



भारत सरकार  
GOVERNMENT OF INDIA  
विद्युत मंत्रालय, केन्द्रीय विद्युत प्राधिकरण  
MINISTRY OF POWER, CENTRAL ELECTRICITY AUTHORITY  
क्षेत्रीय निरीक्षण संगठन  
REGIONAL INSPECTORIAL ORGANISATION



SPEED POST

RIO/ER/Report/Singbel\_Sikkim/2018/ 284 - 288

dated-17.07.2018

To,

The District Collector, East,  
District Administration Centre, Government of Sikkim,  
Sichey, Gangtok, East District -737101

Subject: Report on the electrical incidents occurred in Singbel village on 04.07.18, 05.07.18 and 06.07.18

Sir,

On request of TPTL to CEA and on the advice of Chief Electrical Inspector, Govt of India, a site visit was conducted by the undersigned at Singbel village on 09.07.2018

A report of the findings is enclosed for your kind reference. The report is based on the opinion formed during site visit and discussion of the event with local administration, villagers, Powergrid representative and Energy and Power department officials, Govt of Sikkim.

Yours faithfully,

*Subhro Paul*  
(Subhro Paul) 17/07/18  
Dy Director

Copy for kind information:

- (1) Member (Power System), Central Electricity Authority, Sewa Bhawan, R.K. Puram, Sector-1, New Delhi-110066
- (2) Principal Chief Engineer cum Secretary, Energy and Power Department, Kazi Road, Gangtok-737 201
- (3) Chief Engineer (EI) & Chief Electrical Inspector, Govt. of India, CEA, Sewa Bhawan, R.K. Puram, Sector-1, New Delhi-110066
- (4) Director (Projects), TVPTL, 2<sup>nd</sup> Floor, Vijaya Building, 17 Barakhamba Road, Connaught Place, New Delhi - 110001

## Report on the incidents of damages to household electrical installations in Singbel area of East Sikkim

Teestavalley Power Transmission Ltd. (TPTL), a JV Company of Powergrid Corporation of India Ltd. and Teesta Urja Ltd. (Govt. of Sikkim Enterprise), requested the Central Electricity Authority on 7<sup>th</sup> July to investigate the incidents of reported damages to household electrical installations of the residents in Singbel area of East Sikkim on 4<sup>th</sup> July, 5<sup>th</sup> July and 6<sup>th</sup> July 2018; wherein energized Teesta III HEP – Rangpo Section of 400 kV quad moose D/C Teesta III HEP - Kishanganj Transmission line of TPTL passes in the nearby area.

As per request of TPTL, a site visit was carried out in the above mentioned Singbel area of East Sikkim by Deputy Director, Regional Inspection Organisation (Eastern Region), Central Electricity Authority, Ministry of Power, Government of India, Kolkata on 9<sup>th</sup> July 2018 to investigate the cause of reported damages to household electrical installations of the residents. The officials of the district administration of the East District, Energy & Power Department, Govt. of Sikkim, Powergrid Rangpo S/s, TPTL and villagers were also present during the site visit.

Site visit was carried out in the following tower locations of Teesta III HEP – Rangpo transmission line section:

- (i) Tower location : 71-72
- (ii) Tower location : 69-70
- (iii) Tower location : 68B- 69

**Tower location 71-72:** It was reported by the villagers that there was heavy rain fall in Singbel area during night hours of 4<sup>th</sup> July 2018 and during that time house hold electrical installations got burnt in the houses and the villagers apprehended that the problem has been caused by the 400 kV transmission line of TPTL passing through the nearby area. It was also reported by the officials Energy & Power Department, Govt. of Sikkim that the LT transformer of the area was damaged. It was reported that the damage to electrical wiring/appliances took place in houses near the TPTL line as well as at distances 20-25 m from the line.

The area was visited and it was observed that all electrical clearances of 400 kV Teesta III – Rangpo transmission line owned by TPTL in between the tower locations appear to be as per statutory requirements. It was informed that one circuit of the 400 kV transmission line (The line is a double circuit line drawn on same towers) was under successful operation since 24.11.2016. It was observed that all the houses in the area, where the above incident occurred, appear to be located in line with the minimum safe electrical distance requirements specified by CEA safety regulations. Further, the 400 kV Teesta III – Rangpo transmission line crosses one 11 kV distribution line in the area. It was observed that the clearance between the 11 kV distribution line and the 400 kV transmission line appear to be as per recommended statutory requirement. Therefore, mere presence of a 400 KV line can never be the cause towards damages of domestic electrical appliances.

*Subhojit*  
17/07/18

In this span, bamboo bushes are present which are quite overgrown near the 400 kV TPTL line. Trimming is required to avoid flashover.

It was observed that in addition to the 11 kV distribution line, one 230 volt LT line passes in the area which supplies power to the houses in the village. Some portion of the 230 V LT supply line is erected on the same supports as the 11 kV line. Both lines are bare conductors. It was also observed that there are a number of trees overgrowing in the vicinity of 11 kV distribution line and 230-volt LT line. Considering the nature of events reported and the proximity of the 11 kV and 230 V line, overgrowing trees in the span might come close to the 11 kV and the 230 V line with flashover during inclement weather harming transmission/distribution equipments as well as 230V side appliances.

The chance of the causing flash over due to the 400 kV line to 11 kV or 230 V is remote as required clearance is maintained between 400 kV and 11 kV and the 230 V is also having clearance from 11kV. However, during inclement weather conditions overgrowing trees may provide low resistance path. Further one 400 kV line was charged since 24.11.2016 so many flash over could have happened by now if required clearance were not maintained. As second 400 kV circuit which was charged on 30/06/2018 was also having the same clearance as the first circuit, so the flashover occurring due to that line after four days of normal operation may not be tenable.

**Tower location 69 -70 :** It was reported by the villagers that there was spark in a tree under the 400 kV transmission line of TPTL around 1 PM on 5<sup>th</sup> July 2018. The area was visited and it was found that there are number of trees in the corridor of 400 kV Teesta III –Rangpo transmission line between these two towers. It appears that the electrical clearance between the conductor of the 400 kV transmission line and the said tree may have become less than the minimum phase to earth clearance due to overgrowing trees. Flashing over of lines in heavily forested corridors during inclement weather is quite common. Flashovers may cause over voltage in adjacent lines during inclement weather where clearances have been breached by tree overgrowth.

**Tower location no. 68B – 69:** It was reported that there was flash-over in a tree under the 400 kV transmission line of TPTL around 2-30 PM on 6th July 2018. It was informed by TPTL that one circuit of 400 kV D/C Teesta III –Rangpo Transmission Line was taken under shut down on 6<sup>th</sup> July for felling/trimming/cutting of bamboos & trees under this circuit to avoid flash-over as occurred on 5<sup>th</sup> July, while other circuit was under energized condition. It was informed by TPTL that there was no tripping of energized circuit of Teesta III – Rangpo transmission Line. It was informed that while felling one of the trees below the circuit under shut down, the tree felled towards the energized circuit and the electrical clearance between the conductor of the energized circuit & the tree became less than the minimum phase to earth clearance which caused a flash-over on the tree. This could have been avoided by carrying out the trimming exercise carefully.

*Sulbro Paul*  
17/07/18

In view of the incidents on 4<sup>th</sup>, 5<sup>th</sup> & 6<sup>th</sup> July 2018, it is recommended that:

- (1) TPTL should carry out regular patrolling to check clearances and proper maintenance of the 400 kV Teesta III – Rangpo Transmission Line. All bamboos/ trees falling in the corridor of the Transmission Line be lopped/ trimmed / felled to avoid any flash-over.
- (2) Sikkim power department should maintain adequate clearances and guarding between their lines at different voltages drawn on same supports and should clear any overgrowth of trees/bamboos close to the lines by trimming/pruning, etc
- (3) Earth cutting in identified hill side locations (it was informed that the same is under discussion with administration since a long time) shall be completed to maintain mandated clearances.
- (4) Surge arrestors at Sikkim power department substation to be checked and replaced if faulty.
- (5) As per the commissioning report, tower footing resistance values were found to be within limit. Testing of tower footing resistance for the 400 kV double circuits TPTL line to be done regularly as per power grid benchmark practice.
- (6) Houses close to high voltage line should ensure proper domestic earthing.
- (7) It shall be ensured that anti climbing devices and danger plates are provided in the towers.



*Sulbroant*  
17/07/18