

Detailed Report

Date of Submission : 13-08-2026 14:49

KAMALAPURAM - 220KV tripped at **01-08-2026 15:26** and restored at **01-08-2026 17:46**

Summary of Event (घटना का सारांश) :

- i. At the consumer end 220/11KV SS is having single bus system with bus sectionalizer breaker and configuration having 2Nos 31.5MVA, 220/11KV STRs & 7Nos 45MVA, 220/11KV Pump transformers is being maintained by I&CAD Dept./Government of Telangana.
- ii. On 01.08.2026 at 15:24Hrs, 220kV Bus Bar-1 operated for an external fault caused due to burning of 11kV LV cables at the consumer end pump house of 31.5MVA Station transformer-2 and tripping all the elements connected to 220kV Bus-1 at 400/220kV SS Kamalapur.
- iii. The following elements connected to 220kV bus -1 got tripped i.e., 315MVA ICT-1, 315MVA ICT-3, 220KV V.K.Ramavaram -1 feeder, 220KV Bus coupler and 220KV Metering bay-1 (Bay-202).
- iv. The 31.5MVA Station Transformer-2 (Bay-2C10) Differential (RED670) & Restricted earth fault (REF615) relays operated and initiated tripping of the HV 220KV breaker and LV 11KV breaker. LV breaker tripped, but the HV breaker did not trip due to the existing SF6 gas lockout condition. In this case, LBB protection had to be initiate to consumer bus bar and to trip all the connected 220KV elements.
- v. It was observed that LBB protection wiring from consumer bus bar PUs was not terminated at pump house consumer bay respective C& R panels, thereby, consumer bus bar LBB protection did not operate.
- vi. The maloperation of 220KV busbar-1 at 400/220KV Kamalapur SS is mainly observed due to improper configuration of network topology at the time of commissioning of substation.

vii. It was observed that the breaker status binary input mapping of Bay-202(metering bay-1) in the Main Bus bar PCS-915 relay was not configured correctly in the Bus bar topology.

viii. There was no load loss due to the above tripping.

Time and Date of the event : 01-08-2026 15:26
(घटना का समय और दिनांक)

Name of the Substation/Generating Station/Pooling Station affected (Along with Voltage level) : KAMALAPURAM - 220KV

Event Category (श्रेणी के साथ इवेंट प्रकार) : GI-1

Location/Control Area (स्थान/नियंत्रण क्षेत्र) : TELANGANA

Configuration of Bus (HV/LV) :
. Along with details of Bus split Operation (if any)

Bus Configuration Type : Double Bus with Bus coupler

Bus Coupler Status : NA

Bus 1 Connected Elements	Bus 2 Connected Elements	Bus 3 Connected Elements	Bus 4 Connected Elements
1. 220KV-KAMALAPURAM-VK_RAMAVARAM-1 2. KAMALAPURAM - 220KV - Bus 1 3. 400KV/220KV KAMALAPURAM-ICT-1 4. 400KV/220KV KAMALAPURAM-ICT-3	1. 220KV-KAMALAPURAM-VK_RAMAVARAM-2 2. KAMALAPURAM - 220KV - Bus 2 3. 400KV/220KV KAMALAPURAM-ICT-2		

Station Connectivity / SLD during antecedent : Enclosed

Weather Conditions : Normal

Elements under outage prior to the event :

Other Information (Antecedent Cnditions) :

Renewable Energy Trip : False

Details of SPS Operation (if any): : False

Reason of tripping : Fault Tripping

Type of Fault : SLG

phases inv : None, None

Auto Reclosure Operation : No

Fault Clearing Time (ms) : None

Load and Generation Loss (लोड और जेनरेशन हानि) :

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

Duration of interruption (रुकावट की अवधि) :

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

Equipment Type	Equipment Make
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List of elements tripped during the event :
1. 220KV-KAMALAPURAM-VK_RAMAVARAM-1
2. 400KV/220KV KAMALAPURAM-ICT-1
3. 400KV/220KV KAMALAPURAM-ICT-3
4. KAMALAPURAM - 220KV - Bus 1

Station Connectivity/SLD during the event : Enclosed

Analysis of the event :
i. At the consumer end 220/11KV SS is having single bus system with bus sectionalizer breaker and configuration having 2Nos 31.5MVA,220/11KV STRs & 7Nos 45MVA,220/11KV Pump transformers is being maintained by I&CAD Dept./Government of Telangana.

ii. On 01.08.2026 at 15:24Hrs, 220kV Bus Bar-1 operated for an external fault caused due to burning of 11kV LV cables at the consumer end pump house of 31.5MVA Station transformer-2 and tripping all the elements connected to 220kV Bus-1 at 400/220kV SS Kamalapur.

iii. The following elements connected to 220kV bus -1 got tripped i.e., 315MVA ICT-1, 315MVA ICT-3, 220KV V.K.Ramavaram -1 feeder, 220KV Bus coupler and 220KV Metering bay-1 (Bay-202).

iv. The 31.5MVA Station Transformer-2 (Bay-2C10) Differential (RED670) & Restricted earth fault (REF615) relays operated and initiated tripping of the HV 220KV breaker and LV 11KV breaker. LV breaker tripped, but the HV breaker did not trip due to the existing SF6 gas lockout condition. In this case, LBB protection had to be initiate to consumer bus bar and to trip all the connected 220KV elements.

v. It was observed that LBB protection wiring from consumer bus bar PUs was not terminated at pump house consumer bay respective C& R panels, thereby, consumer bus bar LBB protection did not operate.

vi. The maloperation of 220KV busbar-1 at 400/220KV Kamalapur SS is mainly observed due to improper configuration of network topology at the time of commissioning of substation.

vii. It was observed that the breaker status binary input mapping of Bay-202(metering bay-1) in the Main Bus bar PCS-915 relay was not configured correctly in the Bus bar topology.

viii. There was no load loss due to the above tripping.

**Protection / Operational
Issues observed**

:

The maloperation of 220KV busbar-1 at 400/220KV Kamalapur SS is mainly observed due to improper configuration of network topology at the time of commissioning of substation.

Restoration Details

Sl. No.	Voltage Level (kV)	Name of the Element	Date of Restoration (DD-MM-YYYY)	Time of Restoration (Hrs)
1	400kV	315MVA ICT-1	01-08-2026	17:46
2	220KV	Bus-1	01-08-2026	17:46
3	400kV	315MVA ICT-3	01-08-2026	17:52
4	220KV	Bus coupler	01-08-2026	17:54
5	220kV	VK Ramavaram-1	01-08-2026	17:57
6	220kV	Metering bay-1	01-08-2026	19:19

DR Time synchronization issues observed (सुरक्षा/प्रचालन समस्या)

: True

Remedial Measures Taken (सुधारात्मक सुझाव)

i. During detailed tripping analysis, it was observed that even though the circuit breaker of metering bay is in closed status it was shown as open condition in bus bar network topology. Consequently, CT current of Bay-202(metering bay-1) was excluded from the differential calculation during the external fault, which resulted in operation of the Bus bar differential protection. The same is rectified in peripheral unit (PU) and bus bar scheme is tested for its stability and then taken into service on 06.08.2026.

ii. With regard to consumer bus bar protection & Station Transformer-2 HV breaker issues, the matter is being taken up with I&CAD Dept./Government of Telangana for rectification of the same on priority.

Relay/PLCC Operation Details

Control Panel Anunciation

: Busbar protection operated

Main I Relay Indications

: 96 trip relay Operated

Main II Relay Indications	:	NIL
Other Relay Indications	:	
PLCC Counter Increment I/T	:	
PLCC Counter Increment D/T	:	
Fault Current Value (kAmp)	:	22.5
LA Counter	:	
Remarks	:	
Attachments	:	1. SLD/Connectivity Diagram