

Central Electricity Authority, SP&PA Division
Sewa Bhawan, R.K. Puram, New Delhi-110066

No.66/5/99-SP&PA/ 280- 301

Dated: 09-03-2012

1. Member (Transmission),
Bihar State Electricity Board
Vidyut Bhavan, Baily Road,
Patna-800021.
2. Director (System),
Damodar Valley Corporation
DVC Towers, VIP Road,
Kolkata-700054.
3. Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygange,
Kolkata-700033.
4. Director (Commercial),
Grid Corporation of Orissa Ltd,
Jan path, Bhubaneshwar-751022.
5. Director (Transmission),
Orissa Power Transmission Corporation
Ltd,
Jan path, Bhubaneshwar-751022.
6. Director (System Operation),
West Bengal State Electricity Transmission
Company Ltd, Vidyut Bhavan, 5th Floor,
Block-D, Bidhannagar, Sector-II
Kolkata-700091.
7. Principal Chief Engineer cum Secretary,
Power Department
Government of Sikkim, Sikkim.
8. Director (Projects),
Power Grid Corporation of India
"Saudamini" Plot No. 2, Sector-29
Gurgaon-122001
9. Director (Technical),
NTPC Limited,
Engineering Office Complex,
A-8, Sector 24, Noida.
10. Member (Transmission),
Jharkhand State Electricity Board,
In front of Main Secretariat,
Doranda, Ranchi-834002.
11. Executive Director (T&RE),
NHPC Ltd, NHPC Office complex,
Sector 33, Faridabad-121003.
12. General Manager,
Eastern Regional Load Dispatch Center, 14,
Golf Club Road, Tollygange,
Kolkata-700033.

Sub: Summary record of discussions of the 1st-2012 Standing Committee Meeting on Power System Planning in Eastern Region held on 08-02-12 at NRPC, New Delhi.

Sir,

Minutes of the meeting for the Standing Committee Meeting on Power System Planning in Eastern Region held on 08-02-12 at NRPC, Katwaria Sarai, New Delhi, and LTOA minutes of PGCIL are uploaded on the CEA website: www.cea.nic.in. (path to access: Wings of CEA/Power Systems/Standing Committee on Power System Planning/EASTERN REGION) for kind perusal.

Yours faithfully,


(Dr. R. Saha)
Director (SP&PA)

Copy to:

- (i) Sh. S K Soonee, CEO, POSOCO, B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-16.
- (ii) Shri Jyotimay Bhaumik, CEO, M/s DPSC Limited, Plot No.X-1,2&3, Block EP, Sector-V, Salt Lake city, Kolkata-700 091.
- (iii) Shri Varun K. Jha, Vice President, M/s Tata Steel Limited, Bistupur, Jamshedpur-831 001.
- (iv) Director(NR, WR, SR, NER, PSPM)

Summary record of discussions of the Standing Committee Meeting on Power System Planning in Eastern Region held on 08-02-12 at NRPC, New Delhi.

List of participants is at Annex-I.

Member (PS), CEA welcoming the participants, stated that the last Standing Committee Meeting(SCM) on Power System Planning in Eastern Region was held on 28-12-10 and delay in holding SCM of ER was due to conducting SCM in other Regions. Thereafter, he requested Director (SP&PA), CEA to take up the agenda.

1.0 Confirmation of the minutes of the meeting (MoM) held at NRPC, New Delhi on 28.12.2010.

Director (SP&PA), stated that Minutes of the Standing Committee Meeting (SCM) held on 28.12.2010 at PGCIL, Gurgaon were circulated vide CEA letter No. 66/5/99/SP&PA/74-88 dated 20.01.2011. Subsequently, a modification on Item-2.0 of the MoM was suggested by WBSETCL through their letter No. CE/CPD/CEA/22 dated 27-01-11. Subsequently, Item-2.0 was revised and a corrigendum to the MoM was uploaded on 25-02-2011 to the CEA website. Director (Engg.), OPTCL stated that they are agreeable to the ATS for Phase-I IPPs but not agreeable to the 765 kV Dhenkanal S/S considered under Phase-II IPPs in Orissa. With noting of above observations of OPTCL, minutes of the meeting held on 28.12.2010 were thereafter confirmed.

He informed that no numbering system for SCM of ER was since being followed. He has suggested that henceforth, numbering system for SCM is introduced and present SCM shall be known as 1st-2012 meeting and sequence shall be followed for next meetings. Members welcomed the suggestion and agreed.

2.0 System strengthening in Eastern Regional Grid

(i) Installation of 1x125 MVAR Bus Reactor at 400kV Biharshariff S/S (PG)

Members were agreeable to the installation of 1x125 MVAR Bus Reactor at 400kV Biharsharif sub-station of PGCIL to limit high voltage as discussed in the 18th ERPC meeting held on 01-07-2011 at Ranchi.

(ii) Replacement & Aug. of 220/132kV transformers capacity at 220kV Purnea S/S (PG) from 3x100MVA to (2x160 + 1x100)MVA

Director (SP&PA), stated that presently there are 3x100 MVA, 220/132 kV transformers at Purnea 220/132kV substation of POWERGRID supplying power to

BSEB, which are critically loaded exceeding 250 MW(cumulative) on several occasions. In order to meet load growth/demand at Purnea, 2x100MVA transformers should be replaced by 2x160MVA transformers (including bay equipments) in a phased manner and the old transformers (2x100MVA) so released would be added to the inventory of spare transformer. Representative from ERLDC stated that at present there are 4 nos. 132kV outlets of BSEB from Purnea (PG) 220/132 S/s and BSEB could be able to draw 350MW if, they construct more 132 kV lines. The proposed augmentation of transformer capacity was approved in the 16th ERPC meeting held on 18th December, 2010 and members were agreeable to the same.

(iii) Replacement of 1x63 MVAR 420kV Shunt reactor with 2x125 MVAR capacity at 400kV Muzaffarpur S/S (PG).

Director (SP&PA), stated that in order to contain over voltage at Muzaffarpur PGCIL proposed for installation of 2x125 MVAR Shunt reactors at 400kV Muzaffarpur S/S (PG) replacing the existing 1x63 MVAR shunt reactor. Replacement of 1x63MVAR reactor which would be used as regional spare to meet any contingency was also agreed in the 69th OCC meeting of ERPC. The proposal was agreed by the ER constituents.

(iv) Proposal of POWERFRID for additional spare converter transformers (single phase unit) for 2x500 MW Gazuwaka/Vizag & 1x500MW Sasaram HVDC back-to-back (B-t-B) stations.

In order to improve reliability of the existing HVDC B-t-B links Sasaram (1x500MW ABB) and Gazuwaka (2x500 MW of ABB & Areva), POWERGRID explained that there would be a requirement for an additional spare single phase Converter Transformer unit per pole i.e. one single phase unit at Sasaram and 2 single phase units at Gazuwaka HVDC stations. Members were of the view that this additional requirement could be dropped for the time being and would be considered later.

(v) Augmentation of Transformation Capacity at 220/132 kV, 2x100 MVA Ara S/S of POWERGRID

In view of loading of 2x100MVA transformers to the extent of 120MW at Ara, replacement of 1x100MVA with 1x160 MVA transformer was proposed by PGCIL. After deliberation, the proposal was dropped by the constituent members of ER.

(vi) Shifting of 2x50MVAR line reactor from Patna end of 400kV Kahalgaon/Barh – Patna D/C line to Balia end of 400kV Patna – Balia D/C line

PGCIL explained that at present there are 2x50 MVAR line reactors at Patna end of 257 km long Kahalgaon - Patna 400kV D/c (quad) line. As the line was subsequently looped-in and looped-out at Barh TPS resulting in 217 km long Kahalgaon – Barh 400kV D/c line and 93 km long Barh – Patna 400kV D/c line, the reactors at Patna end of Barh - Patna 400kV D/c line provides high degree of compensation resulting in resonance like phenomena when one of the D/c line is out of service. On the other hand, existing Patna-Balia 400kV D/c (quad) line is 195 kms. long having no line reactors at either end. It was proposed to shift the 2x 50MVAR line reactors from Patna and to install them as fixed line reactors at Balia end in NR of 400kV Patna – Balia D/c line.

Members were agreeable to the proposal.

(vii) Proposal for bus reactors at 400kV Jeypore, Indravati and Rourkela S/s of PGCIL

In view of very high voltage problem at the above stated 400kV substations even during normal operating conditions, installation of 1x125 MVAR shunt reactor each at these stations was proposed by PGCIL to control voltage to a permissible level. On query from Director (SP&PA), CEA about any shunt reactor connected to these 400kV substations, and space availability, PGCIL official stated that the existing 1x63MVAR bus reactor each at 400kV Jeypore sub-stations would be replaced by 1x125MVAR and the existing shunt reactor of 1x63MVAR at Jeypore would be kept as spare for future use in Eastern Region. The bus reactor of 1x125Mvar each at Indravati and Rourkela would be in addition to the existing reactor.

Members were agreeable to the proposal.

3.0 Proposals of JSEB:

(i) Construction of 400kV Ranchi (PG) – Patratu D/C line and 2x315MVA 400/220kV substation at Patratu by JSEB & provision of 2 nos. 400kV Bay at 400kV Ranchi sub-station of PGCIL.

Regarding the above proposal of JSEB, CE, JSEB stated that Govt. of Jharkhand has decided to construct the 400kV Ranchi(PG) – Patratu D/C line and 400/220kV substation at Patratu through PGCIL as deposit work of JSEB, which would enable to draw the State's share from upcoming IPPs viz. Essar Power and Corporate (Abhijeet) Projects and also facilitate to evacuate power from the existing Tenughat

and Patratu TPS. He added that JSEB would supply 250 MW power to Jindal Steel & Power and 150 MW to NTPC for their coal block from the proposed 2x315MVA, 400/220kV substation at Patratu. On query from Director, CEA about the adequacy of the downstream 220kV network from Patratu, CE, JSEB stated that there would be no constraints to supply load from the proposed 400kV Patratu S/S. In this context, PGCIL confirmed the availability of space for 2 nos. 400kV line bays at their 765/400kV Ranchi S/S and the proposal of JSEB was agreed.

(ii) Provision of 2 nos. 220kV line bays at 400/220kV Maithon S/S (PG) for construction of 220kV Maithon(PG) –Dumka D/C line by JSEB.

For construction of the 220kV Maithon (PG) –Dumka D/C line by JSEB enabling to meet the growing load demand of Dumka area, PGCIL confirmed the availability of space for 2 nos. 220kV line bays at Maithon (PG).

4.0 (i) LILO of 220kV Raigarh(CSPTCL) - Budhipadar(ER) line at 400/220kV Raigarh(PG).

(ii) LILO of Korba-Budhipadar 220kV S/C line (owned by CSPTCL) at Naharpalli 220kV S/S (WR) (as an interim arrangement).

Director (SP&PA), CEA, stated that there are 3xS/C 220kV lines between Korba(E) and Budhipadar(ER), one circuit of PGCIL and two circuits of Chattishgarh (CSPTCL). One of the CSPTCL's circuit was already LILOed at 220kV Raigarh S/S (CSPTCL) forming 220kV Budhipadar-Korba(E)-Raigarh(CSPTCL) line. The present proposal is for LILO of 220kV Raigarh (CSPTCL)- Budhipadar section of the Budhipadar- Korba(E)- Raigarh (CSPTCL) line at 400/220kV Raigarh(PGCIL), which would provide 3rd 220kV inter-connection between Raigarh (CSPTCL) - Raigarh (PGCIL) (one 220kV Raigarh (PG)- Raigarh (CSPTCL) D/C already exists) to ease the over loading in the 220kV Raigarh (CSPTCL) - Raigarh (PGCIL) section.

Secondly, Chattishgarh (CSTPCL) in WR proposed for LILO of 220kV Korba(W)- Budhipadar S/C (second line of CSPTCL) at Naharpalli CPP (2x45MW+ 1x80MW=140MW) of M/s Monnet Ispat and Energy Ltd (MIEL) as an interim arrangement for evacuation. When their approved 220kV Naharpalli CPP - Raigarh (CSPTCL) D/C line would be completed, the proposed LILO would be removed to restore the 220kV Budhipadar - Korba(E) line. OPTCL representative stated that in case of LILOing the line at Naharpalli, the existing 220kV Budhipadar- Tarkera D/C line would be over loaded, and they were not agreeable for the LILO. ERLDC participant suggested that the Korba-Raigarh(CSPTCL) section of the same 220kV

Budhipadar- Korba(E) circuit, which is proposed to be LILoed at Raighar(PG), may be further LILoed at Naharpalli. Accordingly, it was opined that the views of the ER constituents could be taken up with CSPTCL.

5.0 (i) Establishment of 400kV Rajarhat as GIS in West Bengal under approved system strengthening scheme (ERSS-V) and

(ii) GIS for 400 kV Jharkhand pooling station, 765/400kV Varanashi and 765/400kV Kanpur sub-stations as part of Common system strengthening for transfer of power from Phase-I generation projects in Jharkhand and West Bengal to NR/WR.

5.1 Director (SP&PA), CEA, stated that in the last Standing Committee Meeting of ER held on 20-09-10 at NRPC, New Delhi, the following ISTS scheme (ERSS-V) were agreed to be implemented by POWERGRID.

- Rajarhat-Purnea 400 kV D/c line (triple snowbird), with LILo of one circuit at Gokarna and other circuit at Farakka
- Establishment of 400/220 kV, 2X500 MVA Rajarhat substation with LILo of Subhashgram - Jeerat 400kV S/c line

In view of land procurement and severe RoW/approachability problems at Rajarhat area, Director CEA stated that the 2X500 MVA Rajarhat substation would be developed as GIS, which would reduce the land requirement to the extent of 60-70%. He further added that due to similar problems, the 400kV Jharkhand pooling station, 765/400kV Varanashi S/S and 765/400kV Kanpur S/S, which were approved as part of evacuation system for Phase-I IPPs in Jharkhand & West Bengal, would be also developed as GIS. The scope of works for the above GIS stations would remain same as approved. Members agreeing to the proposals opined that GIS cost being very competitive relative to AIS, GIS technology should be generally adopted wherever availability of land would be an issue.

6.0 Re-grouping of Works on the approved System in ER for evacuation of power from Phase-I IPPs in Jharkhand & West Bengal.

6.1 Director (SP&PA), CEA, stated that according to the revised commissioning schedules of IPPs in Jharkhand & West Bengal as given below in the table , POWERGRID has re-grouped the approved system. The scope of Part-A works is divided into two groups i.e. Part-A1 and Part-A2 whereas the scope of works approved under Part-B and private sector remain the same.

Phase-I IPPs in Jharkhand & West Bengal#:

Sl No	Projects	Developer/Applicant	Time Frame	Ins. Cap (MW)	LTO A (MW)	Allocation(Mw)			
						NR	WR	ER	Total
A Jharkhand Projects									
1	Adhunik	Adhunik Power & Natural Resources Ltd.	U-I Jan-12 U-II Mar-12	540	450	200	50	200	450
2	Corporate	Corporate Power Ltd	U-I Sept-13 U-II Mar-14	540	480	240	240		480
3	ESSAR	Essar Power (Jharkhand) Ltd.	U-I Mar-13 U-II Sept-13	1200	1100	400	400	300	1100
Subtotal				2280	2030	840	690	500	2030
B West Bengal Projects									
		WBSEDCL (West Bengal State Electricity Distribution Company Ltd.)	2013-14	1000	1000	600	400	-	1000
Total				3280	3030	1440	1090	500	3030

#* Furnished by POWERGRID

6.2 Details of the approved system after re-grouping are given below.

I. Transmission system for Phase-I generation projects in Jharkhand and West Bengal(WB) - Part-A1:

- Establishment of 400kV GIS Jharkhand Pooling Station near Essar and Corporate generation projects (depending upon progress of Essar and Corporate IPPs). This will be a switching station without ICTs.
- Ranchi – Gaya 400 kV D/C Quad line via proposed Jharkhand Pooling Station near Essar/ Corporate generation projects

II. Transmission system for Phase-I generation projects in Jharkhand and West Bengal - Part-A2:

- Ranchi New (765/400kV S/s) – Dharamjayagarh/near Korba 765kV S/C line
- New 2x1500 MVA, 765/400 kV GIS substation at Varanasi
- Gaya – Varanasi 765 kV S/C
- LILO of one circuit of Gaya - Balia 765 kV line at Varanasi

III. Transmission system for Phase-I generation projects in Jharkhand and West Bengal - Part-B:

- New 2x1500 MVA, 765/400 kV GIS substation at Kanpur
- Varanasi – Kanpur 765 kV D/C
- Kanpur – Jhatikra 765 kV S/C
- 765/400 kV Kanpur – Kanpur(Existing) 400 kV D/C Quad line
- 400kV connectivity for new 765/400kV S/s at Varanasi
 - Varanasi - Sarnath (UPPCL) 400kV D/C Quad line
 - LILO of Sasaram - Allahabad 400kV line at Varanasi
 - Opening of LILO of one circuit of Sasaram-Allahabad 400kV D/C line at Sarnath.

IV. Private Sector line:

In addition to the above work to be undertaken by PGCIL, Dharamjaygarh – Jabalpur 765kV D/C line (2nd line) would be under the scope of private sector. Associated 765kV line bays at Dharamjaygarh and Jabalpur S/S would be under the scope of POWERGRID.

Members agreed to the above proposal.

7.0 Establishment of 400kV sub-station at Chalbalpur (West Bengal) and LILO of one Ckt. of 400kV Mejia- Maithon D/C line at Chalbalpur by DPSC Limited.

Director (SP&PA) stated that Dishergarh Power Supply Company (DPSC), a private sector distribution licensee, which provides supply to consumers in its licensed area of Asansol, West Bengal. They are at present embedded in the STU network and drawing power through WBSETCL. They have estimated that load in the area would grow to the extent of 500 MW by 2015-16 and would increase further to 1000 MW progressively in future. In order to meet such load growth, DPSC desires to create a 400kV Chalbalpur S/S in West Bengal by LILO of one circuit of 400 kV Mejia-Maithon D/C ISTS line and have sought direct connectivity for 1000MW from the CTU in May 2010 for power to be procured from the electricity market. They have also sought in-principle approval from WBSETCL which is the STU of West Bengal. Member(PS) stated that the proposal of DPSC is pending for approval of WBSETCL and seems to be technically viable. WBSETCL may permit DPSC to create the facility for meeting load growth in its licensed area. Director(Operation), WBSETCL was of the view that first of all their power procurement plan has to be approved. DPSC should first apply to WBERC for obtaining the investment approval and thereafter, WBSETCL would examine the proposal of DPSC for direct connectivity with ISTS. PGCIL representative mentioned that as per regulation they would have to give non-discriminatory open access to the transmission system to a licensee and therefore connectivity application of DPSC could not be kept pending for a long time.

Member (PS) observed that this is not the case of a generator seeking open access/connectivity. DPSC is a Discom embedded in the State grid and falling in the domain of planning by the STU. Their request for direct connectivity with ISTS can be processed only with the concurrence of WBSETCL. Finally, it was decided that DPSC would be advised to first take regulatory approval from WBERC and then submit the proposal to WBSETCL for technical examination. The matter will be processed accordingly.

8.0 Temporary termination of 400kV Jamshedpur (PG)-Baripada D/C ISTS line at 400 kV Jamshedpur S/S of DVC.

Director (SP&PA), CEA, stated that **termination of the ongoing** 400kV Jamshedpur-Baripada D/c ISTS line (PG) at Jamshedpur (PG) **was held up** due to RoW problem and DVC intended to terminate both the circuits at their Jamshedpur 400KV S/S temporarily. It was also agreed in the 20th TCC/ERPC meeting held on 16-17 Dec., 2011. Relating to commercial issue, it was decided in the meeting held on 25-1-12 in CEA with DVC, TSL & PGCIL that transmission charge recovery for the line would be made from DVC exclusively (which in turn would be reimbursed by TSL) till the time the line gets completed upto Jamshedpur (PG) forming 400kV Baripada-Jamshedpur (PG) D/C line and DVC was agreeable.

Representative from ERLDC/POSOCO stated that 400kV Baripada S/S of PGCIL would receive power from 400kV Rengali-Baripada S/C and/or 400kV Kolaghat-Baripada S/C lines and for any contingency, there could be operational problems and in such a situation DVC has to restrict their drawal through the line as permissible. Director(Engg.) OPTCL stated that there could be overloading in their system as power would flow from Baripada side to Jamshedpur (DVC). Considering this aspect, it was decided Jamshedpur load of DVC/TSL would be served according to the available margin in the system. DVC was agreeable to it and Members concurred to the proposal.

8.1 Interim Evacuation arrangement for Durgapur Steel TPS (2x500 MW) of DVC

Director (SP&PA), CEA stated that according to the information given by DVC, CoD of Unit No.1 (500 MW) of DSTPS was likely to be January, 2012 and ERLDC was not agreeable to make scheduling of the unit on the ground that the connectivity planned via 400 kV Parulia- DSTPS-Jamshedpur line was not completed. It was reiterated that the approved transmission system for DSTPS evacuation was comprising of LILO of one ckt. of 400 kV Parulia-Jamshedpur D/C line of PGCIL at DSTPS and DSTPS – Raghunathpur-Ranchi 400 kV D/C line of DVC. Neither of these lines are in place for DSTPS U#1 evacuation. Due to severe RoW problems, some stretch of the 400 kV Parulia-Jamshedpur D/C line near terminating points at Parulia(PG) S/S as well as Jamshedpur S/S (PG) ends are held up, pending completion of the line. DVC was also not able to bring their 400kV DSTPS –Raghunathpur-Ranchi 400 kV D/C line.

He further stated that as 400 kV Maithon-Mejia D/C line was commissioned recently, the interim arrangement earlier made for supply of start-up power to DSTPS Unit No.1 through LILO of 400kV Maithon-Mejia section of the 400kV Maithon-Mejia-Jamshedpur line at DSTPS could be continued, as requested by DVC to facilitate evacuation of DSTPS unit-1 till the time either of the above two planned evacuation lines of DSTPS is implemented. Members were agreeable to this interim arrangement to facilitate for DSTPS unit-1 evacuation.

However, ERLDC, POSOCO stated that PGCIL has to grant connectivity for DSTPS accordingly to enable ERLDC for scheduling of DSTPS unit-1. It was further added that scheduling of DSTPS unit-1 would be made according to the margin to be available in the 400kV Maithon-DSTPS-Mejia-Jamshedpur S/C line. Member (PS) advised PGCIL to issue revised connectivity immediately for DSTPS plant of DVC.

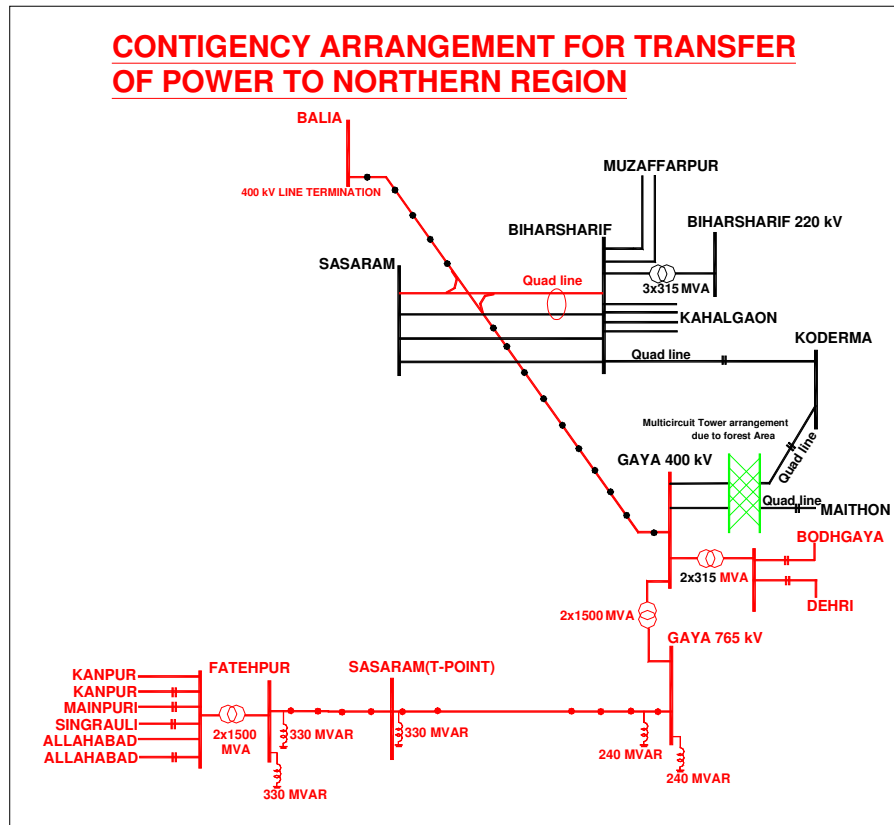
8.2 PGCIL's proposal for interim arrangement for facilitating evacuation of power from upcoming DVC generation projects in Eastern Region

PGCIL stated a number of generation projects having a total capacity of about 5700 MW were proposed by DVC for commissioning in Eastern region with major beneficiaries in Northern region. The associated transmission system which is under various stages of construction was planned to pool power at Gaya through Maithon-Gaya & Koderma-Gaya 400kV D/c quad line and thereon to Sasaram and Balia points for further transfer of power to NR. One unit of 500 MW each at Mejia, Maithon-RB & Koderma have been commissioned and another unit of 500 MW each at Durgapur STPS and Maithon RB TPS would be commissioned shortly. Adequate transmission system is being developed matching with the progressive commissioning of generating units.

PGCIL explained that Koderma - Gaya and Maithon - Gaya 400kV D/c lines would pass through dense forest stretch of about 37 kms (shown as green line in the diagram below). The forest clearances are awaited and it is anticipated to be cleared by March, 2012. In order to judiciously utilise the Right of Way, POWERGRID informed that construction of these two D/c lines in the forest stretch would be made on one tower by using multi-circuit tower configuration and the lines are expected to be commissioned in six months after the forest clearance i.e. October, 2012.

In order to avoid any evacuation constraint for generation projects, PGCIL formulated an interim arrangement by reconfiguring the (i) Gaya-Balia 765kV S/c (to be

completed shortly) and (ii) one circuit of the Biharsharif-Sasaram 400kV D/c (Quad) lines as shown in the diagram below. It would enable to create a 400kV Biharsharif-Gaya S/C and Sasaram-Balia 400kV S/C lines to transfer DVC power to Fatepur and Balia in NR. This interim arrangement would also enable Bihar to draw power from Gaya through the 400/220kV 2X315 MVA ICTs and Dehri-Bodhgaya 220kV line being LILoed at Gaya.



The PGCIL stated that the above interim arrangement would be withdrawn and the normal/planned transmission system would be in place upon completion on Maithon-Gaya 400kV D/C and Koderma-Gaya 400kV D/C lines.

Members of ER constituents were agreeable to the above interim arrangement.

9.0 Establishment of Uttara 400/220kV 2x315MVA S/S at Begunia (an alternative site) in Orissa as GIS with LILO of 400kV Mendhasal-Baripada D/C line under the approved ERSS-III scheme - Modifications in the ERSS-III Scheme.

Director (SP&PA), CEA, stated that the establishment of 2x315MVA, 400/220kV substation at Uttara in Orissa along with 400kV Uttara-Mendhasal D/C line was approved as a part of ISTS Strengthening Scheme (ERSS-III) in the SCM held on 14-9-2009. In view of the land for Uttara being earmarked for construction of an International Airport, PGCIL in co-ordination with OPTCL identified a land at Begunia close to Uttara and proposed to establish Begunia 400/220kV GIS with LILO of 400kV

Mendhasal-Baripada D/C line, instead of the earlier agreed system. The proposal in principle was agreed by CEA.

Director (Engg.) OPTCL stated that due to land procurement/acquisition problem at Begunia, OPTCL has recently identified a land at Pattanaikaya between Bhubaneswar and Puri and there would not be any problem for land acquisition and RoW for creating the 400/220kV 2x315MVA GIS at Pattanaikaya with a 400kV D/C line to Mendhasal. He requested PGCIL to send their concerned officials to ascertain the land identified at Pattanaikaya. PGCIL agreed to the proposal of joint site visit to firm-up the sub-station land.

Members were agreeable to the proposal of OPTCL.

10.0 Proposal of OPTCL, Odisha for provision of space for

- (i) 2nos. 220kV line bays at 400/220kV 2x315MVA Jeypore S/S (PG) and**
- (ii) 4 nos. 132kV line bays at 400/220/132kV Baripada S/S (PG)**

PGCIL confirmed the availability of space for two nos. 220kV bays (bay-1 & bay-8) that could be used by OPTCL for the additional interconnection between 220kV S/s at Jaynagar (OPTCL) and 400/220kV Jeypore S/s (PG).

Regarding the provision of space at the Baripada S/S (PG), PGCIL stated that 4 nos. 132kV bays are being used by OPTCL & JSEB (2 nos. each) and space for providing additional 2nos. 132kV bays at the sub-station would be available for use by OPTCL. OPTCL stated that altogether 4 nos. 132kV line bays at Baripada (PG) would fulfill their requirement. PGCIL confirmed the availability of 4 nos. 132kV bays at their sub-station for the use of OPTCL.

11. Proposals of WBSETCL for

- (i) Execution of WBSETCL's 400 kV PPSP (WB)-Ranchi (PG) D/C & 400 kV Kharagpur (WB)-Chaibasa(PG) D/C lines (including associated bays) POWERGRID to be shared on 100% tariff by WBSETCL.**

Director (SP&PA), CEA, stated that establishment of 400 kV PPSP (WB)-Ranchi (PG) D/C & Kharagpur-Chaibasa D/C lines were agreed in the SCM held on 14.9.2009 and 20.9.2010 as part of system strengthening works of WBSETCL. WBSETCL intended to implement the above lines by POWERGRID as deposit work. He further added that the 400kV lines would be inter-State in nature and some portion outside the jurisdiction of West Bengal. WBSETCL/WBSEDCL stated that they were facing difficulty to develop these lines owing to creation of transmission assets on the other State. They proposed to develop these lines by PGCIL for which 100% transmission charges would be shared by WB. PGCIL representative stated that the above two

400kV D/C lines would help to export surplus of ER and also enable to import from other regions and therefore, it would be prudent to construct the above two 400kV D/C lines as ISTS lines. On the suggestion of PGCIL, Member(PS) stated that these two lines could be developed through competitive bidding route. In this regard, WBSETCL/WBSEDCL had no objection. All the members were agreeable to develop the 400 kV PPSP (WB)-Ranchi (PG) D/C and 400 kV Kharagpur-Chaibasa D/C lines as ISTS works.

(ii) Augmentation of 400/220 kV transformer capacity from 2x315 MVA to (2x315+1x500) MVA at Subhashgram (PG)

Director (SP&PA), CEA, stated that the existing ICTs at 400/220 kV Subhashgram (PG) S/s having capacity of 2x315 MVA are presently getting loaded at around 75% of its rating and loading would further to increase due to load growth and additional 220 kV interconnections being set up by WBSETCL with its adjoining S/s. While augmentation of transformer capacity by 1x315 MVA ICT was proposed, PGCIL suggested for considering 1x500 MVA, 400/220kV ICT at Subhasgram(PG). Member(PS) welcome the suggestion and Members were agreeable.

(iii) Proposal of WBSETCL for 220 kV connectivity of their new 220 kV s/s at Sirakol to the 400/220 kV Subhasgram s/s (PG).

PGCIL stated that they would provide additional 2 nos. 220kV line bays at Subhashgram(PG) along with the 1x500MVA 400/220kV ICT being added at the sub-station to enable WBSETCL to construct a 220kV D/C line from Subhasgram(PG) to 220kV Sirakol S/S by WBSETCL.

(iv) Creation of 400/220 kV Raghunathpur s/s with LILO of 400 kV Parulia(PG)-Maithon (PG) D/C line by WBSETCL.

The load growth potential at Raghunathpur area was about 120MVA as estimated by WBSETCL. Director CEA stated that creation of a 400kV new S/S at Raghunathpur as proposed by WBSETCL would not be justifiable at this stage. Representative from DVC intimated that space for 2nos. 400kV bay could be made available at their upcoming Raghunathpur TPS to enable WBSETCL to feed its load at Raghunathpur. WBSETCL/WBSEDCL decided to re-examine the issue and withdrew the proposal.

12. Proposal of PGCIL for establishment of 400kV substation at Darbhanga and Motihari in North Bihar and associated connectivity to the grid network in ER

Director CEA requested PGCIL to explain the need for developing 400kV substations at Darbhanga and Motihari in north Bihar. PGCIL stated that 2 nos. 400kV substations (Purnea & Muzaffarpur) with total capacity of 1260MVA are existing in Bihar

as against projected demand of about 2100 MW in 2016-17. Nevertheless, Bihar would have additional share of about 2500MW from upcoming central generating stations (e.g. Barh-I & II, Nabinagar-I & II, etc.) to meet its load growth in north and south Bihar. Accordingly, it was felt to establish 400kV sub-stations at Darbhanga and Motihari to meet load growth in north Bihar. ERPC representative added that transmission network in north Bihar is weak requiring additional 400kV sub-stations and grid strengthening there. While seeking views of, it was noted that the meeting was not attended by the concerned high level officers from the Board to properly present the views in the matter. However, the attending officer agreeing to the proposal of PGCIL stated that M (Trans) BSEB addressed CE CEA on the subject stating requirement of the two new 400kV sub-stations in north Bihar.

As regards 400kV Darbhanga S/S, PGCIL stated that the proposed 400/220kV, 2x315MVA Darbhanga S/S could be connected to Muzaffarpur S/S (PG) through a 400kV D/C line or alternatively by LILO of Purnea–Muzaffarpur 400kV D/c line at Darbhanga. Director CEA suggested that the LILO option would avoid construction of new 400kV line from Muzaffarpur S/S and it would rather anchor the 400kV Purnea-Muzaffarpur series compensated quad conductor long line enrouting Darbhanga and thus provide operational benefit. PGCIL explained that 400kV Purnea-Muzaffarpur line being a trunk line (part of Tala system) would not be suitable to connect to Darbhanga and further added that length of the LILO portion would be comparable to that of 400kV Darbhanga- Muzaffarpur D/C line and thus would offer no major cost advantage. Regarding intra-state system strengthening requirements to be made by BSEB from Darbhanga, PGCIL suggested that (i) 2x160 MVA, 220/132kV sub-station at Samastipur by LILO of 220kV Begusarai(BSEB) - KTPS D/C (ii) Darbhanga – Darbhanga (BSEB) 220kV 2xD/c (iii) Darbhanga – Saharsa / Madhepura(BSEB) 220kV D/c and (iv) Darbhanga – Samastipur 220kV D/c line, should be established by the Board.

Regarding creation of 400kV Motihari S/S, PGCIL explained that the load growth at Motihari area in BSEB would be around 305MW by 2016-17 and a 400/132kV 3x200MVA ISTS sub-station at Motihari with LILO of 400kV Barh – Gorakhpur 400kV D/C quad line (about 50 kms.) would enable BSEB to meet load growth in the area. As intra-state system strengthening from Motihari, PGCIL proposed for (i) 132 kV Motihari - Motihari (BSEB) 2xD/C and (ii) 132kVMotihari – Betiah (BSEB) D/C line with HTLS conductor. Director CEA suggested that instead of creating 400/132kV level at Motihari it could be better option to consider 400/220kV level to supply load in and

around Motihari. On this aspect, while seeking views of BSEB, BSEB participant, after consultation with their Member (Trans) in Bihar, stated that creation of 220kV level at Motihari would be the right option. Accordingly, it was decided that a 400/220kV ISTS sub-station at Motihari with LILO of 400kV Barh – Gorakhpur 400kV D/C quad line would be established and suitable intra-state 220kV outlets from Motihari would be planned later by BSEB.

Regarding selection of transformation capacity of ICTs (MVA) at the 400kV sub-stations, Member (PS) opined after deliberation that both the new substation at Darbhanga and Motihari should have 2x500MVA 400/220kV ICTs for the longer time frame and the same was agreed by the members.

The following inter State and intra-State works for establishment of 400kV sub-station at Darbhanga and Motihari in north Bihar were decided:

I. 400kV sub-station at Darbhanga

(a) ISTS Works:

- Establishment of 2x500 MVA, 400/220kV sub-station at Darbhanga and 400kV Muzaffarpur - Darbhanga D/c line with triple snow bird conductor.

(b) Intra-State Transmission works under the scope of BSEB (BSEB has to confirm and implement the following intra-state system strengthening works matching with time line of 400kV Darbhanga sub-station).

- 2x160 MVA, 220/132kV sub-station at Samastipur by LILO of 220kV Begusarai(BSEB) - KTPS D/C.
- Darbhanga – Darbhanga (BSEB) 220kV 2xD/c line
- Darbhanga – Saharsa / Madhepura (BSEB)220kV D/c line
- Darbhanga – Samastipur 220kV D/c line

II. 400kV Substation at Motihari

(a) ISTS Works:

- 2x500 MVA, 400/220 kV sub-station at Motihari
- LILO of Barh – Gorakhpur 400kV D/C quad line at Motihari (about 50 kms.)

(b) BSEB needs to develop the associated 220kV intra-State Transmission works from Motihari to meet their load requirement.

PGCIL stated that the above ISTS strengthening works would be developed through tariff based competitive bidding route as “Eastern Region Strengthening Scheme-VI”. Members were agreeable.

(13) Modification in ISTS System for Phase-I Generation Projects in Jharkhand & West Bengal (establishment of 765 kV Varanasi – Balia S/c direct line in lieu of LILO of Gaya – Balia 765 kV S/c line at Varanasi)

Director, CEA stated that 765/400kV 2x1500MVA Varanasi GIS (PG) with LILO

of one circuit of 765kV Gaya – Balia line was inter-alia planned under Part-A-2 of the “Transmission System for Phase-I Generation Projects in Jharkhand & West Bengal” being executed by PGCIL to enable power transfer from Gaya in ER to Varanasi/Balia in NR.

Due to the LILO point on Gaya – Balia 765 kV S/c line being close to Balia substation and LILO distance from the line tapping point to 765kV Varanasi S/S being of the order of 110 km, PGCIL informed that the long LILO distance would result into unbalanced loading on Gaya – Varanasi 765 kV line. In order to avert such situation, PGCIL opted to construct Varanasi – Balia 765 kV S/c direct line at a reduced cost instead of proposed LILO work and it was in principle approved by CEA.

The Transmission system covered under Part A-2 (Item-6.2 above) relating to transmission system for Phase-I generation projects in Jharkhand and West Bengal was revised as below:

Part A-2 (revised) of the ISTS System for Phase-I Projects in Jharkhand & WB:

- Ranchi New (765/400kV S/s) – Dharamjayagarh/near Korba 765kV S/C line
- New 2x1500 MVA, 765/400 kV GIS substation at Varanasi
- Gaya – Varanasi 765 kV S/C
- Varanasi- Balia 765 kV S/C

After deliberation, members were agreeable to the modification.

(14) Line Bays & Reactors for Private Sector Lines under ATS of Phase-I IPPs in Orissa

PGCIL stated that ATS for Phase-I IPPs in Orissa was finalised in ER Standing Committee Meeting on 20-09-2010 and ratified in the 16th ERPC meeting held at Bhubaneswar on 17-18 Dec, 2010, in which the following elements are getting implemented under private sector through tariff based competitive bidding:

- Jabalpur Pool -Bhopal-Indore 765kV S/c
- Bhopal New S/s – Bhopal (MP) 400kV D/c (High Capacity)
- Establishment of 765/400kV, 2x1500MVA Bhopal S/s

The bay extension works of the above lines at POWERGRID substations viz. 765/400kV Jabalpur Pool and Indore along with line reactors would be implemented by POWERGRID. Members noted it.

15.0 Review of Progress on Earlier Agreed Transmission Schemes

POWERGRID furnished the progress of earlier approved transmission schemes, which is enclosed at Annex.-II

**List of participants
for 1st-2012 Standing Committee Meeting on Power System Planning in ER held on 8.2.2012
at NRPC, Katwaria Sarai, New Delhi**

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PROGRESS REPORT UP TO JANUARY'2012

Rs. in Crore

Sl. No.	Name of the Trans line	Investment Approval	Cost (Appd. / Ant.)	Commissioning Schedule	Remarks / Constraints & assistance required.
1	Eastern Region Strengthening Scheme - I	Oct'06	975.96	Mar'12	
	400KV D/C Durgapur - Jamshedpur			Mar'12*	ECL is not allowing construction on the diverted route, where line locs. diverted to allow setting up of Andal Airport. Matter taken up with Ministry of Coal at MOP level. Termination of line at Durgapur (PG) uncertain due to non-resolution of above issue. * Powergrid is now planning to terminate the line at Durgapur Steel TPS (Andal). A portion of line (18.5 Km) to provide connectivity to LILO at Andal (for Start-up power to Durgapur STPS) completed & test charged on 22.01.11.
	400KV D/C Jamshedpur - Baripada			Mar'12	Severe ROW problem being faced in Jharkhand. Matter continuously being taken up with chief Sec. & distt administration. Critical.
	400KV D/C Baripada - Mendhasal			Aug'11	Line completed & commissioned on 29.08.11.
	Re-conductoring of 400KV D/C Siliguri - Purnea line (HTLS Cond.)			Jun'12	Award placed in Aug'10. Engg. in progress. Supply of conductor has been delayed due to earth quake in Japan and flood in Thailand Which has delayed the supply of material & likely to delay the erection.
2	Eastern Region Strengthening Scheme - II	Dec'07	227.52	Feb'12	
	400KV D/C Durgapur - Maithon line			Feb'12	Severe ROW problem. Works being executed under police protection.
3	Eastern Region Strengthening Scheme - III	July'10	1272.8	Nov'12	
	400KV D/C Sasaram - Deltonganj line			Nov'12	Completion likely to be delayed due to non-availability of sub station site.
	400KV D/C Mendhasal - Uttra line			Nov'12	Award placed in Dec'10. Completion likely to be delayed due to non-availability of sub station site.
	LILO of 400KV D/C Kahalgaon - Biharshariff line (1st line) at Lakhisarai			Nov'12	Award placed in Mar'11. Engg. in progress.
	LILO of 400KV D/C Kahalgaon - Biharshariff line (2nd line) at Banka			Nov'12	
	LILO of 400KV S/C Meramundali - Jeypore line at Bolangir			Nov'12	
	LILO of 400KV S/C Rengali - Baripada line at Keonjhar			Nov'12	
	LILO of 400KV D/C (one ckt) Baripada - Mendhasal line at Dubri (OPTCL)			Nov'12	Progress affected due to ROW problem..
	LILO of 400KV D/C (both ckt) Jamshedpur - Rourkela line at Chaibasa			Nov'12	Award placed in Mar'11. Completion likely to be delayed due to non-availability of sub station site.
4	Immediate evacuation system for NABINAGAR TPS	Feb'10	215.86	Mar'12	
	400KV D/C Nabinagar - Sasaram line (Twin lapwing))			Mar'12	
5	Common Scheme for 765KV Pooling Station and Network Associated with DVC & Maithon RB Project etc and Inport by NR & WR via ER	Aug'08	7075.33	Aug'12	
	400KV D/C Maithon-Gaya line (Q) (Including. M/C portion - 37 Kms)			Mar'12*	Completion likely to be delayed due to involvement of Multi-ckt (awarded seperately) and forest clearances (awaited). Contingency arrangement being made to connect Maithon -Gaya with Koderma-Gaya, by-passing multi-ckt portion, to form Maithon-Koderma line
	765KV S/C Gaya - Sasaram line			Mar'12	Matching with readiness of Sasaram S/Stn. However efforts being made to complete the link earlier alongwith Sasaram-Fatehpur link through mid-point reactor at Sasaram.
	765KV S/C Gaya - Balia line			Feb'12	
	765KV S/C Ranchi - WR Pooling Station			Aug'12*	Matching with compln of Ranchi S/S. *Which is likely slip due to delay in acquisition of land (acquired in May'11). Further, forest clearance awaited & severe ROW problem.

PROGRESS REPORT UP TO JANUARY'2012

Rs. in Crore

Sl. No.	Name of the Trans line	Investment Approval	Cost (Appd. / Ant.)	Commissioning Schedule	Remarks / Constraints & assistance required.
	765KV S/C Balia - Lucknow line			Feb'12	
	400KV D/C Ranchi (New) -Ranchi line -I (Quad)			Aug'12	Matching with completion of Ranchi S/Stn. (Critical)
	400KV D/C Ranchi (New) -Ranchi line - II (Quad)			Aug'12	Matching with completion of Ranchi S/Stn. (Critical)
	400KV D/C Lucknow (New) - Lucknow line - II (Quad)			Feb'12	Line back charged in Dec'11 from Lucknow (old S/Stn.) Commissioning matching with charging of Balia-Lucknow line (ant. By Feb'12).
	LILO of 400KV D/C Barh - Balia at Patna			Mar'12	Tower erection commenced from Jan'12
	LILO of both Ckt of Allahabad - Mainpuri at Fatehpur			Jun'12	
6	Supplementary Transmission System Associated with DVC & Maithon Right Bank Project	Aug'08	2360.95	Aug'12	
	400KV D/C Maithon RB - Ranchi (PG) line			Dec'11	Line commissioned in Dec'11.
	400KV D/C Bokara TPS Extn.- Koderma TPS line			Aug'12	Gen. project (Bokaro STPP) delayed.
	400KV D/C Koderma - Gaya line (Quad) (Including. M/C portion -37 Kms)			Mar'12*	Completion likely to be delayed due to involvement of Multi-ckt (awarded seperately) and forest clearance (awaited). Contingency arrangement being made to connect Maithon -Gaya with Koderma-Gaya, by-passing multi-ckt portion, to from Maithon-Koderma line
	400KV D/C Mejia - Maithon line			Nov'11	Line completed & charged on 30.11.11
	765KV S/C Sasaram - Fatehpur line-I			Mar'12	Being a Inter regional link, proposed to complete in 11th plan alongwith Sasaram line through mid-point Reactor at Sasaram
	765KV S/C Fatehpur - Agra line			Aug'12	Completion likely to be delayed (land for Agra S/Stn. acquired in Jun'11).
	400KV D/C Biharshariff - Sasaram line (Quad)			Jan'12	Ckt-I commissioned Jan'12 and Ckt-II Through Gaya-Balia line charged on 31.01.12.
	LILO of 400KV S/C Singrauli - Kanpur line at Fatehpur			Jan'12	Linr commissioned in Jan'12.
	LILO of 400KV S/C Allahabad - Kanpur line at Fatehpur			Dec'11	Line commissioned in Dec'11.
	LILO of 220KV D/C Fatehpur (UPPCL) - Kanpur (UPPCL) line at Fatehpur			Dec'11	Line commissioned in Dec'11.
	LILO of 220KV D/C Dehri - Bodhgaya line at Gaya			Feb'12	Ckt-I (24 Ckm) commissioned in Jan'12.
7	Immediate evacuation system with BARH - II TPS	Dec'11	901.77	Aug'14	Compln. Sch. - 32 months from date of investment approval
	400 KV D/C Barh - II TPS - Gorakhpur line (Quad)			Aug'14	Award under progress.
8	Transmission System for Phase-I Generation Projects in ORISSA - Part - A.	Sep'10	2074.86	Mar'13	Compln. Sch. - 30 months from date of investment approval
	765KV S/C Angul Pooling station - Jharsuguda Pooling station line -I			Mar'13	
	765KV S/C Angul Pooling station - Jharsuguda Pooling station line -II			Mar'13	
	LILO of 400KV D/C Rourkela - Raigarh at Jharsuguda Pooling stn.			Mar'13	Foundation commenced from Jan'12.
	LILO of 400KV S/C Meramunali - Jeypore at Angul Pooling stn.			Mar'13	Foundation commenced from Jan'12.
	LILO of one ckt 400KV D/C Talchar - Meramundali at Angul Pooling station.			Mar'13	Award placed in Mar'11. Engg. in progress.
9	Transmission System for Phase-I Generation Projects in ORISSA - Part - B.	Dec'10	2743.19	Dec'13	Compln. Sch. - 36 months from date of investment approval
	765 KV D/C Jharsuguda Pooling Station - Dharamjaygarh line			Dec'13	
	765 KV D/C Dharamjaygarh - Jabalpur Pooling Station line			Dec'13	

PROGRESS REPORT UP TO JANUARY'2012

Rs. in Crore

Sl. No.	Name of the Trans line	Investment Approval	Cost (Appd. / Ant.)	Commissioning Schedule	Remarks / Constraints & assistance required.
	LILO of 765KV S/C Ranchi - Sipat (Bilaspur) Pooling Station at Dharamjaygarh / near Korba			Dec'13	Award placed in Jan'11. Engg. in progress.
	400 KV D/C Jabalpur Pooling Station - Jabalpur (High Capacity) line			Dec'13	Award placed in Jan'11. Engg. in progress..
10	Transmission System for Phase-I Generation Projects in ORISSA - Part - C.	Mar'11	2569.25	Mar'14	Compln. Sch. - 36 months from date of investment approval
	765 KV D/C Jabalpur Pooling Station - Bina line			Mar'14	
	765 KV S/C Bina - Gwalior line (3rd Ckt)			Mar'14	Award placed in Nov'11.
	765KV S/C Gwalior-Jaipur line (2nd Ckt)			Mar'14	01 pkg. awarded out of 02 pkgs.
	765 KV S/C Jaipur - Bhiwani line			Mar'14	Award placed in Oct'11. Engg. in progress.
11	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - A1.	Oct'11	558.26	Nov'13	Compln. Sch. - 25 months from date of investment approval
	400KV D/C Ranchi (765/400KV S/S) - Jharkhan Pool - Gaya line (Quad)			Nov'13	Award placed in Dec'11.
12	Transmission System for Phase-I Generation Projects in Jharkhand and West Bengal - Part - A2.	Dec'11	2422.66	Aug'14	Compln. Sch. - 32 months from date of investment approval
	765KV S/C Ranchi New(765/400KV S/S) - Dharamjaygarh / Near Korba line			Aug'14	Award under progress.
	765KV S/C Gaya - Varanasi line			Aug'14	Award under progress.
	LILo of Gaya - Balia 765KV S/C line at Varanasi (on D/C tower)			Aug'14	Award under progress.
13	Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - A.	May'10	250.03	Jan'13	
	LILo of Siliguri (Existing) - Purnea 400KV D/C line (Q) at New Pooling station at Kishanganj			Jan'13	Award placed in Aug'11. Engg. in progress.
	LILo of Siliguri (Existing) - Purnea 400KV D/C line (on which reconductoring is being carried out) at Kishanganj with QUAD Cond.			Jan'13	Award placed in Aug'11. Engg. in progress.
	LILo of Siliguri - Dalkhola 220KV D/C line at New Pooling station Kishanganj			Jan'13	Award placed in Aug'11. Engg. in progress.
	LILo of Gangtok - Melli 132KV S/C line up to Rangpo.			Jan'13	Award placed in Aug'11. Engg. in progress.
14	Transmission System for Transfer of Power from Generation Project in SIKKIM to NR/WR Part - B.	Mar'11	1585.12	Nov'13	Compln. Sch. - 32months from date of investment approval
	400KV D/C Kishanganj - Patna line (Quad)			Nov'13	Tower erection commenced from Jan'12
	LILo of 400KV D/C Teesta-V - Siliguri line at Rangpo (1 D/C & 1.5 M/C)			Nov'13	Award placed in Sep'11. Engg. in progress.
	LILo of Teesta-III - Kishanganj 400KV D/C (Q) at Rangpo (21 D/C+1.5 M/C) (being constructed under JV rout)			Nov'13	Award placed in Sep'11. Engg. in progress.
	220KV D/C Rangpo - New Melli line (twin moose) (20.5 D/C & 1.5 M/C)			Nov'13	Award placed in Sep'11. Engg. in progress.
	LILo of 132KV S/C Gangtok - Rangit line at Rangpo			Nov'13	Award placed in Sep'11. Engg. in progress.