

Additional agenda for 42nd TCC Meeting to be held on 12th Dec' 2019

1. The following schemes have been approved in the 2nd meeting of Standing Committee on Transmission of Eastern Region held on 05-07-2019:

A. Modification in earlier approved schemes

1. Termination of 400kV lines at Jeerat (WBSETCL) substation under the ERSS-XV and ERSS-XVIII schemes

1.1 Following 400kV lines are existing / under construction at 400/220kV substation of Jeerat (WBSETCL):

Existing:

- (i) Jeerat (WBSETCL) – Sagardighi 400kV S/c line of POWERGRID
- (ii) Jeerat (WBSETCL) – Rajarhat/Subhashgram 400kV S/c line of POWERGRID
- (iii) Jeerat (WBSETCL) – Barkeshwar (WBSETCL) 400kV S/c line of WBSETCL
- (iv) Jeerat (WBSETCL) – Kolaghat (WBSETCL) 400kV S/c line of WBSETCL

Under Construction:

- (v) LILO of Sagardighi – Subhashgram 400kV S/c line at Jeerat (WBSETCL) as a part of ERSS-XV by POWERGRID
- (vi) Jeerat (New) – Jeerat (WBSETCL) 400kV D/c line (Quad) as a part of ERSS-XVIII being implemented under TBCB by POWERGRID Medinipur-Jeerat Transmission Ltd.

1.2 There was RoW problem for termination of new 400kV lines being implemented under ERSS-XV and ERSS-XVIII at Jeerat (WBSETCL) S/s. Accordingly, in the 19th meeting of SCPSPER, following was decided to resolve the issue:

- (i) Dismantling of dead end towers and termination of existing lines mentioned at 1.1 (i) to (iv) through GIS duct, at the existing 400kV Jeerat AIS S/s (WBSETCL) as ISTS.
- (ii) The new lines mentioned at 1.1 (v) and (vi) can be directly terminated on separate double circuit towers at normal height (around 45 meters) to new GIS extension area.
- (iii) Further, it was also acknowledged that implementation of LILO of Sagardighi-Subhasgram 400kV S/c line at Jeerat along with associated line bays shall get delayed due to addition of above mentioned GIS duct arrangement.

1.3 Since the work to be carried out under ISTS may not match the timeline of ERSS-XV & ERSS-XVIII schemes, it was requested to extend the completion of ERSS-XV & ERSS-XVIII schemes in the 1st meeting of ERSCT. Further, in the 1st

ERSCT it was also decided that “after finalization of implementing agency for the work, a separate meeting in CEA with CTU, POWERGRID, WBSETCL and implementing agency will be held to discuss the extension of completion schedule of ERSS-XV & ERSS-XVIII schemes. Decision of the meeting will be put up before ERSCT for ratification.”

1.4 In the 2nd meeting of ECT held on 06-08-2018, POWERGRID has been entrusted with the works mentioned above at 1.2 (i) through RTM.

1.5 For dismantling and termination of various lines of POWERGRID and WBSETCL through GIS duct, agreement was signed by POWERGRID with WBSETCL on 07-11-2017, i.e. WBSETCL is implementing the said works on POWERGRID's behalf at its substation. The work has been awarded to JV of M/s Techno & M/s ABB in Nov'18 after approval of mode of implementation in the 2nd ECT meeting. The expected commissioning schedule of the GIS works is 15 months (i.e. Feb 2020) from award.

Members may approve revised completion schedule of ERSS-XV/XVIII scheme as Feb 2020.

2. Conversion of 50MVAR bus reactor at Farakka generation switchyard to switchable line reactor under ERSS-15

2.1 In the 19th meeting of Standing Committee on Power System Planning of Eastern Region held on 01-09-2017 it was informed that one spare future bay has been selected for termination of one circuit of Farakka – Baharampur D/c line at 400kV bus at Farakka generation switchyard, however, due to non-availability of adjacent bay for termination of the other circuit it is proposed to terminate the second circuit in the existing 50MVAR bus reactor bay along with conversion of this reactor to switchable line reactor. This arrangement would result in connection of 50MVAR switchable line reactor in one circuit of Farakka – Baharampur 400kV D/c line at Farakka end to be utilised as bus reactor.

2.2 In the meeting, members agreed for conversion of 50MVAR (3x16.67) bus reactor at Farakka to switchable line reactor to be installed in one circuit of Farakka – Baharampur 400kV D/c line as ISTS. Subsequently, in the 2nd meeting of ECT it has been decided that the said works would be implemented by POWERGRID under RTM. **Accordingly, as per ECT approval the scheme has already been implemented by POWERGRID under the ERSS-XV scheme.**

Members may please note.

3. Extension of completion schedule for installation of ICT-2 at Farakka (NTPC) under ERSS-XII

3.1 In 19th meeting of SCSPER held on 01.09.2017, constraint in transportation of ICT-II at Farakka (NTPC) under ERSS-XII were discussed and it was recorded that:

“In case of transportation constraint at Farakka Switch Yard, the ICT may be transported through Farakka Feeder Cannel waterways at additional cost under ERSS-XII scheme”.

3.2 Subsequently in first meeting of ERSCT held on 16.07.2018 following was decided:

“After deliberation, following modification in ERSS-XII was agreed with extension in completion schedule by 18 months from the schedule COD”.

“... New ICT which is being procured to replace the burnt ICT, Patna to be diverted to Farakka for installation of ICT-II”.

3.3 Based on decision on ERSCT meeting held on 26.07.2018, POWERGRID took procurement action for ICT and NOA for supplying new ICT for Farakka was placed in April 2019 with completion schedule of 12 months i.e. up to April 2020.

3.4 However, considering shutdown constraint at NTPC and commission activities of bays & ICT, completion schedule of Installation of ICT-2 at Farakka (NTPC) under ERSS-XII may need to be extended till June 2020.

Members may approve the extension of completion schedule of installation of ICT-2 (400/220kV, 315MVA) at Farakka (NTPC) under ERSS-XII till June 2020.

4. Modification in transmission system associated with North Karanpura (3x660MW) generation project of NTPC

4.1 Director (PSPA-II), CEA informed that the evacuation system for North Karanpura (3x660MW) generation project (of NTPC) and ERSS-XIX schemes together was to be implemented by M/s NKTL (subsidiary of Adani) under TBCB route with following scope of works:

- (a) North Karanpura – Gaya 400kV D/c (Quad) line
- (b) North Karanpura – Chandwa 400kV D/c (Quad) line
- (c) Establishment of 400/220 kV, 2x500 MVA sub-station at Dhanbad
- (d) LILO of both circuits of Ranchi-MaithonRB 400 kV D/c line at Dhanbad

4.2 However, the work was not progressed. CERC, in its order dated 20.03.2019 in Petition no. 194/MP/2017 has directed CEA to decide revised Scheduled Commercial Date of Operation (SCoD) for execution of the transmission system in consultation with NTPC and the Petitioner.

4.3 Accordingly, a meeting was held at CEA on 23-04-2019, wherein the status of transmission system of NKTL was reviewed and following was agreed.

i. Revised scope of the project:

- a. NKSTPP – Common point would be 13 km multi circuit 400kV line (quad moose conductor).
- b. Common point – Chandwa would be 25 km 400kV D/c line (quad moose conductor).

- c. Common point – Gaya would be 98 km 400kV D/c line (quad moose conductor).
 - d. New 400/220kV, 2x500MVA Dhanbad Substation.
 - e. 1.2 km D/c LILO of Ranchi-Maithon RB 400kV D/c line at Dhanbad.
- ii. NKSTPP-Chandwa 400kV D/c line would be completed in 14 months, i.e. by June 2020 and NKSTPP-Gaya 400kV D/c line would be completed in 23 months, i.e. by March 2021. New 400kV Dhanbad S/s with 1.2 km D/c LILO of Ranchi-Maithon 400kV D/c line would be completed in about 18 months, i.e. by October 2020.
- iii. Representative of NKTL agreed for the above time lines subject to getting forest clearance for NKSTPP-Chandwa 400kV D/c line within 200 days and for NKSTPP-Gaya 400kV D/c line within 300 days.

Members may approve the revised scope of works mentioned above at para 7.3, which is to be implemented by M/s NKTL within above mentioned revised Scheduled Commercial Date of Operation (SCoD).

A. New Transmission Schemes

5. Augmentation of transformation capacity at Muzaffarpur (POWERGRID) S/s

5.1 The load demand in Muzaffarpur & adjoining areas is largely fed by Muzaffarpur (PG) with transformation capacity of 1x500+2x315 MVA. During peak hours following loadings are being observed:

5.2

Sl. No.	Lines	Maximum Loading (MW)
1	Muzaffarpur (PG)-MTPS (D/C)	420
2	Muzaffarpur (PG)-Hazipur (D/C)	296
3	Muzaffarpur (PG)-Dhalkebar (Nepal) (400kV Transmission Line charged at 220kV)	150
	Total	866

5.3 In present scenario itself, Muzaffarpur (PG) is not able to fulfill N-1 criteria and in case of outage of any power transformer, the situation will be critical. Moreover, if the generation at Kanti (MTPS) reduces, the power supply position at Muzaffarpur 220kV level further aggravates under N-1 of ICTs.

5.4 In future, Amnor (Chappra) GSS(220/132/33 KV) will be connected to Muzaffarpur (PG) through 220 KV D/C lines as approved in 18th Standing Committee Meeting. Further Amnor has been proposed to be connected to Digha

(new) GSS (220/132/33 KV) at 220 KV level. BSPTCL has also proposed one 220/132/33 KV GSS at Garaul (Dist. Vaishali) under State Plan, approved in the Bihar cabinet, is getting source at 220 KV level with D/C from Muzaffarpur(PG). Both proposed GSSs (Digha and Garaul) are likely to be commissioned in March-2020. In future the loading pattern on 220kV lines is expected to be as follows:-

Sl. No.	Lines	Maximum Loading (MW)
1	Muzaffarpur (PG)-MTPS (D/C)	80
2	Muzaffarpur (PG)-Hazipur (D/C)	250
3	Muzaffarpur (PG)-Amnor (BGCL) (D/C)	300
4	Muzaffarpur (PG)-Goraul (Proposed) (D/C)	200
	Total	830

5.5 In view of the above, BSPTCL proposed for addition of one new 500MVA transformer at Muzaffarpur (PG) to ensure uninterrupted power to Muzaffarpur and adjoining areas in the event of outage of any transformer.

5.6 A meeting was held on 26.03.2019 at CEA it was suggested that additional one no. of 500MVA ICT may be installed to meet the load under N-1 criteria.

5.7 Space is available for new 400/220kV, 500MVA ICT. The 400kV ICT bay could be implemented as AIS; however, 220kV ICT bay needs to be implemented as GIS along with 220kV cable from ICT to GIS bay.

Members may approve installation of one additional 400/220kV, 500MVA ICT at Muzaffarpur (PG) was agreed for installation under ISTS. The 400kV ICT bay would be implemented as AIS & 220kV ICT bay would be implemented as GIS along with 220kV cable from ICT to GIS bay.

6. Additional 400kV connectivity at 400/220/132kV Saharsa (new) S/s being implemented under ERSS-XXI through TBCB

6.1 The present connectivity of upcoming 400/220/132 kV Saharsa (New) GSS at 400 kV level is LILO of Patna (PG) - Kishanganj (PG) 400 kV D/C line and this work is being done by POWERGRID under TBCB route.

6.2 Saharsa (New) GSS has to be fed from two reliable sources, whereas one of the feed i.e. Patna (PG) - Saharsa (New) 400 kV D/c line is having river crossing and tower failure may occur during floods. Therefore, to improve the reliability at 400 kV level, it is proposed to provide an additional source by making LILO of Darbhanga (DMTCL) - Kishanganj (PG) 400 kV D/C line at 400 kV Saharsa (New) S/S.

6.3 A meeting was held on 26.03.2018 at CEA, wherein Chief Engineer (PSP&All), CEA, and representative of CTU stated that Kishanganj (PG) - Saharsa(New) 400 kV D/c line with Quad moose conductor can meet the load of Saharsa (New) S/S , in case of tower failure of Patna (PG) – Saharsa (New) 400kV

D/c line. Under worst case scenario, i.e. with only one circuit of Kishanganj (PG) - Saharsa(New) 400 kV line (with quad moose), the load of Saharsa (New) S/S would be met in the present condition. Based on operational experience, the alternatives may be discussed.

6.4 It was opined that N-1 criteria can only be considered while planning, whereas tower failure in river crossing cannot be considered as a general case in the studies. However, representative of BSPTCL insisted that the 2nd 400kV LILO line i.e. LILO of Kishanganj – Darbhanga may be considered at Saharsa to improved power supply reliability, as the Kishanganj – Patna line during the last two monsoon seasons has suffered prolonged outage due to tower collapse at various locations during flood.

Members may approve additional 400kV connectivity at 400/220/132kV Saharsa (new) through LILO of both circuits of Kishanganj – Darbhanga 400kV D/c (Q) line.

7. Scheme for limiting of fault current level at 400kV level at Farakka generation switchyard

7.1 The three phase fault level at Farakka TPS (NTPC) at 400kV bus is found to be exceeding the designed short time current rating of equipment (i.e. 40kA). In the present time-frame, the fault level is observed to be about 53kA (assuming split is operational at Maithon, Biharsharif, Durgapur, and Kahalgaon). Moreover, the fault level of Farakka generation switchyard in 2022-23 time-frame is expected to be about 54.5kA.

7.2 The matter was discussed in a meeting held at CEA on 26-03-2019 (Minutes of meeting is at Annexure-I). In the meeting, CTU had proposed for splitting the 400kV Farakka bus using series reactor. With the proposed bus splitting arrangement and a series reactor of 12ohm between the bus sections, it was observed that maximum angular difference between the two sections is about 4-5 degrees. Representative of NTPC informed that auxiliary power supply for Farakka STPP is designed to derive station and backup power supply for plant auxiliaries from 400kV switchyard through 3 nos. Tie transformers (125MVA, 125MVA and 100MVA). Tie transformer#1 and 2 are fed from 400kV Bus#1 and Tie Transformer#3 is fed from 400kV bus#2. For Farakka STPP stage-1, 2 and 3, there is interconnection between the respective Tie transformers at 33kV, 11/6.6kV and 0.415kV levels. 2x100% / 3x50% redundant feeding configuration is provided at each load centre with two sources fed from different Tie transformers such that there is no loss of plant auxiliaries in case of outage of any one tie transformer. This provision has been kept by design in order to ensure reliability of supply to auxiliaries and avoid loss of generation on outage of Tie Transformer. In case of splitting the 400kV Farakka bus using series reactor arrangement, the phase angle difference between same voltage level buses would be more than 5 degree. Due to

this, auxiliary power supply changeover may not take place or heavy circulating currents would flow, which may further trip some of the circuit breakers.

7.3 After system study, NTPC informed that even with 2.5 deg. angle between FSTPP split buses and around 50% loadings of the tie transformer, angular difference at 33kV level is more than 6 deg. which may result in blocking of changeover considering equipment safety. It is also pertinent to highlight here that as per load flow studies with paralleling at 415Volts level, high recirculating currents are observed in the LT system during paralleling which lead to overloading of the transformer and subsequent tripping of the incoming LT transformer. Changeover from one source to second source is not possible under this condition.

7.4 In view of the above, it was decided that alternate solutions to limit fault current at Farakka would be studied.

7.5 Accordingly, in view non feasibility of either bus splitting of installation of series reactor at Farakka generation switchyard, following alternatives involving physically bypassing of 400kV D/c lines outside the generation switchyard have been studied: (a) Bypassing Kahalgaon ckt-1 & ckt-2 and Durgapur D/c (about 250km)

(b) Bypassing Kahalgaon ckt-3 & ckt-4 and Durgapur D/c (about 250km)

(c) Bypassing Kahalgaon ckt-3 & ckt-4 and Sagardighi D/c (about 160km)

Case	Fault current at Farakka	Fault current at Sagardighi	Fault current at Durgapur
(a)	44.16kA		41.13kA
(b)	41.76kA		41.64kA
(c)	43.16kA	41.85kA	

7.6 From the above, it may be observed that alternative-(b) is the most suitable alternative as the 3-phase short circuit current reaches the lowest value. Only shortcoming of this alternative is Kahalgaon ckt-3 & ckt-4 lines (95km) are designed to operate till 85°C, whereas Durgapur lines (150km) are designed to operate till 75°C, which would result in underutilisation of Kahalgaon-Farakka section of resultant Kahalgaon-Durgapur line

7.7 Nevertheless, it may be noted from above that with 41.76kA fault level, most of the Circuit Breakers (CB) at Farakka switchyard are expected to experience fault current less than 40kA as the contribution from each of elements is mostly greater than 1.76kA, except contribution from 3x200MW generators, 2x315MVA ICTs and a few transmission line.

Members may discuss.

2. Cold Spare transformer requirement for Eastern Region:

CERC had set up a Committee on dated 15.03.2018 consisting of representatives from CERC, NLDC, CEA & POWERGRID under the Chairmanship of the Chief (Engineering) of the CERC to assess the requirement of regional spares including bus reactors, line reactors, ICTs, etc. This would ensure reliability of the grid and reduce downtime in case of any failure/outage.

Based on CERC Committee recommendation, following spare transformers will be needed for Eastern Region:

MVA Rating and Phase	Voltage Rating	Qty Required as per norms	Available Regional Spare	Qty proposed for procurement	Spare requirement
3Ø-500MVA	400/220	3	0	3	Bihar, Odissa and West Bengal
3Ø-160MVA	220/132	4	2	2	Jharkhand and Odissa
3Ø-100MVA	220/132	2	0	0**	
Total		9	2	5	

***As per CERC committee recommendation, for 3-phase,220KV and below rated equipment, one 3-phase transformer is needed with highest MVA rating in each state.*

ERPC may consider for approval of 05 nos of cold spare transformers of various ratings as per CERC committee recommendation as mentioned above. The Tariff for the investment made is to be shared by all constituents as per CERC notification.



GRIDCO LIMITED

(A Govt. of Odisha Undertaking)
(Formerly Grid Corporation of Orissa Limited)
Regd. Office: Janpath, Bhubaneswar-751022
CIN:L40109OR1995SGC003960

Ref: Sr. GM-PP-15/2018/

4929(4)

Date: 06/12/19

To,

The Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road, Tollygung, Kolkata - 700 033
E-mail: mserpc-power@nic.in

Sub: Replacement of existing Joda - JSPL conductor with HTLS.

Ref: Office letter no. 788 dated 26.11.2019 of CGM (Con)

Sir,

Inviting reference to the subject cited above and subsequent to placing this as an agenda item in the next CEA standing committee, Odisha is to place the following for your kind consideration.

The power flow in the Joda-JSPL 220 kV line varies from 120 to 145 MW during peak scenario. With the drawl of around 75 MW by M/s JSW from JSPL switching station, the Joda-JSPL portion will be loaded to around 220 MW.

M/s JSW has given their consent to replace the Joda-JSPL portion with HTLS (ANNEXURE-I).

However, during the replacement, which will take almost around 3 months, the JSPL load of around 50 MW has to be catered by M/s DVC. As this project is of paramount importance to the state of Odisha M/s DVC may be requested to cater the load of M/s JSPL in the interim period during the augmentation.

The replacement with HTLS will eventually be beneficial to both Odisha and DVC in the long run.

With regards

Yours faithfully,

06/12/19
CGM (PP)

- C.C.: (i) Commissioner-cum-Secretary, Dept. of Energy, Govt. of Odisha for kind information.
(ii) Commissioner-cum-Secretary, Industries Department, Govt. of Odisha for kind information.
(iii) E.A. to CMD, GRIDCO for kind appraisal of CMD.

o/c

JSW Utkal Steel Limited



No. JSW/U/0/2019/266

Date- 20th November 2019

To
The CGM-O&M
OPTCL, Bhubaneswar

Sub: - JSWUSL Joda Unit 220 KV Power Supply
Ref: - TB-SO-PSI-27/2017/1870 dtd. 05.11.2019

Dear Sir,

This is in reference to the joint visit to JSPL Switchyard Joda Plant and joint inspection report, JSW agrees to go ahead with Option-1 to draw 220 KV power supply by constructing a 220 KV AIS bay adjacent to transformer-III bay of JSPL for the grinding unit. We are in the process of acquiring the land adjacent to JSPL boundary through IDCO. JSWUSL are also agreeing to all the conditions put by OPTCL in option no-1

You are requested to approve and release 75 MW power in the name of JSWUSL by which project activities can be started.

Thanking you
Your Faithfully

B.K.Das
Head-E&A

CC to: - Director (Operation) OPTCL - For kind information please.

gem
20/11

POWER SYSTEM STUDY SHOWING CONNECTIVITY OF JODA COMMAND AREA FOR DRAWL OF ABOUT 75 MW OF POWER BY M/S JSW UTKAL STEEL LTD. THROUGH LILO OF 220 KV TRANSMISSION LINK BETWEEN JODA AND DVC.

