Eastern Regional Power Committee, Kolkata

Minutes of Special meeting held on 11th December, 2017 at ERPC, Kolkata for discussion on outage of 220kV D/C Rangpo-New Melli TL for rectification of bend tower affected due to Land-slide near to Rangpo S/S

List of participants is at **Annexure-A.**

Member Secretary, ERPC welcomed all the participants and informed thatas per the information received from Powergrid, severe land-slide has occurred and almost entire stretch between Loc No. 2(located in top of hill) &Loc No.-1(located in bottom of hill) of 220kV D/C Rangpo-New Melli TL has slided down. Location No.-1(Multi-Ckt D-Type Tower with Strengthened X-arm) is situated just outside the boundary of POWERGRID Rangpo SS. For carrying out the necessary rectification works on urgent basis, Powergrid has requested for long shut down of the line. Since this is the only line for evacuation of power for Tashiding and Jorethang, these stations would not be able to generate any power during the above shut down. Member Secretary informed that letter has also been received from the generators against long shut down of the line.

Member Secretary requested Powergrid to explain in details.

Powergrid, through detailed presentation, explained the issue and work involved. The presentation is enclosed at **Annexure-I**. Powergrid informed that the land slide had resulted in bending of Stub in B & C leg along with main leg and lower bracing member causing severe damage to the tower. The rectification of the tower will be carried out by replacing all the bend members including bend stub through breaking the concrete in chimney portion and splicing with new stub. For replacing the bend stub, the whole tower has to be dismantled and upon replacement of damaged stub, the tower has to be erected again.

The subjected towers of the line are located in steep hills and passing through the reserve forest. Any deviation of the line through ERS will enter into the reserve forest area and which would require forest clearance. Further, location of the ERS should be atleast 35-40 mtr away from the existing tower for dismantling/re-erection of damaged tower. Under this condition it will put angular load on the switchyard gantry and also on terminal equipments.

Therefore complete shutdown of 220kV D/C Rangpo-New Melli line is required for rectification of the tower No.1 near to Rangpo S/s. However, after detailed analysis for squeezing the timelines and with the best efforts by Powergrid, the estimated time to complete the work would be 20-25 days.

Jorethang and Tashiding informed that their plants were already under stressed conditions and any loss of generation due to long outage of only available line would create financial disaster for the Company. They expressed that either of the following two options may be utilized for evacuation of power during rectification of the damaged tower:

i) Restoration of line by using Emergency Restoration Towers (ERS)
ii) Installation of Alternative temporary Tower: By installing a temporary tower nearby (about 25m away) damaged tower and restoring the line on this tower till the restoration of damaged tower.

The note submitted by DANS on the above two arrangements is placed at **Annexure-II**.

Powergrid explained that ERS installation would not be a feasible solution as the height required for ERS tower and supporting locations of the guy wires are not practically implementable as per the geographical constraints at the location. It will also create problem for dismantling/ de-stringing activities for permanent restoration of the damaged tower.

The other option of installation of temporary tower near damaged tower will not be possible as it would attract the following additional requirements:

i) Encroachment to the reserve forest area: Due to installation of new tower the ROW of the line will enter into the reserve forest area which would require permission of Forest department.

ii) Location of new tower: The location of new tower should be at least 35-40 m away from the existing tower for dismantling/ de-stringing activities for permanent restoration of the damaged tower.

iii) Strengthening of gantry: The present gantry design is not suitable for angular termination of line due to creation of new tower and it may require additional strengthening.

Considering all the above, members deliberated the issue in details and followings were concluded:

1) Powergrid, Jorethang & Tashiding would sit together within this week and would make all possible efforts to a consensus solution for carrying out the rectification work.

2) Jorethang and Tashiding would extend all possible help to facilitate Powergrid to complete the rectification works within minimum possible time.

3) Alternatively, Tashiding and Jorethang may carry out the rectification works for which Powergrid would make payment as per Powergrid norms and as per relevant regulations, if any.

4) Considering the importance of the line for evacuation of hydro power from Tashiding and Jorethang, Powergrid was advised to explore avenues for minimizing the number of days of shutdown with maximum efforts like mobilization of double gangs etc. so that the effective generation loss may be reduced to a great extent.

5) The next meeting on the issue will be held on **18.12.2017 at 16:00 Hrs at ERPC Kolkata** to further deliberate on this issue.

Meeting ended with vote of thanks to the chair.

****

Annexure - A

ERPC::KOLKATA

ATTENDANCE SHEET

Special Meeting on outage of 220kV D/C Rangpo-New Melli TL for rectification of, bend tower LocationNo.-01(MDS+0) affected badly due to Land-slide near to Rangpo S/S

DATE: 11.12.2017(MONDAY) **TIME: 11:00 HRS**

VENUE: ERPC CONFERENCE HALL

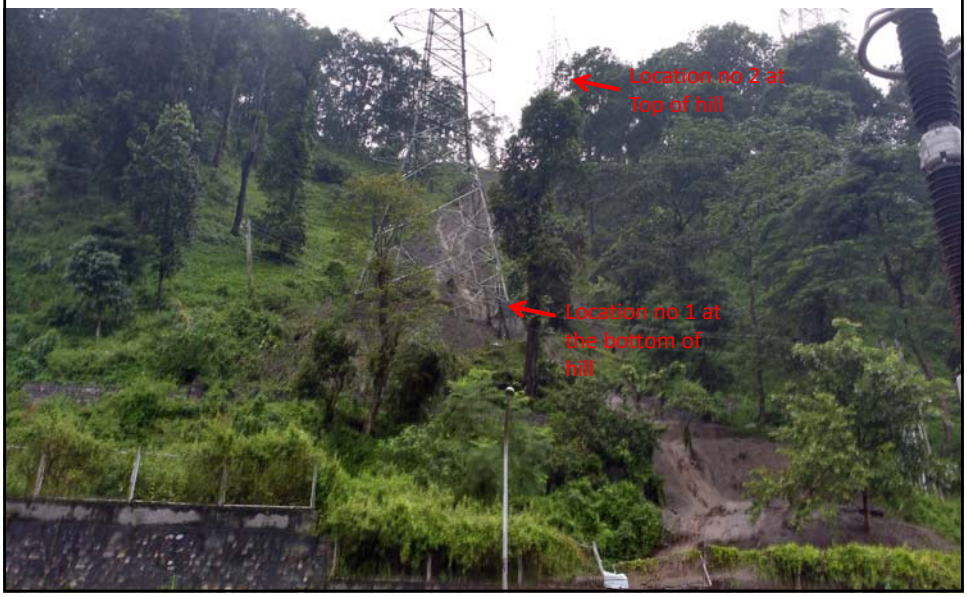
Sl. No.	Organisation	Name & Designation	Contact Number	E-mail Id	Signature
1	ERPC	J. BANDYOPADHYAY MS	94323-26359	[illegible]@nic-erpc-powergov.in	
2	ERLDC	P. Mukhopadhyay	9869438073	pmukhopadhyay@posoco.in	
3	ERLDC	S. BANERJEE	9433041823	suvajit.banerjee@posoco.in	
4	ERLDC	T-R. Mohapatra	9433041873	trmohapatra@posoco.in	
5	POWERGRID	N.K. Mohdar	9434740031	nkmohdar@yahoo.co.in	
6	Shiga	P. C. Sharma	7810096455	pravin.sharma@dansenergy.com	
7					
8	Shiga	S.C. Mudhyii	9830555104	[illegible]	
9	DANS Energy	NUKala Kishore	9873574939	nukala.kishore@dansenergy.com	
10	SHIGA	PRADEEP ELLINI	9735939996	pradeep.ellini@dansenergy.com	
11	ER-II.	PARTHA GHOSH.	9434748263	partha.ghosh@powergridindia.com	
12	ER-II	P K Mallik	9434713582	prosen.mallik@powergridindia.com	
13	ERPC	P. P. Jena	9776198991	ppjena.erpc@gov.in	
14	ERPC	D K. Bauri EE	9883617236	eeep.erpc@gov.in	
15	ERPC	A. De.	9681932906	alikpantha@gmail.com	
16	ERPC	J. G. Roo	9547891353	eseb_cea@yahoo.co.in	
17	ERPC	S.P. Datta, AGM	9433067022	spdatta@rediffmail.com	
18	ERPC	P.N. Sarkar, EE	9830027523	pnsarkar@rediffmail.com	
19	ERPC	Lenin.B, AEE	8335903823	lenin.nitc@gmail.com	
20	ERPC	P.K.DE, EE	9433125844	pkderpc@gmail.com	
21					
22					
23					
24					

Damage of tower Location No.- 01(MDS+0- Deadend) of 220KV D/C Rangpo-New Melli Line Due to Landslide

LAND SLIDE at Tower Location no 1 of 220 KV RANGPO – NEW MELI TL

- Due to Heavy Landslide the Tower at Location No.1 damaged heavily
- 2 Legs along with its Stubs got bend (1 stub broken).
- Bracing between legs upto bottom cross arms also got bend heavily.
- The Tower is Extremely dangerous,virtually hanging in support of conductor and requires immediate replacement.

LAND SLIDE ALONG THE LINE ROUTE



Damaged Bracings

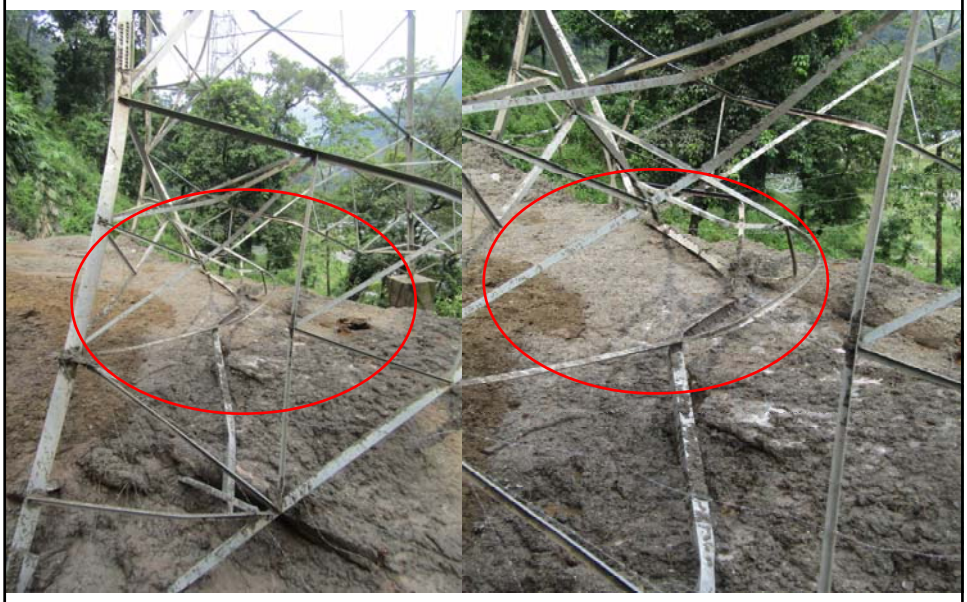


Photo of Stub of B & C Leg

C Leg Stub Bend

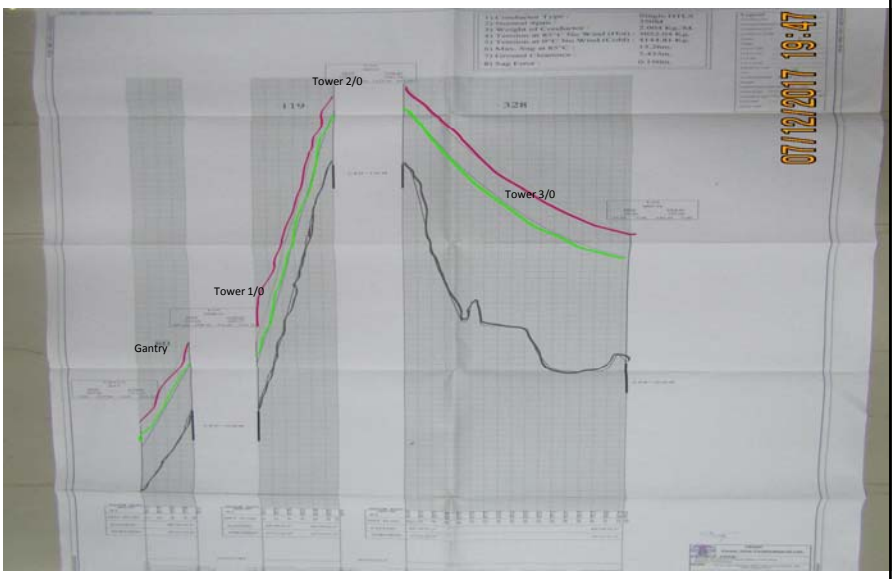
B Leg Stub Bend

BIRD's EYE VIEW

ERS installation may not be feasible due to following reasons :-

1. location is along the steep slope of the hill &
2. Both side of the corridor is Reserve Forest having dense & very big Trees.

TOWER PROFILE OF 220KV RANGPO-NEWMELLI D/C LINE



For Restoration Work Following Actions are Needed

1. Back Stay of Tower no 1 & 2 for Anchoring to facilitate De-Stringing.
2. De-Stringing of conductor between Gantry-Loc#1 –Loc#2.
3. Dismantling of Tower Loc no 1.
4. Stub Rectification of Leg B&C at loc No 1.
5. Erection of Tower at Loc No 1.
6. Re-Stringing of conductor between Gantry-Loc#1 –Loc#2.

Following are required :-

1. **Shutdown of 220 KV RANGPO – New Melli**
   (For about 20-25 days)
   - Involving JHELP Power Station (DANS Energy) & Tashiding (Shiga Energy)

1. **Shutdown of LILO of 132 KV RANGIT- GANGTOK Line at RANGPO(132 Kv Rangpo-Gangtok, 132 KV Rangpo-Rangit Lines) strung at the bottom cross-arms of Multi-Ckt Tower No.-2 for short-period (10 Hrs) during de-stringing of 220kV Conductors**

Proposal of DANS Energy

A. Proposal of DANS Energy vide their letter dated 07/12/2017 addressed to Member Secretary ERPC are as under:-
Option-I:-Diversion of Line by Installation of alterative temporary tower of narrow base
Option II: Diversion of Line by using ERS and go for permanent restoration.

B. Both the above options are not feasible because of following:-
I) Any diversion of the line will enter in Reserve Forest and as such requires Forest clearance.
II) Because of steep slope, the temporary tower/ERS will be of impractical height not only because of slope but also to have requisite clearance with 132kV Line.
III)Putting temporary tower/ERS will cause difficulty during dismantaling and erection work of affected M/C Tower having about 52 Mtr Height.
IV)Any deviation for present alignment of line shall put angular load on Switch-yard Gantry along with all terminal equipments.
V) The working space for the restoration work is in between dead end tower and Gantry. Diversion of line as above and finally terminating at gantry shall create obstruction in putting Guy wires required during restoration work.
Altogether proposal of DANS Energy seems not feasible under present geographical condition.

Annexure- II

A note on Outage of 220kV D/C Rangpo- New Melli TL for rectification of bent Dead end tower affected due to land-slide near to Rangpo S/s

The generation projects evacuating the power through this 220 kV D/C Rangpo- New Melli transmission line are Jorethang HEP (96 MW) and Tashiding HEP (97 MW). Hence, if the Rangpo- New Melli transmission line is allowed continuous shutdown for 45 days as desired by PGCIL then the both the above mentioned project would not be able to evacuate power. The 220 kV D/C Rangpo- New Melli transmission line is the only line through which evacuation of power can take place and there is no other alternative arrangement for evacuation of power. This would result in huge financial losses to the Project authorities and the Lenders (PFC & IFCI: Govt. of India undertakings) if the generation from these projects are stopped.

You would also appreciate both these projects mentioned are hydroelectric projects; hence any loss in generation from these projects will also be a loss of renewable/clean energy. The water has to be spilled from these projects resulting in wastage of national resource.

The total clean energy from the projects in the desired period (from 15th January 2018 to 28th Feb 2018) would be around:-

- Jorethang HEP- 16.5 MU
- Tashiding HEP -15.95 MU

The provisional approved tariff of power in Jorethang and Tashiding HEP are Rs. 4.71/unit and Rs. 4.58/unit respectively. In addition to the clean energy loss there would be a revenue loss of around Rs. 7.77 Cr for Jorethang HEP and around Rs. 7.31 Cr for Tashiding HEP. Hence, loss of nearly Rs. 15.08 Cr.

We would further like to add that Tashiding HEP had already suffered the generation loss of around 10 months due to non-availability of transmission line from legship to New Melli built by PGCIL under comprehensive scheme of Government of India. The projects have now become a stressed assets for the Project authorities and the Lenders (PFC & IFCI: Govt. of India undertakings) and further loss in generation would result in projects becoming NPA.

In view of the above we request the committee to consider the following options that would require minimum generation loss to the project developers. Some of the options PGCIL could pursue are as under:-

OPTION -1 -Installation of Alternative temporary tower

This has been a standard practice adopted in many State transmission company's to minimize the loss of power. In this option a temporary narrow based tower can be installed say 25 Meters away from the damaged Multi Circuit Tower. Once the tower is installed then shutdown can be

taken for destringing of the existing damaged tower and stringing with the temporary tower. This would help in reducing the downtime considerably. The maximum time of outage of power from the projects could be 1 day.

PGCIL being pioneers in transmission line may have similar temporary tower available with them. PGCIL are having large number of transmission lines in the surrounding areas. The temporary tower if not available already can be of very good use in future to PGCIL as this type of problem occurs regularly in hilly terrains.

OPTION-2 Using Emergency Restoration System Tower

In the event of Transmission Line (TL) tower failures, permanent restoration may take several weeks. Emergency Restoration System (ERS) is light weight modular system used as temporary support structure to restore power lines immediately with minimal losses. This would help in reducing the downtime considerably. The maximum time of outage of power from the projects could be 1 day.

Understand PGCIL already have in-house similar Emergency Restoration System (ERS) and this could be a good solution to resolve the issue with minimum outage and time involved.