Grid Occurrences – 147

I. Details of Grid Disturbances

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
1	Complete Outage of 220kV Chintur of APTRANSCO and Bus-2 outage of Lower Sileru of APGENCO	In the antecedent conditions, 220kV Chintur-BG Kothur was under planned outage and due to Bus spilt at Lower Sileru where in Bus-2 was connected to 220KV-ASUPAKA-LOWER_SILERU-1 and 220KV-Chintur-LOWER_SILERU-1. Hence, 220kV Chintur SS and 220kV Bus-2 of Lower Sileru was radially connected through 220KV-ASUPAKA-LOWER_SILERU-1. The triggering incident is the B-G fault in 220KV-ASUPAKA-LOWER_SILERU-1 line where in at Asupaka end, the fault was sensed in Z2 and Z2 time tripped. Tripping of the line led to the Complete Outage of 220kV Chintur of APTRANSCO and Bus-2 outage of Lower Sileru of APGENCO	25-08-2026 12:53	0	3	GD - 1	25-09-2026	24-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. Event Summary (घटना का सारांश):

In the antecedent conditions, 220kV Chintur-BG Kothur was under planned outage and due to Bus spilt at Lower Sileru where in Bus-2 was connected to 220KV-ASUPAKA-LOWER_SILERU-1 and 220KV-Chintur-LOWER_SILERU-1. Hence, 220kV Chintur SS and 220kV Bus-2 of Lower Sileru was radially connected through 220KV-ASUPAKA-LOWER_SILERU-1. The triggering incident is the B-G fault in 220KV-ASUPAKA-LOWER_SILERU-1 line where in at Asupaka end, the fault was sensed in Z2 and Z2 time tripped. Tripping of the line led to the Complete Outage of 220kV Chintur of APTRANSCO and Bus-2

outage of Lower Sileru of APGENCO

2. **Time and Date of the Event (घटना का समय और दिनांक:** 25-08-2026 12:53
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** TELANGANA , ANDHRA PRADESH
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
Andhra Pradesh State Demand (MW)	12132	12053
Andhra Pradesh State Generation (MW)	7765	7717
Telangana State Demand (MW)	12897	12947
Telangana State Generation (MW)	5823	5935
Grid Frequency (Hz)	50.06	50.08
SR Demand (MW)	61088	60884
SR Generation (MW)	60612	60266

Pre and post data of 1 minute before and after the event

Elements under outage	1. 220KV-Chintur-BG Kothur-1
Weather Condition (मौसम स्थिति)	Cloudy , Rainy

6. **Load and Generation loss (लोड और जेनरेशन हानि**):

Generation Loss (MW)	**Load Loss (MW)**
0.0 MW	3.0 MW

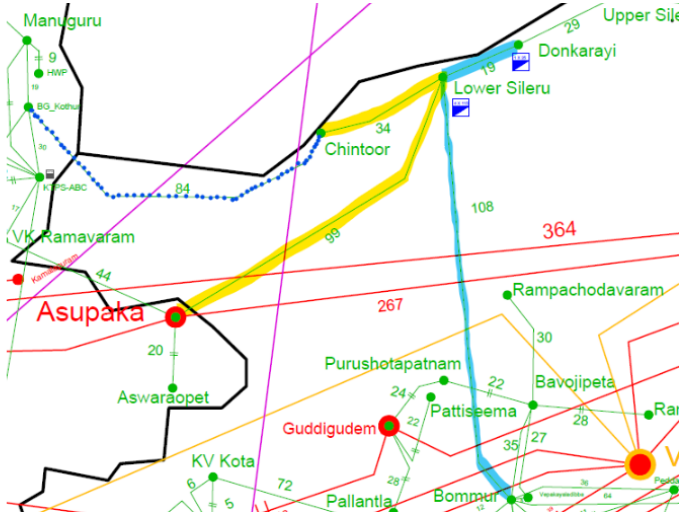
7. **Duration of interruption (रुकावट की अवधि):** 0 hours, 24 minutes
8. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 220KV-ASUPAKA-LOWER_SILERU-1

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

In the antecedent conditions, 220kV Chintur-BG Kothur was under planned outage and due to Bus spilt at Lower Sileru where in Bus-2 was connected to 220KV-ASUPAKA-LOWER_SILERU-1 and 220KV-Chintur-LOWER_SILERU-1. Hence, 220kV Chintur SS and 220kV Bus-2 of Lower Sileru was radially connected through 220KV-ASUPAKA-LOWER_SILERU-1 as shown below.



The triggering incident is the B-G fault in 220KV-ASUPAKA-LOWER_SILERU-1 line where in at Asupaka end, the fault was sensed in Z2 and Z2 time tripped. At Lower Sileru end, the fault was not sensed as there is no fault contribution from LOWER_SILERU end. Tripping of the line led to the Complete Outage of 220kV Chintur of APTRANSCO and Bus-2 outage of Lower Sileru of APGENCO. There was no generation at LOWER_SILERU end and no generation loss during the event.

11. DR Analysis:

220KV-ASUPAKA-LOWER_SILERU-1

	ASUPAKA - 220KV	**LOWER_SILERU - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:25-08-2026 12:53:21.647 PHASE SELECT CG	DR Trigger Time:25-08-2026 12:53:31.716 A/R Lockout

	GND DIST Z4 PKP GND DIST Z3 PKP GND DIST Z2 PKP, NEUTRAL TOC2 PKP 86A OPTD On TRIPBUS 2 OP, GND DIST Z2 OP, MCB 86A/B TR On CB R PH OPEN On, CB Y PH OPEN On, CB B PH OPEN On PHASE SELECT MULTI-P Ir (max): 0.11 kA Iy (max): 0.16 kA Ib (max): 1.64 kA Vr (max): 129.91 kV Vy (max): 129.17 kV Vb (max): 128.06 kV	Ir (max): 0.00 kA Iy (max): 0.00 kA Ib (max): 0.00 kA Vr (max): 0.12 kV Vy (max): 0.14 kV Vb (max): 0.05 kV

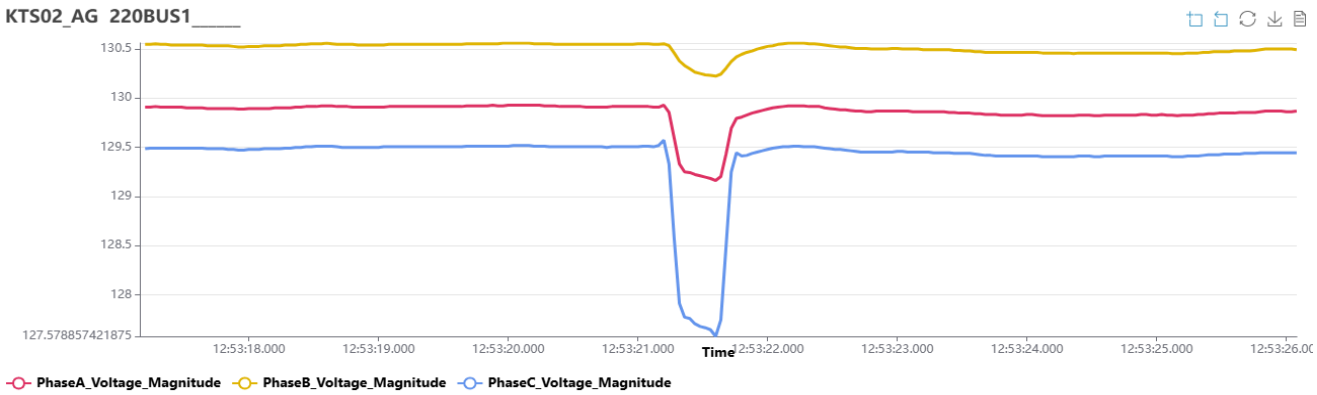
Chintur - 220KV

	Chintur - 220KV
Time Sync Issue	**No**
DR Analysis	Supply Failure

LOWER_SILERU - 220KV

	LOWER_SILERU - 220KV
Time Sync Issue	**No**
DR Analysis	Bus-2 outage (Supply Failure)

12. A) PMU Analysis:



From the PMU plot, B-G fault can be observed during the event with delayed clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	**Points for review**
APTRANSCO	1. Single Bus Operation at Chintur needs review

14. Action Taken/Remedial Measures (सुधारात्मक उपाय): Nil

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details: 25-08-2026 13:17

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl .No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	APTRANSCO, APGENCO
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c)	APTRANSCO, APGENCO

		2. CEA grid Standard 15.3	
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	APTRANSCO, APGENCO
4	**Any other non-compliance**	IEGC section 17.3	APTRANSCO, APGENCO

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

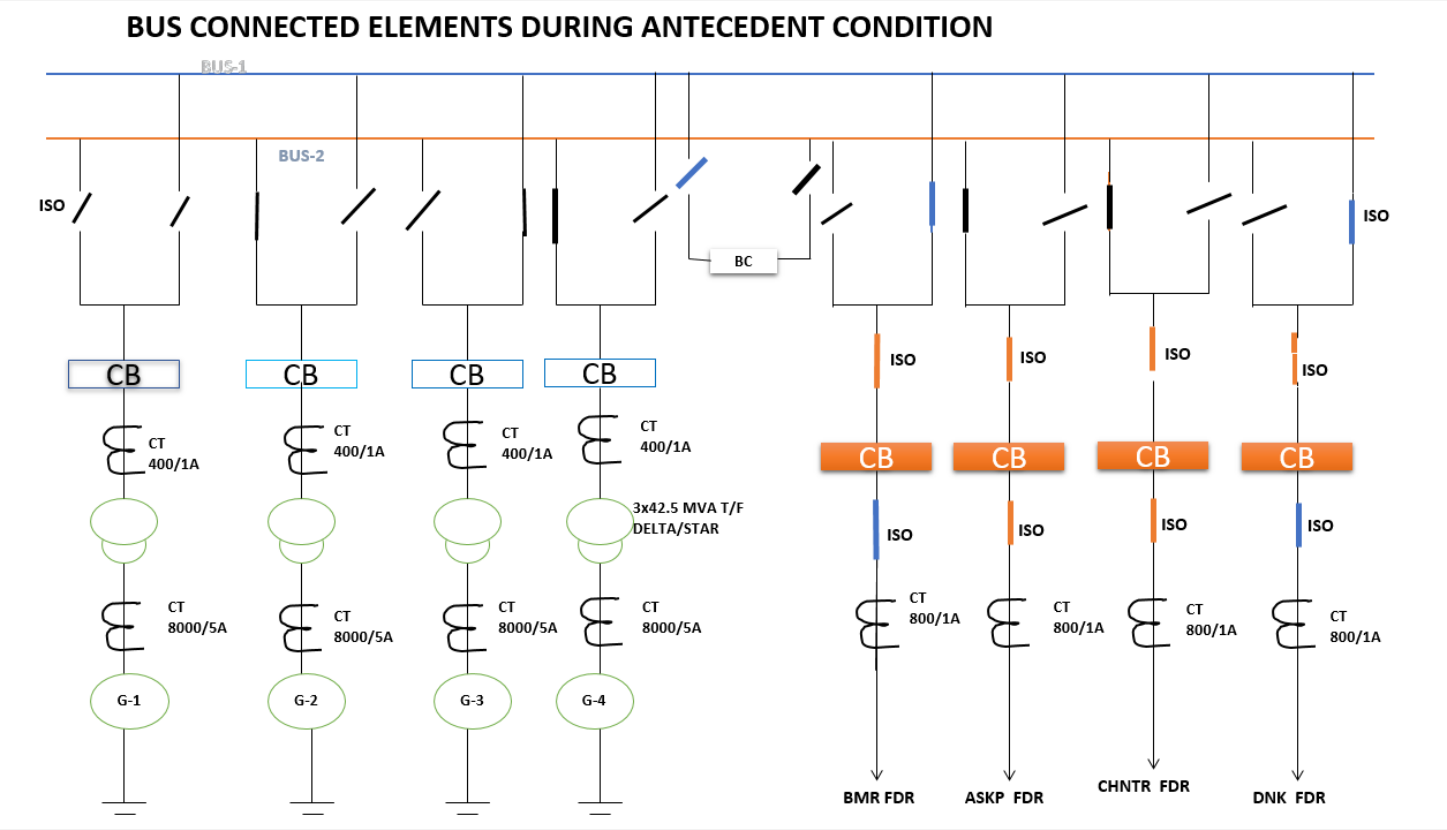
Annexure 1

Sequence of Events as per SCADA

time	Event	Location
25-08-2026 12:53:44	ASUPAKA 400KV CB 20652 (LINE TO LSLR2) OPEN	ASPK4_AT

Deliberations:

1. APGENCO stated that in the Antecedent condition the Bus-Coupler Breaker in open Condition. The 220 KV Bommuru and Donkarayi feeders on Bus-1. The 220 KV Asupaka feeder, Chinthuru on Bus-2. No units connected on BUS-1 and BUS-2.



2. APGENCO informed that, as per APSLDC instructions, Unit-1 was kept in the rest position at 10:00 hrs. Subsequently, Unit-4 was de-paralleled at 12:04 hrs, Unit-2 at 12:32 hrs and Unit-3 at 12:37 hrs.
3. APGENCO informed that the Chinturu–BG Kothuru line was under line clearance (LC). At 12:53 hrs, a single-line-to-ground fault occurred on the 220 kV Asupaka–Lower Sileru line, resulting in breaker tripping at the Asupaka end only and rendering Bus-2 dead, with the line operating as a radial feeder. It was clarified that there was no generation loss at LSPH.
4. SRLDC highlighted that the 220 kV Chinturu Substation was operating in single-bus mode. APTRANSCO informed that the double-bus arrangement had been charged in 2024; however, the second bus was not in service during the event due to issues related to Substation Automation System (SAS) integration. Consequently, the substation was operating in single-bus mode.

5. TGTRANSCO enquired about the reason for keeping the bus-coupler breaker at Lower Sileru in the open position. SRLDC explained that the bus-coupler was kept open due to loading constraints on the Bommuru–Lower Sileru line. APTRANSCO informed that upgradation works on the line were in progress.
6. SRPC requested APTRANSCO to resolve the pending SAS integration issues and restore double-bus operation at the substation.

Recommendation:

- ***APTRANSCO to enable double busbar operation at Lower sileru SS.***
- ***APGENCO advised to Realign the feeders on each bus at Lower sieleru Pump House***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
2	Complete outage of 230kV Echur of TANTRANSCO	In the antecedent condition, 230kV Echur-Arani line was under planned shutdown and 230kV Echur was radially connected to 230kV MAPS-Echur line. As per the reports submitted, the triggering incident is the Y-G fault in the line and the line tripped. Tripping of the radial line led to the complete outage of 230kV Echur of TANTRANSCO	28-08-2026 13:23	30	24	GD - 1	06-09-2026	30-08-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. **Event Summary (घटना का सारांश):**

In the antecedent condition, 230kV Echur-Arani line was under planned shutdown and 230kV Echur was radially connected to 230kV MAPS-Echur line. As per the reports submitted, the triggering incident is the Y-G fault in the line and the line tripped. Tripping of the radial line led to the complete outage of 230kV Echur of TANTRANSCO

2. **Time and Date of the Event (घटना का समय और दिनांक:** 28-08-2026 13:23
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** TAMILNADU

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
TamilNadu State Demand (MW)	17485	17803
TamilNadu State Generation (MW)	16305	16235
Grid Frequency (Hz)	50.06	50.04
SR Demand (MW)	64975	65221
SR Generation (MW)	62399	62176

Pre and post data of 1 minute before and after the event

Elements under outage	1. 230KV-ARNI-ECHUR-1
Weather Condition (मौसम स्थिति)	Normal

Bus Configuration Type : Single Main and Transfer Bus

Bus Coupler Status : NA

Bus 1 Connected Elements
1. 230KV-ARNI-ECHUR-1 2. 230KV-MAPS-ECHUR-1

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)		**Load Loss (MW)**
Solar	30.29 MW	23.88 MW
Wind	0.0 MW	
Others	0.0 MW	
Total	30.29 MW	

7. Duration of interruption (रुकावट की अवधि): 0 hours, 45 minutes

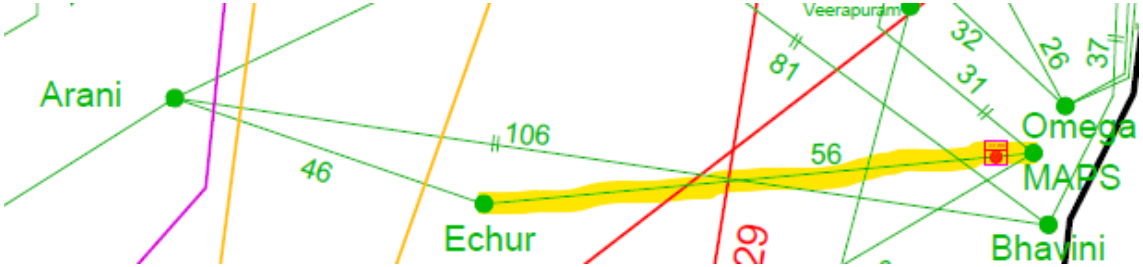
8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 230KV-MAPS-ECHUR-1

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

In the antecedent condition, 230kV Echur-Arani line was under planned shutdown and 230kV Echur was radially connected to 230kV MAPS-Echur line.



As per reports submitted, the triggering incident was a Y-G fault in the 230 kV Echur-MAPS line. At both the ends fault was sensed in Zone 1 and Y pole got opened. At Echur end A/R operated successfully but at MAPS end A/R failed to operate and after 1.5 sec pole discrepancy operated and 3 phase tripping was observed. After tripping of only connected line with Echur led to complete outage of 230 kV Echur SS.

11. DR Analysis:

ECHUR - 230KV

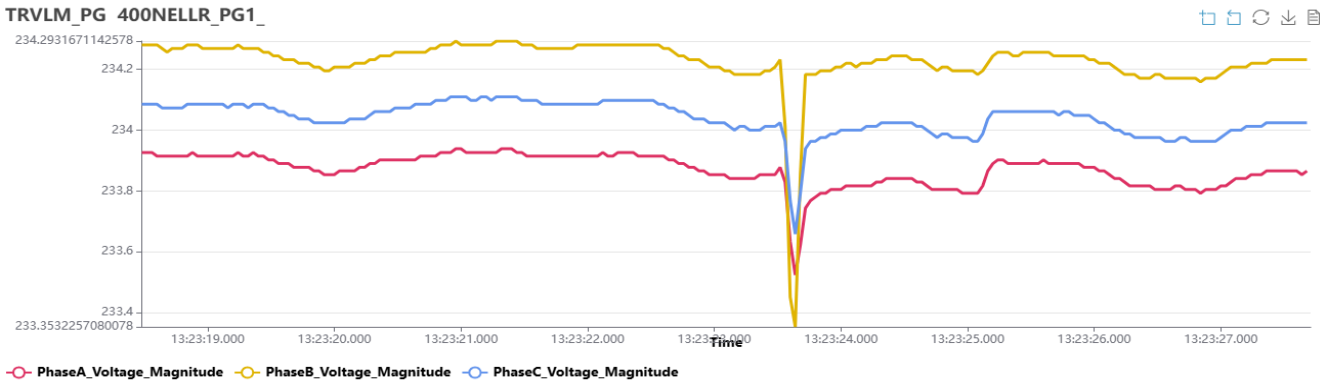
	ECHUR - 230KV
Time Sync Issue	**No**
DR Analysis	DR not uploaded

230KV-MAPS-ECHUR-1

	MAPS - 230KV	**ECHUR - 230KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:28-08-2026 13:23:23.608	DR Trigger Time:28-08-2026 13:23:23.599

	Any Trip Ir (max): 0.34 kA Iy (max): 2.28 kA Ib (max): 0.34 kA Vr (max): 126.06 kV Vy (max): 126.38 kV Vb (max): 126.34 kV	FD.Pkp CARR_RECV 85-1.Recv1 CB1.TrpB, 85.Op_Z, CB1.Trp, CB1.79.Active Y_PH_OPEN CB1.79.Inprog, CB1.79.Inprog_1P CB1.25.Chk_DdL 79.Close CB1.79.Perm_Trp3P CB1.79.Succ_Rcls BCU_CB_UNHEALTHY Alm_Freq Alm_Device CB1.25.Chk_DdB CB1.25.Chk_DdL Ir (max): 0.35 kA Iy (max): 0.69 kA Ib (max): 0.36 kA Vr (max): 0.12 kV Vy (max): 0.12 kV Vb (max): 0.13 kV

12. A) PMU Analysis:



From the PMU plot, Y-G fault can be observed without any delayed fault clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
TANTRANSCO	1. Single Bus operation at 230 kV Echur Substation needs review.
NPCIL_MAPS	1. Non operation A/R needs review.

14. Action Taken/Remedial Measures (सुधारात्मक उपाय): Nil

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details: 28/08/2026 14:08

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl .No	Issues	Regulation Non-Compliance	Utilities
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	TANTRANSCO
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	TANTRANSCO, NPCIL_MAPS
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	
4	**Any other non-compliance**	IEGC section 17.3	NPCIL_MAPS

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

Annexure 1

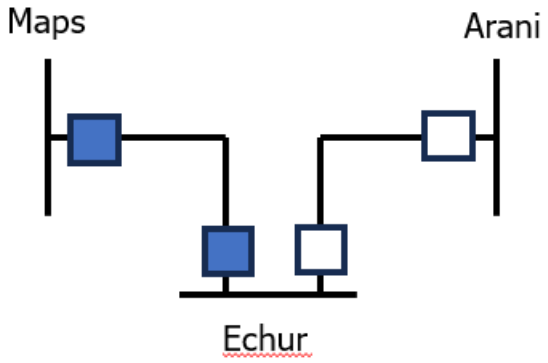
Sequence of Events as per SCADA

time	Event	Location
28-08-2026 13:23:33	KALPAKKAM CB 20552 (LINE TO ECUR2) OPEN	KLPKM_CS

Deliberations:

1. TANTRANSCO presented the bus configuration of the 230 kV Echur Substation, which has a double-main and transfer bus scheme with two incoming sources, one from Arani 230 kV Substation and the other from MAPS. All 110 kV feeders are radially fed from Echur Substation.
2. TANTRANSCO informed that, under the antecedent conditions, the 230 kV Echur–Arani line was under planned shutdown for maintenance from 28 August 2026 at 09:10 hrs.

Antecedent condition:



3. TANTRANSCO informed that, at 13:23 hrs, a single-line-to-ground fault occurred in the Y-phase, resulting in auto-reclosing (AR) operation at the Echur end and lockout tripping at the MAPS end. Consequently, the source supply to Echur Substation was lost.
4. SRPC enquired about the non-operation of auto-reclosing at the NPCIL-MAPS end. NPCIL-MAPS explained that the lead-follower scheme did not operate during the incident due to the non-availability of voltage at the remote end.
5. TANTRANSCO stated that, as per the disturbance recorder (DR) data, a line voltage of 102 kV was observed. NPCIL-MAPS clarified that at least 80% of the line voltage was required for the lead-follower scheme to operate. SRLDC enquired whether the voltage threshold of the lead-follower scheme could be reduced. NPCIL-MAPS informed that the setting was based on OEM recommendations.
6. TGTRANSCO enquired about the low voltage observed at the 230 kV Echur end. TANTRANSCO explained that, under the antecedent conditions, one 230 kV line was under outage and solar generation in the 110 kV network was low. It was further stated that the solar generators were absorbing reactive power, contributing to the low voltage observed during the incident.

7. MS, SRPC highlighted that, as per the applicable regulations, solar generators were required to inject reactive power as prescribed. TANTRANSCO was requested to take up the issue with the concerned renewable energy generators through SLDC.
8. MS, SRPC enquired about the monthly maintenance practices followed for transmission lines in the Tamil Nadu network, noting that other utilities were not undertaking monthly maintenance. TANTRANSCO explained that, as per its maintenance philosophy, the tightness of bay equipment connections and the operational healthiness of circuit breakers were checked monthly, and any deficiencies identified were attended to. Accordingly, monthly maintenance shutdowns were being availed.
9. SRPC enquired about the auto-reclosing dead times for the Echur–MAPS line. TANTRANSCO informed that the dead time was set at 600 ms at the Echur end and 1 second at the MAPS end. SRPC suggested that TANTRANSCO review the settings and revise the AR dead time to 1 second at the Echur end and 1.5 seconds at the NPCIL-MAPS end.
10. SRPC highlighted that an alternate communication path for teleprotection was not available for the line. NPCIL-MAPS informed that only Power Line Carrier Communication (PLCC) was available and that the Optical Ground Wire (OPGW) system was yet to be commissioned. SRPC enquired about the timeline for completion of the OPGW works. TANTRANSCO stated that it would coordinate with the concerned team and provide an update on the matter.

Recommendations:

- ***TANTRANSCO shall revise the auto-reclosing (AR) dead time setting to 1 second at the 230 kV Echur end.***
- ***NPCIL-MAPS shall revise the auto-reclosing (AR) dead time setting to 1.5 seconds at the 230 kV MAPS end.***
- ***TANTRANSCO/TNSLDC shall take up the issue of non-injection of reactive power by renewable energy (RE) plants with the concerned generators through SLDC and pursue necessary corrective action.***
- ***TANTRANSCO shall submit a detailed report to SRPC on the status and timeline for commissioning of the OPGW system for the 230 kV NPCIL-MAPS–Echur line.***
- ***Monthly maintenance needs review in line with other transmission licenseess.***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
3	Complete Outage of 220kV Upper Sileru PH of APGENCO	During antecedent conditions, all 220kV lines were connected to 220kV Upper Sileru Bus-1 at 220kV Upper Sileru PH and all units are connected to 220kV Bus-2. As per the reports submitted, the triggering incident was B-G fault in 220kV Upper Sileru Balimela line. At Upper Sileru end, zone-1 protection operated but B-pole failed to open. Immediately, 220kV LBB operated and all the elements connected to 220kV Bus-1 tripped. This led to complete outage of 220kV Upper Sileru PH.	05-09-2026 14:06	0	0	GD - 1	25-09-2026	-	Not Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. Event Summary (घटना का सारांश):

During the antecedent conditions, all 220 kV lines were connected to the 220 kV Upper Sileru Main Bus, while all units were connected to either the Main Bus or the Transfer Bus. The Transfer Bus was provided with a bus sectionalizer, as shown below. According to this configuration, if LBB operates due to the failure of any line breaker, all breakers will open, resulting in a complete outage of the station.

As per the reports submitted, the triggering incident was a B-G fault on the 220 kV Upper Sileru–Balimela-1 line. At the Upper Sileru end, the fault was sensed in Zone 1; however, due to the B-phase pole of the line circuit breaker being stuck, the breaker failed to open instantaneously. Consequently, the LBB protection operated for the breaker and tripped all the surrounding breakers. This resulted in a complete outage of the 220 kV Upper Sileru station, without any generation

loss.

2. **Time and Date of the Event (घटना का समय और दिनांक:** 05-09-2026 14:06
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** ANDHRA PRADESH , ODISHA
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
Andhra Pradesh State Demand (MW)	13349	13527
Andhra Pradesh State Generation (MW)	7277	7335
Grid Frequency (Hz)	50.08	49.98
SR Demand (MW)	70291	70623
SR Generation (MW)	57648	57803

Pre and post data of 1 minute before and after the event

Elements under outage	
Weather Condition (मौसम स्थिति)	Normal

6. **Load and Generation loss (लोड और जेनरेशन हानि**):

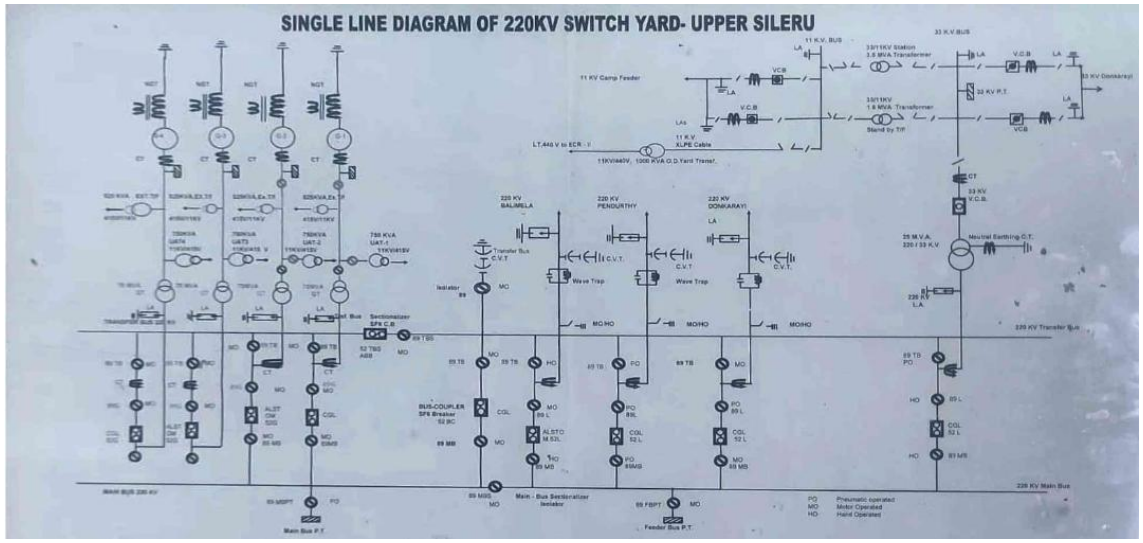
Generation Loss (MW)	**Load Loss (MW)**
0.0 MW	0.0 MW

7. **Duration of interruption (रुकावट की अवधि):** 1 hours, 28 minutes
8. **Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):** NA
9. **List of Elements got tripped during event (प्रमुख ट्रिपिंग)**

1. 220KV-DONKARAYI-UPPER_SILERU-1
2. 220KV-PENDURTHI-UPPER_SILERU-1
3. 220KV-UPPER_SILERU-BALIMELA-1
4. UPPER_SILERU - 220KV

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

During the antecedent conditions, all 220 kV lines were connected to the 220 kV Upper Sileru Main Bus, while all units were connected to either the Main Bus or the Transfer Bus. The Transfer Bus was provided with a bus sectionalizer, as shown below. According to this configuration, if LBB operates due to the failure of any line breaker, all breakers will open, resulting in a complete outage of the station.



As per the reports submitted, the triggering incident was a B-G fault on the 220 kV Upper Sileru–Balimela-1 line. At the Upper Sileru end, the fault was sensed in Zone 1; however, due to the B-phase pole of the line circuit breaker being stuck, the breaker failed to open instantaneously. Consequently, the LBB protection operated for the breaker and tripped all the surrounding breakers. This resulted in a complete outage of the 220 kV Upper Sileru station, without any generation loss.

11. DR Analysis:

220KV-UPPER_SILERU-BALIMELA-1

	UPPER_SILERU - 220KV	**BALIMELA - 220KV**
Time Sync Issue	**No**	**No**

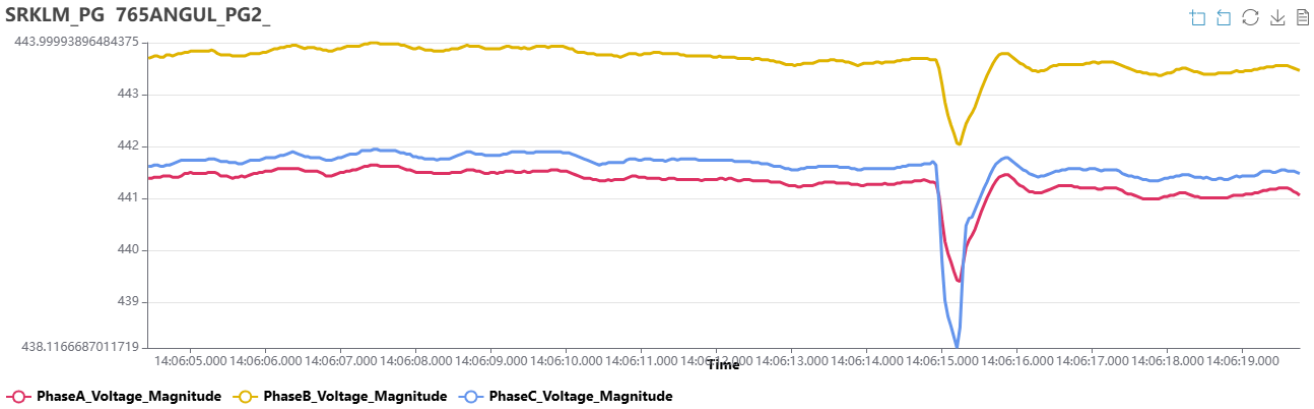
DR Analysis	DR Trigger Time:05-09-2026 14:06:14.970 T1 Z3, Z3 Z1, DIST Trip C SOTF/TOR Trip, 3P Trip T2 Ir (max): 0.01 kA Iy (max): 0.01 kA Ib (max): 2.34 kA Vr (max): 151.69 kV Vy (max): 134.32 kV Vb (max): 129.10 kV DR Trigger Time:05-09-2026 14:04:30.277 PHS-STFWL3, PHS-STFWPE ZM03-START, ZM04-START ZM02-START TRIP_TRIP, TRIP L3, ZM01-TRIP, ZCOM_CS LBB_TRIP Ir (max): 0.01 kA Iy (max): 0.01 kA Ib (max): 2.32 kA Vr (max): 152.07 kV Vy (max): 134.63 kV Vb (max): 128.88 kV	NA

UPPER_SILERU - 220KV

	UPPER_SILERU - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:05-09-2026 14:06:14.970 T1 Z3, Z3 Z1, DIST Trip C SOTF/TOR Trip, 3P Trip

	T2 Ir (max): 0.01 kA Iy (max): 0.01 kA Ib (max): 2.34 kA Vr (max): 151.69 kV Vy (max): 134.32 kV Vb (max): 129.10 kV DR Trigger Time:05-09-2026 14:04:30.277 PHS-STFWL3, PHS-STFWPE ZM03-START, ZM04-START ZM02-START TRIP_TRIP, TRIP L3, ZM01-TRIP, ZCOM_CS LBB_TRIP Ir (max): 0.01 kA Iy (max): 0.01 kA Ib (max): 2.32 kA Vr (max): 152.07 kV Vy (max): 134.63 kV Vb (max): 128.88 kV

12. A) PMU Analysis:



From the PMU plot, B-G fault can be observed with delayed fault clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review

APGENCO	1. Non opening of B-phase breaker in 220 kV Upper Sileru–Balimela-1 at Upper sileru.

14. Action Taken/Remedial Measures (सुधारात्मक उपाय): Nil

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details: 05/09/2026 15:34

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl .No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	APGENCO
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	APGENCO, ODISHA
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	APGENCO
4	**Any other non-compliance**	IEGC section 17.3	APGENCO

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

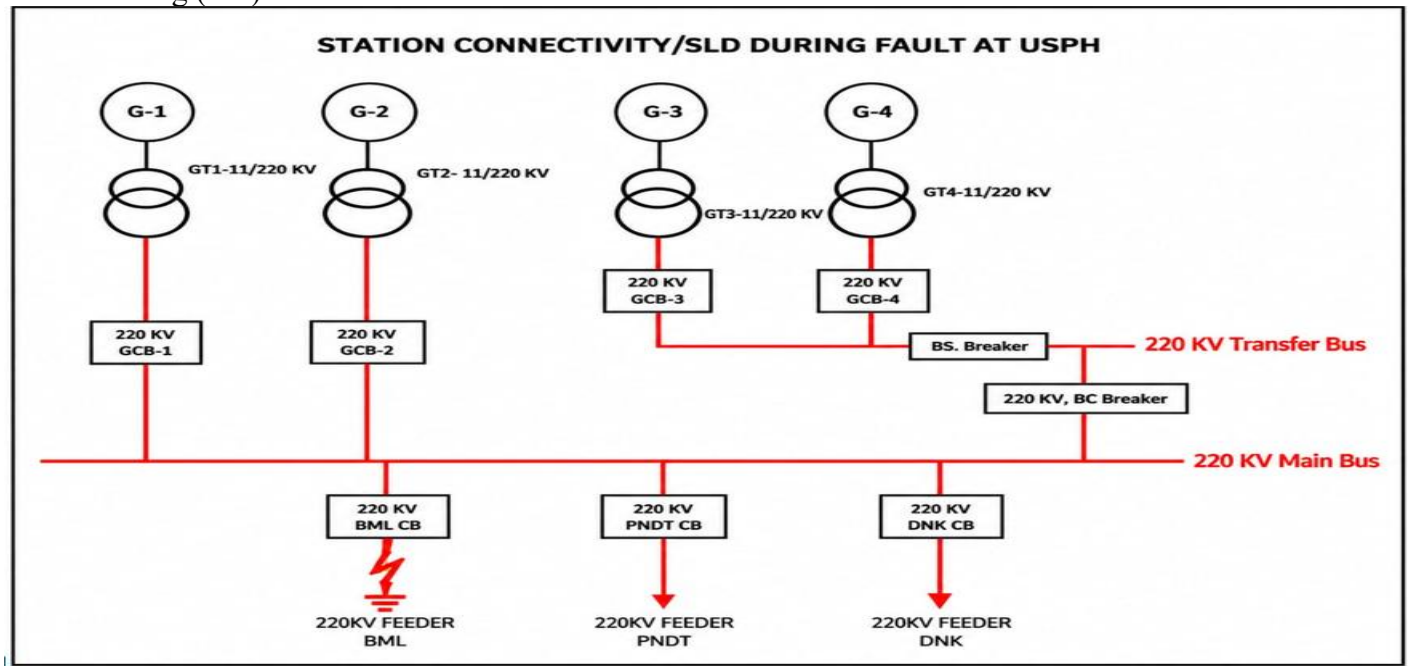
Annexure 1

Sequence of Events as per SCADA

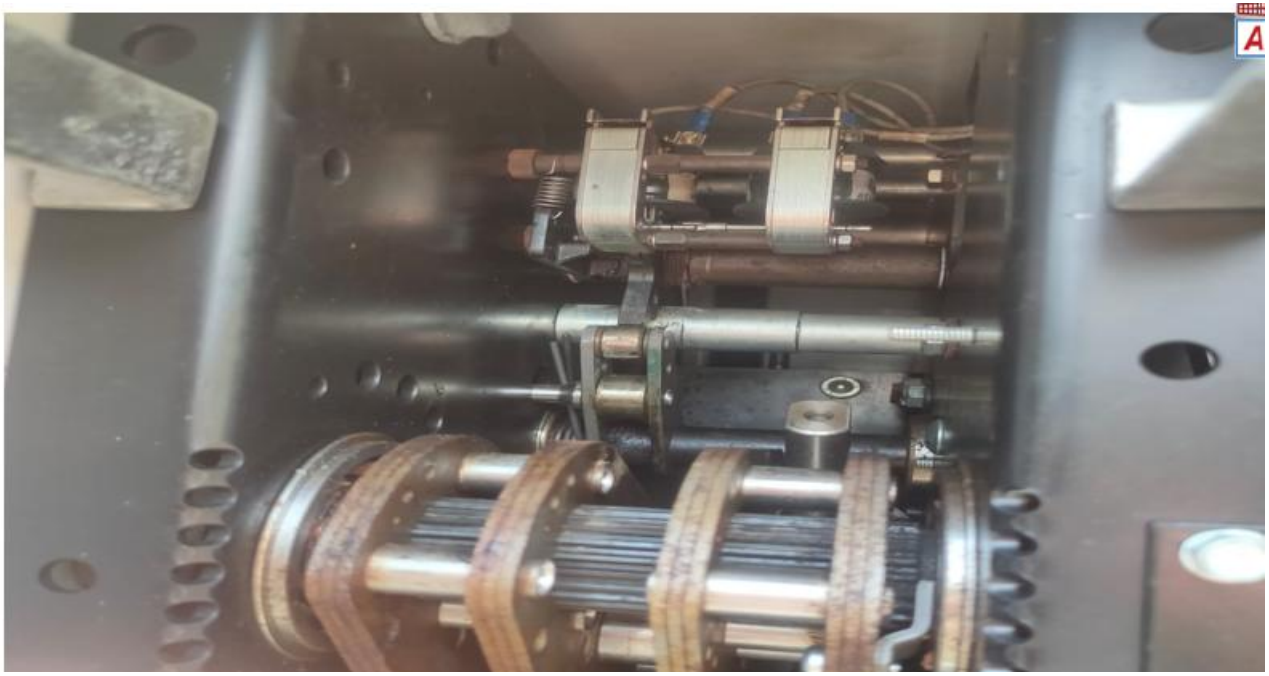
time	Event	Location
05-09-2026 14:06:28	UPPER SILERU CB COUPLER CB 21052 CLOSED	USLR2_AG
05-09-2026 14:06:28	UPPER SILERU CB COUPLER CB 20552 OPEN	USLR2_AG
05-09-2026 14:08:01	UPPER SILERU CB COUPLER CB 21052 INVALID	USLR2_AG

Deliberations:

1. APGENCO informed that, under the antecedent conditions, no generating units were in service at Upper Sileru Power House (USPH). The feeders connected to the 220 kV USPH bus were the Balimela feeder (idle-charged), Donkarayi feeder and Pendurthi feeder. It was further informed that the auto-reclosing (AR) scheme for the Balimela feeder was in the disabled condition.



2. APGENCO informed that a B-phase-to-earth fault occurred on the 220 kV Upper Sileru–Balimela feeder on 5 September 2026 at 14:06 hrs. As the AR scheme was disabled, three-pole tripping was initiated. However, due to a faulty roller mechanism in the circuit breaker, the breaker failed to open, resulting in Local Breaker Backup (LBB) protection operation. Consequently, all feeders connected to the 220 kV bus at Upper Sileru tripped.
3. APGENCO further clarified that the faulty roller mechanism in the B-phase breaker limb resulted in breaker failure and subsequent LBB operation



4. Remedial Action: APGENCO informed that servicing of the B-pole roller mechanism had been completed and the failed trip coils had been replaced.
5. SRPC enquired whether a retrip feature was available for LBB operation. APGENCO stated that the matter would be examined and an update would be provided.
6. SRPC highlighted that an internal audit of Upper Sileru Substation had been conducted in August 2026 and enquired whether the breaker mechanism issue had been identified during the audit. APGENCO clarified that the issue had not been detected during the internal audit, as it was mechanical in nature. APGENCO further informed that replacement of the circuit breaker was being proposed.
7. SRLDC highlighted the need to review the existing bus configuration of the station, wherein the generating units and loads were connected to separate buses. It was observed that, in the event of LBB operation of a load-feeder circuit breaker, tripping of the associated bus could result in disconnection of all loads. Further, due to the consequent loss of power evacuation, all generating units could also trip on overfrequency. APGENCO stated that the matter would be discussed with its management and the outcome would be communicated to the forum.
8. TGTRANSCO suggested modifying the existing arrangement by converting the transfer bus into a double-bus arrangement and adopting a double-

busbar scheme. APGENCO stated that the proposal would be discussed with its higher management and an update would be provided.

9. MS, SRPC enquired about the availability of OPGW communication links for the concerned lines. APGENCO stated that the status would be checked and an update would be provided.
10. SRPC enquired about the reason for keeping the Balimela line idle-charged. APGENCO stated that the matter would be examined and the reasons would be communicated to the forum.

Recommendations:

- ***APGENCO to review the BUS configuration arrangement at Upper sileru SS. Possibility of generation and load feeder on samebuds will ne examined.***
- ***APGENCO to submit detailed report regarding the OPGW availability and DTPC healthiness.***
- ***APGENCO to enable retrip for LBB operation.***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
4	Complete outage of 230 kV KILPAUK, 230 kV ATHIPATU of TANTRANSCO and 230 kV NCTPS of TNPGCL	230 kV Kilpauk, 230 kV Athipattu 1& 2 are radially connected with 230 kV NCTPS station. 230 kV Tondiarpet-NCTPS 1&2 was under outage during the event. As per the reports submitted, around 23:21 230 kV NCTPS-Kilpauk line 3 phase tripped at both ends upon sensing B-G fault in Z1. Around 23:32 Hrs, 230 kV Gummidipondi-NCTPS line tripped due to R-G fault, then 230 kV NCTPS-Sriperumbadur line also tripped due to Y-G fault. During the same time Unit-1 & Unit-3 tripped on turbine protection and over frequency protection operation. After 13 minutes (for house load operation) Unit-2 also tripped due to turbine trip protection. These trippings led to complete outage of 230 kV NCTPS, 230 kV Kilpauk and 230 kV Athipatu stations.	07-09-2026 23:32	194	0	GD - 1	17-09-2026	09-09-2026 10-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. Event Summary (घटना का सारांश):

230 kV Kilpauk, 230 kV Athipattu 1& 2 are radially connected with 230 kV NCTPS station. 230 kV Tondiarpet-NCTPS 1&2 was under outage during the event. As per the reports submitted, around 23:21 230 kV NCTPS-Kilpauk line 3 phase tripped at both ends upon sensing B-G fault in Z1. Around 23:32 Hrs, 230 kV Gummidipondi-NCTPS line tripped due to R-G fault , then 230 kV NCTPS-Sriperumbadur line also tripped due to Y-G fault. During the same time Unit-1 & Unit-3 tripped on turbine protection and overfrequency protection operation. After 13 minutes (for house load operation) Unit-2 also tripped due to turbine trip protection. These trippings led to complete outage of 230 kV NCTPS, 230 kV Kilpauk and 230 kV Athipatu stations.

2. Time and Date of the Event (घटना का समय और दिनांक: 07-09-2026 23:32

3. Event Category (ग्रिड घटना का प्रकार): GD - 1

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): TAMILNADU

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
TamilNadu State Demand (MW)	18396	18287
TamilNadu State Generation (MW)	9077	9064
Grid Frequency (Hz)	49.97	50.0
SR Demand (MW)	54433	54262
SR Generation (MW)	52459	52409

Pre and post data of 1 minute before and after the event

Elements under outage	
Weather Condition (मौसम स्थिति)	Rainy , Windy

Bus Configuration Type : Single Main and Transfer Bus

Bus Coupler Status : NA

Bus 1 Connected Elements	Bus 2 Connected Elements	Bus 3 Connected Elements
1. 230KV-NCTPS-NCTPS STG3-1 2. 230KV-NCTPS-KILPAUK-1	1. 230KV-NCTPS-SRIPERUMBADUR_TN-1 2. 230KV-NCTPS-TONDIARPET-1	1. 230KV-NCTPS-TONDIARPET-2 2. 230KV-GUMMIDIPOONDI-NCTPS-1 3. 230KV-NCTPS-ATHIPATU-1 4. 230KV-NCTPS-ATHIPATU-2

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)	Load Loss (MW)

194.0 MW	0.0 MW

7. Duration of interruption (रुकावट की अवधि): 0 hours, 27 minutes

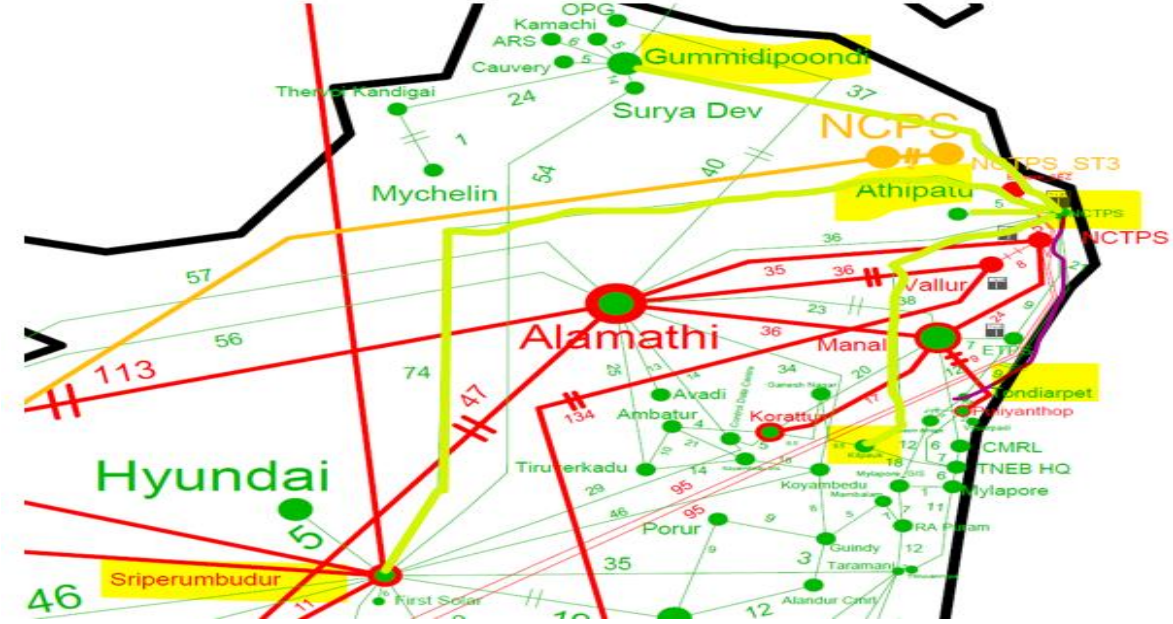
8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 230KV-NCTPS-NCTPS STG3-1
2. 230KV-GUMMIDIPOONDI-NCTPS-1
3. 230KV-NCTPS-ATHIPATU-2
4. 230KV-NCTPS-SRIPERUMBADUR_TN-1
5. 230KV-NCTPS-KILPAUK-1

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

230 kV Kilpauk, 230 kV Athipattu 1& 2 , 230 kV NCTPS Stg 3 station are radially connected with 230 kV NCTPS station. 230 kV Tondiarpet-NCTPS 1&2 was under outage during the event.



As per the reports submitted, at around 23:21hrs B-G fault was observed in the 230 kV NCTPS-Kilpauk line. At both ends of the line the fault was sensed in Z1 , and owing to composite feeder the line 3 phase tripped at both ends without A/R operation. At 23:32hrs, R-G fault was observed in 230 kV Gummidipondi-NCTPS line . At Gummidipondi end, the fault was sensed in carrier aided Z2, A/R operated and was succesful. At NCTPS end the fault was sensed in Z1 and the line tripped because A/R was disabled due to malfunctioning.

Subsequently, Y-G fault was observed in 230 kV NCTPS-Sriperumbadur line. At NCTPS end the fault was sensed in Z1 and line tripped at without operating Autoreclosure as A/R was disabled due to malfuntioning. At Sriperumbadur end the fault was sensed in zone-1, A/R operated but line tripped due Y-B fault after A/R operation.

During the same period, Unit-1 of NCTPS tripped on turbine trip protection, while Unit-3 tripped on over-frequency protection. The frequency during the operation was reported to be around 52 Hz. Unit-2 of NCTPS remained in operation for approximately 13 minutes under house-load operation, after which it also tripped on turbine trip protection.

These trippings led to complete outage of 230 kV NCTPS, 230 kV Kilpauk and 230 kV Athipatu stations.

11. DR Analysis:

NCTPS - 230KV

	NCTPS - 230KV
Time Sync Issue	**Yes**
DR Analysis	DR Trigger Time:07-09-2026 18:09:22.788 START N, Any Start START R-ph, DIST Start A Rph-MAIN BKR TRP, Yph-MAIN BKR TRP, Bph-MAIN BKR TRP, Rph-TFR BKR TRP, Yph-TFR BKR TRP, Bph-TFR BKR TRP, Z2TorZ3T-EXT AR, START AR, CARR SEND, Any Trip, Fault_REC_TRIG Ir (max): 2.72 kA Iy (max): 0.04 kA Ib (max): 0.04 kA Vr (max): 130.68 kV Vy (max): 132.78 kV Vb (max): 130.69 kV DR Trigger Time:07-09-2026 23:31:45.949 Any Start Any Trip, DIST Trip A, DIST Fwd, Z1, R1-MCB R TRIP, R2-MCB Y TRIP, DIST Sig. Send, R3-MCB B TRIP, R4-TCB R TRIP, R5-TCB Y TRIP, R6-TCB B TRIP, R7-Z2-Z3T-EXT AR, R8-START AR, R10-CAR SEND, R11-START R, R14-START N, R15-GEN TRIP, R17-CAR

	SEND AUX, R18 PO SPARE R14-START N Ir (max): 12.23 kA Iy (max): 1.18 kA Ib (max): 0.55 kA Vr (max): 134.66 kV Vy (max): 140.79 kV Vb (max): 131.12 kV DR Trigger Time:07-09-2026 23:21:48.833 FR_DR TRIG On, GND DIST Z1 OP Ir (max): 0.19 kA Iy (max): 0.58 kA Ib (max): 9.85 kA Vr (max): 132.36 kV Vy (max): 132.36 kV Vb (max): 131.71 kV DR Trigger Time:07-09-2026 23:20:14.258 Any Trip, Zone 1 Trip, Aided 1 Send, Trip Output A, Trip Output B, Trip Output C Ir (max): 14.87 kA Iy (max): 0.27 kA Ib (max): 0.49 kA Vr (max): 131.70 kV Vy (max): 131.89 kV Vb (max): 131.36 kV DR Trigger Time:07-09-2026 23:20:14.263 GND DIST Z1 OP GEN TRIP ON (VO9) Ir (max): 14.79 kA Iy (max): 0.27 kA Ib (max): 0.49 kA Vr (max): 131.84 kV Vy (max): 132.05 kV Vb (max): 131.80 kV DR Trigger Time:07-09-2026 18:09:22.788 START N, Any Start START R-ph, DIST Start A Rph-MAIN BKR TRP, Yph-MAIN BKR TRP, Bph-MAIN BKR TRP, Rph-TFR BKR TRP, Yph-TFR BKR TRP, Bph-TFR BKR TRP, Z2TorZ3T-EXT AR, START AR, CARR SEND, Any Trip, Fault_REC_TRIG Ir (max): 2.72 kA Iy (max): 0.04 kA Ib (max): 0.04 kA Vr (max): 130.68 kV Vy (max): 132.78 kV Vb (max): 130.69 kV DR Trigger Time:07-09-2026 23:20:14.237 START N, Any Start

	Ir (max): 0.38 kA Iy (max): 0.29 kA Ib (max): 0.50 kA Vr (max): 134.28 kV Vy (max): 135.00 kV Vb (max): 134.64 kV DR Trigger Time:07-09-2026 23:20:14.263 GND DIST Z1 OP GEN TRIP ON (VO9) Ir (max): 14.79 kA Iy (max): 0.27 kA Ib (max): 0.49 kA Vr (max): 131.84 kV Vy (max): 132.05 kV Vb (max): 131.80 kV DR Trigger Time:07-09-2026 23:32:06.025 START Y PH, DIST Start B, Any Start CARRIER RECIEVE, START N, DIST. Chan Recv RPh MAIN BKRTRIP, YPh MAIN BKRTRIP, BPh MAIN BKRTRIP, R-TRFR BKR TRIP, Y TRFR BKR TRIP, B TRFR BKR TRIP, 3 PH TRIP, START AR, Any Trip, Fault_REC_TRIG VTS Fast CARRIER RECIEVE, DIST. Chan Recv VTS Fast Ir (max): 0.92 kA Iy (max): 2.23 kA Ib (max): 0.58 kA Vr (max): 137.86 kV Vy (max): 133.74 kV Vb (max): 133.51 kV

KILPAUK - 230KV

	KILPAUK - 230KV
Time Sync Issue	**No**
DR Analysis	Supply Failure

ATHIPATU - 230KV

	ATHIPATU - 230KV

Time Sync Issue	**No**
DR Analysis	Supply Failure

230KV-NCTPS-KILPAUK-1

	KILPAUK - 230KV	**NCTPS - 230KV**
Time Sync Issue	**Yes**	**Yes**
DR Analysis	DR Trigger Time:07-09-2026 23:23:23.263 Any Start, Fault_REC_TRIG Any Trip, Any Trip A, Any Trip B, Any Trip C, Z1, DIST Fwd, DIST Sig. Send, DIST Start C Any Start, Z1, DIST Fwd, DIST Start C Ir (max): 0.20 kA Iy (max): 0.59 kA Ib (max): 0.43 kA Vr (max): 133.00 kV Vy (max): 133.38 kV Vb (max): 132.78 kV	GND DIST Z1 SRC1 50DD

230KV-NCTPS-SRIPERUMBADUR_TN-1

	NCTPS - 230KV	**SRIPERUMBADUR_TN - 230KV**
Time Sync Issue	**Yes**	**Yes**
DR Analysis	DR Trigger Time:07-09-2026 23:31:45.961 START N, Any Start START R PH, DIST Start A Ir (max): 2.59 kA Iy (max): 1.29 kA Ib (max): 0.60 kA	DR Trigger Time:07-09-2026 23:31:59.560 NEUTRAL TOC1 PKP NTRL DIR OC1 FWD GND DIST Z3 PKP ANY TRIP ON (VO23), GND

	Vr (max): 133.55 kV Vy (max): 133.51 kV Vb (max): 133.11 kV	DIST Z1 PKP B, GND DIST Z1 OP B, GND DIST Z2 PKP B, ANY TRIP ON (VO23), PUTT TX1, TRIP 1-POLE, MCB/TCB-BPH.TRIP ON (VO12) AR RIP LBB B-PH START ON (VO73) AR FORCE 3P TRIP H2 MCB/TCB-BPH.OPEN ON (CI2), MCB/TCB B-PH OPEN ON (VO100) NEUTRAL TOC1 PKP TRIP FORCE 3-POLE AR CLOSE BKR1, AR CLOSE BKR1, FORCE 3P TRIP ON (VO54), AR SHOT CNT=1, AR SHOT CNT>0 AR BLOCK ON (VO24) AR BKR1 BLK ANY TRIP ON (VO23), PH DIST Z3 PKP, ANY TRIP ON (VO23), SOTF/TOR OPTD ON (VO14) TRIP 3-POLE, MCB/TCB-APH. TRIP ON (VO11), MCB/TCB-BPH.TRIP ON (VO12), MCB/TCB-CPH.TRIP ON (VO13) PH DIST Z2 PKP BC ANY TRIP ON (VO23), PH DIST Z1 PKP BC, PH DIST Z1 OP BC, ANY TRIP ON (VO23), PUTT TX1 LBB 3PH START ON (VO75) LBB A-PH START ON (VO72) LBB B-PH START ON (VO73),

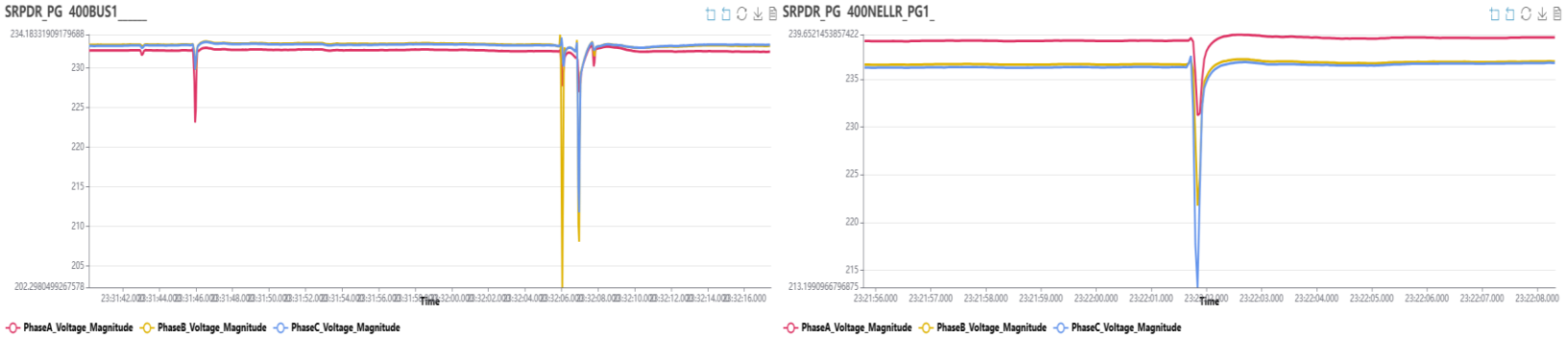
		LBB C-PH START ON (VO74) GND DIST Z2 PKP C, GND DIST Z3 PKP, H1 MCB/TCB-APH.OPEN ON (CI1), H2 MCB/TCB-BPH.OPEN ON (CI2), H3 MCB/TCB-CPH.OPEN ON (CI3), MCB/TCB A-PH OPEN ON (VO99), MCB/TCB B-PH OPEN ON (VO100), MCB/TCB C-PH OPEN ON (VO101) NEUTRAL TOC1 PKP H20 MCB/TCB HEALTHY ON (CI20) Ir (max): 0.91 kA Iy (max): 15.42 kA Ib (max): 15.45 kA Vr (max): 137.68 kV Vy (max): 132.43 kV Vb (max): 137.04 kV

230KV-GUMMIDIPOONDI-NCTPS-1

	GUMMIDIPOONDI - 230KV	**NCTPS - 230KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:07-09-2026 23:31:46.004 T1 Z3 Any Trip, Any Trip A, DIST. Chan Recv, A/R 1P In Prog Z2 External Trip A CB Aux A (52-A) Ir (max): 3.62 kA Iy (max): 1.17 kA Ib (max): 0.55 kA	DR Trigger Time:07-09-2026 23:31:45.949 Any Start Any Trip, DIST Trip A, DIST Fwd, Z1, R1-MCB R TRIP, R2-MCB Y TRIP, DIST Sig. Send, R3-MCB B TRIP, R4-TCB R TRIP, R5-TCB Y TRIP, R6-TCB B TRIP, R7-Z2-Z3T-EXT AR, R8-START AR, R10-CAR SEND, R11-START R, R14-START N, R15-GEN TRIP,

	Vr (max): 130.87 kV Vy (max): 129.88 kV Vb (max): 129.55 kV	R17-CAR SEND AUX, R18 PO SPARE R14-START N Ir (max): 12.23 kA Iy (max): 1.18 kA Ib (max): 0.55 kA Vr (max): 134.66 kV Vy (max): 140.79 kV Vb (max): 131.12 kV DR Trigger Time:07-09-2026 23:31:45.954 DIST TRIP On, GND DIST Z1 OP Ir (max): 12.13 kA Iy (max): 1.17 kA Ib (max): 0.55 kA Vr (max): 134.57 kV Vy (max): 140.87 kV Vb (max): 131.92 kV

12. A) PMU Analysis:



13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
TNPGCL	1. Single Bus operation at 230 kV NCTPS station needs review. 2. Non operation of A/R at NCTPS end in all lines needs review

14. Action Taken/Remedial Measures (सुधारात्मक उपाय): Nil

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details:

230kV NCTPS - Kilpauk feeder Normalized on 08.09.2026 at 00.00Hrs

230kV NCTPS - Gummidipoondi feeder Normalized on 08.09.2026 at 00.22Hrs
230kV NCTPS - Athipattu II feeder Normalized on 08.09.2026 at 02.11Hrs
Unit III Synchronized on 08.09.2026 at 14.50Hrs
Unit I Synchronized on 08.09.2026 at 16.46Hrs
230kV NCTPS - NCTPS Stage III feeder Normalized on 08.09.2026 at 17.02Hrs
230kV NCTPS - Sriperumbudur feeder Normalized on 08.09.2026 at 18.01Hrs
Unit II Synchronized on 08.09.2026 at 20.23Hrs

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl. No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	TANTRANSCO , TNPGCL
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	TANTRANSCO , TNPGCL
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	TNPGCL
4	**Any other non-compliance**	IEGC section 17.3	TANTRANSCO , TNPGCL

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

Annexure 1

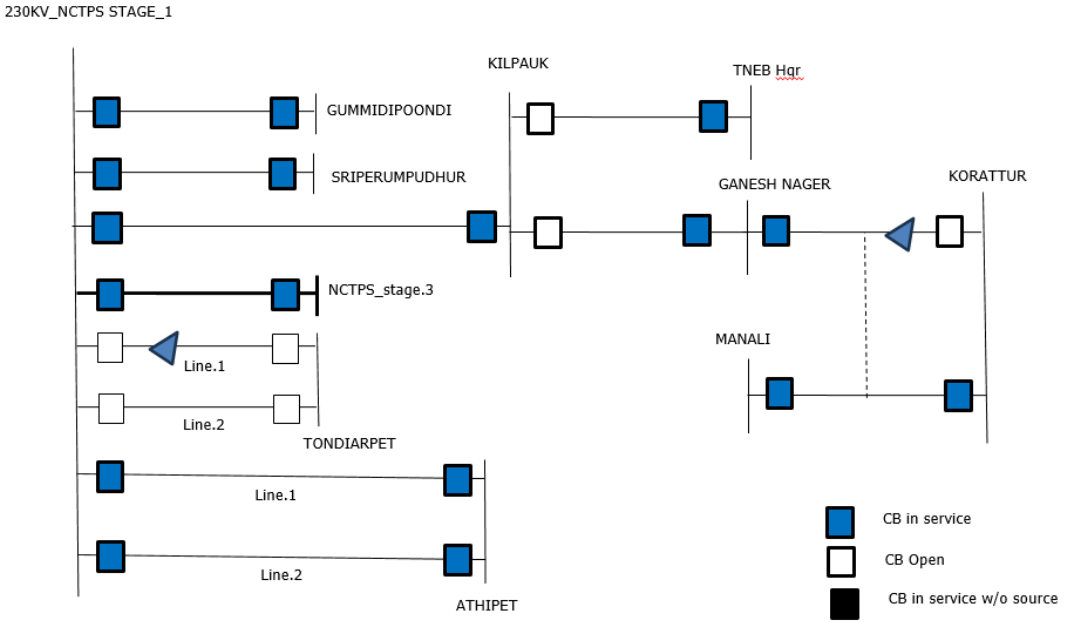
Sequence of Events as per SCADA

time	Event	Location
07-09-2026 23:20:25	NCTPS_S_1_230 CB 20252 (LINE TO NCTP7) BETWEEN	NCTP2_TG
07-09-2026 23:21:36	NCTPS_S_1_230 CB CB 20352 (GT-1) CLOSED	NCTP2_TG
07-09-2026 23:21:59	NCTPS_S_1_230 CB 20452 (LINE TO KLPK2) BETWEEN	NCTP2_TG
07-09-2026 23:31:57	NCTPS_S_1_230 CB 21352 (LINE TO GMDI2) OPEN	NCTP2_TG
07-09-2026 23:32:24	NCTPS_S_1_230 CB 21052 (LINE TO SPDR4) OPEN	NCTP2_TG
07-09-2026 23:32:24	NCTPS_S_1_230 CB CB 21452 (GT-3) OPEN	NCTP2_TG
07-09-2026 23:33:18	NCTPS_S_1_230 CB CB 20352 (GT-1) OPEN	NCTP2_TG
07-09-2026 23:33:24	NCTPS_S_1_230 CB CB 20352 (GT-1) INVALID	NCTP2_TG
07-09-2026 23:45:29	NCTPS_S_1_230 CB CB 20852 (GT-2) OPEN	NCTP2_TG

Deliberations:

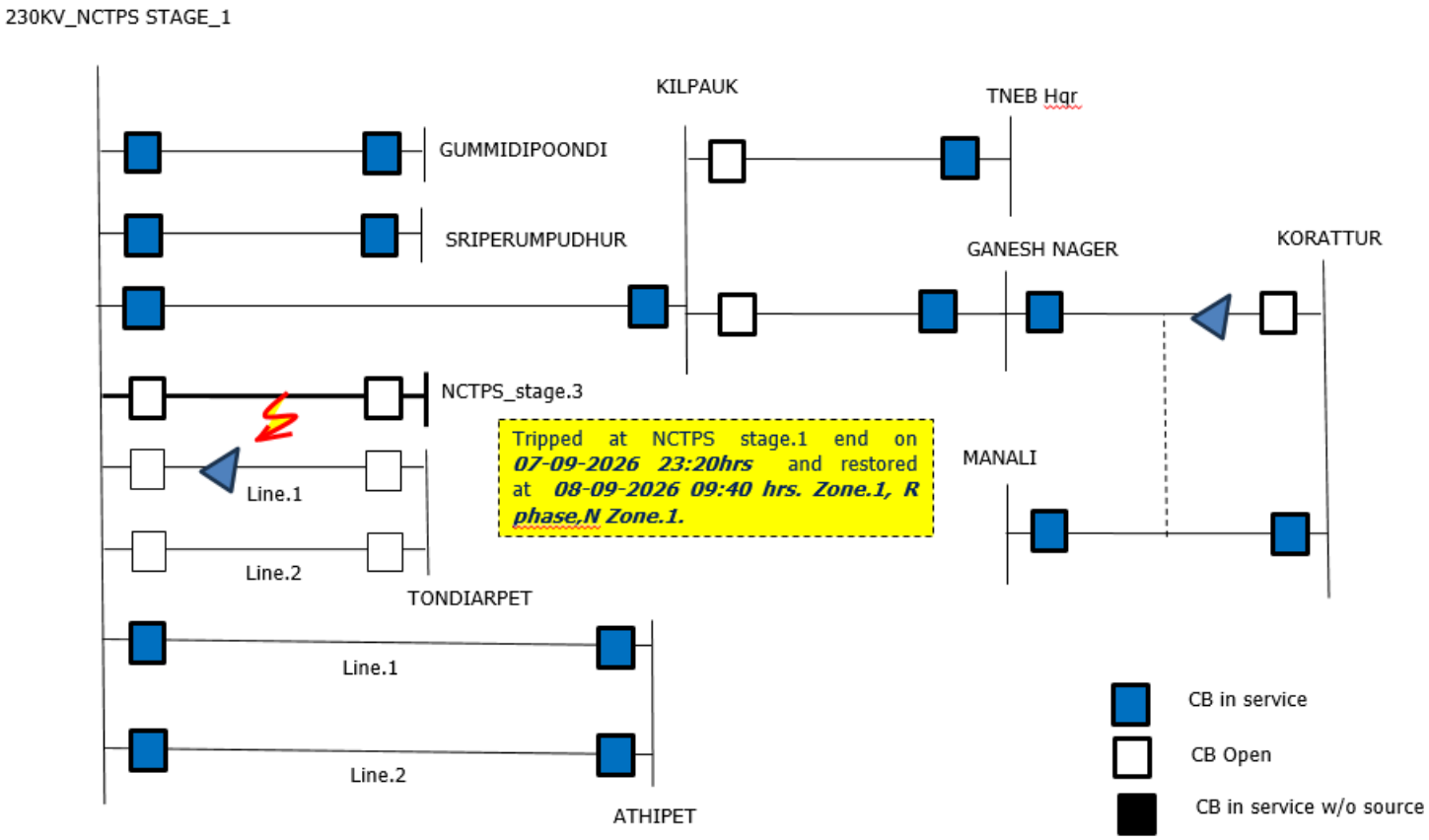
1. TANTRANSCO informed that, under the antecedent conditions, the 230 kV Tondiarpet Line-1 and Line-2 were under line clear for attending to the tower collapse reported on 28.06.2026 at 01:32 hrs. Restoration work was in progress. It was further informed that the tower at Location No. 12, situated inside Korattur Lake, had collapsed on 18.06.2026 at 16:19 hrs and had subsequently been replaced. The corroded tower at Location No. 11 had also been replaced. Replacement of the corroded tower at Location No. 10, near the Aavin sewage tank, was scheduled for completion by 31.10.2026.

Antecedent Conditions:

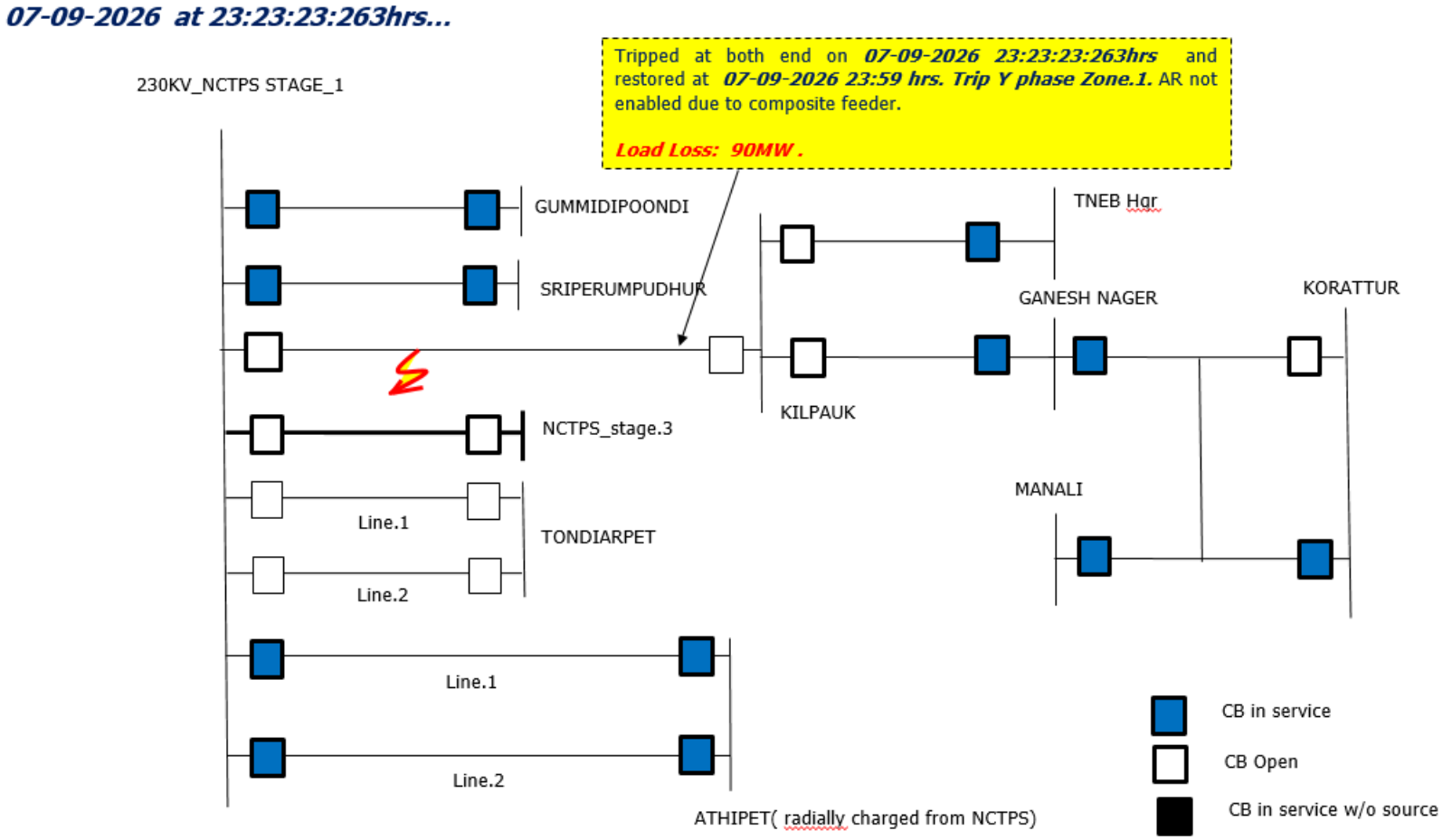


2. TANTRANSCO informed that on 07-09-2026 at 23:20 Hrs NCTPS Stage-1 to Stage-3 feeder Tripped at NCTPS stage.1 end on *07-09-2026 23:20hrs* and restored at *08-09-2026 09:40 hrs. Zone.1, R phase,N Zone.1.* AR not enabled due to Generation stations feeder.

07-09-2026 at 23:20hrs...

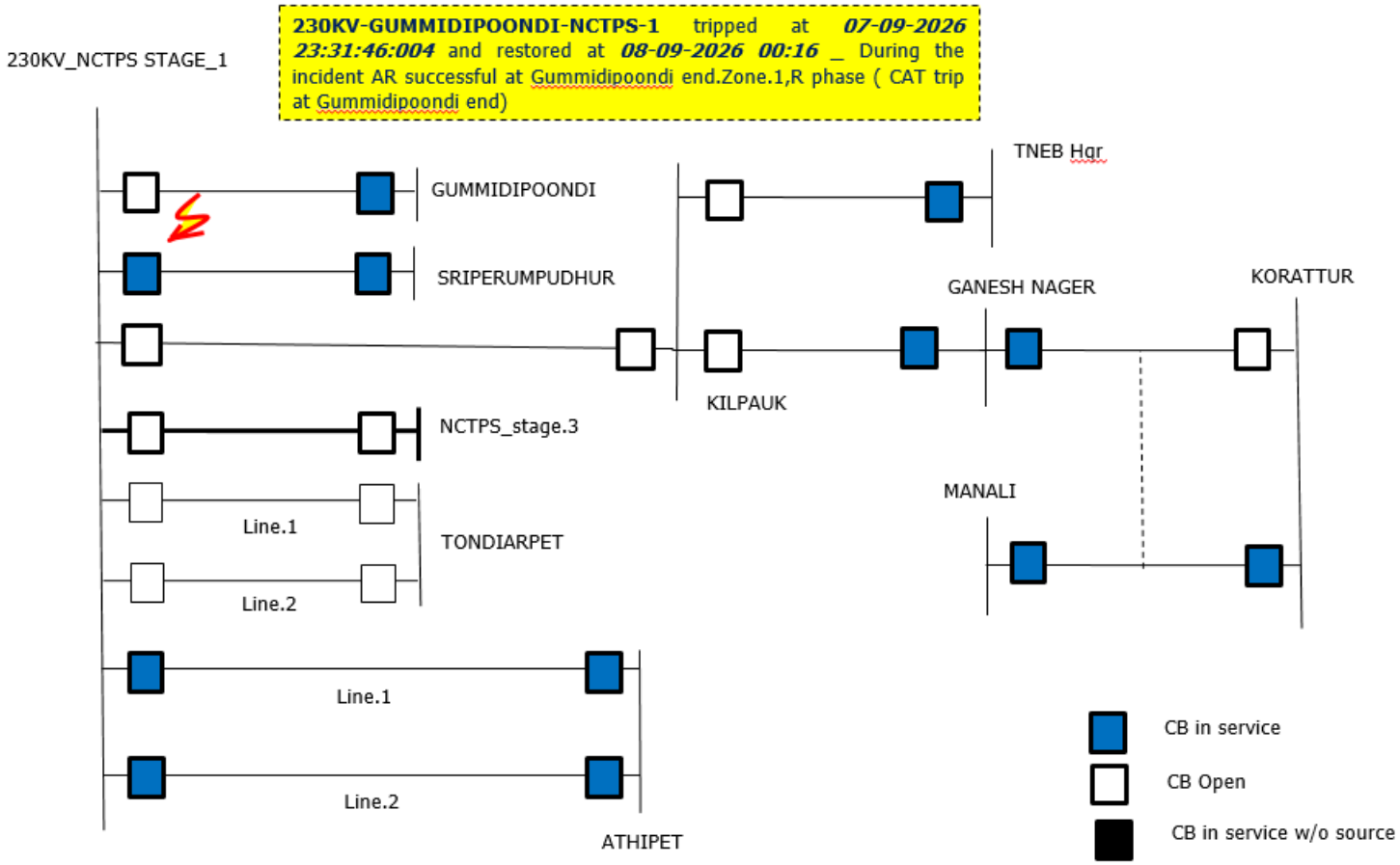


3. Later 230kV NCTPS Stage-1 to Kilpauk feeder Tripped at both end on *07-09-2026 23:23:23:263hrs* and restored at *07-09-2026 23:59 hrs. Trip Y phase Zone.1.* AR not enabled due to composite feeder.

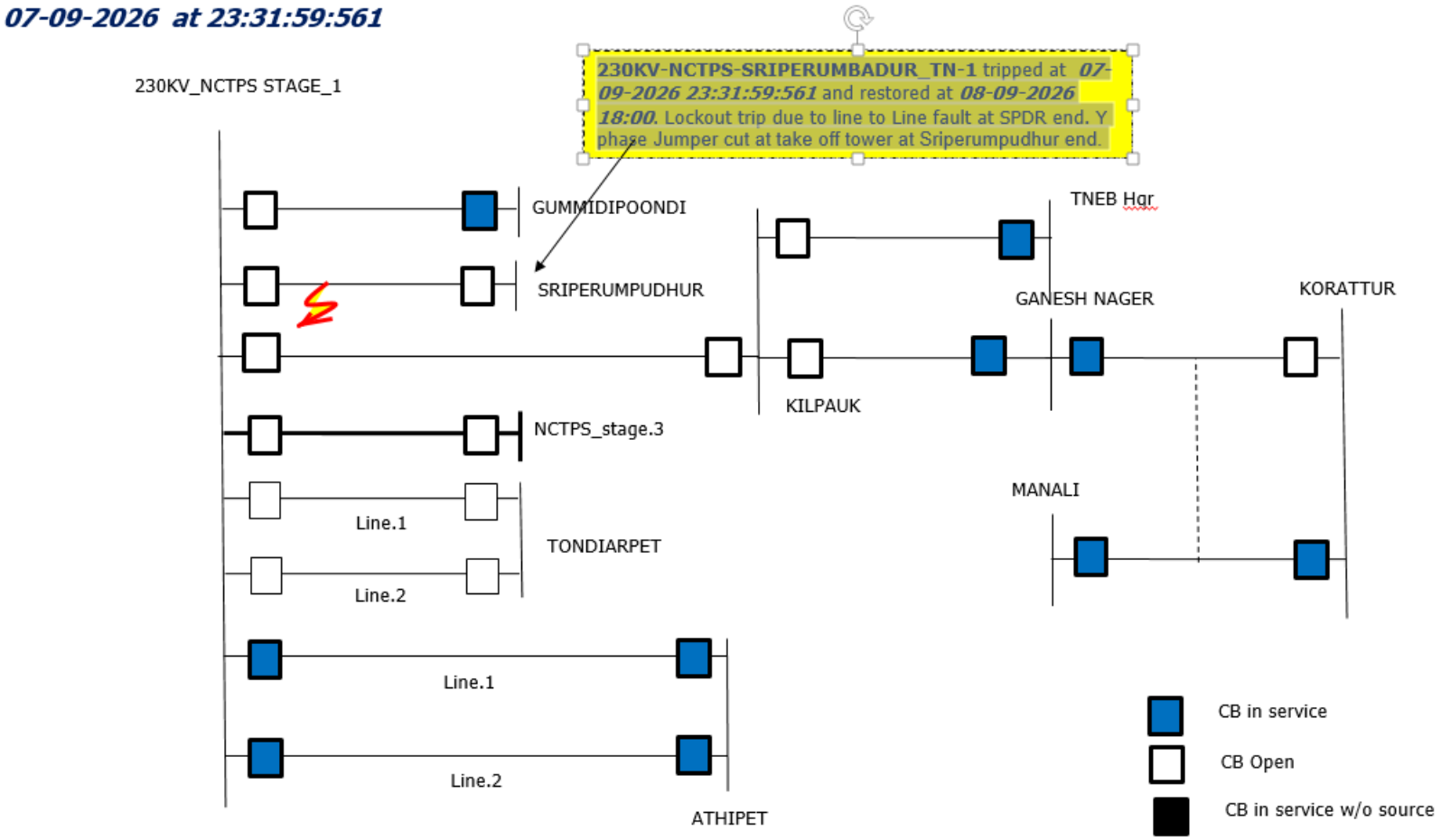


4. TANTRANSCO informed that 230KV-GUMMIDIPOONDI-NCTPS-1 tripped at *07-09-2026 23:31:46:004* and restored at *08-09-2026 00:16* _ During the incident AR successful at Gummidipoondi end.Zone.1,R phase (CAT trip at Gummidipoondi end). SRPC enquired the reason for non operation of Auto reclosure at NCTPS-stage-1 end. TANTRANSCO stated that due to old C&R panels Auto reclosure is not enabled at NCTPS end.

07-09-2026 at *23:31:46:004* hrs...

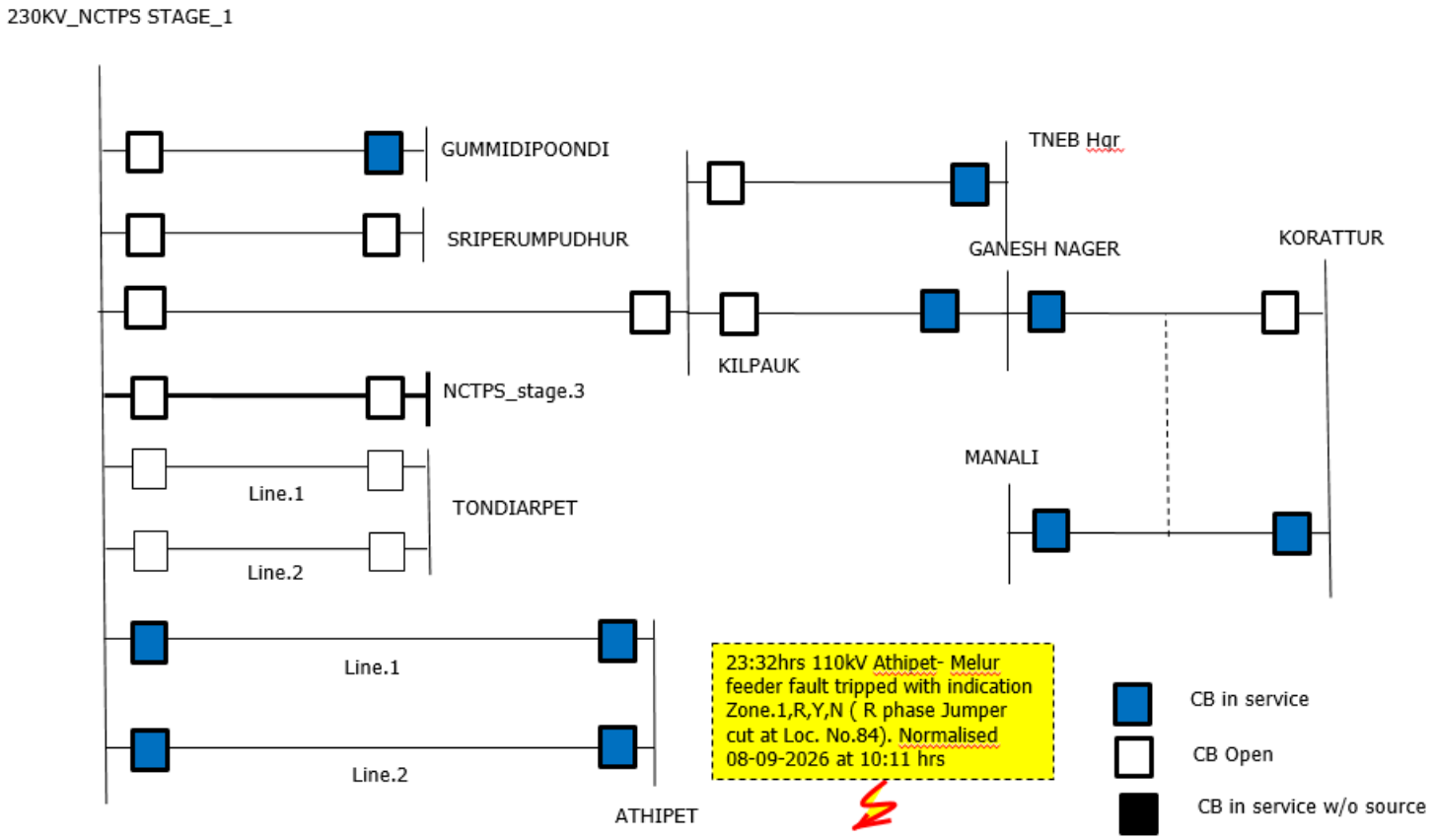


5. 230KV-NCTPS-SRIPERUMBADUR_TN-1 tripped at 07-09-2026 23:31:59:561 and restored at 08-09-2026 18:00. Lockout trip due to line to Line fault at SPDR end. Y phase Jumper cut at take off tower at Sriperumpudhur end.

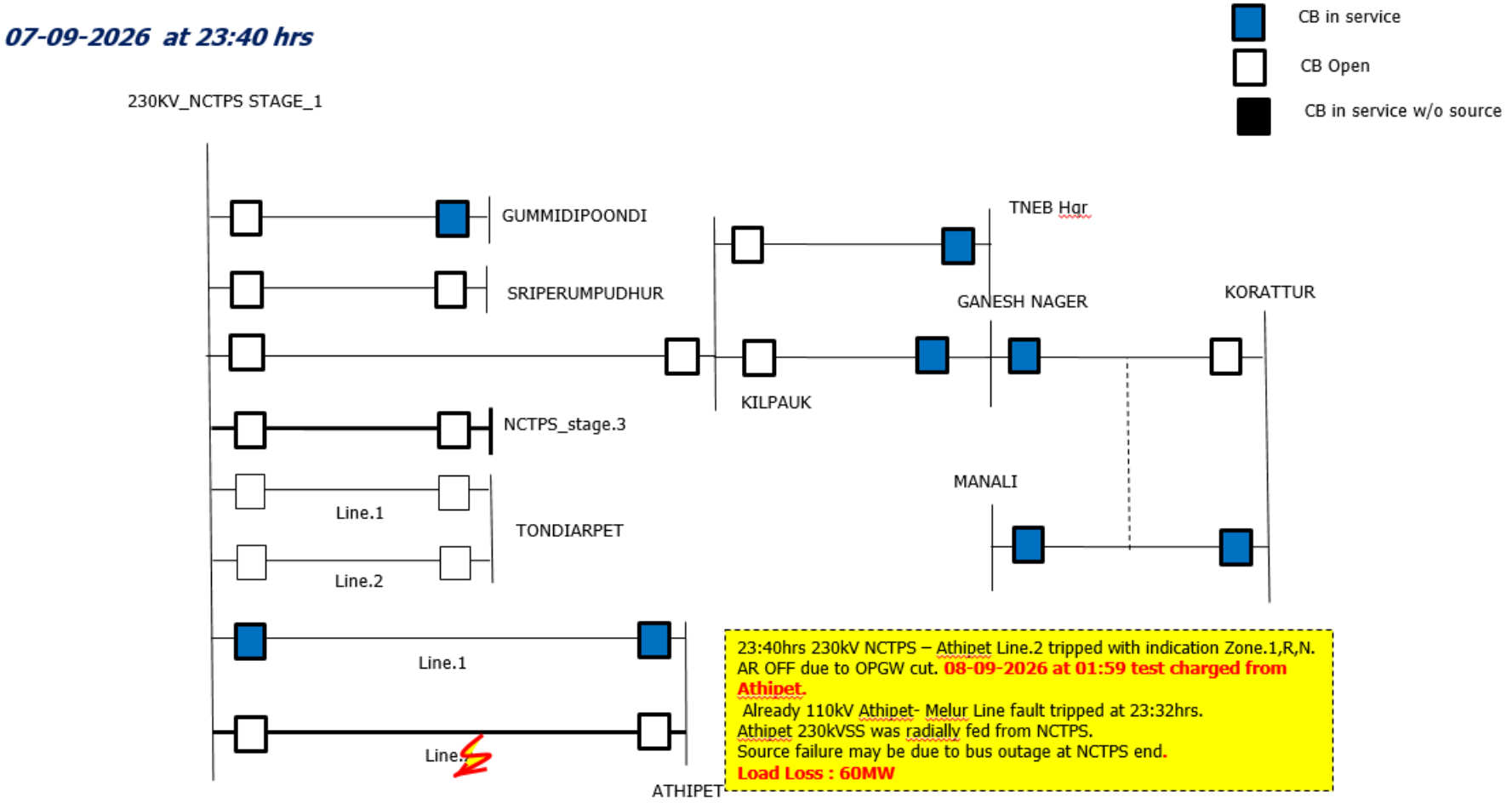


6. TANTRANSCO stated that on 23:32hrs 110kV Athipet- Melur feeder fault tripped with indication Zone.1,R,Y,N (R phase Jumper cut at Loc. No.84). Normalised 08-09-2026 at 10:11 hrs

07-09-2026 at 23:32 hrs

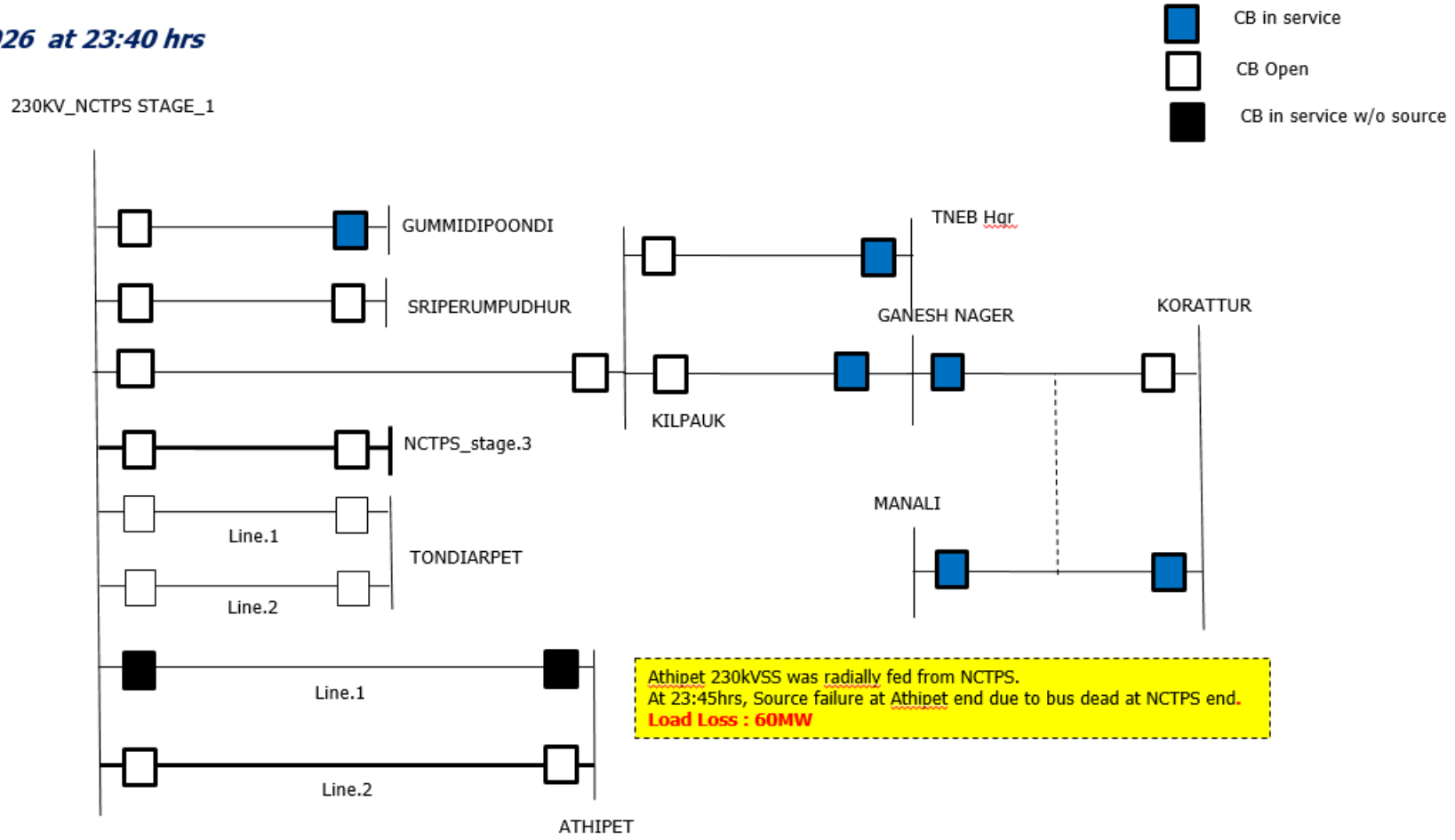


7. Furtther, on 07-09-2026 at 23:40hrs 230kV NCTPS – Athipet Line.2 tripped with indication Zone.1,R,N.AR OFF due to OPGW cut. **08-09-2026 at 01:59 test charged from Athipet.**Already 110kV Athipet- Melur Line fault tripped at 23:32hrs. Athipet 230kVSS was radially fed from NCTPS. Source failure may be due to bus outage at NCTPS end.



8. TANTRANSCO informed that Athipet 230kVSS was radially fed from NCTPS.At 23:45hrs, Source failure at Athipet end due to bus dead at NCTPS end.

07-09-2026 at 23:40 hrs



9. MS, SRPC enquired about the action taken to address the corrosion of towers on the Tondiarpet lines and sought details of the practices followed by PGCIL. PGCIL SR-II informed that zinc painting was currently being carried out on towers in the Southern Region. It was further informed that the matter would be taken up with the Corporate Engineering Division and that details of best practices for the maintenance of coastal towers would be shared.

10. AGM, NTECL informed that similar tower-corrosion issues were also being encountered by NTECL. It was stated that anti-corrosive RTV coating was now available for towers, with vendors offering a guaranteed service life of 10 years.

11. MS, SRPC enquired why the Kilpauk line was being kept open radially from Ganesh Nagar. It was observed that, when Kilpauk was connected to TNEB Headquarters, the power flow was from TNEB Headquarters towards Kilpauk, whereas the desired direction of power flow was from Kilpauk towards TNEB Headquarters. It was understood that the line was being kept open due to overloading.

12. SRPC highlighted that the supply to Ganesh Nagar was being extended from Manali through a tapping at 230 kV and advised TANTRANSCO to avoid such an arrangement, as it was in violation of CEA safety regulations. TANTRANSCO clarified that the line between Ganesh Nagar and Korattur had been kept open at the Korattur end due to the corrosion of certain towers. As a temporary arrangement to extend supply to Ganesh Nagar, a tapping from Manali had been provided. TANTRANSCO assured the forum that, after rectification of the corroded towers, the supply would be shifted back to Korattur and the tapping arrangement would be removed.
13. SRPC observed that cascading tripping of multiple lines was being experienced in the North Chennai area following the tripping of a single line and enquired about the reasons for such occurrences. TANTRANSCO informed that these incidents were being observed mainly during inclement weather conditions.
14. MS, SRPC suggested that an infrastructure review be carried out to examine the recurring cascading tripping incidents in the North Chennai area. TANTRANSCO was advised to submit a report on the review and proposed remedial measures to its higher management and SRPC.

Recommendations:

- ***TANTRANSCO to review the infrastructure upgrdation requirement at North Chennai area and submit report to SRPC/SRLDC and Higher management of TANTRANSCO.***
- ***TANTRANSCO to restore the 230kV Korattur – Ganaesh nagar line at earliest and remove the Tapping arrangement from Manali SS.***
- ***TANTRANSCO to ensure tied mode of operation of Kilpauk SS.***
- ***TANTRANSCO/TNPGCL to expedite the C&R PANEL renovation and enable Auto reclosure at NCTPS-Stage-1 end.***
- ***TANTRANSCO to provide the restoration details of 230kV NCTPS – Athipet Line.2 which was tripped on 07.09.2026 at 2340hrs.***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
5	Complete Outage of 220 kV Ramavaram SS , 220 kV Bavojipeta SS, 220 kV Rampachodavaram SS and 220kV Vepakayaladibba SS of APTRANSCO	During antecedent conditions, 220 kV Bavojipeta-Purushotapatnam line 1 & 2 and 220 kV Bommur-Vepakayaladibba line were under outage during the event. 220 kV Bavojipeta SS was radially feed from 220 kV Bommuru SS and 220 kV Rampachodavaram SS, 220kV Ramavaram SS, 220kV Vepakayaladibba SS were radially fed from 220 kV Bavojipeta SS. As per the reports submitted, a B-G fault on the 132 kV Ramavaram–Peddapuram-I feeder resulted in Z3 operation at Bommur due to a stuck circuit breaker mechanism. Consequently, the 220 kV Bommur–Bavojipeta line tripped three-phase at the Bommur end, leading to the complete outage of the 220 kV Bavojipeta, Rampachodavaram, and Ramavaram substations.	10-09-2026 11:28	0	160	GD - 1	24-09-2026	23-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. Event Summary (घटना का सारांश):

During antecedent conditions, 220 kV Bavojipeta-Purushotapatnam line 1 & 2 and 220 kV Bommur-Vepakayaladibba line were under outage during the event. 220 kV Bavojipeta SS was radially feed from 220 kV Bommuru SS and 220 kV Rampachodavaram SS, 220kV Ramavaram SS, 220kV Veoakayaladibba SS were radially fed from 220 kV Bavojipeta SS. As per the reports submitted, a B-G fault on the 132 kV Ramavaram–Peddapuram-I feeder resulted in Z3 operation at Bommur due to a stuck circuit breaker mechanism. Consequently, the 220 kV Bommur–Bavojipeta line tripped three-phase at the Bommur end, leading to the complete outage of the 220 kV Bavojipeta, Rampachodavaram, and Ramavaram substations.

2. **Time and Date of the Event (घटना का समय और दिनांक:** 10-09-2026 11:28
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** ANDHRA PRADESH
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	Pre-Event (घटना पूर्व)	Post Event (घटना के बाद)
Andhra Pradesh State Demand (MW)	13796	13770
Andhra Pradesh State Generation (MW)	7518	7495
Grid Frequency (Hz)	49.95	50.02
SR Demand (MW)	74005	74082
SR Generation (MW)	59818	59904

Pre and post data of 1 minute before and after the event

Elements under outage	1. 220KV-BAVOJIPETA-PURUSHOTAPATNAM-1 2. 220KV-BAVOJIPETA-PURUSHOTAPATNAM-2
Weather Condition (मौसम स्थिति)	Normal

At Bovojipeta SS:

Bus Configuration Type : Double Bus with Bus coupler

Bus Coupler Status : NA

Bus 1 Connected Elements	Bus 2 Connected Elements
	1. 220KV-BAVOJIPETA-PURUSHOTAPATNAM-1 2. 220KV-BAVOJIPETA-PURUSHOTAPATNAM-2 3. 220KV-BAVOJIPETA-RAMAVARAM-1 4. 220KV-BAVOJIPETA-RAMAVARAM-2 5. 220KV-BOMMUR-BAVOJIPETA-1 6. 220KV-BOMMUR-BAVOJIPETA-2 7. 220KV-RAMPACHODAVARAM-BAVOJIPETA-1

220 kV Purushottamapatnam–Bavojipeta line-1 & 2 were in hand tripped condition since 10:54 Hrs. from 09/09/26 as per the LD instructions.

6. **Load and Generation loss (लोड और जेनरेशन हानि):**

Generation Loss (MW)	Load Loss (MW)
0.0 MW	160.0 MW

7. Duration of interruption (रुकावट की अवधि): 0 hours, 10 minutes

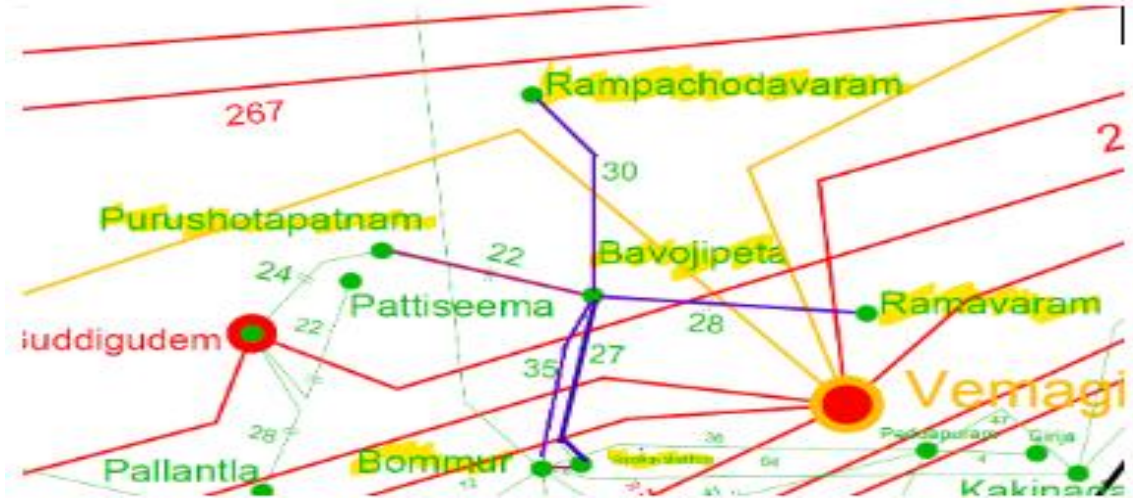
8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

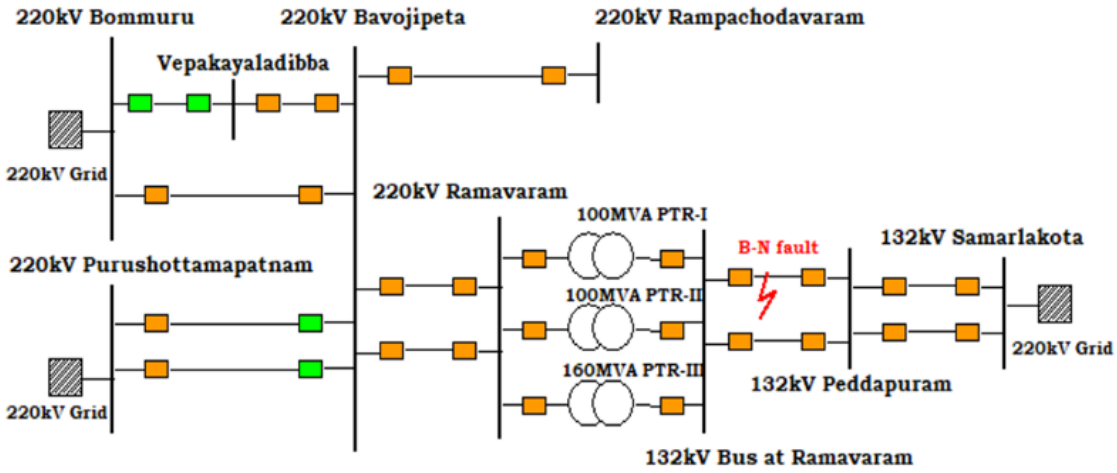
9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 220KV-BOMMUR-BAVOJIPETA-1

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

During antecedent conditions, 220 kV Purushottamapatnam–Bavojipeta line-1 & 2 and 220kV Bommuru Vepakayaladibba lines were kept in open position. As per the reports submitted, the triggering incident was B-G fault in the 132 kV Ramavaram Peddapuram Line-1. At Peddapuram end, the fault was sensed in zone-2 and the line tripped. At Ramavaram end, the fault was initially sensed in zone-2 but later sensed in zone-1, however, the circuit breaker failed to open due to a mechanism problem. During this event, Over current and Earth Fault protections of the 220/132 kV PTRs at Ramavaram picked up and these protections were expected to take more time to clear the fault on the 132 kV feeders, as their OC and EF settings were adopted duly considering the fault contribution from 220 kV Purushottamapatnam SS. Meanwhile, DEF protection picked up in 220 kV Bavojipeta Ramavaram feeder at Bavojipeta end and Zone-3 protection picked up in 220kV Bommuru Bavojipeta feeder at Bommuru end and continued feeding the fault due to non-clearance of the fault from the Ramavaram end. After 905 ms, DEF protection operated at the Peddapuram end on the 132 kV Ramavaram Peddapuram-II feeder and tripped the breaker, thereby clearing the fault from the Peddapuram end. Subsequently, after 1.2s, Zone-3 protection operated at 220 kV Bommuru end in the 220kV Bommuru Bavojipeta line and the line tripped resulting in loss of supply to 220 kV Bavojipeta SS which inturn led to loss of power supply to 220 kV Rampachodavaram SS, 220 kV Vepakayaladibba SS, and 220 kV Ramavaram SS.





11. DR Analysis:

RAMPACHODAVARAM - 220KV

	RAMPACHODAVARAM - 220KV
Time Sync Issue	**No**
DR Analysis	DR not triggered

BAVOJIPETA - 220KV

	BAVOJIPETA - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:10-09-2026 11:28:09.228 Any Start Z3 Ir (max): 0.24 kA Iy (max): 0.38 kA Ib (max): 0.80 kA Vr (max): 123.50 kV Vy (max): 124.45 kV Vb (max): 124.28 kV

RAMAVARAM - 220KV

	RAMAVARAM - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:10-09-2026 11:28:09.228 Any Start Z3 Ir (max): 0.24 kA Iy (max): 0.38 kA Ib (max): 0.80 kA Vr (max): 123.50 kV Vy (max): 124.45 kV Vb (max): 124.28 kV

220KV-BOMMUR-BAVOJIPETA-1

	BOMMUR - 220KV	**BAVOJIPETA - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:10-09-2026 11:28:09.201 Any Start Z3 Any Trip, AR Lockout Shot> 86-A OPTD BAR 86-B OPTD M2 Y-Ph TRIP M2 R-Ph TRIP Ir (max): 0.57 kA Iy (max): 0.87 kA Ib (max): 1.57 kA Vr (max): 122.42 kV Vy (max): 129.49 kV Vb (max): 138.09 kV	DR Trigger Time:10-09-2026 11:28:09.228 Any Start Z3 Ir (max): 0.24 kA Iy (max): 0.38 kA Ib (max): 0.80 kA Vr (max): 123.50 kV Vy (max): 124.45 kV Vb (max): 124.28 kV

12. A) PMU Analysis: Nil

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
APTRANSCO	1. Non opening of breaker in 220kV Ramavaram Peddapuram Line-1 2. DEF and zone-3 settings co-ordination in 220kV/33kV PTRs at Ramavaram , 220kV lines at Bavojipeta and Bommuru needs review

14. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Constituent	Remedial Actions
APTRANSCO	1. At Ramavaram end, CGL make CB of 132kV Peddapuram line-1 mechanism problem informed to service agency and the same will be attended soon.

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details:

220kV Ramavaram-Purushottamapatnam-1&2 were taken into service at 11:37 Hrs and 11:38 Hrs respectively on the same day.220kV Bommuru-Bavojipeta feeder charged at 11:51 Hrs on the same day.

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl. No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	APTRANSCO
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	APTRANSCO

4	**Any other non-compliance**	IEGC section 17.3	

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

Annexure 1

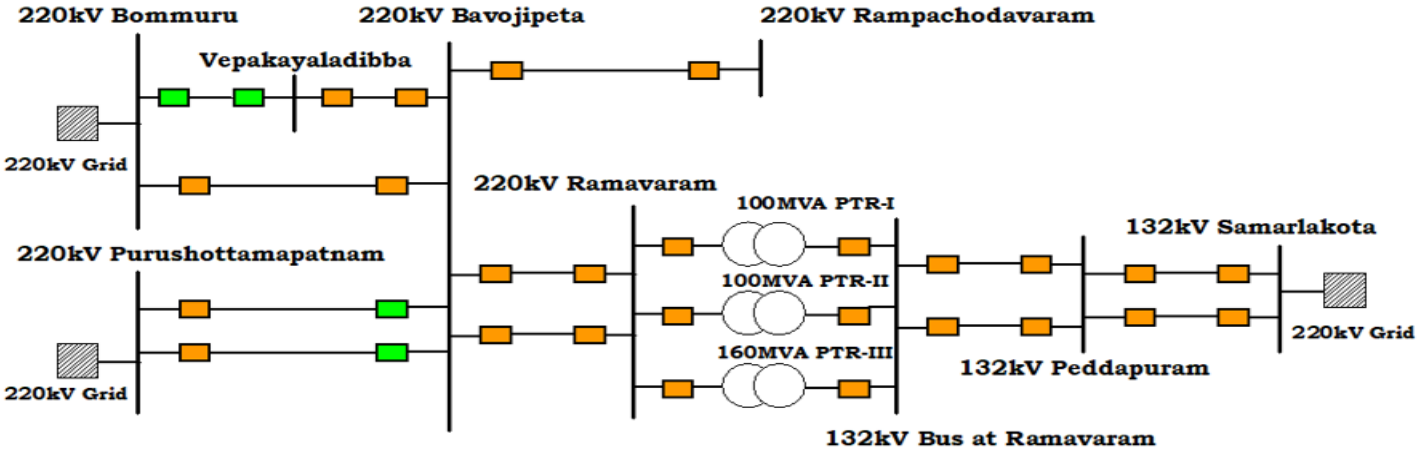
Sequence of Events as per SCADA

time	Event	Location
10-09-2026 11:28:23	BOMMURU 220 CB 20252 (LINE TO BVPT2) OPEN	BMRU2_AT

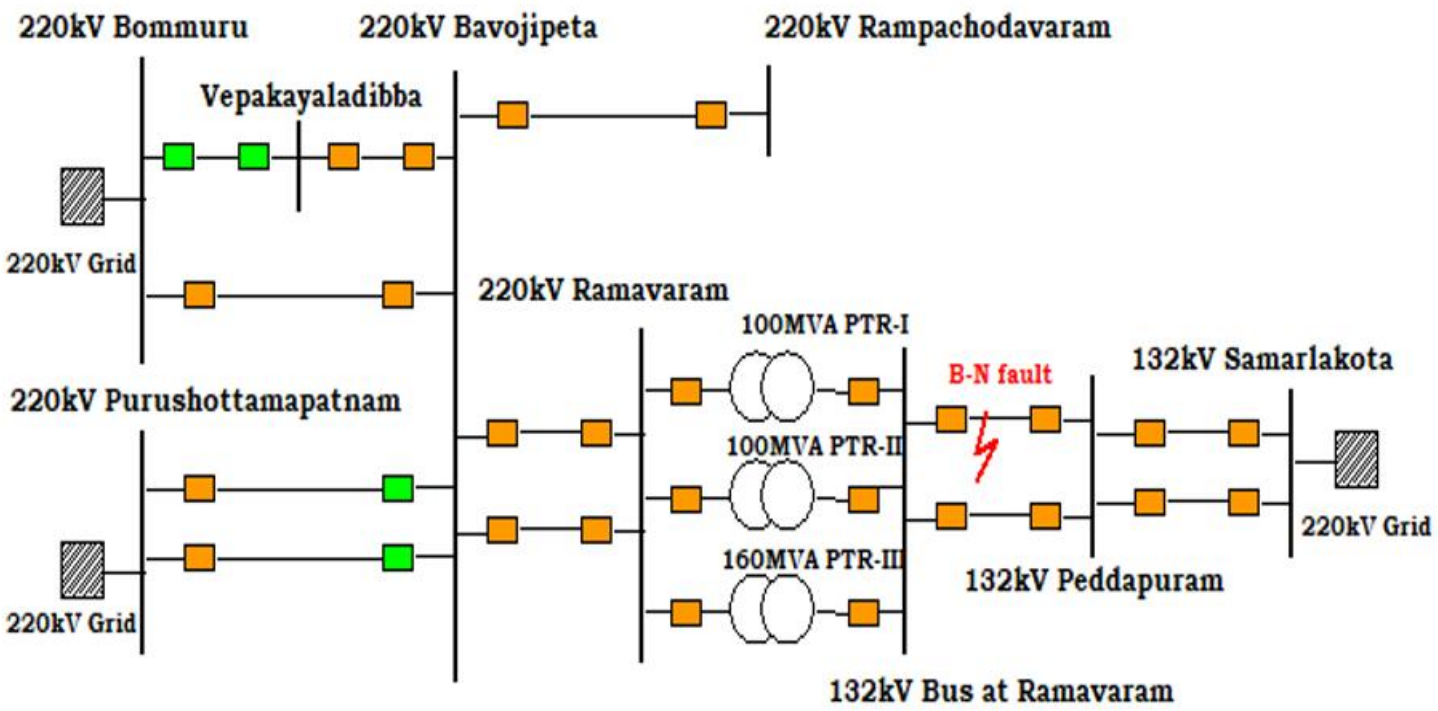
Deliberations:

1. APTRANSCO stated that in the Antecedent to the incident, 220kV Bavojipeta- Purushottamapatnam line-1&2 were not in service from 09/09/26 at 10:54 Hrs as per the instructions of APSLDC. 220kV Bommuru-Vepakayaladibba SS kept open at both the ends due problem in UG cable.

Antecedent conditions



2. APTRANSCO stated that At 11:28:08:957 Hrs, slow developing high resistance fault started in 132kV Ramavaram- Peddapuram line-1 (Later, on patrolling of line, it is found that, a palm oil dry leaf fallen and came into induction zone of bottom conductor between Loc. 7-8).



3. APTRANSCO informed that for the above fault, the following protections were operated/started at the substations mentioned as below.
4. *At 132kV SS, Peddapuram*: On 132kV Ramavaram line-1, Zone-2 protection operated and tripped the CB.
5. *At 220kV SS, Ramavaram:* On 132kV Peddapuram line-1, Zone-2 protection (followed by Zone-1 protection) operated at Ramavaram end, but the CB was not opened due to problem in mechanism. On 220/132kV PTRs, Over current and EF protections were started to clear the downstream fault, and these protections will take more time to clear the fault on 132kV feeders as their OC and EF settings adopted duly considering the fault contribution of 220kV Purushottamapatnam SS. During the incident, Purushottamapatnam line-1&2 were kept in open position.
6. *At 220kV SS, Bavojipeta:* On 220kV Ramavaram-1&2 feeders, DEF started at Bavojipeta end and continued as the fault was not cleared from Ramavaram end. DEF protection may take more take more time as the fault current is low and DEF protection was set to coordinate with Zone-4.
7. *At 220kV SS, Bommuru*: Zone-4 protection started (due to outfeed effect) at Bommuru SS and continued as the fault was not cleared from Ramavaram

end.

8. **After 905mS**, EF protection operated at Peddapuram end on 132kV Ramavaram line-2 and the CB was tripped. Hence fault was cleared from Peddapuram end.**After 1.2 Sec**, Zone-4 protection operated at 220kV Bommuru SS on Bavojipeta feeder. This incident resulted in loss of incoming supply to 220kV Rampachodavaram, 220kV Vepakayaladibba, 220kV Bavojipeta, 220kV Ramavaram SS. **Load loss:** Total load loss observed to be 160MW in the above incident.
9. **Remedial measures taken**: At Ramavaram end, CGL make CB of 132kV Peddapuram line-1 mechanism problem rectified on 29/09/2026.
10. Restoration details:220kV Ramavaram-Purushottamapatnam-1&2 were taken into service at 11:37 Hrs and 11:38 Hrs respectively on the same day.220kV Bommuru-Bavojipeta feeder charged at 11:51 Hrs on the same day.
11. SRPC Enquired why the Bommuru end relay encroached into lower voltage level of transformer at 220/132kV ramavaram SS . APTRANSCO stated that due to non availability of other source feeder during that instance , Bommuru end need to feed fault current and load current also. So Zone-4 (Forward zone as per APTRANSCO philosophy) operated.
12. SRPC highlighted the DR time sync issue at Bommuru SS and requested APTRANSCO to rectify the same.

Recommendations:

- ***APTRANSCO to rectify the DR time sync issue at Bommuru SS.***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
6	Complete outage of 220 kV Vizag SWS of APTRANSCO	As per the reports submitted, the triggering incident was failure of B-phase CT in 220kV Vizag SWS Gangavaram line causing fault in 220kV Bus-2 of Vizag SWS. Immediately, 220kV Bus-1 and Bus-2 operated tripping all elements connected to the buses which further led to complete outage of 220 kV Vizag SWS.	14-09-2026 04:57	0	0	GD - 1	28-09-2026	29-09-2026	Not Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. **Event Summary (घटना का सारांश):**

220kV Vizag Steel is radially connected to 220 kV Vizag SWS. As per the reports submitted, the triggering incident was failure of B-phase CT in 220kV Vizag SWS Gangavaram line causing B-G fault in 220kV Bus-2 of Vizag SWS and subsequent failure of R-phase CT in 220kV VSS MRS Line-1 causing R-G fault in 220kV Bus-1 of Vizag SWS. Immediately, 220kV Bus-1 and Bus-2 operated tripping all elements connected to the buses which further led to complete outage of 220 kV Vizag SWS which intrun led to complete outage of 220kV Vizag Steel SS

2. **Time and Date of the Event (घटना का समय और दिनांक:** 14-09-2026 04:57
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** ANDHRA PRADESH
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
Andhra Pradesh State Demand (MW)	10447	10347
Andhra Pradesh State Generation (MW)	6632	6628

Grid Frequency (Hz)	49.99	50.05
SR Demand (MW)	50621	50661
SR Generation (MW)	44856	45001

Pre and post data of 1 minute before and after the event

Elements under outage	
Weather Condition (मौसम स्थिति)	Cloudy

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)	Load Loss (MW)
0.0 MW	168.0 MW

7. Duration of interruption (रुकावट की अवधि): 1 hours, 24 minutes

8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण):

Equipment Type	Equipment make
CT	ABB, Sl.No 2114065,Y.O.M:2014,D.O.C:25.09.2016

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

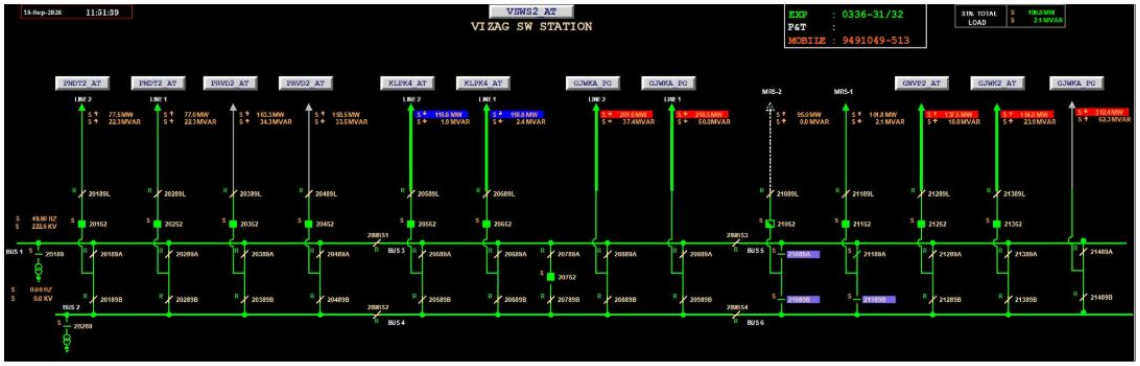
1. 400KV/220KV GAZUWAKA-ICT-1
2. 400KV/220KV GAZUWAKA-ICT-2
3. 400KV/220KV GAZUWAKA-ICT-3
4. 220KV-VIZAG_SWS-GANGAVARAM-1
5. VIZAG_SWS - 220KV - Bus 2
6. 220KV-VIZAG_SWS-PARAVADA-1
7. 220KV-VIZAG_SWS-PARAVADA-2
8. 220KV-VIZAG_SWS-PENDURTHI-1

9. 220KV-VIZAG_SWS-PENDURTHI-2
10. 220KV-VIZAG_STEEL-VIZAG_SWS-1
11. 220KV-VIZAG_STEEL-VIZAG_SWS-2

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

220 kV Vizag_SWS have a double bus with a bus coupler busbar arrangement as shown below. As per the reports submitted, the triggering incident was a B-G fault in 220kV Vizag_SWS Gangavaram line caused by B-phase CT failure, which caused a B-G fault in 220kV Bus-2 of 220 kV Vizag_SWS. Immediately, 220kV Bus-2 BBP operated and all elements connected to Bus-2 tripped. Subsequently, R-ph CT flashover was observed at Vizag SWS in 220kV Vizag_SWS-MRS-1 line at Vizag_SWS end causing an R-G fault in 220kV Bus-1 of 220 kV Vizag_SWS. Immediately, 220kV Bus-1 BBP operated and all elements connected to 220kV Bus-1 tripped. This led to complete outage of 220kV Vizag SWS.

At Gangavaram end, the B-G fault was sensed in Zone 1, and the B pole opened. However, within the A/R dead time, Y-G fault was observed in zone-1 and the line tripped. It is suspected to have zone-1 overreach at Gangavaram end for B-G fault at Viag SWS due to B-phase CT failure.



11. DR Analysis:

400KV/220KV GAZUWAKA-ICT-1

	GAZUWAKA - 400KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:14-09-2026 04:57:47.116 IN>2 Start, IN>1 Start I>2 Start ZONE2_START, ZONE3_START I>1 Start IN>2 Start, IN>1 Start

	Ir (max): 0.32 kA Iy (max): 0.47 kA Ib (max): 2.32 kA Vr (max): 239.92 kV Vy (max): 253.63 kV Vb (max): 240.99 kV

400KV/220KV GAZUWAKA-ICT-2

	GAZUWAKA - 400KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:14-09-2026 04:57:47.152 HV_ MCBO, HV_ TCBO HV_ MCBO, HV_ TCBO HV_ MCBO, HV_ TCBO HV_ TCBO HV_ MCBO GRA_OPD HV_ TCBO HV_ MCBO HV_ MCBO HV_ TCBO Ir (max): 0.00 kA Iy (max): 0.00 kA Ib (max): 0.00 kA Vr (max): 0.05 kV Vy (max): 0.05 kV Vb (max): 0.04 kV

400KV/220KV GAZUWAKA-ICT-3

	GAZUWAKA - 400KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:14-09-2026 04:57:47.259 IV_MCBO Ir (max): 0.55 kA Iy (max): 0.38 kA Ib (max): 1.46 kA Vr (max): 241.42 kV Vy (max): 244.29 kV Vb (max): 246.40 kV

VIZAG_SWS - 220KV

	VIZAG_SWS - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:14-09-2026 04:57:47.114 ZA IIN ALM, ZB IIN ALM CHECK ZONE TR PGCIL3_CB_OPN ZB COMMON TR GGVM TRIP, BC TR, MRS2 TRIP, PGCL1_TR, PGCL2 TRIP, KPK1 TRIP, PWD-1 TRIP, PDT2 PGCIL1_CB_OPN BC_CB_OPN GGVM_3PH_INI KPK1_3PH_INI, PWD-1_3PH_INI, PDT2_3PH_INI PWD-1_CB_OPN KPK1_CB_OPN MRS2_CB_OPN PDT2_CB_OPN GGVM_CB_OPN PGCIL3_CB_OPN, PGCL2_3PH_INI BC_CB_OPN PWD-2_CB_OPN, GWK_3PH_INI, KPK2_3PH_INI GWK_CB_OPN PWD-2_3PH_INI MRS1_CB_OPN KPK2_CB_OPN PDT1_CB_OPN MRS1_3PH_INI Ir (max): 5.96 kA Iy (max): 14.58 kA Ib (max): 22.58 kA DR Trigger Time:14-09-2026 04:57:48.308 ZA IIN ALM, ZA COMMON TR, CHECK ZONE TR GWK TRIP, BC TR, MRS1 TRIP, PGCL3 TRIP, KPK2 TR, PWD-2 TRIP, PDT1 TRIP

	PWD-2_CB_OPN, GWK_3PH_INI, KPK2_3PH_INI GWK_CB_OPN PWD-2_3PH_INI MRS1_CB_OPN KPK2_CB_OPN PDT1_CB_OPN BRF_RETRIP MRS1 LBB TR MRS1_3PH_INI Ir (max): 3.91 kA Iy (max): 0.00 kA Ib (max): 0.00 kA

220KV-VIZAG_SWS-GANGAVARAM-1

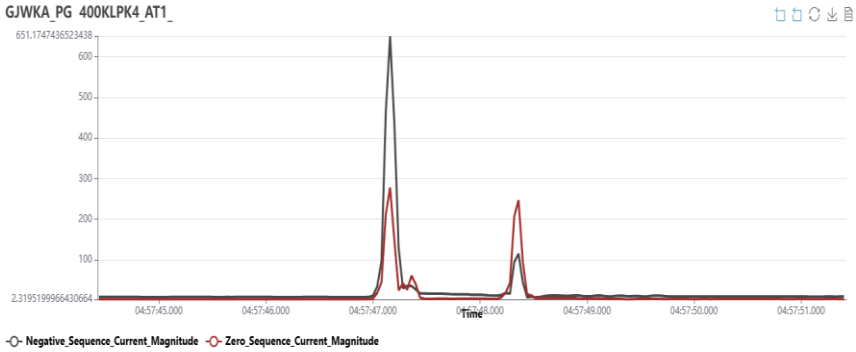
	VIZAG_SWS - 220KV	**GANGAVARAM - 220KV**
Time Sync Issue	**No**	**Yes**
DR Analysis	DR Trigger Time:14-09-2026 04:57:47.138 TEF1-2NDHARMD PHS-STFWL3, PHS-STFWPE, PHS START TEF1-STFW TEF1-STRV, BRC START 96 OPTD AR-PREP3P 86B OPTD 86A OPTD CB R OPEN CB B OPEN TEF1-2NDHARMD CARR REC CH1 L1 FUSE FAIL FUSE_FAIL CARR REC CH1 Ir (max): 0.30 kA Iy (max): 0.47	DR Trigger Time:14-09-2026 04:56:53.418 21_STFWL3, 21_STFWPE 67N_START 21_STZ4 21_STZ3 21_STZ2 21_TRZ1, 21_STZ1, ZCOM_CS, QA1_START_AR 21_BPH_FAULT, COMMON_TRIP, B-PH_TRIP 1PH TRIP M2 CB_B-PH_OPEN 67N_START 21_STFWL2, 21_STFWPE, PSB_ZOUT 21_TRZ1, 21_STZ1, 21_STZ2, 21_STZ3, 21_STZ4, QA1_START_AR

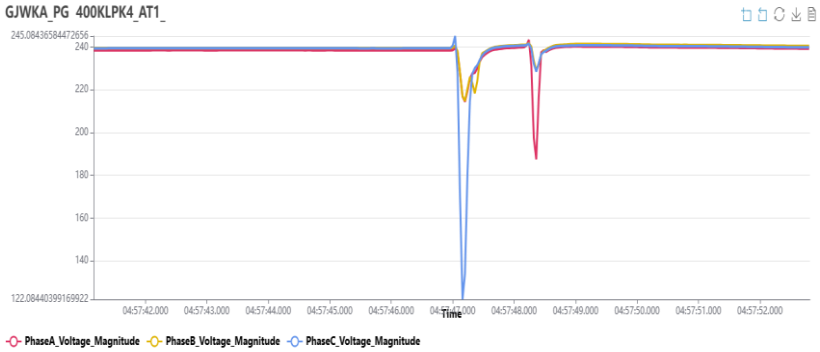
	kA Ib (max): 12.27 kA Vr (max): 133.23 kV Vy (max): 134.24 kV Vb (max): 133.46 kV	21_YPH_FAULT, Y-PH_TRIP, 3-PH_TRIP QA1_INHIBIT_AR, 3PH TRIP M2 AR_PREP3P 1PH TRIP M2 86A/B OPTD CB_Y-PH_OPEN CB_R-PH_OPEN FSD1-BLKZ, FSD1-BLKU Ir (max): 0.31 kA Iy (max): 9.84 kA Ib (max): 9.42 kA Vr (max): 133.24 kV Vy (max): 134.99 kV Vb (max): 133.62 kV

VIZAG_STEEL - 220KV

	VIZAG_STEEL - 220KV
Time Sync Issue	**No**
DR Analysis	Loss of power supply

12. A) PMU Analysis:





From the PMU plot, B-G fault followed by R-G fault can be observed without any delayed fault clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
APTRANSCO	1. B-phase CT failure and R-phase CT failure at Vizag SWS. 2. Zone-1 over reach at Gangavaram end needs review during B-G fault in Vizag SWS.

14. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Constituent	Remedial Actions
APTRANSCO	All the feeders are charged by isolating the faulty feeder and proposed to replace the failed CT with new CT

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details:

14/09/2026 06:21

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl .No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	APTRANSCO
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	APTRANSCO, PGCIL SR-1
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	APTRANSCO
4	**Any other non-compliance**	IEGC section 17.3	APTRANSCO

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

Annexure 1

Sequence of Events as per SCADA

time	Event	Location
14-09-2026 04:58:13	VIZAG SW STATION CB 20452 (LINE-2 TO PRVD2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 21352 (LINE TO GJWK2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 20552 (LINE-2 TO KLPK4) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 20352 (LINE-1 TO PRVD2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 21052 (LOAD-2 MRSC2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 21152 (LOAD-1 MRSC2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 20252 (LINE-1 TO PNDT2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 20152 (LINE-2 TO PNDT2) OPEN	VSWS2_AT
14-09-2026 04:58:13	VIZAG SW STATION CB 21252 (LINE TO GNVP2) OPEN	VSWS2_AT

Deliberations:

1. APTRANSCO presented the bus configuration of the 220 kV VSS during the antecedent conditions. The bus-coupler was in the closed condition. The connected elements were as follows:

220kV Bus-1	220kV Bus-2
Gazuwaka	MRS-2
MRS-1	Kalapaka-1
Pendurthy-1	Pendurthy-2
Parawada-2	Parawada-1
Kalapaka-2	Gangavaram

500MVA ICT-3	315MVA ICT-1
	315MVA ICT-2
Bus coupler was in closed condition	

2. APTRANSCO informed that the initiating incident occurred at 04:57:47.104 hrs due to the failure of the B-phase CT of the 220 kV Gangavaram feeder. The failed CT was of ABB make, manufactured in 2014 and commissioned in 2016.
3. *Operation of protections*: For the above B-N fault, at VSS end: Bus bar protection of 220kV Bus-2 (ABB make REB670 relay) operated and tripped all the connected elements.
4. At Gangavaram end: Zone-2 protection started and after tripping of CB at VSS end, fault contribution increased from Gangavaram end Zone-1 trip operated and tripped B-Ph CB. Immediately Y-ph fault occurred (may be due to spreading of oil from failed B-Ph CT at VSS switchyard end) and hence R & Y Ph CBs also tripped.Oil from the failed B-Ph CT in Gangavaram feeder bay, spread into adjacent R-Ph Bay of 220kV MRS-1 (from CT to CB) bay resulting in R-G fault. For this R-G fault Bus bar protection of 220kV Bus-1 (ABB make REB670 relay) was operated (after 1.2 sec approximately from the inception of first fault in B-Ph CT of Gangavaram feeder bay) and tripped all the connected elements at VSS end. But the fault continued to be contributed by MRS end. Hence LBB re-trip and backtrip operated at VSS end.As DT was not configured for LBB backtrip at VSS end, DT was not extended to MRS end.
5. APTRANSCO informed that the protection systems at the MRS end pertained to M/s RINL. It was further stated that RINL had informed that no protection had operated at its end and that neither disturbance recorder (DR) nor event logger (EL) records were available for the incident
6. Remedial Action Taken: APTRANSCO informed that the failed B-phase CT in the 220 kV Gangavaram feeder bay was replaced with a healthy CT on 6 September 2026. The replacement CT was of CGL make, bearing Serial No. 65915, manufactured in 2017.
7. SRPC enquired about the non-availability of DR and EL records at the MRS end. APTRANSCO reiterated that the MRS end belonged to Visakhapatnam Steel Plant and that it had been informed that no protection had operated at that end.
8. SRPC enquired about the availability of line differential protection (LDP) for the VSS–MRS feeder. APTRANSCO informed that implementation of LDP was in progress in accordance with the earlier recommendations of PSAG.
9. MS, SRPC recommended that a third-party protection audit be conducted at the MRS end. APTRANSCO was requested to take up the issue with M/s Visakhapatnam Steel Plant through the concerned SLDC regarding non-compliance with the requirements for submission of DR and EL records and the applicable provisions of the IEGC Regulations.
10. NLCIL suggested that APTRANSCO to test the CT in accordance with the procedure specified in **Annexure-22**.

Recommendations:

- ***APTRANSCO to take non compliance of IEGC regulation by M/s RINL through AP SLDC.***
- ***M/s RINL to submit Third Party protection audit report of MRS station with in 90 days.***
- ***APTRANSCO to expedite the commission of Line differential protection for 220kV VSS to MRS lines.***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
7	Complete Outage of 220kV Lingapur SS of KPTCL	During antecedent conditions, 220kV Lingapur Bus-2 was in idle charged condition and all elements were connected to 220kV Lingapur Bus-1. As per the reports submitted, the triggering incident was jumper cut between CT and CB in 220kV Jindal Lingapur Line-1 and the jumper fell on 220kV Bus-1 causing RYB fault in 220kV Lingapur Bus-1. This led to tripping of all lines connected to 220kV Lingapur Bus-1 which further led to complete outage of 220kV Lingapur SS	14-09-2026 14:03	3	3	GD - 1	01-10-2026	24-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. **Event Summary (घटना का सारांश):**

During antecedent conditions, 220kV Lingapur Bus-2 was in idle charged condition and all elements were connected to 220kV Lingapur Bus-1. As per the reports submitted, the triggering incident was jumper cut between CT and CB in 220kV Jindal Lingapur Line-1 and the jumper fell on 220kV Bus-1 causing RYB fault in 220kV Lingapur Bus-1. This led to tripping of all lines connected to 220kV Lingapur Bus-1 which further led to complete outage of 220kV Lingapur SS

2. **Time and Date of the Event (घटना का समय और दिनांक:** 14-09-2026 14:03
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** KARNATAKA
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	Pre-Event (घटना पूर्व)	Post Event (घटना के बाद)
Karnataka State Demand (MW)	17158	17456
Karnataka State Generation (MW)	10197	10256
Grid Frequency (Hz)	50.08	50.04
SR Demand (MW)	62613	62952
SR Generation (MW)	51694	52995

Pre and post data of 1 minute before and after the event

Elements under outage	
Weather Condition (मौसम स्थिति)	Normal

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)	Load Loss (MW)
3.0 MW	3.0 MW

7. Duration of interruption (रुकावट की अवधि): 1 hours, 13 minutes

8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 220KV-ISPAT-LINGAPUR-1
2. 220KV-BTPS-LINGAPUR-1
3. 220KV-MUNIRABAD-LINGAPUR-2
4. 220KV-LINGAPUR-GANGAVATHI-1
5. 220KV-LINGAPUR-GANGAVATHI-2

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

During the antecedent conditions, 220 kV Lingapur Bus-2 was in an idle charged condition, while all elements were connected to 220 kV Lingapur Bus-1.
As per the reports submitted, the triggering incident was an R-G fault on the 220 kV Jindal–Lingapur Line-1, located approximately 11 km from the Lingapur end. At the Lingapur end, the fault was sensed in carrier-aided Zone-2; however, the circuit breaker failed to trip due to a problem with the BCU, wherein the

89D isolator close-status condition was not extended to the TTX1 and TTX2 relays through the NIX contacts.
Consequently, the Trip Circuit Supervision (TCS) relays 195 and 295 became unhealthy, blocking the protection trip pathway and preventing the line CB from clearing the fault locally. Further, the LBB re-trip failed to operate because the DC-positive trip common connection of the PU relay was wired in series with the NO contacts of the TTX1 and TTX2 relays.
During the above fault on the 220 kV Jindal–Lingapur Line-1, the Y-phase CT primary terminal (line side) and the jumper conductor between the R-phase circuit breaker bottom limb and the 89DE isolator were snapped. Additionally, the B-phase CVT primary top cover was punctured at Lingapur Switching Station, resulting in an RYB-G fault on 220 kV Lingapur Bus-1.
The BBP relay was also registered as “Out of Service” (Locking Level-2 Alarm), which prevented the BBP back-trip from executing.
The uncleared bus fault was eventually cleared by the tripping of all lines connected to the Lingapur bus, either at the Lingapur end due to Zone-4 operation or at the remote ends due to Zone-2 operation, as detailed below. This resulted in the complete outage of 220 kV Lingapur SS.

Sl.No.	Line Name	Tripped at Local end	Tripped at Remote end
1	Halavarthy line-1		Tripped on Zone-2
2	Halavarthy Line-2		Tripped on Zone-2
3	Sulekal line-1	Tripped on Zone-4	
4	Sulekal line-2	Tripped on Zone-4	
5	JVSL line-1	Breaker not tripped	Breaker tripped
6	JVSL line-2		Tripped on Zone-2
7	Munirabad PH Line-1		Tripped on Zone-2
8	Munirabad PHLine-2	Tripped on Zone-4	
9	Guddadahally line-1		Tripped on Zone-2
10	Guddadahally line-2		Tripped on Zone-2
11	BTPS line	Tripped on Zone-4	
12	Ayanahally Switching Station line		Tripped on Zone-2
13	BMM Ispat line	Tripped on Zone-4	

11. DR Analysis:

LINGAPUR - 220KV

	LINGAPUR - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:15.738 T1 Z1, R8 CH1 CRR SND, DIST Trip A R12 TRP RLY 86, A/R Lockout, I>2 Trip T2 T4 T3, DIST Trip B, DIST Trip C IN>2 Trip Ir (max): 12.05 kA Iy (max): 10.13 kA Ib (max): 0.13 kA Vr (max): 120.77 kV Vy (max): 123.50 kV Vb (max): 121.05 kV

220KV-JINDAL-LINGAPUR-1

	LINGAPUR - 220KV	**JINDAL - 220KV**
Time Sync Issue	**No**	**Yes**
DR Analysis		DR Trigger Time:14-09-2026 14:21:55.916 LINE1_OC_STA, L1_OC_START1, L1_OC_START2 UV_START LINE1_OC_OPTD L1_UV_OC_OPTD UV_STG1_OPTD L1_UV_OC_OPTD Ir (max): 3.36 kA Iy (max): 0.21 kA Ib (max): 0.12 kA Vr (max): 120.94 kV Vy (max): 121.41 kV Vb (max): 120.58 kV

220KV-MUNIRABAD-LINGAPUR-1

	MUNIRABAD - 220KV	**LINGAPUR - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:17.098 Z3 Power Swing O/V STG1 OPTD Ir (max): 5.48 kA Iy (max): 5.15 kA Ib (max): 4.89 kA Vr (max): 85.71 kV Vy (max): 117.44 kV Vb (max): 117.29 kV	

220KV-JINDAL-LINGAPUR-2

	JINDAL - 220KV	**LINGAPUR - 220KV**
Time Sync Issue	**Yes**	**No**
DR Analysis	DR Trigger Time:14-09-2026 13:50:12.301 LINE2_OC_STAR, L2_OC_START1 LINE2_OC_OPTD L2_OC_UV_OPTD UV_START UV_STG1_OPTD L2_OC_UV_OPTD Ir (max): 0.00 kA Iy (max): 0.00 kA Ib (max): 0.00 kA Vr (max): 121.25 kV Vy (max): 121.41 kV Vb (max): 120.91 kV	

220KV-LINGAPUR-MUNIRABAD_KAR-1

	LINGAPUR - 220KV	**MUNIRABAD_KAR - 220KV**

Time Sync Issue	**No**	**No**
DR Analysis		

220KV-LINGAPUR-MUNIRABAD_KAR-2

	LINGAPUR - 220KV	**MUNIRABAD_KAR - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis		

220KV-LINGAPUR-HALAVARTHY-1

	LINGAPUR - 220KV	**HALAVARTHY - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis		

220KV-LINGAPUR-HALAVARTHY-2

	LINGAPUR - 220KV	**HALAVARTHY - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis		

220KV-LINGAPUR-GANGAVATHI-1

	LINGAPUR - 220KV	**GANGAVATHI - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:19.002 ZM05-START	

	ZM05-START ZM05-START PSB-OPTD PSB-OPTD Ir (max): 1.28 kA Iy (max): 1.45 kA Ib (max): 1.13 kA Vr (max): 121.32 kV Vy (max): 121.32 kV Vb (max): 120.02 kV	

220KV-BTPS-LINGAPUR-1

	BTPS - 220KV	**LINGAPUR - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:06.839 Any Start T1 Ir (max): 1.26 kA Iy (max): 0.28 kA Ib (max): 0.39 kA Vr (max): 122.99 kV Vy (max): 123.05 kV Vb (max): 122.52 kV DR Trigger Time:14-09-2026 14:03:08.198 T1, Z3 T2, T4 T1, Z3 T2, T4 T1, Z3 Z2 Any Trip, DIST Trip A, DIST Trip B, DIST Trip C, T2, T4 Ir (max): 2.90 kA Iy (max): 3.59 kA Ib (max): 3.01 kA Vr (max): 127.58 kV Vy (max): 127.58 kV Vb (max): 127.39 kV DR Trigger Time:14-09-2026	

	14:03:19.214 LBB INITIATION A PH ON (VO63) LBB INITIATION C PH ON (VO65) AR RIP LBB INITIATION B PH ON (VO64) AR BLOCK ON (VO45) OSC TRIGGER ON (VO40), 23.M2-86B OPTD ON (CI23), 22.M1-86A OPTD ON (CI22) OSC TRIGGER ON (VO40), 12.TO 3PH 86(21M2X) CLOSED (CO12), 17.TO 21M2 3P TRIP CLOSED (CO17) Z-2 START ON (VO32), Z-3 START ON (VO33) Z-3 START ON (VO33) Ir (max): 2.88 kA Iy (max): 3.57 kA Ib (max): 2.99 kA Vr (max): 104.41 kV Vy (max): 100.40 kV Vb (max): 98.61 kV	

220KV-MUNIRABAD-LINGAPUR-2

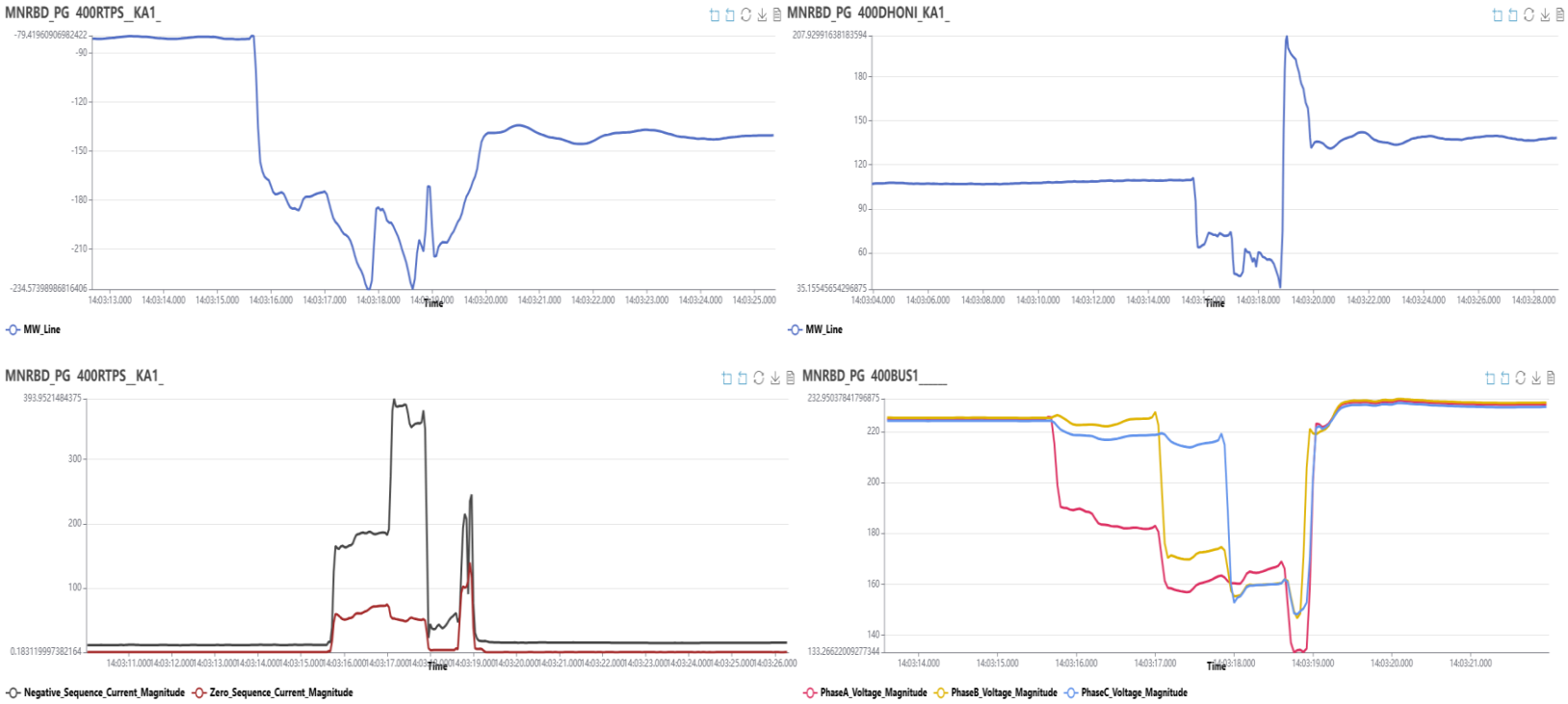
	MUNIRABAD - 220KV	**LINGAPUR - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:17.095 Z3 DIST Trip A, DIST Trip B, DIST Trip C MCB OPEN Power Swing Ir (max): 2.12 kA Iy (max): 2.10 kA Ib (max): 1.99 kA Vr (max): 85.42 kV Vy (max): 119.13 kV Vb (max): 115.78 kV	

	DR Trigger Time:14-09-2026 14:03:17.095 Z3 DIST Trip A, DIST Trip B, DIST Trip C MCB OPEN Power Swing Ir (max): 2.12 kA Iy (max): 2.10 kA Ib (max): 1.99 kA Vr (max): 85.42 kV Vy (max): 119.13 kV Vb (max): 115.78 kV	

220KV-LINGAPUR-GANGAVATHI-2

	LINGAPUR - 220KV	**GANGAVATHI - 220KV**
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:14-09-2026 14:03:18.720 PSB-OPTD ZM05-START ZM05-START ZM05-START ZM05-START ZM05-START ZM05-START PSB-OPTD Ir (max): 1.30 kA Iy (max): 1.50 kA Ib (max): 1.16 kA Vr (max): 121.16 kV Vy (max): 121.13 kV Vb (max): 119.48 kV	

12. A) PMU Analysis:



From the PMU plot, R-G fault followed by RYBG fault is observed with a delayed fault clearance of around 3200ms

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
KPTCL	1. Non extension of Trip signal to the breaker at Lingapur end in 220kV Jindal Lingapur Line-1. 2. Non operation of BBP at Lingapur end. 3. Zone-2 and Zone-3 settings of the 220kV lines connected to Lingapur SS needs review.

14. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Constituent	Remedial Actions
KPTCL	1. Replaced the damaged 220kV JVSL-1 line Y-phase CT and the punctured B-phase CVT. 2. Replaced jumper conductors: 89D isolator to breaker bottom limb (R, Y, & B phases), breaker top limb to 89C isolator (Y & B phases), Y-phase under-hung to CT primary side, and CT to 89D isolator. 3. The JVSL Line-1 BCU contact issue (89D isolator close status to TTX1 & TTX2) was temporarily bypassed by making it forcibly high via external shorting. The TTX1 & TTX2 relays picked up successfully, and the Trip Circuit Supervision relays were reset. 4. JVSL Line-1 CB protection trippings were checked via relays and verified to be working satisfactorily. 5. The status of all the PU Relays connected to Bus Bar Protection relay are checked (PU Relay currents) are found to be correct except PU-1 and PU-2 for the bus coupler were found disconnected. Upon thorough inspection, faulty patch cords for PU-1 and PU-2 relays were identified and replaced. The Bus Bar Protection relay is now In-Service, with differential and bias currents verified to be normal. 6. Contact Resistance Measurement (CRM) and Insulation Resistance (IR) tests were successfully conducted on the JVSL-1 line circuit breaker with satisfactory results. 7. Shift staff are advised continuous monitoring of healthiness of Trip Circuit Supervision relays (195 & 295), TTX1 & TTX2 relays, and the Bus Bar Protection relay on hourly basis. 8. The JVSL-1-line BCU HMI is non-functional and requires immediate replacement.

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details:

LINGAPUR - 220KV tripped at *14-09-2026 14:03* and restored at *14-09-2026 16:03*

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl. No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	KPTCL
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	KPCL, KPTCL, JSW_THERMAL, PGCIL SR-1
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	
4	**Any other non-compliance**	IEGC section 17.3	KPCL, KPTCL, JSW_THERMAL, PGCIL SR-1

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

Annexure 1

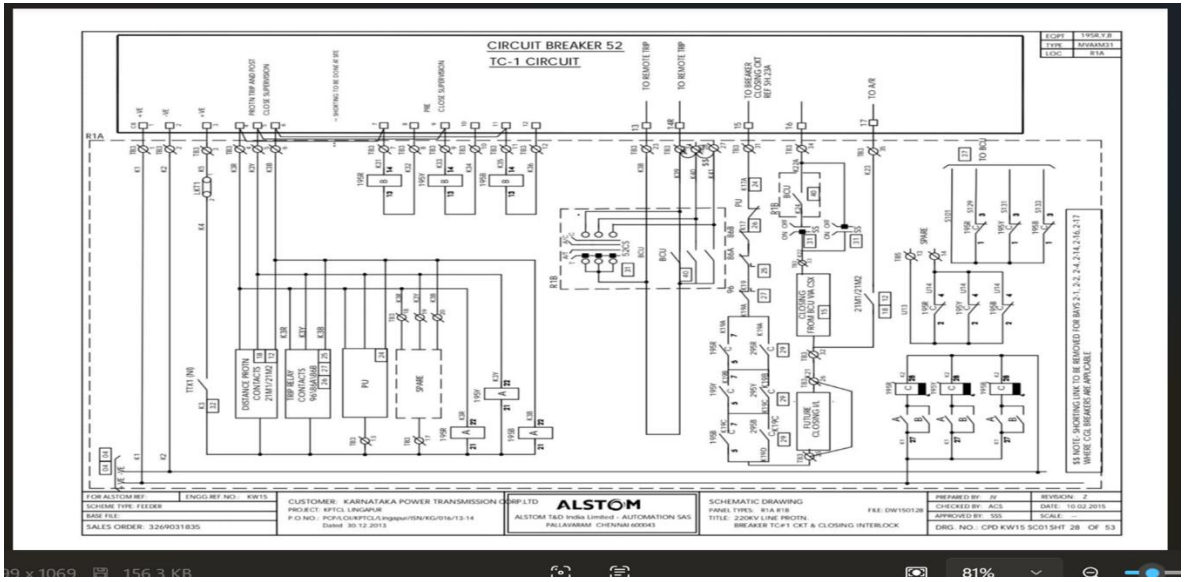
Sequence of Events as per SCADA

time	Event	Location
14-09-2026 14:03:35	LINGAPUR CB 21052 (LINE-1 TO GNGVT) OPEN	LNGPR_KA
14-09-2026 14:03:35	JINDAL 400 CB 20852 (LINE-2 TO LNGPR) BETWEEN	JNDL4_KA
14-09-2026 14:03:35	JINDAL 400 CB 20652 (LINE-1 TO LNGPR) INVALID	JNDL4_KA
14-09-2026 14:03:35	LINGAPUR CB 20752 (LINE TO BMMIS) OPEN	LNGPR_KA
14-09-2026 14:03:35	LINGAPUR CB 21352 (LINE TO BTPS_) OPEN	LNGPR_KA
14-09-2026 14:03:35	LINGAPUR CB 21252 (LINE-2 TO GNGVT) OPEN	LNGPR_KA
14-09-2026 14:03:35	JINDAL 400 CB 40452 (LOAD RJPR4) OPEN	JNDL4_KA
14-09-2026 14:03:47	LINGAPUR CB 20352 (LINE-1 TO MNRBD) OPEN	LNGPR_KA

Deliberations:

1. KPTCL informed that, under the antecedent conditions at Lingapur 220 kV Switching Station, all 220 kV lines were connected to the Main Bus, while the Reserve Bus was idle-charged through the bus-coupler. It was further informed that double-bus operation had not yet been restored following the recent maintenance works.
2. KPTCL informed that, on 14 September 2026 at 14:03:15 hrs, the protection relays for the 220 kV Lingapur–JVSL-1 line operated in response to an R-phase-to-ground fault located approximately 11.17 km from the Lingapur Substation end, near tower locations 34–35.
3. The details of relay operation at both ends were presented as follows:
    - **At the JSW end:** The line tripped within 100 ms following the operation of the SPS.
    - **At the Lingapur end:** Main-1 (M1) and Main-2 (M2) relays detected the R-phase fault in Zone-1 and recorded a fault current of 8.5 kA in the R-phase. However, the circuit breaker failed to trip due to an issue with the Bay Control Unit (BCU), wherein the 89D isolator close-status signal was not extended to the TTX1 and TTX2 relays through the NIX contacts.
4. KPTCL informed that the LBB retrip function, enabled through the busbar protection (BBP) scheme, also failed to operate because the DC positive trip common connection of the PU relay was wired in series with the normally open (NO) contacts of the TTX1 and TTX2 relays. Further, the BBP relay registered an “Out of Service” condition, with a Level-2 locking alarm due to communication failure between the PU of the bus-coupler and the CU of the BBP. Consequently, the bus tripping (back-trip) operation was blocked, and the fault continued to be fed from the Lingapur end.
5. KPTCL stated that the fault subsequently spread to the other two phases due to the resulting bus fault in the Lingapur switchyard. Y-phase fault current was observed 1.32 seconds after fault initiation, and the fault further evolved into a three-phase fault after another 850 ms.
6. KPTCL informed that the Y-phase CT primary terminal on the line side and the jumper connecting the R-phase circuit breaker bottom limb to the 89DE isolator had snapped. The B-phase CVT in the JVSL Line-1 bay at Lingapur Switching Station was also damaged.
7. It was observed that the fault developed progressively, with relatively low fault-current contributions from individual sources, resulting in delayed pickup or operation of Zone-2 and Zone-3 protection at the remote ends. The bus fault at Lingapur was eventually cleared by tripping of lines at the remote ends through Zone-2/Zone-3 operation or through Zone-4 operation at the Lingapur end.
8. The details of line tripping is as below:

Sl.No.	Line Name	Tripped at Local end	Tripped at Remote end
1	Halavarthy line-1		Tripped on Zone-2
2	Halavarthy Line-2		Tripped on Zone-2
3	Sulekal line-1	Tripped on Zone-4	
4	Sulekal line-2	Tripped on Zone-4	
5	JVSL line-1	Relays acted ,CB not tripped	Tripped on SPS operation
6	JVSL line-2		Tripped on SPS operation
7	Munirabad PH Line-1		Tripped on Zone-2
8	Munirabad PHLine-2	Tripped on Zone-4	
9	Guddadahally line-1		Tripped on Zone-2
10	Guddadahally line-2		Tripped on Zone-2
11	BTPS line	Tripped on Zone-4	
12	Ayanahally line		Tripped on Zone-2
13	BMM Ispat line	Tripped on Zone-4	



9. **Remedial Measures Taken details:**

- Replaced the damaged 220kV JVSL-1 line Y-phase CT and the B-phase CVT.

- Replaced jumper conductors: 89D isolator to breaker bottom limb (R, Y, & B phases), breaker top limb to 89C isolator (Y & B phases), Y-phase under-hung to CT primary side, and CT to 89D isolator.
- The JVSL Line-1 BCU contact issue (89D isolator close status to TTX1 & TTX2) was temporarily bypassed by making it forcibly high via external shorting. The TTX1 & TTX2 relays picked up successfully, and the Trip Circuit Supervision relays were reset.
- JVSL Line-1 CB protection trippings were checked via relays and verified to be working satisfactorily.
- The status of all the PU Relays connected to Bus Bar Protection relay are checked (PU Relay currents) are found to be correct except PU-1 and PU-2 for the bus coupler were found disconnected. Upon thorough inspection, faulty patch cords for PU-1 and PU-2 relays were identified and replaced
- Contact Resistance Measurement (CRM) and Insulation Resistance (IR) tests were successfully conducted on the JVSL-1 line circuit breaker with satisfactory results.
- Shift staff are advised continuous monitoring of healthiness of Trip Circuit Supervision relays (195 & 295), TTX1 & TTX2 relays, and the Bus Bar Protection relay basis and log on daily basis.
- Directions have been given to explore the possibility of enabling external LBB in the event of failure of LBB function of BBP & Necessary hard wiring is to ascertained.
- A detail report in this regard will be submitted to SRPC/SRLDC after through verification of the relay settings and healthiness of protection schemes at Lingapur and nearby remote end substations.

10. SRPC highlighted that only one contact was available for TTX-1 in both Main-1 and Main-2 protection schemes and suggested that the scheme be reviewed. KPTCL agreed to examine the matter.
11. MS, SRPC requested KPTCL to submit a detailed report on the protection settings and trip logic at Lingapur Switching Station.
12. SRPC highlighted the disturbance recorder (DR) time-synchronization issue at the 220 kV JSW switchyard and requested JSWEL to rectify the same.

Recommendations:

- ***KPTCL to submit detailed report on Protection Issues and time line for rectification of same at Lingasur SS.***
- ***JSWEL to rectify the DR time sync issue at 220kV JSW Switch yard***

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
8	Complete Outage of 220 kV Kadra PH of KPCL and 220kV Karwar SS of KPTCL	220 kV Kadra-Kodasalli line was under outage during the event. 220 kV Karwar SS was radially feed from 220 kV Kadra SS and 220 kV Kadra PH was radially fed from 220kV Kaiga Kadra line. As per the reports submitted, the triggering incident was B-G fault in 220kV Kaiga Kadra line and the line tripped. Tripping of the only connected line led to complete outage of 220 kV Kadra PH which in turn led to complete outage of 220kV Karwar SS.	15-09-2026 11:13	0	56	GD - 1	23-09-2026	17-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. **Event Summary (घटना का सारांश):**

220 kV Kadra-Kodsalli line was under outage during the event. 220 kV Karwar SS was radially feed from 220 kV Kadra SS and 220 kV Kadra PH was radially fed from 220kV Kaiga kadra line. As per the reports submitted, the triggering incident was B-G fault in 220kV Kaiga kadra line and the line tripped. Tripping of the only connected line led to complete outage of 220 kV Kadra PH which in turn led to complete outage of 220kV Karwar SS.

2. **Time and Date of the Event (घटना का समय और दिनांक:** 15-09-2026 11:13
3. **Event Category (ग्रिड घटना का प्रकार): GD - 1**
4. **Location/Control Area (स्थान/नियंत्रण क्षेत्र):** KARNATAKA
5. **Antecedent Conditions (पूर्ववर्ती स्थिति):**

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
Karnataka State Demand (MW)	18719	18816
Karnataka State Generation (MW)	10810	10806

Grid Frequency (Hz)	49.86	49.86
SR Demand (MW)	67224	67416
SR Generation (MW)	57764	57938

Pre and post data of 1 minute before and after the event

Elements under outage	1. 220KV-KADRA-KODASALLY-1
Weather Condition (मौसम स्थिति)	Normal

At 220kV Kadra PH

Bus Configuration Type : Single Main and Transfer Bus

Bus Coupler Status : NA

Bus 1 Connected Elements
1. 220KV-KADRA-KARWAR-1 2. 220KV-KADRA-KARWAR-2 3. 220KV-KAIGA-KADRA-1

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)	Load Loss (MW)
0.0 MW	56.0 MW

7. Duration of interruption (रुकावट की अवधि): 1 hours, 12 minutes

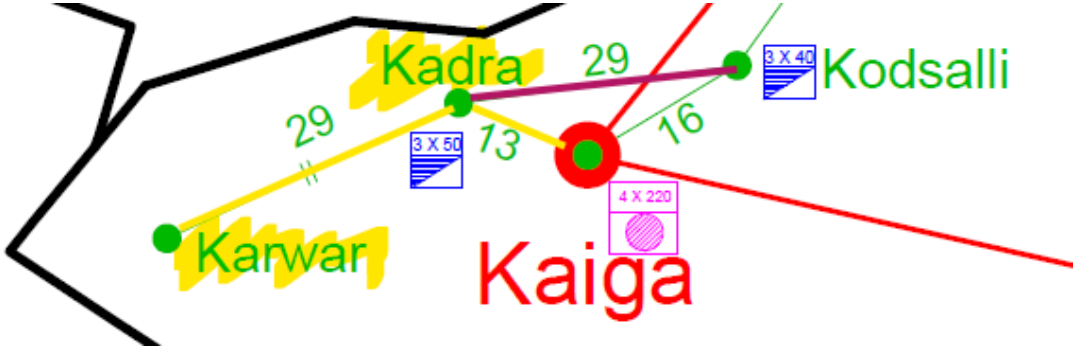
8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 220KV-KAIGA-KADRA-1

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):

220 kV Kadra-Kodsalli line was under outage during the event. 220 kV Karwar SS was radially feed from 220 kV Kadra SS and 220 kV Kadra PH was radially fed from 220kV Kaiga Kadra line.



As per the reports submitted, the triggering incident was B-G fault in 220kV Kaiga kadra line. At Kaiga end, the fault was sensed in Zone-1 and B-pole opened. Other 2 poles opened after around 150ms on operation of Pole descrepency relay and the line tripped. However, it is reported that A/R is disabled in the line and the same needs review. Tripping of the only connected line led to complete outage of 220 kV Kadra PH which in turn led to complete outage of 220kV Karwar SS.

11. DR Analysis:

KADRA - 220KV

	KADRA - 220KV
Time Sync Issue	**No**
DR Analysis	DR Trigger Time:15-09-2026 11:12:59.004 BRC_START CARR_RCVD_CH1 Ir (max): 0.33 kA Iy (max): 0.57 kA Ib (max): 0.53 kA Vr (max): 127.75 kV Vy (max): 129.60 kV Vb (max): 124.83 kV

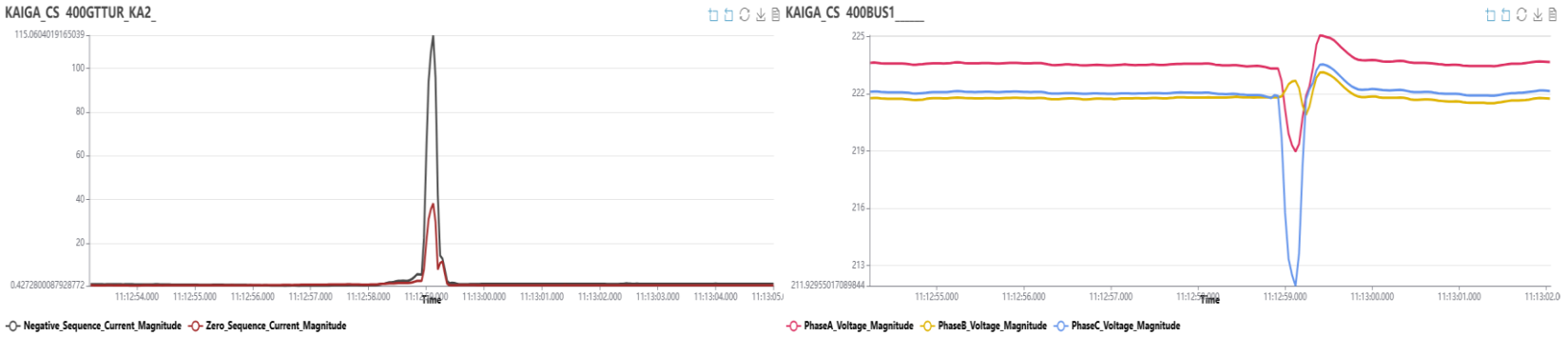
KARWAR - 220KV

	KARWAR - 220KV
Time Sync Issue	**No**
DR Analysis	DR not triggered

220KV-KAIGA-KADRA-1

	KAIGA - 220KV	KADRA - 220KV
Time Sync Issue	**No**	**No**
DR Analysis	DR Trigger Time:15-09-2026 11:12:58.992 Any Start DIST Fwd Z3 Z2 Any Trip, DIST Trip C, Z1 Ir (max): 0.33 kA Iy (max): 0.57 kA Ib (max): 3.61 kA Vr (max): 128.01 kV Vy (max): 130.50 kV Vb (max): 127.46 kV	DR Trigger Time:15-09-2026 11:12:59.004 BRC_START CARR_RCVD_CH1 Ir (max): 0.33 kA Iy (max): 0.57 kA Ib (max): 0.53 kA Vr (max): 127.75 kV Vy (max): 129.60 kV Vb (max): 124.83 kV

12. A) PMU Analysis:



From PMU plot, B-G fault can be observed without any delayed fault clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
NPCIL_KAIGA	1. Tripping of only B-pole in 220kV Kaiga Kadra line though A/R is disabled in the line. 2. PD operated after 150ms of openeing of B-pole.

14. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Constituent	Remedial Actions
NPCIL_KAIGA	At 11:13 AM, immediately after the bus dead condition, the DG started and the Plant Auxiliary Supply was restored in Auto Mode. All 220 kV breakers connected to the bus were hand-tripped. As no source was available at Kadra PH, to ensure the healthiness of 220KV Kadra-Kaiga Line, the 220 kV bus was first charged through Dead Bus Charging from Unit-1 with the concurrence of LDC and SRLDC. Subsequently, @12:00Hrs the 220 kV Kaiga Line was test-charged from the Kadra end to check the healthiness of the line & line stood OK. At 12:14 Hrs the Kaiga Line CB was opened after completion of the test charging and Unit-1 Normalised. Consequently, the PGCIL patrolling team give the clearance to test charging of 220KV Kadra-Kodasalli Line. Hence at 12:16 PM, the Kodasalli Line was test-charged from the Kodasalli end and was found healthy.

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details:

At 12:21 PM, the Kadra–Kodasalli Line CB was closed at the Kadra end, and the 220 kV Kadra bus was restored.

At 12:24 PM, the 220 kV Kadra–Karwar-1 and Kadra–Karwar-2 Line CBs were closed at both ends, and the 220 kV Karwar Bus was restored.

At 12:25 PM, the 220 kV Kadra–Kaiga Line CB was closed at both ends, and the line was charged.

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl. No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	KPTCL, KPCL
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	NPCIL_KAIGA, KPTCL, KPCL
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	
4	**Any other non-compliance**	IEGC section 17.3	

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

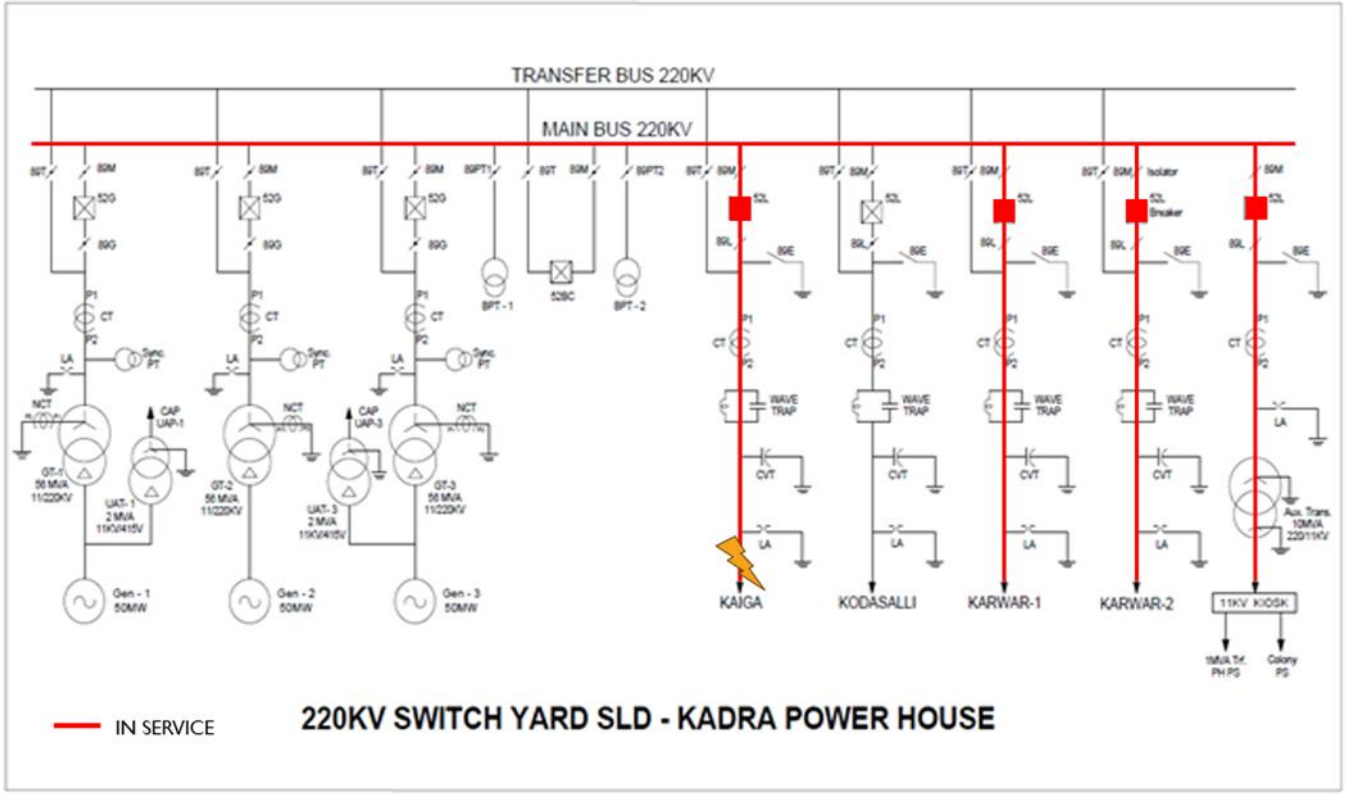
Annexure 1

Sequence of Events as per SCADA

time	Event	Location
15-09-2026 11:13:04	KAIGA CB 20152 (T3_P) INVALID	KAIGA_CS
15-09-2026 11:45:31	KADRA CB 20452 (LINE-2 TO KRWAR) OPEN	KADRA_KA
15-09-2026 11:47:02	KADRA CB 20452 (LINE-2 TO KRWAR) OPEN	KADRA_KA

Deliberations:

1. KPCL presented the antecedent operating conditions as follows:
    - **Elements in service:** 220 kV Kadra–Kaiga line and 220 kV Kadra–Karwar-1 and Kadra–Karwar-2 lines.
    - **Elements not in service:** All three generating units and the 220 kV Kadra–Kodasalli line.
    - **Power flow:** Import of 49 MW through the 220 kV Kadra–Kaiga line and export of 25 MW through the 220 kV Kadra–Karwar-1 and Kadra–Karwar-2 lines.



2. KPCL informed that the 220 kV Kadra–Kaiga line tripped at the Kaiga end due to the operation of Zone-1 distance protection. Consequently, the 220 kV supply to Kadra Substation was lost, resulting in a dead-bus condition. At the Kadra end, the circuit breakers of the 220 kV Kaiga, Karwar-1 and Karwar-2 lines remained intact. Subsequently, all circuit breakers connected to the 220 kV bus were tripped manually
3. Restoration sequence: KPCL presented the following restoration sequence:
    - **11:55 hrs on 15 September 2026:** The bus was charged through dead-bus charging from Unit-1, with the concurrence of LDC and SRLDC, for test charging of the Kaiga line.
    - **12:21 hrs:** The Kadra–Kodasalli line circuit breaker was closed at the Kadra end, restoring the 220 kV Kadra bus.
    - **12:24 hrs:** The Kadra–Karwar-1 and Kadra–Karwar-2 line circuit breakers were closed at both ends, restoring the 220 kV Karwar bus.
    - **12:25 hrs:** The Kadra–Kaiga line circuit breakers were closed at both ends, and the line was successfully charged.
4. SRLDC informed that the initiating event was a B-G phase fault on the 220 kV Kaiga–Kadra line. At the Kaiga end, Zone-1 distance protection detected the fault and the B-phase breaker pole opened. The remaining two poles opened approximately 150 ms later due to the operation of the pole discrepancy relay, resulting in tripping of the line.
5. SRPC enquired about the pole discrepancy (PD) timer setting at NPCIL-Kaiga. NPCIL-Kaiga informed that the setting was 100 ms. TGTRANSCO observed that, even when auto-reclosing was not enabled, a PD timer setting of 100 ms was too conservative and requested NPCIL-Kaiga to review the

setting and consider revising it to 500 ms. NPCIL-Kaiga agreed to refer the matter to its corporate office and provide an update.

6. SRLDC highlighted that auto-reclosing was not enabled on the concerned lines. KPCL explained that auto-reclosing had not been enabled because the line connected two generating stations.
7. SE, SRPC suggested that the matter be referred to the Protection Sub-Committee of NPC for examination of the feasibility of enabling auto-reclosing on lines connecting two generating stations.
8. SRPC requested NPCIL-Kaiga to carry out circuit breaker testing and submit a detailed report on the findings. NPCIL-Kaiga informed that the testing would be carried out in the following month after availing the required line clearance (LC).

Recommendations:

- ***NPCIL-Kaiga to review the PD time timing at their end***
- ***NPCIL-Kaiga to submit detailed report on non opening of R& Y poles during the incident.***

II. Details of Grid Incidents

S. No.	Event	Event Analysis	Outage Date & time	Generation Loss (MW)	Load Loss (MW)	Category as per CEA Grid Standards	Date of receipt of Draft Report/ Updated draft report from SRLDC	Date of receipt of User Detailed report	SRLDC furnished revised Report after considering the User Report
1	Tripping of 220kV Bus-1 of 220kV Sharavathy PH of KPCL	As per the reports submitted, the triggering incident was B-G fault in 220kV Sharavathy Belgavi line. At the same time, Sharavathy Unit-6 tripped on over current protection maloperation, but the Unit-6 breaker failed to open. This led to operation of Unit-6 LBB and all elements connected to 220kV Sharavathy Bus-1 tripped. This led to loss of power supply to 220kV Bus-1 of 220kV Sharavathy PH	12-09-2026 01:59	488	0	GI-1	23-09-2026	16-09-2026	Considered

Detailed Draft Report of grid event submitted by SRLDC:

1. Event Summary (घटना का सारांश):

As per the reports submitted, the triggering incident was B-G fault in 220kV Sharavathy Belgavi line. At the same time, Sharavathy Unit-6 tripped on over current protection maloperation, but the Unit-6 breaker failed to open. This led to operation of Unit-6 LBB and all elements connected to 220kV Sharavathy Bus-1 tripped. This led to loss of power supply to 220kV Bus-1 of 220kV Sharavathy PH

2. Time and Date of the Event (घटना का समय और दिनांक: 12-09-2026 01:59

3. Event Category (ग्रिड घटना का प्रकार): GI-1

4. Location/Control Area (स्थान/नियंत्रण क्षेत्र): KARNATAKA

5. Antecedent Conditions (पूर्ववर्ती स्थिति):

Condition	**Pre-Event** (घटना पूर्व)	**Post Event** (घटना के बाद)
Karnataka State Demand (MW)	12033	12159

Karnataka State Generation (MW)	8333	8331
Grid Frequency (Hz)	50.02	50.0
SR Demand (MW)	53137	53044
SR Generation (MW)	49610	49632

Pre and post data of 1 minute before and after the event

Elements under outage	
Weather Condition (मौसम स्थिति)	Normal

6. Load and Generation loss (लोड और जेनरेशन हानि):

Generation Loss (MW)	Load Loss (MW)
487.8 MW	0.0 MW

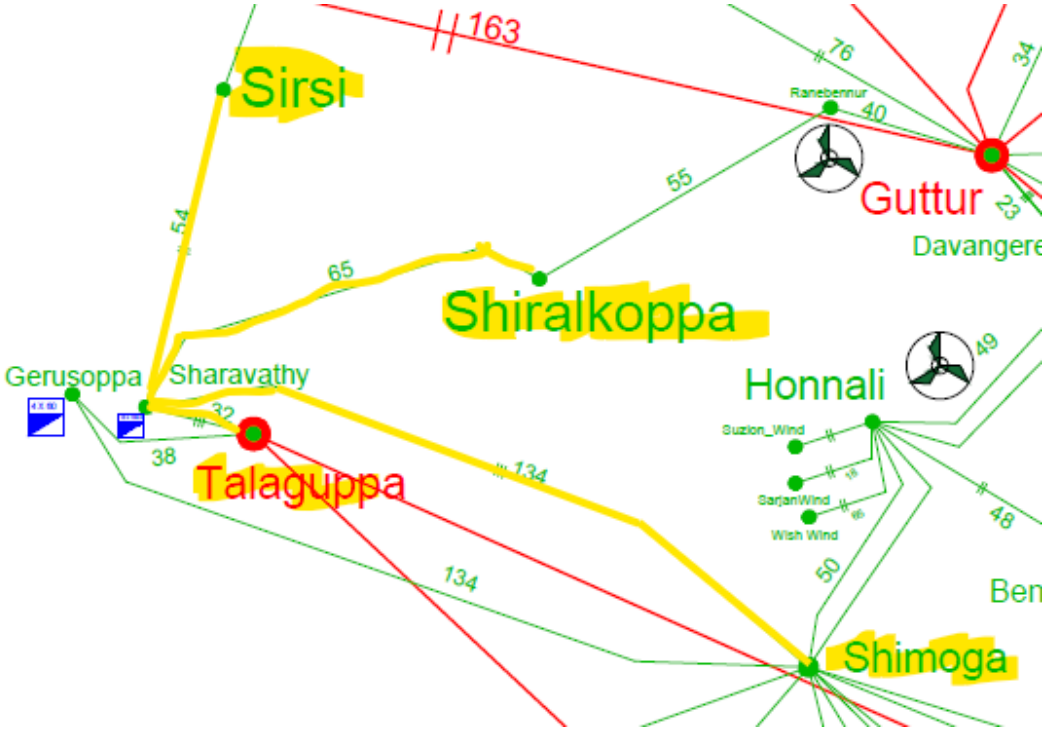
7. Duration of interruption (रुकावट की अवधि): 0 hours, 51 minutes

8. Details of Equipment Failure (if any during the event) (उपकरण विफलता का विवरण): NA

9. List of Elements got tripped during event (प्रमुख ट्रिपिंग)

1. 220KV-SHIRALKOPPA-SHARAVATHY-1
2. 220KV-SIRSI-SHARAVATHY-1
3. 220KV-SIRSI-SHARAVATHY-2
4. 220KV-SHARAVATHY-TALGUPPA-2
5. 220KV-MRS SHIMOGA-SHARAVATHY-3
6. 220KV-SHARAVATHY-MRS SHIMOGA-2

10. Event Analysis (Based on PMU, SCADA & DR) (घटना का विश्लेषण):



220kV Sharavathy is operating with 220kV Bus with bus sectionaliser with 220kV Bus-1 and Bus-2. As per the reports submitted, the triggering incident was B-G fault in 220kV Sharavathy Belgavi line. At the same time, Sharavathy Unit-6 tripped on over current protection maloperation , but the Unit-6 breaker failed to open. This led to operation of Unit-6 LBB and all elements connected to 220kV Sharavathy Bus-1 tripped. This led to loss of power supply to 220kV Bus-1 of 220kV Sharavathy PH

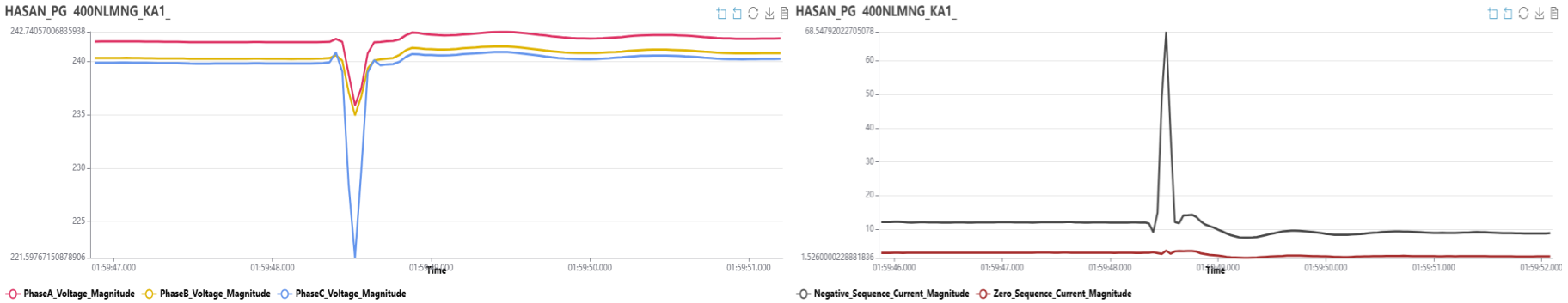
11. DR Analysis:

SHARAVATHY - 220KV

	SHARAVATHY - 220KV
Time Sync Issue	**Yes**
DR Analysis	DR Trigger Time : 12-Sep-26 1:59:46.634 UNIT6_BFP_L3P BAY UNIT#6 TR BAY UNIT#7 TR

	BAY UNIT#8 TR BAY UNIT#9 TR BAY UNIT#10 TR

12. A) PMU Analysis:



From the PMU plot , B-G fault can be observed without any delayed fault clearance.

13. Protection/Operational issues observed (सुरक्षा/परिचालन संबंधी समस्या):

Constituent	Points for review
KPCL	1. Maloperation of OVer current protection in Sharavathy Unit-6 for external fault 2. 220kV Bus-2 which is available in the station is not being utilized and the same needs operational review

14. Action Taken/Remedial Measures (सुधारात्मक उपाय):

Constituent	Remedial Actions
KPCL	UNIT 6 OVER CURRENT PROTECTION SETTING CHECKED FOUND OK UNIT 6 CB DCRM TEST CARRIED OUT AND RESULTS FOUND OK

15. RLDC Analysis/Observations (Based on Simulation Studies): NA

16. Restoration Details: 12/09/2026 02:50

17. Non-compliance observed (विनियमन का गैर-अनुपालन):

Sl. No	Issues	**Regulation Non-Compliance**	**Utilities**
1	**Flash Report not received within 8 Hours**	IEGC section 37.2 (b)	KPCL
2	**DR/EL not provided within 24 hours**	1. IEGC section 37.2 (c) 2. CEA grid Standard 15.3	KPCL
3	**Detailed Report not received within 7 days**	IEGC section 37.2 (e)	
4	**Any other non-compliance**	IEGC section 17.3	KPCL

18. Key Lessons Learnt (प्रमुख अधिगम बिंदु): NA

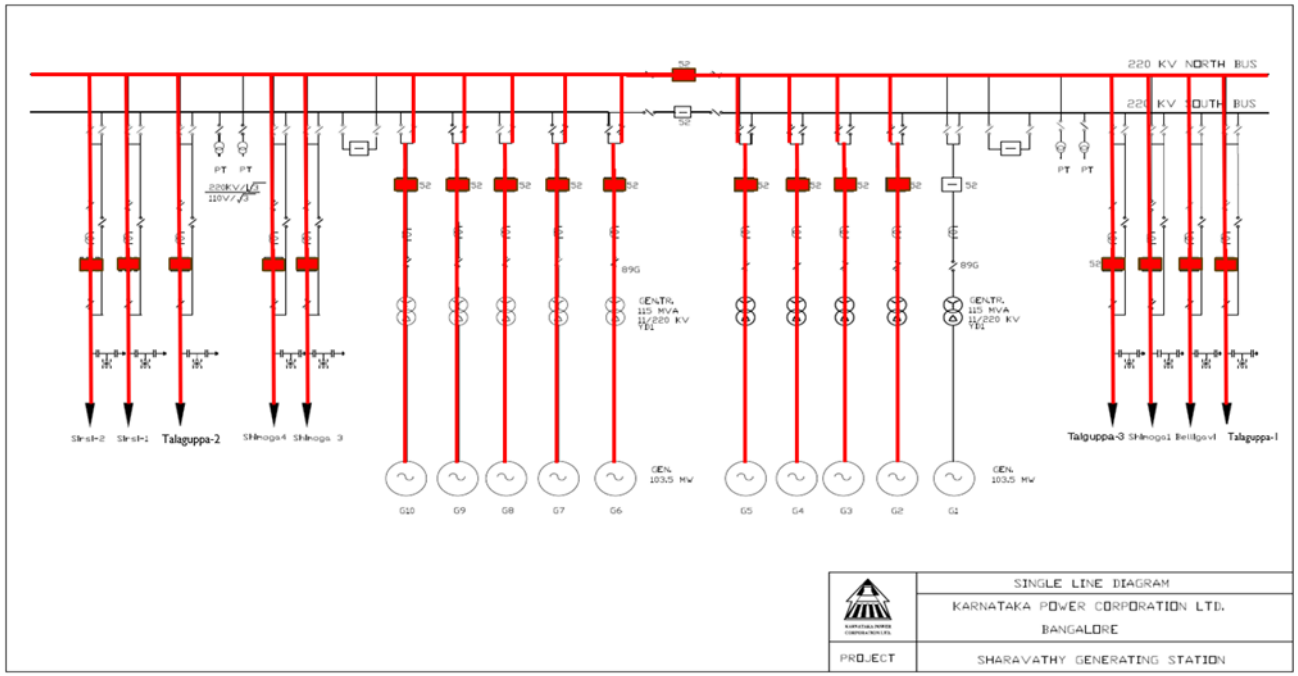
Annexure 1

Sequence of Events as per SCADA

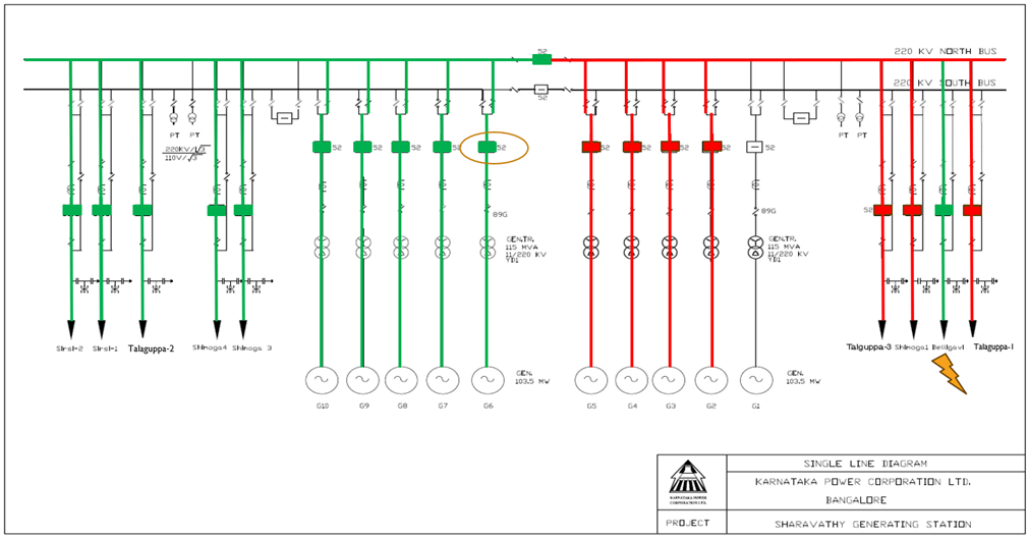
time	Event	Location
12-09-2026 01:59:57	SHARAVATHI CB CB 20752 (GT-8) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB 20852 (LINE-4 TO MRSSH) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB 20652 (LINE-2 TO TLGPA) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB CB 20552 (GT-9) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB 20252 (LINE-2 TO SIRSI) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB 21952 (LINE TO SRLKP) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB CB 20352 (GT-10) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB CB 20952 (GT-7) OPEN	SRVTI_KA
12-09-2026 01:59:57	SHARAVATHI CB COUPLER CB 21252 OPEN	SRVTI_KA

Deliberations:

1. KPCL presented the bus configuration at 220kV sharavathy SS



2. KPCL informed that, on 12 September 2026 at 01:59 hrs, the 220 kV Sharavathy–Balligavi line tripped due to a B-phase fault, with a fault current of 18 kA, resulting in the operation of Zone-1 protection. Subsequently, the Unit-6 overcurrent protection operated; however, the R- and B-phase circuit breaker poles failed to open, resulting in Local Breaker Backup (LBB) protection operation. Consequently, busbar protection operated in the West Wing, tripping all connected elements



3. KPCL informed that a detailed analysis revealed that the Unit-6 overcurrent protection had been inadvertently enabled during relay testing and was not disabled thereafter. Further, due to sluggish mechanical operation of the circuit breaker mechanism, the R- and B-phase breaker poles failed to trip. The LBB protection operated successfully, resulting in busbar tripping in the West Wing and disconnection of all connected elements.
4. Remedial Actions & Status
    - Protection: Unit #6 overcurrent protection trip disabled.
    - Breaker Tests: Unit #6 breakers DCRM & Chronograph tests conducted and found ok .
    - Replacement: Replacement of old breakers (Alstom GL-314 & FXT14F) is planned and the procurement process has been initiated.
5. SRPC enquired about the rationale for keeping the overcurrent protection instantaneous. KPCL explained that the instantaneous setting had been provided specifically for this purpose and was inadvertently left enabled after relay testing. It was further informed that the issue had been rectified following the incident. SRPC advised KPCL to strictly follow the prescribed Standard Operating Procedures (SOPs) during testing and maintenance activities to prevent the recurrence of such incidents.
6. MS, SRPC enquired about the continued single-bus operation at the 220 kV Sharavathy Substation. KPCL informed that the substation was operating in single-bus mode due to issues with isolator contacts. It was further stated that double-bus operation would be restored after refurbishment of the isolators and circuit breakers.

Recommendations:

- ***KPCL to strictly adhere to SOP during testing and Maintaianance activities.***
- ***KPCL to enable double busbar operation at 220kV Sharavathy SS.***

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