Detailed Report

Date of Submission : 15-10-2026 14:25

KANIYAMPETTA - 220KV tripped at ***08-10-2026 16:34*** and restored at ***08-10-2026 17:03***

Summary of Event (घटना का सारांश)	:	On 08.10.2026 at 16:34 hrs, the 220 kV Kaniyampetta–Kadagola and 220 kV Kaniyampetta–Kunnamangalam feeders tripped during heavy rain and thunderstorm conditions. A teak tree fell on the 220 kV Kaniyampetta–Kunnamangalam feeder at approximately 6 km from Kaniyampetta Substation towards Kunnamangalam, resulting in a high-resistance single-line-to-ground fault.
Time and Date of the event (घटना का समय और दिनांक)	:	08-10-2026 16:34
Name of the Substation/Generating Station/Pooling Station affected (Along with Voltage level) :	:	KANIYAMPETTA - 220KV
Event Category (श्रेणी के साथ इवेंट प्रकार)	:	GD - 1
Location/Control Area (स्थान/नियंत्रण क्षेत्र)	:	KERALA
Configuration of Bus (HV/LV) . Along with details of Bus split Operation (if any)	:	

Bus Configuration Type : Single Bus

Bus Coupler Status : NA

Bus 1 Connected Elements	Bus 2 Connected Elements	Bus 3 Connected Elements	Bus 4 Connected Elements
1. 220KV-KADAKOLA-KANIYAMPETTA 2. 220KV-KANIYAMPETTA-KUNAMANGALAM-1			

Station Connectivity / SLD during antecedent : The 220 kV Kaniyampetta Substation has a single 220 kV bus arrangement, to which the following feeders and transformers are connected:

- 220 kV Kaniyampetta–Kadagola feeder
- 220 kV Kaniyampetta–Kunnamangalam feeder
- 220/33 kV transformer
- 220/66 kV Transformer No. 1
- 220/66 kV Transformer No. 2

Hence, all the above feeders and transformers are connected to the same 220 kV bus, without bus-section segregation.

Weather Conditions : Rainy, Thunders

Elements under outage prior to the event :

Other Information (Antecedent Cnditions) : On 08.10.2026 at 16:34 hrs, the 220 kV Kaniyampetta–Kadagola and 220 kV Kaniyampetta–Kunnamangalam feeders tripped during heavy rain and thunderstorm conditions.

A teak tree fell on the 220 kV Kaniyampetta–Kunnamangalam feeder, approximately 6 km from Kaniyampetta Substation towards Kunnamangalam, resulting in a high-resistance fault.

At Kaniyampetta Substation, neither the Main-1 nor the Main-2 protection relay detected the fault. However, the Main-2 relay at Kunnamangalam Substation detected the fault and issued a trip command. As the protection relays at the Kaniyampetta end failed to detect the fault, the fault was cleared from the KPTCL end by the relay at the Kadagola end.

The 220 kV Kunnamangalam–Kaniyampetta feeder was restored at 17:03 hrs, and the 220 kV Kaniyampetta–Kadagola feeder was restored at 18:18 hrs. A load loss of approximately 54 MW was reported during the incident.

Renewable Energy Trip : False

Details of SPS Operation (if any): : False

Reason of tripping : Others

Other Reason : A teak tree fell on the 220 kV Kaniyampetta–Kunnamangalam feeder

Load and Generation Loss (लोड और जेनरेशन हानि) :

Total Generation Loss (MW)	**Total Load Loss(MW)**
0 MW	54 MW

Duration of interruption (रुकावट की अवधि) :

Details of Equipment Failure (if any during the event): :

Equipment Type	**Equipment Make**

List of elements tripped during the event :

1. 220KV-KADAKOLA-KANIYAMPETTA
2. 220KV-KANIYAMPETTA-KUNAMANGALAM-1

Station Connectivity/SLD during the event	:	
Analysis of the event	:	On 08.10.2026 at 16:34 hrs, the 220 kV Kaniyampetta–Kadagola and 220 kV Kaniyampetta–Kunnamangalam feeders tripped during heavy rain and thunderstorm conditions. A teak tree fell on the 220 kV Kaniyampetta–Kunnamangalam feeder, approximately 6 km from Kaniyampetta Substation towards Kunnamangalam, resulting in a high-resistance fault.
Protection / Operational Issues observed	:	At Kaniyampetta Substation, both the Main-1 MiCOM P543 and Main-2 SEL 311C protection relays registered directional earth-fault indications. However, neither relay initiated distance protection for the fault. At Kunnamangalam Substation, the Main-2 GE L90 relay detected the fault in Zone 2 and issued a trip command. The Main-1 MiCOM P543 relay registered only a directional earth-fault indication without distance protection operation. As the protection relays at the Kaniyampetta end failed to detect the fault through their distance protection elements, the fault was ultimately cleared from the KPTCL end by the protection relay at Kadagola in Zone 2 DP. The relay indications recorded in the event report suggest that the high-resistance nature of the fault prevented the distance protection elements from operating, although the directional earth-fault elements detected the fault.
Restoration Details	:	**Transmission element** / **Tripping time** / **Restoration time** / **Interruption duration** 220 kV Kaniyampetta–Kunnamangalam / 16:34 hrs / 17:03 hrs / 29 minutes 220 kV Kaniyampetta–Kadagola / 16:34 hrs / 18:18 hrs / 1 hour 44 minutes
DR Time synchronization issues observed (सुरक्षा/	:	False

प्रचालन समस्या)

Remedial Measures Taken (सुधारात्मक सुझाव)	:	The incident indicates that a high-resistance earth fault caused by a fallen teak tree resulted in the simultaneous tripping of the 220 kV Kaniyampetta–Kunnamangalam and Kaniyampetta–Kadagola feeders. Although the directional earth-fault elements at Kaniyampetta registered the fault, the distance protection elements did not initiate operation. This indicates a possible limitation in the reach of the distance protection for high-resistance faults. The operation of the Main-2 GE L90 relay at Kunnamangalam in Zone 2 demonstrates that the fault was detected by the protection scheme at the remote end. However, the non-operation of the distance protection elements at the Kaniyampetta end necessitated fault clearance from the Kadagola end. The event report indicates that the relay reach and resistive reach settings had been verified and were found to be in accordance with the prescribed guidelines. Nevertheless, the adequacy of the existing resistive reach, particularly for high-resistance earth faults, requires further examination and modification.
Relay/PLCC Operation Details	:	
Control Panel Anunciation	:	
Main I Relay Indications	:	
Main II Relay Indications	:	
Other Relay Indications	:	
PLCC Counter Increment I/T	:	
PLCC Counter Increment D/T	:	
Fault Current Value (kAmp)	:	None
LA Counter	:	
Remarks	:	

Attachments :