnadu, by TNEB and Review of Chennai NTPC-TNEB JV TPS (2x500 MW) Transmission System" – Sunguvarchatram and Sholinganallur (Refer Item 8.0 of the summary record of the 23rd meeting)

TNEB may inform the progress of the agreed transmission scheme. TNEB may also intimate their final scope of works for their substations and associated lines together with provision of reactors, if any.

2.8 Establishment of a 400/230 kV S/S near Tirunelveli and Associated Transmission System for evacuation of power from Wind Projects of Tamil Nadu, by TNEB" (Refer Item 9.0 of the summary record of the 23rd meeting)

As agreed in the 23rd meeting, TNEB would build the above transmission system along with suitable reactors and should apply for long-term open access for the Tirunelveli – Pugalur corridor. TNEB may inform the progress on the agreed transmission scheme, including reactors and on the process of seeking long-term open access for the Tirunelveli – Pugalur corridor.

3.0 Transmission Systems for Evacuation of power from Krishnapatnam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR

3.1 For evolving an optimum transmission system for evacuation of power from Krishnapattnam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR, discussions were held in the previous meeting i.e. 23rd meeting of the Standing Committee in which, following emerged :

(i) Step-up voltage for Krishnapattnam UMPP would be 400kV.

(ii) Their would be six outgoing circuits from generation switchyard, i.e. -

- Krishnapattnam UMPP – Nellore 400 kV, Quad D/C line
- Krishnapattnam UMPP – Kurnool 400 kV, Quad D/C line, and
- Krishnapattnam UMPP – Gooty, 400 kV, Quad D/C line

(iii) The Kurnool – Raichur link would be either a 400 kV Quad D/C line or 765kV 2xS/C lines. This would be decided based on studies for monsoon period. Further analysis was done after the meeting and it was found that for the emerged scenario during Monsoon period, the Kurnool - Raichur 400kV quad D/C line would be right option instead of the 765kV option.

(iv) Following 765kV/400kV transformer capacity had been identified-

- 765/400 kV S/S at Raichur, 3000 MVA,
- 765/400 kV S/S at Sholapur 3000 MVA, and
- 765/400 kV S/S at Pune, 3000 MVA

(v) Depending upon share of various states, including Kerala, from Tamil Nadu UMPP and also considering feedback from state utilities regarding new 400kV S/Ss or transformer capacity augmentations in their States, the above transmission system may be updated.

(vi) Following inter-regional links between SR and WR would be established for – (i) transmission of share of Maharashtra from Krishnapatnam UMPP (ii) transmission of share of other regions from Tamil Nadu UMPP, and (iii) free flow of power to all beneficiaries of Krishnapattnam UMPP,

- Raichur (SR) – Sholapur (WR) 765 kV 2xS/C lines
- Narendra (SR) – Kohlapur (WR) 400 kV D/C line with a 1000 MW HVDC back-to-back at Narendra
- Sholapur (WR) – Pune (WR) 765 kV S/C line

(vii) Regarding sharing of Transmission Charges, it was acknowledged that this would emerge after constituents of other regions had also discussed these issues.

3.2 The above transmission system was subsequently discussed in the 3rd meeting of SRPC held on 19-02-2007. There was general agreement on the above transmission

system and it was discussed that sharing of transmission charges could be based on all beneficiaries of combined Krishnapatnam and Tamil Nadu UMPPs and complete account of sharing of charges would emerge after these issues are discussed with constituents of other regions.

3.3 This issue was also discussed in the 26th meeting of the Standing Committee on Power System Planning in Western Region held on 23-02-2007. Following Transmission system was proposed for the Krishnapattnam UMPP:

1. Krishnapattnam UMPP – Nellore 400 kV, Quad D/C line
2. Krishnapattnam UMPP – Kurnool 400 kV, Quad D/C line, and
3. Krishnapattnam UMPP – Gooty, 400 kV, Quad D/C line
4. Raichur (SR) – Sholapur (WR) 765 kV 2xS/C lines
5. Narendra (SR) – Kohlapur (WR) 400 kV D/C line
6. 1000 MW HVDC back-to-back at Narendra
7. Raichur (SR) – Sholapur (WR) 765 kV S/C line-1
8. Raichur (SR) – Sholapur (WR) 765 kV S/C line-2
9. Sholapur (WR) – Pune (WR) 765 kV S/C line
10. 765/400 kV S/S at Raichur, 3000 MVA
11. 765/400 kV S/S at Sholapur 3000 MVA
12. 765/400 kV S/S at Pune, 3000 MVA
13. Pune (WR) – Navi Mumbai (WR) 400kV D/C line

Further, it was also proposed that transmission charges for the works at Sl. No. 1,2,3,4,5,6 & 7 and 50% at Sl. No. 10 & 11 which would meet the requirement of Maharashtra were proposed to be borne by the beneficiaries of Krishnapatnam UMPP. Works at Sl. No. 8,9,12 &13 and 50% of the works at Sl. No. 10 & 11 were proposed as inter-regional system between SR and WR and accordingly, transmission charges to be shared by SR and WR in the ratio of 50:50 and recovered as pooled transmission charges for the regions. It was decided that the constituents would take up these proposals with their management.

3.4 Combined shares from Krishnapatnam and the Tamilnadu UMPPs (tentative) are given in the following table:

Sl. No.	State/ Region	From Krishnapatnam UMPP	From Tamilnadu UMPP
1.	Andhra Pradesh	1600	400

Sl. No.	State/ Region	From Krishnapatnam UMPP	From Tamilnadu UMPP
2.	Karnataka	800	800
3.	Kerala	---nil-	300
4.	Tamil Nadu	800	1600
5.	Puducherry	---nil-	--nil-
6.	Total in Southern Region	3200	3100
7.	Maharashtra	800	400
8.	Total in Western Region	800	400
9.	Uttar Pradesh	---nil-	300
10.	Punjab	---nil-	200
11.	Total in Northern Region	---nil-	500
12.	Total	4000	4000

3.5 Regarding new 400kV S/Ss or transformer capacity augmentations in the States, only TNEB has given their demand for providing a new 400/220kV S/S near Karamadai with 2x315 MVA under Krishnapatnam UMPP and a new 400/220kV S/S at Singarpet with 2x315 MVA under Tamilnadu UMP.

3.6 While firming-up the transmission system for Krishnapatnam UMPP, a 400kV line to Chittor had also been envisaged from Krishnapatnam TPS of 1600MW of A.P. and confirmation from APTRANSCO for their programme of 400kV line to Chitoor was sought. However, definite proposal in this context has not been received. It is therefore proposed to include 400kV quad D/C line from Krishnapatnam UMPP to Chittoor under the Krishnapatnam UMPP transmission system.

3.7 APTRANSCO have intimated Bhopalpalli TPS (500 MW) coming up near Warrangal. TNEB is also proposing additional generation at Mettur(500 MW), Tuticorin Stage-IV (1000 MW), North Chennai TNEB (500 MW), and Ennore TPS (500 MW). Further, Nagarjuna TPS (1015 MW) is coming up in Karnataka. In view of the above, additional power for export from SR may be available. It is therefore proposed to establish Kurnool as a 765kV S/S. In the National Electricity Plan-Transmission, corresponding to 2013-14 conditions, the SR is estimated to have winter months exportable surplus

of 6700 MW (peak) and 12000 MW (off-peak). Considering above, following transmission schemes are proposed:

Scheme - A

' Increasing SR_WR inter-regional transmission capacity through HVDC back-to-back – Target – June/December 2010' :

1) Narendra – Kohlapur 400kV D/C line
2) 1000 MW HVDC back-to-back at Narendra of which 500 MW through shifting of equipment from Sasarm.

Transfer of equipment from Sasaram would involve commercial and assets related issues. Transmission charges of the existing scheme at Sasaram for equipment to be shifted as well as unusable and leftover assets, from the date of decommissioning, would be required to be transferred to new scheme and would become payable by SR/WR constituents. The left over assets of land and building, if and when usable at Sasaram, would be credited when utilized in some future scheme.

Scheme - B

' Synchronous Inter-connection of SR and WR – Target – December 2010' :

1) Raichur - Sholapur 765kV S/C line-1 at 400kV operation

Scheme - C

' Evacuation System for Krishnapatnam UMPP – Target – to match with the generation project' :

1) Krishnapatnam UMPP – Nellore 400 kV, Quad D/C line
2) Krishnapatnam UMPP – Chittoor 400kV, Quad D/C line
3) Krishnapattnam UMPP – Gooty, 400 kV, Quad D/C line
4) Space provision for two additional 400kV bays at Krishnapatnam UMPP (for Krishnapattnam UMPP – Kurnool 400 kV, Quad D/C line covered in scheme F)
5) Raichur - Sholapur 765kV S/C line-2 at 400kV operation
6) Sholapur – Pune 765kV S/C line at 400kV operation

Scheme - D

' System strengthening in Western Region corresponding to power from Krishnapatnam UMPP - Target – to match with the generation project' :

1) Pune (WR) – Navi Mumbai (WR) 400kV D/C line

Scheme - E

Additional 400/220kV sub-stations based on future request of state utilities to be provided as separate system strengthening scheme

Scheme – F

To be tied-up with Krishnapatnam of APGENCO or Tamil Nadu UMPP or other generation projects or regional system strengthening schemes or inter-regional strengthening schemes

- KrishnapatnamAPGENCO– KrishnapatnamUMPP– Kurnool or KrishnapatnamUMPP– KrishnapatnamAPGENCO– Kurnool , 400kV Quad D/C line (with Krishnapatnam APGENCO)
- Kurnool – Raichur 765kV S/C line
- 765kV substations at Kurnool, Raichur, Sholapur and Pune
- 765kV operation of Kurnool – Raichur line
- 765kV operation of Raichur - Sholapur line-1 and line-2
- 765kV operation of Sholapur - Pune line

3.8 Regarding sharing of transmission charges it is proposed that

- Scheme – A : Regional pool schemes of SR and WR on 50:50 basis.
- Scheme – B : Regional pool schemes of SR and WR on 50:50 basis.
- Scheme – C : Sharing by all beneficiaries of Krishnapatnam UMPP in ratio of their shares in Krishnapatnam UMPP
- Scheme – D : Sharing only by WR beneficiaries of Krishnapatnam UMPP in ratio of their shares in Krishnapatnam UMPP

Implementation of the above schemes could be taken up based on above proposed sharing of transmission charges. Later, when the works under schemes – F together with other transmission schemes are firmed-up, the total sharing of the transmission charges could be reviewed.

3.9 Members may discuss and concur.

4.0 Any other issue with permission of chair

5.0 Transmission addition requirements of State Transmission Utilities

5.1 Transmission Addition requirements of APTRANSCO

APTRANSCO has proposed following transmission system for evacuation of power from the Kakatiya (Bhoopalapally) TPS (1x500 MW) of APGENCO:

(i) Bhoopalapally – Warrangal (PGCIL S/S), 400kV D/C line

(ii) Bhoopalapally – Gazwel, 400kV D/C line

The transmission system is to be built by APTRANSCO at their cost. In this regard, discussion was held in CEA, with APTRANSCO officials in May 2007 and it was observed that their proposal could be optimized by taking up Warangal – Siddipet 220kV D/C line instead of Bhoopalpally- Gazwel 400kV D/C line. However, APTRANSCO should also evolve their proposal covering transmission systems for evacuation of power from Kothagudam Stage-IV TPS (500MW), Lower Jurala HEP (240MW), Vijayawada-VI TPS (500 MW) and Krishnapatnam (1600 MW) generation projects, which have been programmed for implementation during 11th Plan.

Members may discuss and decide.

5.2 Transmission Addition requirements of KPTCL

KPTCL has proposed following transmission systems:

(i) LILO of Nelamangla – Somanahalli 400kV D/C line at Bidadi.

(ii) Establishment of a new 400kV S/S at Bidadi with 2x500MVA 400/220kV transformer.

(iii) Bidadi-Ramnagar-Tubinkere and Bidadi-Magadi 220kV D/C lines

(iv) Bellary TPS – Hiriyur (PGCIL S/S), 400kV D/C line

The transmission system is to be built by KPTCL at their cost. In this context it may be noted that Bidadi 1400 MW project is also proposed in XI plan which KPTCL have not considered in the above proposal. Also, the choice between LILO of Nelamangla – Somanahalli vis-à-vis Neelamangla – Mysore would depend on right of way feasibility for the LILO.

Members may discuss and decide.

5.3 Transmission Addition requirements of TNEB

Tirunelveli (TNEB) (near Marandai) 400/230 kV S/S of 3x315 MVA capacity was agreed in the 23rd meeting held in January 2007, for meeting evacuation requirements of wind projects. TNEB has proposed following additional transmission systems to strengthen the transmission network for evacuation of wind power:

(a) Kayathar 400kV S/S with 400/220kV transformers of 2x315 MVA and 400/110kV transformers of 2x200 MVA,
(b) Karaikudi – Kayathar 400kV D/C line
(c) Kanaparthy – Kayathar 400kV D/C line
(d) 220kV and 110kV interconnections

The above transmission system would inject additional power at Kayathar and strengthening of regional transmission system from Kayathar would be needed.

Members may discuss and decide.

In this context, it is also to flag that Pugalur – Chennai 400kV D/C line to be taken up by TNEB as agreed in the last meeting, is with quad conductor and the LILO circuits to which it is to be connected are with twin conductors. It may be useful that TNEB and PGCIL provide the one circuit of the LILOs of Kolar – Sriperumbudur line to their SV Chatram and Melakottiyur substations, to which the line from Pugalur is to be connected, with high specification conductor. Alternatively, the line from Pugalur could be with quad conductor only upto Singarapet where a new 400kV substation is to be created by TNEB and beyond Singarapet, the line could be with twin conductors.

Members may discuss and decide.

5.4 TNEB has also proposed transmission systems for evacuation of power from North Chennai TPS Stage-II (1x500 MW), Mettur TPS Stage-III (1x500 MW), Ennore (TNEB) TPS (1x500MW) and Tuticorin TPS Stage-IV (2x500 MW). The proposed transmission systems are at 400kV and 220kV levels.

It is proposed to study their proposal and discuss in next meeting.

6.0 Agenda Items for discussion in the 24th meeting of the SC on PSP in SR, that emerged from the discussions held in the 4th meeting of SRPC held on 07-06-2007

6.1 KSEB's request for share from Krishnapatnam UMPP

MS, SRPC has informed that Kerala had requested for share in the power from Krishnapatnam UMPP, for enabling them to share cost of associated transmission system. KSEB needs to take up the issue with MoP.

6.2 Finalization of the Agency for implementation of Reactors as decided in the 23rd meeting of SC on PSP in SR.

In the 23rd meeting of this committee, provision of 25 nos. of 63 MVAR reactors were decided to be implemented in Southern Region. Out of these, 11 reactors are to be implemented by PGCIL at their S/Ss and the rest 14 to be implemented by respective utilities/generating companies at their S/Ss. However, in the 4th meeting of SRPC, it was decided implementation agency for the 14 reactors should again be discussed and finalized in the 24th meeting of the SC on PSP in SR.

Members may discuss.

6.3 Shifting of one 315 MVA 400/220kV transformer from Trivandrum to Madakathara

KSEB has informed that the load of Trivandrum district, upto year 2011-12, is expected to be 480 MVA only, therefore the existing 2x315 MVA transformers at Trivandrum 400 kV S/S would be sufficient, the Madakathara 400/220kV S/S with 2x315 MVA is getting overloaded and is not sufficient to meet the load in Trissur district. They also opined that the new400kV S/S proposed at Areakode, near Trissur would also not be able to mitigate the overloading problem. Therefore, they had suggested to shift the third transformer proposed for Trivandrum, to Madakathara S/S.

Members may discuss.

6.4 Termination of Tirunelveli – Edamon 400kV circuit under Kudankulam evacuation system at Edamon

Transmission system for evacuating power from Kudankulam APP (2x1000 MW) was finalized in the 17th and 18th meetings of the Standing Committee on Power System Planning of Southern region. As per the scheme, out of the four circuits coming from Thirunalveli, Thirunalveli- Cochin -Trissur 400 kV quad D/C line will go directly to Cochin without entering Edamon substation, and the other two circuits i.e. Thirunalveli - Edamon 400 kV Twin Moose D/C line (to be operated initially at 220 kV) would terminate at Edamon for establishing connectivity of Tirunelveli to Trivandrum. Accordingly, both the circuits of the line are being connected to existing Edamon-Trivandram 220kV D/C line.

KSEB has expressed that as Trivandrum load requirements are being met by Madurai - Trivandram 400kV D/C line, there may be no need of inter-connecting the Thirunalveli - Edamon line with the existing Edamon-Trivandram 220kV D/C line and

instead, the line may be bussed at Edamon itself. PGCIL has informed that with the arrangement being suggested by KSEB, the power from Kudankulam/Thirunalveli would flow towards Kayamkulam, restricting proper evacuation of power from the Kayamkulam CCPP.

Members may discuss.

7.0 Termination of one circuit of Neyveli(TSII) - Pulgalur 400 kV D/C at Neyveli (TSII Expansion) switchyard by utilizing one circuit of Neyveli(TSII) – Neyveli(TSII Expansion) 400 kV 2xS/C tie-lines

The transmission system for N (TSII Exp) consists of Neyveli(TSII) – Neyveli(TSII Expansion) 400kV 2xS/C lines for interconnection and Neyveli(TSII) - Pugalur 400 kV D/C line for power evacuation. The interconnection system was evolved as per proposal of NLC. NLC has now proposed to connect one of the circuits of Neyveli(TSII) - Pugalur 400 kV D/C line at Neyveli(TSII Expansion) switchyard directly utilizing one circuit of Neyveli (TSII) – Neyveli(TSII Expansion) interconnection. The proposal could be agreed as this would provide evacuation reliability for Neyveli (TSII Exp) independent of Neyveli (TS II). In this the interconnecting section (one S/C line) would also become part of regional transmission system for power evacuation from Neyveli (TS II Exp).

Members may discuss and decide.

8.0 Transmission System for Evacuation of Power from Nagarjuna TPS (1015 MW) in Karnataka, of M/s Nagarjuna Power Corporation Ltd

POWERGRID has informed that M/s Nagarjuna Power Corp. Ltd. had applied to the CTU, for Long Term Open Access for evacuation of power from their 1015 MW project near Mangalore, Karnataka. Identified beneficiaries of the project are :- Karnataka– 845 MW and Punjab– 94 MW. POWERGRID may present their studies carried out for evolving transmission system for evacuation of power from this project and its transmission to the beneficiaries. Members may discuss.

9.0 Transmission System for Evacuation of Power from Simhadri-II TPS (2x500 MW) of NTPC

Simhadri Stage-II TPS (1000 MW) of NTPC is targeted for 2010-11. As informed by NTPC, tentative allocation of power from this project is – Andhra Pradesh (398 MW),

Karnataka (175 MW), Kerala (77 MW), Tamilnadu (190 MW), Pondicherry (10 MW) and Unallocated (150 MW). Powergrid have carried out studies to evolve evacuation system from Simhadri II which show that providing an interconnection for Simhadri II to nearest grid point would suffice and no further transmission would be required. As the Simhadir II TPS is now proposed to be a regional station with benefit to all constituents, it is proposed to provide grid station to Gazuwaka substation of PGCIL.

It may also be noted that in the above proposal, part of the transmission capacity of Vizag – Vemagiri – Tandikonda 400kV D/C line of APTRANSCO would also be utilized for power evacuation from Simhadri-II. APTRANSCO have provided this line keeping in view 2x525 MW Vizag TPS, which is yet to come. As such, till AP' s generation is firmed up, part of the transmission capacity of their line could be utilized for power evacuation of Simhadri-II and when AP' s generation is firmed up, their line could be spared and if need be, another line could be taken up as a regional system strengthening scheme.

Members may discuss and decide.

Annex-II

List of participants during the 24th meeting of Standing Committee on Power System Planning held on 18th June, 2007 at Bangalore

Sl. No.	Name and Organization	Designation
	Central Electricity Authority (CEA)	
1.	V. Ramakrishna	Member (PS)
2.	A.K. Asthana	Chief Engineer(SP&PA)
3.	Pardeep Jindal	Deputy Director (SP&PA)
	Southern Region Power Committee (SRPC)	
4.	K. Srinivasa Rao	Member Secretary
5.	Magudapathi A.	Suptg. Engineer
6.	A.K. Yadav	Ex. Engineer
	Power Grid Corporation of India Ltd (POWERGRID)	
7.	Sachchidanand Singh	GM (Proj), SRTS-II, Bangalore
8.	Y.K. Sehgal	AGM(Engg- SEF)
9.	Dilip Rozekar	CDE (Engg- SEF)
10.	A. Naga Raju	CM (Coml.),SRTS-II,Bangalore
	National Thermal Power Corp. (NTPC)	
11.	A.K. Gupta	AGM & HoD(Elect.)
12.	R.S. Krishnan	DGM (Comml.), Bangalore
	Nuclear Power Corp of India Ltd (NPCIL)	
13.	N.S.M. Rao	GM (Trans)
	Neyveli Lignite Corp. (NLC)	
14.	S. Muthu	DGM
15.	R. Suresh	DGM/Comml.

Sl. No.	Name and Organization	Designation
	Southern Region Load Dispatch Center(SRLDC)	
16.	V.K. Agrawal	GM
17.	P.R. Raghuram	AGM
18.	U.K. Verma	DGM
19.	P. Bhaskar Rao	DGM(Coml.)
20.	K. Ramakrishna	DGM (OS)
21.	S.P. Kumar	CM
	Transmission Corp. of Andhra Pradesh Ltd. (APTRANSCO)	
22.	M. Koteswara Rao	CE (Power System)
23.	M. Balasubramanyam	DE/System Studies
	Karnataka Power Transmission Corp. Ltd. (KPTCL)	
24.	V. M. Chandre Gowda	Director (Trans)
25.	S. Ramesh	CEE (P&C)
26.	K.N. Ramakrishna	CEE I/C SLDC
27.	M.S. Prabhakar	EEE (PSS)
28.	K.N. Srinath	EE, SLDC
29.	Kiran V.	AEE (PSS)
	Kerala State Electricity Board (KSEB)	
30.	K. Ramachandran Nair	CE/System Operation
31.	S.R. Anand	EE (LD)
32.	B. Pradeep	EE(Plg.)
	Tamil Nadu Electricity Board (TNEB)	
33.	C. Vijayakumar	CE/Planning
34.	S. Balaguru	EE/System Studies
	Pondicherry Electricity Dept. (PED)	
35.	Ramnath Ashok	EE/EHV
36.	T. Gopalakrishna	AEE/EHV-Div VI

Sl. No.	Name and Organization	Designation
	PTC India Ltd	
37.	S.S. Sharma	Sr. Vice President

Annex-III

Status of Southern Region New Schemes of POWERGRID

Sl. No.	Name of Scheme	Standing Committee Approval	FR Date	Investment approval by POWER GRID Board/CCEA	Award Date for Major part	Target as of now	Comments/ Reasons of delay
1.	**System Strengthening – V** Augmentation of transformation capacity at Cuddapah, Gooty, Khammam, Gazuwaka, Munirabad and Kolar and 1x80 MVAR bus reactor at Nellore	17th Meeting on 15.09.03	Jan. 2004	POWER GRID Board Approval – June, 2004	**March, 2005**	**June 2007**	- Nellore reactor was ready & requested for early commissioned by Feb'07, however, constituents did not agree for the same. - Rest system shall progressively commissioned from June,07 onwards
2.	**System Strengthening – VI** LILO of both circuits of Gazuwaka – Vijayawada 400 kV D/c line at Vemagiri. 400/220 kV substation of APTRANSCO, and 2nd 1x315 MVA 400/220 kV transformer at Vijayawada	19th Meeting on 14.06.04	Aug. 2004	POWER GRID Board Approval – March, 2005	**Jan, 06**	**December 2007**	– System shall be commissioned as scheduled
3.	**Neyveli TS-II Expn Transmission System**	16th Meeting on 20.01.03	Aug. 2003	CCEA Approval – Jan., 2005	**Oct' 05**	**Feb'09**	- Commissioning schedule as per CCEA is Dec'07. - However, generation project is delayed, so schedule is now revised to match generation commissioning.

Sl. No.	Name of Scheme	Standing Committee Approval	FR Date	Investment approval by POWER GRID Board/CCEA	Award Date for Major part	Target as of now	Comments/ Reasons of delay
4.	**Kaiga U-3&4 Transmission System**	16th Meeting on 20.01.03	Oct. 2003	CCEA Approval – March, 2005	**Nov, 05**	**Sept. 2007 /Dec. 2007**	- Most of the elements of scheme shall be commissioned as scheduled. – However, Mysore – Kozhikode might get delayed due to forest clearance and ROW problem in coffee plantation area in Karnataka.
5.	**Kudankulam Tr. System**	18th Meeting on 05.03.04	June, 04	CCEA – May, 2005	**Nov'05**	**Dec'08**	– Generation project is delayed to Dec'08/June'09. – System to be commn. Matching with generation project. – Tirunelveli 400/220 kV S/stsn and LILO of Madurai – Trivandrum to be commn early as per request of TNEB.
6.	**System Strengthening – VII** New substations at 400/220 kV substations at Karaikudi and Hassan through LILO of 400 kV lines	18th Meeting on 05.03.04	July, 04	POWER GRID Board Approval - April, 05	**Aug, 06**	**Dec, 08**	Matching with the Kudankulam APP generation project generation
7.	**Upgradation of transfer capacity of Talcher – Kolar HVDC bipole**	18th Meeting on 05.03.04	March, 04	POWER GRID Board Approval –June, 05	**Apr, 06**	**Oct, 07**	Subject to availability of shutdown for the Talcher-Kolar HVDC bipole