



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति

Eastern Regional Power Committee
14, गौल्फ क्लब रोड, टालीगंज, कोलकाता-700033
14 Golf Club Road, Tollygunj, Kolkata-700033



Tel No.:033-24239650, 24239651 FAX No.:033-24239652, 24239653 Web: www.erpc.gov.in

NO. ERPC/COM-I/Meeting/2018-19/ 1025 - 30

DATE: 23.05.2018

To,

1. Managing Director, Tenughat Vidyut Nigam Ltd, Hinoo, Doranda, Ranchi-834002.
2. Director (Project), BSPTCL, Vidyut Bhavan , Bailey Road, Patna-800021
3. Director (Project), JUSNL, Engineering Building, HEC, Dhurwa, Ranchi-834004
4. Executive Director (ER-I), PGCIL, Alankar Place, Boring Road, Patna-800001.
5. Chief Engineer (Trans. O&M), JUSNL, Engineering Building, HEC, Dhurwa, Ranchi-834004.
6. Executive Director, ERLDC, POSOCO, KOLKATA- 700033

Sub: Minutes of Special meeting to finalize the course of action for charging of 220kV Biharsharif-Tenughat line at 400 kV level- reg.

Sir,

Please find herewith enclosed the minutes of Special meeting to “finalize the course of action for charging of 220kV Biharsharif-Tenughat line at 400 kV level” held on 21st May, 2018 (Monday) at 17:00hrs at ERPC Conference Hall, Kolkata. The same is also available at ERPC website (<http://www.erpc.gov.in/>).

Observations, if any, may please be forwarded to this office at the earliest.

Yours faithfully,

(D. K. Bauri)
Executive Engineer

Eastern Regional Power Committee

Minutes of Special Meeting to finalize the course of action for charging of 220kV Biharsharif-Tenughat line at 400 kV level held on 21st May, 2018 at ERPC, Kolkata

List of Participants is enclosed at **Annexure-I**.

Shri J. Bandyopadhyay, Member Secretary, ERPC, welcomed all the participants from JUSNL, TVNL, BSPTCL, Powergrid and ERLDC in the meeting. He informed that this special meeting was convened as per the decision of 37th TCC to finalize the course of action for strengthening the 220kV Biharsharif-Tenughat line for charging it at 400 kV level. He requested JUSNL and BSPTCL to place their report of survey of the line for charging it at 400 kV level.

JUSNL placed a comprehensive survey report along with the estimated cost for strengthening of the line for charging it at 400 kV level. The report of JUSNL is enclosed at **Annexure-II**. JUSNL in its report indicated the followings:

- a) Conductor of the line needs to be rectified or replaced due to aging, bulging and rusting of the conductors.
- b) The complete earth wire of the line needs to be replaced with OPGW as the existing earth wire the existing earth wire is in rusted condition and missing at many locations.
- c) Requirement of re-sagging at many locations (like crossings etc.) as well as installation of new towers for maintaining the ground clearance for charging the line at 400 kV level.
- d) All jumpers are either tightened or replaced.
- e) Hardware fittings of all tension tower needs to be replaced at all respective locations.
- f) There will be requirement of forest clearance and ROW clearances before charging the line at 400 kV level.
- g) JUSNL informed that the estimated cost for strengthening of line would be approximately 65.12 Cr.

BSPTCL informed that a walkover survey has been carried out for the line falling under BSPTCL jurisdiction and submitted their report for strengthening of the line. The report of BSPTCL is enclosed at **Annexure-III**. BSPTCL in its report indicated the followings for charging the line at 400 kV level.

- a) Re- sagging of conductors at all the crossings for maintaining the ground clearance.
- b) Conductor and hardware fittings of the line at many locations need to be repaired/ replaced.
- c) The complete Earth wire needs to be replaced with OPGW as the existing earth wire is missing at many locations.
- d) The tower footing resistance needs to be assessed before charging the line at 400 kV level.

- e) There will be requirement of forest clearance and ROW clearances before charging the line at 400 kV level due to enhancement of corridor width from 35m to 53m (for 400 kV level).
- f) A check survey of the line is being arranged for final assessment for charging the line at 400 kV level.

BSPTCL informed that as per the present survey the estimated cost would be around 55 cr., however the final estimate would be intimated only after completion of check survey. BSPTCL also pointed that at this juncture of financial crunch, the investment on strengthening of the line would be a little difficult for BSPTCL.

TVNL informed that all equipments at their end are ready for charging the line at 400 kV level except one transformer which will be charged within a month.

Powergrid also confirmed their readiness for charging the line at 400 kV level.

After detailed deliberations, it was concluded that the 220 kV Tenughat- Biharshariff line should be charged at 400 kV level only after strengthening of the line. Further, it was agreed that the complete proposal for strengthening of the 220 kV Tenughat-Biharshariff line would be placed before ensuing TCC/ERPC meetings for further advice and final decision on the issue.

Meeting ended with vote of thanks to the chair.

ERPC::KOLKATA

ATTENDANCE SHEET

SPECIAL MEETING FOR FINALISATION OF COURSE OF ACTION TO CHANGE THE 220KV TENNUGHAT-BIHARSHARFF LINE AT 400KV LEVEL

DATE: 21.05.2018 (MONDAY)

TIME: 17:00HRS

VENUE: ERPC CONFERENCE HALL

Sl. No.	Organisation	Name & Designation	Contact Number/ E-mail ID	Signature
1	ERPC	J. Banerjee M.S		
2	BSPTCL	Ashish Kumar, AEE	9730213191, 7763817775 ashijoy@life@gmail.com	
3	JUSNL	Subhash Mishra GM-Cum-CE, Trans.	7903816247	
4		Zone-2, Hazaribag		
5	BASUDEO JUSNL MAHATO	BASUDEO MAHATO A.E.E.	8051064040, basul@mit.gov.in	
6	RAJDEEP BSPHCL	RAJDEEP BHATTACHARJEE	9830380689 rekolb@bphcl@gmail.com	
7	BSPTCL	Rakesh Kumar EEE/SDC	7763818079 rakesh2k7.mit@gmail.com	
8	ERPC	Shri Mohan Jha. Consultant.	9874738913	
9	TUNL	S.K. Choudhary	9135493211	
10	ERPC ERPE	B. SARKHEL Consultant	9483065724	
11	ERPC	D K Bauri	9883617236	
12	ERPC	J. G. Rao	9547891353	
13	ERLDC	G. M. L.	9831297392	
14	ERLDC	SURAJIT BANERJEE	9433041823	
15	POWERGRID	S.R. SINGH	8544401030	
16				
17				
18				
19				
20				
21				
22				
23				

A Comprehensive Report regarding Strengthening of 400 KV TTPS-B'sharif T/L

400 KV S/C TTPS-B'sharif T/L is proposed to charge at 400 KV voltage level, which is currently charged at 220 KV voltage level. The line is in service from 1993, whereas construction work had been commenced from 1985. Due to soil deposition, construction of Road and other environmental change along the route of the line at many locations ground clearance does not meet as per IS for 400 KV line. It is, therefore required to raise the height of line, which will be achieved by erection of new 18 numbers of towers.

In many spans of the line Earthwire snapped, existing EW is in rusted condition and snapped due to wind pressure which results in forced outage of electrical Power. Considering it complete EW in the line is required to be replaced by OPGW wire.

All conductor are to be replaced due to aging, bulging & corrosion.

At many location forest department & land owner has planted trees below the conductor. Considering ROW, corridor for 400 KV S/C line forest clearance and crop tree compensation are required to be carried out.

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JHARKHAND URJA SANCHARAN NIGAM LIMITED

SELF ASSESSMENT BY PETROLING OF 400 KV S/C TTPS-BIHARSHARIF LINE BEFORE CHARGING AT 400 KV VOLTAGE LEVEL

From Tower No-01 to 291

Lo. No.	Type of tower	Cond. of Leg	Tower Footing resistance Value(Ohm)	Position of Tower Member	NP/ DP/ PP	Position of Jumper/ Insulator	Condition of FW	Position of Conductor	Hardware Fitting	Ground Clearance(in M) at Maximum Sag point	REMARK Road/ Railway/River Crossing & Forest+Trees/Private land Position
1	TD	OK	3.28	OK						OK	TTPS Dam - (loc.-02 to 03)
2	TD+6	OK	3.16	OK						OK	
3	TD+21.5	OK	3.18	OK						OK	
4	TD	OK	6.56	OK						OK	
5	TC+21.5	OK	6.22	OK						OK	Forest+Trees-(loc.-04 to 07)
6	TC+6	OK	5.23	OK						OK	
7	TC	OK	10.94	OK						OK	
8	TD+6	OK	7.96	OK						OK	Railway crossing-(loc.-08 to 09)
9	N	OK	6.8	OK						OK	
9A	TD+6	OK	8.28	OK						OK	
10	TD+6	OK	7.18	OK						OK	
11	TD+19	OK	5.92	OK						OK	
12	TD	OK	6.16	OK						OK	
13	N	OK	7.22	OK						OK	
14	TD	OK	6.18	OK						OK	Railwaycrossing-(loc.-15 to 16)
15	TD	OK	8.11	OK						OK	
16	TD+3	OK	9.22	OK						OK	
17	TD	OK	8.96	OK						OK	
18	N	OK	2.13	OK						OK	
19	TB	OK	6.18	OK						OK	
20	TC	OK	9.68	OK						OK	Forest+Trees-(loc.-17 to 26)
21	A	OK	9.36	OK						OK	
22	TC	OK	11.98	OK						OK	
23	A	OK	10.48	OK						OK	
24	A	OK	6.16	OK	damaged, rusted, Replacement required.	All jumpers tightness need to be checked/replaced.			Hardware fitting need to be checked and replaced at all tension tower.	OK	
25	A	OK	7.21	OK						OK	Road crossing-(loc.-27 to 28)
26	A	OK	9.22	OK						OK	
27	TC	OK	8.24	OK						OK	Railwaycrossing-(loc.-28 to 29)
28	TD+3	OK	3.23	OK						OK	
29	TD+3	OK	4.22	OK						OK	
30	A	OK	8.98	OK						OK	
31	A	OK	10.98	OK						OK	
32	A	OK	3.38	OK						OK	
33	A	OK	5.38	OK						OK	
34	TD+3	OK	3.36	OK						OK	River crossing (loc.-35 to 36)
35	TB+3	OK	3.18	OK						OK	
36	A	OK	2.56	OK						OK	Forest+Trees(loc. 37 to 102)
37	T	OK	3.52	OK						OK	
38	TD+3	OK	6.93	OK						OK	
39	A	OK	4.22	OK						OK	
40	A	OK	4.18	OK						OK	Road crossing-(loc.-41 to 42)
41	A	OK	9.96	OK						OK	Railwaycrossing (loc. 42 to 43)

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94	A	OK	6.16	OK
95	A	OK	8.26	OK
96	A	OK	3.18	OK
97	A	OK	7.16	OK
98	A	OK	7.22	OK
99	T D+3	OK	6.19	OK
100	A	OK	11.42	OK
101	A	OK	10.94	OK
102	A	OK	12.12	OK
103	T C	OK	7.26	OK
104	A	OK	3.26	OK
105	A	OK	7.94	OK
106	A	OK	8.22	OK
107	A	OK	4.37	OK
108	A	OK	4.67	OK
109	A	OK	4.34	OK
110	A	OK	4.32	OK
111	A	OK	8.24	OK
112	A	OK	8.18	OK
113	A	OK	5.32	OK
114	T B	OK	5.98	OK
115	A	OK	7.24	OK
116	A	OK	6.23	OK
117	A	OK	5.22	OK
118	A	OK	9.56	OK
119	A	OK	9.1	OK
120	T C+3	OK	9.55	OK
121	A	OK	7.13	OK
122	T	OK	5.98	OK
123	A	OK	3.18	OK
124	A	OK	7.86	OK
125	A	OK	7.11	OK
126	A	OK	6.87	OK
127	A	OK	6	OK
128	A	OK	3.02	OK
129	A	OK	7.32	OK
130	A	OK	3.22	OK
131	A	OK	2.28	OK
132	A	OK	4.27	OK
133	T C	OK	7.93	OK
134	A	OK	5.17	OK
135	A	OK	4.13	OK
136	A	OK	3.19	OK
137	A	OK	3.87	OK
138	A	OK	8.24	OK
139	A	OK	7.24	OK
140	A	OK	8.63	OK
141	A	OK	7.97	OK
142	T C	OK	6.28	OK
143	A	OK	9.08	OK

No. Plate is to be re-numbered due to enhancement of tower and accordingly DP/PP.

Reconductering/ Rectification of conductor is required

Hardware Fitting need to be checked and replaced at all tension tower.

Loc 95-96, R-7.5, Y-7.1, B-7.6	
OK	
OK	
OK	
OK	
OK	
OK	
OK	
OK	Private land (102-121)
OK	Road crossing-(loc.-103-104)
OK	
OK	Road crossing-(loc.-104 -105)
OK	
OK	
OK	
OK	
OK	
OK	
OK	
OK	
OK	
OK	
(loc.119-120)R-10.3,Y-9.64,B-10.43	NH-100 (loc. 119-120)
(loc.120-121)R-9.71,Y-9.20,B-9.66	
	Forest+Trees(loc.121 to 130)
(loc.123-124)R-6.01,Y-6.7,B-7.2	
(loc.124-125)R-6.11,Y-6.7,B-7.2	
(loc.127-128)R-5.94,Y-6.19,B-6.50	
OK	Private land(loc.130 to 137)
OK	
OK	
OK	
OK	
OK	
OK	
OK	Forest+Trees(loc.137 to 138)
OK	Private land (138 to 155)
OK	road crossing (139-140)
OK	
OK	
OK	
OK	
OK	

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Tentative Estimate For Strengthening Of 400 KV S/C TTPS B'sharif T/L (Tower Loc No.01 to 290 Total 291 towers)

Sl. No.	Item Description	Unit	Qty	(A) Supply		(B) Erection	
				Rate	Amount(Rs)	Rate	Amount (Rs)
1	Fabrication, galvanising and supply of various types of tower for 18 nos. of towers(MS)	MT	540	82203	44389620	4952	2674080
2	Fabrication, galvanising and supply of stub & Cleats for various types of tower for 18 nos. of towers(MS)	MT	17	82203	1397451	4952	84184
3	Supply of bolts & nuts including step bolts and spring washer	MT	27	115460	3117420	4952	133704
4	Earthing of Towers						
	Pipe type earthing	nos	18	3542	63756	3472	62496
	counterpoise earthing 120 meter	nos	220	7844	1725680	3472	763840
	counterpoise earthing 280 meter	nos	10	18323	183230	3472	34720
5	Tower Accessories						
	Number Plate	nos	309	226	69834	184	56856
	Danger Plate	nos	309	226	69834	184	56856
	Phase Plate (set of three)	set	618	201	124218	552	341136
	Anti Climbing Device	nos	309	3765	1163385	3807	1176363
6	Design manufacture and supply of following line materials						
6.1	ACSR Moose condutor	Km	700	331361	231952700	83826	58678200
6.2	24 Core OPGW wire	Km	242	192807	46659294	49590	12000780
6.3	Hardware fitting for 400 KV AC with Twin ACSR Moose Conductor						
	Single I suspension String	sets	301	4693	1412593	1874	564074
	Single suspension Pilot String	sets	50	4693	234650	1874	93700
	Double Tension String	sets	306	5566	1703196	3125	956250
6.4	Conductor accessories for ACSR Moose Conductor						
	Mid Span Comp. Joint For ACSR Moose Conductor	Nos	450	1554	699300	0	0
	Repair Sleeve ACSR Moose Conductor	Nos	150	582	87300	0	0

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	Vibration Damper For ACSR Moose Conductor	Nos	4700	1046	4916200	171	803700
	Bundle Spacer For line for Twin Bundle Conductor	Nos	6400	1128	7219200	171	1094400
	Rigid Spacer for jumper for twin bundle conductor	Nos	800	530	424000	171	136800
6.5	Accessories for 24 Core OPGW wire						
	Vibration Damper	nos	2464	470	1158080	1140	2808960
	Joint Box	nos	70	3614	252980	11400	798000
	Installation hardware set for above 24 core OPGW wire including all cable fittings and excluding VD & JB	set	309	18323	5661807	2280	704520
6.7	Other unseen materials	L.S	1	5E+06	5000000	0	0
7	Detail survey along with prome, Row Corridor, tree enumeration report, preparation of complete DPR	L.S	1		0	610000	610000
8	excavation	cum	3000		0	225	675000
9	concreting M20	CUM	400		0	10025	4010000
10	M10	cum	50		0	9121	456050
11	Supply & placement of reinforcement steel (Fe500)	MT	35		0	62000	2170000
12	Tower footing protection	Ls	1		0	3500000	3500000
13	LOWERING OF EXISTING CONDUCTOR	Km	675		0	50296	33949800
14	Lowering of existing Earth wire	Km	220		0	4025	885500
15	Forest clearance (.018x55 Km=0.990=99 Hect.	Hect.	99		0	1323000	130977000
16	Cost toward crop compensation & tree cutting & compensation, PTCC Clearnce, all statutory clearance except Railway & forest clearance, required for successful commissioning of the line in all respect	RKM	55		0	550000	30250000
					Total	359685728	291506969

Total A+B= Rs. 651192697

Note :- The Project Cost may vary after complition of detailed survey & preparation of final DPR.

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TRANSMISSION CIRCLE, BIHARSHARIF

Report on assessment for strengthening of 220KV S/C Biharsharif-TTPS line for charging at 400KV level

As per letter no. 853 dated: 18.04.18 of Chief Engineer (Project-II), BSPTCL, headquarter, Patna, it has been directed for assessment of work required for strengthening of 220KV S/C Biharsharif- TTPS line for charging at 400KV level. Accordingly, walk over survey by field officials of Transmission Circle, Biharsharif has been done. Some observations have been made:

1. **Transmission line jurisdiction under BSPTCL** :- This line is very old and has been constructed in 1976. The line has total 506 towers, out of which, Tower location no. 291 to 506 i.e. 216 towers fall under jurisdiction of Line Maintenance Sub Division (LMSD), Biharsharif and rest Tower loc. No. from 1 to 290 under jurisdiction of JUSNL.
2. **Sagging of the Conductors** :- Sagging of the existing transmission line in some sections is high for this line to be charged at 400KV level, for example at loc. No. 334-335, 322-325, 314-316, 304-307 and 300-301. There are two no. railway crossings (Danapur- Rajgir railway line near Pawapuri halt and Nawada Kiul Railway line near Nawada Station), two no. river crossings (One no. Panchane River near K.K. Polytechnic and Amravati river in Kodarma valley) and two no. NH crossings (2times crossing of NH31) line under jurisdiction of LMSD, Biharsharif. Sagging problem exist in all these crossings.
Hence, re-sagging of eleven (11) spans or more are required to make proper ground clearance.
3. **Condition of conductors and hardware fittings** :- This line is very old and in some places the condition of conductor and its hardware fittings are not good enough to charge this line on 400KV for example strands of conductor between loc. No. 304-305, 344-345,405-406 have been found damaged. This has been observed in course of recent jumper tightening work of this line. Repairing of the conductor of these spans are required.
4. **Condition of earth wire:-** Due to aging factor, the earth wire snaps anytime and due to this in some portion earth wire of the line is missing and required to be completely replaced by new one. For example earth wire is absent in between loc. No. 458-459, 463-466, 291-293.
5. **Transmission line power crossings** :- Many 400KV, 220KV and 132KV transmission lines overhead or underpass cross this transmission line. For charging of this transmission line, clearance between conductors of these crossing lines and TTPS line should be maintained to be charged at 400KV level.
6. **Residential building near the market located at Pawapuri** :- Residential Buildings has been constructed beneath this line between loc. No.472-473 in vicinity of market located at Pawapuri.
7. **ROW and Forest department clearance:-** Currently this line is charged at 220KV level and therefore width of transmission line corridor (ROW) of 35m is available. For charging of this line on 400KV, additional transmission line corridor of 18m width (total 53m corridor) will be required, which involves trees, plants etc. and that have to be cleared.

This line passes through Kodarma valley and therefore forest exists between loc. No. 334 to 291 (approx. 15km) under jurisdiction of LMSD, Biharsharif. This area is also affected by Left Wing Extremists.

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For cutting/pruning trees in large no. approval is required from Forest department.

8. **Readiness from PGCIL, Biharsharif end:-** In PGCIL, Biharsharif substation, corresponding 400KV bay is ready and stringing of conductor has been completed from dead end tower to loc. No. 501 (PGCIL). Only span between loc. No. 501(PGCIL) and loc. No. 500(BSPTCL) has been left and will be completed by PGCIL before charging of this line on 400KV.
9. **Jumper Tightening:-** Jumper tightening of this line has been completed.
10. **Tower member nut bolt tightening and tack welding upto first section:-** Tower member nut bolt tightening and tack welding upto first section is being done and will be completed shortly.
11. **To conduct check survey:-** To conduct check survey of this transmission line with a view to charging at 400KV level is being arranged and as per check survey report, further action will be taken up.
12. **Measurement of tower footing resistance:-** This line is very old and the condition of tower foot earthing is not known. Measurement of tower footing resistance of this line will be required before charging of this line on 400KV.
13. **Conductors and insulators:-** This line has been constructed in 1976. And running on 220KV level since then. The conductors and insulators of this line are old enough. Hence, for smooth and trouble free operation at 400KV level, re-/conductoring of this line may be required in near future.

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