List of Most Critical Substations, Switching Stations & Power Stations of North Eastern Region

Sl. No.	Name of Substation	State
POWERGRID		
1	400/220/33 kV Balipara	Assam
2	400/132 kV Biswanath Chariali	
3	400/220/33 kV Bongaigaon	
4	400/220/33 kV Misa	
5	400/132/33 kV Silchar	
6	220/132 kV Dimapur	Nagaland
7	220 kV Mariani (PG)	Assam
8	220/132 kV Salakati	
NEEPCO		
1	400/132 kV Ranganadi	Arunachal Pradesh
2	220/132 kV AGBPP	Assam
OTPC		
1	400/132 kV Palatana	Tripura
NTPC		
1	400/220 kV BgTPP	Assam
AEGCL		
1	400/220 kV Azara	Assam
2	220/132/66/33 kV Agia	
3	220/132/33 kV BTPS	
4	220/132/66/33 kV Mariani	
5	220/132/33 kV Samaguri	
6	220/132/33 kV Sarusajai	
7	220/132 kV Sonabil	
MePTCL		
1	400/220/132 kV Byrnihat (Killing)	Meghalaya
TSECL		
1	132/33/11 kV Agartala (79 Tilla)	Tripura
2	132/33 kV Surajmani Nagar	

List of Most Critical Substations, Switching Stations & Power Stations of North Eastern Region

Sl. No.	Name of Substation	State
POWERGRID		
1	400/220/33 kV Balipara	Assam
2	400/132 kV Biswanath Chariali	
3	400/220/33 kV Bongaigaon	
4	400/220/33 kV Misa	
5	400/132/33 kV Silchar	
6	220/132 kV Dimapur	Nagaland
7	220 kV Mariani (PG)	Assam
8	220/132 kV Salakati	
9	132 kV Aizawl	Mizoram
11	132 kV Imphal	Manipur
12	132 kV Khliehriat	Meghalaya
13	132/33 kV Nirjuli	Arunachal Pradesh
NEEPCO		
1	400/132 kV Ranganadi	Arunachal Pradesh
2	220/132 kV AGBPP	Assam
4	132 kV AGTCCPP	Tripura
5	132 kV Khandong	Assam
6	132 kV Monarchak	Tripura
OTPC		
1	400/132 kV Palatana	Tripura
NTPC		
1	400/220 kV BgTPP	Assam
DoP, Arunachal Pradesh		
1	132/33 kV Itanagar	
AEGCL		
1	400/220 kV Azara	Assam
2	220/132/66/33 kV Agia	
3	220/132/33 kV BTPS	
4	220/132/66/33 kV Mariani	
5	220/132/33 kV Samaguri	
6	220/132/33 kV Sarusajai	
7	220/132 kV Sonabil	
8	132/66/11 kV Kahilipara	
MSPCL		
1	132/33 kV Imphal (Yurembam)	Manipur
MePTCL		
1	400/220/132 kV Byrnihat (Killing)	Meghalaya
2	132/33 kV Khliehriat	
3	132/33 kV Mawlai	
4	132 kV Myntdu Leshka	
P&ED, Mizoram		
1	132/33 kV Zungtui (Zemabawk)	
DoP, Nagaland		
1	132/66/33 kV Dimapur	
TSECL		
1	132/33/11 kV Agartala (79 Tilla)	Tripura
2	132/33 kV Surajmani Nagar	

List of Important Substations/Switching Stations of North Eastern Region

Sl. No.	Name of Substation	State
POWERGRID		
1	400/220/33 kV Balipara	Assam
2	400/132 kV Biswanath Chariali	Assam
3	400/220/33 kV Bongaigaon	Assam
4	400/220/33 kV Misa	Assam
5	400/132/33 kV Silchar	Assam
6	220/132 kV Dimapur	Nagaland
8	220 kV Mariani (PG)	Assam
9	220/132 kV Salakati	Assam
10	132 kV Aizawl	Mizoram
11	132 kV Badarpur	Assam
12	132 kV Haflong	Assam
13	132 kV Imphal	Manipur
14	132 kV Khliehriat	Meghalaya
15	132 kV Kumarghat	Tripura
16	132/33 kV Jiribam	Manipur
17	132/33 kV Nirjuli	Arunachal Pradesh
21	132 kV Melriat	Mizoram
NEEPCO		
1	400/132 kV Ranganadi	Arunachal Pradesh
2	220/132 kV AGBPP	Assam
3	220/132 kV Kopili	Assam
4	132 kV AGTCCPP	Tripura
5	132 kV Doyang	Nagaland
6	132 kV Khandong	Assam
7	132 Turial	Mizoram
8	132 Monarchak	Tripura
9	132/33 kV Khupi	Arunachal Pradesh
NHPC		
1	132kV Loktak	Manipur
OTPC		
1	400/132 kV Palatana	Tripura
NTPC		
1	400/220 kV BgTPP	Assam
DoP, Arunachal Pradesh		
4	Bhalupong	
6	132/33 kV Lekhi	
7	Itanagar	

AEGCL	
1	400/220 kV Azara
2	220/132/66/33 kV Agia
3	220/132/33kV Boko
4	220/132/33 kV BTPS
5	220/132/66/33 kV Mariani
6	220/132/33 kV Samaguri
7	220/66 kV Jawhar Nagar
8	220/132/33 kV Sarusajai
9	220/132 kV Sonabil
10	220/132/66/33 kV Tinsukia
11	132/66/33 kV Bokajan
19	132/33 kV Gohpur
20	Dispur
21	132/66/11 kV Kahilipara
25	132/33 kV Panchgram(New)
27	Umrangshu
28	132/33 kV Pavoi
29	132/33 kV Rangia
32	132/33 kV Sisugram(Amingaon)
33	132/33 kV Srikona
	Kamalpur
APGCL	
1	220 kV Langpi HEP
2	220/132/66/33 kV Namrup TPS
3	132/33 kV Lakwa TPS
MSPCL	
2	132/33 kV Imphal (Yurembam)
4	132/33 kV Karong
7	132/33 kV Ningthoukhong

MePTCL	
1	400/220/132 kV Byrnihat (Killing)
4	132/33 kV Khliehriat
5	132/33/11 kV Lumsnong
7	132/33 kV NEHU
8	132/33 kV NEIGRIHMS
10	132/33 kV Mawlai
12	132 kV Myntdu Leshka
13	132/33 kV Umiam
14	132 kV Umiam Stg I
15	132 kV Umiam Stg II
17	132 kV New Umtru
19	132 kV Umiam Stg III
20	132 kV Umiam Stg IV

P&ED, Mizoram	
1	132/66/33 kV Kolasib (Bawklang)
2	132/33 kV Longmol
3	132/33 kV Zungtui (Zemabawk)

DoP, Nagaland	
2	132/33 kV Kohima
3	Dimapur

TSECL	
1	132/33/11 kV Agartala (79 Tilla)
2	132/33/11 kV Ambasa
3	132/66 kV Baramura
4	132/33 kV Bodhjungnagar
5	132/11 kV Dhalabil
6	132/33/11 kV Dharmanagar (Mission Tilla)
7	132/33/11 kV Jirania
8	132/11 kV Kamalpur
9	132/33/11 kV P K Bari
10	132/66 kV Rokhia
11	132/33 kV Surajmani Nagar
12	132/66/33/11 kV Teliamura (Gamaitilla)
13	132/66/33/11 kV Udaipur (Banduar)

Grid Events

July 2017

वृत्तांत सूचना रिपोर्ट की पेशकश / Furnishing of Event Information Report

पूर्वोत्तर क्षेत्र में 01.07.17 से 31.07.17 तक की घटनाये / Events in NER Grid from 01.07.17 to 31.07.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/001	132 kV Doyang - Mokokchung (Nagaland) 1 Line	DoP Nagaland	NEEPCO	DoP, Nagaland	02-07-2017 12:58:00	02-07-2017 13:37:00	DP, ZI, R-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/002	132 kV Doyang - Mokokchung (Nagaland) 1 Line	DoP Nagaland	NEEPCO	DoP, Nagaland	02-07-2017 15:14:00	02-07-2017 15:40:00	DP, ZI, R-E	Over current	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/003	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	04-07-2017 00:01:00	04-07-2017 00:54:00	Not Furnished	DP, ZI, R-Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output of Salakati end indicates 3-phase balanced fault with fault current of around 2.7 kA. **Likely due to lightning.**														
Remedial-Measures	POWERGRID & AEGCL may identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														
NERLDC/TL/17/07/004	132 kV Dimapur - Doyang 1 Line	POWERGRID	POWERGRID	NEEPCO	04-07-2017 10:11:00	04-07-2017 10:47:00	DP, ZII, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**DR indicates vegetation infringement fault**. Fault cleared in Z-2 time and no tripping at Doyang end indicate fault in downstream of Doyang.														
Remedial-Measures	Proper vegetation clearance of 132 kV Dimapur - Doyang D/C to be done by POWERGRID and DoP Nagaland and downstream of Doyang by DoP Nagaland. **Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/004	132 kV Dimapur - Doyang 2 Line	POWERGRID	POWERGRID	NEEPCO	04-07-2017 10:15:00	04-07-2017 10:38:00	No tripping	DP, ZI, R-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
Root Cause	**Transient fault in the line likely due to vegetation infringement. Z-I tripping at Doyang needs to be analyzed by DHEP, NEEPCO as there was no tripping at Dimapur end and no other tripping was reported at the time of tripping.**														
Remedial-Measures	**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/005	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	04-07-2017 11:50:00	04-07-2017 12:22:00	DP, ZI, R-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/006	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	04-07-2017 12:26:00	04-07-2017 12:50:00	DP, ZI, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/007	220 kV Samaguri - Sonabil 1 Line	AEGCL	AEGCL	AEGCL	05-07-2017 10:47:00	05-07-2017 11:00:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the line. DR output to be submitted by AEGCL for identification of root cause. As informed by AEGCL, R-phase jumper snapping occurred in the last year over Brahmaputra river crossing. As a temporary measure, spare conductor is used and during wind, line trips due to less clearance.														
Remedial-Measures	DR output to be submitted by AEGCL. AEGCL to replace brocken jumper and restore the conductor at the earliest.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/008	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	06-07-2017 14:11:00	06-07-2017 14:21:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/008	132 kV Agartala - AGTCCPP 2 Line	POWERGRID	TSECL	NEEPCO	06-07-2017 14:11:00	06-07-2017 14:22:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Agartala/Tripura system due to **Vegetation (B-E fault, 29 degrees between Vb & Ib and fault cleared in 300 milliseconds).**														
Remedial-Measures	Proper vegetation clearance is to be done by TSECL. Relay coordination of downnstream of Agartala is to be done by TSECL in consultation with POWERGRID & NEEPCO. E/F and O/C functions in DPR at AGTCCPP are to be reviewed by AGTCCPP, NEEPCO considering the latest fault contribution.														
NERLDC/TL/17/07/009	132 kV Dimapur - Doyang 1 Line	POWERGRID	POWERGRID	NEEPCO	06-07-2017 16:30:00	06-07-2017 16:50:00	Low air pressure	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	No fault in the line as per DR submitted. CB low air pressure at Dimapur (Equipment Failure)														
Remedial-Measures	Maintenance activities as per schedule to be strictly followed by utilities														
NERLDC/TL/17/07/010	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	07-07-2017 15:13:00	07-07-2017 15:20:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	Line tripped due to lightning fault as informed by POWERGRID.														
Remedial-Measures	Installation of TLSA to be expedicted.DR output of both ends to be submitted by POWERGRID.														

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पूर्वोत्तर क्षेत्र में 01.07.17 से 31.07.17 तक की घटनाये / Events in NER Grid from 01.07.17 to 31.07.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/011	220 kV AGBPP - Mariani (AEGCL) 1 Line	POWERGRID	NEEPCO	AEGCL	09-07-2017 05:15:00	09-07-2017 05:34:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output of both ends are not submitted. As informed by AEGCL, fault was in 220 kV Mariani - Samaguri line due to jumper snapping. While charging 220 kV Mariani - Samaguri line from Mariani end, due to persisting fault, other lines also tripped.														
Remedial-Measures	**Settings of Earth Fault relays of all lines at Mariani(AS) to be reviewed by POWERGRID. Directionality of Earth fault Relay at Mariani to be checked and to be made directional**.Bay Owner may provide all required accessories to substation owner for downloading DR output as decided in the last subgroup and PCC meetings. **DR output of both ends to be submitted by concerned substation owners.**														
NERLDC/TL/17/07/012	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	09-07-2017 05:15:00	09-07-2017 06:28:00	DP, ZI, R-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/013	220 kV AGBPP - Mariani (AEGCL) 1 Line	POWERGRID	NEEPCO	AEGCL	09-07-2017 05:50:00	09-07-2017 06:08:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/015	220 kV Mariani (AEGCL) - Misa 1 Line	POWERGRID	AEGCL	POWERGRID	09-07-2017 05:50:00	09-07-2017 06:39:00	No tripping	DP, ZII, R-E, 273 kms.	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output of both ends are not submitted. As informed by AEGCL, fault was in 220 kV Mariani - Samaguri line due to jumper snapping. While charging from Mariani end, due to persisting fault, other lines also tripped.														
Remedial-Measures	**Settings of Earth Fault relays of 220 kV AGBPP - Mariani (AEGCL) Line at Mariani(AS) to be reviewed by POWERGRID(Directionality of Earth fault Relay at Mariani to be checked). Relay settings of DPR and other relays of 220 kV Mariani - Samaguri at Mariani end to be reviewed.** Bay Owner may provide all required accessories to Bay owner for downloading DR output as decided in the last subgroup meeting. **DR output of both ends to be submitted by concerned substation owners.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/016	220 kV AGBPP - Mariani (AEGCL) 1 Line	POWERGRID	NEEPCO	AEGCL	09-07-2017 07:26:00	09-07-2017 08:13:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/017	220 kV Mariani (AEGCL) - Misa 1 Line	POWERGRID	AEGCL	POWERGRID	09-07-2017 07:27:00	09-07-2017 08:12:00	No tripping	DP, ZII, R-E, 278 kms.	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output of both ends are not submitted. As informed by POWERGRID, fault was in 220 kV Mariani - Samaguri line.														
Remedial-Measures	**Settings of Earth Fault relays of 220 kV AGBPP - Mariani (AEGCL) Line at Mariani(AS) to be reviewed by POWERGRID(Directionality of Earth fault Relay at Mariani to be checked). Relay settings of DPR and other relays of 220 kV Mariani - Samaguri at Mariani end to be reviewed.** Bay Owner may provide all required accessories to Bay owner for downloading DR output as decided in the last subgroup meeting. **DR output of both ends to be submitted by concerned substation owners.**														
NERLDC/TL/17/07/014	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	09-07-2017 07:33:00	09-07-2017 09:56:00	DP, Z-I, R-E	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/019	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	POWERGRID	MSPCL	POWERGRID	10-07-2017 15:23:00	10-07-2017 15:54:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output of both ends are not submitted. Fault in the line as 2nd circuit not tripped**. POWERGRID may intimate the reason for tripping.**														
Remedial-Measures	**DR output of both ends to be submitted by concerned substation owners.**														
NERLDC/TL/17/07/020	400 kV Bongaigaon - New Siliguri (Binaguri) 1 Line	POWERGRID	POWERGRID	POWERGRID	13-07-2017 10:21:00	13-07-2017 10:37:00	No tripping	DT Received(Suspected PLCC maloperation)	Not Applicable	Not Applicable	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/021	400 kV Bongaigaon - New Siliguri (Binaguri) 1 Line	POWERGRID	POWERGRID	POWERGRID	13-07-2017 11:13:00	13-07-2017 13:02:00	No tripping	DT Received(Suspected PLCC maloperation)	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	PLCC Mal-operation														
Remedial-Measures	Extra care is to be taken while testing any live equipment in the substations especially in those stations where inter regional/international lines are connected. Forum once again requetsed all utilities to avoid unwanted trippings while testing and inform NERLDC/NERPC before conducting any online test.														
NERLDC/TL/17/07/022	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	13-07-2017 23:50:00	14-07-2017 06:40:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output not available. Mal-operation of Earth Fault Relay at Mokokchung as no other element tripping reported at the time of event and no tripping occurred at Doyand end.														
Remedial-Measures	Earth Fault Relay settings at Mokokchung is to be reviewed by DoP Nagaland.														
NERLDC/GD/17/07/017	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-07-2017 11:30:00	15-07-2017 11:37:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/TL/17/07/023	132 kV Silchar - Hailakandi 1 Line	POWERGRID	POWERGRID	AEGCL	16-07-2017 01:00:00	16-07-2017 01:37:00	DP, ZI, B-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Silchar shows B-E fault in Z-II with fault current upto 2.122 kA and angle between Vb and Ib is 71 deg which indicates solid fault likely due to **lightning**.														
Remedial-Measures	AR was not attempted at either end and this need to be checked by POWERGRID & AEGCL.Vulnerable lightning locations are to be identified by POWERGRID, Checking of Tower footing resistance is to be done in these locations. If required, Line LAs are to be installed.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/024	+/-800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	16-07-2017 03:38:00	16-07-2017 04:39:00	Maloperation of VESDA(fire trip)	Fire alarm	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**VESDA mal-operation as informed by CPCC, POWERGRID.**														
Remedial-Measures	Rectified as informed by POWERGRID.														
NERLDC/TL/17/07/025	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	16-07-2017 11:14:00	16-07-2017 11:48:00	No tripping	DP, ZI, Y-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
Root Cause	Fault in the line due to **vegetation (angle around 32 degrees between Vy & Iy).**														
Remedial-Measures	Vegetation clearance to be done by **POWERGRID.**														
NERLDC/TL/17/07/026	400 kV Biswanath Chariali - Ranganadi 1 Line	POWERGRID	POWERGRID	NEEPCO	16-07-2017 14:12:00	16-07-2017 14:19:00	DP, ZII, B-E	DP, ZI, B-E	Not Applicable	Successful operation	No	No	No	No	No SPS
Root Cause	DR output from Biswanath Chariali shows DEF(Directional Earth fault) initiattion, Z-II carrier aided trip with fault current in B phase gradually rising upto 2.185 kA and neutral current 1.683 kA and angle between Vb and Ib around 1-25 degrees indicate **high resistive fault due to vegetation**. Auto-reclose was attempted but the line tripped due to persistent B-E fault with fault current upto 2.102 kA.														
Remedial-Measures	Vegetation clearance to be done by **POWERGRID.**														
NERLDC/TL/17/07/027	132 kV Dimapur - Imphal 1 Line	POWERGRID	POWERGRID	POWERGRID	17-07-2017 04:49:00	17-07-2017 15:17:00	DP, ZI, R-Y	DP, ZI, R-Y	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Dimapur shows R-Y fault with fault current up to 1.624 kA. No neutral current indicates **phase-phase fault not involving earth.** DR output from Imphal shows R-Y fault with fault current up to 1.127 kA. No neutral current indicates phase-phase fault not involving earth. At 05:09 Hrs, line tripped again due to same type of fault. **As informed by POWERGRID, tree fell on the line due to landslide at Loc No 300-301.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Remedial-Measures	Locations prone to landslide are to be identified by POWERGRID and measurements to be taken to avoid infringement in these locations.														
NERLDC/TL/17/07/028	+/- 800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	17-07-2017 08:18:00	17-07-2017 11:31:00	DC Line Fault	DC Line Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DC line fault. Fault location to be intimated by POWERGRID.														
Remedial-Measures	Referred to NLDC														
NERLDC/TL/17/07/029	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	17-07-2017 11:19:00	17-07-2017 12:02:00	DP, ZI, R-E	DP, ZI, R-E	Not successful operation	Not Furnished	Yes	Yes	Yes	Yes	No SPS
NERLDC/TL/17/07/030	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	17-07-2017 12:47:00	17-07-2017 13:38:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	Yes	Yes	Yes	Yes	No SPS
Root Cause	**Vegetation Fault**. AR attempted but failed due to persistant fault.														
Remedial-Measures	Vegetation clearance to be done by NETC.														
NERLDC/TL/17/07/031	400 kV Bongaigaon - Alipurduar 2 Line	ENICL	POWERGRID	POWERGRID	18-07-2017 15:03:00	##############	DP, ZII, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Bongaigaon shows R-E fault in Z-I with fault current upto 4.135 kA and angle between Vr and Ir is around 73 deg which indicates solid fault. **Chances of insulator failure** as AR was attempted but the line tripped due to persistent R-E fault with fault current upto 5.070 kA. POWERGRID may intimate the root cause.														
Remedial-Measures	Referred to NLDC														
NERLDC/TL/17/07/032	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	19-07-2017 04:52:00	19-07-2017 05:27:00	DP, ZI, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**Likely due to transient lightning fault as many cases of tripping due lightning reported previously . No other tripping in NER reported at the same time.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Remedial-Measures	DPR settings at Gelephu end may be reviewed. Also, DPR settings at Salakati end is to be reviewed by POWERGRID to ensure that relay is not over reaching. Reffered to NLDC.														
NERLDC/TL/17/07/033	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	20-07-2017 17:03:00	20-07-2017 17:20:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by AEGCL, TMS of O/C & E/F at Rangia end are 0.95 & 1 respectively. Due to this, most of the faults are reflected at Kahilipara. Relay Panels are maintained by POWERGRID.														
Remedial-Measures	O/C and E/F Relay settings at Rangia end to be reviewed considering the latest fault contribution. Testing of DPR at Rangia to be done by POWERGRID within 15 days.														
NERLDC/GD/17/07/033	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-07-2017 13:05:00	22-07-2017 13:13:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (R-E fault initially with angle between Vr & Ir around 23 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														
NERLDC/TL/17/07/034	220 kV Agia - BTPS 1 Line	AEGCL	AEGCL	AEGCL	23-07-2017 01:45:00	23-07-2017 17:20:00	Not Furnished	DP, ZI, R-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
NERLDC/TL/17/07/034	220 kV Agia - BTPS 2 Line	AEGCL	AEGCL	AEGCL	23-07-2017 01:45:00	23-07-2017 17:21:00	No tripping	DP, ZI, R-Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**DR outputs not submitted. As informed by AEGCL, conductor Snapping occurred in circuit 2.**														
Remedial-Measures	Proper maintenance of the transmission assets are to be done by transmission licencees to avoid unwanted tripping of critical elements.														
NERLDC/TL/17/07/035	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	23-07-2017 11:15:00	23-07-2017 11:39:00	Not Furnished	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/036	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	23-07-2017 11:53:00	23-07-2017 12:38:00	DP, ZI, Y-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/037	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	23-07-2017 12:53:00	Not yet restored	DP, ZI, Y-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland.**Installation of numerical relays at Doyang to be expedicted by NEEPCO.**														
NERLDC/TL/17/07/038	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	25-07-2017 11:35:00	25-07-2017 12:09:00	DP, ZI, Y-E, successful	DP, ZI, Y-E	Successful	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Jiribam shows Y-E fault in Z-I with fault current upto 1.059 kA and angle between Vy and Iy is around 33 deg which indicates **highly resistive fault likely due to vegetation infringement.** Auto-reclose was **attempted after around 1.6 sec** and was successful.														
Remedial-Measures	AR attempted after 1.6 seconds at Jiribam end needs to be reviewed by POWERGRID. AR scheme at Loktak needs to be reviewed by NHPC. Vegetation clearance to be done by POWERGRID.														
NERLDC/TL/17/07/039	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	POWERGRID	POWERGRID	26-07-2017 10:52:00	26-07-2017 11:24:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Mokokchung shows B-E fault in Z-I with fault current upto 1.664 kA and angle between Vb and Ib is around 27-30 deg which indicates **highly resistive fault likely due to vegetation**. 3 ph Auto-reclose was attempted but failed due to persistent fault with fault current upto 1.532 kA.														
Remedial-Measures	Vegetation clearance to be done by POWERGRID.														
NERLDC/TL/17/07/040	220 kV Samaguri - Sarusajai 2 Line	AEGCL	AEGCL	AEGCL	26-07-2017 12:22:00	26-07-2017 12:35:00	DP, ZI, R-E	Not Furnished	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	Less clearance during windy season as informed by AEGCL. R-ph Jumper of ckt 1 brocked at Brahmaputra river crossing last year. DR output not submitted by AEGCL.														
Remedial-Measures	Restoration of the brocken jumper and old conductor by AEGCL to be expedicted.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/041	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	26-07-2017 13:45:00	26-07-2017 15:20:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	Earth wire snapped and fell on R-ph conductor at Loc 213-214.														
Remedial-Measures	Rectified														
NERLDC/TL/17/07/042	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	27-07-2017 13:33:00	27-07-2017 13:46:00	Tripped during testing of SPS 2 & 3	Direct Trip received	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Tripped during testing of SPS 2 & 3														
Remedial-Measures	Care to be taken to avoid tripping of elements during testing.														
NERLDC/TL/17/07/043	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	28-07-2017 08:03:00	28-07-2017 08:17:00	DP, ZI, Y-E	DP, ZI, Y-E	Successful operation	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Jiribam shows Y-E fault in Z-I with fault current upto 1.104 kA and angle between Vy and Iy is around 22-30 deg which indicates **highly resistive fault likely due to vegetation**. Auto- reclose was **attempted after around 1.6 sec** and was successful.														
Remedial-Measures	AR attempted after 1.6 seconds at Jiribam end needs to be reviewed by POWERGRID. AR scheme at Loktak needs to be reviewed by NHPC. Vegetation clearance to be done by POWERGRID.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/044	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	28-07-2017 13:42:00	29-07-2017 11:04:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/044	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	28-07-2017 13:42:00	29-07-2017 14:38:00	Not Furnished	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in 132 kV Monarchak-Rokhia line. As informed by TSECL, jumper problem is there this line. Tripping of 132 kV Agartala-Rokhia 2 line needs to be analysed by TSECL.														
Remedial-Measures	Relay Settings at Rokhia & 79 Tilla need to reviewed by TSECL and for Monarchak by NEEPCO.														
NERLDC/TL/17/07/045	220 kV Samaguri - Sonabil 2 Line	AEGCL	AEGCL	AEGCL	29-07-2017 07:07:00	29-07-2017 07:18:00	DP, ZI, R-Y-B-E	DP, ZI, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Less clearance during windy season as informed by AEGCL. R-ph Jumper of ckt 1 brocked at Brahmaputra river crossing last year. DR output not submitted by AEGCL.														
Remedial-Measures	Restoration of the brocken jumper and old conductor by AEGCL to be expedicted.														
NERLDC/TL/17/07/047	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	31-07-2017 11:38:00	31-07-2017 12:06:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/07/046	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	31-07-2017 11:30:00	31-07-2017 11:36:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Due to Overloading (65 MW due to CT ratio restriction at Kopili)**														
Remedial-Measures	CT ratio at Kopili end to be changed to 600/1 A by POWERGRID. Accordingly, relay settings at Kopili & khandong to be changed.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/07/048	132 kV AGTCCPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	31-07-2017 13:22:00	31-07-2017 13:35:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Due to improper relay settings at AGTCCPP.**														
Remedial-Measures	In 47th PCC, it was decided to disable the E/F & O/C features of DPR at AGTCCPP. As informed by NEEPCO, O/C & E/F features of DPR are disabled on 21.08.17.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/001	132 kV Dimapur (PG) - Kohima 1 Line	DoP Nagaland & POWERGRID	POWERGRID	DoP, Nagaland	01-07-2017 17:12:00	01-07-2017 17:22:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	High resistive fault due to **vegetation**														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														
NERLDC/GD/17/07/002	132 kV Dimapur (PG) - Kohima 1 Line	DoP Nagaland & POWERGRID	POWERGRID	DoP, Nagaland	02-07-2017 13:11:00	02-07-2017 13:24:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	High resistive fault due to **vegetation**														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														
NERLDC/GD/17/07/003	132 kV Balipara-Khupi 1 Line	NEEPCO	POWERGRID	NEEPCO	02-07-2017 16:02:00	03-07-2017 15:07:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**Vegetation Fault**														
Remedial-Measures	Proper vegetation clearance to be done by DoP AP & NEEPCO														
NERLDC/GD/17/07/004	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	03-07-2017 13:26:00	03-07-2017 14:25:00	DP, ZII, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Rengpang likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Rengpang are to be done by MSPCL.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/005	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	04-07-2017 08:54:00	04-07-2017 09:06:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland.														
NERLDC/GD/17/07/006	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	04-07-2017 21:15:00	04-07-2017 21:24:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland.														
NERLDC/GD/17/07/007	132 kV Loktak - Ningthoukhong 1 Line	MSPCL	NHPC	MSPCL	05-07-2017 12:52:00	05-07-2017 13:09:00	DP, ZI, R-Y-B	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Transient balanced phase-phase fault. Initially R-Y fault and after 200 millisecond fault turned in to R-Y-B fault not involving ground. **Fault cleared in 350 milliseconds.**														
Remedial-Measures	MSPCL may intimate the root cause.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/008	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	POWERGRID	MSPCL	POWERGRID	07-07-2017 11:56:00	07-07-2017 12:14:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/008	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	POWERGRID & MSPCL	MSPCL	POWERGRID	07-07-2017 11:56:00	07-07-2017 12:09:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by POWERGRID, line tripped due to fault in 132 kV Imphal(MSPCL) - Karong line due to CB problem of Karong feeder at Imphal(MSPCL) . MSPCL may confirm the fault in 132 kV Imphal(MSPCL) - Karong line and intimate the root cause.														
Remedial-Measures	CB problem of Karong feeder at Imphal(MSPCL) is to be attended by MSPCL at the earliest.														
NERLDC/GD/17/07/009	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	POWERGRID	MSPCL	POWERGRID	08-07-2017 10:44:00	08-07-2017 10:53:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/009	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	POWERGRID & MSPCL	MSPCL	POWERGRID	08-07-2017 10:44:00	08-07-2017 10:54:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by POWERGRID, line tripped due to fault in 132 kV Imphal(MSPCL) - Karong line due to CB problem of Karong feeder at Imphal(MSPCL) . MSPCL may confirm the fault in 132 kV Imphal(MSPCL) - Karong line and intimate the root cause.														
Remedial-Measures	CB problem of Karong feeder at Imphal(MSPCL) is to be attended by MSPCL at the earliest.														
NERLDC/GD/17/07/010	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	09-07-2017 15:55:00	10-07-2017 19:32:00	Not Furnished	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Root Cause could not be concluded due unavailability of Relay indications/DR outputs of both ends.														
Remedial-Measures	Relay indications of both ends to be furnished by DoP AP														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/011	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	10-07-2017 14:10:00	10-07-2017 14:18:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR not available/submitted. Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/012	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	11-07-2017 12:50:00	11-07-2017 14:55:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/05/013	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	12-07-2017 09:48:00	12-07-2017 10:52:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/05/014	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	13-07-2017 05:16:00	14-07-2017 15:30:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR outputs of both ends not available.Likely due to Fault in the line due to vegetation.														
Remedial-Measures	Vegetation clearance to be done by DoP AP.														
NERLDC/GD/17/07/015	132 kV Karong - Kohima 1 Line	MSPCL & DoP, Nagaland	MSPCL	DoP, Nagaland	13-07-2017 09:05:00	15-07-2017 17:35:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR not avaialable. Fault in the line likely due to vegetation.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/016	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	13-07-2017 09:47:00	14-07-2017 15:22:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR not avaialable.Fault in the line likely due to vegetation.														
Remedial-Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/07/017	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-07-2017 11:30:00	15-07-2017 11:37:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/018	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	15-07-2017 12:26:00	15-07-2017 16:58:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the line due to **vegetation (Angle between Vb & Ib around 18-20 degrees).**														
Remedial-Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/07/019	132 kV Imphal (MSPCL) - Karong 1 Line	MSPCL	MSPCL	MSPCL	15-07-2017 14:40:00	Not yet restored	O/C, Snapping of B phase conductor	Not Furnished (Collapse of suspension tower at loc no 217)	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	B-phase Conductor Snapping at loc no 217.														
Remedial-Measures	Rectified														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/020	132 kV Karong - Kohima 1 Line	MSPCL & DoP, Nagaland	DoP, Nagaland	MSPCL	15-07-2017 17:48:00	16-07-2017 19:55:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the line due to **vegetation.**														
Remedial-Measures	Vegetation clearance to be done by **MSPCL & DoP, Nagaland.**														
NERLDC/GD/17/07/021	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	16-07-2017 02:02:00	16-07-2017 12:30:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/022	132 kV Dimapur - Doyang 1 Line	POWERGRID	POWERGRID	NEEPCO	16-07-2017 04:30:00	16-07-2017 05:31:00	DP, ZI, R-Y-B-E	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/022	132 kV Dimapur - Doyang 2 Line	POWERGRID	POWERGRID	NEEPCO	16-07-2017 04:30:00	16-07-2017 05:46:00	DP, ZI, R-Y-B-E	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/022	132 kV Doyang - Mokokchung Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	16-07-2017 04:30:00	16-07-2017 06:07:00	DP, ZI, R-Y-B-E	Not Tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/022	132 kV Doyang - Wokha 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	16-07-2017 04:30:00	16-07-2017 05:59:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/022	Doyang Unit 1	NEEPCO	NEEPCO		16-07-2017 04:30:00	16-07-2017 06:05:00	Elect. Non-lockout relay 86I optd.		No		No		No		No SPS
NERLDC/GD/17/07/022	Doyang Unit 2	NEEPCO	NEEPCO		16-07-2017 04:30:00	16-07-2017 08:20:00	Non Elec.Lockout 86A & Emer Non Elec Lockout 86B optd .		No		No		No		No SPS
NERLDC/GD/17/07/022	DHEP Unit 3	NEEPCO	NEEPCO		16-07-2017 04:30:00	16-07-2017 06:24:00	Non Elec.Lockout 86A & Emer Non Elec Lockout 86B optd .		No		No		No		No SPS
Root Cause	DPR settings at Doyang need to be reviewed as Distance Protection not operated at Doyang. DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. DR from Dimapur(PG) indicate Doyang line I tripped first and after 5 sec Line-II tripped on R-Y-B-E fault likely due to vegetation.														
Remedial-Measures	Testing of all DPRs at Doyang to be done by NEEPCO and test results to be submitted to NEERPC/NERLDC. Installation of Numerical Relays at Doyang end is to be expedicted by NEEPCO. Vegetation clearance of these line corridors to be done by POWERGRID & DoP Nagaland.														
NERLDC/GD/17/07/023	132 kV Along-Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	16-07-2017 23:25:00	Not yet restored	Earth Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR outputs not available. Fault in the line likely due to vegetation.														
Remedial-Measures	Issue of Vegetation clearance has been already highlighted in the previous subgroup meetings. Status to be intimated by DoP AP.														
NERLDC/GD/17/07/024	132 kV Balipara - Khupi 1 Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	17-07-2017 14:23:00	17-07-2017 14:41:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Vegetation Fault**.														
Remedial-Measures	Issue of line clearance has been already highlighted in the previous subgroup meetings. Status to be intimated by NEEPCO.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/025	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-07-2017 14:52:00	17-07-2017 15:06:00	Earth Fault	Over Current	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	Y-E Solid Transient Fault (Angle between Vy & Iy around 65-71 degrees).														
Remedial-Measures	Resistive reach of DPR at Dimapur(PG) to be reviewed by POWERGRID as fault cleared after 500 msec. POWERGRID & DoP Nagaland to identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														
NERLDC/GD/17/07/026	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-07-2017 15:27:00	17-07-2017 15:37:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	Y-E Solid Transient Fault (Angle between Vy & Iy around 68 degrees).														
Remedial-Measures	Resistive reach of DPR at Dimapur(PG) to be reviewed by POWERGRID as fault cleared after 250 msec. POWERGRID & DoP Nagaland to identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														
NERLDC/GD/17/07/027	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	18-07-2017 14:30:00	18-07-2017 14:43:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR from both ends are not furnished. Relay indication suggests that fault is in the line. Root Cause could not be concluded.														
Remedial-Measures	Thorough patrolling of the line is to be done by POWERGRID & DoP, Nagaland and identify root cause. Detailed report is to be submitted to NERPC.														
NERLDC/GD/17/07/028	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	19-07-2017 05:03:00	19-07-2017 05:15:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault (38 degrees between Vb & Ib)**. Fault cleared in Zone-I timing from Dimapur end. However, fault fed from Kohima end for 570 msec (fault voltage in tripped phase)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. Earth Fault Relay setting at Kohima to be reviewed by DoP Nagaland considering the LHEP generation & latest fault contribution.														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/029	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	19-07-2017 13:37:00	19-07-2017 14:03:00	Not Furnished	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	Yes	Yes	No SPS
NERLDC/GD/17/07/029	132 kV AGTCCPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	19-07-2017 13:37:00	19-07-2017 13:58:00	Not Furnished	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Dhalabil - Kamalpur 1 Line	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 14:02:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	19-07-2017 13:31:00	19-07-2017 13:37:00	No tripping	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Rokhia - Monarchak 1 Line	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 14:03:00	Not Furnished	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 1 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 2 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 3 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	AGTCCPP Extn Unit STG-1	NEEPCO	NEEPCO		19-07-2017 13:30:00	19-07-2017 18:13:00	High Frequency		No		No		No		No SPS
NERLDC/GD/17/07/029	AGTCCPP Extn Unit STG-2	NEEPCO	NEEPCO		19-07-2017 13:30:00	20-07-2017 21:59:00	High Frequency		No		No		No		No SPS
NERLDC/GD/17/07/029	Monarchak Unit 1	NEEPCO	NEEPCO		19-07-2017 13:30:00	19-07-2017 14:46:00	Reversed Power		No		No		No		No SPS

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Root Cause	**Relay indications of Tripura substations are not received properly due to which proper analysis of the event could not be done.**														
Remedial-Measures	Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.														
NERLDC/GD/17/07/030	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	21-07-2017 11:08:00	21-07-2017 11:14:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/030	132 kV Agartala - AGTCCPP 2 Line	POWERGRID	TSECL	NEEPCO	21-07-2017 11:08:00	21-07-2017 11:13:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in downstream of Agartala likely due to **vegetation** (Angle between Vr & Ir around 55 degrees).														
Remedial-Measures	In 47th PCC, it was decided to disable the E/F & O/C features of DPR at AGTCCPP. As informed by NEEPCO, O/C & E/F features of DPR are disabled on 21.08.17.														
NERLDC/GD/17/07/031	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	21-07-2017 11:10:00	22-07-2017 13:31:00	DP, ZI, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR not available. Likely due to Vegetation Fault in the line.														
Remedial-Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/07/032	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-07-2017 11:23:00	22-07-2017 11:35:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (R-E fault initially and turned in to R-Y-E fault with angle between Vr & Ir around 23 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														
NERLDC/GD/17/07/033	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-07-2017 13:05:00	22-07-2017 13:13:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	Yes	Yes	No	No	No SPS

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Root Cause	**Vegetation Fault**. (B-E fault with angle between Vb & Ib around 23 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														
NERLDC/GD/17/07/034	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-07-2017 13:28:00	23-07-2017 13:35:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/035	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	24-07-2017 09:15:00	24-07-2017 09:22:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/07/036	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	24-07-2017 09:35:00	24-07-2017 09:42:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities as informed by DoP Nagaland**.														
Remedial-Measures	Vegetation clearance is to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/037	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	25-07-2017 10:49:00	25-07-2017 11:03:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/037	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	25-07-2017 10:49:00	25-07-2017 11:17:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/037	Monarchak GTG	NEEPCO	NEEPCO		25-07-2017 10:49:00	25-07-2017 12:00:00	Over Frequency		No		No		No		No SPS
Root Cause	**DR output is not available. Likely due to fault in downstream of Monarchak.**														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Remedial-Measures	Relay Settings at Monarchak, Rokhia & Udaipur to be reviewed by NEEPCO & TSECL and downstream co-ordination to be done. DR ouputs to be submitted by NEEPCO & TSECL.														
NERLDC/GD/17/07/038	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	26-07-2017 15:08:00	26-07-2017 15:16:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/039	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	26-07-2017 19:04:00	26-07-2017 19:55:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TSECL	26-07-2017 19:04:00	26-07-2017 19:53:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	26-07-2017 19:04:00	26-07-2017 19:12:00	No tripping	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TSECL	26-07-2017 19:04:00	26-07-2017 20:44:00	No tripping	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132/66 kV Auto Transformer 1, 2 & 3 at Udaipur	TSECL	TSECL		26-07-2017 19:04:00	26-07-2017 19:10:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	Monarchak GTG	NEEPCO	NEEPCO		26-07-2017 19:04:00	26-07-2017 20:19:00	High Frequency		Yes		Yes		No		No SPS
NERLDC/GD/17/07/039	Monarchak STG	NEEPCO	NEEPCO		26-07-2017 19:04:00	26-07-2017 21:30:00	High Frequency		No		No		No		No SPS
Root Cause	**Relay indications of Tripura substations are not received properly due to which proper analysis of the event could not be done.**														

Grid Disturbance in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
Remedial-Measures	Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.														
NERLDC/GD/17/07/040	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-07-2017 09:25:00	27-07-2017 09:35:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/07/041	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-07-2017 10:17:00	27-07-2017 10:35:00	Over current	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/042	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	30-07-2017 15:50:00	30-07-2017 16:53:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														

Grid Incidents in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/07/001	DHEP Unit II	NEEPCO	NEEPCO		04-07-2017 03:55:00	04-07-2017 10:28:00	Power swing cause by tripping of Dimapur Doyang I and II		No		No		No		No SPS
Root Cause	Power swing caused by tripping of Dimapur Doyang I and II														
Remedial-Measures	Installation of Numerical Relay at Doyang is to be expedicted.														
NERLDC/GI/17/07/001	KOPILI Unit II	NEEPCO	NEEPCO		05-07-2017 10:48:00	05-07-2017 15:24:00	Excitation problem		No		No		No		No SPS
Root Cause	Thyristor fan failure														
Remedial-Measures	Rectified														
NERLDC/GI/17/07/002	AGTCCPP Unit IV	NEEPCO	NEEPCO		08-07-2017 02:16:00	08-07-2017 03:43:00	Oil temperture high		No		No		No		No SPS
NERLDC/GI/17/07/002	AGTCCPP Extn Unit STG-II	NEEPCO	NEEPCO		08-07-2017 02:16:00	08-07-2017 07:41:00	Due to tripping of GTG Unit IV		No		No		No		No SPS
Root Cause	Cooling water sprinkler failed														
Remedial-Measures	rectified														
NERLDC/GI/17/07/003	AGTCCPP Unit 2	NEEPCO	NEEPCO		12-07-2017 08:32:00	12-07-2017 10:21:00	Exhaust duct pressure high		No		No		No		No SPS
Root Cause	Gueltin Damper closed														
Remedial-Measures	Locking of Gueltin Damper done														

Grid Incidents in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/07/004	Kopili Unit 4	NEEPCO	NEEPCO		20-07-2017 20:12:00	22-07-2017 11:36:00	Thrust bearing temperature high		No		No		No		No SPS
Root Cause	One Thrust Bearing cooler(out of 6 nos) failed														
Remedial-Measures	Replaced with spare cooler														
NERLDC/UI/17/07/002	Loktak Unit 3	NHPC	NHPC		21-07-2017 14:58:00	21-07-2017 16:26:00	Cooling pump problem		No		No		No		No SPS
Root Cause	Cooling pump problem														
Remedial-Measures	Measures taken against this problem is to be intimated by Loktak, NHPC.														
NERLDC/UI/17/07/003	Monarchak GTG	NEEPCO	NEEPCO		28-07-2017 04:58:00	28-07-2017 11:47:00	Cooling Pump problem		No		No		No		No SPS
NERLDC/UI/17/07/003	Monarchak STG	NEEPCO	NEEPCO		28-07-2017 04:58:00	28-07-2017 12:32:00	Cooling Pump problem		No		No		No		No SPS
Root Cause	Cooling pump problem														
Remedial-Measures	Rectified														
NERLDC/GI/17/07/005	AGTCCPP Unit 4	NEEPCO	NEEPCO		28-07-2017 06:26:00	28-07-2017 09:14:00	Failure of Spinkler system (Lube oil header temp high)		No		No		No		No SPS
NERLDC/GI/17/07/005	AGTPP Extn STG 2	NEEPCO	NEEPCO		28-07-2017 06:26:00	29-07-2017 03:50:00	Failure of Spinkler system (Lube oil header temp high)		No		No		No		No SPS
Root Cause	Failure of Spinkler system														
Remedial-Measures	rectified														

Grid Incidents in NER Grid for the month of July 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/07/006	AGTPP Unit 1	NEEPCO	NEEPCO		28-07-2017 13:42:00	28-07-2017 13:55:00	Voltage Jerk		No		No		No		No SPS
Root Cause	Due to voltage dip in the grid. (Y & B phases voltage touched 45 kV)														
Remedial-Measures	DR output of operated relays to be submitted by AGTCCPP.														
NERLDC/UI/17/07/004	Monarchak STG	NEEPCO	NEEPCO		28-07-2017 13:48:00	29-07-2017 16:47:00	Over Frequency		No		No		No		No SPS
Root Cause	Disturbance in Tripura														
Remedial-Measures	-														
NERLDC/GI/17/07/007	Khandong Unit 2	NEEPCO	NEEPCO		30-07-2017 13:21:00	30-07-2017 18:41:00	Rotar earth fault		No		No		No		No SPS
Root Cause	Carbon Dust in slip ring														
Remedial-Measures	Regular cleaning to be done by Khandong, NEEPCO														

Grid Events

August 2017

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पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/001	220 kV Salakati - Alipurduar 2 Line	POWERGRID	POWERGRID	POWERGRID	01-08-2017 14:00:00	01-08-2017 14:32:00	Tripped without Indication.	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by POWERGRID, CB opened with out any relay indication.														
Remedial-Measures	POWERGRID may intimate the reason for tripping.														
NERLDC/GD/17/08/001	132 kV Balipara - Khupi Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	01-08-2017 18:01:00	01-08-2017 20:07:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Vegetation Fault**.														
Remedial-Measures	Vegetation clearance to be done by DoP AP and NEEPCO.														
NERLDC/GD/17/08/002	132 kV Salakati - Gelephu Line	POWERGRID	POWERGRID	BPC, Bhutan	01-08-2017 18:25:00	02-08-2017 18:48:00	DP, ZII, R-Y-B, 52.49 km	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Balanced R-Y-B fault. Fault beyond Gelephu. Root cause could not be concluded. POWERGRID to intimate the reason for delayed restoration.														
Remedial-Measures	Referred to NLDC.														
NERLDC/TL/17/08/003	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	01-08-2017 18:25:00	01-08-2017 19:13:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by AEGCL, TMS of O/C & E/F at Rangia end are 0.95 & 1 respectively. Due to this, most of the faults are reflected at Kahilipara. Relay Panels are maintained by POWERGRID.														
Remedial-Measures	O/C and E/F Relay settings at Rangia end to be reviewed. Testing of DPR at Rangia to be done by POWERGRID at the earliest.														
NERLDC/TL/17/08/004	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	02-08-2017 18:07:00	02-08-2017 20:30:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Tripped due to LA blast at Motonga as per NLDC report.**														
Remedial-Measures	-														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/005	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	02-08-2017 21:06:00	02-08-2017 21:15:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (B-E fault with angle between Vb & Ib around 36-40 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID. Resistive reach of the DPR settings at Dimapur to be reviewed by POWERGRID.														
NERLDC/TL/17/08/005	220 kV Balipara - Sonabil 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	04-08-2017 22:34:00	05-08-2017 12:53:00	DP, ZI, R-E	DP, ZII, R-Y-B-E	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**Jumper snapped at Loc No 7**														
Remedial-Measures	Periodic Jumper tightning as well as condition based monitoring of transmission assets are to be done by Transmission Licencees.														
NERLDC/TL/17/08/006	132 kV Dimapur - Imphal 1 Line	POWERGRID	POWERGRID	POWERGRID	05-08-2017 10:05:00	05-08-2017 10:15:00	DP, ZI, R-E	DP, ZII, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	**Vegetation infringment**. (R-E fault with angle between Vr & Ir around 30 degrees)														
Remedial-Measures	Vegetation clearance to be done by POWERGRID														
NERLDC/TL/17/08/007	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	05-08-2017 15:18:00	05-08-2017 15:43:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	Y-E fault with angle between Vy & Iy around 65-72 degrees indicate fault likely due to **lightning**. AR attempted and successful at Salakati.														
Remedial-Measures	Healthiness of AR scheme to be checked. POWERGRID may identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/008	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	05-08-2017 18:17:00	05-08-2017 19:55:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**As informed by AEGCL, TMS of O/C & E/F at Rangia end are 0.95 & 1 respectively. Due to this, most of the faults are reflected at Kahilipara. Relay Panels are maintained by POWERGRID.**														
Remedial-Measures	TMS settings has been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution.														
NERLDC/TL/17/08/010	132 kV Jiribam - Loktak 1 Line	POWERGRID	POWERGRID	NHPC	06-08-2017 07:30:00	06-08-2017 07:52:00	Auto-reclosure sucessful	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	**Vegetation fault.** As informed by POWERGRID, burnt bamboo found at Loc 105-106.														
Remedial-Measures	Vegetation clearnce to be done by POWERGRID. Bamboos in the vulnerable locations outside corridor also to be removed to avoid tripping of the line.														
NERLDC/TL/17/08/011	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	09-08-2017 12:22:00	10-08-2017 14:32:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Likely due to fault in downstream of Monarchak. TSECL may please confirm.														
Remedial-Measures	**Relay coordination of downstream of Monarchak to be done by TSECL. Relay settings at Monarchak, Udaipur & Rokhia to be reviewed by concerned utilities.**														
NERLDC/TL/17/08/012	+/-800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	12-08-2017 08:54:00	13-08-2017 01:36:00	Not Furnished	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Relay indications of either end not available. Root cause not concluded.														
Remedial-Measures	**POWERGRID is to furnish relay indications and relevant TFR outputs.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/013	400 kV Balipara - Bongaigaon 4 Line	POWERGRID	POWERGRID	POWERGRID	13-08-2017 06:21:00	13-08-2017 06:49:00	Direct Trip received	Over Voltage	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR from Bongaigaon shows 3 ph trip of Main and Tie CB at 6:21:57 Hrs. Prefault data is missing. Over Voltage tripping as informed by POWERGRID is missing in Digital /Analog data from DR output . As informed by POWERGRID, lightning reported at Bongaigaon area.DR shows no current in C-Ph. Digital channels show only CB opening. **Probable mal-operation.**														
Remedial-Measures	**POWERGRID may do thorough check for to identify the cause for this mal-operation and intimate the root cause to NERPC/NERLDC .**														
NERLDC/TL/17/08/014	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	13-08-2017 8:03:00	13-08-2017 11:05:00	DP, ZI, R-B, 42.76 km	DP, ZI, R-B, 83.6 km	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As reported by POWERGRID, fault was due to bamboo touching at Loc 122-123. However, DR outputs indicate R-B balanced fault with out involment of ground.														
Remedial-Measures	**POWERGRID may intimate the reason for low neutral current as fault due to touching of bamboo normally involves high neutral current. Vegetation clearance to be done by POWERGRID and vegetation like bamboos outside corridor at vulnerable locations also to be cleared by concerned transmission utilities.**														
NERLDC/TL/17/08/014	132 kV Aizawl - Jiribam 1 Line	POWERGRID	POWERGRID	POWERGRID	13-08-2017 16:01:00	13-08-2017 16:10:00	DP, ZII, B-E	DP, ZII, B-E	A/R not Successful	A/R not Successful	No	No	No	No	No SPS
Root Cause	DR output from Aizawl shows operation of Back up protection with 0.481 kA fault current in B phase and neutral current 0.512 kA. The line tripped after 800 msec of fault initiation. DR output from Jiribam shows ZII, B-E fault with fault current up to 0.710 kA and angle between Vb & Ib is around 27-36 degrees which indicate **Vegetation infringment.**														
Remedial-Measures	**Vegetation clearance to be done by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/015	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	13-08-2017 23:20:00	13-08-2017 23:56:00	Not Furnished	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/016	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	13-08-2017 23:56:00	Not yet restored	Not Furnished	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**As informed by AEGCL, TMS of O/C & E/F at Rangia end are 0.95 & 1 respectively. Due to this, most of the faults are reflected at Kahilipara.**														
Remedial-Measures	TMS settings has been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution.														
NERLDC/TL/17/08/018	132 kV Aizawl - Jiribam 1 Line	POWERGRID	POWERGRID	POWERGRID	14-08-2017 13:40:00	16-08-2017 15:40:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	**As informed by POWERGRID, conductor snapped at Loc No 154-155.** DR output from Aizawl shows B-E fault in Z-I with fault current upto 0.540 kA and angle between Vb and Ib is 72-81 deg which indicates solid fault .AR was attempted and was successful. DR output from Jiribam shows B-E fault in Z-I with fault current upto 1.607 kA and angle between Vb and Ib is 61-76 deg which indicates solid fault. AR was attempted but the line tripped due to persistent B-E fault in ZI with fault current upto 1.216 kA.These indicate **solid fault due to conductor snapping.**														
Remedial-Measures	**Trees/Vegetation in vulnerable locations to be removed by concerned utilities.**														
NERLDC/TL/17/08/018	132 kV Aizawl - Kumarghat 1 Line	POWERGRID	POWERGRID	POWERGRID	16-08-2017 14:08:00	16-08-2017 15:33:00	DP, ZI, R-B-E	DP, ZI, R-B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Aizawl shows Z-I, R-B fault with 0.755 kA fault current and **no neutral current indicates** chance of **conductor touching.** DR output not furnished by Kumarghat. **DR is not time sync at Aizwal.**														
Remedial-Measures	**POWERGRID is to intimate the reason for delayed restoration (83 minutes) and root cause of tripping.**														

वृतांत सूचना रिपोर्ट की पेशकश / Furnishing of Event Information Report

पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/019	132 kV Aizawl - Jiribam 1 Line	POWERGRID	POWERGRID	POWERGRID	17-08-2017 10:24:00	17-08-2017 10:36:00	DP, ZI, Y-E	Not Furnished	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Aizawl shows Y-E fault in Z-III with fault current upto 0.580 kA, angle between **Vy and Iy is 19 deg and gradual increase in fault current indicates highly resistive fault due to vegetation**. Line tripped from Aizwal end after 650 msec. DR output from Jiribam shows Y-E fault in Z-II(only initiation) with fault current upto 0.475 kA and angle between Vy and Iy is 44 deg which indicates highly resistive fault likely due to vegetation. **Back up protection was operated and the line tripped after 1.65 sec.** POWERGRID may review the furnished relay indications.														
Remedial-Measures	**Resistive reach of the DPR settings at both ends to be reviewed by POWERGRID.**														
NERLDC/TL/17/08/020	+/-800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	17-08-2017 12:55:00	17-08-2017 14:07:00	DC Line Fault, 232.4 km	DC Line Fault, 1512 km	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DC line fault at 234 Kms. from Biswanath Chariali.														
Remedial-Measures	**Patrolling report and root cause to be furnished by POWERGRID.**														
NERLDC/TL/17/08/021	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	17-08-2017 22:27:00	17-08-2017 22:39:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output not submitted. Fault in the line as earth fault relay operated at both ends. Likely due to infringement.														
Remedial-Measures	**Trees/Vegetation in vulnerable locations to be removed by concerned utilities.**														

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पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/022	132 kV Badarpur - Silchar 2 Line	POWERGRID	POWERGRID	POWERGRID	19-08-2017 20:45:00	19-08-2017 20:54:00	DP, ZII, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/024	132 kV Badarpur - Silchar 2 Line	POWERGRID	POWERGRID	POWERGRID	19-08-2017 21:09:00	19-08-2017 21:42:00	DP, ZII, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**There was no tripping reported in the upstream of Silchar.** DR output from Badarpur shows ZIII, R-Y fault(initiated) with fault current up to 0.505kA and no neutral current. The line however tripped after 70 msec of fault initiation as trip relay operated after 20 milliseconds after Z-III initiation. **Likely due to mal-operation of relay(86) at Badarpur.**														
Remedial-Measures	**POWERGRID may furnish Event Logger Output of Badarpur and intimate the reason for operation of Trip Relay(86).**														
NERLDC/TL/17/08/023	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	19-08-2017 20:52:00	19-08-2017 21:05:00	DP, ZII, R-E	DP, ZII, R-E	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Jiribam shows R-E fault in ZII, carrier received with fault current upto 2.401 kA, sudden dip in Vr and angle between Vr and Ir is around 25 deg which indicates **highly resistive fault likely due to infringement.** AR was attempted and successful, indicates transient nature of fault.														
Remedial-Measures	**Vegetation clearance to be done by POWERGRID. Healthiness of AR scheme at Loktak to be checked by NHPC.**														
NERLDC/TL/17/08/025	132 kV Panchgram - Silchar 1 Line	POWERGRID	AEGCL	POWERGRID	19-08-2017 21:30:00	19-08-2017 21:41:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output not submitted. Likely due to mal-operation of Over Current relay at Panchgram														
Remedial-Measures	**Over Current relay settings at Panchgram to be reviewed by AEGCL.**														

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पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/026	132 kV Dimapur - Imphal 1 Line	POWERGRID	POWERGRID	POWERGRID	21-08-2017 04:31:00	21-08-2017 08:50:00	DP, ZI, R-Y-E	DP, ZII, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Dimapur shows Z-I, R-Y fault with 3.496 kA fault current and **no neutral current.** As informed by POWERGRID, tree fell at Loc No 464-465.														
Remedial-Measures	**Vegetation clearance of outside corridor at vulnerable locations to be done by Transmission licencee.**														
NERLDC/TL/17/08/027	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	21-08-2017 09:56:00	21-08-2017 16:01:00	DP, ZI, R-E	Earth Fault	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
Root Cause	DR output not avaialable. Fault in the line likely due to **vegetation** as this line passes through rubber plantation as informed by TSECL.														
Remedial-Measures	**Vegetation clearance to be done by TSECL.**														
NERLDC/TL/17/08/028	132 kV Dimapur - Doyang 2 Line	POWERGRID	POWERGRID	NEEPCO	21-08-2017 21:50:00	22-08-2017 00:10:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR outputs shows R-Y balanced fault with fault current of 3.3 kA. As informed by POWERGRID, tree brach touched R-Y phases.														
Remedial-Measures	**Vegetation clearance of outside corridor at vulnerable locations needs to be done by Transmission licencee.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/029	400 kV Bongaigaon - Killing (Byrnihat) 1 Line	NETC & MePTCL	POWERGRID	MePTCL	22-08-2017 11:50:00	22-08-2017 19:43:00	Direct trip received	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Bongaigaon shows B-E fault in ZII , carrier received with fault current upto 1.840 kA and angle between Vb and Ib is around 35-44 deg which indicates vegetation fault.DT was received and hence, Auto reclose was not attempted DR output from Byrnihat shows B-E fault in ZI with fault current upto 1.510 kA and angle between Vb and Ib is around 11-14 deg which indicates **highly resistive fault likely due to vegetation**. Auto-reclose was not attempted														
Remedial-Measures	**DT received at Bongaigaon needs to be reviewed by POWERGRID & MePTCL. Vegetation clearance to be done by NETC.**														
NERLDC/TL/17/08/030	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	POWERGRID	POWERGRID	23-08-2017 10:48:00	23-08-2017 11:14:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	.cfg files of both ends not furnished. From PMU , it is observed that AR was attempted but the line tripped due to persistent fault. Likely due to vegetation fault.														
Remedial-Measures	**DR outputs to be furnished by POWERGRID. Vegetation clearance to be done by POWERGRID.**														
NERLDC/TL/17/08/032	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	24-08-2017 04:05:00	27-08-2017 14:05:00	DP, ZI, Y-E	Not Furnished	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR outputs not furnished. As informed by POWERGRID, conductor snapped at Loc No 130-140 due to feeling of tree.														
Remedial-Measures	**Vegetation clearance of outside corridor at vulnerable locations needs to be done by Transmission licencee.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/033	+/- 800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	24-08-2017 13:05:00	24-08-2017 14:01:00	Line Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DC Line fault. POWERGRID may intimate the fault location.														
Remedial-Measures	**Patrolling report, TFR outputs and root cause are to be furnished by POWERGRID.**														
NERLDC/TL/17/08/034	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	25-08-2017 21:43:00	26-08-2017 00:23:00	Earth Fault	DP, ZIII, B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	B-E fault in Z-III (fault cleared after 800 msec) with angle between Vb & Ib around 68-70 degrees indicate fault likley due to **lightning in Bhutan system**.														
Remedial-Measures	**Earth Fault Relay operation at Gelephu end to be reviewed. Resistive reach of DPR at Salakati to be reviewed by POWERGRID. Healthiness of Carrier Communication Scheme to be checked by POWERGRID.**														
NERLDC/TL/17/08/035	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	26-08-2017 01:19:00	26-08-2017 01:42:00	Earth Fault	DP, ZII, B-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
Root Cause	B-E fault in Z-II (fault cleared after 500 msec) with angle between Vb & Ib around 67-68 degrees indicate fault likley due to **lightning in Bhutan system**.														
Remedial-Measures	**Earth Fault Relay operation at Gelephu end to be reviewed. Resistive reach of DPR at Salakati to be reviewed by POWERGRID. Healthiness of Carrier Communication Scheme to be checked by POWERGRID.**														

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पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/036	132 kV Motonga - Rangia 1 Line	AEGCL	BPC, Bhutan	AEGCL	25-08-2017 21:44:00	25-08-2017 22:42:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/037	132 kV Motonga - Rangia 1 Line	AEGCL	BPC, Bhutan	AEGCL	26-08-2017 01:28:00	26-08-2017 02:02:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	As informed by AEGCL, TMS of O/C & E/F at Rangia end were 0.95 & 1 respectively. No tripping reported at Rangia. POWERGRID to intimate the root cause.														
Remedial-Measures	**TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. Testing of DPR at Rangia to be done by POWERGRID at the earliest. Patrolling report to be furnished by POWERGRID.**														
NERLDC/TL/17/08/038	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	26-08-2017 02:08:00	26-08-2017 02:27:00	Earth Fault	DP, ZII, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	R-Y-E fault in Z-II (fault cleared after 500 msec) with fault current 1.7 kA. Likely due to fault in Bhutan system.														
Remedial-Measures	**Earth Fault Relay operation at Gelephu end to be reviewed. Resistive reach of DPR at Salakati to be reviewed by POWERGRID. Healthiness of Carrier Communication Scheme to be checked by POWERGRID.**														
NERLDC/TL/17/08/039	+/- 800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	26-08-2017 12:25:00	26-08-2017 16:22:00	DC Line Fault	DC Line Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/039	+/- 800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	26-08-2017 12:25:00	26-08-2017 16:07:00	DC Line Fault	DC Line Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DC Line fault. POWERGRID may intimate the fault location.														
Remedial-Measures	**Patrolling report, TFR outputs and root cause are to be furnished by POWERGRID.**														

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पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/040	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	27-08-2017 10:50:00	27-08-2017 11:06:00	DP, ZI, Y-E	DP, ZII, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR output from Jiribam shows Y-E fault in ZI with fault current upto 0.900 kA and angle between Vy and Iy is around 19-26 deg which indicates **highly resistive fault likely due to vegetation infringment**														
Remedial-Measures	**Vegetation clearance to be done by Transmission Licensee.**														
NERLDC/TL/17/08/041	132 kV Dimapur - Doyang 2 Line	POWERGRID	POWERGRID	NEEPCO	27-08-2017 11:47:00	27-08-2017 12:04:00	DP, ZII, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Dimapur shows R-Y fault in ZII with fault current upto 1.420 kA and no neutral current. Back up over current and EF was trigered at 534 msec and continuous initiation was given even after tripping of line in Distance Protection. **Likely due to conductor touching.**														
Remedial-Measures	**Continous initiation of over current relay may be checked by POWERGRID. Healthiness of Dampers of may be checked by POWERGRID .**														
NERLDC/TL/17/08/042	220 kV Killing (Byrnihat) - Misa 2 Line	MePTCL	MePTCL	POWERGRID	28-08-2017 04:31:00	28-08-2017 05:06:00	DP, ZI, R-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	Relevant DR outputs not furnished from either ends. Submitted DR from Byrnihat is not relevant to this event. Fault in the line. MePTCL may intimate the root cause.														
Remedial-Measures	**Substation Owners may furnish relevant DR outputs**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/043	400 kV Balipara - Bongaigaon 1 Line	POWERGRID	POWERGRID	POWERGRID	28-08-2017 06:14:00	28-08-2017 06:30:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	DR submitted is not time synchronized. DR output from Bongaigaon shows Y-E fault in ZI with fault current upto 2.42 kA and angle between Vy and Iy is around 37-46 deg which indicates **vegetation fault.** AR was attempted after 1.059 sec and was successful. DR output from Balipara shows **Y-E fault in ZIII initiation** (initiated for 20 milliseconds) with fault current upto 1.305 kA and angle between Vy and Iy is around 37-46 deg which indicates **vegetation fault.** AR was attempted after 1 sec and was successful. However, as informed by RTAMC, line tripped at Balipara.														
Remedial-Measures	**POWERGRID to furnish the DR output of the tripping event (Main-I & Main-II relays) and intimate the reason for tripping at Balipara. Vegetation clearance to be done by POWERGRID. POWERGRID may intimate whether carrier scheme is provided for Z-III at Balipara (as seen from DR).**														
NERLDC/TL/17/08/044	220 kV Balipara - Sonabil 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	28-08-2017 07:01:00	28-08-2017 07:09:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Balipara shows B-E fault with fault current upto 7.126 kA and angle between Vb and Ib is around 65-82 deg which indicates **solid fault**. There is chance of mal-operation of protection at Balipara due to **ill coordination as 220 kV Samaguri-Sonabil I line tripped as informed by AEGCL.** AEGCL may provide the DR output to confirm that the fault was cleared at their end.														
Remedial-Measures	**Relay coordination to be done at Balipara and other 220 kV stations in Assam system.**														
NERLDC/TL/17/08/045	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	28-08-2017 05:48:00	28-08-2017 06:10:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Connectivity of Rangia at the time of tripping to be informed by AEGCL.No tripping reported at Rangia. POWERGRID is to intimate the root cause.														
Remedial-Measures	**TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. Testing of DPR at Rangia to be done by POWERGRID at the earliest. Patrolling report to be furnished by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/046	400 kV Bongaigaon - Alipurduar 2 Line	ENICL	POWERGRID	POWERGRID	28-08-2017 21:03:00	31-08-2017 15:41:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
Root Cause	DR outputs not submitted. From PMU, Auto-Reclosure attempted at Bongaigaon but tripped due to persistent fault.														
Remedial-Measures	**POWERGRID may furnish relevant DR outputs and intimate the reason for tripping.**														
NERLDC/TL/17/08/047	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	29-08-2017 23:56:00	30-08-2017 00:46:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/048	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	30-08-2017 10:50:00	30-08-2017 11:11:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Connectivity of Rangia at the time of tripping to be informed by AEGCL. No tripping reported at Rangia. POWERGRID is to intimate the root cause.														
Remedial-Measures	**TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. Testing of DPR at Rangia to be done by POWERGRID at the earliest. Patrolling report to be furnished by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/049	132 kV Khandong - Khliehriat 2 Line	POWERGRID	NEEPCO	POWERGRID	31-08-2017 10:47:00	31-08-2017 11:06:00	DP, ZI, R-Y-B-E	DP, ZI, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/049	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	31-08-2017 10:47:00	31-08-2017 11:00:00	DP, ZI, R-Y-B, 12.6 km	DP, ZIII, R-Y-B, 56 km	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Z-III tripping at Kopili needs to be reviewed. Fault in 132 kV Khandong - Khliehriat 2 Line likely due to lightning.														
Remedial-Measures	**DPR settings at Kopili needs to be reviewed by NEEPCO. As informed by Kopili, Z-III timing in PSL has been changed to 800 msec from 0 sec.**														
NERLDC/TL/17/08/049	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	31-08-2017 10:47:00	31-08-2017 10:58:00	DP, ZIII, R-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/08/050	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	31-08-2017 13:58:00	31-08-2017 14:15:00	DP, ZIII, R-E	DP, ZI, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR otputs from either end not submitted. Z-III tripping at Khliehriat needs to be reviewed.														
Remedial-Measures	**MePTCL informed that DPR settings were changed on 12th Oct'17. Distance Protection of 132 kV Khliehriat (PG) – Khliehriat (MePTCL) II line is kept out of service due to substation earthing issue. Subgroup requested to take this Distance Protection in service at the earliest**														

वृतांत सूचना रिपोर्ट की पेशकश / Furnishing of Event Information Report

पूर्वोत्तर क्षेत्र में 01.08.17 से 31.08.17 तक की घटनाये / Events in NER Grid from 01.08.17 to 31.08.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/08/051	132 kV Badarpur - Kumarghat 1 Line	POWERGRID	POWERGRID	POWERGRID	31-08-2017 16:06:00	31-08-2017 16:16:00	DP, ZI, R-B-E	Power Swing trip	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR output from Badarpur shows 3 ph trip with no initiation of other digital signals. Root Cause is not concluded.														
Remedial-Measures	**Relevant DR outputs from both ends to be submitted by POWERGRID.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/ 17/08/001	132 kV Balipara - Khupi Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	01-08-2017 18:01:00	01-08-2017 20:07:00	DP, ZI, R-Y-B-E	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	**Vegetation Fault**.															
Remedial-Measures	Vegetation clearance to be done by DoP AP and NEEPCO.															
NERLDC/GD/ 17/08/002	132 kV Loktak - Ningthoukhong 1 Line	MSPCL	NHPC	MSPCL	02-08-2017 11:57:00	02-08-2017 12:18:00	DP, ZII, Y-E	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR from Loktak show Y-E fault with fault curent up to 2.5 kA and angle between Vy & Iy around 62 degrees. Fault persisted for around 180 milliseconds. Before Z-II timing, trip relay operated and correpsonding relay indication is not visible in the digital channel. Likely due to **Vegetation fault beyond Ningthoukhong.**															
Remedial-Measures	Vegetation clearance to be done by MSPCL															

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/ 17/08/003	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	02-08-2017 12:55:00	02-08-2017 13:38:00	No tripping	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/ 17/08/003	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	02-08-2017 12:55:00	02-08-2017 13:37:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/ 17/08/003	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	02-08-2017 12:55:00	02-08-2017 16:23:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/ 17/08/003	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	02-08-2017 12:55:00	02-08-2017 13:39:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/ 17/08/003	Monarchak Unit GTG	NEEPCO	NEEPCO		02-08-2017 12:55:00	02-08-2017 14:52:00	Over Frequency		NA	Not Applicable		No		No		No SPS
NERLDC/GD/ 17/08/003	Monarchak Unit STG	NEEPCO	NEEPCO		02-08-2017 12:55:00	02-08-2017 17:35:00	Over Frequency		NA	Not Applicable		No		No		No SPS
Root Cause	Unwanted tripping of lines connected to Monarchak. Root cause/Fault location could not be concluded due to unavailability of DR outputs.															
Remedial-Measures	TSECL to submit the patrolling report. Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.															
NERLDC/GD/ 17/08/004	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	02-08-2017 13:38:00	02-08-2017 13:53:00	DP, ZI, B-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	**Vegetation fault (Angle between Vb & Ib around 20 degree)**															
Remedial-Measures	Vegetation clearance to be done by MSPCL															
NERLDC/GD/ 17/08/005	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	02-08-2017 21:06:00	02-08-2017 21:15:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (B-E fault with angle between Vb & Ib around 36-40 degrees)															
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID. Resistive reach of the DPR settings at Dimapur to be doen by POWERGRID.															

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/006	132 kV Pasighat - Roing 1 Line	POWERGRID	DoP, Arunachal Pradesh	POWERGRID	04-08-2017 11:47:00	04-08-2017 12:02:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR outputs not available. Fault in the line likely due to vegetation.															
Remedial-Measures	Issue of Vegetation clearance has been already highlighted in the previous subgroup meetings. Status to be intimated by DoP AP.															
NERLDC/GD/17/08/007	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	06-08-2017 05:27:00	06-08-2017 06:35:00	No tripping	SF_6 gas low	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	CB SF6 low gas pressure															
Remedial-Measures	Periodic maintenance to be done by concerned utilities.															
NERLDC/GD/17/08/008	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	06-08-2017 18:03:00	07-08-2017 12:49:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (Y-E fault with angle between Vy & Iy around 30 degrees)															
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.															
NERLDC/GD/17/08/009	132 kV Aizawl - Zungtui 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	07-08-2017 12:06:00	07-08-2017 17:10:00	Over current	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram power system was connected with rest of NER Grid through 132 kV Aizawl - Zuangtui line. At 12:06 Hrs on 07.08.2017, 132 kV Aizawl- Zuangtui line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**															
	Antecedent Conditions of NER Grid	**Antecedent Load: 1654 MW , Antecedent Generation: 1681 MW**														
	***Substation Affected**	**Zuangtui, Saitual, Serchip, Lunglei, Khawzawl and Champai Substation**														
	Restoration Details	**Power supply extended to Zungtui Substation through 132 kV Aizawl - Zungtui 1 Line at 17:10 Hrs on 07.08.2017.**														
	Root Cause	**Downstream phase to phase fault.**														
	Remedial Measures	**Relay coordination of downstream substations of Aizwal is to be done by P&ED Mizoram in consultation with POWERGRID.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/010	132 kV Lekhi - Nirjuli 1 Line	DoP, AP & POWERGRID	DoP, Arunachal Pradesh	POWERGRID	08-08-2017 07:51:00	08-08-2017 08:20:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Nirjuli area of Arunachal Pradesh Power System and Gohpur Area of Assam Power System were connected with rest of NER Grid through 132 kV Lekhi - Nirjuli line (Bus Coupler CB of Gohpur kept open for system requirement). At 07:51 Hrs on 08.08.2017, 132 kV Lekhi - Nirjuli line tripped. Due to tripping of this element, Lekhi area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1848 MW , Antecedent Generation: 1942 MW**														
	***Substation Affected**	**Nirjuli and Gohpur Substation**														
	Restoration Details	**Power supply extended to Nirjuli Substation through 132 kV Lekhi - Nirjuli 1 Line at 08:20 Hrs, to Gohpur Substation through 132 kV Nirjuli - Gohpur 1 Line at 08:20 Hrs on 08.08.2017.**														
	Root Cause	**Fault in the line / downstream of Nirjuli.**														
	Remedial Measures	**Relay coordination to be done at Nirjuli & downstream substations of Nirjuli by POWERGRID & DoP,AP.**														
NERLDC/GD/17/08/011	132 kV Palatana - Surajmaninagar 1 Line	POWERGRID	OTPCL	TSECL	09-08-2017 05:17:00	09-08-2017 05:40:00	DP, ZIII, R-E	No tripping	GD-II	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	132 kV AGTCCPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	09-08-2017 05:17:00	09-08-2017 06:35:00	Over current	No tripping		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	09-08-2017 05:17:00	09-08-2017 06:47:00	Not Furnished	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
	132 kV Agartala - AGTCCPP 2 Line	POWERGRID	TSECL	NEEPCO	09-08-2017 05:17:00	09-08-2017 05:58:00	Not Furnished	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	09-08-2017 05:17:00	09-08-2017 06:14:00	No tripping	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV P K Bari - Kumarghat 1 Line	TSECL	TSECL	POWERGRID	09-08-2017 05:17:00	09-08-2017 06:43:00	Over current	No tripping		Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	Brief Description of the Incident	**Bangladesh (South Comilla) Power system, AGTCCPP and Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Surajmaninagar I line, 132 kV Palatana - Udaipur I line, 132 kV Kumarghat – P K Bari I line and 132 kV AGTCCPP - Kumarghat I line (132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded, 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc N. 124, 125, 126, 137, 138 and 139, 132 kV & 132 kV Dullavcherra – Hailakandi I line was under outage since 06:06 Hrs on 02.04.2017 due to tower collapsed at Loc No. 134). At 05:17 Hrs on 09.08.2017, 132 kV Palatana - Surajmaninagar I line, 132 kV Palatana - Udaipur I line, 132 kV Kumarghat – P K Bari I line and 132 kV AGTCCPP - Kumarghat I line tripped. Due to tripping of these elements, Bangladesh (South Comilla) power system, AGTCCPP and Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1700 MW , Antecedent Generation: 1809 MW**														
	***Substation Affected**	**Tripura (Rokhia Power Station, Monarchak Power Station, Agartala, Ambasa, Budhjungnagar, Dhalabil, Dharmanagar, Dullavchera, Jirania, Kamalpur, P K Bari, Rabindranagar, Surajmaninagar, Teliamura (Gamaitilla), Udaipur (Banduar) and Baramura), Bangladesh (South Comilla) & AGTCCPP Power Station**													
	Restoration Details	**Power Supply extended to Surajmaninagar through 132 kV Palatana - Surajmaninagar I line at 05:40 Hrs, to Agartala through 132 kV Agartala - Surajmaninagar II line at 05:41 Hrs, to AGTCCPP Power Station through 132 kV Agartala - AGTCCPP II line at 05:58 Hrs, to Rokhia Power Station through 132 kV Agartala - Rokhia II line at 05:59 Hrs, to Udaipur through 132 kV Palatana – Udaipur I line at 06:25 Hrs, to Monarchak Power Station through 132 kV Monarchak – Rokhia I line at 08:25 Hrs, to P K Bari through 132 kV P K Bari – Kumarghat I line at 06:43 Hrs. Power supply was extended to Bangladesh (South Comilla) through 132 kV Surjamaninagar – South Comilla I at 06:27 Hrs on 09.08.2017. The system was progressively restored at Hrs.**													
	Root Cause	**Fault in the tripura system. Root Cause could not be concluded due to unavailability of DR Output/Proper Relay indications.**														
	Remedial Measures	**TSECL may intimate the root cause. OTPC may furnish the DR output of Palatana end.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/012	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-08-2017 13:09:00	09-08-2017 13:20:00	DP, ZI, B-E	No tripping	GD-I	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG) - Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 13:09 Hrs on 09.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1671 MW , Antecedent Generation: 1567 MW**														
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**														
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 13:20 Hrs on 09.08.2017.**														
	Root Cause	**Fault in the line likely due to vegetation.**														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland. DR output of Dimapur end to be submitted by POWERGRID.**														
NERLDC/GD/17/08/013	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-08-2017 17:42:00	09-08-2017 17:49:00	DP, ZI, R-E	No tripping	GD-I	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 17:42 Hrs on 09.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 2112 MW , Antecedent Generation: 2057 MW**														
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**														
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 17:49 Hrs on 09.08.2017.**														
	Root Cause	DR output shows R-E fault with 3 kA fault current and angle between Vr & Ir around 60-61 degrees indicate transient fault due to **vegetation infringement.**Dimapur end opened within 60 msec of fault initiation. However, Fault cleared after 650 msec as seen from DR (tripping at remote end).														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/014	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	09-08-2017 14:01:00	09-08-2017 14:12:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur I line was under outage since 12:22 Hrs on 09.08.2017). At 13:59 Hrs on 09.08.2017, 132 kV Monarchak - Rokhia I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1698 MW , Antecedent Generation: 1699 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 14:12 Hrs, Rabindranagar Substation through 132 kV Monarchak - Rabindranagar 1 Line at 14:24 Hrs on 09.08.2017.**														
	Root Cause	**DR output not avaialable. Fault in the line likely due to vegetation as this line passes through rubber plantation as informed by TSECL.**														
	Remedial Measures	**Vegetation clearance to be done by TSECL.**														
NERLDC/GD/17/08/015	132 kV Mokokchung (PG) - Mokokchung (DoP, Nagaland) 1 Line	POWERGRID	POWERGRID	DoP, Nagaland	09-08-2017 21:05:00	10-08-2017 08:06:00	Earth Fault	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Mokokchung (PG) - Mokokchung (DoP, Nagaland) 2 Line	POWERGRID	POWERGRID	DoP, Nagaland	09-08-2017 21:05:00	09-08-2017 23:17:00	Earth Fault	Not Furnished		Not Applicable	Not Applicable	No	No	No	No	No SPS

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	09-08-2017 21:05:00	09-08-2017 21:30:00	DP, ZI, B-E (27.4%)	Not Furnished		Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Mokokchung area of Nagaland Power System was connected with rest of NER Grid through 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines. (132 kV Mokokchung(DoP, Nagaland) -Marianai(AS) is under long outage & 66 kV Tuengsang-Likimro line kept open for system requirement). At 21:05 Hrs on 09.08.2017, 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines tripped. Due to tripping of these elements, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 2454 MW, Antecedent Generation: 2141 MW**														
	***Substation Affected**	**Mokokchung Substation**														
	Restoration Details	**Power supply extended to Mokokchung Substation through 132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line at 21:30 Hrs on 09.08.2017.**														
	Root Cause	DR output not submitted/available. Fault was in 132 kV Doyang - Mokokchung (DoP, Nagaland) Line as seen from relay indication. Likely due to vegetation fault as this line corridor has vegetation as informed in the earlier subgroup meetings.														
	Remedial Measures	Healthiness of Protection System at Mokokchung (DoP Nagaland) for 132 kV Doyang - Mokokchung line to be done by DoP Nagaland.														
NERLDC/GD/17/08/016	132 kV Aizawl - Zungtui 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	09-08-2017 23:02:00	10-08-2017 01:49:00	DP, ZIII, R-E	CT blast at Zungtui	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Zuangtui I line. At 23:02 Hrs on 09.08.2017, 132 kV Aizawl- Zuangtui I line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**															
	Antecedent Conditions of NER Grid	**Antecedent Load: 2084 MW , Antecedent Generation: 2163 MW**														
	***Substation Affected**	**Zungtui Substation**														
	Restoration Details	**Power supply extended to Zungtui Substation through 132 kV Aizawl - Zungtui 1 Line at 01:49 Hrs on 10.08.2017.**														
	Root Cause	As informed by POWERGRID, R-ph CT blast occurred at Zuangtui SS.														
	Remedial Measures	Zone-3 operation at Aizwal end needs to be reviewed by POWERGRID. Condition based maintenance is to be followed by all utilities to avoid equipment failures.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/017	132 kV Doyang - Mokokchung (DoP, Nagaland) Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	09-08-2017 23:20:00	10-08-2017 00:03:00	DP, ZI, B-E (27.5%)	Not Furnished	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	132 kV Mokokchung (PG) - Mokokchung (DoP, Nagaland) 2 Line	POWERGRID	POWERGRID	DoP, Nagaland	09-08-2017 23:20:00	10-08-2017 07:55:00	Earth Fault	Not Furnished		Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	09-08-2017 23:20:00	10-08-2017 07:55:00	Earth Fault	Not Furnished		Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Mokokchung area of Nagaland Power System was connected with rest of NER Grid through 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) II line. (132 kV Mokokchung (DoP, Nagaland) - Mokokchung (PG) I line is tripped at 21:05 Hrs on 09.08.2017 and was not restored, 132 kV Mokokchung(DoP, Nagaland) - Marianai(AEGCL) is under long outage & 66 kV Tuengsang-Likimro line kept open for system requirement). At 23:20 Hrs on 09.08.2017, 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) II line tripped. Due to tripping of these elements, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 2041 MW , Antecedent Generation: 2129 MW**														
	***Substation Affected**	**Mokokchung Substation**														
	Restoration Details	**Power supply extended to Mokokchung Substation through 132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line at 00:03 Hrs on 10.08.2017.**														
	Root Cause	DR output not submitted/available. Fault was in 132 kV Doyang - Mokokchung (DoP, Nagaland) Line as seen from relay indication. Likely due to vegetation fault as this line corridor has vegetation as informed in the earlier subgroup meetings.														
	Remedial Measures	Healthiness of Protection System at Mokokchung (DoP Nagaland) for 132 kV Doyang - Mokokchung line to be done by DoP Nagaland.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/018	132 kV Agartala - Rokhia I Line	TSECL	TSECL	TPGL	10-08-2017 00:26:00	10-08-2017 01:03:00	Over current	Over current	GD-I	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Agartala - Rokhia II Line	TSECL	TSECL	TPGL	10-08-2017 00:26:00	10-08-2017 00:55:00	Hand tripped	Closed		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	10-08-2017 00:26:00	10-08-2017 01:05:00	Hand tripped	Directional Over Current		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Agartala-Rokhia I & II lines and 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur 1 Line was under shutdown since 12:30 Hrs on 09.08.2017, 66 kV Bagafa-Belonia line & 66 kV Rokhia-Badarghat line kept open for system requirement). At 00:26 Hrs on 10.08.2017, 132 kV Agartala-Rokhia I & II lines and 132 kV Monarchak - Rokhia I line tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station and Rabindranagar area were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1852 MW , Antecedent Generation: 2112 MW**														
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station and Rabindranagar Substation**														
	Restoration Details	**Power supply extended to Rokhia Power Station through 132 kV Agartala - Rokhia II Line at 00:55 Hrs, to Monarchak Power Station through 132 kV Monarchak - Rokhia I Line at 01:05 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar I Line at 01:06 Hron 10.08.2017.**														
	Root Cause	Fault in 132 kV Agartala-Rokhia I line due to jumper snap. Tripping of 132 kV Monarchak - Rokhia line needs to be reviewed.														
	Remedial Measures	Over Current relay settings at Rokhia to be reviewed.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/019	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	10-08-2017 01:10:00	10-08-2017 09:06:00	DP, ZI, B-E (28%)	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Mokokchung area of Nagaland Power System was connected with rest of NER Grid through 132 kV Doyang-Mokokchung (DoP, Nagaland) I line (132 kV Mokokchung (DoP, Nagaland) - Mokokchung (PG) I line is tripped at 09:05 Hrs on 09.08.2017 and was not restoted, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) II line is tripped at 23:20 Hrs on 09.08.2017 and was not restored, 132 kV Mokokchung(DoP, Nagaland) - Marianai(AEGCL) is under long outage & 66 kV Tuengsang-Likimro line kept open for system requirement). At 01:10 Hrs on 10.08.2017, 132 kV Doyang-Mokokchung (DoP, Nagaland) I line tripped. Due to tripping of this element, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1847 MW , Antecedent Generation: 2098 MW**														
	***Substation Affected**	**Mokokchung Substation**														
	Restoration Details	**Power supply extended to Mokokchung Substation through 132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line at 09:06 Hrs on 10.08.2017.**														
	Root Cause	DR of Doyand end is not submitted as Numerical relay is not available at Doyang end. Likely due to vegetation fault in the line.														
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland. Installation of numerical relays at Doyang to be expedicted by NEEPCO.														
NERLDC/GD/17/08/020	132 kV Pasighat - Roing 1 Line	POWERGRID	DoP, Arunachal Pradesh	POWERGRID	10-08-2017 01:35:00	10-08-2017 02:02:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Roing area (Roing and Tezu) of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Pasighat - Roing I line. At 01:35 Hrs on 10.08.2017, 132 kV Pasighat - Roing I line tripped. Due to tripping of this element, Roing area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**															
	Antecedent Conditions of NER Grid	**Antecedent Load: 1779 MW , Antecedent Generation: 2041 MW**														
	***Substation Affected**	**Roing and Tezu Substation**														
	Restoration Details	**Power supply extended to Roing Substation through 132 kV Pasighat - Roing 1 Line at 02:02 Hrs on 10.08.2017.**														
	Root Cause	Likely due to fault in the line/downstream of Roing.														
	Remedial Measures	DoP AP may intimate the root cause.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/021	132 kV Agia - Mendipathar 1 Line	MePTCL	AEGCL	MePTCL	10-08-2017 22:55:00	10-08-2017 23:08:00	Over current	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	132 kV Mawngap - Nongstoin 1 Line	MePTCL	AEGCL	MePTCL	10-08-2017 22:55:00	10-08-2017 23:00:00	DP, ZI, Y-E	No tripping		Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Nangalbibra, Medipathar, Nongstoin and Rongkhon areas of Meghalaya Power System were connected with rest of NER Grid through 132 kV Agia - Medipathar I line and 132 kV Mawngap - Nongstoin I line . At 22:55 Hrs on 10.08.2017, 132 kV Agia - Medipathar I line and 132 kV Mawngap - Nongstoin I line tripped. Due to tripping of these element, Nangalbibra, Medipathar, Nongstoin and Rongkhon areas were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1962 MW , Antecedent Generation: 2145 MW**														
	***Substation Affected**	**Nangalbibra, Medipathar, Nongstoin and Rongkhon Substation**														
	Restoration Details	**Power supply extended to Nongstoin Substation through 132 kV Mawngap - Nongstoin 1 Line at 23:00 Hrs, to Mendipathar Substation through 132 kV Agia - Mendipathar 1 Line at 23:08 Hrs, to Nangalbibra Substation through 132 kV Nongstoin - Nangalbibra 1 Line at 23:10 Hrs, to Rongkhon Substation through 132 kV Nangalbibra - Rongkhon 1 Line at 23:10 Hrs on 10.08.2017.**														
	Root Cause	Fault was in 132 kV Mawngap - Nongstoin Line. Due to non-clearance of fault at Nongstoin, fault was cleared at Agia by tripping 132 kV Agia - Mendipathar Line.														
	Remedial Measures	MePTCL may intimate the root cause. Healthiness of Protection System at Nongstoin for 132 kV Mawngap - Nongstoin Line to be done by MePTCL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/022	132 kV Badarpur - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	11-08-2017 01:15:00	11-08-17 1:37	DP, ZIII, Y-B-E	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	11-08-2017 01:15:00	11-08-2017 02:13:00	DP, ZIII, Y-B-E	Not Furnished		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Kolasib area of Mizoram Power System was connected with rest of NER Grid through 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line. At 01:15 Hrs on 11.08.2017, 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line tripped. Due to tripping of these elements, Kolasib area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1629 MW , Antecedent Generation: 2091 MW**														
	***Substation Affected**	**Kolasib Substation**														
	Restoration Details	**Power supply extended to Kolasib Substation through 132 kV Badarpur - Kolasib 1 Line at 01:37 Hrs on 11.08.2017.**														
	Root Cause	Fault in the downstream of Kolasib likely due to Vegetation.														
	Remedial Measures	Relay Coordination to be done at Kolasib & downstream substations of Kolasib by P&ED Mizoram.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/023	132 kV Badarpur - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	11-08-2017 01:39:00	11-08-2017 02:21:00	DP, ZIII, Y-B-E	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	SPS not operated
	Brief Description of the Incident	**Kolasib area of Mizoram Power System was connected with rest of NER Grid through 132 kV Kolasib-Badarpur line (132 kV Kolasib-Aizwal line was under outage since 01:15 Hrs on 11.08.2017. At 01:15 Hrs on 11.08.2017, 132 kV Kolasib-Badarpur line tripped. Due to tripping of this element, Kolasib area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**															
	Antecedent Conditions of NER Grid	**Antecedent Load: 1577 MW , Antecedent Generation: 2103 MW**														
	***Substation Affected**	**Kolasib Substation**														
	Restoration Details	**Power supply extended to Kolasib Substation through 132 kV Badarpur - Kolasib 1 Line at 02:21 Hrs on 11.08.2017.**														
	Root Cause	Fault in the downstream of Kolasib likely due to Vegetation.														
	Remedial Measures	Relay Coordination to be done at Kolasib & downstream substations of Kolasib by P&ED Mizoram.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/024	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	11-08-2017 10:41:00	11-08-2017 10:46:00	Not Furnished	Directional Earth Fault	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	11-08-2017 10:41:00	11-08-2017 10:59:00	Not Furnished	Earth Fault		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line & 132 kV Monarchak - Udaipur I line. At 10:42 Hrs on 11.08.2017, 132 kV Monarchak - Rokhia I line & 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1507 MW , Antecedent Generation: 2044 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 10:46 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Udaipur 1 Line at 10:49 Hrs on 11.08.2017.**														
	Root Cause	Fault in any one the tripped line or downstream of Monarchak.														
	Remedial Measures	Relays settings at Monarchak to be reviewed. Relay Coordination of downstream substations of Monarchak to be done by TSECL in consultation with Monarchak,NEEPCO.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/025	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	13-08-2017 12:20:00	13-08-2017 12:29:00	DP, ZI, B-E	Over current	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:20 Hrs on 13.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1627 MW , Antecedent Generation: 2056 MW**														
	***Substation Affected**	**Rengpang Substation**														
	Restoration Details	**Power supply extended to Rengpang Substation through 132 kV Loktak - Rengpang 1 Line at 12:29 Hrs on 13.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/08/026	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	13-08-2017 12:22:00	13-08-2017 12:32:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 12:22 Hrs on 13.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1630 MW , Antecedent Generation: 2054 MW**														
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**														
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:32 Hrs on 13.08.2017.**														
	Root Cause	Vegetation Fault														
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/027	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	13-08-2017 12:45:00	Not yet restored	DP, ZI, B-E	Over current	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:45 Hrs on 13.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1630 MW , Antecedent Generation: 2046 MW**														
	***Substation Affected**	**Rengpang Substation**														
	Restoration Details	**Power supply is not restored yet.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/08/028	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	14-08-2017 12:01:00	14-08-2017 12:09:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line kept open due to improper relay cordination of Dimapur-Kohima-Wokha link & 66 kV Tuensang - Likhimro line kept open for construction activities). At 12:09 Hrs on 14.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1664 MW , Antecedent Generation: 2158 MW**														
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**														
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:09 Hrs on 14.08.2017.**														
	Root Cause	Vegetation Fault														
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/029	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-08-2017 12:03:00	15-08-2017 12:13:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line kept open due to improper relay cordination of Dimapur-Kohima-Wokha link & 66 kV Tuensang - Likhimro line kept open for construction activities). At 12:03 Hrs on 15.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to load generation mismatch.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1650 MW , Antecedent Generation: 2267 MW**														
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**														
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:13 Hrs on 15.08.2017.**														
	Root Cause	Vegetation Fault														
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														
NERLDC/GD/17/08/030	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	16-08-2017 12:45:00	16-08-2017 13:28:00	DP, ZI, B-E	Not Furnished	GD-I	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	16-08-2017 12:45:00	16-08-2017 13:39:00	No tripping	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	16-08-2017 12:45:00	16-08-2017 13:05:00	No tripping	Directional Earth Fault		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Palatana - Udaipur I line (66 kV Gokulnagar - Badarghat I line, 66 kV Bagafa - Belonia I line and 66 kV Udaipur - Jatan Bari I line were kept open due to phase sequence issue). At 12:45 Hrs on 16.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Palatana - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar area and Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1720 MW , Antecedent Generation: 2121 MW**														
	***Substation Affected**	**Monarchak, Rabindranagar and Udaipur**														
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 13:05 Hrs, to Udaipur through 132 kV Palatana - Udaipur 1 Line at 13:28 Hrs.**														
	Root Cause	Fault in 132 kV Palatana - Udaipur line/ downstream of Monarchak. TSECL may intimate the root cause.														
	Remedial Measures	Earth Fault settings at Rokhia to be reviewed by TSECL. Tripping at Udaipur end of 132 kV Monarchak-Udaipur line to be reviewed. DR output of 132 kV Palatana-Udaipur line to be furnished by OTPC.														
NERLDC/GD/17/08/031	132 kV Loktak - Ningthoukhong 1 Line	MSPCL	NHPC	MSPCL	16-08-2017 13:39:00	16-08-2017 14:18:00	DP, ZIII, Y-B	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Ningthoukhong area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak-Ningthoukhong line (132 kV Imphal(PG)-Ningthoukhong line & 132 kV Kakching-Kongba line kept open as 132 kV Loktak-Ningthoukhong I line gets overloaded in case of keeping these lines in loop). At 13:39 Hrs on 16.08.2017, 132 kV Loktak-Ningthoukhong line tripped. Due to tripping of this element, Ningthoukhong area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1783 MW , Antecedent Generation: 2161 MW**														
	***Substation Affected**	**Ningthoukhong, Churachandpur and Kakching**														
	Restoration Details	**Power supply extended to Ningthoukhong Substation through 132 kV Loktak - Ningthoukhong 1 Line at 14:18 Hrs on 16.08.2017.**														
	Root Cause	Phase to Phase(Y-B) fault in downstream of Ningthoukhong.Z-III initiated. Tripped due to over current. Fault cleared in 270 msec.														
	Remedial Measures	Relay coordination to be done at downstream stations of Ningthoukhong by MSPCL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/032	132 kV Doyang - Wokha 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	17-08-2017 09:42:00	17-08-2017 10:15:00	DP, ZI, R-E	Over current	GD-I	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Wokha area of Nagaland Power System was connected with rest of NER Grid through 132 kV Doyang - Wokha line (132 kV Wokha - Kohima line kept open due to improper relay cordination of Dimapur-Kohima-Wokha link). At 09:42 Hrs on 17.08.2017, 132 kV Doyang - Wokha I line tripped. Due to tripping of this element, Doyang area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1738 MW , Antecedent Generation: 2177 MW**														
	***Substation Affected**	**Wokha**														
	Restoration Details	**Power supply extended to Wokha Substation through 132 kV Doyang - Wokha 1 Line at 10:15 Hrs on 17.08.2017.**														
	Root Cause	Vegetation Fault														
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland														
NERLDC/GD/17/08/033	132 kV Imphal (MSPCL) - Imphal (PG) 1 Line	POWERGRID	MSPCL	POWERGRID	17-08-2017 11:13:00	17-08-2017 11:23:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Imphal (MSPCL) - Imphal (PG) 2 Line	POWERGRID	MSPCL	POWERGRID	17-08-2017 11:13:00	17-08-2017 11:22:00	Earth Fault	Earth Fault		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Capital area & Karong area of Manipur Power System were connected with rest of NER Grid through 132 kV Imphal-Imphal I & II lines (132 kV Kakching-Kongba line kept open as 132 kV Yurembam - Yaingangpokpi line gets overloaded in case of keeping this line in loop & 132 kV Karong-Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop). At 11:13 Hrs on 17.08.2017, 132 kV Imphal-Imphal I & II lines tripped. Due to tripping of these elements, Capital area & Karong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1809 MW , Antecedent Generation: 2214 MW**														
	***Substation Affected**	**Imphal and Karong**														
	Restoration Details	**Power supply extended to Imphal Substation through 132 kV Imphal (MSPCL) - Imphal (PG) 2 Line at 11:22 Hrs on 17.08.2017.**														
	Root Cause	Fault in the line.														
	Remedial Measures	MSPCL & POWERGRID may intimate the root cause as DR outputs are not available.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/034	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	17-08-2017 12:04:00	17-08-2017 13:07:00	DP, ZI, B-E	Not Furnished	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:04 Hrs on 17.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1802 MW , Antecedent Generation: 2217 MW**														
	***Substation Affected**	**Rengpang**														
	Restoration Details	**Power supply extended to Rengpang through 132 kV Loktak - Rengpang 1 Line at 13:07 Hrs on 17.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by MSPCL.														
NERLDC/GD/17/08/035	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	18-08-2017 12:07:00	18-08-2017 12:45:00	DP, ZI, B-E	Not Furnished	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:07 Hrs on 18.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1743 MW , Antecedent Generation: 2031 MW**														
	***Substation Affected**	**Rengpang**														
	Restoration Details	**Power supply extended to Rengpang through 132 kV Loktak - Rengpang 1 Line at 12:45 Hrs on 18.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by MSPCL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/036	132 kV Pasighat - Roing 1 Line	POWERGRID	DoP, Arunachal Pradesh	POWERGRID	18-08-2017 17:17:00	18-08-2017 17:36:00	Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Roing area (Roing and Tezu) of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Pasighat - Roing I line. At 17:17 Hrs on 18.08.2017, 132 kV Pasighat - Roing I line tripped. Due to tripping of this element, Roing area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**															
	Antecedent Conditions of NER Grid	**Antecedent Load: 1898 MW , Antecedent Generation: 2324 MW**														
	***Substation Affected**	**Roing and Tezu**														
	Restoration Details	**Power supply extended to Roing through 132 kV Pasighat - Roing 1 Line at 17:36 Hrs on 18.08.2017.**														
	Root Cause	Likely due to fault in the line/downstream of Roing.														
	Remedial Measures	DoP AP may intimate the root cause.														
NERLDC/GD/17/08/037	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) II Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	19-08-2017 13:11:00	19-08-2017 14:40:00	Over current	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Dimapur area of Nagaland was connected with rest of NER Grid through 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line (132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) I line was under outage since 08.06.2016). At 13:11 Hrs on 19.08.2017, 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line tripped. Due to tripping of this element, Dimapur area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1798 MW , Antecedent Generation: 1706 MW**														
	***Substation Affected**	**Dimapur**														
	Restoration Details	**Power supply extended to Dimapur through 132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) II Line at 14:40 Hrs on 19.08.2017.**														
	Root Cause	Likely due to vegetation fault in the downstream of Dimapur.														
	Remedial Measures	Relay coordination to be done at downstream stations of Dimapur by DoP Nagaland.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/038	132 kV Lekhi - Ranganadi 1 Line	DoP, AP & POWERGRID	DoP, Arunachal Pradesh	NEEPCO	19-08-2017 13:54:00	19-08-2017 14:00:00	Over current	DP, ZI, Y-B-E	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Lekhi area & Capital area of Arunachal Pradesh Power System and Gohpur Area of Assam Power System were connected with rest of NER Grid through 132 kV Ranganadi-Lekhi line (132 kV Balipara-Gohpur line & Bus Coupler CB of Gohpur kept open as 132 kV Ranganadi-Lekhi line gets overloaded in case of keeping these lines in loop). At 13:54 Hrs on 19.08.2017, 132 kV Ranganadi-Lekhi line tripped. Due to tripping of this element, Lekhi area & Capital area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1807 MW , Antecedent Generation: 1785 MW**														
	***Substation Affected**	**Lekhi, Nirjuli and Gohpur**														
	Restoration Details	**Power supply extended to Lekhi through 132 kV Ranganadi - Lekhi 1 Line at 14:00 Hrs, to Nirjuli through 132 kV Nirjuli - Lekhi 1 Line at 14:00 Hrs, to Gohpur Substation through 132 kV Nirjuli - Gohpur 1 Line at 14:00 Hrs on 19.08.2017.**														
	Root Cause	DR output of either end not available. Fault in the line likely due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by POWERGRID & DoP AP. DR outputs of both ends are to be submitted by concerned utilities(Owner of the Substation).														
NERLDC/GD/17/08/039	132 kV Balipara - Khupi 1 Line	NEEPCO & DoP, AP	POWERGRID	DoP, Arunachal Pradesh	20-08-2017 10:40:00	20-08-2017 11:05:00	DP, ZI, B-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 10:40 Hrs on 20.08.2017, 132 kV Balipara-Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1654 MW , Antecedent Generation: 1597 MW**														
	***Substation Affected**	**Khupi**														
	Restoration Details	**Power supply extended to Khupi through 132 kV Balipara - Khupi 1 Line at 11:05 Hrs on 20.08.2017.**														
	Root Cause	Fault in the line due to Vegetation. DR output of either end not available.														
	Remedial Measures	Vegetation clearance to be done by NEEPCO & DoP AP. DR outputs of both ends are to be submitted by concerned utilities(Owner of the Substation).														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/040	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	21-08-2017 08:40:00	21-08-2017 15:56:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	21-08-2017 08:40:00	21-08-2017 09:04:00	No tripping	Earth Fault		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	21-08-2017 08:40:00	21-08-2017 09:30:00	No tripping	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 08:40 Hrs on 21.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1827 MW , Antecedent Generation: 1549 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 09:04 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 09:04 Hrs on 21.08.2017.**														
	Root Cause	Fault in 132 kV Agartala - Rokhia 1 Line / downstream of Monarchak. TSECL may intimate the root cause.														
	Remedial Measures	Earth Fault and Over Current relay settings at Rokhia,Udaipur & Monarchak to be reviewed by TSECL & Monarchak,NEEPCO.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/041	132 kV Daporijo - Ziro 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	POWERGRID	21-08-2017 22:37:00	23-08-2017 15:00:00	Not Furnished	DP, ZI, B-E	GD-I	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Brief Description of the Incident	**Daporijo area (Daporijo, Along, Pasighat, Roing and Tezu) of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Ziro - Daporijo I line. At 22:37 Hrs on 21.08.2017, 132 kV Ziro - Daporijo I line tripped. Due to tripping of this element, Daporijo area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 2036 MW , Antecedent Generation: 1317 MW**														
	***Substation Affected**	**Daporijo, Along, Pasighat, Roing and Tezu Substation**														
	Restoration Details	**Power supply extended to Daporijo through 132 kV Daporijo - Ziro 1 Line at 15:00 Hrs on 23.08.2017.**														
	Root Cause	Likely due to Vegetation fault. DR output is not available.														
	Remedial Measures	Vegetation clearance to be done by DoP AP														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/042	132 kV Palatana - Udaipur 1 line	TSECL	OTPCL	TSECL	21-08-2017 23:45:00	21-08-2017 23:52:00	High Speed Relay	Not Furnished	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 KV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	21-08-2017 23:45:00	22-08-2017 01:18:00	Earth Fault	Hand Tripped		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 KV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	21-08-2017 23:45:00	22-08-2017 01:25:00	Hand Tripped	Earth Fault		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur I line and 132 KV Agartala - Rokhia 1&2 Lines (66 kV Rokhia - Badarghat I line, 66 kV Gokulnagar - Badarghat I line, 66 kV Bagafa - Belonia I line and 66 kV Amarpur - Gumti I line were kept open due to phase sequence issue). At 23:45 Hrs on 21.08.2017, 132 kV Palatana - Udaipur I line and 132 KV Agartala - Rokhia 1&2 Lines tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1930 MW , Antecedent Generation: 1440 MW**														
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur Substation**														
	Restoration Details	**Power Supply extended to Udaipur through 132 kV Palatana - Udaipur 1 Line at 23:52 Hrs on 21.08.2017, to Monarchak Power Station through 132 kV Monarchak - Udaipur 1 Line at 23:58 Hrs on 21.08.2017, to Rokhia Power Station through 132 KV Agartala - Rokhia 1 Line at 01:18 Hrs on 22.08.2017.**														
	Root Cause	TSECL may intimate the root cause. Root cause could not be concluded due to unavailability of DR outputs/Proper relay indications.														
	Remedial Measures	Earth Fault and Over Current relay settings at Palatana,Udaipur & Rokhia to be reviewed by OTPC & TSECL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/ 17/08/043	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	22-08-2017 12:22:00	22-08-2017 12:39:00	DP, ZI, R-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:22 Hrs on 22.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1990 MW , Antecedent Generation: 1417 MW**														
	***Substation Affected**	**Rengpang Substation**														
	Restoration Details	**Power supply extended to Rengpang through 132 kV Loktak - Rengpang 1 Line at 12:39 Hrs on 22.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by MSPCL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/044	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	22-08-2017 13:12:00	22-08-2017 13:43:00	Hand Tripped	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	22-08-2017 13:12:00	22-08-2017 15:20:00	Hand Tripped	Hand Tripped		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 13:12 Hrs on 22.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1976 MW , Antecedent Generation: 1430 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 13:43 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 13:43 Hrs on 22.08.2017.**														
	Root Cause	TSECL may intimate the root cause. Root cause could not be concluded due to unavailability of DR outputs/Proper relay indications.														
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/045	132 kV Mokokchung (PG) - Mokokchung (DoP, Nagaland) 1 Line	POWERGRID	POWERGRID	DoP, Nagaland	22-08-2017 17:33:00	22-08-2017 17:53:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Mokokchung (PG) - Mokokchung (DoP, Nagaland) 2 Line	POWERGRID	POWERGRID	DoP, Nagaland	22-08-2017 17:33:00	22-08-2017 17:54:00	Earth Fault	Earth Fault		Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Doyang - Mokokchung (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	22-08-2017 17:16:00	23-08-2017 16:30:00	DP, ZI, R-E	Not Furnished		Not Furnished	Not Furnished	No	No	No	No	No SPS
	Brief Description of the Incident	**Mokokchung area of Nagaland Power System was connected with rest of NER Grid through 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines. (132 kV Doyang-Mokokchung (DoP, Nagaland) I line was under outage since 17:16 Hrs on 23.08.2017, 132 kV Mokokchung(DoP, Nagaland)-Marianai(AEGCL) is under long outage & 66 kV Tuengsang-Likimro line kept open for construction activities). At 17:33 Hrs on 22.08.2017, 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines tripped. Due to tripping of these elements, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 2205 MW , Antecedent Generation: 1420 MW**														
	***Substation Affected**	**Mokokchung Substation**														
	Restoration Details	**Power Supply extended to Mokokchung substation through 132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland) 1 Line at 17:53 Hrs on 22.08.2017.**														
	Root Cause	DR output not submitted/available. Fault was in 132 kV Doyang - Mokokchung (DoP, Nagaland) Line as seen from relay indication. Likely due to vegetation fault as this line corridor has vegetation as informed in the earlier subgroup meetings.														
	Remedial Measures	Healthiness of Protection System at Mokokchung (DoP Nagaland) for 132 kV Doyang - Mokokchung line to be done by DoP Nagaland.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/046	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 1 Line	POWERGRID	MePTCL	POWERGRID	23-08-2017 13:45:00	23-08-2017 13:57:00	No tripping	DP, ZI, R-E	GD-I	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	23-08-2017 13:45:00	23-08-2017 14:01:00	Over Current	DP, ZIII, R-E		Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	132kV NEHU-NEIGRIHMS I Line	MePTCL	MePTCL	MePTCL	23-08-2017 13:45:00	23-08-2017 13:51:00	DP, Z-I, R-E	No tripping		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Mustem-Khliehriat 1 Line	MePTCL	MePTCL	MePTCL	23-08-2017 13:45:00	23-08-2017 14:59:00	DP, Z-III, R-E	No tripping		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**MLHEP and Khliehriat area of Meghalaya Power System was connected with rest of NER Grid through 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines, 132 kV NEHU - NEIGRIHMS I line and 132 kV Mustem-Khliehriat I line (132 kV Lumnshnong - Panchgram line is under long outage). At 13:45 Hrs on 23.08.2017, 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines, 132 kV NEHU - NEIGRIHMS I line and 132 kV Mustem-Khliehriat I line tripped. Due to tripping of these elements, MLHEP & Khliehriat area were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1912 MW , Antecedent Generation: 1361 MW**														
	***Substation Affected**	**MLHEP, Khliehriat and NEIGRIHMS Substation**														
	Restoration Details	**Power supply extended to NEIGRIHMS Substation through 132kV NEHU-NEIGRIHMS I Line at 13:51 Hrs, to Khliehriat through 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 1 Line at 13:57 Hrs on 23.08.2017.**														
	Root Cause	MePTCL may intimate the root cause. Likely due to lightning fault in 132kV NEHU-NEIGRIHMS line.														
	Remedial Measures	DPR reach of all the lines in Meghalaya needs to be reviewed by MePTCL in consultation with POWERGRID.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/047	132 kV Along - Pasighat 1 Line	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	24-08-2017 10:48:00	25-08-2017 11:13:00	Not Furnished	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Pasighat area (Pasighat, Roing and Tezu) of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Along - Pasighat I line. At 10:48 Hrs on 24.08.2017, 132 kV Along - Pasighat I line tripped. Due to tripping of this element, Pasighat area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1807 MW , Antecedent Generation: 1389 MW**														
	***Substation Affected**	**Pasighat, Roing and Tezu Substation**														
	Restoration Details	**Power supply extended to Pasighat through 132 kV Along - Pasighat 1 Line at 11:13 Hrs on 25.08.2017.**														
	Root Cause	Relay indications of either end not available. Root Cause could not be concluded.														
	Remedial Measures	DoP AP may provide required data for analysis.														
NERLDC/GD/17/08/048	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	24-08-2017 12:30:00	24-08-2017 13:01:00	DP, ZII, B-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Rengpang area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Rengpang line (132 kV Rengpang - Jiribam(MSPCL) line is under long outage). At 12:30 Hrs on 24.08.2017, 132 kV Loktak - Rengpang I line tripped. Due to tripping of this element, Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1810 MW , Antecedent Generation: 1407 MW**														
	***Substation Affected**	**Rengpang**														
	Restoration Details	**Power supply extended to Rengpang through 132 kV Loktak - Rengpang 1 Line at 13:01 Hrs on 24.08.2017.**														
	Root Cause	Fault in downstream of Rengpang due to Vegetation. However, In DR output, interruption of current observed many times.														
	Remedial Measures	Vegetation clearance to be done by MSPCL. Loktak to check the current input given to DPR.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/049	132 kV Balipara - Khupi 1 Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	24-08-2017 13:50:00	24-08-2017 14:31:00	DP, ZI, R-Y-B-E	Not Furnished	GD-I	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 13:50 Hrs on 24.08.2017, 132 kV Balipara-Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1854 MW , Antecedent Generation: 1415 MW**														
	***Substation Affected**	**Khupi Substation**														
	Restoration Details	**Power supply extended to Khupi Substation through 132 kV Balipara - Khupi 1 Line at 14:31 Hrs on 24.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by DoP AP & NEEPCO.														
NERLDC/GD/17/08/050	132 kV Balipara - Khupi 1 Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	24-08-2017 14:34:00	24-08-2017 15:15:00	DP, ZII, R-E	No tripping	GD-I	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Brief Description of the Incident	**Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 14:34 Hrs on 24.08.2017, 132 kV Balipara-Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1803 MW , Antecedent Generation: 1425 MW**														
	***Substation Affected**	**Khupi Substation**														
	Restoration Details	**Power supply extended to Khupi Substation through 132 kV Balipara - Khupi 1 Line at 15:15 Hrs on 24.08.2017.**														
	Root Cause	Fault in the line due to Vegetation.														
	Remedial Measures	Vegetation clearance to be done by DoP AP & NEEPCO.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/051	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	26-08-2017 17:14:00	26-08-2017 17:25:00	No tripping	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	26-08-2017 17:14:00	26-08-2017 17:38:00	Not Furnished	Over current		Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 17:14 Hrs on 26.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 2041 MW , Antecedent Generation: 1408 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 17:25 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 17:25 Hrs on 26.08.2017.**														
	Root Cause	TSECL may intimate the root cause. Likely due to fault in the downstream of Monarchak.														
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/052	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TSECL	27-08-2017 09:21:00	27-08-2017 09:28:00	Earth Fault	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur I line was under shutdown since 09:18 Hrs on 27.08.2017). At 09:21 Hrs on 27.08.2017, 132 kV Monarchak - Rokhia I line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**														
	Antecedent Conditions of NER Grid	**Antecedent Load: 1830 MW , Antecedent Generation: 1415 MW**														
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**														
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 09:28 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 09:28 Hrs on 27.08.2017.**														
	Root Cause	TSECL may intimate the root cause.														
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.														
NERLDC/GD/17/08/054	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	29-08-2017 12:49:00	29-08-2017 12:57:00	DP, ZI, B-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line . 132 kV Karong - Kohima line kept open (Cause of opening the line: Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause of opening the line: improper relay cordination of Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open(Cause of opening the line: construction activities). At 12:49 Hrs on 29.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.														
	Antecedent Conditions of NER Grid	Antecedent Load: 1896 MW , Antecedent Generation: 1434 MW														
	*Substation Affected	Kohima, Meluri and Kiphire Substation														
	Restoration Details	Power supply extended to Kohima through 132 kV Dimapur (PG) - Kohima 1 Line at 12:49 Hrs on 29.08.2017.														
	Root Cause	**Fault in the line likely due to vegetation.**														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland. DR output of Dimapur end to be submitted by POWERGRID.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/055	132 kV Balipara - Khupi 1 Line	NEEPCO & DoP, AP	POWERGRID	NEEPCO	29-08-2017 17:14:00	29-08-2017 17:35:00	DP, ZI, R-E	No tripping	GD-I	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 17:14 Hrs on 29.08.2017, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.															
	Antecedent Conditions of NER Grid	Antecedent Load: 2059 MW , Antecedent Generation: 1450 MW														
	*Substation Affected	Khupi Substation														
	Restoration Details	Power supply extended to Khupi through 132 kV Balipara - Khupi 1 Line at 17:35 Hrs on 29.08.2017.														
	Root Cause	**Fault in the line likely due to vegetation.**														
	Remedial Measures	**Vegetation clearance to be done by NEEPCO & DoP AP.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/056	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 1 Line	POWERGRID	MePTCL	POWERGRID	31-08-2017 13:28:00	31-08-2017 13:42:00	No tripping	DP, ZII, Y-B-E	GD-I	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	31-08-2017 13:28:00	31-08-2017 13:43:00	No tripping	DP, ZI, Y-E		Not Applicable	Not Furnished	Yes	No	No	No	No SPS
	132 kV NEHU-NEIGRIHMS I Line	MePTCL	MePTCL	MePTCL	31-08-2017 13:28:00	31-08-2017 13:31:00	Distance backup protection	No tripping		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Mustem - NEHU	MePTCL	MePTCL	MePTCL	31-08-2017 13:28:00	31-08-2017 13:33:00	86-A/86-B	No tripping		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Khliehriat (MePTCL) - Lumshnong Line	MePTCL	MePTCL	MePTCL	31-08-2017 13:28:00	31-08-2017 13:35:00	DP, ZIII, R-E	No tripping		Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	MLHEP, Khliehriat and Lumshnong area of Meghalaya Power System were connected with rest of NER Grid through 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines, 132 kV NEHU - NEIGRIHMS line and 132 kV NEHU - Mustem line .132 kV Lumnshnong - Panchgram line was kept open(Cause of opening the line: SPS-I requirement). At 13:28 Hrs on 31.08.2017, 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines, 132 kV NEHU - NEIGRIHMS line and 132 kV NEHU - Mustem line tripped. Due to tripping of these elements, MLHEP, Khliehriat and Lumshnong area were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1830 MW , Antecedent Generation: 1460 MW														
	*Substation Affected	MLHEP Power Station, NEIGRIHMS, Mustem, Khliehriat (MePTCL) and Lumshnong Substation														
	Restoration Details	Power supply extended to NEIGRIHMS through 132 kV NEHU-NEIGRIHMS I Line at 13:31 Hrs, to Khliehriat through 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 1 Line at 13:42 Hrs, to Mustem through 132 kV Khliehriat (MePTCL) - Mustem 1 Line at 13:33 Hrs, to Lumshnong through 132 kV Khliehriat (MePTCL) - Lumshnong 1 Line at 13:35 Hrs, on 31.08.2017.														
	Root Cause	**Likely due to fault in 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 1 Line. DR outputs not received from any of the stations.**														
	Remedial Measures	**DPR settings at Khliehriat(PG) and Khliehriat(MePTCL) to be reviewed by POWERGRID & MePTCL.**														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/ 17/08/057	132 kV Aizawl - Luangmual 1 Line	P&ED, Mizoram	POWERGRID	P&ED, Mizoram	31-08-2017 13:35:00	31-08-2017 14:12:00	Directional Earth Fault	No tripping	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Aizawl - Melriat 1 Line	POWERGRID	POWERGRID	POWERGRID	31-08-2017 13:35:00	31-08-2017 14:15:00	Directional Earth Fault	Direction Earth Fault		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Luangmual and Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line & 132 kV Aizawl- Luangmual line. At 13:35 Hrs on 31.08.2017, 132 kV Aizawl- Melriat line & 132 kV Aizawl- Luangmual line tripped. Due to tripping of these elements, Luangmual and Zuangtui areas were separated from rest of NER Grid and subsequently collapsed due to no source in this area.															
	Antecedent Conditions of NER Grid	Antecedent Load: 1831 MW , Antecedent Generation: 1430 MW														
	*Substation Affected	Melriat, Zuangtui and Lungmual Substation														
	Restoration Details	Power supply extended to Luangmual through 132 kV Aizawl - Luangmual 1 Line at 14:12 Hrs, to Melriat through 132 kV Aizawl - Melriat 1 Line at 14:15 Hrs on 31.08.2017.														
	Root Cause	Same time 132 kV Aizwal- Kumarghat Line tripped from Aizwal end on DPR, Z-III. DR outputs not received from Aizwal(PG) & Melriat. Operation of DEF at Melriat needs to be reviewed. DR from Kumarghat shows Z-III initiation, R-E fault with angle between Vr & Ir around 22 degrees indicates **vegetation fault.** Fault was likely in 132 kV Aizawl - Melriat Line as per furnished relay indicaction.														
	Remedial Measures	Relevant DR outputs are to be submitted by concerned utilities. Directionality of DEF at Melriat is to be reviewed. Tripping of 132 kV Aizawl - Luangmual 1 Line to be analysed and report to be submitted by POWERGRID. POWERGRID & P&ED Mizoram may initimate the root cause.														

Grid Dsturbances in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Category of GD/GI as per CEA Standards	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B		End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/058	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	31-08-2017 15:46:00	31-08-2017 16:02:00	No tripping	Earth Fault	GD-I	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line (132 kV Monarchak - Udaipur line was under shutdown since 12:45 Hrs on 31.08.2017). At 15:46 Hrs on 31.08.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.														
	Antecedent Conditions of NER Grid	Antecedent Load: 1806 MW, Antecedent Generation: 1434 MW														
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation														
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 16:02 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 16:02 Hrs on 31.08.2017.														
	Root Cause	**TSECL may intimate the root cause.**														
	Remedial Measures	**Earth Fault relay settings at Rokhia to be reviewed by TSECL.**														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/08/001	Palatana Unit GTG-1	OTPCL	OTPCL		02-08-2017 10:21:00	02-08-2017 15:09:00	High Exhaust temperature spread trip		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/001	Palatana Unit STG-1	OTPCL	OTPCL		02-08-2017 10:21:00	02-08-2017 16:45:00	High Exhaust temperature spread trip		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/002	Palatana Unit GTG-1	OTPCL	OTPCL		02-08-2017 21:00:00	03-08-2017 00:55:00	High Exhaust temperature spread trip		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/002	Palatana Unit STG-1	OTPCL	OTPCL		02-08-2017 21:00:00	03-08-2017 02:25:00	High Exhaust temperature spread trip		Not Applicable		No		No		No SPS
Root Cause	ST#2 was out of order due repeated 132KV volatge fluctuations and kept under shutdown. ST#1 tripped due to undervoltage in 132KV system, tripping 6.6KV OCA Board. This led to failure of power supply to both Gas Boost Compressor. Failure of gas supply caused GTG#1 trip resulted STG#1 tripping due to source trip. Same happened again at 21:00 hrs.														
Remedial-Measures	Once 132KV system voltage settled within permissible level, ST#1 was charged and Startup process initiated & synched to NER Grid.														
NERLDC/GI/17/08/003	Doyang Unit 2	NEEPCO	NEEPCO		03-08-2017 10:13:00	04-08-2017 10:13:00	Governor/ EHG problem		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/003	Doyang Unit 3	NEEPCO	NEEPCO		03-08-2017 10:13:00	03-08-2017 11:07:00	Due to heavy jerk		Not Applicable		No		No		No SPS
Root Cause	HMC(Hydro Mechanical Cabinet) problem														
Remedial-Measures	Rectified														
NERLDC/GI/17/08/004	Doyang Unit 2	NEEPCO	NEEPCO		06-08-2017 18:40:00	07-08-2017 10:56:00	Governor /EHG problem		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/004	Doyang Unit 3	NEEPCO	NEEPCO		06-08-2017 18:40:00	06-08-2017 19:20:00	Due to heavy jerk		Not Applicable		No		No		No SPS
Root Cause	HMC(Hydro Mechanical Cabinet) problem														
Remedial-Measures	Rectified														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/08/005	Doyang Unit 2	NEEPCO	NEEPCO		07-08-2017 17:25:00	08-08-2017 13:37:00	Power Swing in 132 kV Wokha - Mokokchung line		No		No		No		No SPS
NERLDC/GI/17/08/005	Doyang Unit 3	NEEPCO	NEEPCO		07-08-2017 17:25:00	07-08-2017 17:45:00	Power Swing in 132 kV Wokha - Mokokchung line		No		No		No		No SPS
Root Cause	Due to Voltage jerk as informed by Doyang. No tripping/Jerk observed in the Grid.														
Remedial-Measures	**NEEPCO may intimate the root cause.**														
NERLDC/GI/17/08/006	AGBPP Unit 8	NEEPCO	NEEPCO		09-08-2017 02:30:00	09-08-2017 04:50:00	Due to compressor machine II tripped		No		No		No		No SPS
Root Cause	Gas compressor II tripped due to high coolant temparature due cooler fan belt failure														
Remedial-Measures	**Problem in Fan belt rectified**														
NERLDC/GI/17/08/008	AGBPP Unit 3	NEEPCO	NEEPCO		10-08-2017 02:10:00	10-08-2017 03:44:00	Gas compressor 2 tripped		No		No		No		No SPS
NERLDC/GI/17/08/008	AGBPP Unit 4	NEEPCO	NEEPCO		10-08-2017 02:10:00	10-08-2017 03:20:00	Gas compressor 2 tripped		No		No		No		No SPS
NERLDC/GI/17/08/008	AGBPP Unit 8	NEEPCO	NEEPCO		10-08-2017 02:10:00	10-08-2017 04:11:00	Gas compressor 2 tripped		No		No		No		No SPS
Root Cause	Gas compressor II tripped due to high coolant temparature due cooler fan belt failure														
Remedial-Measures	**Problem in Fan belt rectified**														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/08/001	Monarchak STG	NEEPCO	NEEPCO		15-08-2017 11:29:00	15-08-2017 11:51:00	Due to Over Speed		No		No		No		No SPS
Root Cause	Due to high gas tuner temparature, GTG tripped.														
Remedial-Measures	**Rectified**														
NERLDC/GI/17/07/009	Kopili Unit 1	NEEPCO	NEEPCO		19-08-2017 02:01:00	19-08-2017 15:23:00	Stator E/F		No		No		No		No SPS
Root Cause	No fault found after inspection as informed by NEEPCO. **Tripping due to mal-operation of Stator Earth Fault Relay.**														
Remedial-Measures	**Testing of the relay done by GE as informed by NEEPCO**														
NERLDC/UI/17/08/002	Ranganadi Unit 3	NEEPCO	NEEPCO		19-08-2017 09:35:00	19-08-2017 11:03:00	PRV operated C ph GT		No		No		No		No SPS
Root Cause	Mal-operation of PRV														
Remedial-Measures	**Rectified**														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/08/010	Khandong Unit 2	NEEPCO	NEEPCO		19-08-2017 12:30:00	20-08-2017 18:09:00	Rotar earth fault		No		No		No		No SPS
Root Cause	Carbon Dust in slip ring														
Remedial-Measures	**Regular cleaning to be done by Khandong, NEEPCO**														
NERLDC/GI/17/08/012	AGTCCPP Extn STG-1	NEEPCO	NEEPCO		22-08-2017 18:11:00	22-08-2017 22:02:00	Prime mover failure		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/012	AGTCCPP Extn STG-2	NEEPCO	NEEPCO		22-08-2017 18:11:00	23-08-2017 12:05:00	Prime mover failure		Not Applicable		No		No		No SPS
Root Cause	Disturbance in Tripura System														
Remedial-Measures	-														
NERLDC/UI/17/08/004	Doyang Unit 2	NEEPCO	NEEPCO		23-08-2017 08:41:00	23-08-2017 09:08:00	86-I, 86-A and 86-B		Not Applicable		No		No		No SPS
NERLDC/UI/17/08/004	Doyang Unit 3	NEEPCO	NEEPCO		23-08-2017 08:41:00	23-08-2017 09:04:00	86-I, 86-A and 86-B		Not Applicable		No		No		No SPS
Root Cause	NEEPCO may intimate the root cause														
Remedial-Measures	-														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/08/005	Doyang Unit 2	NEEPCO	NEEPCO		23-08-2017 09:26:00	23-08-2017 09:42:00	86-I, 86-A and 86-B		Not Applicable		No		No		No SPS
NERLDC/UI/17/08/005	Doyang Unit 3	NEEPCO	NEEPCO		23-08-2017 09:26:00	23-08-2017 09:46:00	86-I, 86-A and 86-B		Not Applicable		No		No		No SPS
Root Cause	NEEPCO may intimate the root cause														
Remedial-Measures	-														
NERLDC/GI/17/08/013	BgTPP Unit 1	NTPC	NTPC		23-08-2017 18:15:00	23-08-2017 19:17:00	Prime mover failure		Not Applicable		No		No		No SPS
Root Cause	High vibration of shaft														
Remedial-Measures	**1. provide time delay of 5 sec for turbine trip on shaft vibration protection. 2. offline emeasurement was taken at both 600 and 3000 rpm.**														
NERLDC/GI/17/08/014	BgTPP Unit 1	NTPC	NTPC		24-08-2017 09:40:00	25-08-2017 01:52:00	Prime mover failure		Not Applicable		No		No		No SPS
Root Cause	Suspected mix up of AC voltage with 24 V DC of DCS input field wires.														
Remedial-Measures	**As informed by BgTPP, trip command through DCS for EPB pressed removed from DCS logic for SG ECW pump.**														
NERLDC/GI/17/08/015	AGTCCPP Unit 4	NEEPCO	NEEPCO		24-08-2017 18:08:00	26-08-2017 16:54:00	Over Current		Not Applicable		No		No		No SPS
Root Cause	Due to high MVAR injection														
Remedial-Measures	**Measures to be taken to improve the volatge in improtant nodes in Tripura System**														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/08/016	AGTCCPP Extn STG-1	NEEPCO	NEEPCO		24-08-2017 15:42:00	25-08-2017 00:06:00	Over Current		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/016	AGTCCPP Extn Unit STG-2	NEEPCO	NEEPCO		24-08-2017 15:42:00	27-08-2017 04:42:00	Over Current		Not Applicable		No		No		No SPS
Root Cause	Due to high MVAR injection														
Remedial-Measures	**Measures to be taken to improve the volatge in improtant nodes in Tripura System**														
NERLDC/GI/17/08/017	AGTCCPP Unit 1	NEEPCO	NEEPCO		25-08-2017 00:17:00	25-08-2017 03:23:00	Over Current		Not Applicable		No		No		No SPS
Root Cause	Due to high MVAR injection														
Remedial-Measures	**Measures to be taken to improve the volatge in improtant nodes in Tripura System**														
NERLDC/GI/17/08/018	AGTCCPP Unit 1	NEEPCO	NEEPCO		25-08-2017 16:32:00	25-08-2017 19:30:00	Low Gas Pressure		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/018	AGTCCPP Unit 2	NEEPCO	NEEPCO		25-08-2017 16:32:00	25-08-2017 17:16:00	Low Gas Pressure		Not Applicable		No		No		No SPS
NERLDC/GI/17/08/018	AGTCCPP Extn STG-1	NEEPCO	NEEPCO		25-08-2017 16:32:00	25-08-2017 19:38:00	Prime mover failure		Not Applicable		No		No		No SPS
Root Cause	Due to high condensate in gas supply														
Remedial-Measures	**Matter taken up with GAIL as informed by AGTCCPP,NEEPCO**														

Grid Incidents in NER Grid for the month of August 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/08/019	BgTPP Unit 1	NTPC	NTPC		26-08-2017 15:26:00	27-08-2017 13:33:00	Stator Earth Fault		Not Applicable		No		No		No SPS
Root Cause	Suspected overheating due to looseness and use of magnetic belly velly washers instead of non magnetic type.														
Remedial-Measures	**As informed by BgTPP, belly velly washers replaced with non magnetic ones. Connection tightness done as per OIN-32.**														
NERLDC/GI/17/08/018	Kopili Unit 3	NEEPCO	NEEPCO		31-08-2017 10:08:00	31-08-2017 16:02:00	GT PRV Operated		Not applicable		No		No		No SPS
Root Cause	Internal fault in C-phase GT														
Remedial-Measures	**Replaced by Spare -I**														
NERLDC/UI/17/09/001	Monarchak GTG	NEEPCO	NEEPCO		03-09-2017 16:19:00	03-09-2017 18:47:00	Over Frequency		Not applicable		No		No		No SPS
NERLDC/UI/17/09/001	Monarchak STG	NEEPCO	NEEPCO		03-09-2017 16:19:00	03-09-2017 18:47:00	Over Frequency		Not applicable		No		No		No SPS
Root Cause	Due to tripping of evacuation lines														
Remedial-Measures	-														

Grid Events

September 2017

वृत्तांत सूचना रिपोर्ट की पेशकश / Furnishing of Event Information Report

पूर्वोत्तर क्षेत्र में 01.09.17 से 30.09.17 तक की घटनाये / Events in NER Grid from 01.09.17 to 30.09.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TR/17/09/001	220/132 kV, 100 MVA ICT 1 at Dimapur	POWERGRID	POWERGRID	POWERGRID	01-09-2017 12:54:00	01-09-2017 18:51:00	5:57:00	Bucholz Relay operated		Not Applicable		No		No		No SPS
	Root Cause	Mal-operation of Bucholz relay.														
	Remedial Measures	**POWERGRID may intimate the reason for mal-operation of Bucholz relay.**														
NERLDC/TL/17/09/001	132 kV Jiribam - Loktak Line	POWERGRID	POWERGRID	NHPC	01-09-2017 23:01:00	02-09-2017 18:05:00	19:04:00	Earth Fault	DP, ZI, R-E	Not Applicable	Not furnished	No	No	No	No	No SPS
	Root Cause	**As informed by POWERGRID, tree fell from uphil side and branches touched RYB conductor at loc 159-160**. DR output from Jiribam at **23:03 Hrs** shows B-E fault with ZIII initiation for 200 msec with gradually increasing fault current upto 0.58 kA and angle between Vb and Ib is around 25 deg indicates **high resistive nature of the fault likely due to vegetation**.Fault cleared after 470 msec (**back up earth fault protection**). As per submited Patrolling report, fault was in B-phase. **POWERGRID may please review the submitted relay indications.** However, DR output from Jiribam at **23:00 Hrs** shows R-E fault in ZI with fault current upto 1.130 kA and angle between Vr and Ir is around 65-71 deg which indicates solid fault.The fault was cleared in around 60 msec. AR was attempted and was successful from Jiribam end.**DR from Loktak not furnished.**														
	Remedial Measures	**Vegetation clearance at Vulnerable locations to be done by POWERGRID. POWERGRID may intimate the reason for delayed fault clearance.**														
NERLDC/TL/17/09/002	132 kV Dimapur - Doyang II Line	POWERGRID	POWERGRID	NEEPCO	02-09-2017 10:44:00	02-09-2017 10:58:00	0:14:00	DP, ZI, R-B, 53.99 km	DP, ZI, R-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Dimapur shows R-B fault in ZI with fault current upto 1.669 kA and **no neutral current. Likely due to conductor touching**. The fault was cleared in around 65 msec.														
	Remedial Measures	POWERGRID may intimate the root cause/reason for tripping and submit patrolling report. Installation of Numerical Relays at Doyang is to be expedicted.														

वृतांत सूचना रिपोर्ट की पेशकश / Furnishing of Event Information Report

पूर्वोत्तर क्षेत्र में 01.09.17 से 30.09.17 तक की घटनाये / Events in NER Grid from 01.09.17 to 30.09.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/09/001	Monarchak GTG	NEEPCO	NEEPCO		03-09-2017 16:19:00	03-09-2017 18:47:00	2:28:00	64R, 86G1, 86G2		Not applicable		No		No		No SPS
NERLDC/UI/17/09/001	Monarchak STG	NEEPCO	NEEPCO		03-09-2017 16:19:00	03-09-2017 18:47:00	3:36:00	64R , 86G1, 86G2		Not applicable		No		No		No SPS
	Root Cause	**NEEPCO may intimate the root cause.**														
	Remedial Measures	-														
NERLDC/TL/17/09/003	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	05-09-2017 00:57:00	05-09-2017 01:23:00	00:26:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**AEGCL may intimate information regarding tripping of downstream elements. As informed by AEGCL, TMS of O/C & E/F at Rangia end were 0.95 & 1 respectively. No tripping reported at Rangia. POWERGRID may intimate the root cause.**														
	Remedial Measures	TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. **Testing of DPR at Rangia to be done by POWERGRID at the earliest.** Patrolling report to be furnished by POWERGRID.														
NERLDC/TL/17/09/005	132 kV Aizawl - Jiribam 1 Line	POWERGRID	POWERGRID	POWERGRID	05-09-2017 12:15:00	05-09-2017 12:24:00	00:09:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows Y-E fault in ZIII with fault current upto 0.624 kA and angle between Vy and Iy is around 17-27 deg which indicates highly resistive fault likely due to vegetation. Fault was cleared in **561 msec.** DR output from Jiribam shows Y-E fault in ZII with fault current upto 0.536 kA and angle between Vy and Iy is around 27-44 deg which indicates **highly resistive fault likely due to vegetation**. Fault was cleared in 536 msec.														
	Remedial Measures	**POWERGRID may intimate the reason for delayed fault clearance. DPR settings of both ends may be reviewed by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/006	220 kV Mariani (AS) - Misa 1 Line	POWERGRID	AEGCL	POWERGRID	05-09-2017 14:31:00	05-09-2017 17:11:00	02:40:00	Direct Trip received	Line reactor Buchholz relay operated	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	POWERGRID may intimate the reason for operation of Bucholz relay. POWERGRID may intimate whether the line was charged with/without line reactor.														
	Remedial Measures	Remedial measures will be decided after the finding the root ccause.														
NERLDC/TL/17/09/007	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	05-09-2017 18:17:00	05-09-2017 18:52:00	00:35:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**AEGCL may intimate information regarding tripping of downstream elements. As informed by AEGCL, TMS of O/C & E/F at Rangia end were 0.95 & 1 respectively. No tripping reported at Rangia. POWERGRID may intimate the root cause.**														
	Remedial Measures	TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. **Testing of DPR at Rangia to be done by POWERGRID at the earliest.** Patrolling report to be furnished by POWERGRID.														
NERLDC/GD/17/09/007	132 kV Aizawl - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	06-09-2017 10:46:00	06-09-2017 11:35:00	00:49:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/09/007	132 kV Badarpur - Kolasib 1 Line	POWERGRID	POWERGRID	P&ED, Mizoram	06-09-2017 10:46:00	06-09-2017 19:12:00	08:26:00	Back Up Earth Fault	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR from Badarpur shows DPR, Y-E, Z-2 & 3 initiation for 50 msec and fault was cleared in backup earth fault. Fault current was around 0.6 kA and angle between Vy & Iy around 18 degrees indicate **vegetation fault likely in downstream of Kolasib**.														
	Remedial Measures	**Testing of Protection System in downstream of Kolasib to be done by P&ED Mizoram. Vegetation clearance of downstream elements of Kolasib to be done by P&ED Mizoram and report to be submitted to NERPC.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/008	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	07-09-2017 00:33:00	07-09-2017 00:47:00	00:14:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**AEGCL may intimate information regarding tripping of downstream elements. As informed by AEGCL, TMS of O/C & E/F at Rangia end were 0.95 & 1 respectively. No tripping reported at Rangia. POWERGRID may intimate the root cause.**														
	Remedial Measures	TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. **Testing of DPR at Rangia to be done by POWERGRID at the earliest.** Patrolling report to be furnished by POWERGRID.														
NERLDC/TL/17/09/009	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	07-09-2017 01:10:00	07-09-2017 01:16:00	00:06:00	Auto trip	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**AEGCL may intimate information regarding tripping of downstream elements. As informed by AEGCL, TMS of O/C & E/F at Rangia end were 0.95 & 1 respectively. No tripping reported at Rangia. POWERGRID may intimate the root cause.**														
	Remedial Measures	TMS settings had been changed to 0.2 for both O/C and E/F as informed by AEGCL. However, O/C and E/F Relay settings at Rangia end to be reviewed by POWERGRID considering the latest fault contribution. **Testing of DPR at Rangia to be done by POWERGRID at the earliest.** Patrolling report to be furnished by POWERGRID.														
NERLDC/TL/17/09/010	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	07-09-2017 02:21:00	07-09-2017 02:42:00	00:21:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows R-E fault in ZI with fault current upto 1.958 kA and angle between Vr and Ir is around 65-75 deg which indicate **solid fault**.The fault was cleared in around 56 msec. AR was attempted and was successful at Salakati end indicate **transient nature of the fault. As informed by POWERGRID, insulator flash over occured at Loc No 119 due to lightning.**														
	Remedial Measures	**POWERGRID may identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/012	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	07-09-2017 15:36:00	07-09-2017 15:47:00	00:11:00	DP, ZIII, B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/013	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	07-09-2017 15:37:00	07-09-2017 15:46:00	00:09:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/014	132 kV Khandong - Umranshu 1 Line	POWERGRID & AEGCL	NEEPCO	AEGCL	07-09-2017 15:38:00	07-09-2017 16:35:00	00:57:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	From PMU, **R-E fault was at 15:38 Hrs**. EL output furnished by Kopili for Khandong-I feeder shows Y-E fault in ZIII with fault current upto 1.332 kA. Fault distance was 29.09 km from Kopili. Fault duration was 63 msec. **DR output from Khandong for Umranshu feeder shows ZI, Y-E fault with fault current up to 7.16 kA and angle between Vy & Iy is around 48-56 degrees which indicates fault likely due to vegetation infringement.**The fault was cleared in 98 msec.Auto-reclose was not atempted.														
	Remedial Measures	**Vegetation clearance of 132 kV Khandong - Umranshu Line to be done by POWERGRID & AEGCL. DPR settings (Z-III tripping even though fault cleared in 63 sec) at Kopili to be reviewed by NEEPCO. Earth Fault settings at Khliehriat(MePTCL) to be reviewed by MePTCL.**														
NERLDC/TL/17/09/015	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	08-09-2017 02:59:00	08-09-2017 03:14:00	00:15:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows Y-E fault in ZI with fault current upto 4.898 kA and angle between Vy and Iy is around 45-65 deg which indicate **fault likely due to vegetation infringement**.The fault was cleared in around 70 msec. AR was attempted and was successful.														
	Remedial Measures	**POWERGRID may intimte the root cause. Vegetation clearance to be done by POWERGRID. Healthiness of carrier scheme to be checked by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/016	220 kV Salakati - Alipurduar 1 Line	POWERGRID	POWERGRID	POWERGRID	08-09-2017 23:23:00	09-09-2017 00:00:00	00:37:00	DP, ZI, Y-E	Not Furnished	A/R successful	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows ZI, Y-E fault with fault current up to 10.1 kA and angle between Vy & Iy is around 23-31 degrees which indicates v**egetation infringement.Y-phase was opened at Salakati after 70 msec however fault was cleared after 560 msec (likely due to clearing of fault at other end in Z-II).** Auto recloser sucessfully attempted at Salakati indicate transient nature of fault.														
	Remedial Measures	**POWERGRID may intimate the root cause and reason for delayed fault clearance. Vegetation clearance to be done by POWERGRID. Healthniness of carrier scheme to be tested by POWERGRID.**														
NERLDC/TL/17/09/017	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	09-09-2017 01:07:00	09-09-2017 01:22:00	00:15:00	DP, ZIII, R-E, 9.7 Kms.	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR outputs not furnished by MePTCL. DPR settings at Khliehriat(MePTCL) to be reviewed by MePTCL.														
	Remedial Measures	Relevant DR outputs to be furnished by MePTCL. DPR settings at Khliehriat(MePTCL) to be reviewed by MePTCL.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/018	132 kV Aizawl - Jiribam 1 Line	POWERGRID	POWERGRID	POWERGRID	09-09-2017 12:26:00	09-09-2017 12:38:00	00:12:00	DP, ZII, Y-E	DP, ZI, Y-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
NERLDC/TL/17/09/018	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	09-09-2017 12:26:00	09-09-2017 12:46:00	00:20:00	No tripping	DP, ZIII, Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl(**not time sync**) shows ZII **carrier aided** trip in Y-E fault with fault current upto 0.410 kA and angle between Vy and Iy is around 50-55 deg which indicates fault likely due to **vegetation infringement**. The fault was cleared in around 95 msec. **Auto-reclose wa attempted after 1 sec of fault initiation and was successful (Transient Fault)**. However, another Y-E fault occured within reclaim time in ZII with fault current upto 0.423 kA and the line tripped. **This fault was cleared in 550 msec.** **DR and EL output is not furnished by Jiribam(PG).**DR output from Loktak for Jiribam feeder shows **Y-E fault with ZIII initiation and SOTF/TOR trip** with fault current upto 0.592 kA and angle between Vy and Iy is around 37-47 deg. Fault cleared in 77 msec.													
	Remedial Measures	**DPR settings(Z-III initiation, SOTF/TOR trip need to be investigated as CB indication shows closed status prior to TOR operation for more than 1 sec) at Loktak to be reviewed by NHPC.Loktak to furnish all relevant DR outputs. DR outputs of Jiribam end to be furnished by POWERGRID. Vegetation clearance of 132 kV Aizawl - Jiribam line to be done by POWERGRID.**														
NERLDC/TL/17/09/019	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	09-09-2017 15:29:00	09-09-2017 15:57:00	00:28:00	DP, ZII, Y-B-E	DP, ZI, Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows Y-B-E fault in ZII with fault current upto 2.361 kA and neutral current 2.361 kA.The fault was cleared in around 570 msec.														
	Remedial Measures	**POWERGRID may intimate the root cause and reason for delayed fault clearance.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/020	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	10-09-2017 00:05:00	10-09-2017 00:37:00	00:32:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows R-E fault in ZI with fault current upto 2.22 kA and angle between Vr and Ir is around 65-72 deg which indicate **solid fault likely due to lightning**.The fault was cleared in around 67 msec. AR was attempted and was successful (transient fault).														
	Remedial Measures	**POWERGRID may intimate the root cause.Healthiness of carrier scheme to be checked by POWERGRID.**														
NERLDC/TL/17/09/021	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	10-09-2017 02:38:00	10-09-2017 02:51:00	00:13:00	Not Furnished	DP, ZI, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows R-Y-B-E fault in ZI with fault current upto 3.552 kA and neutral current 0.695.The fault was cleared in around 75 msec. AR was attempted and was successful (transient fault).														
	Remedial Measures	**POWERGRID may intimate the root cause. Healthiness of carrier scheme to be checked by POWERGRID. Healthiness of AR scheme at Gelephu to be checked by BPC. Reffered to NLDC.**														
NERLDC/TL/17/09/022	132 kV Agartala - AGTPP 1 Line	POWERGRID	TSECL	NEEPCO	10-09-2017 14:31:00	10-09-2017 18:46:00	04:15:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	**DR and EL output is not furnished by both ends. As informed by POWERGRID, 23 Y ph jumber broken at loc no 23 due to localised storm.**														
	Remedial Measures	**Relevant DR outputs to be furnished by POWERGRID & AGTCCPP. Periodic line maintenace to be done by Transmission Licencees.**														
NERLDC/UI/17/09/002	Leshka Unit 2	MLHEP	MLHEP		05-09-2017 19:20:00	05-09-2017 19:58:00	0:38:00	86A, 86B and 86C		No		No		No		No SPS
	Root Cause	**Root cause could not be concluded due to unavailability of proper relay indication.**														
	Remedial Measures	**MePGCL is to intimate the root cause.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/09/003	Doyang Unit 2	NEEPCO	NEEPCO		06-09-2017 15:31:00	06-09-2017 15:55:00	00:24:00	86A, 86B and 86I		No		No		No		No SPS
NERLDC/UI/17/09/003	Doyang Unit 3	NEEPCO	NEEPCO		06-09-2017 15:31:00	06-09-2017 15:54:00	00:23:00	86A, 86B and 86I		No		No		No		No SPS
	Root Cause	**Root cause could not be concluded due to unavailability of proper relay indication.**														
	Remedial Measures	**Doyang,NEEPCO is to intimate the root cause. Installation of Numerical relays at Doyang is to be expedicted.**														
NERLDC/UI/17/09/004	Palatana STG-2	OTPCL	OTPCL		09-09-2017 00:25:00	09-09-2017 00:52:00	00:27:00	Vacuum pressure high		No		No		No		No SPS
	Root Cause	**After long shutdown STG#2 Vacuum Pump tripped while startup activity, resulting rise in presure inside condenser. Tripped STG#2.**														
	Remedial Measures	**Once again Vacuum Pump was started and proper vacuum was established. STG#2 was synched to grid.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/023	132 kV Khandong - Khliehriat 1 Line	POWERGRID	NEEPCO	POWERGRID	12-09-2017 10:09:00	12-09-2017 10:39:00	00:30:00	DP, ZI, Y-B	DP, ZI, Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/023	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	12-09-2017 10:09:00	12-09-2017 10:24:00	00:15:00	DP, ZIII, Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Fault was in 132 kV Khandong - Khliehriat 1 Line. **Unwanted tripping of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line to be reviewed.**DR output from Khliehriat shows balanced Y-B fault in ZI with fault current upto 3.849 kA. **No involvement of ground observed.** Not a chatacteristics of lightning fault. The fault was cleared in 65 msec. AR was attempted after 920 msec of fault initiation but the line tripped due to **peristent fault** in Z-I, Y-B ph with fault current upto 4.835 kA. The fault was cleared in 463 msec.														
	Remedial Measures	**As informed by POWERGRID, 132 kV Khandong - Khliehriat 1 Line tripped due to lightning . Unwanted tripping of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line to be reviewed by MePTCL. DPR settings of Khliehriat (MePTCL) to be reviewed by MePTCL at the earliest.**														
NERLDC/TL/17/09/024	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	12-09-2017 18:18:00	12-09-2017 18:31:00	00:13:00	No tripping	DP Operated, Tripped on SOTF/TOR	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	B ph current in DR output in pre fault conidtion is 0. It is likely from the given DR that AR was attempted and due to peristent fault in R-Y-E ph with fault current upto 0.344 kA and neutral current 0.225 kA, the line tripped on SOTF/TOR. POWERGRID may intimate the root cause and furnish patrolling report.														
	Remedial Measures	**SOE from both ends to be submitted by concerned utilities.**														

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पूर्वोत्तर क्षेत्र में 01.09.17 से 30.09.17 तक की घटनाये / Events in NER Grid from 01.09.17 to 30.09.17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/025	132 kV Panchgram - Silchar 1 Line	POWERGRID	AEGCL	POWERGRID	12-09-2017 18:20:00	13-09-2017 19:16:00	1.00:56:00	DP, ZI, Y-E	DP, ZII, Y-E	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Silchar shows R-E fault in ZII with fault current upto 1.506 kA and angle between Vr & Ir around 61-63 degrees indicates solid fault.The fault was cleared in 235 msec. Also, Y-phase current suddenly dropped to 3 A before 300 msec of fault initiation. As informed by POWERGRID, fault was in AEGCL section. **AEGCL may confirm fault in their section and intimate the root cause**.														
	Remedial Measures	**AEGCL may furnish DR from Panchgram end.**														
NERLDC/TL/17/09/026	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	12-09-2017 18:33:00	12-09-2017 18:53:00	00:20:00	No tripping	DP Operated, Tripped on SOTF/TOR	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Loktak shows Y-E fault with fault current up to 0.285 kA and angle between Vy & Iy is around 43-44 degrees which indicates fault likely due to **vegetation.**The fault was cleared in 80 msec.														
	Remedial Measures	**TOR operation at Loktak to be reviewed by NHPC as no tripping/attempt for AR recorded in DR before operation of TOR. Vegetation clearance to be done by POWERGRID. POWERGRID to furnish DR output of Jiribam end.**														
NERLDC/TL/17/09/027	132 kV Badarpur - Kumarghat 1 Line	POWERGRID	POWERGRID	POWERGRID	13-09-2017 15:25:00	13-09-2017 15:33:00	00:08:00	No tripping	Power Swing	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR from Badarpur shows DPR, Z-3 initiation for 350 msec and after that fault current decreased from 0.6 kA to 0.3 kA in R-Y phases**.Negligible current in Neutral.** Voltage during this period was around 66 kV in R & Y phases (phase to ground). **Fault cleared at remote end** after 850 msec w.e.f initiation . **TSECL may confirm fault in their system**.														
	Remedial Measures	**POWERGRID to provide DR output of Kumarghat to conclude the root cause. Operation of Power Swing at Kumarghat is to be investigated by POWERGRID as all zones shall be blocked in 132 kV voltage level for 2 sec.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/028	+/-800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	13-09-2017 16:56:00	13-09-2017 19:05:00	02:09:00	DC Line Fault	DC Line Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DC line fault as informed by CPCC, POWERGRID. POWERGRID may intimate the fault location (to ensure fault was not in NER portion).														
	Remedial Measures	TFR,FIR and Patrolling report to be submitted by POWERGRID.														
NERLDC/TL/17/09/029	220 kV Salakati - Alipurduar 2 Line	POWERGRID	POWERGRID	POWERGRID	13-09-2017 18:40:00	13-09-2017 19:33:00	00:53:00	DP, ZI, Y-E	Not Furnished	A/R Successful	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows ZI, Y-E fault with fault current up to 2.465 kA and angle between Vy & Iy is around 71-74 degrees which indicates solid fault. The fault was cleared in 64 msec. Auto-reclose was attempted after 1 sec and was successful at Salakati indicate transient nature of fault likely due to **lightning.**														
	Remedial Measures	**TLSA may be installed in case of frequent tripping due to lightning. POWERGRID may take up with Alipurduar for non-operation of AR & may check healthiness of carrier scheme in these lines.**														
NERLDC/TL/17/09/030	220 kV Salakati - Alipurduar 1 Line	POWERGRID	POWERGRID	POWERGRID	13-09-2017 19:01:00	13-09-2017 19:33:00	00:32:00	DP, ZI, R-E	Not Furnished	A/R Successful	Not Furnished	No	No	No	No	No SPS
	Root Cause	**DR output from Salakati shows ZI, R-E fault with fault current up to 4.953 kA and angle between Vr & Ir is around 64-66 degrees which indicates solid nature of fault.The fault was cleared in 558 msec. POWERGRID may intimate the reason for delayed fault clearance and status of healthiness of carrier communication. Auto-reclose was attempted after 1 sec and was successful.**														
	Remedial Measures	**TLSA may be installed in case of frequent tripping due to lightning. POWERGRID may take up with Alipurduar non-operation of AR & may check healthiness of carrier scheme in these lines.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/031	400 kV Balipara - Bongaigaon 4 Line	POWERGRID	POWERGRID	POWERGRID	14-09-2017 01:23:00	14-09-2017 01:30:00	00:07:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZI, R-Y-E fault with fault current up to 11.578 kA in R-ph and 7.3 kA in Y-ph.The fault was cleared in 90 msec. DR output from Balipara shows R-E fault with fault current up to 11.578 kA and angle between Vr & Ir is around 77 degrees which indicates solid fault. The fault was cleared in **577 msec**. Auto-reclose was attempted and was successful indicate **likelihood of lightning fault. Timestamp of DR outputs of Balipara and Bongaigaon is not matching. POWERGRID to submit relevant DR outputs for concluding the root cause.**													
	Remedial Measures	POWERGRID to check and intimate the reason for delayed fault clearance from balipara end. Resistive Reach of DPR at Balipara to be reviewed. Healthiness of Carrier Scheme at both end to be checked by POWERRGRID.													
NERLDC/TL/17/09/032	220 kV Killing (Byrnihat) - Misa 2 Line	MePTCL	MePTCL	POWERGRID	15-09-2017 03:20:00	15-09-2017 03:45:00	00:25:00	DP, ZI, B-E	DP, ZII, B-E	Not Furnished	Successful operation	No	No	No	No	No SPS
	Root Cause	**Relevant DR outputs not available from both ends. DR submitted by Byrnihat is of event at 11:30 Hrs. Root Cause could not be concluded.**														
	Remedial Measures	**AR at Byrnihat needs review. Healthiness of Carrier scheme & AR Scheme to be done by POWERGRID & MePTCL.**														
NERLDC/TL/17/09/033	400 kV Bongaigaon - New Siliguri (Binaguri) 1 Line	POWERGRID	POWERGRID	POWERGRID	15-09-2017 11:37:00	15-09-2017 12:02:00	00:25:00	DP, Z-II, B-E	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZI, B-E fault with fault current up to 3.185 kA and angle between Vb & Ib is around **52-57 degrees which indicates Vegetation infringment.** The fault was cleared in 82 msec. Auto-reclose was attempted after around 1 sec but the line **tripped due to persistent** B-E fault in ZI with fault current upto 2.891 kA. The fault was cleared in 70 msec.														
	Remedial Measures	**POWERGRID to intimate exact location of fault & root cause. Vegetation clearance to be done by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/034	400 kV Bongaigaon - Killing (Byrnihat) 1 Line	NETC & MePTCL	POWERGRID	MePTCL	15-09-2017 11:40:00	15-09-2017 12:06:00	00:26:00	DP, ZI, B-E	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows B-E fault in ZI with fault current upto 2.514 kA, angle between Vb and Ib is around 59-66 deg and AR was attempted but the line tripped due to persistent B-E fault in ZI indicate **chances of vegetation fault. NETC is to intimate the root cause.** DR output from Killing shows R-E fault with fault current upto 0.934 kA and angle between Vr and Ir is about **23-25 deg which indicate high resistive fault likely due to vegetation**.														
	Remedial Measures	**Vegetation clearance to be done by NETC. Healthiness of Auto Recloser Scheme and Carrier Scheme to be checked by MePTCL & POWERGRID. Input to DR to be checked at Byrnihat & Bongaigaon as DR outputs suggests fault in different phases.**														
NERLDC/TL/17/09/035	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	15-09-2017 13:44:00	15-09-2017 14:34:00	00:50:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**DR output from Khandong shows over current trip I>1 . The current in all the phases was about 0.4 kA at the time of tripping. Tripping occurred at the time of shutdown of II nd circuit of Khandong-Kopili.**														
	Remedial Measures	**Khandong may carryout necessary strengthening of their bays/Bus and review the O/C setting.**														
NERLDC/TL/17/09/036	+/- 800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	15-09-2017 13:01:00	15-09-2017 14:05:00	01:04:00	DC Line Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DC line fault as informed by CPCC,POWERGRID. POWERGRID may intimate the fault location (to ensure fault was not in NER portion).														
	Remedial Measures	TFR,FIR and Patrolling report to be submitted by POWERGRID.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/037	220 kV BTPS - Salakati 1 Line	POWERGRID	AEGCL	POWERGRID	16-09-2017 18:10:00	16-09-2017 19:14:00	01:04:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Root cause could not be concluded due to unavailability of proper relay indication/DR ouputs. No current at PG end. However it is learnt that at BTPS line tripped on B-Ph **Broken Conductor**.														
	Remedial Measures	Condition based maintenance of transmission elements to be done by concerned utilities. Regular patrolling to be done by Transmission licencees.														
NERLDC/TL/17/09/038	220 kV BTPS - Salakati 2 Line	POWERGRID	AEGCL	POWERGRID	16-09-2017 18:12:00	16-09-2017 23:34:00	05:22:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Root cause could not be concluded due to unavailability of proper relay indication/DR ouputs. No current at PG end. However it is learnt that at BTPS line tripped on Y-Ph Broken Conductor.														
	Remedial Measures	Condition based maintenance of transmission elements to be done by concerned utilities. Regular patrolling to be done by Transmission licencees.														
NERLDC/TL/17/09/039	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	17-09-2017 15:05:00	17-09-2017 16:56:00	01:51:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	No tripping reported at Rangia or downstream of Rangia.														
	Remedial Measures	**POWERGRID may furnish the patrolling report.** Review of Numerical Distance Protection Relay & EM earth fault relay settings at Rangia & testing of these relays to be done by powergrid at the earliest. **POWERGRID to intimate the implemented settings along with adopted CT rario and testing results to NERPC/NERLDC at the earliest.**														
NERLDC/TL/17/09/040	+/-800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	17-09-2017 17:13:00	17-09-2017 17:52:00	00:39:00	DC Line Fault	DC Line Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DC line fault as informed by CPCC,POWERGRID. POWERGRID may intimate the fault location (to ensure fault was not in NER portion).														
	Remedial Measures	TFR,FIR and Patrolling report to be submitted by POWERGRID.														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/041	+/-800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	17-09-2017 22:01:00	17-09-2017 22:21:00	00:20:00	DC Line Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DC line fault as informed by CPCC,POWERGRID. POWERGRID may intimate the fault location (to ensure fault was not in NER portion).														
	Remedial Measures	TFR,FIR and Patrolling report to be submitted by POWERGRID.														
NERLDC/UI/17/09/005	Kopili Unit 3	NEEPCO	NEEPCO		15-09-2017 00:49:00	16-09-2017 18:28:00	1.17:39:00	Stator Earth Fault		No		No		No		No SPS
NERLDC/UI/17/09/005	Doyang Unit 2	NEEPCO	NEEPCO		15-09-2017 10:02:00	15-09-2017 12:45:00	02:43:00	GT Backup Prot. Operated		No		No		No		No SPS
NERLDC/UI/17/09/005	Doyang Unit 3	NEEPCO	NEEPCO		15-09-2017 10:02:00	15-09-2017 12:49:00	02:47:00	GT Backup Prot. Operated		No		No		No		No SPS
	Root Cause	**Stator Earth fault due to carbon dust**														
	Remedial Measures	**Regular cleaning to be done by Kopili.**														

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			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/042	400 kV Bongaigaon - Alipurduar 1 Line	ENICL	POWERGRID	POWERGRID	18-09-2017 00:18:00	18-09-2017 00:57:00	00:39:00	DP, ZII, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZII carier aided trip, Y-E fault with fault current up to 4.976 kA and angle between Vy & Iy is around 52-66 degrees which indicates **Vegetation infringment.** The fault was cleared in 90 msec. Auto-reclose was attempted after around 1 sec and was successful. However, another fault occured after around 400 msec of successful AR (fault within reclaim time) in ZII with fault current upto 4.7 kA in Y phase and the line tripped. The fault was cleared in 92 msec.														
	Remedial Measures	**Vegetation clearance to be done by ENICL. Vegetation outside corridors at vulnerable locations to be cleared by owner of the line to avoid frequent tripping of crtitical elements.**														
NERLDC/TL/17/09/043	400 kV Bongaigaon - Alipurduar 1 Line	ENICL	POWERGRID	POWERGRID	18-09-2017 06:39:00	18-09-2017 07:17:00	00:38:00	DP, ZII, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZII carier aided trip, Y-E fault with fault current up to 4.874 kA and angle between Vy & Iy is around 48-62 degrees which indicates **Vegetation infringment**. The fault was cleared in 85 msec.Auto-reclose was attempted after around 1 sec but the line tripped due to **peristent Y-E fault** with fault current upto 4.3 kA. The fault was cleared in about 71 msec														
	Remedial Measures	**Vegetation clearance to be done by ENICL. Vegetation outside corridors at vulnerable locations to be cleared by owner of the line to avoid frequent tripping of crtitical elements.**														
NERLDC/TL/17/09/044	400 kV Bongaigaon - Alipurduar 1 Line	ENICL	POWERGRID	POWERGRID	18-09-2017 07:34:00	18-09-2017 15:28:00	07:54:00	DP, ZII, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZII carier aided trip, Y-E fault with fault current up to 4.741 kA and angle between Vy & Iy is around 45-59 degrees which indicates **Vegetation infringment**. The fault was cleared in 100 msec.Auto-reclose was attempted after around 1 sec but the line tripped due to peristent Y-E fault with fault current upto 4.851 kA. The fault was cleared in 78 msec														
	Remedial Measures	**Vegetation clearance to be done by ENICL. Vegetation outside corridors at vulnerable locations to be cleared by owner of the line to avoid frequent tripping of crtitical elements.**														

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			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/045	132 kV AGTPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	18-09-2017 12:36:00	18-09-2017 12:46:00	00:10:00	DP, ZII, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Kumarghat shows R-E fault with fault current up to 03.142 kA and angle between Vr & Ir is around 57-59 degrees which indicate fault likely due to vegetation infringement. The fault was cleared in 98msec. As informed by POWERGRID, **tree cut by unknwon villagers fell on 11 kV TSECL feeder which in turn came near 132 kV R ph conductor due to swinging at loc 335-336 (X-ing)**														
	Remedial Measures	**AR scheme is not implemented in this line. Same may be expedicted.**														
NERLDC/TL/17/09/046	+/-800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	19-09-2017 14:24:00	19-09-2017 15:10:00	00:46:00	DC Line Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**DC line fault as informed by CPCC,POWERGRID. POWERGRID may intimate the fault location (to ensure fault was not in NER portion).**														
	Remedial Measures	TFR,FIR and Patrolling report to be submitted by POWERGRID.														
NERLDC/TL/17/09/047	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	19-09-2017 14:23:00	19-09-2017 14:48:00	00:25:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	**No tripping reported at Rangia. This is to be investigated by POWERGRID.**														
	Remedial Measures	**POWERGRID may furnish the patrolling report.** Review of Numerical Distance Protection Relay & EM earth fault relay settings at Rangia & testing of these relays to be done by powergrid at the earliest. **POWERGRID to intimate the implemented settings along with adopted CT rario and testing results to NERPC/NERLDC at the earliest.**														

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			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/048	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	BPC, Bhutan	AEGCL	23-09-2017 01:14:00	23-09-2017 01:40:00	00:26:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**No tripping reported at Rangia. This is to be investigated by POWERGRID.**														
	Remedial Measures	**POWERGRID may furnish the patrolling report.** Review of Numerical Distance Protection Relay & EM earth fault relay settings at Rangia & testing of these relays to be done by powergrid at the earliest. **POWERGRID to intimate the implemented settings along with adopted CT rario and testing results to NERPC/NERLDC at the earliest.**														
NERLDC/TL/17/09/049	132 kV Gelyphu - Salakati 1 Line	POWERGRID	BPC, Bhutan	POWERGRID	23-09-2017 06:15:00	23-09-2017 11:19:00	05:04:00	DP, ZI, R-Y-B-E	DP, ZI, R-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows R-Y-B-E fault in ZI with fault current upto 2.773 kA and neutral current 0.630.The fault was cleared in around 72 msec. AR was attempted and was successful. However, another fault occurred in R-E, ZI with fault current upto 1.931 kA within reclaim time and the line tripped. **Likely due to lightning. Reason for delayed restoration as well as root cause (like insulator failure) of the event to be intimated to NERPC/NERLDC by POWERGRID .**														
	Remedial Measures	**POWERGRID to identify the lightning prone areas/locations and measure tower footing resistance of the towers in the ldentified ightning prone locations.TLSA may be installed in case of frequent tripping due to lightning.**														
NERLDC/TL/17/09/050	132 kV Haflong - Umranshu 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	23-09-2017 11:30:00	23-09-2017 12:10:00	00:40:00	DP, ZII, Y-B-E	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Haflong shows Y-E fault with fault current up to 0.527 kA and angle between Vy & Iy is around 7-8 degrees which indicates highly resistive fault likely due to vegetation infringement. The fault was cleared in 542 msec. **Likely due to vegetation fault. AEGCL to intimate Over Current Relay at Umrangshu is diectional/Non directional.**														
	Remedial Measures	**Over Current Settings (to be made directional) at Umranshu end need to be reviewed by AEGCL. Resitsive reach of Z-I of DPR at Haflong(PG) to be reviewed by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/051	220 kV Dimapur - Misa 1 Line	POWERGRID	POWERGRID	POWERGRID	23-09-2017 14:10:00	23-09-2017 14:18:00	00:08:00	DP, ZI, R-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Misa shows start of R-E fault with fault current upto 1.44 kA. After around 540 msec, R-Y-E fault occured with fault current up to 2.950 kA. The fault was cleared in 660 msec. DR output from Dimapur shows starting of R-E fault in ZI with fault current up to 1.572 kA and angle between Vr & Ir is around 20-29 degrees which indicates **fault likely due to vegetation infringement**.However, R phase was opened after around 95 msec but the fault was not cleared and Y-E fault with fault current upto 1.636 kA was observed after around 500 msec of fault initiation. The fault was cleared in around 650 msec.													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID. Resistive reach of DPR at both ends to be reviewed by POWERGRID to reduce the fault clearing time.**														
NERLDC/TL/17/09/053	132 kV Khandong - Kopili 2 Line	POWERGRID	NEEPCO	NEEPCO	24-09-2017 03:37:00	25-09-2017 16:46:00	1.13:09:00	No tripping	DP, ZI, R-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR and EL output is not furnished by Kopili. Due to Y ph CVT cable fault at Kopili as per flash report given by POWERGRID.														
	Remedial Measures	**Rectified as informed by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/54	132 kV Aizawl - Kumarghat 1 Line	POWERGRID	POWERGRID	POWERGRID	24-09-2017 10:33:00	24-09-2017 10:44:00	00:11:00	DP, ZI, R-E	DP, ZII, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows R-E fault in ZI with fault current up to 1.136 kA and angle between Vr & Ir is around 14-21 degrees which indicates highly resistive fault likely due to **vegetation**. The fault was cleared in 87 msec. Auto-reclose was not attempted. DR output from Kumarghat shows R-E fault in ZII with fault current up to 0.637 kA and angle between Vr & Ir is around 37-52 degrees which indicates fault likely due to vegetation. The fault was cleared in 153 msec. Auto-reclose was not attempted.														
	Remedial Measures	**Healthiness of AR scheme to be checked by POWERGRID and results to be submitted to NERPC/NERLDC. Vegetation clearance to be done by POWERGRID.**														
NERLDC/TL/17/09/055	400 kV Killing (Byrnihat) - Silchar 1 Line	NETC & MePTCL	MePTCL	POWERGRID	24-09-2017 11:34:00	24-09-2017 12:07:00	00:33:00	DP, ZI, R-E	DP, ZII, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Silchar shows R-E fault in ZII with fault current upto 2.243 kA and angle between Vr and Ir is around 8-26 deg which indicate **highly resistive fault likely due to vegetaion**.The fault was cleared in around 891 msec. AR was not attempted. DR output from Killing shows R-E fault in ZII with fault current upto 0.994 kA and angle between Vr and Ir is around 23-25 deg which indicate highly resistive fault likely due to vegetaion. AR was not attempted.														
	Remedial Measures	**Vegetation clearance to be done by NETC. Resistive reach of DPR (Z-1) at both ends to be reviewed by POWERGRID (Silchar) & MePTCL(Byrnihat) to keep the fault clearing time within 100 msec.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/056	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	24-09-2017 23:14:00	24-09-2017 23:26:00	00:12:00	No tripping	DP, ZIII, R-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/057	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	24-09-2017 23:16:00	24-09-2017 23:43:00	00:27:00	DP, ZI, R-Y-B-E	DP, ZI, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**Lightning fault** in 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line. Unwanted tripping of 132 kV Khandong - Kopili 1 Line in Z-III to be analysed by Kopili, NEEPCO. DR and EL output is not furnished by Kopili														
	Remedial Measures	**DPR settings of Kopili end of 132 kV Khandong - Kopili 1 Line to be reviewed by Kopili,NEEPCO. Relevant DR and EL output to be furnished by Kopili.**														
NERLDC/TL/17/09/058	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	24-09-2017 23:45:00	24-09-2017 23:55:00	00:10:00	No tripping	DP, ZIII, R-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/058	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	24-09-2017 23:45:00	25-09-2017 00:45:00	01:00:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Lightning fault in 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line. DR and EL output is not furnished by Kopili. DPR at Khliehriat(PG) not operated.POWERGRID to intimate the reason for non-operation of DPR at Khliehriat.														
	Remedial Measures	**Tetsing of DPR at Khliehriat (PG) to be done by POWERGRID. The ckt-II with the bay and relays belong to MePTCL. So testing shall have to be done in co-ordination with MePTCL. Kopili may review Z-III setting.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/059	132 kV Khandong - Khliehriat 1 Line	POWERGRID	NEEPCO	POWERGRID	24-09-2017 23:46:00	25-09-2017 23:50:00	24:04:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Khandong shows R-Y-B-E fault in ZI with fault current up to 3.08 kA and neutral current 0.616 kA likely due to **lightning.** The fault was cleared in 96 msec.														
	Remedial Measures	**DPR at both end to be checked by concerned utilities at both ends.**														
NERLDC/TL/17/09/060	132 kV Khandong - Khliehriat 1 Line	POWERGRID	NEEPCO	POWERGRID	24-09-2017 23:53:00	25-09-2017 00:07:00	00:14:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Khandong shows **ZII carier aided trip, R-E** fault with fault current up to 1.882 kA and angle between Vr & Ir is around 50-65 degrees which indicates fault likely due to **vegetation.** The fault was cleared in 110 msec. Auto-reclose is not attempted. DR and EL output is not furnished by Khliehriat(PG)														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID. Healthiness of AR scheme to be checked by utilities at both ends.**														
NERLDC/UI/17/09/006	Palatana GTG-2	OTPCL	OTPCL		21-09-2017 18:05:00	21-09-2017 20:38:00	02:33:00	Gas fuel temp high		No		No		Yes		No SPS
	Root Cause	**Spurious signal was received at Palatana End from Silchar due to operation of SPS-3 resulted in tripping of GTG#2.**														
	Remedial Measures	**After normalisation, unit was synched again with grid. Implemetation of SPS-3 may be expedicted. POWERGRID may submit the detailed report of spurious signal generation as discussed on 11th Nov'17.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/09/007	Monarchak GTG - 1	NEEPCO	NEEPCO		23-09-2017 16:13:00	23-09-2017 17:50:00	04:53:00	Under Voltage		No		No		Yes		No SPS
NERLDC/UI/17/09/007	Monarchak STG - 1	NEEPCO	NEEPCO		23-09-2017 16:13:00	23-09-2017 18:17:00	04:53:00	Under Voltage		No		No		Yes		No SPS
	Root Cause	**NEEPCO may intimate the root cause.**														
	Remedial Measures	-														
NERLDC/UI/17/09/008	Khandong Unit 2	NEEPCO	NEEPCO		24-09-2017 23:17:00	25-09-2017 00:25:00	01:08:00	Over frequency		No		No		No		No SPS
	Root Cause	**NEEPCO may intimate the root cause.**														
	Remedial Measures	-														
NERLDC/TL/17/09/053	132 kV Haflong - Umranshu 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	25-09-2017 01:33:00	25-09-2017 01:59:00	00:26:00	DP, ZI, R-Y-B-E	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Haflong shows ZII carier aided trip in R-E with fault current up to 1.663 kA and angle between Vr & Ir is around **69-70 degrees which indicates solid fault likely due to lightning. POWERGRID may intimate the root cause.** The fault was cleared in 110 msec. Auto-reclose was not attempted.														
	Remedial Measures	**POWERGRID & AEGCL may identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.**														
NERLDC/TL/17/09/054	220 kV Samaguri - Sonabil 2 Line	AEGCL	AEGCL	AEGCL	25-09-2017 10:16:00	25-09-2017 10:25:00	00:09:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
	Root Cause	**Fault in the line. AEGCL may intimate the root cause and furnish DR outputs relevant to this event of both ends.**														
	Remedial Measures	**AEGCL to furnish patrolling report, FIR and relevant DR outputs for concluding the root cause.**														
NERLDC/ TL/17/09/ 055	132 kV Khandong - Kopili 2 Line	POWERGRID	NEEPCO	NEEPCO	26-09-2017 06:45:00	26-09-2017 16:53:00	10:08:00	No tripping	DP, ZI, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**DR and EL output is not furnished by Kopili**														
	Remedial Measures	**DPR at both end to be checked by concerned utilities at both ends.**														
NERLDC/ TL/17/09/ 056	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	26-09-2017 10:36:00	26-09-2017 10:59:00	00:23:00	DP, ZII, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows ZII carier aided trip in Y-E with fault current up to 0.467 kA and angle between Vy & Iy is around 50-52 degrees which indicates fault likely due to **vegetation**. The fault was cleared in 120 msec. Auto-reclose was attempted but the line tripped due to **persistent Y-E fault in ZII**. DR output from Jiribam shows Y-E with fault in ZI with fault current up to 1.548 kA and angle between Vy & Iy is around 11-20 degrees which indicates **highly resistive fault likely due to vegetation**. The fault was cleared in 155 msec. Auto-reclose was attempted but the line tripped due to persistent Y-E fault in ZI with fault current upto 1.527 kA. The fault was cleared in 94 msec.														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/057	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	27-09-2017 00:53:00	27-09-2017 16:58:00	00:20:00	DP, ZII, R-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Haflong shows ZII carier aided trip in R-E with fault current up to 1.663 kA and angle between Vr & Ir is around **69-70 degrees which indicates solid fault likly due to lightning.** The fault was cleared in 110 msec. Auto-reclose was not attempted. POWERGRID to intimate the root cause.														
	Remedial Measures	**POWERGRID & AEGCL may identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping. No tripping at Umrangshu need to be reviewed by AEGCL.**														
NERLDC/TL/17/09/058	132 kV Doyang - Mokokchung (DoP, Nagaland) Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	27-09-2017 06:12:00	27-09-2017 07:12:00	01:00:00	Over current	Over current	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
NERLDC/TL/17/09/058	132 kV Dimapur - Doyang 2 Line	POWERGRID	POWERGRID	NEEPCO	27-09-2017 06:12:00	27-09-2017 07:12:00	01:00:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	Root Cause could not concluded due to unavailability of DR outputs. From relay indication, fault could be in one/both lines which were tripped.														
	Remedial Measures	**Installation of Numerical Relay at Doyand to be expedicted by NEEPCO. Patrolling report of both lines to be submitted by concerned line owners. Over Current & Earth Fault relay settings at Doyang, Mokokchung(NG), Dimapur(PG) to be reviewed by conncerned utilities.**														
NERLDC/TL/17/09/059	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	27-09-2017 11:10:00	27-09-2017 11:20:00	00:10:00	Back Up Earth Fault	Back Up Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Root Cause could not concluded due to unavailability of DR outputs. From relay indication, fault was in the line likely due to **vegetation.** POWERGRID to intimate the root cause.														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID. Resistive reach of DPR at both ends to be reviewed by POWERGRID.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/060	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	27-09-2017 13:13:00	27-09-2017 13:20:00	00:07:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Root Cause could not concluded due to unavailability of DR outputs. From relay indication, fault was in the line likely due to **vegetation.** POWERGRID to intimate the root cause.														
	Remedial Measures	**Vegetation clearance to be done by POWERGRID. Resistive reach of DPR at both ends to be reviewed by POWERGRID.**														
NERLDC/TL/17/09/061	132 kV Badarpur - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	27-09-2017 14:15:00	27-09-2017 14:25:00	00:10:00	DP, ZII, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Badarpur shows ZII carier aided trip in R-E with fault current up to 1.663 kA and angle between Vr & Ir is around 69-70 degrees which indicates solid fault likely due to **lightning.** The fault was cleared in 110 msec. Auto-reclose was not attempted.														
	Remedial Measures	**POWERGRID to check healthiness of Autorecloser Scheme at both ends. POWERGRID may furnish relevant DR output of Jiribam end.**														
NERLDC/TR/17/09/002	220/132 kV, 160 MVA ICT 2 at Balipara	POWERGRID	POWERGRID	POWERGRID	28-09-2017 09:59:00	28-09-2017 14:25:00	04:26:00	REF operated		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**REF wrongly operated.**														
	Remedial Measures	**As informed by POWERGRID, ICT tripped due to wrong connection of REF which was corrected on the same day.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/062	132 kV Haflong - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	28-09-2017 13:45:00	28-09-2017 13:54:00	00:09:00	DP, ZI, R-E	DP, ZIII, R-E	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output of Jiribam end is not furnished. DR output from Haflong shows Y-E fault in ZIII with fault current up to 0.647 kA and angle between Vy & Iy is around 2-3 degrees which indicates highly resistive fault. The fault was cleared in 817 msec. As per relay indication submitted, Jiribam also tripped in Z-III. **POWERGRID may intimate the reason for initiation of Z-III at both ends**. POWERGRID may please submit relevant DR outputs of Jiribam.														
	Remedial Measures	**Resistive reach of DPR at both ends to be reviewed by POWERGRID. Vegetation clearance to be done by POWERGRID.**														
NERLDC/TL/17/09/063	132 kV Dimapur - Doyang 1 Line	POWERGRID	POWERGRID	NEEPCO	28-09-2017 15:35:00	28-09-2017 16:03:00	00:28:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/TL/17/09/063	132 kV Doyang - Mokokchung (DoP, Nagaland) Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	28-09-2017 15:35:00	28-09-2017 16:03:00	00:28:00	No tripping	Earth Fault	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	Root Cause	Root Cause could not concluded due to unavailability of DR outputs. From relay indication, fault could be in downstream of Doyang.														
	Remedial Measures	**Installation of Numerical Relay at Doyand to be expedicted by NEEPCO. Patrolling report of downstream of Doyang to be submitted by DoP Nagaland. Over Current & Earth Fault relay settings at Doyang, Mokokchung(NG), Dimapur(PG) to be reviewed by conncerned utilities. Co-ordination of relay settings of downstream of Doyang to be done by DoP Nagaland in consultation witth Doyang,NEEPCO.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/09/064	132 kV Kahilipara - Umtru 1 Line	AEGCL & MePTCL	AEGCL	MePTCL	28-09-2017 17:05:00	28-09-2017 17:13:00	00:08:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/09/064	132 kV Kahilipara - Umtru 2 Line	AEGCL & MePTCL	AEGCL	MePTCL	28-09-2017 17:05:00	28-09-2017 17:13:00	00:08:00	No tripping	DP, ZI, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR not available from either end. As per relay indication, fault was in line 1. Tripping of line II need to be reviewed by AEGCL.														
	Remedial Measures	**Earth Fault Relay settings at Kahelipara for Umtru lines to be reviewed by AEGCL. AEGCL to intimate the root cause for this event.**														
NERLDC/TL/17/09/065	800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	29-09-2017 10:44:00	29-09-2017 11:18:00	00:34:00	DC Line Fault, 161.6 km	DC line fault,	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DC line fault at 161 Kms from BNC as informed by CPCC,POWERGRID.														
	Remedial Measures	**Patrolling report and TFR outputs to be submitted by POWERGRID.**														
NERLDC/TR/17/09/003	220/132 kV, 160 MVA ICT 2 at Balipara	POWERGRID	POWERGRID		29-09-2017 20:36:00	29-09-2017 23:59:00	03:23:00	OSR(Oil surge relay) operated		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**OSR(Oil surge relay) operated**														
	Remedial Measures	**Wrong operation of OSR. The problem has been attended.**														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Outage Duration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B				End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/09/009	Doyang Unit 1	NEEPCO	NEEPCO		27-09-2017 06:12:00	27-09-2017 06:21:00	00:09:00	Elect/ Non Electrical Inter phase relay 86I optd		No		Yes		No		No SPS
NERLDC/UI/17/09/009	Doyang Unit 2	NEEPCO	NEEPCO		27-09-2017 06:12:00	27-09-2017 06:31:00	00:19:00	Elect/ Non Electrical Inter phase relay 86I optd		No		Yes		No		No SPS
NERLDC/UI/17/09/009	Doyang Unit 3	NEEPCO	NEEPCO		27-09-2017 06:12:00	27-09-2017 06:40:00	00:28:00	Elect/ Non Electrical Inter phase relay 86I optd		No		Yes		No		No SPS
	Root Cause	**NEEPCO may intimate the root cause.**														
	Remedial Measures	-														

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
1	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	03-09-2017 11:02:00	03-09-2017 11:33:00	No tripping	Direction Earth Fault	41	112	GD-I	0.008	Not Applicable	Not Applicable	No	No	No	No	No SPS	760	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line. 132 kV Palatana - Udaipur line was under shutdown since 06:29 Hrs on 03.09.17, 66 kV Udaipur - Gokulnagar line, 66 kV Amarpur - Gumti line and 66 kV Bagafa - Belonia line were kept open (Cause: phase sequence issue). At 11:02 Hrs on 03.09.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station, Rabindranagar and Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1619 MW , Antecedent Generation: 1588 MW																			
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation																			
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 11:14 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar Line also at 11:14 Hrs on 03.09.17.																			
	Root Cause	DR outputs/Tripping details of downstream elements are not available for analysis. From relay indication, fault was likely in downstream of Rokhia/fault in 132 kV Monarchak-Rokhia line which has stretches of rubber plantations.																			
	Remedial Measures	**Tripping of 132 kV Agartala-Rokhia II line at Rokhia needs to be analysed. DEF setting at Rokhia end is to be checked by TSECL.Rubber plantations in vicinity of line to be cleared.** Relay coordination of downstream substation of Rokhia to be reviewed by TSECL. TSECL is to check Circuit Breaker operation of downstream elements.																			
2	132 kV Dimapur (PG) - Kohima Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	03-09-2017 16:38:00	03-09-2017 16:49:00	DP, ZI, Y-E	No Indication	20	22	GD-I	0.004	Not Furnished	Not Applicable	No	Yes	No	No	No SPS	160	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line .132 kV Karong - Kohima line was kept open (Cause: Overloading of 132 kV Dimapur(PG) - Kohima line), 132 kV Wokha - Kohima line kept open (Cause of opening the line: improper relay cordination of Dimapur - Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open(Cause of opening the line: construction activities)). At 16:38 Hrs on 03.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1710 MW , Antecedent Generation: 1657 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima through 132 kV Dimapur (PG) - Kohima Line at 16:49 Hrs on 03.09.17																			
	Root Cause	DR output from Dimapur shows Y-E fault in ZI with fault current upto 3.846 kA and angle between Vy and Iy is around 59-66 deg which indicate fault **likely due to vegetation**.The fault was cleared in around 78 msec. **AR was not attempted.**																			
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland. Relay coordination of downstream of Kohima and 132 kV Nagaland Substations to be done by DoP Nagaland.**																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
3	132 kV Lekhi - Nirjuli Line	POWERGRID & DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	POWERGRID	04-09-2017 14:35:00	04-09-2017 14:52:00	Earth Fault	No tripping	27	-	GD-I	0.008	Not Applicable	Not Applicable	No	No	No	No	No SPS	480	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Nirjuli area of Arunachal Pradesh Power System & Gohpur area of Assam Power System were connected with rest of NER Grid through 132 kV Lekhi-Nirjuli line. 132 kV Pavoi - Gohpur line & Bus Coupler CB of Gohpur kept open (Cause : overloading of 132 kV Ranganadi - Lekhi line). At 14:35 Hrs on 04.09.2017, 132 kV Lekhi-Nirjuli line tripped. Due to tripping of these elements, Nirjuli area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1928 MW, Antecedent Generation: 1875 MW																			
	*Substation Affected	Nirjuli and Gohpur Substation																			
	Restoration Details	Power supply extended to Nirjuli Substation through 132 kV Lekhi - Nirjuli Line at 14:52 Hrs, to Gohpur Substation through 132 kV Nirjuli - Gohpur Line at 14:52 Hrs on 04.09.2017.																			
	Root Cause	Likely downstream fault. As per discussions in previous subgroup meetings, vegetation clearance near gantry of Nirjuli to be done by DoP AP. Status of the same may be intimated.																			
	Remedial Measures	Patrolling is to done and report is to be furnished to NERPC and NERLDC by line owners. **Downstream coordination at Nirjuli to be done by DoP AP.**																			
4	132 kV Lekhi - Nirjuli Line	POWERGRID & DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	POWERGRID	04-09-2017 15:01:00	04-09-2017 15:25:00	Earth Fault	No tripping	25	-	GD-I	0.010	Not Applicable	Not Applicable	No	No	No	No	No SPS	-	-
	Brief Description of the Incident	Nirjuli area of Arunachal Pradesh Power System & Gohpur area of Assam Power System were connected with rest of NER Grid through 132 kV Lekhi-Nirjuli line. 132 kV Pavoi - Gohpur line & Bus Coupler CB of Gohpur kept open (Cause: overloading of 132 kV Ranganadi - Lekhi line). At 15:01 Hrs on 04.09.2017, 132 kV Lekhi-Nirjuli line tripped. Due to tripping of these elements, Nirjuli area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1778 MW, Antecedent Generation: 1675 MW																			
	*Substation Affected	Nirjuli and Gohpur Substation																			
	Restoration Details	Power supply extended to Nirjuli Substation through 132 kV Lekhi - Nirjuli Line at 15:25 Hrs, to Gohpur Substation through 132 kV Nirjuli - Gohpur Line at 15:25 Hrs on 04.09.2017.																			
	Root Cause	Likely downstream fault. As per discussions in previous subgroup meetings, vegetation clearance near gantry of Nirjuli to be done by DoP AP. Status of the same may be intimated.																			
	Remedial Measures	Patrolling is to done and report is to be furnished to NERPC and NERLDC by line owners. **Downstream coordination at Nirjuli to be done by DoP AP.**																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
5	132 kV Lekhi - Nirjuli Line	POWERGRID & DoP, Arunachal Pradesh	DoP, Arunachal Pradesh	POWERGRID	04-09-2017 15:40:00	04-09-2017 16:25:00	Earth Fault	No tripping	25	-	GD-I	0.019	Not Applicable	Not Applicable	No	No	No	No	No SPS	400	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Nirjuli area of Arunachal Pradesh Power System & Gohpur area of Assam Power System were connected with rest of NER Grid through 132 kV Lekhi-Nirjuli line. 132 kV Pavoi - Gohpur line & Bus Coupler CB of Gohpur kept open (Cause : overloading of 132 kV Ranganadi - Lekhi line). At 15:40 Hrs on 04.09.2017, 132 kV Lekhi-Nirjuli line tripped. Due to tripping of these elements, Nirjuli area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1851 MW, Antecedent Generation: 1673 MW																			
	*Substation Affected	Nirjuli and Gohpur Substation																			
	Restoration Details	Power supply extended to Nirjuli Substation through 132 kV Lekhi - Nirjuli Line at 16:25 Hrs, to Gohpur Substation through 132 kV Nirjuli - Gohpur Line at 16:25 Hrs on 04.09.2017.																			
	Root Cause	Likely downstream fault. As per discussions in previous subgroup meetings, vegetation clearance near gantry of Nirjuli to be done by DoP AP. Status of the same may be intimated.																			
	Remedial Measures	Patrolling is to done and report is to be furnished to NERPC and NERLDC by line owners. **Downstream coordination at Nirjuli to be done by DoP AP.**																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/09/006	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	05-09-2017 08:16:00	05-09-2017 13:04:00	DPR, Z-IV, B-E	Direct Trip received	45	117	-	0.018	Not Applicable	Not Applicable	No	Yes	No	No	No SPS		
NERLDC/GD/17/09/006	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	05-09-2017 08:16:00	05-09-2017 09:16:00	Earth Fault	No tripping	45	117	GD-I		Not Applicable	Not Applicable	No	Yes	No	No	No SPS		
NERLDC/GD/17/09/006	132 kV Rokhia - Monarchak 1 Line	TSECL	TPGL	NEEPCO	05-09-2017 08:16:00	05-09-2017 08:40:00	Earth Fault	No tripping	45	119	GD-I		Not Applicable	Not Applicable	No	Yes	No	No	No SPS		
NERLDC/GD/17/09/006	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	05-09-2017 08:16:00	05-09-2017 09:00:00	No tripping	Earth Fault	45	119	GD-I		Not Applicable	Not Applicable	No	Yes	No	No	No SPS		
	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur line and 132 KV Monarchak - Rokhia Line. 66 kV Gokulnagar - Udaipur line kept open (Cause : phase sequence issue), 66 kV Amarpur - Gumti line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 08:16 Hrs on 05.09.2017, 132 kV Monarchak - Rokhia line and 132 kV Palatana - Udaipur lines tripped. Due to tripping of these elements, Monarchak Power Station,Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1821 MW, Antecedent Generation: 1728 MW																			
	*Substation Affected	Monarchak Power Station, Udaipur and Rabindranagar Substation																			
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 09:16 Hrs, to Monarchak Power Station through 132 kV Rokhia - Monarchak Line at 08:40 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 08:40 Hrs on 05.09.2017.																			
	Root Cause	As informed by OTPC, Tripping of lines were due to wrong operation of earth switch of 132 kV Palatana-SM Nagar line at Palatana. Tripping of 400 kV Palatana-Silchar I line in reverse zone at Palatana, 132 kV Rokhia - Monarchak Line and 132 kV Monarchak - Udaipur Line need review.																			
	Remedial Measures	OTPC to review the reverse zone settings of 400 kV Silchar-Palatana D/C. Earth Fault Relay settings at Rokhia, Monarchak & Udaipur need to be reviewed by concerned utilities.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
7	132 kV Aizawl - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	06-09-2017 10:46:00	06-09-2017 11:35:00	Earth Fault	No tripping	45	4	GD-I	0.037	Not Applicable	Not Applicable	No	No	No	No	No SPS	6000	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	132 kV Badarpur - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	06-09-2017 10:46:00	06-09-2017 19:12:00	DP, ZI, B-E	No tripping					Not Furnished	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	Kolasib area of Mizoram Power System was connected with rest of NER Grid through 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line. At 10:46 Hrs on 06.09.2017, 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal lines tripped. Due to tripping of these elements, Kolasib area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																				
	Antecedent Conditions of NER Grid	Antecedent Load: 1833 MW, Antecedent Generation: 1838 MW																			
	*Substation Affected	Bairabi Power Station, Turial Power Station and Kolasib Substation																			
	Restoration Details	Power supply extended to Kolasib Substation through 132 kV Aizawl - Kolasib Line at 11:35 Hrs on 06.09.2017.																			
	Root Cause	DR output from Badarpur shows Y-E fault in ZI with fault current upto 0.764 kA and angle between Vy and Iy is around 23-31 deg which indicate **high resistive fault likely due to vegetation**. The fault was cleared in around 50 msec, which suggest transient nature of fault. However, at the same time, **Kolasib - Bhairabi (state line)** also tripped. **So, DPR settings at Badarpur to be reviewed by POWERGRID.** DR and EL output is not furnished by Aizawl.																			
	Remedial Measures	Patrolling to be done to clear infringement within the line section and report to be furnished to NERLDC and NERPC. **DPR settings at Badarpur to be reviewed by POWERGRID.Healthiness of Protection System of Kolasib - Bhairabi (state line) at Kolasib to be checked by P&ED Mizoram.**																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
8	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 10:35:00	07-09-2017 10:46:00	Earth Fault	No tripping	15	24	GD-I	0.003	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:35 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1723 MW, Antecedent Generation: 1699 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 10:46 Hrs on 07.09.2017.																			
	Root Cause	DR output from Dimapur shows Zone III start, B-E fault with fault current upto 1.247 kA and angle between Vb & Ib around 70 degrees indicate solid fault likely due to **lightning in downstream of Kohima** . Back up protection was operated and the line tripped. The fault was cleared in around 220 msec.																			
	Remedial Measures	Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			
9	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 10:54:00	07-09-2017 11:17:00	Earth Fault	No tripping	12	-	GD-I	0.005	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:54 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1758 MW, Antecedent Generation: 1673 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 11:17 Hrs on 07.09.2017.																			
	Root Cause	DR output from Dimapur shows Zone III start,B-E fault with fault current upto 1.269 kA . Angle between Vb and Ib is around 70 deg which indicate solid fault. Back up protection was operated and the line tripped. The fault was cleared in around 220 msec.																			
	Remedial Measures	Line to be patrolled and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
10	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 12:12:00	07-09-2017 12:20:00	Earth Fault	No tripping	12	-	GD-I	0.002	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 12:12 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1686 MW, Antecedent Generation: 1645 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 12:20 Hrs on 07.09.2017.																			
	Root Cause	Root cause of this event could not be found as FIR (First Information Report), DR and EL output not yet furnished by Dimapur(PG). Likely due to downstream fault.																			
	Remedial Measures	Line to be patrolled and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Kohima is to be done by DoP Nagaland.																			
11	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	08-09-2017 07:36:00	08-09-2017 07:47:00	Earth Fault	Earth Fault	19	23	GD-I	0.003	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 07:36 Hrs on 08.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1851 MW, Antecedent Generation: 2024 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 07:47 Hrs on 08.09.2017																			
	Root Cause	DR output from Dimapur shows Zone III start, B-E fault with fault current upto 1.351 kA . Back up protection was operated and the line tripped. The fault was cleared in around 219 msec.Angle between Vb and Ib is around 70 deg which indicate solid fault likely due to **lightning.** Earth fault also operated at Kohima end which suggest that **fault was in line.**																			
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
12	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	08-09-2017 11:40:00	08-09-2017 11:52:00	Over current	No tripping	53	-	GD-I	0.019	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Dimapur area of Nagaland was connected with rest of NER Grid through 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line (132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) I line is under long outage since 08.06.2016). At 11:40 Hrs on 08.09.2017, 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line tripped. Due to tripping of this element, Dimapur area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1721 MW, Antecedent Generation: 1914 MW																			
	*Substation Affected	Dimapur Substation																			
	Restoration Details	Power supply extended to Dimapur Substation through 132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line at 11:52 Hrs on 08.09.2017.																			
	Root Cause	Root cause of this event could not be found as FIR(First Information Report), DR and EL output not yet furnished by Dimapur(PG). **Likely due to downstream phase-phase fault.**																			
	Remedial Measures	Line patrolling to be done by DoP Nagaland and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Dimapur is to be done by DoP Nagaland.																			
13	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	08-09-2017 11:22:00	08-09-2017 11:49:00	Earth Fault	No tripping	6	106	GD-I	0.003	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	-	-
	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	08-09-2017 11:22:00	08-09-2017 11:51:00	No tripping	DP, ZI, R-E					Not Furnished	Not Applicable	No	Yes	No	No	No SPS		
	Brief Description of the Incident	Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line (132 kV Monarchak - Udaipur line was under shutdown since 09:51 Hrs on 08.09.2017). At 11:22 Hrs on 08.09.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1817 MW, Antecedent Generation: 2025 MW																			
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation																			
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 11:51 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 11:51 Hrs on 08.09.2017.																			
	Root Cause	It is likely that fault was in 132 kV Monarchak - Rokhia line which has stretches of rubber plantations . DR and EL output is not furnished by Rokhia(TPGL). Also, TSECL may please confirm the reason for tripping of 132 kV Agartala - Rokhia I line.																			
	Remedial Measures	Rubber plantations/Vegetation in vulnerable locations to be removed. Earth Fault settings at Agartala for Rokhia line-I is to be reviewed by TSECL. **Also, relay setting at Monarchak Power System is to be checked and coordinated with TSECL as per Ramakrishna Task Force Settings.**																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
14	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-09-2017 04:48:00	09-09-2017 05:00:00	Earth Fault	No tripping	12	21	GD-I	0.003	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 04:48 Hrs on 09.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1716 MW, Antecedent Generation: 2074 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 05:00 Hrs on 09.09.2017.																			
	Root Cause	DR output from Dimapur shows Zone 3 start, B-E fault with fault current upto 1.290 kA .Angle between Vb and Ib is around 69-71 deg which indicate **solid fault likely due to lightning**. Back up protection was operated and the line tripped. The fault was cleared in around 218 msec.																			
	Remedial Measures	Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.DPR settings at Dimapur(PG) to be reviewed.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
15	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-09-2017 16:27:00	09-09-2017 16:35:00	Earth Fault	Earth Fault	25	24	GD-I	0.004	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	320	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line . 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 16:27 Hrs on 09.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1867 MW, Antecedent Generation: 2285 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 16:35 Hrs on 09.09.2017.																			
	Root Cause	DR output from Dimapur shows Zone 3 start,B-E fault with fault current upto 1.336 kA . Angle between Vb and Ib is around 65-70 deg which indicate solid fault. Back up protection was operated and the line tripped. The fault was cleared in around 225 msec.																			
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
16	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	11-09-2017 09:56:00	11-09-2017 10:10:00	Earth Fault	Earth Fault	14	23	GD-I	0.007	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	200	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 09:56 Hrs on 11.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load:1558 MW, Antecedent Generation: 1852 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 10:10 Hrs on 11.09.2017																			
	Root Cause	DR output from Dimapur shows Zone II start, R-E fault with fault current upto 1.827 kA . Angle between Vr and Ir is around 61-67 deg which indicate fault likely due to lightning. Back up protection was operated and the line tripped. The fault was cleared in around 179 msec. Earth fault also operated at Kohima end which suggest that fault was in line.																			
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			
17	132 kV Balipara - Khupi Line	NEEPCO & DoP, Arunachal Pradesh	POWERGRID	NEEPCO	12-09-2017 12:43:00	12-09-2017 13:09:00	DP, ZI, R-Y-B-E	No tripping	11	-	GD-I	0.006	Not Applicable	Not Applicable	No	No	No	No	No SPS	560	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 12:43 Hrs on 12.09.2017, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1768 MW, Antecedent Generation: 1854 MW																			
	*Substation Affected	Khupi Substation																			
	Restoration Details	Power supply extended to Khupi Substation through 132 kV Balipara - Khupi Line at 13:09 Hrs on 12.09.2017.																			
	Root Cause	Likely due to vegetation fault in the line.																			
	Remedial Measures	Vegetation clearance to be done by NEEPCO & DoP, Arunachal Pradesh. Same was discussed in Previous Subgroup meetings.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
18	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	13-09-2017 12:48:00	13-09-2017 13:06:00	DP, ZI, B-E	No tripping	14	21	GD-I	0.005	Not Furnished	Not Applicable	No	Yes	No	No	No SPS	160	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 12:48 Hrs on 13.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1755 MW, Antecedent Generation:2064 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:06 Hrs on 13.09.2017																			
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2 kA . Angle between Vb and Ib is around 25-30 deg which indicate fault likely due to **vegetation.** The fault was cleared in around 95 msec, suggesting transient nature of fault.																			
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, relay setting at Kohima to be reviewed by DoP, Nagaland for no tripping.																			
19	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	13-09-2017 15:20:00	13-09-2017 15:51:00	No tripping	Earth Fault	151	116	GD-I	0.078	Not Furnished	Not Applicable	No	No	No	No	No SPS	520	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	66 kV Amarpur - Gumti Line	TSECL	TSECL	TPGL	13-09-2017 15:20:00	13-09-2017 16:40:00	Over current	Over current					Not Furnished	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia Line and 66 kV Amarpur - Gumti 1 Line. 132 kV Palatana - Udaipur 1 Line was under shutdown since 09:50 Hrs on 13.09.2017, 66 kV Rokhia - Badarghat line, 66 kV Agartala - Badarghat line, 66 kV Bagafa - Belonia line were kept open (Cause: phase sequence issue). At 15:20 Hrs on 13.09.2017, 132 kV Monarchak - Rokhia Line and 66 kV Amarpur - Gumti line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1870 MW, Antecedent Generation: 2060 MW																			
	*Substation Affected	Monarchak Power Station, Rabindranagar and Udaipur Substation																			
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 17:19 Hrs, to Monarchak Power Station through 132 kV Rokhia - Monarchak Line at 15:51 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 15:51 Hrs.																			
	Root Cause	At the same time, 132 kV Palatana - Surajmaninagar line, 132 kV Surajmaninagar - Budhjungnagar I & II Line, 132 kV Agartala - Budhjungnagar I Line and 132 kV Jirania - Budhjungnagar I Line tripped. **TSECL may carry out patrolling of the lines and intimate the root cause.** Due to unavailability of DR and proper relay indications, root cause could not be concluded.																			
	Remedial Measures	Patrolling report to be furnished to NERPC and NERLDC. Also, Relay Settings at Rokhia, 79 Tilla, Budhjangnagar, Surajmaninagar & Monarchak need to reviewed by TSECL & NEEPCO. Also, directional nature of Earth Fault setting at Rokhia to be confirmed by TPGL																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
20	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-09-2017 06:06:00	15-09-2017 06:21:00	Earth Fault	Earth Fault	21	23	GD-I	0.005	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	160	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 06:06 Hrs on 15.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1487 MW, Antecedent Generation: 2064 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 06:21 Hrs on 15.09.2017																			
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2.412 kA . Angle between Vb and Ib is around 26-34 deg which indicate fault likely due to **vegetation.** The fault was cleared in around 88 msec. Earth fault also operated at Kohima end which suggest that fault was in line.																			
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
21	132 kV Doyang - Mokokchung (DoP, Nagaland) Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	15-09-2017 11:57:00	15-09-2017 13:15:00	Over current	No tripping	18	-	GD-I	0.023	Not Applicable	Not Applicable	No	No	No	No	No SPS	-	-
	132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland) 1 Line	POWERGRID	POWERGRID	DoP, Nagaland	15-09-2017 11:57:00	15-09-2017 12:10:00	Back Up Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland) 2 Line	POWERGRID	POWERGRID	DoP, Nagaland	15-09-2017 11:57:00	15-09-2017 12:10:00	Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	Mokokchung area of Nagaland Power System was connected with rest of NER Grid through 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines and 132 kV Doyang-Mokokchung (DoP, Nagaland) line . 132 kV Mokokchung(DoP, Nagaland)-Marianai(AEGCL)line is under long outage & 66 kV Tuengsang-Likimro line kept open (Cause: Construction activities). At 11:57 Hrs on 15.09.2017, 132 kV Doyang-Mokokchung (DoP, Nagaland) I line, 132 kV Mokokchung (DoP, Nagaland)-Mokokchung (PG) I & II lines tripped. Due to tripping of these elements, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1672 MW, Antecedent Generation: 2013 MW																			
	*Substation Affected	Mokokchung (DoP, Nagaland) Substation																			
	Restoration Details	Power supply extended to Mokokchung Substation through 132 kV Mokochung (PG) - Mokokchung (DoP, Nagaland) 1 & 2 Lines at 12:10 Hrs on 15.09.2017.																			
	Root Cause	Likely fault in downstream of Mokokchung(DoP, Nagaland)/ 132 kV Doyang-Mokokchung line. DoP, Nagaland may intimate the root cause.																			
	Remedial Measures	Patrolling is to be done and report is to be furnished to NERLC and NERPC by DoP Nagaland. Downstream coordination of Mokokchung(DoP, Nagaland) is to be done by DoP Nagaland.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
22	132 kV Balipara - Khupi Line	NEEPCO & DoP, Arunachal Pradesh	POWERGRID	NEEPCO	15-09-2017 12:11:00	15-09-2017 12:25:00	Earth Fault	No tripping	15	-	GD-I	0.005	Not Applicable	Not Applicable	No	No	No	No	No SPS	120	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 12:11 Hrs on 15.09.2017, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																				
	Antecedent Conditions of NER Grid	Antecedent Load: 1833 MW, Antecedent Generation: 1838 MW																			
	*Substation Affected	Khupi Substation																			
	Restoration Details	Power supply extended to Khupi Substation through 132 kV Balipara - Khupi Line at 12:25 Hrs on 15.09.2017.																			
	Root Cause	Likely due to vegetation fault in the downstream of Khupi.																			
	Remedial Measures	Vegetation clearance to be done by DoP, Arunachal Pradesh. Relay coordination of downstream of Khupi to be done by DoP AP.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
23	132 kV Badarpur - Panchgram Line	POWERGRID	POWERGRID	AEGCL	16-09-2017 08:51:00	16-09-2017 09:39:00	DP, ZIII, Y-E	No tripping	18	-	GD-I	0.014	Not Applicable	Not Applicable	No	No	No	No	No SPS	1400	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	132 kV Panchgram - Silchar Line	POWERGRID	AEGCL	POWERGRID	16-09-2017 08:51:00	16-09-2017 09:20:00	Not Furnished	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Panchgram - Srikona Line	POWERGRID	AEGCL	AEGCL	16-09-2017 08:51:00	16-09-2017 09:10:00	Not Furnished	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Lumshnong - Panchgram Line	AEGCL & MePTCL	MePTCL	AEGCL	16-09-2017 08:51:00	17-09-2017 00:58:00	No tripping	Earth Fault					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	Panchgram area of Assam Power System was connected with rest of NER Grid through 132 kV Panchgram-Badarpur line, 132 kV Panchgram - Silchar line, 132 kV Panchgram - Srikona line and 132 kV Lumshnong - Panchgram line. At 08:51 Hrs on 16.09.2017,132 kV Panchgram-Badarpur line, 132 kV Panchgram - Silchar line, 132 kV Panchgram - Srikona line and 132 kV Lumshnong - Panchgram lines tripped. Due to tripping of these elements, Panchgram area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1814 MW, Antecedent Generation: 1792 MW																			
	*Substation Affected	Panchgram Substation																			
	Restoration Details	Power supply extended to Panchgram Substation through 132 kV Panchgram - Srikona Line at 09:10 Hrs on 17.09.2017.																			
	Root Cause	Due to improper relay indication at Panchgram and unavailability of DR outputs, root cause cannot be concluded. From relay indications, Fault was likely in downstream of Panchgram.																			
	Remedial Measures	Proper relay indication is to recorded at the time of tripping and to be intimated to SLDC/RLDC along with FIR. Also, relay coordination of downstream of Panchgram is to be done by AEGCL. Directional nature of Earth Fault Relay at Panchgram to be checked for all elements in Panchgram.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
24	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-09-2017 08:50:00	17-09-2017 08:56:00	Earth Fault	Earth Fault	17	19	GD-I	0.002	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	240	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 08:50 Hrs on 17.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1855 MW, Antecedent Generation: 2001 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 08:56 Hrs on 17.09.2017.																			
	Root Cause	DR output from Dimapur shows Zone III start, R-E fault in ZI with fault current upto 1.130 kA . Angle between Vr and Ir is around 66-67 deg which indicate **solid fault likely due to lightning.** Back up protection operated and the line tripped.The fault was cleared in around 168 msec. Earth fault also operated at Dimapur (PG) which suggest that fault was in line.																			
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.																			
25	132 kV Loktak - Ningthoukhong Line	MSPCL	NHPC	MSPCL	20-09-2017 14:25:00	20-09-2017 14:52:00	Over current	No tripping	13	-	GD-I	0.006	Not Applicable	Not Applicable	No	No	No	No	No SPS	120	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Ningthoukhong area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak-Ningthoukhong line. 132 kV Imphal(PG)-Ningthoukhong line & 132 kV Kakching-Kongba line kept open (Cause: Overloading of 132 kV Loktak-Ningthoukhong line). At 14:25 Hrs on 20.09.2017, 132 kV Loktak-Ningthoukhong line tripped. Due to tripping of this element, Ningthoukhong area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 1792 MW, Antecedent Generation: 2085 MW																			
	*Substation Affected	Ningthoukhong Substation																			
	Restoration Details	Power supply extended to Ningthoukhong Substation through 132 kV Loktak - Ningthoukhong Line at 14:52 Hrs on 20.09.2017.																			
	Root Cause	Root cause of this event could not be found due to unavailablity of FIR(First Information Report), DR and EL output. From relay Indication, it can be concluded that phase-phase fault occurred in the line/downstream of Ningthkong.																			
	Remedial Measures	Patrolling report to be furnished to NERPC and NERLDC by MSPCL. MSPCL may intimate the root cause.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
26	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	DoP, Nagaland & POWERGRID	POWERGRID	DoP, Nagaland	22-09-2017 15:33:00	22-09-2017 15:48:00	Earth Fault	No tripping	63	-	GD-I	0.034	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	120	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Dimapur area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line (132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) I line is under long outage since 08.06.2016). At 15:33 Hrs on 22.09.2017, 132 kV Dimapur (PG)-Dimapur (DoP, Nagaland) II line tripped. Due to tripping of this element, Dimapur area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1850 MW, Antecedent Generation: 2113 MW																			
	*Substation Affected	Dimapur (DoP, Nagaland) Substation																			
	Restoration Details	Power supply extended to Dimapur (DoP, Nagaland) Substation through 132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line at 15:48 Hrs on 22.09.2017.																			
	Root Cause	Root cause of this event could not be found as FIR(First Information Report), DR and EL output not yet furnished by Dimapur(PG). **Likely due to downstream vegetation fault.**																			
	Remedial Measures	Line patrolling to be done by DoP Nagaland and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Dimapur is to be done by DoP Nagaland.																			
27	132 kV Balipara - Khupi Line	NEEPCO & DoP, Arunachal Pradesh	POWERGRID	NEEPCO	23-09-2017 10:29:00	23-09-2017 10:51:00	DP, ZII, R-Y-B-E	No tripping	21	-	GD-I	0.013	Not Applicable	Not Applicable	No	No	No	No	No SPS	280	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 10:29 Hrs on 23.09.2017, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1705 MW, Antecedent Generation: 2035 MW																			
	*Substation Affected	Khupi Substation																			
	Restoration Details	Power supply extended to Khupi Substation through 132 kV Balipara - Khupi Line at 10:51 Hrs on 23.09.2017.																			
	Root Cause	Likely due to vegetation fault in the downstream of Khupi.																			
	Remedial Measures	Vegetation clearance to be done by DoP, Arunachal Pradesh. Relay coordination of downstream of Khupi to be done by DoP AP.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
28	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-09-2017 16:43:00	23-09-2017 16:52:00	DP, ZI, B-E	No tripping	25	18	GD-I	0.004	Not Furnished	Not Applicable	No	No	No	No	No SPS	160	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 16:43 Hrs on 23.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1794 MW, Antecedent Generation: 1568 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 16:52 Hrs on 23.09.2017																			
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2.589 kA . Angle between Vb and Ib is around 27-38 deg which indicate fault likely due to **vegetation.**The fault was cleared in around 87 msec.																			
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, relay setting of this element at Kohima is to be checked as there was no relay tripping.																			
29	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRD & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-09-2017 13:26:00	27-09-2017 13:55:00	DP, ZI, R-Y-E	Earth Fault	14	22	GD-I	0.008	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	-	-
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 13:26 Hrs on 27.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.																			
	Antecedent Conditions of NER Grid	Antecedent Load: 1906 MW, Antecedent Generation: 2118 MW																			
	*Substation Affected	Kohima, Meluri and Kiphire Substation																			
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:55 Hrs on 27.09.2017.																			
	Root Cause	DR output from Dimapur shows R-Y-E fault in ZI with fault current upto 6.442 kA.The fault was cleared in around 86 msec, suggesting transient nature of fault likely due to **vegetation**.																			
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
30	132 kV Ranganadi - Ziro Line	POWERGRID	NEEPCO	POWERGRID	28-09-2017 11:42:00	28-09-2017 12:02:00	DP, ZII, R-Y-B-E, 40 km	No tripping	11	-	GD-I	0.004	Not Applicable	Not Applicable	No	No	No	No	No SPS	480	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	Brief Description of the Incident	Ziro(Ziro, Daporjio, Along, Pasighat, Roing and Tezu) area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Ranganadi-Ziro line. At 11:42 Hrs on 28.09.2017, 132 kV Ranganadi-Ziro line tripped. Due to tripping of this element, Ziro area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																				
	Antecedent Conditions of NER Grid	Antecedent Load: 1882 MW, Antecedent Generation: 2071 MW																			
	*Substation Affected	Ziro, Daporjio, Along, Pasighat, Roing and Tezu Substation																			
	Restoration Details	Power supply extended to Ziro Substation through 132 kV Ranganadi - Ziro Line at 12:02 Hrs on 28.09.2017.																			
	Root Cause	DR output from Ranganadi shows Y-B-E fault in ZII with fault current up to 3.591 kA and neutral current . The fault was cleared in **441 msec.** Likely due to Fault in Downstream of ziro																			
	Remedial Measures	Patrolling is to be carried out and report to be furnished to NERPC and NERLDC by DoP AP. Relay Co-ordination of downstream of Ziro to be done by DoP AP in consulation with POWERGRID.																			
31	132 kV Palatana - Udaipur Line	TSECL	OTPCL	TSECL	28-09-2017 13:15:00	28-09-2017 14:02:00	Over current	Earth Fault	15	18	GD-I	0.004	Not Applicable	Not Applicable	No	No	No	No	No SPS	160	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	132 kV Monarchak - Udaipur Line	TSECL	NEEPCO	TSECL	28-09-2017 13:15:00	28-09-2017 14:09:00	No tripping	Earth Fault					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	Udaipur area of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur line and 132 KV Monarchak - Udaipur Line. 66 kV Gokulnagar - Udaipur line kept open (Cause : phase sequence issue), 66 kV Amarpur - Gumti line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 13:15 Hrs on 28.09.2017, 132 kV Monarchak - Udaipur line and 132 kV Palatana - Udaipur line tripped. Due to tripping of these elements, Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to no source in this area.																				
	Antecedent Conditions of NER Grid	Antecedent Load: 1864 MW, Antecedent Generation: 2030 MW																			
	*Substation Affected	Udaipur Substation																			
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 14:02 Hrs on 28.09.2017.																			
	Root Cause	At the same time , 132 kV Palatana - Surajmaninagar line tripped with Over current relay indication at Palatana. POWERGRID may comfirm the reason for tripping of this line. Also, from relay indication, it was fault was likely occurred in 132 kV Palatana - Udaipur line. **TSECL may provide reason for tripping of 132 kV Monarchak - Udaipur line at Udaipur.**																			
	Remedial Measures	Line patrolling is to be done and report is to be furnished to NERLDC and NERPC. Also, Earth Fault and Over current relay settings is to be reviewed at Palatana, Udaipur and Monarchak by OTPCL, TSECL and NEEPCO.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
32	132 kV AGTPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:44:00	DP, ZII, B-E	No tripping	53	-	GD-I	0.07	Not Applicable	Not Applicable	No	No	No	No	No SPS	360	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	132 kV Kumarghat - P K Bari Line	TSECL	POWERGRID	TSECL	28-09-2017 17:22:00	29-09-2017 00:32:00	No tripping	Earth Fault					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Badarpur - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:42:00	DP, ZII, Y-E	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:48:00	DP, ZII, Y-E	DP, ZIV, Y-E					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV P K Bari - Ambassa Line	TSECL	TSECL	TSECL	28-09-2017 17:22:00	28-09-2017 17:28:00	No tripping	Earth Fault					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Dhalabil - Kamalpur Line	TSECL	TSECL	TSECL	28-09-2017 17:22:00	28-09-2017 17:26:00	Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	P K Bari area of Tripura Power System consisting load of P K Bari, Kamalpur, Dharmanagar, Kailashshahar & Dullavcherra area of Assam Power System were connected with rest of NER Grid through 132 kV P K Bari - Kumarghat Line, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line. 132 kV Ambassa - Kamalpur Line kept open at Ambassa end, 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr, 2016 (Cause: Tower collapesd), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc No. 124, 125, 126, 137, 138 and 139 . At 17:22 Hrs on 28.09.2017, 132 kV P K Bari - Kumarghat Line, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line tripped. Due to tripping of these elements, P K Bari, Kamalpur, Dharmanagar, Kailashshahar area of Tripura Power System and Dullavcherra area of Assam Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas. Also, at 17:22 Hrs 132 kV AGTCCPP-Kumarghat , 132 kV Kumarghat - Aizawl and 132 kV Kumarghat - Badarpur lines tripped resulting in bus dead at Kumarghat Substation.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 2276 MW, Antecedent Generation: 2209 MW																			
	*Substation Affected	P K Bari, Kamalpur, Dharmanagar, Kailashahar and Dullavcherra Substation																			
	Restoration Details	Power supply extended to Kamalpur Substation through 132 kV Dhalabil - Kamalpur Line at 17:26 Hrs, to Kailashahar through 132 kV P K Bari - Kailashahar Line at 17:28 Hrs on 28.09.2017.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
	Root Cause	DR output from Kumarghat for tripping of 132 kV AGTCCPP-Kumarghat line shows Y-E fault with fault current up to 0.894 kA. The fault was cleared in 550 msec. DR output from Badarpur for tripping of 132 kV Badarpur - Kumarghat Line shows Y-E in ZII with fault current up to 0.889 kA and angle between Vy & Iy is around 60-66 degrees which indicates **solid nature of fault** . The fault was cleared in 565 msec. Auto-reclose was not attempted. DR output from Aizawl shows Y-E in ZII with fault current up to 0.503 kA and angle between Vy & Iy is around 65-70 degrees which indicates **solid fault** . The fault was cleared in 563 msec. Auto-reclose was not attempted. DR output from Kumarghat for tripping of 132 kV Aizawl - Kumarghat Line shows Y-E fault in Z IV with fault current up to 0.514 kA. The fault was cleared in 550 msec. DR and EL output is not furnished by PK Bari for tripping of 132 kV PK Bari-Kumarghat line. **As informed by TSECL, fault was in 132 kV PK Bari- Kumarghat line due to jumper issue.TSECL may intimate the exact reason of fault. Due to non operation of relay at Kumarghat end, the fault was cleared by all the lines from remote end of Kumarghat Substation.**TSECL may confirm the root cause after patrolling of the line.																		
	Remedial Measures	Patrolling of 132 kV PK Bari - Kumarghat line is to be done and report is to be furnished to NERPC and NERLDC . Also, relay settings at Kumarghat end is to be reviewed by POWERGRID and coordination to be done with TSECL to avoid unwanted trippings of healthy lines. **Considering the short nature of the 132 kV PK Bari-Kumarghat line, line diffrential relay may be installed / POP-Z-II scheme may be implemented in DPR at both ends. Non-directional O/C and E/F relays at PK bari to be changed to Directional.**																		
33	132 kV P K Bari - Ambassa Line	TSECL	TSECL	TSECL	28-09-2017 17:32:00	28-09-2017 17:40:00	Earth Fault	No tripping	41	-	GD-I	0.04	Not Applicable	Not Applicable	No	No	No	No	No SPS	**120**	5.2 (R) , 5.9.6 (a) of IEGC Regulations
	132 kV Dhalabil - Kamalpur Line	TSECL	TSECL	TSECL	28-09-2017 17:32:00	28-09-2017 17:36:00	Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	P K Bari area of Tripura Power System consisting load of P K Bari, Kamalpur, Dharmanagar, Kailashshahar & Dullavcherra area of Assam Power System were connected with rest of NER Grid through 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line. 132 kV Ambassa - Kamalpur Line kept open at Ambassa end, 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr, 2016 (Cause: Tower collapesd), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc N. 124, 125, 126, 137, 138 and 139 . 132 kV P K Bari - Kumarghat Line tripped at 17:22 Hrs on 28.09.17. While charging 132 kV PK Bari - Kumarghat line at 17:32 Hrs on 28.09.17, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line lines tripped. Due to trippng of these elements, PK Bari was separated from rest of NER Grid and subsequently collapsed due to no source in these areas.																		
	Antecedent Conditions of NER Grid	Antecedent Load: 2312 MW, Antecedent Generation: 2206 MW																			
	*Substation Affected	P K Bari, Kamalpur, Dharmanagar, Kailashahar and Dullavcherra Substations																			
	Restoration Details	Power supply extended to Kamalpur Substation through 132 kV Dhalabil - Kamalpur Line at 17:36 Hrs, to P K Bari through 132 kV P K Bari - Kamalpur Line at 17:36 Hrs on 28.09.2017, to Dharmanagar Substation through 132 kV P K Bari - Dharmanagar Line at 17:38 Hrs on 28.09.2017.																			
	Root Cause	**It is likely that fault was in 132 kV PK Bari- Kumarghat line**. Due to non operation of relay at Kumarghat end at 17:22 Hrs, the fault was cleared by all the lines from remote end of Kumarghat Substation. However, while charging this line at 17:32 Hrs, the line tripped again along with all the other lines connected to PK Substation.																			
	Remedial Measures	Patrolling of 132 kV PK Bari - Kumarghat line is to be done and report is to be furnished to NERPC and NERLDC. Installation of Numerical Relays at PK Bari to be expedicted..Also, Earth Fault Relay settings at Kumarghat, PK Bari,Ambassa and Kamalpur is to be reviewed by POWERGRID and coordination to be done with TSECL to avoid unwanted trippings of healthy lines.																			

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
34	132 kV Ranganadi - Ziro Line	POWERGRID	NEEPCO	POWERGRID	28-09-2017 18:04:00	28-09-2017 18:28:00	No tripping	RYB, Broken conductor	21	-	GD-I	0.008	Not Applicable	Not Applicable	No	No	No	No	No SPS	-	-
	Brief Description of the Incident	Ziro area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Ranganadi-Ziro line. At 18:04 Hrs on 28.09.2017, 132 kV Ranganadi-Ziro line tripped. Due to tripping of this element, Ziro area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.																				
	Antecedent Conditions of NER Grid	Antecedent Load: 2384 MW, Antecedent Generation: 2367 MW																			
	*Substation Affected	Ziro, Daporjio, Along, Pasighat, Roing and Tezu Substation																			
	Restoration Details	Power supply extended to Ziro Substation through 132 kV Ranganadi - Ziro Line at 18:28 Hrs on 28.09.2017.																			
	Root Cause	It is informed by POWERGRID in their flash report that the line tripped due to **RYB ph broken conductor** fault in downstream system. However, the tripping of this line suggest non directional sensing of the fault by Ziro. Also, DR and EL output to be furnihsed by Ziro(PG) to obtain the root cause.																			
	Remedial Measures	Tripping line in brocken conductor function at Ziro to be reviewed by POWERGRID. POWERGRID may also identify the exact location of fault and intimate NERPC/NERLDC.																			

***Affected substation of voltage level of 132 kV and above**

Brownout on 23rd Sep'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Outage Duration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B				End A	End B					End A	End B	End A	End B	End A	End B	
1	400/132 kV, 125 MVA ICT 2 at Palatana	OTPCL	OTPCL		23-09-2017 16:11:00	23-09-2017 16:30:00	00:08:00	Earth Fault		163	569	-	-	Not Furnished		No		No		No SPS
	132 kV AGTCCPP - Kumarghat (PG) 1 Line	POWERGRID	NEEPCO	POWERGRID	23-09-2017 16:11:58	23-09-2017 16:43:00	00:09:00	DP, ZI, R-Y-B	No tripping					Not Furnished	Not Applicable	No	No	No	No	No SPS
	PalatanaSTG-1	OTPCL	OTPCL		23-09-2017 16:36:00	23-09-2017 17:16:00	04:53:00	Condenser Pressure high						No		No		Yes		No SPS
	Monarchak GTG - 1	NEEPCO	NEEPCO		23-09-2017 16:13:00	23-09-2017 17:50:00	04:53:00	Under Voltage						No		No		Yes		No SPS
	Monarchak STG - 1	NEEPCO	NEEPCO		23-09-2017 16:13:00	23-09-2017 18:17:00	04:53:00	Under Voltage						No		No		Yes		No SPS
	AGTCCPP Unit 1	NEEPCO	NEEPCO		23-09-2017 16:10:00	23-09-2017 17:25:00	09:38:00	Under Voltage						No		No		No		No SPS
	AGTCCPP Unit 2	NEEPCO	NEEPCO		23-09-2017 16:10:00	23-09-2017 17:09:00	09:38:00	Under Voltage						No		No		No		No SPS
	AGTCCPP Unit 3	NEEPCO	NEEPCO		23-09-2017 16:10:00	23-09-2017 21:18:00	09:38:00	Under Voltage						No		No		No		No SPS
	AGTCCPP Extn STG-1	NEEPCO	NEEPCO		23-09-2017 16:10:00	23-09-2017 19:43:00	09:38:00	Under Voltage						No		No		No		No SPS
	AGTCCPP Extn STG-2	NEEPCO	NEEPCO		23-09-2017 16:10:00	23-09-2017 16:24:00	09:38:00	Under Voltage						No		No		No		No SPS
	Brief Description of the Incident	AGTCCPP Power Station, Tripura Power System and South Comilla (Bangladesh) Power System were connected with rest of NER Grid through 400/132 kV, 125 MVA ICT- 2 at Palatana, 132 kV AGTCCPP - Kumarghat I line and 132 kV P K Bari - Kumarghat I line (125 MVA ICT-1 was under planned shutdown since 07:20 Hrs on 23.09.17 for Lightning Arrester replacement). At 16:10:42.270 Hrs, LV side CB of ICT-1 was closed as seen from voltage plots of Agartala PMU. At 16:10:46.000 Hrs, OTPC closed HV side breakers of ICT-1 as observed from PMU plots and DR Output. B-phase CB of ICT-I failed to close due to unhealthy operating mechanism resulted in unbalanced neutral current (53-55 A) in ICT-II at Palatana (From DR output). Before operation of Pole Descrepancy of ICT-I HVCB, ICT-II tripped on Back up Earth fault Protection at HV side at 16:11:47.523 Hrs. ICT-I tripped at 16:11:47.706 Hrs (from Event Logger) after 200 milliseconds delayed operation from PD setting of 1.5 seconds. After tripping of both ICTs at Palatana , Voltage Collapse was observed in Tripura Power System. At 16:11:53:000 Hrs, sharp decline in voltage observed at Agartala PMU (92 kV to 5 kV). At 16:11:58 Hrs 132 kV AGTCCPP - Kumarghat (PG) 1 Line tripped on DPR, Z-I, R-Y-B due to low system voltage. At 16:13 Hrs, Monarchak (61 MW), Rokhia(36 MW), Baramura(21 MW) and Gumti(6 MW) Units were de-synchronized due to low voltage from the Grid as informed by TSECL. Tripura Power System was connected to the Grid through 132 kV Agartala- Budhjangnagar- Jirania- Baramura- Gamaitilla- Ambassa- Kamalpur- P.K Bari-Kumarghat(PG) link. Due to Voltage instability problem, load was crashed in Tripura Power System and Bangladesh Power System. 132 kV SurajmaniNagar-South Comilla(Bangladesh) D/C hand tripped from SM Nagar at 16:46 Hrs for Voltage Control in Tripura System.																	
	Antecedent Conditions	Antecedent Load: 1966 MW, Antecedent Generation: 2150 MW																		
	***Substation Affected**	Tripura Power System and Bangladesh Power System																		
	Restoration Details	Power was extended to AGTCCPP Power Station through 132 kV AGTCCPP - Agartala - I line at 16:24 Hrs. Palatana was connected to Tripura Power System through 132 kV Palatana - Udaipur I line at 17:10 Hrs. Power was extended to Bangladesh Power System through 132 kV Surajmaninagar - Comilla I line at 17:03 Hrs on 23.06.2017.																		
	Root Cause	Due to unhealthy operating mechanism, HV side B ph CB of 400/132 kV ICT I at Palatana failed to close while charging resulted in unbalanced neutral current in 400/132 kV, ICT II. Also, operation of sensitive Earth Fault protection of ICT II prior to PD operation of ICT I.																		
	Remedial Measures	**PD settings and Sensitive Earth Fault settings at Palatana needs to be reviewed by OTPCL**. Maintenance Tests of Switchyard equipments are to be done as per AMP to ensure correct operation of the equipment. Also, test results are to be furnished to NERPC/NERLDC .																		

List of Grid Incidents during Sep 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Date & Time	Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
1	NER	Doyang	Doyang Unit II & III	NEEPCO	05-Sep-17 17:23:00	05-Sep-17 19:15:00	1:52:00	Doyang Unit II & III tripped at 17:23 Hrs on 05.09.2017 due to 86A, 86B and 86C. (Revision of schedule from Block No.78 on 05.09.17)	46	0	0.086	GI-I
	Root Cause	Root cause cannot be obtained due to unavailibilty of required information from Doyang.										
	Remedial Measures	Without finding root cause, remedial measures could not be suggested										
2	NER	Doyang	Doyang Unit II & III	NEEPCO	06-Sep-17 00:09:00	06-Sep-17 02:00:00	1:51:00	Doyang Unit II & III tripped at 00:09 Hrs on 06.09.2017 due to Governor problem. (Revision of schedule from Block No.9 on 06.09.17)	46	0	0.085	GI-I
	Root Cause	Root cause cannot be obtained due to unavailibilty of required information from Doyang.										
	Remedial Measures	Without finding root cause, remedial measures could not be suggested										
3	NER	AGBPP	AGBPP Unit VI	NEEPCO	07-Sep-17 18:04:00	07-Sep-17 18:45:00	0:41:00	AGBPP Unit VI tripped at 18:04 Hrs on 07.09.2017 due to Low Gas Supply. (Revision of schedule from Block No.76 on 07.09.17)	30	0	0.021	GI-II
	Root Cause	Low Gas supply										
	Remedial Measures	Gas Supply issue is taken up with concerned ministry.										
4	NER	Palatana	Palatana GTG-II	OTPCL	08-Sep-17 04:13:00	08-Sep-17 05:00:00	0:47:00	Palatana GTG II tripped at 04:13 Hrs on 08.09.2017 due to high vacuum pressure. (Revision of schedule from Block No.21 on 08.09.17)	13	0	0.01	GI-II
	Root Cause	GT#2 Exhaust Thermocouple malfunctioned.										
	Remedial Measures	Exhaust Thermocouple replaced with a new one and given clearance for startup.										

List of Grid Incidents during Sep 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Date & Time	Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
5	NER	Doyang	Doyang Unit I, II & III	NEEPCO	12-Sep-17 17:53:00	12-Sep-17 18:45:00	0:52:00	Doyang Unit I, II & III tripped at 17:53 Hrs on 12.09.2017 due to Governor problem. (Revision of schedule from Block No.76 on 12.09.17)	71	0	0.062	GI-I
	Root Cause	Root cause cannot be obtained due to unavailibilty of required information from Doyang.										
	Remedial Measures	Without finding root cause, remedial measures could not be suggested										
6	NER	Doyang	Doyang Unit I & II	NEEPCO	12-Sep-17 19:10:00	12-Sep-17 21:15:00	2:05:00	Doyang Unit I & II tripped at 19:10 Hrs on 12.09.2017 due to Rotor Earth fault. (Revision of schedule from Block No.86 on 12.09.17)	49	0	0.102	GI-I
	Root Cause	Carbon Dust in Slip ring										
	Remedial Measures	Regular Cleaning to be done by Doyang,NEEPCO										
7	NER	AGTCCPP	AGTCCPP Unit I, II & III, AGTCCPP Extn STG-I & II	NEEPCO	13-Sep-17 15:20:00	13-Sep-17 16:15:00	0:55:00	AGTCCPP Unit I, II & III and AGTCCPP Extn STG - I & II tripped at 15:20 Hrs on 13.09.2017 due to Over Current. (Revision of schedule from Block No.66 on 13.09.17)	70	0	0.064	GI-I
	Root Cause	AGTCCPP Unit # 1 and Unit # 2 Generator and Field breaker tripped and Unit # 3 , STG # 1 and STG # 2 machine tripped due to **huge voltage jerk and Over Current Relay operated**. However, due to unavailibity of DR and EL output, root cause cannot be obtained.										
	Remedial Measures	Without finding root cause, remedial measures could not be suggested . DR and EL output to be furnished for tripping of units by AGTCCPP										
8	NER	Kopili	Kopili Unit IV	NEEPCO	15-Sep-17 19:43:00	15-Sep-17 21:15:00	1:32:00	Kopili Unit IV tripped at 19:43 Hrs on 15.09.2017 due to Upper Guide Bearing (UGB) cooler problem. (Revision of schedule from Block No.86 on 15.09.17)	48	0	0.074	GI-II
	Root Cause	Choking of coolers and cooling water pipes										
	Remedial Measures	Temporarily cleaned the coolers and pipe lines, would be replaced/ cleaned during APM										
9	NER	Khandong	Khandong Unit II	NEEPCO	17-Sep-17 07:10:00	17-Sep-17 08:30:00	1:20:00	Khandong Unit II tripped at 07:10 Hrs on 17.09.2017 due to Rotor Earth fault. (Revision of schedule from Block No.35 on 17.09.17)	24	0	0.032	GI-I
	Root Cause	DR output shows Group A Trip and 64 R,2 trip. As informed by Khandong, there was carbon deposit at slipring.										
	Remedial Measures	Proper cleaning has to be done										

List of Grid Incidents during Sep 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Date & Time	Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
10	NER	Doyang	Doyang Unit I, II & III	NEEPCO	19-Sep-17 01:24:00	19-Sep-17 04:00:00	2:36:00	Doyang Unit I, II & III tripped at 01:24 Hrs on 19.09.2017 due to Electro Hydraulic System of Governor (EHG) problem. (Revision of schedule from Block No.17 on 19.09.17)	73	0	0.044	GI-I
	Root Cause	Governer Problem										
	Remedial Measures	NEEPCO to take up this matter with OEM urgently										
11	NER	AGBPP	AGBPP Unit IX	NEEPCO	19-Sep-17 15:09:00	19-Sep-17 16:00:00	0:51:00	AGBPP Unit IX tripped at 15:09 Hrs on 19.09.2017 due to Overall differential protection. (Revision of schedule from Block No.65 on 19.09.17)	11	0	0.009	GI-II
	Root Cause	Unit 6 tripped due to switchyard LA blast. Unit 9 tripped due to tripping of Unit-6										
	Remedial Measures	Third Harmonic Leackage Current to be measured periodically.										
12	NER	Palatana	Palatana STG-II	OTPCL	21-Sep-17 18:20:00	21-Sep-17 18:30:00	0:10:00	Palatana STG II tripped at 18:20 Hrs on 21.09.2017 due to low steam pressure. (Revision of Schedule from Block No. 75 on 21.09.2017)	56	0	0.009	GI-II
	Root Cause	STG-02 tripped on low live steam temperature as both GT breakers opened because of SPS3 operation which was due to tripping of Silchar- Byrnihat lines,										
	Remedial Measures	Breakers' signals of Azara & Byrnihat to be incorporated in SPS-3 Scheme at Silchar end										
13	NER	Palatana	Palatana STG-I	OTPCL	23-Sep-17 16:36:00	23-Sep-17 17:15:00	0:39:00	Palatana STG-I tripped at 16:36 Hrs on 23.09.2017 due to High condenser Pressure. (Revision of schedule from Block No.70 on 23.09.17)	99	0	0.064	GI-II
	Root Cause	STG-1 tripped on Live steam Temperature Low protection. Both ST-1&2 6.6KV side breakers tripped on "Under voltage protection" as both 132KV line -1&2 voltage was low (around 100KV) 6.6 KV Station switch gear power supply failure leading to tripping of GBC-2 & 3										
	Remedial Measures	132KV voltage level improved and 6.6KV Bus was charged. All neccesary drives for running STG were supplied power. STG#2 den was synched.										

List of Grid Incidents during Sep 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Date & Time	Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
14	NER	AGTCCPP	AGTCCPP Unit I, II & III, AGTCCPP Extn STG-I & II	NEEPCO	23-Sep-17 16:10:00	23-Sep-17 16:15:00	0:05:00	AGTCCPP GTG I, II & III and STG - I & II tripped at 16:10 Hrs on 23.09.2017 due to under voltage. (Revision of schedule from Block No.66 on 23.09.17)	71	0	0.006	GI-I
	Root Cause	Brownout in Tripura System due to tripping of Palatana ICTs										
	Remedial Measures	-										
15	NER	Doyang	Doyang Unit I, II & III	NEEPCO	28-Sep-17 15:35:00	28-Sep-17 17:00:00	1:55:00	Doyang Unit I, II & III tripped at 15:35 Hrs on 28.09.2017 due to Elect/ Non Electrical Inter phase relay 86 I optd. (Revision of schedule from Block No.71 on 28.09.17)	72	0	0.138	GI-I
	Root Cause	Root cause cannot be obtained due to unavailibilty of required information from Doyang. Tripping associated with tripping of 132 kV Dimapur-Doyang-I										
	Remedial Measures	Without finding root cause, remedial measures could not be suggested										

Grid Events

October 2017

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/001	132 kV Doyang - Wokha Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	02-10-2017 10:15:00	02-10-2017 11:30:00	DP,ZI, R-Y-B	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not available. Fault in the line is likely due to vegetation.													
	Remedial Measures	DoP, Nagaland to carry out vegetation clearance activities.													
NERLDC/GD/17/10/002	132 kV Imphal (PG) - Loktak Line	POWERGRID	POWERGRID	NHPC	02-10-2017 18:21:00	02-10-2017 18:49:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/002	132 kV Loktak - Ningthoukhong Line	MSPCL	NHPC	MSPCL	02-10-2017 18:21:00	02-10-2017 18:50:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Loktak shows 3 ph balanced fault with fault current of around 380 A in all the phases. The line tripped on I>1 over current trip													
	Remedial Measures	The available DR suggests that 132 kV Loktak - Ningthoukhong line tripped first and then over loading of 132 kV Loktak - Imphal occurred. Patrolling of the 132 kV Loktak - Ningthoukhong line is to be done by MSPCL to find if there are trees/vegetation infringement.													
NERLDC/TL/17/10/001	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	03-10-2017 15:19:00	03-10-2017 17:32:00	DP, ZII, R-Y-B	DP, R-Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Haflong shows R-Y-B balanced fault in ZII with fault current upto 1.063 kA . The fault was cleared in around 572 msec. Balanced nature of fault and fault initiated in B-phase at Vb peak indicate chances of **lightning fault**.													
	Remedial Measures	Lightning prone areas to be identified, footing resistance of towers in the identified lightning prone areas to be measured by concerned utilities.													
NERLDC/TL/17/10/002	132 kV Khliehriat (MePTCL) - Khliehriat (PG) II Line	MePTCL	MePTCL	POWERGRID	03-10-2017 15:38:00	03-10-2017 15:56:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/10/002	132 kV Khandong - Khliehriat I Line	POWERGRID	NEEPCO	POWERGRID	03-10-2017 15:38:00	03-10-2017 16:01:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not available. DR indicates R-Y lightening fault in 132 kV Khandong - Khliehriat I Line. CB at Khliehriat of 132 kV Khandong - Khliehriat I Line reclosed successfully. Unwanted tripping of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) II Line to be analysed by MePTCL.													
	Remedial Measures	Earth Fault Relay settings at Khliehriat (MePTCL) of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) II Line is to be reviewed by MePTCL. Lightning prone areas to be identified, footing resistance of towers in the identified lightning prone areas to be measured by concerned utilities.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/003	132 kV Khandong - Kopili I Line	POWERGRID	NEEPCO	NEEPCO	03-10-2017 15:42:00	03-10-2017 15:55:00	Earth Fault	Distance Protection Operated	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/003	132 kV Khandong - Kopili II Line	POWERGRID	NEEPCO	NEEPCO	03-10-2017 15:42:00	03-10-2017 16:56:00	DP, ZI, R-Y-B	Distance Protection Operated	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/003	132 kV Khandong - Khliehriat II Line	POWERGRID	NEEPCO	POWERGRID	03-10-2017 15:42:00	03-10-2017 16:31:00	DP, ZI, R-Y-B-E, Earth Fault	Auto Recloser Sucessful	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/003	132 kV Khandong - Umranshu Line	POWERGRID & AEGCL	NEEPCO	AEGCL	03-10-2017 15:42:00	03-10-2017 17:30:00	Back up Over current and Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not available. Chances of multile fault. Fault in the 132 kV Khandong - Kopili II Line and 132 kV Khandong - Khliehriat II Line likely due to lightning.													
	Remedial Measures	Tripping of 132 kV Khandong - Kopili I Line to be reviewed by Kopili & Khandong. Lightning prone areas to be identified, footing resistance of towers in the identified lightning prone areas to be measured by concerned utilities.POWERGRID and AEGCL to carry out intensive vegetation monitoring/clearance activities.													
NERLDC/GD/17/10/004	132 kV Palatana - Udaipur Line	TSECL	OTPC	TSECL	04-10-2017 09:37:00	04-10-2017 09:46:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/10/004	132 kV Monarchak - Rokhia line	TSECL	NEEPCO	TPGCL	04-10-2017 09:37:00	04-10-2017 09:48:00	No tripping	Directional Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR Output not available. Fault in 132 kV Monarchak - Rokhia line/ downstream of Monarchak.													
	Remedial Measures	Relay setting of important nodes of Tripura is to be tested/modified.Operation of Earth Fault relay at Udaipur to be checked by TSECL.													
NERLDC/GD/17/10/005	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	04-10-2017 10:03:00	04-10-2017 11:05:00	DP, ZI, Y-E, over-current, 26.11 km	Not furnished	Not operated	Not Applicable	Yes	No	Yes	No	No SPS
	Root Cause	DR output from Loktak shows Y-E fault in ZI with fault current upto 1.892 kA . Angle between Vy and Iy is around 5-25 deg which indicate highly resistive fault likely due to **vegetation. The fault was cleared in around 135 msec. Auto-reclose was not attempted.**													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, R and B ph current input in DR output is not available and the same is to be rectified.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/006	132 kV Balipara - Khupi Line	NEEPCO & DoP, Arunachal Pradesh	POWERGRID	DoP,Arunachal Pradesh	04-10-2017 11:03:00	04-10-2017 19:26:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not available. Fault in the line is likely due to vegetation due to ground clearance of the line.													
	Remedial Measures	The issue of line clearance has already been highlighted in previous sub-group meetings. Status may please be mentioned by the concerned authorities.													
NERLDC/TL/17/10/003	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	04-10-2017 13:10:00	04-10-2017 13:25:00	Back Up Earth Fault	Back Up Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl end shows that Angle between R and Y phase Voltage and Current is approx 180 degree and B-phase Voltage and Current is approx 8 degree. Which indicates reverse Earth Fault protection operated. This DR indiactes vegetation fault because low phase angle between Voltage and Current. DR indicates high resistive vegetation fault in forward direction.													
	Remedial Measures	Vegetation need to be cleared.													
NERLDC/GD/17/10/007	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	05-10-2017 10:09:00	05-10-2017 10:59:00	DP, ZI, Y-E, 19.49 km	No tripping	Not operated	Not Applicable	Yes	No	Yes	No	No SPS
	Root Cause	DR output from Loktak shows Y-E fault in ZI with fault current upto 1.717 kA . Angle between Vy and Iy is around 17-19 deg which indicate highly resistive fault likely due to **vegetation**. The fault was cleared in around 96 msec. Auto-reclose was not attempted.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, R and B ph current input in DR output is not available and the same is to be rectified.													
NERLDC/TL/17/10/004	220 kV Dimapur - Misa II Line	POWERGRID	POWERGRID	POWERGRID	05-10-2017 11:09:00	05-10-2017 11:20:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 1.331 kA . Angle between Vb and Ib is around 16-30 deg which indicate highly resistive fault likely due to vegetation. The fault was cleared in around 188 msec. Auto-reclose was attempted and was successful. Another fault occured within reclaim time and the line tripped. The fault was in B ph with fault current upto 1.67 kA. Angle between Vb and Ib is around 25-31 deg which suggest fault likely due to vegetation. This fault was cleared in 95 msec. DR output from Misa shows B-E fault with fault current upto 4.02 kA . Angle between Vb and Ib is around 30-57 deg which indicate fault likely due to vegetation. The fault was cleared in around 200 msec. Auto-reclose was not attempted.													
	Remedial Measures	Patrolling is to be done by the concerned authorities to find out the location of Tree/Vegetation infringement.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/005	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	05-10-2017 16:00:00	05-10-2017 16:13:00	DP, ZI, B-E	DP, ZI, B-E	Successful operation	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows B-E fault in ZI with fault current upto 1.08 kA . Angle between Vb and Ib is around 60-73 deg which indicate solid fault. The fault was cleared in around 75 msec. Auto-reclose was attempted and was successful. DR output from Jiribam shows B-E fault in ZI with fault current upto 0.752 kA . Angle between Vb and Ib is around 61-70 deg which indicate solid fault. The fault was cleared in around 77 msec. Auto-reclose was attempted and was successful.													
	Remedial Measures	TLSA is not yet installed in this line, only the porcelain insulators have been replaced with polymer.Installation of TLSA may be expedicted.													
NERLDC/GD/17/10/008	132 kV Badarpur - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	05-10-2017 17:34:00	05-10-2017 18:22:00	DP, ZII, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
NERLDC/GD/17/10/008	132 kV Aizawl - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	05-10-2017 17:34:00	05-10-2017 18:22:00	DP, ZII, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Badarpur shows B-E fault in ZII with fault current upto 0.810 kA . Angle between Vb and Ib is around 32-40 deg which indicate fault likely due to **vegetation.**The fault was cleared in around 635 msec. Prima facie, fault was in 132 kV Badarpur - Kolasib Line. DR and EL output is not furnished by Kolasib.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Healthiness of Protection system at Kolasib for 132 kV Badarpur - Kolasib Line is to be checked by P & ED Mizoram.													
NERLDC/TL/17/10/006	400 kV Azara - Bongaigaon Line	NETC & AEGCL	AEGCL	POWERGRID	06-10-2017 11:35:00	06-10-2017 11:56:00	DP, Y-E	DP, Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows Y-E fault with gradual increasing of fault current upto 3.233 kA . Angle between Vb and Ib is around 15-18 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 982 msec.													
	Remedial Measures	Tree/Vegetation in vulnerable locations to be removed by concerned utilities.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/007	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	06-10-2017 13:08:00	06-10-2017 13:27:00	Back Up Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/10/007	132 kV Khandong - Khliehriat 1 Line	POWERGRID	NEEPCO	POWERGRID	06-10-2017 13:08:00	06-10-2017 20:06:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Khliehriat of 132 kV Khandong - Khliehriat 1 Line shows R-B-E fault in ZI, carrier fault with fault current upto 4.832 kA and neutral current 2.712 kA.The fault was cleared in around 69 msec.Auto-reclose was attempted after around 900 msec but the line tripped due to persistent R-E fault in ZI with fault current upto 3.250 kA. Angle between Vr and Ir is about 48-50 deg which indicate fault likely due to vegetation. This fault was cleared in around 448 msec.													
	Remedial Measures	Tree/Vegetation in vulnerable locations of 132 kV Khandong - Khliehriat 1 Line is to be removed by concerned utilities. Unwanted tripping of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line is to be reviewed by MePTCL.Earth fault setting at Khliehriat (MePTCL) of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line is to be reviewed by MePTCL.													
NERLDC/TL/17/10/008	400 kV Bongaigaon TPP- Bongaigaon Line	POWERGRID	NTPC	POWERGRID	06-10-2017 15:50:00	06-10-2017 16:46:00	86A operated, relay malfunction	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Trip relay 86A maloperated at NTPC end													
	Remedial Measures	The maloperated 86A relay is to be tested by the concerned authorities													
NERLDC/TL/17/09/009	400 kV Killing (Byrnihat) - Silchar1 Line	NETC & MePTCL	MePTCL	POWERGRID	06-10-2017 22:15:00	06-10-2017 22:37:00	DP, ZII	DP, ZI, B-E	Not Applicable	Not operated	No	No	No	Yes	No SPS
	Root Cause	DR indicates B-N lightening fault.The unwanted DT from Byrnihat prevented auto reclosure. The same has been attended.													
	Remedial Measures	NETC to conduct patrolling of the said line for possible vegetation infringement and/or damage due to lightning													
NERLDC/TL/17/10/010	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	06-10-2017 23:58:00	07-10-2017 00:05:00	Over current	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/10/010	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	06-10-2017 23:58:00	07-10-2017 01:29:00	DP, ZI, R-Y-B	DP operated, AR lockout	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Khandong shows R-Y-E fault in ZI with fault current upto 7.758 kA and neutral current 5.437 kA.The fault was cleared in around 90 msec.													
	Remedial Measures	Tree/Vegetation in vulnerable locations of 132 kV Khandong - Khliehriat 1 Line is to be removed by concerned utilities. Unwanted tripping of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line is to be reviewed by MePTCL.Earth fault setting at Khliehriat (MePTCL) of 132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line is to be reviewed by MePTCL.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/009	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	07-10-2017 09:00:00	07-10-2017 09:42:00	DP, ZI, B-E	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
NERLDC/GD/17/10/009	132 kV Khandong - Umrangshu Line	POWERGRID & AEGCL	NEEPCO	AEGCL	07-10-2017 09:00:00	07-10-2017 09:45:00	Back Up Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Khandong for 132 kV Khandong- Umrangshu shows tripping of line due to Earth Fault in B ph with fault current upto 1.328 kA .The fault was cleared in around 393 msec.Likehood of vegetation fault in 132 kV Haflong - Umranshu Line.													
	Remedial Measures	Vegetation clearance to be done for 132 kV Haflong - Umranshu Line. Healthiness of Protection System as well as DPR settings at Umranshu for 132 kV Haflong - Umranshu Line to be checked.													
NERLDC/GD/17/10/010	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	07-10-2017 09:55:00	07-10-2017 12:30:00	DP, ZI, B-E	No tripping	Not furnsihed	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/010	132 kV Khandong - Umranshu Line	POWERGRID & AEGCL	NEEPCO	AEGCL	07-10-2017 09:55:00	07-10-2017 10:15:00	Back Up Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Likehood of vegetation fault in 132 kV Haflong - Umranshu Line.													
	Remedial Measures	Vegetation clearance to be done for 132 kV Haflong - Umranshu Line. Healthiness of Protection System as well as DPR settings at Umranshu for 132 kV Haflong - Umranshu Line to be checked.													
NERLDC/TL/17/09/011	400 kV Bongaigaon - Alipurduar II Line	ENICL	POWERGRID	POWERGRID	07-10-2017 10:58:00	07-10-2017 11:30:00	DP, ZI, R-E	DP, ZI, R-E	Successful operation	Not Furnished	No	No	Yes	No	No SPS
	Root Cause	DR output from Bongaigaon shows R-E fault in ZI with fault current up to 4.110 kA and angle between Vr & Ir is around 11-20 degrees which indicates highly resistive fault likely due to vegetation. The fault was cleared in 605 msec. Auto-reclose was attempted after around 1 sec and was successful.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities													
NERLDC/TL/17/09/012	+/- 800 kV Biswanath Chariali - Agra II HVDC	POWERGRID	POWERGRID	POWERGRID	07-10-2017 22:12:00	07-10-2017 23:10:00	DC Line Fault, 217 km	DC line fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	TFR output of Biswanath Chariali shows shows phase voltage of 238 kV in AC side in all the phases before fault. At the time of fault, the voltage in R, Y and B phase decreased to 212, 213 ad 203 kV respectively . Current in all the phases increased to about 1 kA. In DC side, voltage and current in pre fault conddition was 795 kV and 312 A respectively. Maximum rise in current during fault was 1.456 kA. Fault was cleared in 36 msec.													
	Remedial Measures	**Referred to NLDC.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/013	132 kV Gelyphu - Salakati Line	POWERGRID	BPC, Bhutan	POWERGRID	08-10-2017 12:38:00	08-10-2017 13:09:00	Not Furnished	DP, ZIII, R-Y-B	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output of Salakati end shows R-Y-B-E, Z-III fault with maximum current of 2 KA in Y-Phase and Voltage dropped mainly in Y & B phases. Fault was cleared after 1.037 second.DR shows that the fault starterd as a 3-Ph fault. But Ir became zero after 40 mS that confirms the fault was in another section beyond the protected line.Fault distance shown at Salakati 62.9 KM; **FAULT BEYOND LINE LENGTH**													
	Remedial Measures	Fault in Bhutan System. Referred to NLDC.													
NERLDC/TL/17/10/014	132 kV Khandong - Khliehriat II Line	POWERGRID	NEEPCO	POWERGRID	08-10-2017 15:16:00	08-10-2017 15:35:00	Not Furnished	DP, ZI, R-Y	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Khliehriat shows R-Y-E fault in ZI with fault current upto 3.283 kA and neutral current 1.643 kA . The fault was cleared in around 74 msec. DR shows a R-Y-N lightening fault.													
	Remedial Measures	Patrolling of line is required and report needs to be furnished by POWERGRID													
NERLDC/TL/17/10/015	132 kV Khliehriat (MePTCL) - Khliehriat (PG) II Line	MePTCL	MePTCL	POWERGRID	08-10-2017 15:17:00	08-10-2017 15:26:00	DP, R-Y-B	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not received from either ends.													
	Remedial Measures	Detailed patrolling is to be done and report needs to be furnished by MePTCL													
NERLDC/GD/17/10/011	132 kV Pasighat - Roing Line	POWERGRID	DoP, Arunachal Pradesh	POWERGRID	08-10-2017 06:49:00	08-10-2017 08:08:00	Not Furnished	Direct Trip received	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output not received from either ends.													
	Remedial Measures	DR output of Pasighat end is to be submitted to identify the main cause of the tripping. DT Received at Roing end confirms some issues at Pasighat end.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/012	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	08-10-2017 16:25:00	08-10-2017 16:48:00	General Trip	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/012	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	08-10-2017 16:25:00	08-10-2017 16:50:00	DP, ZII, Y-E	DP, ZII, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl for 132 kV Aizawl - Jiribam line shows Y-E fault in ZII with fault current upto 0.498 kA . Angle between Vy and Iy is around 40-44 deg which indicate fault likely due to vegetation. DR output from Jiribam for 132 kV Aizawl - Jiribam line shows Y-E fault in ZII with fault current upto 0.843 kA . Angle between Vy and Iy is around 15-25 deg which indicate highly resistive fault likely due to vegetation.Auto-reclose was not attempted.**Vegetation fault in 132 kV Aizawl - Jiribam Line.**													
	Remedial Measures	Vegetation clearance to be done for 132 kV Aizawl - Jiribam Line. Tripping of Aizawl-Melriat was due to wrong setting of built in E/F feature of DPR, which has been disabled as informed by POWERGRID.													
NERLDC/GD/17/10/013	132 kV Doyang - Wokha Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	08-10-2017 13:20:00	08-10-2017 14:28:00	DP,R-E, 15.20 km,	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output of either ends not received.Likelyhood of vegetation fault.													
	Remedial Measures	Patrolling may be done by DoP, Nagaland and report submitted to NERLDC													
NERLDC/TL/17/10/016	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	08-10-2017 19:58:00	08-10-2017 20:03:00	Not Furnished	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output of either ends not received.													
	Remedial Measures	MePTCL to furnish the DR output of their end.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/003	Khandong Unit I	NEEPCO	NEEPCO		03-10-2017 15:42:00	03-10-2017 16:31:00	Over Voltage		No		No		No		No SPS
NERLDC/GD/17/10/003	Kopili St 2 Unit I	NEEPCO	NEEPCO		03-10-2017 15:42:00	03-10-2017 16:53:00	Over Voltage		No		No		No		No SPS
	Root Cause	Grid Disturbance													
	Remedial Measures	-													
NERLDC/GD/17/10/004	Monarchak GTG	NEEPCO	NEEPCO		04-10-2017 09:37:00	04-10-2017 10:44:00	Over frequency, 86A,86B		No		No		No		No SPS
NERLDC/GD/17/10/004	Monarchak STG	NEEPCO	NEEPCO		04-10-2017 09:37:00	04-10-2017 11:47:00	Over fluxing		No		No		No		No SPS
	Root Cause	Loss of Evacuation Path for Monarchak.													
	Remedial Measures	-													
NERLDC/GI/17/10/001	BgTPP Unit I	NTPC	NTPC		04-10-2017 09:52:00	04-10-2017 12:10:00	Boiler Master Fuel trip operated		No		No		No		No SPS
	Root Cause	As informed by NTPC, Boiler Master Fuel trip relay operated													
	Remedial Measures														
NERLDC/GI/17/10/002	AGTCCPP Unit II	NEEPCO	NEEPCO		04-10-2017 20:25:00	04-10-2017 21:17:00	High lube oil temperature		No		No		No		No SPS
	Root Cause	Cooling Pump Failure													
	Remedial Measures	Pump replaced													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/10/001	Khandong Unit II	NEEPCO	NEEPCO		03-10-2017 15:19:00	03-10-2017 20:22:00	Over frequency and Under Voltage		No		No		No		No SPS
	Root Cause	Grid Disturbance													
	Remedial Measures	-													
NERLDC/UI/17/10/002	Doyang Unit II	NEEPCO	NEEPCO		03-10-2017 21:03:00	03-10-2017 21:55:00	Electrical and non electrical inter phase relay 86 I, non electrical relay 86 A, non eletrical relay 86 B		No		No		No		No SPS
NERLDC/UI/17/10/002	Doyang Unit III	NEEPCO	NEEPCO		03-10-2017 21:03:00	03-10-2017 22:10:00	Electrical and non electrical inter phase relay 86 I, non electrcial relay 86 B, Generator Back up protection operated		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received													
	Remedial Measures	**NEEPCO may intimate the root cause.**													
NERLDC/UI/17/10/003	Kopili St2 Unit I	NEEPCO	NEEPCO		06-10-2017 23:58:00	07-10-2017 02:49:00	Over current and Over frequency		No		No		No		No SPS
NERLDC/UI/17/10/003	Khandong Unit II	NEEPCO	NEEPCO		06-10-2017 23:58:00	07-10-2017 00:55:00	Over current & over frequency		No		No		No		No SPS
	Root Cause	Due to tripping of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) line and 132 kV Khandong - Kopili 1 lines tripped.													
	Remedial Measures	-													
NERLDC/UI/17/10/004	Monarchak GTG	NEEPCO	NEEPCO		08-10-2017 00:00:00	08-10-2017 02:13:00	Gas Booster Compressor(GBC) trip		No		No		No		No SPS
NERLDC/UI/17/10/004	Monarchak STG	NEEPCO	NEEPCO		08-10-2017 00:00:00	08-10-2017 02:49:00	High vibration at TGB		No		No		No		No SPS
	Root Cause	Due to GBC tripping													
	Remedial Measures	NEEPCO may intimate the reason for GBC tripping													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/10/005	Monarchak GTG	NEEPCO	NEEPCO		08-10-2017 05:46:00	08-10-2017 06:49:00	Gas Booster Compressor(GBC) trip		No		No		No		No SPS
NERLDC/UI/17/10/005	Monarchak STG	NEEPCO	NEEPCO		08-10-2017 05:46:00	08-10-2017 08:15:00	High vibration at TGB		No		No		No		No SPS
	Root Cause	Due to GBC tripping													
	Remedial Measures	NEEPCO may intimate the reason for GBC tripping													
NERLDC/UI/17/10/006	Khandong Unit II	NEEPCO	NEEPCO		08-10-2017 15:16:00	08-10-2017 16:34:00	Over frequency, Class B and C protection operated		No		No		No		No SPS
	Root Cause	Due to tripping of 132 kV Khliehriat (MePTCL)- Khliehriat (PG) line and 132 kV Khandong - Kopili 1 lines tripped.													
	Remedial Measures	-													
NERLDC/TL/17/10/017	220 kV Mariani (PG) - Mokokchung (PG) 1 Line	POWERGRID	POWERGRID	POWERGRID	09-10-2017 11:10:00	09-10-2017 11:26:00	DP, ZI, B-E	Directional Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR Output from Mariani shows highly resistive Earth fault occurred in B- Phase with maximum fault current of 1.5 KA and maximum phase angle between Voltage and current was 22 degree and fault cleared in 630 ms and auto reclosure not operated.													
	Remedial Measures	Vegetation need to be cleared.													
NERLDC/TL/17/10/018	400 kV Killing (Byrnihat) - Silchar 1 Line	NETC & MePTCL	MePTCL	POWERGRID	09-10-2017 13:27:00	09-10-2017 13:45:00	DP, ZI, R-E	DP, ZII, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR shows a solid R-N fault , probably caused by **pollution flashover**.													
	Remedial Measures	NETC to conduct patrolling of the said line. Cleaning of insultors to be done as per schedule.													
NERLDC/GD/17/10/014	132 kV Depota - Sonabil Line	AEGCL	AEGCL	AEGCL	09-10-2017 13:32:00	09-10-2017 13:41:00	No tripping	DP, ZI, Y-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
NERLDC/GD/17/10/014	132 kV Sonabil - Ghoramari 1 Line	AEGCL	AEGCL	AEGCL	09-10-2017 13:32:00	09-10-2017 13:41:00	DP, ZI, Y-E	No tripping	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault in 132 kV Depota - Sonabil Line.													
	Remedial Measures	AEGCL may conduct patrolling on the said lines for possible vegetation infringment and/or damage due to lightning.DPR settings at Sonabil for 132 kV Depota - Sonabil Line & 132 kV Sonabil - Ghoramari 1 Line to be done by AEGCL.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/019	132 kV Jiribam - Loktak 2 Line	POWERGRID	POWERGRID	NHPC	09-10-2017 15:37:00	09-10-2017 15:51:00, 72.22 km	No tripping	Over current	Not Applicable	Not Applicable	No	Yes	No	Yes	No SPS
	Root Cause	DR output from Loktak shows ZII carrier aided trip, R-E fault with fault current upto 1.10.The fault was cleared in around 106 msec. DR indicates R-N fault probably due to **lightning**.													
	Remedial Measures	Lightning prone areas are to be identified and footing resistance of towers in the identified areas are to be measured. In case of high tower footing resistance, appropriate counter measures are to be taken to reduce the tower footing resistance. Installation of TLSA may be done in case of frequent tripping due to lightning.													
NERLDC/TL/17/10/020	132 kV Biswanath Chariali - Pavoi 1 Line	POWERGRID	POWERGRID	AEGCL	09-10-2017 18:35:00	10-10-2017 13:22:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/10/020	132 kV Biswanath Chariali - Pavoi 2 Line	POWERGRID	POWERGRID	AEGCL	09-10-2017 18:35:00	09-10-2017 18:55:00	Over current	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Fault was in 132 kV Biswanath Chariali - Pavoi 1 Line. Due to tripping of this line, other line tripped on Over Current. DR Output for 132 kV Biswanath Chariali - Pavoi 2 Line shows Over current in all R-Y-B phases and magnitude of Fault current was up to 475 A.													
	Remedial Measures	POWERGRID may intimate the root cause of tripping of 132 kV Biswanath Chariali - Pavoi 1 Line.													
NERLDC/GD/17/10/015	132 kV Aizawl - Melriat 1 Line	POWERGRID	POWERGRID	POWERGRID	10-10-2017 10:38:00	10-10-2017 11:03:00	General Trip, RYB Phase	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl end shows Y-B-E phase fault and angle betwe**en all the R-Y-B phases Voltage and Current is approx 180 degree. Which indicates reverse Earth Fault protection operated**. This DR indiactes vegetation fault because phase angle between Voltage and current is low and fault was cleared in 550 ms.													
	Remedial Measures	Vegetation need to be cleared.The built in E/F protection of the DPR at Aizawl operated for reverse fault. The same has been disabled as informed by POWERGRID.													
NERLDC/GD/17/10/016	132 kV Doyang - Wokha 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	10-10-2017 15:55:00	10-10-2017 16:42:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in downstream of Wokha.													
	Remedial Measures	DoP, Nagaland to carry out activities to find the reason for tripping.													
NERLDC/TL/17/10/021	132 kV Motonga - Rangia 1 Line	BPC, Bhutan	Bhutan	AEGCL	11-10-2017 10:37:00	11-10-2017 10:55:00	No tripping	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR Output and FIR has not been received from either ends.													
	Remedial Measures	Testing of DPR at Rangia to be done by POWERGRID. Earth Fault relay settings at Rangia to be reviewed by POWERGRID.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/017	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	11-10-2017 10:52:00	11-10-2017 11:00:00	Over current	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR Output and FIR has not been received from either ends. As seen from SCADA the flow in the line was about 8 MW. So, the line was not tripping due to over load of the line.													
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping													
NERLDC/TL/17/10/022	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	11-10-2017 11:31:00	11-10-2017 11:42:00	No tripping	DP, ZIII, R-Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR Output and FIR has not been received from either ends. Relay indication show that its probable that the fault is in downstream of Khliehriat (MePTCL)													
	Remedial Measures	MePTCL may carrry out patrolling activities and submit the report to NERLDC													
NERLDC/TL/17/10/023	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	11-10-2017 12:10:00	11-10-2017 12:18:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR Output and FIR has not been received from either ends													
	Remedial Measures	MePTCL may carrry out patrolling activities and submit the report to NERLDC as the same line tripped at 11:31 Hrs on the same day.													
NERLDC/TL/17/10/024	132 kV Badarpur - Khliehriat 1 Line	POWERGRID	POWERGRID	POWERGRID	11-10-2017 12:11:00	11-10-2017 12:18:00	DP, ZII, B-E, 50.14 km	DP, ZI, B-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Badarpur shows B-E fault in ZII carrier aided with fault current upto 1.181 kA . Angle between Vb and Ib is around 27-38 deg which indicate fault likely due to vegetation.The fault was cleared in around 140 msec. Auto-reclose was not attempted. DR output from Khliehriat shows B-E fault in ZI ,carrier send, with fault current upto 1.140 kA . Angle between Vb and Ib is around 17-22 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 80 msec. Auto-reclose was not attempted.													
	Remedial Measures	POWERGRID to conduct patrolling activities and clerance of vegetation in the affected line													
NERLDC/GD/17/10/018	132 kV Doyang - Wokha 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	12-10-2017 10:08:00	12-10-2017 11:03:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in downstream of Wokha.													
	Remedial Measures	DoP, Nagaland to carry out activities to find the reason for tripping.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/025	220 kV Balipara - Sonabil 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	12-10-2017 11:50:00	12-10-2017 12:01:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Sonabil for temporary fault in 220 kV Samaguri - Sonabil line shows operation of Earth Fault Relay with Ir=4.461 kA.The fault was cleared in 518 msec.DR output from Balipara end is not available to confirm the tripping at Balipara when Sonabil has cleared the fault.													
	Remedial Measures	Patrolling of 220 kV Samaguri - Sonabil is to be done and report is to be furnished to NERLDC and NERPC. Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, TMS and PSM at Balipara and Sonabil is to be reviewed.													
NERLDC/GD/17/10/019	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	12-10-2017 13:12:00	12-10-2017 13:20:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR Output and FIR has not been received from either ends.													
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping													
NERLDC/TL/17/10/026	800 kV Biswanath Chariali - Agra 1 HVDC	POWERGRID	POWERGRID	POWERGRID	12-10-2017 13:25:00	12-10-2017 14:54:00	DC Line Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	TFR output of Biswanath Chariali shows phase voltage of 238 kV in AC side in all the phases before fault. At the time of fault, the voltage in R phase decreased significantly to 184 kV while voltage in Y anf B ph decreased to 203 and 214 kV. R and Y ph curent also increased signifcantly compared to B ph. In DC side, voltage in and current in pre fault conddition was 795 kV and 442 A respectively. Maximum rise in current during fault was 1.644 kA. Fault was cleared in 35 msec.													
	Remedial Measures	**Referred to NLDC.**													
NERLDC/TL/17/10/027	220 kV Dimapur - Misa 1 Line	POWERGRID	POWERGRID	POWERGRID	12-10-2017 15:37:00	12-10-2017 16:25:00	Busbar Protection	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	220 kV Dimapur - Misa 2 Line	POWERGRID	POWERGRID	POWERGRID	12-10-2017 15:37:00	12-10-2017 16:25:00	Busbar Protection	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	220/132 kV, 100 MVA ICT 1 at Dimapur	POWERGRID	POWERGRID	POWERGRID	12-10-2017 15:37:00	12-10-2017 19:20:00	Differential Protection optd		Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	The tension insulator of the spare bus failed and the bus conductor fell on ICT- I Bay.													
	Remedial Measures	Operation of Busbar protection is to reviewed by POWERGRID.Condition based maintenace to be followed by utilities.													
NERLDC/TL/17/10/028	132 kV Badarpur - Silchar 2 Line	POWERGRID	POWERGRID	POWERGRID	13-10-2017 01:09:00	13-10-2017 01:17:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Badarpur shows R-Y-B-E fault and Fault current was 1.4 KA and operated in Reverse Zone and fault was cleared in 91 ms.													
	Remedial Measures	Mal operation due to wrong PSL, which has been corrected as informed by POWERGRID.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/029	220 kV Kopili - Misa 1 Line	POWERGRID	NEEPCO	POWERGRID	13-10-2017 11:08:00	13-10-2017 11:25:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Kopili 1 Line	POWERGRID	NEEPCO	NEEPCO	13-10-2017 11:08:00	13-10-2017 11:30:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Khliehriat 2 Line	POWERGRID	NEEPCO	POWERGRID	13-10-2017 11:08:00	13-10-2017 11:25:00	No tripping	DP, ZII, B-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	As reported from Khandong, there occurred a fault in the Khandong Switchyard simultaneous to a lightening . People saw smoke in the area between Bus Coupler CB and Bus - A. DR from KHD shows a Y-B Lightening fault Iy=Ib=1.5kA													
	Remedial Measures	Tripping of 220 kV Kopili - Misa 1 Line is to be reviewed by POWERGRID. Directionality of Earth fault Relay at Kopili may be checked.													
NERLDC/TL/17/10/030	220 kV Killing (Byrnihat) - Misa 1 Line	MePTCL	MePTCL	POWERGRID	13-10-2017 12:32:00	13-10-2017 12:49:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends.													
	Remedial Measures	Patrolling is to be done by MePTCL for the line and report is to be submitted to NERLDC													
NERLDC/TL/17/10/031	+/- 800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	13-10-2017 18:44:00	13-10-2017 20:12:00	DC Line Fault	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	TFR output of Biswanath Chariali shows phase voltage of 238 kV in AC side in all the phases before fault. At the time of fault, the voltage in Y phase decreased significantly to 192 kV while voltage in R and Y ph decreased to 233 and 221 kV. Y and B ph curent also increased signifcantly compared to R ph. In DC side, voltage in and current in pre fault conddition was 800 kV and 311 A respectively. Maximum rise in current during fault was 1.530 kV. Fault was cleared in 35 msec.													
	Remedial Measures	**Referred to NLDC.**													
NERLDC/GD/17/10/020	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	14-10-2017 01:15:00	15-10-2017 14:57:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TSECL	14-10-2017 01:15:00	14-10-2017 01:30:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/020	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TSECL	14-10-2017 01:15:00	14-10-2017 02:38:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/020	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	14-10-2017 01:15:00	14-10-2017 01:21:00	Hand Tripped	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	Fault likely in 132 kV Agartala - Rokhia 1 Line.													
	Remedial Measures	Directionality of Over Current & Earth fault relays at Rokhia to be checked by TSECL.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/033	132 kV Dimapur - Imphal 1 Line	POWERGRID	POWERGRID	POWERGRID	14-10-2017 11:34:00	14-10-2017 11:50:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR shows R-Y fault, probably due to lightening													
	Remedial Measures	Lightning prone areas are to be identified and footing resistance of towers in the identified areas are to be measured. In case of high tower footing resistance, appropriate counter measures are to be taken to reduce the tower footing resistance. Installation of TLSA may be done in case of frequent tripping due to lightning.													
NERLDC/TL/17/10/034	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TSECL	14-10-2017 07:52:00	14-10-2017 16:12:00	Not Furnished	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR not submitted													
	Remedial Measures	TSECL to conduct patrolling activities and find the reason of tripping of the said line													
NERLDC/GD/17/10/021	132 kV Depota - Sonabil 1 Line	AEGCL	AEGCL	AEGCL	15-10-2017 17:15:00	16-10-2017 15:55:00	No tripping	DP, ZI, B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/021	132 kV Sonabil - Ghoramari 1 Line	AEGCL	AEGCL	AEGCL	15-10-2017 17:15:00	15-10-2017 18:44:00	DP, ZI, R-Y-B-E	No tripping	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault in 132 kV Depota - Sonabil Line.													
	Remedial Measures	AEGCL may conduct patrolling on the said lines for possible vegetation infringment and/or damage due to lightning.DPR settings at Sonabil for 132 kV Depota - Sonabil Line & 132 kV Sonabil - Ghoramari 1 Line to be done by AEGCL.													
NERLDC/GI/17/10/007	Khandong Unit 2	NEEPCO	NEEPCO		10-10-2017 07:19:00	10-10-2017 11:53:00	Rotor Earth fault		No		No		No		No SPS
	Root Cause	Carbon dust in slip ring													
	Remedial Measures	regular cleaning to be done by Khandong,NEEPCO													
NERLDC/GI/17/10/008	Doyang Unit 3	NEEPCO	NEEPCO		11-10-2017 00:03:00	11-10-2017 16:08:00	inter phase relay 86 I, non electrcial relay 86 B, Generator Back up protection operated		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received from Doyang.													
	Remedial Measures	NEEPCO may intimate the root cause.													
NERLDC/UI/17/10/007	AGTCCPP Unit 4	NEEPCO	NEEPCO		11-10-2017 17:58:00	12-10-2017 12:02:00	Low gas pressure		No		No		No		No SPS
	Root Cause	Low gas pressure													
	Remedial Measures	Matter taken up with GAIL													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/10/008	Kopili Stg 2 Unit 1	NEEPCO	NEEPCO		13-10-2017 11:11:00	13-10-2017 12:06:00	Over Voltage		No		No		No		No SPS
	Root Cause	Lightning fault in Khandong Main Bus which tripped elements connected to this bus.													
	Remedial Measures	-													
NERLDC/UI/17/10/009	Monarchak STG	NEEPCO	NEEPCO		13-10-2017 18:31:00	13-10-2017 19:25:00	Over Frequency		No		No		No		No SPS
	Root Cause	Due to Dearater level low													
	Remedial Measures	Rectified													
NERLDC/GI/17/10/009	AGTCCPP Unit 4	NEEPCO	NEEPCO		14-10-2017 01:15:00	14-10-2017 02:03:00	Over current		No		No		No		No SPS
	AGTCCPP Unit 6	NEEPCO	NEEPCO		14-10-2017 01:15:00	14-10-2017 05:18:00	Over current		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received. At the same time 132 kV Rokhia-Agartala D/C tripped.Fault fed by AGTCCPP units.													
	Remedial Measures	Over Current settings of AGTCCPP ubits to be reviewed by AGTCCPP.													
NERLDC/GD/17/10/020	Monarchak GTG	NEEPCO	NEEPCO		14-10-2017 01:15:00	14-10-2017 02:13:00	Over Frequency		No		No		No		No SPS
	Monarchak STG	NEEPCO	NEEPCO		14-10-2017 01:15:00	14-10-2017 02:13:00	Over Frequency		No		No		No		No SPS
	Root Cause	DR output has not been received. 132 kV Monarchak - Rokhia and 132 kV Monarchak - Udaipur Lines tripped leading to Over Frequency trip of Monarchak													
	Remedial Measures	-													
NERLDC/GI/17/10/010	AGTCCPP Unit 3	NEEPCO	NEEPCO		14-10-2017 01:52:00	14-10-2017 14:14:00	Low Boiler Water Level		No		No		No		No SPS
	Root Cause	As mentioned by NEEPCO, Low Boiler Water Level led to tripping of the unit.													
	Remedial Measures	NEEPCO may intimate the root cause.													
NERLDC/GI/17/10/011	AGTCCPP Unit 6	NEEPCO	NEEPCO		14-10-2017 07:52:00	14-10-2017 19:22:00	Over Frequency		No		No		No		No SPS
	Root Cause	**Volatage at Agartala touched 71 kV due to R-Y fault.**													
	Remedial Measures	**NEEPCO may intimate the exact protection operated and furnish DR output of this event for analysis.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/10/012	AGTCCPP Unit 1	NEEPCO	NEEPCO		14-10-2017 09:55:00	14-10-2017 10:01:00	Due to voltage jerk		No		No		No		No SPS
	Root Cause	**Volatage at Agartala touched 70 kV and fault cleared in 580 msec.**													
	Remedial Measures	**NEEPCO may intimate the exact protection operated and furnish DR output of this event for analysis.**													
NERLDC/UI/17/10/010	Monarchak GTG	NEEPCO	NEEPCO		14-10-2017 19:10:00	14-10-2017 19:21:00	Due to problem in gas booster		No		No		No		No SPS
	Monarchak STG	NEEPCO	NEEPCO		14-10-2017 19:10:00	14-10-2017 19:21:00	Due to problem in gas booster		No		No		No		No SPS
	Root Cause	**GBC tripped due to high temparature**													
	Remedial Measures	**Rectified**													
NERLDC/UI/17/10/011	Monarchak GTG	NEEPCO	NEEPCO		15-10-2017 00:48:00	15-10-2017 11:52:00	DC failure		No		No		No		No SPS
	Monarchak STG	NEEPCO	NEEPCO		15-10-2017 00:48:00	15-10-2017 18:05:00	DC failure		No		No		No		No SPS
	Root Cause	**DC charger failure**													
	Remedial Measures	**Rectified**													
NERLDC/GD/17/10/022	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	16-10-2017 10:40:00	16-10-2017 14:05:00	DP, ZI, Y-E	DP, ZII, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	16-10-2017 10:40:00	16-10-2017 10:51:00	General Trip, R-Y-B Phase	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl for 132 kV Aizawl -Jiribam line shows Y-E fault in ZII with fault current upto 0.730 kA . Angle between Vb and Ib is around 20-27 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 650 msec. DR output from Jiribam for 132 kV Aizawl -Jiribam line shows starting of ZIII and ZII. The line finally tripped in R-Y-E fault in ZII with fault current upto 0.730 kA . Angle between Vb and Ib is around 20-27 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 650 msec.													
	Remedial Measures	**Time syn has to be done at Aizawl(10 min differ). Vegetation clearnace is to be done. Relay settings of Aizwal for Melriat line to be reviewed by POWERGRID.**													
NERLDC/TL/17/10/035	220 kV Byrnihat - Misa 1 Line	MePTCL	MePTCL	POWERGRID	17-10-2017 08:09:00	17-10-2017 09:01:00	No tripping	CB, Auto Trip	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR not submitted													
	Remedial Measures	Reason for Relay Maloperation of CB at Misa may be mentioned by POWERGRID.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/036	400 kV Bongaigaon - Alipurduar 2 Line	ENICL	POWERGRID	POWERGRID	17-10-2017 09:32:00	17-10-2017 10:15:00	DP, ZII, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows ZII carier aided trip, R-E fault with fault current up to 5.132 kA and angle between Vr & Ir is around 33-45 degrees which indicates fault likely due to **vegetation**. The fault was cleared in 87 msec. Auto-reclose was attempted after around 1 sec and was successful. However, another fault occured within reclaim time in ZII with fault current upto 4.738 kA in R phase and the line tripped. The fault was cleared in 86 msec													
	Remedial Measures	ENICL to conduct patrolling activities to find any vegetation clearance issue in the line.													
NERLDC/TL/17/10/037	132 kV Haflong - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	17-10-2017 10:54:00	17-10-2017 11:09:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**DR shows a Y-N vegetation fault converting to a R-Y fault**													
	Remedial Measures	The issue of non-attempt of auto reclose at Jiribam end is to be taken up by the concerned authorities.Patrolling of this line to be done by POWERGRID and report to be submitted to NERPC/NERLDC.													
NERLDC/TL/17/10/038	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	17-10-2017 11:16:00	17-10-2017 11:26:00	Back Up Earth Fault	Back Up Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl end shows **highly resistive B-E earth fault** occured and fault current was 155 A and angle between Voltage and current is up to 65 degree. Fault cleared in 640 ms.													
	Remedial Measures	Vegetation need to be cleared. Resistive reach of DPR at both ends to be reviewed by POWERGRID to reduce the fault clearing time.													
NERLDC/GD/17/10/023	132 kV Haflong (PG) - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	17-10-2017 11:17:00	18-10-2017 11:01:00	No tripping	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/023	132 kV Haflong (PG) - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	17-10-2017 11:17:00	17-10-2017 11:48:00	No tripping	Back Up Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR outpur and FIR has not been received. From relay indication, there is likelyhood of downstream fault at Haflong.													
	Remedial Measures	AEGCL to carry out intensive patrolling and give a report of NERLDC													
NERLDC/GD/17/10/024	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	17-10-2017 11:56:00	17-10-2017 13:22:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Loktak shows Y-E fault in ZI with fault current upto 2 kA . Angle between Vy and Iy is around 9-28 deg which indicates highly resistive fault likely due to vegetation.The fault was cleared in around 95 msec.													
	Remedial Measures	MSPCL to conduct patrolling activities to find any vegetation clearnace issue in the line.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/025	132 kV Dharmanagar - Dullavcherra Line	TSECL & AEGCL	TSECL	AEGCL	17-10-2017 23:52:00	18-10-2017 16:30:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received. Relay indication indicates downstream fault at Dullavcherra													
	Remedial Measures	AEGCL to conduct patrolling activites in the downstream of Dullavcherra and submit a report to NERLDC													
NERLDC/TL/17/10/039	132 kV AGTCCPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	18-10-2017 03:12:00	18-10-2017 03:28:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Kumarghat shows Y-E fault in ZI with fault current upto 0.973 kA . Angle between Vy and Iy is around 59-69 deg which indicate fault likely due to vegetation.The fault was cleared in around 95 msec.													
	Remedial Measures	Vegetation clearance is to be done by POWERGRID													
NERLDC/GD/17/10/026	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	18-10-17 15:12	18-10-2017 15:50:00	General Trip, R-Y-B Phase	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows **reverse R-Y-B-E** fault. Fault cleared in 540 ms.													
	Remedial Measures	Built in E/F feature of DPR at Aizwal with incorrect settings has been disabled as informed by POWERGRID.													
NERLDC/TL/17/10/040	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	18-10-2017 15:15:00	18-10-2017 18:55:00	DP, ZI, R-B-E	DP, ZI, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows reverse R-B-E fault and fault current was 1.2 KA. Highly resistive fault likely due to vegetation.Fault cleared in 840 ms.													
	Remedial Measures	Vegetation need to be cleared.													
NERLDC/GD/17/10/027	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	18-10-2017 15:30:00	18-10-2017 15:42:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Aizawl - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	18-10-2017 15:30:00	18-10-2017 16:00:00	No tripping	Back up Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output shows R-Y-E fault and fault current was 900 A and successful autoreclosure attempted at Aizawl end. At Jiribam end it cleared fault in 150 ms. Fault is likely due to vegetation.													
	Remedial Measures	Vegetation of 132 kV Aizawl - Jiribam Line need to be cleared by POWERGRID. Tripping of 132 kV Aizawl - Kolasib Line at Kolasib end to be reviewed by P&ED Mizoram.													
NERLDC/TL/17/10/041	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	19-10-2017 18:47:00	19-10-2017 18:57:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR shows R-N Lightening fault. Ir lags Vr by 66 Deg.													
	Remedial Measures	Lightning prone areas are to be identified and footing resistance of towers in the identified areas are to be measured. In case of high tower footing resistance, appropriate counter measures are to be taken to reduce the tower footing resistance. Installation of TLSA may be done in case of frequent tripping due to lightning.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/042	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	20-10-2017 14:08:00	20-10-2017 14:17:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been submitted.													
	Remedial Measures	POWERGRID to conduct patrolling activities and give a report to NERLDC													
NERLDC/GD/17/10/028	132 kV Doyang - Wokha (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	20-10-2017 16:36:00	20-10-2017 17:27:00	DP, ZI, R-E	Over current	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in line likely due to vegetation.													
	Remedial Measures	Vegetation clearance to be done by DoP, Nagaland													
NERLDC/TL/17/10/043	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	21-10-2017 07:25:00	21-10-2017 18:45:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR not submitted													
	Remedial Measures	TSECL may intimate the reason of tripping													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/029	132 kV Palatana - Surajamaninagar Line	POWERGRID	OTPCL	TSECL	21-10-2017 09:26:00	21-10-2017 10:42:00	DP, ZII, R-B-E	No tripping	Not Applicable	Not Applicable	No	No	Yes	No	No SPS
NERLDC/GD/17/10/029	132 kV AGTCCPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:45:00	No tripping	DP, ZIII, Earth Fault	Not Applicable	Not Applicable	Yes	No	No	Yes	No SPS
NERLDC/GD/17/10/029	132 kV P K Bari - Kumarghat Line	POWERGRID	TSECL	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:55:00	No tripping	DP, ZIII, Earth Fault	Not Applicable	Not Applicable	Yes	No	No	Yes	No SPS
NERLDC/GD/17/10/029	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	21-10-2017 09:26:00	21-10-2017 10:53:00	Over Voltage	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/10/029	132 kV Agartala - Rokhia I Line	TSECL	TSECL	TPGL	21-10-2017 09:26:00	21-10-2017 14:15:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/10/029	132 kV Agartala - Rokhia II Line	TSECL	TSECL	TPGL	21-10-2017 09:26:00	21-10-2017 10:24:00	Over current	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output from Palatana for 132 kV Palatana-Surajmaninagar line shows R-Y fault in ZIII with gradual increasing of fault current upto 2.134 kA. The fault was cleared in around 850 msec. Fault distance was 89.7 km from Palatana. Line was not tripped at SurajmaniNagar end. DR furnished by Kumarghat for 132 kV AGTCCPP - Kumarghat line is not time synchronized and shows tripping time as 09:14:54:380 Hrs. DR output shows R-Y-B-E fault with Ir=0.579 kA, Iy=0.476 kA, Ib=0.709 kA and In=0.218 kA. DR furnished by Kumarghat for 132 kC AGTCCPP- Kumarghat line is not time synchronized and shows tripping time as 09:14:54:380 Hrs. DR output shows R-Y-B-E fault with Ir=0.579 kA, Iy=0.476 kA, Ib=0.709 kA and In=0.218 kA. Tripping of 132 kV Palatana Surajmaninagar line led to over loading of the other mentioned lines and subsequent tripping.													
	Remedial Measures	TSECL may intimate the patrolling findings.													
NERLDC/GD/17/10/030	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	21-10-2017 12:54:00	21-10-2017 13:08:00	DP, ZII, R-E, 49.03 km	DP, ZII, R-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/10/030	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	21-10-2017 12:54:00	21-10-2017 13:12:00	General Trip, R-Y-B Phase	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl for 132 kV Aizawl - Kumarghat line shows R-E fault in ZII with fault current upto 0.614 kA . Angle between Vb and Ib is around 23-26 deg which indicate **highly resistive fault likely due to vegetation**.The fault was cleared in around 663 msec. Auto-reclose was not attempted. DR output from Kumarghat for 132 kV Aizawl - Kumarghat line shows R-E fault in ZII with fault current upto 0.667 kA . Angle between Vr and Ir is around 24-31 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 662 msec. DR output from Melriat for 132 kV Aizawl - Melriat line shows operation of **Back up Earth Fault trip and DT sent**.													
	Remedial Measures	Vegetation is to be cleared. Relay settings at Aizwal & Melriat for 132 kV Aizawl - Melriat Line to be reviewed by POWERGRID. Resistive reach of DPR at Aizwal & Kumarghat for 132 kV Aizwal - Kumarghat line is to be reviewed by POWERGRID.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/031	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	21-10-2017 21:52:00	22-10-2017 10:54:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR outpur has not been received. Fault appears to be in the line likely due to vegetation.													
	Remedial Measures	MSPCL to conduct patrolling activities to find any vegetation clearnace issue in the line.													
NERLDC/GD/17/10/032	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-10-2017 00:10:00	22-10-2017 00:17:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output has not been received. Fault appears to be in the line or in downstream of Kohima													
	Remedial Measures	DoP, Nagaland to conduct patrolling activities to find any vegetation clearnace issue in the line.													
NERLDC/TL/17/10/044	132 kV Kumarghat - P K Bari Line	TSECL	POWERGRID	TSECL	22-10-2017 02:22:00	22-10-2017 02:28:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	22-10-2017 02:22:00	22-10-2017 02:40:00	DP, ZII, Y-E	DP, ZII, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl for 132 kV Aizawl - Kumarghat line shows Y-E fault in ZII with gradual increasing of fault current upto 0.840 kA . Angle between Vy and Iy is around 14-18 deg which indicate **highly resistive fault likely due to vegetation**.The fault was cleared in around 537 msec. Auto-reclose was not attempted. DR output from Kumarghat for 132 kV Aizawl - Kumarghat line shows Y-E fault in ZII with gradual increasing of fault current upto 0.7 kA . Angle between Vy and Iy is around 27-44 deg which indicate fault likely due to vegetation.The fault was cleared in around 775 msec. **Vegetation fault in 132 kV Aizawl - Kumarghat Line.**													
	Remedial Measures	Vegetation is to be cleared by the concerned utilities. Earth Fault Relay settings at PK Bari for 132 kV Kumarghat - P K Bari Line is to be reviwed by TSECL.													
NERLDC/GD/17/10/033	132 kV Melriat - Zungtui Line	POWERGRID	POWERGRID	P&ED, Mizoram	22-10-2017 02:39:00	22-10-2017 03:14:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output has not been received. Fault appears to be in the line or in downstream of Zungtui													
	Remedial Measures	POWERGRID & P&ED Mizoram to indicate the reason to tripping													
NERLDC/TL/17/10/045	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	22-10-2017 09:34:00	22-10-2017 09:48:00	Earth Fault	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Aizawl shows operation of Back up Earth Fault with Iy= 0.525 kA and In=0.648 kA. Angle between Vy and Iy is around 15-17 deg which indicate **highly resistive fault likely due to vegetation**.The fault was cleared in around 484 msec. DR output from Jiribam shows ZIII start. The line tripped in R-Y-E fault in ZII with fault current upto 1 kA . The fault was cleared in around 204 msec.													
	Remedial Measures	Vegetation is to be cleared by POWERGRID. Resistive reach of DPR at both ends to be reviewed by POWERGRID.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/046	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	22-10-2017 14:33:00	22-10-2017 14:43:00	DP, ZI, B-E	DP, ZII, B-E	Successful operation	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR shows B-N **vegetation** fault. Ib lags Vb by 47 deg.													
	Remedial Measures	Vegetation clearance to be done by NETC.													
NERLDC/GD/17/10/034	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	22-10-2017 21:44:00	22-10-2017 22:16:00	Over current	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received. Fault appears to be in the line or in the downstream of DoP, Nagaland													
	Remedial Measures	DoP, Nagaland to conduct patrolling activities to find any issue in the line.													
NERLDC/GI/17/10/013	Kopili STG 2 Unit 1	NEEPCO	NEEPCO		17-10-2017 11:03:00	19-10-2017 12:10:00	Control supply failure		No		No		No		No SPS
	Root Cause	Due to Auto sequenser(Control System) DC failure													
	Remedial Measures	**Rectified**													
NERLDC/UI/17/10/012	Ranganadi Unit 3	NEEPCO	NEEPCO		18-10-2017 17:14:00	18-10-2017 18:09:00	DC fail		No		No		No		No SPS
	Root Cause	Unit Control DC failure													
	Remedial Measures	**Rectified**													
NERLDC/GI/17/10/014	AGTCCPP Unit 1	NEEPCO	NEEPCO		20-10-2017 16:10:00	20-10-2017 18:04:00	Over current		No		No		No		No SPS
NERLDC/GI/17/10/014	AGTCCPP STG-1	NEEPCO	NEEPCO		20-10-2017 16:10:00	22-10-2017 14:06:00	Over current		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received.													
	Remedial Measures	**NEEPCO may intimate the root cause.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/10/013	AGTCCPP Unit 3	NEEPCO	NEEPCO		20-10-2017 17:52:00	20-10-2017 18:40:00	Over current		No		No		No		No SPS
NERLDC/UI/17/10/013	AGTCCPP STG-2	NEEPCO	NEEPCO		20-10-2017 17:52:00	20-10-2017 18:20:00	Over current		No		No		No		No SPS
NERLDC/UI/17/10/013	Monarchak GTG	NEEPCO	NEEPCO		20-10-2017 17:52:00	20-10-2017 19:27:00	Gas Booster Compressor (GBC) problem		No		No		No		No SPS
	Monarchak STG	NEEPCO	NEEPCO		20-10-2017 17:52:00	21-10-2017 10:57:00	Gas Booster Compressor(GBC) problem		No		No		No		No SPS
	Root Cause	Volatage at Agartala touched 124 kV.													
	Remedial Measures	**TSECL may intimate the reason for voltage jerk.**													
NERLDC/UI/17/10/014	Khandong Unit 2	NEEPCO	NEEPCO		21-10-2017 08:01:00	22-10-2017 14:14:00	UGB temperature high		No		No		No		No SPS
	Root Cause	Low Oil Level in Upper Guide Bearing													
	Remedial Measures	**Oil filling to be done**													
NERLDC/GD/17/10/029	AGTCCPP STG-2	NEEPCO	NEEPCO		21-10-2017 09:26:00	21-10-2017 22:17:00	Under Voltage		No		No		No		No SPS
NERLDC/GD/17/10/029	Monarchak GTG	NEEPCO	NEEPCO		21-10-2017 09:26:00	21-10-2017 10:19:00	Over Frequency		No		No		No		No SPS
NERLDC/GD/17/10/029	Monarchak STG	NEEPCO	NEEPCO		21-10-2017 09:26:00	21-10-2017 10:57:00	Over Frequency		No		No		No		No SPS
	Root Cause	132 kV Palatana - Surajmaninagar tripped leading to overfrequency of the above units													
	Remedial Measures	-													
NERLDC/UI/17/10/015	Monarchak GTG	NEEPCO	NEEPCO		21-10-2017 13:32:00	21-10-2017 19:05:00	Over Voltage		No		No		No		No SPS
	Root Cause	Likely due to fault in Tripura System.													
	Remedial Measures	**TSECL may intimate any fault in their system.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/UI/17/10/016	AGTCCPP Unit 3	NEEPCO	NEEPCO		21-10-2017 14:13:00	21-10-2017 15:00:00	Under Voltage		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received. Votage touched 16 kV in Agartala PMU.													
	Remedial Measures	**TSECL may intimate any fault in their system.**													
NERLDC/GI/17/10/015	AGTCCPP Unit 3	NEEPCO	NEEPCO		21-10-2017 18:28:00	21-10-2017 19:56:00	Under Voltage		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received.													
	Remedial Measures	**TSECL may intimate any fault in their system.**													
NERLDC/TL/17/10/047	220 kV AGBPP - Mariani (PG) 1 Line	POWERGRID	NEEPCO	POWERGRID	23-10-2017 10:02:00	23-10-2017 11:49:00	DP, ZI, R-E	DP, ZI, R-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Mariani shows R-E fault in ZI with fault current upto 1.436 kA . One of the two Insulator string failed in R-Ph at Loc 334 as informed by POWERGRID. The same has been replaced.													
	Remedial Measures	Condition based maintenance may be done by Utilities.													
NERLDC/TL/17/10/048	400 kV Balipara - Bongaigaon 1 Line	POWERGRID	POWERGRID	POWERGRID	23-10-2017 20:52:00	23-10-2017 20:59:00	DP, ZI, Y-E	DP, ZI, Y-E	Not Furnished	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Balipara end shows Y-E fault and fault current magnitude was 2 KA and fault angle was within **75 degree.** DR shows Y- pole opened in Tie CB at BLP but did not reclose.													
	Remedial Measures	Patrolling is to be done by POWERGRID for the line and report is to be submitted to NERLDC													
NERLDC/TL/17/10/049	132 kV Dimapur - Imphal 1 Line	POWERGRID	POWERGRID	POWERGRID	25-10-2017 07:27:00	25-10-2017 07:47:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Dimapur shows ZI, R-Y fault with fault current upto 1.107 kA . The fault was cleared in 87 msec. DR output from Imphal shows ZI, R-Y fault with fault current upto 2.253 kA . The fault was cleared in 86 msec.**DR shows R-Y fault probably due to lightning.**													
	Remedial Measures	Lightning prone areas are to be identified and footing resistance of towers in the identified areas are to be measured. In case of high tower footing resistance, appropriate counter measures are to be taken to reduce the tower footing resistance. Installation of TLSA may be done in case of frequent tripping due to lightning.													
NERLDC/TL/17/10/050	400 kV Balipara - Biswanath Chariali 3 Line	POWERGRID	POWERGRID	POWERGRID	25-10-2017 10:47:00	25-10-2017 11:07:00	Directional Earth Fault, R-Phase	DP, ZI, R-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output from Balipara shows R-E fault in ZII, Earth Fault with fault current upto 2.270 kA . Angle between Vr and Ir is around 14-16 deg which indicate **highly resistive fault likely due to vegetation**.DT was also sent likely due to Earth Fault operation. DR output from Biswanath Chariali shows starting of Earth Fault. The line finally tripped in R-E fault in ZI with fault current upto 4.371 kA . Angle between Vr and Ir is around 14-16 deg which indicate highly resistive fault likely due to vegetation.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/051	220 kV Samaguri - Sarusajai 2 Line	AEGCL	AEGCL	AEGCL	26-10-2017 10:02:00	26-10-2017 17:17:00	DP, ZIII, R-E	DP, ZII, B-E	Not Applicable	Not Furnished	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received. Likely due to **high resistive fault in the line**.													
	Remedial Measures	AEGCL to indicate the reason of tripping. Resistive reach of DPR at Samaguri and Sarusajai for 220 kV Samaguri - Sarusajai 2 Line to be reviewed by AEGCL.Z-II timing of Sarusajai to be reviewed (fault cleared at Sarusajai in 400 msec and 1080 msec at Samaguri as seen from Sarusajai PMU).													
NERLDC/TL/17/10/052	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	POWERGRID	POWERGRID	26-10-2017 13:22:00	26-10-2017 13:40:00	DP, ZI, Y-B-E	DP, ZI, Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Mariani shows Y-B-E fault in ZI with fault current upto 2.540 kA .The fault was cleared in around 78 msec.													
	Remedial Measures	As informed by POWERGRID, **Tree felled by miscreants between Loc 38-39 resulted in this fault.**													
NERLDC/GD/17/10/035	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-10-2017 08:24:00	27-10-2017 08:29:00	DP, ZI, B-E	Earth Fault	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received. Relay reading indicates fault in the line section.													
	Remedial Measures	POWERGRID and DoP, Nagaland to conduct a detailed patrolling report and submit a report to NERLDC													
NERLDC/TL/17/10/053	400 kV Bongaigaon - Alipurduar 1 Line	ENICL	POWERGRID	POWERGRID	28-10-2017 08:54:00	28-10-2017 09:13:00	DP, ZI, R-E	DP, ZII, R-E	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Bongaigaon shows R-E fault in ZI with fault current up to 3.945 kA and angle between Vr & Ir is around 8-17 degrees which indicates **highly resistive fault likely due to vegetation**. Carrier was sent from Bongaigaon. However, carrier scheme not worked properly. Due to this, fault was cleared in 675 msec. Auto-reclose was attempted after around 1 sec and was successful.													
	Remedial Measures	The issue of non-receiving of carrier at Alipurduar is to be taken up by POWERGRID. Vegetation clearance to be done by ENICL.													
NERLDC/GD/17/10/036	132 kV Loktak - Rengpang 1 Line	MSPCL	NHPC	MSPCL	28-10-2017 10:12:00	Not restored yet	DP, Z-I, B-E	No tripping	Not Furnished	Not Applicable	Yes	No	Yes	No	No SPS
	Root Cause	DR output and FIR not received from either ends. Relay indication indicated the likelyhood of downstream fault at Rengpang.													
	Remedial Measures	MSPCL to conduct patrolling activities to find any vegetation clearanace issue in the line.													
NERLDC/GD/17/10/037	132 kV Doyang - Wokha (DoP, Nagaland) 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	28-10-2017 18:50:00	28-10-2017 19:32:00	General Trip, R-Phase	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in the line or in the downstream of Wokha.													
	Remedial Measures	DoP, Nagaland to carry out activities to find the reason for tripping.													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/10/054	132 kV Imphal (PG) - Ningthoukong 1 Line	MSPCL	POWERGRID	MSPCL	29-10-2017 07:30:00	29-10-2017 14:28:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in the line section.													
	Remedial Measures	MSPCL to conduct patrolling activities to find any clearnace issue in the line.													
NERLDC/TL/17/10/055	220 kV Balipara - Sonabil 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	29-10-2017 10:18:00	29-10-2017 11:28:00	DP, ZI, Y-E	No tripping	Not Furnished	Not Applicable	Yes	No	Yes	No	No SPS
	Root Cause	DR output from Balipara shows Y-E fault in ZI with fault current upto 2.844 kA . Angle between Vy and Iy is around 40-60 deg which indicate fault likely due to vegetation.The fault was cleared in 123 msec.													
	Remedial Measures	Fault was beyond the protected line as informed by POWERGRID. Relay setting at BLP for Sonabil line and at Sonabil for Samaguri line to be reviewed.													
NERLDC/GI/17/10/016	AGBPP Unit 8	NEEPCO	NEEPCO		23-10-2017 10:02:00	23-10-2017 11:53:00	Prime Mover Failure		No		No		No		No SPS
	Root Cause	Tripped while Desynchronization of GTG-III													
	Remedial Measures	-													
NERLDC/UI/17/10/017	Doyang Unit 2	NEEPCO	NEEPCO		26-10-2017 13:14:00	26-10-2017 13:44:00	Electrical & Non Electrical Interface problem		No		No		No		No SPS
	Doyang Unit 3	NEEPCO	NEEPCO		26-10-2017 13:14:00	26-10-2017 13:41:00	Electrical & Non Electrical Interface problem		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received.													
	Remedial Measures	**NEEPCO may intimate the root cause. Installation of Numerical relay at Doyang to be expedicted.**													
NERLDC/GI/17/10/017	Loktak Unit 1	NHPC	NHPC		28-10-2017 12:00:00	28-10-2017 13:30:00	Excitation failure		No		No		No		No SPS
	Root Cause	DR output and FIR has not been received.													
	Remedial Measures	**Loktak may intimate the root cause.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/038	132 kV Palatana - Udaipur I Line	TSECL	OTPCL	TSECL	30-10-2017 15:27:00	30-10-2017 15:34:00	No tripping	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/10/038	132 kV Monarchak - Rokhia I Line	TSECL	NEEPCO	TPGL	30-10-2017 15:27:00	30-10-2017 15:48:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/10/038	132 kV Rokhia - Agartala I Line	TSECL	TPGL	TSECL	30-10-2017 15:27:00	30-10-2017 15:40:00	No tripping	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Rokhia - Agartala II Line	TSECL	TPGL	TSECL	30-10-2017 15:27:00	31-10-2017 11:53:00	No tripping	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault was in **downstream of Monarchak.**													
	Remedial Measures	TSECL to indicate the reason of tripping. Operation of Over current Relay at Udaipur to be reviewed by TSECL.													
NERLDC/TL/17/10/055	220 kV Salakati - Alipurduar 1 Line	POWERGRID	POWERGRID	POWERGRID	30-10-2017 18:10:00	30-10-2017 19:00:00	DP, ZI, R-B-E	DP, ZI, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/10/055	220 kV Salakati - Alipurduar 2 Line	POWERGRID	POWERGRID	POWERGRID	30-10-2017 18:10:00	30-10-2017 19:08:00	DP, ZI, R-B-E	DP, ZI, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR output from Salakati shows R-B-E fault in ZI with fault current up to 4.025 kA.The fault was cleared in 84 msec. DR output from Salakati shows R-B-E fault in ZI with fault current up to 4.086 kA.The fault was cleared in 83 msec.													
	Remedial Measures	POWERGRID to conduct a detailed patrolling and submit a repor to NERLDC													
NERLDC/TL/17/10/056	132 kV Panchgram - Silchar 1 Line	POWERGRID	AEGCL	POWERGRID	30-10-2017 18:18:00	30-10-2017 18:55:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR Output and FIR not received from either ends													
	Remedial Measures	POWERGRID to indicate the reason of tripping													
NERLDC/GD/17/10/039	132 kV Lumshnong - Panchgram 1 Line	AEGCL & MePTCL	MePTCL	AEGCL	30-10-2017 18:20:00	30-10-2017 18:24:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	Root Cause	DR Output and FIR not received from either ends. Relay reading indicates downstream fault at Panchgram.													
	Remedial Measures	AEGCL to carry out intensive patrolling to find any vegetation infringments in the downstream of Panchgram													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/10/040	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	30-10-2017 22:36:00	30-10-2017 22:48:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR Output and FIR not received from either ends. Relay reading indicates downstream fault at Kohima													
	Remedial Measures	DoP, Nagaland to carry out intensive patrolling to find any vegetation infringments in the downstream of Kohima													
NERLDC/GD/17/10/041	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	31-10-2017 16:20:00	31-10-2017 16:32:00	Over current	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Root Cause	DR Output and FIR not received from either ends. This is a short line and it has been conveyed that there is no vegetation fault in the line. Likely due to transient vegetation fault.													
	Remedial Measures	POWERGRID and DoP, Nagaland to consider the option of installation of TLSA. Before the discussion, the nature of fault may be confirmed from DR outputs.													

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
1	132 kV Loktak - Ningthoukhong Line	MSPCL	NHPC	MSPCL	02-10-2017 18:21:00	02-10-2017 18:50:00	Over current	No tripping	53	0	GD-I	0.026	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Ningthoukhong area of Manipur Power System was connected with rest of NER Grid through 132 kV Loktak - Ningthoukhong line (132 kV Imphal(PG) - Ningthoukhong line & 132 kV Kakching -Kongba line kept open (reason: overloading of 132 kV Loktak-Ningthoukhong line). At 18:21 Hrs on 02.10.2017, 132 kV Loktak - Ningthoukhong line tripped. Due to tripping of this element, Ningthoukhong area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 2493 MW, Antecedent Generation: 2438 MW**																	
	***Substation Affected**	**Ningthoukhong Substation**																	
	Restoration Details	**Power supply extended to Ningthoukhong Substation through 132 kV Loktak - Ningthoukhong Line at 18:50 Hrs on 02.10.2017.**																	
	Root Cause	DR output from Loktak shows 3 ph balanced fault with fault current of around 380 A in all the phases. The line tripped on I>1 over current trip																	
	Remedial Measures	The available DR suggests that 132 kV Loktak - Ningthoukhong line tripped first and then over loading of 132 kV Loktak - Imphal occurred. Patrolling of the 132 kV Loktak - Ningthoukhong line is to be done by MSPCL to find if there are trees/vegetation infringement.																	
2	132 kV Khandong - Khliehriat II Line	POWERGRID	NEEPCO	POWERGRID	03-10-2017 15:42:00	03-10-2017 16:31:00	DP, ZI, R-Y-B-E	No tripping	15	42	GD-I	0.052	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Kopili I Line	POWERGRID	NEEPCO	NEEPCO	03-10-2017 15:42:00	03-10-2017 15:55:00	Earth Fault	Distance Protection Operated					Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Kopili II Line	POWERGRID	NEEPCO	NEEPCO	03-10-2017 15:42:00	03-10-2017 16:56:00	DP, ZI, R-Y-B	Distance Protection Operated					Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Umranshu Line	POWERGRID AEGCL	NEEPCO	AEGCL	03-10-2017 15:42:00	03-10-2017 17:30:00	Back up Over current and Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
	Brief Description of the Incident	**Khandong and Kopili ST 2 Power Station and Umrangshu area of Assam Power System was connected with rest of NER grid through 132 kV Khandong - Khleiehriat II line and 132 kV Khandong - Kopili I and II lines. 132 kV Haflong - Umrangshu line tripped at 15:19 Hrs and 132 kV Khandong - Khriehriat I line tripped at 15:38 Hrs. At 15:42 Hrs, 132 kV Khandong - Khleiehriat II line, 132 kV Khandong - Umrangshu line and 132 kV Khandong - Kopili I and II lines tripped. Due to tripping of these elements, Khandong and Kopili St 2 Power Station and Umrangshu area of Assam Power System were separated from rest of NER grid and subsequently collapsed due to load generation mismatch.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1770 MW, Antecedent Generation: 2115 MW**																	
	***Substation Affected**	**Khandong and Kopili St 2 Power Station, Umrangshu Substation**																	
	Restoration Details	**Power Supply was extended to Khandong Power Station through 132 kV Khandong - Kopili I line at 15:55 Hrs and to Umrangshu Substation through 132 kV Khandong - Umrangshu line at 17:30 Hrs on 03.10.17**																	
	Root Cause	DR output not available. Chances of multile fault. Fault in the 132 kV Khandong - Kopili II Line and 132 kV Khandong - Khliehriat II Line likely due to lightning.																	
	Remedial Measures	Tripping of 132 kV Khandong - Kopili I Line to be reviewed by Kopili & Khandong. Lightning prone areas to be identified, footing resistance of towers in the identified lightning prone areas to be measured by concerned utilities.POWERGRID and AEGCL to carry out intensive vegetation monitoring/clearance activities.																	
3	132 kV Palatana - Udaipur Line	TSECL	OTPC	TSECL	04-10-2017 09:37:00	04-10-2017 09:46:00	No tripping	Earth Fault	29	113	GD-I	0.004	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Rokhia line	TSECL	NEEPCO	TPGCL	04-10-2017 09:37:00	04-10-2017 09:48:00	No tripping	Directional Over current					Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia Line and 132 kV Palatana - Udaipur Line. 66 kV Udaipur - Badarghat line, 66 kV Bagafa - Belonia line and 66 kV Amarpur - Gumti line were kept open (Cause : phase sequence issue). At 09:37 Hrs on 04.10.2017, 132 kV Palatana - Udaipur Line and 132 kV Monarchak - Rokhia Line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1655 MW, Antecedent Generation: 2304 MW**																	
	***Substation Affected**	**Monarchak Power Station, Rabindranagar and Udaipur Substation**																	
	Restoration Details	**Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 09:46 Hrs, to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 09:48 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 10:56 Hrs.**																	
	Root Cause	DR Output not available. Fault in 132 kV Monarchak - Rokhia line/ downstream of Monarchak.																	
	Remedial Measures	Relay setting of important nodes of Tripura is to be tested/modified.Operation of Earth Fault relay at Udaipur to be checked by TSECL.																	

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
4	132 kV Balipara - Khupi Line	NEEPCO & DoP, Arunachal Pradesh	POWERGRID	DoP,Arunachal Pradesh	04-10-2017 11:03:00	04-10-2017 19:26:00	Earth Fault	No tripping	22	0	GD-I	0.214	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Khupi area of Arunachal Pradesh Power System was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 11:03 Hrs on 04.10.2017, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1472 MW, Antecedent Generation: 2066 MW**																	
	***Substation Affected**	**Khupi Substation**																	
	Restoration Details	**Power supply extended to Khupi Substation through 132 kV Balipara - Khupi Line at 19:26 Hrs on 04.10.2017.**																	
	Root Cause	DR output not available. Fault in the line is likely due to vegetation due to ground clearance of the line.																	
	Remedial Measures	The issue of line clearance has already been highlighted in previous sub-group meetings. Status may please be mentioned by the concerned authorities.																	
5	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	07-10-2017 09:00:00	07-10-2017 09:42:00	DP, ZI, B-E	DP, ZI, B-E	24	0	GD-I	0.017	Not Furnished	Not Furnished	No	No	No	No	No SPS
	132 kV Khandong - Umranshu 1 Line	POWERGRID & AEGCL	NEEPCO	AEGCL	07-10-2017 09:00:00	07-10-2017 09:45:00	Over current	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Umrangshu area of Assam Power System was connected with rest of NER Grid through 132 kV Khandong - Umrangshu line and 132 kV Haflong - Umrangshu line.At 09:00 Hr on 07.10.17 , 132 kV Khandong - Umrangshu line and 132 kV Haflong - Umrangsho line tripped. Due to tripping of these elements, Umrangshu area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1695 MW, Antecedent Generation: 2094 MW**																	
	***Substation Affected**	**Umranshu Substation**																	
	Restoration Details	**Power supply extended to Umrangshu Substation through 132 kV Haflong - Umranshu Line at 09:42 Hrs on 07.10.17**																	
	Root Cause	DR output from Khandong for 132 kV Khandong- Umrangshu shows tripping of line due to Earth Fault in B ph with fault current upto 1.328 kA .The fault was cleared in around 393 msec.Likehood of vegetation fault in 132 kV Haflong - Umranshu Line.																	
	Remedial Measures	Vegetation clearance to be done for 132 kV Haflong - Umranshu Line. Healthiness of Protection System as well as DPR settings at Umranshu for 132 kV Haflong - Umranshu Line to be checked.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
6	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	07-10-2017 09:55:00	07-10-2017 12:30:00	DP, ZI, B-E	No tripping	18	0	GD-I	0.006	Not furnished	Not Applicable	No	No	No	No	No SPS
	132 kV Khandong - Umranshu 1 Line	POWERGRID & AEGCL	NEEPCO	AEGCL	07-10-2017 09:55:00	07-10-2017 10:15:00	Back Up Earth Fault	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Umrangshu area of Assam was connected with rest of NER Grid through 132 kV Khandong - Umrangsho line and 132 kV Haflong - Umrangsho line .At 09:55 Hr on 07.10.17, 132 kV Khandong - Umrangsho line and 132 kV Haflong - Umrangsho line tripped. Due to tripping of these elements, Umrangsho area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1699 MW, Antecedent Generation: 2059 MW**																	
	***Substation Affected**	**Umransgu Substation**																	
	Restoration Details	**Power supply extended to Umrangshu Substation through 132 kV Khandong - Umranshu Line at 10:15 Hrs on 07.10.17**																	
	Root Cause	Likehood of vegetation fault in 132 kV Haflong - Umranshu Line.																	
	Remedial Measures	Vegetation clearance to be done for 132 kV Haflong - Umranshu Line. Healthiness of Protection System as well as DPR settings at Umranshu for 132 kV Haflong - Umranshu Line to be checked.																	
7	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	08-10-2017 16:25:00	08-10-2017 16:48:00	General Trip	Over current	42	0	GD-I	0.030	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line. At 16:25 Hrs on 08.10.2017, 132 kV Aizawl- Melriat line tripped. Due to tripping of these elements,Zuangtui areas were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 2384 MW, Antecedent Generation: 2367 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 16:48 Hrs on 08.10.17.**																	
	Root Cause	DR output from Aizawl for 132 kV Aizawl - Jiribam line shows Y-E fault in ZII with fault current upto 0.498 kA . Angle between Vy and Iy is around 40-44 deg which indicate fault likely due to vegetation. DR output from Jiribam for 132 kV Aizawl - Jiribam line shows Y-E fault in ZII with fault current upto 0.843 kA . Angle between Vy and Iy is around 15-25 deg which indicate highly resistive fault likely due to vegetation.Auto-reclose was not attempted.Vegetation fault in 132 kV Aizawl - Jiribam Line.																	
	Remedial Measures	Vegetation clearance to be done for 132 kV Aizawl - Jiribam Line. Tripping of Aizawl-Melriat was due to wrong setting of built in E/F feature of DPR, which has been disabled as informed by POWERGRID.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
8	132 kV Depota - Sonabil 1 Line	AEGCL	AEGCL	AEGCL	09-10-2017 13:32:00	09-10-2017 13:41:00	No tripping	DP, ZI, Y-E	80	-	GD-I	0.012	Not Applicable	Not Furnished	No	No	No	No	No SPS
	132 kV Sonabil - Ghoramari 1 Line	AEGCL	AEGCL	AEGCL	09-10-2017 13:32:00	09-10-2017 13:41:00	DP, ZI, Y-E	No tripping					Not Applicable	Not Furnished	No	No	No	No	No SPS
	Brief Description of the Incident	**Depota area of Assam Power System was connected with rest of NER Grid through 132 kV Sonabil -Depota line and 132 kV Sonabil - Ghoramari line. 132 kV Rangia-Sipajhar line & 132 kV Rangia-Rowta line kept open (Cause: Overloading of 132 kV Sonabil -Depota line). At 13:32 Hrs on 09.10.2017, 132 kV Sonabil -Depota line and 132 kV Sonabil - Ghoramari line tripped. Due to tripping of these elements, Depota area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1752 MW, Antecedent Generation: 2020 MW**																	
	***Substation Affected**	**Depota, Ghoramari, Sipajhar and Rowta Substation**																	
	Restoration Details	**Power supply extended to Depota area through 132 kV Depota - Sonabil 1 Line at 13:41 Hrs on 09.10.17.**																	
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault in 132 kV Depota - Sonabil Line.																	
	Remedial Measures	AEGCL may conduct patrolling on the said lines for possible vegetation infringment and/or damage due to lightning.DPR settings at Sonabil for 132 kV Depota - Sonabil Line & 132 kV Sonabil - Ghoramari 1 Line to be done by AEGCL.																	
9	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	10-10-2017 10:38:00	10-10-2017 11:03:00	General Trip, RYB-Phase	No tripping	30	-	GD-I	0.013	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line. At 10:38 Hrs on 10.10.2017, 132 kV Aizawl- Melriat line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1872 MW, Antecedent Generation: 2017 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 11:03 Hrs on 10.10.17.**																	
	Root Cause	DR output from Aizawl end shows Y-B-E phase fault and angle between all the R-Y-B phases Voltage and Current is approx 180 degree. Which indicates reverse Earth Fault protection operated. This DR indiactes vegetation fault because phase angle between Voltage and current is low and fault was cleared in 550 ms.																	
	Remedial Measures	Vegetation need to be cleared.The built in E/F protection of the DPR at Aizawl operated for reverse fault. The same has been disabled as informed by POWERGRID.																	
	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	11-10-2017 10:52:00	11-10-2017 11:00:00	Over current	Over current	14	22	GD-I	0.002	Not Applicable	Not Applicable	No	Yes	No	No	No SPS

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
10	**Brief Description of the Incident**	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:52 Hrs on 11.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1855 MW, Antecedent Generation: 1930 MW**																	
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																	
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 11:00 Hrs on 11.10.2017.**																	
	Root Cause	DR Output and FIR has not been received from either ends. As seen from SCADA the flow in the line was about 8 MW. So, the line was not tripping due to over load of the line.																	
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping																	
11	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	12-10-2017 13:12:00	12-10-2017 13:20:00	Earth Fault	Earth Fault	14	22	GD-I	0.002	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 13:12 Hrs on 12.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1787 MW, Antecedent Generation: 1841 MW**																	
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																	
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:20 Hrs on 12.10.17.**																	
	Root Cause	DR Output and FIR has not been received from either ends.																	
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
12	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	14-10-2017 01:15:00	15-10-2017 14:57:00	Earth Fault	Earth Fault	42	105	GD-I	0.011	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	14-10-2017 01:15:00	14-10-2017 01:30:00	No tripping	Over current					Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	14-10-2017 01:15:00	14-10-2017 02:38:00	No tripping	Over current					Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	14-10-2017 01:15:00	14-10-2017 01:21:00	Hand Tripped	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia areas of Tripura Power System were connected with rest of NER Grid through 132 kV Agartala - Rokhia I & II lines and 132 KV Monarchak - Udaipur Line. 66 kV Rokhia - Badarghat line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 01:15 Hrs on 14.10.2017, 132 kV Agartala - Rokhia I & II lines and 132 KV Monarchak - Rokhia Line tripped and 132 KV Monarchak - Udaipur Line hand tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia areas of Tripura Power Systems were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1945 MW, Antecedent Generation: 1936 MW**																	
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia Substation**																	
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Udaipur 1 Line at 01:21 Hrs, to Rokhia Power Station through 132 kV Agartala - Rokhia 2 Line at 01:30 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 01:22 Hrs on 14.09.17.**																	
	Root Cause	Fault likely in 132 kV Agartala - Rokhia 1 Line.																	
	Remedial Measures	Directionality of Over Current & Earth fault relays at Rokhia to be checked by TSECL.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
13	132 kV Depota - Sonabil 1 Line	AEGCL	AEGCL	AEGCL	15-10-2017 17:15:00	16-10-2017 15:55:00	No tripping	DP, ZI, B-E	100	-	GD-I	0.035	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Sonabil - Ghoramari 1 Line	AEGCL	AEGCL	AEGCL	15-10-2017 17:15:00	15-10-2017 18:44:00	DP, ZI, R-Y-B-E	No tripping					Not Applicable	Not Furnished	No	No	No	No	No SPS
	Brief Description of the Incident	**Depota area of Assam Power System was connected with rest of NER Grid through 132 kV Sonabil -Depota line and 132 kV Sonabil - Ghoramari line. 132 kV Rangia-Sipajhar line & 132 kV Rangia-Rowta line kept open (Cause: Overloading of 132 kV Sonabil -Depota line). At 17:15 Hrs on 15.10.2017, 132 kV Sonabil -Depota line and 132 kV Sonabil - Ghoramari line tripped. Due to tripping of these elements, Depota area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 2349 MW, Antecedent Generation: 2334 MW**																	
	***Substation Affected**	**Depota, Ghoramari, Sipajhar and Rowta Substation**																	
	Restoration Details	**Power supply extended to Depota area through 132 kV Sonabil - Ghoramari 1 Line at 18:44 Hrs on 15.10.17.**																	
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault in 132 kV Depota - Sonabil Line.																	
	Remedial Measures	AEGCL may conduct patrolling on the said lines for possible vegetation infringment and/or damage due to lightning.DPR settings at Sonabil for 132 kV Depota - Sonabil Line & 132 kV Sonabil - Ghoramari 1 Line to be done by AEGCL.																	
14	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	16-10-2017 10:40:00	16-10-2017 10:51:00	General Trip, R-Y-B Phase	Earth Fault	30	-	GD-I	0.006	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line. At 10:40 Hrs on 16.10.2017, 132 kV Aizawl- Melriat line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1810 MW, Antecedent Generation: 2064 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 10:51 Hrs on 16.10.17.**																	
	Root Cause	DR output from Aizawl for 132 kV Aizawl -Jiribam line shows Y-E fault in ZII with fault current upto 0.730 kA . Angle between Vb and Ib is around 20-27 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 650 msec. DR output from Jiribam for 132 kV Aizawl -Jiribam line shows starting of ZIII and ZII. The line finally tripped in R-Y-E fault in ZII with fault current upto 0.730 kA . Angle between Vb and Ib is around 20-27 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 650 msec.																	
	Remedial Measures	Time syn has to be done at Aizawl(10 min differ). Vegetation clearanace is to be done. Relay settings of Aizwal for Melriat line to be reviewed by POWERGRID.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
15	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	18-10-2017 15:12:00	18-10-2017 15:50:00	General Trip, R-Y-B Phase	Earth Fault	50	-	GD-I	0.032	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line. At 15:12 Hrs on 18.10.2017, 132 kV Aizawl- Melriat line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1996 MW, Antecedent Generation: 2128 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 15:50 Hrs on 18.10.17.**																	
	Root Cause	DR output from Aizawl shows reverse R-Y-B-E fault. Fault cleared in 540 ms.																	
	Remedial Measures	Built in E/F feature of DPR at Aizwal with incorrect settings has been disabled as informed by POWERGRID.																	
16	132 kV Aizawl - Jiribam Line	POWERGRID	POWERGRID	POWERGRID	18-10-2017 15:30:00	18-10-2017 15:42:00	DP, ZI, R-Y-E	DP, ZI, R-Y-E	80	-	GD-I	0.016	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Aizawl - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	18-10-2017 15:30:00	18-10-2017 16:00:00	No tripping	Earth Fault					Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui and Luangmual area of Mizoram Power System were connected with rest of NER Grid through 132 kV Aizawl- Kolasib line and 132 kV Aizawl - Jiribam line. 132 kV Aizawl - Kumarghat Line was under outage since 15:15 Hrs on 18.10.2017. While charging 132 kV Aizawl - Kumarghat Line at 15:30 Hrs on 18.05.2017, 132 kV Aizawl- Kolasib line and 132 kV Aizawl - Jiribam line tripped. Due to tripping of these elements, Zuangtui areaand Luangmual area of Mizoram Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas and 132 kV Aizawl Substation was also blacked out.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1944 MW, Antecedent Generation: 2133 MW**																	
	***Substation Affected**	**Aizawl, Melriat, Zuangtui and Lungmual Substation**																	
	Restoration Details	**Power supply extended to Aizawl Substation through 132 kV Aizawl - Jiribam Line at 15:42 Hrs, to Melriat Substation through 132 kV Aizawl - Melriat Line at 15:50 Hrs, to Zuangtui Substation through 132 kV Melriat - Zuangtui Line at 15:50 Hrs, to Luangmual Substation through 132 kV Aizawl - Luangmual Line at 15:46 Hrs on 18.10.17.**																	
	Root Cause	DR output shows R-Y-E fault and fault current was 900 A and successful autoreclosure attempted at Aizawl end. At Jiribam end it cleared fault in 150 ms. Fault is likely due to vegetation.																	
	Remedial Measures	Vegetation of 132 kV Aizawl - Jiribam Line need to be cleared by POWERGRID. Tripping of 132 kV Aizawl - Kolasib Line at Kolasib end to be reviewed by P&ED Mizoram.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
17	132 kV Doyang - Wokha (DoP, Nagaland) Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	20-10-2017 16:36:00	20-10-2017 17:27:00	DP, ZI, R-E	Over current	24	-	GD-I	0.020	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System wa connected with rest of NER Grid through 132 kV Doyang - Wokha line.** 132 kV Dimapur - Kohima line kept open **(To test the stability of 132 kV Doyang-Wokha-Kohima link). At 16:36 Hrs on 20.10.2017, 132 kV Doyang - Wokha line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1946 MW, Antecedent Generation: 1971 MW**																	
	***Substation Affected**	**Wokha Substation**																	
	Restoration Details	**Power supply extended to Wokha Substation through 132 kV Doyang - Wokha (DoP, Nagaland) Line at 17:27 Hrs on 20.10.17.**																	
	Root Cause	DR output and FIR has not been received from either ends. From the relay indication it appears that the fault is in line likely due to vegetation.																	
	Remedial Measures	Vegetation clearance to be done by DoP, Nagaland																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
18	132 kV Palatana - Surajmaninagar Line	POWERGRID	OTPCL	TSECL	21-10-2017 09:26:00	21-10-2017 10:42:00	DP, ZII, R-B-E	No tripping	110	211	GD-I	0.016	Not Furnished	Not Furnished	No	No	Yes	No	No SPS
	132 kV AGTCCPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:45:00	No tripping	DP, ZIII & Earth Fault					Not Furnished	Not Furnished	Yes	No	No	Yes	No SPS
	132 kV P K Bari - Kumarghat Line	POWERGRID	TSECL	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:55:00	No tripping	DP, ZIII & Earth Fault					Not Furnished	Not Furnished	Yes	No	No	Yes	No SPS
	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	21-10-2017 09:26:00	21-10-2017 10:53:00	Over Voltage	Over current					Not Furnished	Not Furnished	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Tripura Power System (except Udaipur area), Dullavchera area of Assam Power System and Bangladesh(South Comilla) Power System were connected with rest of NER Grid through 132 kV Palatana-Surajmaninagar line, 132 kV Monarchak - Rokhia Line, 132 KV AGTCCPP - Kumarghat Line and 132 KV Kumarghat - P K Bari Line. 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr,2016 (Cause: Tower collapsed), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc No. 124, 125, 126, 137, 138 and 139. At 09:26 Hrs on 21.10.2017, 132 kV Palatana - Surajmaninagar line, 132 KV Monarchak - Rokhia Line, 132 KV AGTCCPP - Kumarghat Line and 132 KV Kumarghat - P K Bari Line tripped. Due to tripping of these elements, Tripura Power System (except Udaipur area), Dullavchera area of Assam Power System and Bangladesh(South Comilla) Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**																
	Antecedent Conditions of NER Grid	**Antecedent Load: 1481 MW, Antecedent Generation: 1883 MW**																	
	***Substation Affected**	**NEEPCO: AGTCCPP Power Station; TSECL: Agartala, Bodhjungnagar, Jirania, Surajmaninagar, Rokhia, Rabindranagar, Baramura, Gamaitila, Ambassa, Kamalpur, Dhalabil, P K Bari and Dharmanagar Substation, Assam: Dullavchera Substation, Bangladesh: South Comilla**																
	Restoration Details	**Power supply extended to AGTCCPP Power Station through 132 kV AGTCCPP – Kumarghat line at 09:45 Hrs, to part of Tripura power system through 132 kV P K Bari – Kumarghat line at 09:55 Hrs and to Bangladesh(South Comilla) Power System through 132 kV Surajmaninagar- Comilla I line at 09:55 Hrs, to Dullavchera area of Assam Power System through 132 kV Dharmanagar – Dullavchera line at 09:55 Hrs on 21.10.2017 .**																
	Root Cause	DR output from Palatana for 132 kV Palatana-Surajmaninagar line shows R-Y fault in ZIII with gradual increasing of fault current upto 2.134 kA. The fault was cleared in around 850 msec. Fault distance was 89.7 km from Palatana. Line was not tripped at SurajmaniNagar end. DR furnished by Kumarghat for 132 kV AGTCCPP - Kumarghat line is not time synchronized and shows tripping time as 09:14:54:380 Hrs. DR output shows R-Y-B-E fault with Ir=0.579 kA, Iy=0.476 kA, Ib=0.709 kA and In=0.218 kA. DR furnished by Kumarghat for 132 kC AGTCCPP- Kumarghat line is not time synchronized and shows tripping time as 09:14:54:380 Hrs. DR output shows R-Y-B-E fault with Ir=0.579 kA, Iy=0.476 kA, Ib=0.709 kA and In=0.218 kA. Tripping of 132 kV Palatana Surajmaninagar line led to over loading of the other mentioned lines and subsequent tripping.																
	Remedial Measures	TSECL may intimate the patrolling findings.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
19	132 kV Aizawl - Melriat Line	POWERGRID	POWERGRID	POWERGRID	21-10-2017 12:54:00	21-10-2017 13:12:00	General Trip, R-Y-B Phase	Earth Fault	40	-	GD-I	0.012	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Aizawl- Melriat line. At 12:54 Hrs on 21.10.2017, 132 kV Aizawl- Melriat line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1382 MW, Antecedent Generation: 1794 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 13:12 Hrs on 21.10.17.**																	
	Root Cause	DR output from Aizawl for 132 kV Aizawl - Kumarghat line shows R-E fault in ZII with fault current upto 0.614 kA . Angle between Vb and Ib is around 23-26 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 663 msec. Auto-reclose was not attempted. DR output from Kumarghat for 132 kV Aizawl - Kumarghat line shows R-E fault in ZII with fault current upto 0.667 kA . Angle between Vr and Ir is around 24-31 deg which indicate highly resistive fault likely due to vegetation.The fault was cleared in around 662 msec. DR output from Melriat for 132 kV Aizawl - Melriat line shows operation of Back up Earth Fault trip and DT sent.																	
	Remedial Measures	Vegetation is to be cleared. Relay settings at Aizwal & Melriat for 132 kV Aizawl - Melriat Line to be reviewed by POWERGRID. Resistive reach of DPR at Aizwal & Kumarghat for 132 kV Aizwal - Kumarghat line is to be reviewed by POWERGRID.																	
20	132 kV Dimapur (PG) - Kohima (DoP, Nagaland)Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-10-2017 00:10:00	22-10-2017 00:17:00	Earth Fault	No tripping	19	-	GD-I	0.002	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 00:10 Hrs on 22.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1129 MW, Antecedent Generation: 1780 MW**																	
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																	
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 00:17 Hrs on 22.10.17.**																	
	Root Cause	DR output has not been received. Fault appears to be in the line or in downstream of Kohima																	
	Remedial Measures	DoP, Nagaland to conduct patrolling activities to find any vegetation clearnace issue in the line.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
21	132 kV Melriat - Zungtui Line	POWERGRID	POWERGRID	P&ED, Mizoram	22-10-2017 02:39:00	22-10-2017 03:14:00	Earth Fault	No tripping	10	-	GD-I	0.006	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Zuangtui area of Mizoram Power System was connected with rest of NER Grid through 132 kV Melriat - Zuangtui line. At 02:39 Hrs on 22.10.2017, 132 kV Melriat - Zuangtui line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1019 MW, Antecedent Generation: 1927 MW**																	
	***Substation Affected**	**Melriat and Zuangtui Substation**																	
	Restoration Details	**Power supply extended to Zuangtui Substation through 132 kV Aizawl - Melriat Line at 03:14 Hrs on 22.10.17.**																	
	Root Cause	DR output has not been received. Fault appears to be in the line or in downstream of Zungtui																	
	Remedial Measures	POWERGRID to indicate the reason to tripping																	
22	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	22-10-2017 21:44:00	22-10-2017 22:16:00	Over current	Earth Fault	38	-	GD-I	0.030	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Dimapur area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur (PG)-Dimapur (NA) II line. 132 kV Dimapur (PG)-Dimapur (NA) I line is under long outage. At 21:44 Hrs on 22.10.2017 ,132 kV Dimapur (PG)-Dimapur (NA) II line tripped. Due to tripping of this element, Dimapur area was separated from rest of NER Grid and subsequently collapsed due to no source in this area**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 2004 MW, Antecedent Generation: 2265 MW**																	
	***Substation Affected**	**Dimapur (DoP, Nagaland) Substation**																	
	Restoration Details	**Power supply extended to Dimapur (DoP, Nagaland) Substation through 132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line at 22:16 Hrs on 22.10.17.**																	
	Root Cause	DR output and FIR has not been received. Fault appears to be in the line or in the downstream of DoP, Nagaland																	
	Remedial Measures	DoP, Nagaland to conduct patrolling activities to find any issue in the line.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
23	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-10-2017 08:24:00	27-10-2017 08:29:00	DP, ZI, B-E	Earth Fault	24	21	GD-I	0.002	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept idle charged at Kohima, 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 08:24 Hrs on 27.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																
	Antecedent Conditions of NER Grid	**Antecedent Load: 1522 MW, Antecedent Generation: 1973 MW**																	
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																	
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 08:29 Hrs on 27.10.17.**																	
	Root Cause	DR output and FIR has not been received. Relay reading indicates fault in the line section.																	
	Remedial Measures	POWERGRID and DoP, Nagaland to conduct a detailed patrolling report and submit a report to NERLDC																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
24	132 kV Palatana - Udaipur I Line	TSECL	OTPCL	TSECL	30-10-2017 15:27:00	30-10-2017 15:34:00	No tripping	Over current	30	116	GD-I	0.013	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Rokhia - Agartala I Line	TSECL	TPGL	TSECL	30-10-2017 15:27:00	30-10-2017 15:40:00	No tripping	Earth Fault					Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Rokhia - Agartala II Line	TSECL	TPGL	TSECL	30-10-2017 15:27:00	31-10-2017 11:53:00	No tripping	Earth Fault					Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station, Udaipur, Rabindranagar, Boxnagar areas of Tripura Power System were connected with rest of NER Grid through 132 kV Agartala - Rokhia I & II lines and 132 kV Palatana - Udaipur Line. 66 kV Rokhia - Badarghat line kept open (Cause : phase sequence issue), 66 kV Amarpur - Gumti line kept open (Cause : phase sequence issue). At 15:22 Hrs on 30.10.2017, 132 kV Agartala - Rokhia I & II lines and 132 kV Palatana - Udaipur Line tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station, Udaipur, Rabindranagar, Boxnagar areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																
	Antecedent Conditions of NER Grid	**Antecedent Load: 1513 MW, Antecedent Generation: 1872 MW**																	
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station, Udaipur, Rabindranagar and Boxnagar Substation**																	
	Restoration Details	**Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur I Line at 15:34 Hrs, to Rokhia Power Station through 132 kV Agartala - Rokhia I Line at 15:40 Hrs, to Monarchak Power Station through 132 kV Monarchak - Rokhia I Line at 15:48 Hrs and to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar I Line at 15:53 Hrs on 30.10.2017.**																	
	Root Cause	DR output and FIR has not been received. From the relay indication received from site, it appears fault was in downstream of Monarchak.																	
	Remedial Measures	TSECL to indicate the reason of tripping. Operation of Over current Relay at Udaipur to be reviewed by TSECL.																	

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
25	132 kV Lumshnong - Panchgram 1 Line	AEGCL & MePTCL	MePTCL	AEGCL	30-10-2017 18:20:00	30-10-2017 18:24:00	Earth Fault	No tripping	28	-	GD-I	0.002	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	Brief Description of the Incident	**Lumshnong area of Meghalaya Power System was connected with rest of NER Grid through 132 kV Lumshnong - Panchgram line. 132 kV Lumshnong - Khliehriat line kept open (Cause : Overloading of 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines). At 18:20 Hrs on 30.10.2017, 132 kV Lumshnong - Panchgram line tripped. Due to tripping of this element, Lumshnong area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 2374 MW, Antecedent Generation: 2261 MW**																	
	***Substation Affected**	**Lumshnong Substation**																	
	Restoration Details	**Power supply extended to Lumshnong Substation through 132 kV Lumshnong - Khleihriat 1 Line at 15:34 Hrs on 30.10.2017.**																	
	Root Cause	DR Output and FIR not received from either ends. Relay reading indicates downstream fault at Panchgram.																	
	Remedial Measures	AEGCL to carry out intensive patrolling to find any vegetation infringments in the downstream of Panchgram																	
26	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	30-10-2017 22:36:00	30-10-2017 22:48:00	Earth Fault	Not Furnished	27	22	GD-I	0.027	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept idle charged from Kohima, 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 22:36 Hrs on 30.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 1738 MW, Antecedent Generation: 1834 MW**																	
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																	
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line at 22:48 Hrs on 30.10.2017.**																	
	Root Cause	DR Output and FIR not received from either ends. Relay reading indicates downstream fault at Kohima																	
	Remedial Measures	DoP, Nagaland to carry out intensive patrolling to find any vegetation infringments in the downstream of Kohima																	
	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	31-10-2017 16:20:00	31-10-2017 16:32:00	Over current	Earth Fault	53	-	GD-I	0.015	Not Applicable	Not Applicable	No	Yes	No	No	No SPS

List of Grid Disturbances in North Eastern Region above 10 MW during October'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B	
27	**Brief Description of the Incident**	**Dimapur area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur (PG)-Dimapur (NA) II line. 132 kV Dimapur (PG)-Dimapur (NA) I line is under long outage. At 16:20 Hrs on 31.10.2017, 132 kV Dimapur (PG)-Dimapur (NA) II line tripped. Due to tripping of this element, Dimapur area was separated from rest of NER Grid and subsequently collapsed due to no source in this area**																	
	Antecedent Conditions of NER Grid	**Antecedent Load: 1581 MW, Antecedent Generation: 1885 MW**																	
	***Substation Affected**	**Dimapur (DoP, Nagaland) Substation**																	
	Root Cause	DR Output and FIR not received from either ends. This is a short line and it has been conveyed that there is no vegetation fault in the line. Likely due to transient vegetation fault.																	
	Remedial Measures	POWERGRID and DoP, Nagaland to consider the option of installation of TLSA. Before the discussion, the nature of fault may be confirmed from DR outputs.																	
	Restoration Details	**Power supply extended to Dimapur (DoP, Nagaland) Substation through 132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line at 16:32 Hrs on 31.10.2017.**																	

***Affected substation of voltage level of 132 kV and above**

List of Grid Incidents during Oct 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Outage		Date & Time	Revival		Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
					Date	Time		Date	Time							
1	NER	BgTPP	BgTPP Unit I	NTPC	04-Oct-2017	09:52:00	04-Oct-17 09:52:00	04-Oct-2017	10:15:00	04-Oct-17 10:15:00	00:23:00	BgTPP Unit I tripped at 09:52 Hrs on 04.10.2017 due to operation of Boiler MFT(Master fuel trip) . (Revision of schedule from Block No.42 on 04.10.17)	97	0	0.037	GI-II
	Root Cause	Drum level couldn't be controlled after lifting of drum safety valve.														
	Remedial Measures	Coal flow in running mills/ Load is to be reduced before taking 5th mill into service for establishing coal flow in the mill to avoid pressure rise														
2	NER	AGTCCPP	AGTCCPP Unit II	NEEPCO	04-Oct-2017	20:25:00	04-Oct-17 20:25:00	04-Oct-2017	21:15:00	04-Oct-17 21:15:00	00:50:00	AGTCCPP Unit II tripped at 20:25 Hrs on 04.10.2017 due to high lube oil temperature. (Revision of schedule from Block No.86 on04.10.17)	16	0	0.013	GI-I
	Root Cause	Cooling Pump Failure														
	Remedial Measures	Pump replaced														
3	NER	Khandong	Khandong Unit 2	NEEPCO	10-Oct-2017	07:19:00	10-Oct-17 07:19:00	10-Oct-2017	8:15:00	10-Oct-17 08:15:00	00:56:00	Khandong Unit II tripped at 07:19 Hrs on 10.10.2017 due to Rotor Earth fault. (Revision of schedule from Block No.34 on 10.10.17)	23	0	0.022	GI-I
	Root Cause	Carbon dust in slip ring														
	Remedial Measures	regular cleaning to be done by Khandong,NEEPCO														
4	NER	Doyang	Doyang Unit 3	NEEPCO	11-Oct-2017	00:03:00	11-Oct-17 00:03:00	11-Oct-2017	9:15:00	11-Oct-17 09:15:00	09:12:00	Doyang Unit III tripped at 00:03 Hrs on 11.10.2017 due to Non Elect lockout 86A, Emerg. Non Elect lockout relay 86 B and Elect & Non elec lockout relay 86I operated. (Revision of schedule from Block No.38 on 11.10.17)	22	0	0.202	GI-I
	Root Cause	DR output and FIR has not been received from Doyang.														
	Remedial Measures	NEEPCO may intimate the root cause.														
5	NER	AGTCCPP	AGTCCPP Unit 4 & Unit 6	NEEPCO	14-Oct-2017	01:15:00	14-Oct-17 01:15:00	14-Oct-2017	2:30:00	14-Oct-17 02:30:00	01:15:00	AGTCCPP Unit IV and Unit VI tripped at 01:15 Hrs on 14.10.2017 due to over current. (Revision of schedule from Block No.11 on 14.10.17)	41	0	0.051	GI-I
	Root Cause	DR output and FIR has not been received. At the same time 132 kV Rokhia-Agartala D/C tripped.Fault fed by AGTCCPP units.														
	Remedial Measures	Over Current settings of AGTCCPP ubits to be reviewed by AGTCCPP.														

List of Grid Incidents during Oct 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Outage		Date & Time	Revival		Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
					Date	Time		Date	Time							
6	NER	AGTCCPP	AGTCCPP Unit 3	NEEPCO	14-Oct-2017	01:52:00	14-Oct-17 01:52:00	14-Oct-2017	2:30:00	14-Oct-17 02:30:00	00:38:00	AGTCCPP Unit III tripped at 01:52 Hrs on 14.10.2017 due to Low Boiler Water Level. (Revision of schedule from Block No.11 on 14.10.17)	19	0	0.012	GI-I
	Root Cause	As mentioned by NEEPCO, Low Boiler Water Level led to tripping of the unit.														
	Remedial Measures	NEEPCO may intimate the root cause.														
7	NER	AGTCCPP	AGTCCPP Unit 6	NEEPCO	14-Oct-2017	07:52:00	14-Oct-17 07:52:00	14-Oct-2017	10:45:00	14-Oct-17 10:45:00	02:53:00	AGTCCPP Unit 6 tripped at 07:52 Hrs on 14.10.2017 due to Over Frequency. (Revision of schedule from Block No.44 on 14.10.17)	8	0	0.023	GI-I
	Root Cause	Volatage at Agartala touched 71 kV due to R-Y fault.														
	Remedial Measures	NEEPCO may intimate the exact protection operated and furnish DR output of this event for analysis.														
8	NER	AGTCCPP	AGTCCPP Unit 1	NEEPCO	14-Oct-2017	09:55:00	14-Oct-17 09:55:00	14-Oct-2017	10:45:00	14-Oct-17 10:45:00	00:50:00	AGTCCPP Unit-I tripped at 09:55 Hrs on 14.10.2017 due to voltage jerk. (Revision of schedule from Block No.44 on 14.10.17)	20	0	0.018	GI-I
	Root Cause	Volatage at Agartala touched 70 kV and fault cleared in 580 msec.														
	Remedial Measures	NEEPCO may intimate the exact protection operated and furnish DR output of this event for analysis.														
9	NER	Khandong	Kopili Stg 2 Unit	NEEPCO	17-Oct-2017	11:03:00	17-Oct-17 11:03:00	17-Oct-2017	11:45:00	17-Oct-17 11:45:00	00:42:00	Kopili Stg II Unit tripped at 11:03 Hrs on 17.10.2017 due to Control supply failure. (Revision of schedule from Block No.48 on 17.10.17)	20	0	0.014	GI-I
	Root Cause	Due to Auto sequenser(Control System) DC failure														
	Remedial Measures	Rectified														
10	NER	AGTCCPP	AGTCCPP Unit 1 and AGTCCPP Stg-1 Unit	NEEPCO	20-Oct-2017	16:10:00	20-Oct-17 16:10:00	20-10-17 0:00	17:15:00	20-Oct-17 17:15:00	01:05:00	AGTCCPP Unit I and Stg-I Unit tripped at 16:10 Hrs on 20.10.2017 due to over current. (Revision of schedule from Block No.70 on 20.10.17)	32	0	0.035	GI-I
	Root Cause	DR output and FIR not been received.														
	Remedial Measures	NEEPCO may intimate the root cause.														

List of Grid Incidents during Oct 2017

S.No.	Region	State(s) Involved	Name of Elements	Owner / Agency	Outage		Date & Time	Revival		Date & Time	Outage Duration	Event (Brief Details)	Generation Loss (MW)	Load Loss MW	Energy Unserved (MU)	Category as per CEA Grid Standards
					Date	Time		Date	Time							
11	NER	AGTCCPP	AGTCCPP Unit 3	NEEPCO	21-Oct-2017	18:28:00	21-Oct-17 18:28:00	21-Oct-17	19:15:00	21-Oct-17 19:15:00	00:47:00	AGTCCPP Unit III tripped at 18:28 Hrs on 21.10.2017 due to under voltage problem. (Revision of schedule from Block No.78 on 21.10.17)	21	0	0.017	GI-I
	Root Cause	DR output and FIR not been received.														
	Remedial Measures	NEEPCO may intimate the root cause.														
12	NER	AGBPP	AGBPP Unit VIII	NEEPCO	23-Oct-2017	10:02:00	23-Oct-17 10:02:00	23-Oct-2017	10:15:00	23-Oct-17 10:15:00	00:13:00	AGBPP Unit VIII tripped at 10:02 Hrs on 23.10.2017 due to Prime Mover Failure. (Revision of schedule from Block No.42 on 23.10.17)	12	0	0.003	GI-II
	Root Cause	Tripped while Desynchronization of GTG-III														
	Remedial Measures	-														
13	NER	Loktak	Loktak Unit 1	NHPC	28-Oct-2017	12:00:00	28-Oct-17 12:00:00	28-Oct-2017	13:00:00	28-Oct-17 13:00:00	01:00:00	Loktak Unit I tripped at 12:00 Hrs on 28.10.2017 due to Excitation Failure. (Revision of schedule from Block No.53 on 28.10.17)	35	0	0.035	GI-I
	Root Cause	DR output and FIR not been received.														
	Remedial Measures	Loktak may intimate the root cause.														

Grid Events

November 2017

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/11/001	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	01-11-2017 23:23:00	02-11-2017 05:20:00	Not Furnished	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR outputs are not available from both ends. As per relay indication, fault may in the line or downstream/beyond Motonga. **As informed by AEGCL, PT blast occurred induxtry feeder end which is fed from Motonga. Due to breaker problem of 132 kV Motonga-Industry feeder at Motonga, fault cleared at Rangia.**													
	Remedial Measures	Inter-national Matter. Referred to NLDC.													
NERLDC/GD/17/11/001	132 kV Doyang - Wokha 1 Line	DoP, Nagaland	NEEPCO	DoP, Nagaland	02-11-2017 17:15:00	02-11-2017 18:15:00	3 phase trip Relay (86 A,B&C) operated	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR& EL outputs are not available. As per discussions in the previous subgroup meetings, this line has vegetion issue. **Status of vegetation clearance to be intimated by DoP Nagaland.**													
	Remedial Measures	Vegetation clearance to be done by DoP Nagaland.													
NERLDC/TL/17/11/002	+/- 800 kV Biswanath Chariali - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	02-11-2017 16:09:00	02-11-2017 21:34:00	No tripping	DC Differential Protection operated	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR time and time intimated to Control room is not matching. **Time sysnchronization of TFR to be checked by Biswanath Charali, POWERGRID. DC Differential Protection operated**. As informed by BNC,POWERGRID, due to **problem in protection system (system hanged)** at APD, DC Differential Protection operated.													
	Remedial Measures	**POWERGRID may intimate the remedial measures taken.**													
NERLDC/TL/17/11/003	132 kV Motonga - Rangia 1 Line	POWERGRID	BPC, Bhutan	AEGCL	06-11-17 3:10	06-11-17 3:58	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	AEGCL may intimate whether any downstream tripping occurred at Rangia related to this event.**If no tripping in downstream of Rangia, Fault was likely in line. POWERGRID may intimate the root cause.**													
	Remedial Measures	Testing of Numerical relay at Rangia to be done by POWERGRID. E/F & O/C settings may be reviewed considering latest fault contribution. POWERGRID may intimate adopted CT ratio for protection to NERPC/NERLDC													
NERLDC/TL/17/11/004	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	POWERGRID	POWERGRID	06-11-17 9:00	06-11-17 9:15	DP, ZI, Y-B-E	DP, ZI, Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
	Root Cause	DR& EL outputs are not available. Relay indication is used for analysis. **Y-B-E Fault in the line likely due to vegetation.**													
	Remedial Measures	**DR & EL outputs to be furnished by POWERGRID. Patrolling report to be submitted & vegetation clearance to be done by POWERGRID.**													
NERLDC/GD/17/11/005	132 kV Khandong - Umranshu 1 Line	POWERGRID & AEGCL	NEEPCO	AEGCL	11-11-17 7:00	12-11-17 23:40	Not Furnished	Tripped	Not Applicable	Not Applicable	No	No	No	No	SPS not operated
NERLDC/GD/17/11/005	132 kV Haflong - Umranshu 1 Line	POWERGRID & AEGCL	POWERGRID	AEGCL	11-11-17 7:00	12-11-17 16:55	Not Furnished	Tripped	Not Applicable	Not Applicable	No	No	No	No	SPS not operated
	Root Cause	**DR& EL outputs/Relay Indications are not available. Fault likely in any one the tripped lines or downstream of Umrangshu.**													
	Remedial Measures	**DR& EL outputs/Relay Indications and Patrolling Reports to be furnished by concerned utilities at the earliest.**													
NERLDC/TL/17/11/005	132 kV Badarpur - Silchar 2 Line	POWERGRID	POWERGRID	POWERGRID	12-11-17 17:15	12-11-17 17:18	DP, ZI, R-Y-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	SPS not operated
	Root Cause	DR& EL outputs are not available. As per relay indication, **R-Y-E Transient Fault is likely occurred in the line**. However, no other tripping reported at the same time or no tripping at Silchar end. **So, Z-I reach of DPR at Badarpur as well as Silchar to be reviewed.**													
	Remedial Measures	**Testing of DPR at both Badarpur & Sichar for this line to be done by POWERGRID. DR&EL outputs of both ends to be furnished by POWERGRID.**													
NERLDC/TL/17/11/006	400 kV Balipara - Misa 2 Line	POWERGRID	POWERGRID	POWERGRID	17-11-2017 23:44:00	17-11-2017 23:55:00	DT Received	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR& EL outputs of either end are not submitted. Likely due to **spurious DT signal received at Misa**.													
	Remedial Measures	**POWERGRID may investigate the spurios DT signal received at Misa and submit report to NERLDC/NERPC**. DR& EL outputs of both end are to be submitte by POWERGRID.													
NERLDC/TL/17/11/007	220 kV Killing (Byrnihat) - Misa 1 Line	MePTCL	MePTCL	POWERGRID	17-11-2017 23:47:00	18-11-2017 00:13:00	R-Y-B Phase	General Trip	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR& EL outputs are not available. Relay indication is used for analysis. **3 phase Fault in the line.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
	Remedial Measures	**MePTC may intimate the root cause. DR& EL outputs of both ends are to be submitted by concerned utilities.**													
NERLDC/GD/17/11/007	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	18-11-2017 04:13:00	18-11-2017 07:27:00	DP, ZI, B-E	Over Current	Not Furnished	Not Applicable	Yes	No	Yes	No	No SPS
	Root Cause	DR output from Loktak shows B-E fault with fault current of around 2.6 kA and angle between Vb & Ib around 16 degrees indicate chances of **vegetation infringement**. Fault cleared in 70 msec. AR not attempted.													
	Remedial Measures	**Vegetation clearance to be done by MSPCL.**													
NERLDC/GD/17/11/008	132 kV Haflong - Umranshu Line	POWERGRID & AEGCL	POWERGRID	AEGCL	18-11-2017 12:30:00	18-11-2017 13:02:00	Backup Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR of Haflong end is not furnished by POWERRGRID. Analysis is done based on Relay Indications. Fault was likely in 132 kV Haflong - Umranshu Line. **As informed by POWERGRID, line tripped during charging attempt of of 132 kV Khandong-Umrangshu line.**													
	Remedial Measures	**Vegetation clearance of 132 kV Khandong-Umrangshu to be done by POWERGRID & AEGCL. Patrolling report to be submitted by POWERGRID & AEGCL. DR of Haflong end to be furnished by POWERRGRID.**													
NERLDC/TL/17/11/008	220 kV Mariani (PG) - Mokokchung (PG) 2 Line	POWERGRID	POWERGRID	POWERGRID	18-11-2017 08:55:00	18-11-2017 09:20:00	DP, ZI, Y-B-E	DP, ZI, Y-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR& EL outputs are not available. Relay indication is used for analysis. **Y-B-E Fault in the line likely due to vegetation. Same type of fault occurred on 6th Nov'17.**													
	Remedial Measures	**DR & EL outputs to be furnished by POWERGRID. Patrolling report to be submitted & vegetation clearance to be done by POWERGRID.**													
NERLDC/TL/17/11/009	220 kV Killing (Byrnihat) - Misa 1 Line	MePTCL	MePTCL	POWERGRID	18-11-2017 10:08:00	18-11-2017 10:20:00	R-Y-B Phase	General Trip	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR& EL outputs are not available. Relay indication is used for analysis. **3 phase Fault in the line.**													
	Remedial Measures	**MePTCL may intimate the root cause. DR& EL outputs of both ends are to be submitted by concerned utilities.**													
NERLDC/TL/17/11/010	132 kV Khandong - Umranshu Line	POWERGRID & AEGCL	NEEPCO	AEGCL	18-11-2017 10:55:00	18-11-2017 12:05:00	Backup Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/TL/17/11/011	132 kV Khandong - Umranshu Line	POWERGRID & AEGCL	NEEPCO	AEGCL	18-11-2017 12:27:00	18-11-2017 13:29:00	Backup Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
	Root Cause	DR not time synchronized. DR output from Khandong end shows B-E fault with gradually increasing fault current up to 1.1 kA and angle between Vb & Ib around 10-15 degrees indicate **vegetation fault in the line**. Fault cleared in 450 msec.													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & AEGCL. Patrolling report to be submitted by POWERGRID & AEGCL.**													
NERLDC/TL/17/11/012	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	18-11-2017 14:19:00	18-11-2017 14:34:00	R-Ph	DP, ZII, R-B-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR from Aizwal shows R-E fault with gradually increasing fault current up to 0.5 kA, gradually decreasing Vr up to 46 kV and angle between Vr & Ir around 6-8 degrees indicates high resistive fault likely due to vegetation. Backup protection operated and **fault cleared in 1250 msec from inception**.Z-3 initiated for around 54 msec. DR from Kumarghat shows R-E fault initially evolved in to R-B-E fault with fault current up to 1.1 kA, no much dip in Vr initially and angle between Vr & Ir at the time of R-E fault around 16-36 degrees indicate **high resistive fault likely due to vegetation**. Time of initiation of DR is not matching for both ends. POWERGRID may check the time synchronization. **Fault likely due to vegetation.**													
	Remedial Measures	Patrolling and vegetation clearance required and report need to submitted by POWERGRID. Resistive reach of DPR at both end needs to be reviewed to redue the fault clearing time.													
NERLDC/GD/17/11/009	132 kV Loktak - Rengpang Line	MSPCL	NHPC	MSPCL	20-11-2017 12:33:00	20-11-2017 14:04:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	Yes	No	No SPS
	Root Cause	DR output from Loktak end shows B-E fault with gradually increasing fault current up to 2.3 kA and angle between Vb & Ib around 13-15 degrees indicate **vegetation fault**. Fault cleared in 100 msec.													
	Remedial Measures	**Vegetation clearance to be done by MSPCL. Patrolling report to be submitted by MSPCL.**													
NERLDC/TL/17/11/013	132 kV Imphal - Silchar 1 Line	POWERGRID	POWERGRID	POWERGRID	24-11-2017 06:42:00	24-11-2017 06:58:00	DP, ZI, R-E	R phase	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Root Cause	DR from Silchar end shows R-E fault in Z-2, carrier aided trip with fault current of around 1.1 kA and angle between Vr & Ir around 78 degrees indicate **solid fault**. However, as informed by POWERGRID, fault was due to bamboo touching at Loc No. 353-354. Fault cleared in 80 msec.AR not operated. B & Y phases tripped at Silchar in 40 msec after R-phase opening													
	Remedial Measures	**Thorough patrolling of this line to be done by POWERGRID.**													
NERLDC/TL/17/11/014	400 kV Bongaigaon - Alipurduar 1 Line	ENICL	POWERGRID	POWERGRID	26-11-2017 04:34:00	26-11-2017 06:19:00	Direct Trip received	Over Voltage	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**Due to Over Voltage in Alipurduar.** DT received at Bongaigaon. No Over Voltage observed at Bongaigaon.													
	Remedial Measures	**Grading of Over Voltage Settings at Bongaigaon may be reviewed by POWERGRID to avoid tripping of IR lines first.**													

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/TL/17/11/015	+/- 800 kV Biswanath Chariali - Agra Pole I HVDC	POWERGRID	POWERGRID	POWERGRID	26-11-2017 04:35:00	26-11-2017 06:25:00	Fault on station 2 (APD)	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**Tripped due to disturbance in 400/220 kV Alipurduar Sub-Station.**													
	Remedial Measures	**Blocking of APD terminal would have prevented the tripping of Pole-I. This may be checked by POWERGRID.**													
NERLDC/TL/17/11/016	132 kV Khliehriat (MePTCL) - Khliehriat (PG) 2 Line	MePTCL	MePTCL	POWERGRID	28-11-2017 12:30:00	28-11-2017 12:43:00	Tripped	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**Unwanted tripping due to Over Reaching of DPR at Khliehriat.**													
	Remedial Measures	**DPR settings at Khliehriat(MePTCL) is to be reviewed by MePTCL.**													
NERLDC/TL/17/11/017	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	29-11-2017 17:03:00	30-11-2017 12:30:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**As informed by TSECL, vegetation problem is there in this corridor.**													
	Remedial Measures	**Vegetation clearance to be done by TSECL.**													
NERLDC/TL/17/11/018	+/- 800 kV Biswanath Chariali - APD - Agra 2 HVDC	POWERGRID	POWERGRID	POWERGRID	30-11-2017 11:16:00	30-11-2017 11:59:00	Trip signal received from Agra end(FOS 3)	Transducer faulty of Valve cooling conductivity system.	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Root Cause	**Transducer failure in Valve cooling conductivity system att Agra.**													
	Remedial Measures	**Referred to NLDC.**													
NERLDC/GD/17/11/012	132 kV Pasighat - Roing 1 Line	POWERGRID	DoP, Arunachal Pradesh	POWERGRID	30-11-2017 14:20:00	30-11-2017 16:18:00	Not Furnished	Direct Trip received	Not Applicable	Not Applicable	No	No	No	No	No SPS

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Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
	Root Cause	**Likley due to Vegetation fault in the line**. Analysis is done based on relay indications. DR outputs are not available. Likely Earth Fault Relay operated at Pasighat end as DT received at Roing.													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID.**													
NERLDC/GI/17/11/003	BgTPP Unit 2	NTPC	NTPC		04-11-2017 13:58:00	05-11-2017 09:00:00	Boiler tube leakage		No		No		No		No SPS
	Root Cause	**Due to leackage of boiler tubes.**													
	Remedial Measures	**As informed by NgTPP, leackages have been attended and repaired.**													
NERLDC/UI/17/11/001	Khandong Unit 2	NEEPCO	NEEPCO		10-11-17 10:29	10-11-17 11:13	DC supply problem		No	No	No	No	No	No	No SPS
	Root Cause	**Unit Control Board DC tripped due to earth fault(relay burned out).**													
	Remedial Measures	**Rectified**													
NERLDC/UI/17/11/002	Kopili Unit 4	NEEPCO	NEEPCO		13-11-2017 15:05:00	13-11-2017 16:39:00	Thrust gear temperature high		No		No		No		No SPS
	Root Cause	**Thrust Bearing Cooler failure**													
	Remedial Measures	**Repaced with spare**													

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/002	132 kV Sarusujai - Kahilipara 1 Line	AEGCL	AEGCL	AEGCL	03-11-2017 17:03:00	03-11-2017 17:14:00	No tripping	R-Y Phase fault	136	-	GD-I	0.025	Not Applicable	Not Applicable	No	No	No	No	No SPS	120	5.2 (R) & 5.9.6 (a) IEGC
	132 kV Sarusujai - Kahilipara 2 Line	AEGCL	AEGCL	AEGCL	03-11-2017 17:03:00	03-11-2017 17:14:00	No tripping	R-Y-B Phase, Earth Fault, Z-I, Z-II and Z-III					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Sarusujai - Kahilipara 3 Line	AEGCL	AEGCL	AEGCL	03-11-2017 17:03:00	03-11-2017 17:25:00	No tripping	R-Y-B Phase, Z-I					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	**Kahilipara area of Assam Power System and Motonga area of Bhutan Power System were connected with rest of NER Grid through 132 kV Sarusajai - Kahilipara I, II & III lines. 132 kV Kahilipara-Umtru I & II lines were kept open since 10:08 Hrs on 03.11.2017, 132 kV Rangia-Bornagar line and 132 kV Rangia-Nalbari line kept open (Cause: Low Voltage), 132kV Rangia -Sipajhar line, 132 kV Rangia- Rowta line and 132 kV Sisugram - Kamalpur line kept open (Cause: Overloading of 132 kV Rangia (AEGCL) - Motonga (BPC, Bhutan) line). At 17:03 Hrs on 03.11.2017, 132 kV Sarusajai - Kahilipara I, II & III lines tripped. Due to tripping of these elements, Kahilipara area of Assam Power System and Motonga area of Bhutan Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**																			
	Antecedent Conditions of NER Grid	**Antecedent Load: 2261 MW, Antecedent Generation: 2369 MW**																			
	***Substation Affected**	**Kahilipara, Dispur, Narangi, Chandrapur, Jagiroad, Kamalpur and Rangia Substation.**																			
	Restoration Details	**Power supply extended to Kahilipara, Chandrapur, Jagiroad, Kamalpur and Rangia substation of Assam Power System and Motonga substation of Bhutan Power System through 132 kV Sarusajai - Kahilipara 2 &3 lines at 17:14 Hrs on 03.11.2017.**																			
	Root Cause	DR& EL outputs are not available. **As informed by AEGCL, Due to mismatch in bus voltage input at Kahilipara (connection of line to bus-I and CVT input was from Bus-II), distance protection of 132 kV Sarusujai - Kahilipara 3 Line operated**. Tripping of this line led to over loading of other two lines.																			
	Remedial Measures	**Already rectified. Line CVT input to be given for distance Protection.**																			

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/003	132 kV Sarusujai - Kahilipara 1 Line	AEGCL	AEGCL	AEGCL	03-11-2017 17:20:00	03-11-2017 17:24:00	No tripping	R-Y-B Phase fault	136	-	GD-I	0.009	Not Applicable	Not Applicable	No	No	No	No	No SPS	120	5.2 (R) & 5.9.6 (a) of IEGC
	132 kV Sarusujai - Kahilipara 2 Line	AEGCL	AEGCL	AEGCL	03-11-2017 17:20:00	03-11-2017 17:24:00	No tripping	R-Y-B Phase fault					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	**Kahilipara area of Assam Power System and Motonga area of Bhutan Power System were connected with rest of NER Grid through 132 kV Sarusajai - Kahilipara I & II lines. 132 kV Sarusajai - Kahilipara III line was under outage since 17:03 Hrs on 03.11.2017, 132 kV Kahilipara-Umtru I & II lines were kept open since 10:08 Hrs on 03.11.2017, 132 kV Rangia-Bornagar line and 132 kV Rangia-Nalbari line kept open (Cause: Low Voltage), 132 kV Rangia -Sipajhar line, 132 kV Rangia- Rowta line and 132 kV Sisugram - Kamalpur line kept open (Cause: Overloading of 132 kV Rangia (AEGCL) - Motonga (BPC, Bhutan) line). At 17:20 Hrs on 03.11.2017, 132 kV Sarusajai - Kahilipara I & II lines tripped. Due to tripping of these elements, Kahilipara, area of Assam Power System and Motonga area of Bhutan Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**																		
	Antecedent Conditions of NER Grid	**Antecedent Load: 2346 MW, Antecedent Generation: 2490 MW**																			
	***Substation Affected**	**Kahilipara, Dispur, Narangi, Chandrapur, Jagiroad, Kamalpur and Rangia Substation.**																			
	Restoration Details	**Power supply extended to Kahilipara, Chandrapur, Jagiroad, Kamalpur and Rangia substation of Assam Power System and Motonga substation of Bhutan Power System through 132 kV Sarusajai - Kahilipara 2 &3 lines at 17:24 Hrs on 03.11.2017.**																			
	Root Cause	DR& EL outputs are not available. **As informed by AEGCL, Due to mismatch in bus voltage input at Kahilipara (connection of line to bus-I and CVT input was from Bus-II), distance protection of 132 kV Sarusujai - Kahilipara 3 Line operated**. Tripping of this line led to over loading of other two lines.																			
	Remedial Measures	**Already rectified. Line CVT input to be given for distance Protection.**																			

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/004	220 kV Kopili - Misa 1 Line	POWERGRID	NEEPCO	POWERGRID	09-11-17 12:14	09-11-17 12:36	Not Furnished	No tripping	25	275	GD-I	0.009	Not Applicable	Not Applicable	No	No	No	No	No SPS	-	5.2 (R) & 5.9.6 (a) of IEGC
	220 kV Kopili - Misa 3 Line	POWERGRID	NEEPCO	POWERGRID	09-11-17 12:14	09-11-17 12:37	Not Furnished	No tripping					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Badarpur - Khliehriat 1 Line	POWERGRID	POWERGRID	POWERGRID	09-11-17 12:14	09-11-17 12:29	No tripping	-					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Khliehriat - Mustem 1 Line	MePTCL	MePTCL	MePTCL	09-11-17 12:14	09-11-17 12:41	No tripping	Over current					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	132 kV Khandong - Umranshu 1 Line	POWERGRID & AEGCL	NEEPCO	AEGCL	09-11-17 12:14	09-11-17 12:44	Not Furnished	Not Furnished					Not Applicable	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	**Khleihriat area of Meghalaya Power System, Khandong, Kopili and Umrangsho area of Assam Power System were connected with rest of NER Grid through 220 kV Kopili - Misa I & III lines, 132 kV Badarpur - Khleihriat (PG) line &132 kV NEHU - Mustem line. 132 kV NEIGRIHMS - Khleihriat line was under shutdown since 09:00 Hrs on 09.11.17, 220 kV Misa - Kopili II line was under shutdown since 10:29 Hrs on 09.11.17, 132 kV Lumshnong - Panchgram line kept open (Cause: over loading), 132 kV Haflong - Umrangsho line was under shutdown since 10:39 Hrs on 09.11.17. At 12:14 Hrs on 09.11.2017, 220 kV Kopili - Misa I & III lines, 132 kV Badarpur - Khleihriat (PG) line &132 kV NEHU - Mustem line tripped. Due to tripping of these elements, Khleihriat area of Meghalaya Power System, Khandong, Kopili and Umrangsho area of Assam Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																			
	Antecedent Conditions of NER Grid	**Antecedent Load: 1399 MW, Antecedent Generation: 1651 MW**																			
	***Substation Affected**	**Khandong & Kopili Power Station, Khliehriat and Umrangso Substation**																			
	Restoration Details	**Power supply extended to Kopili Power station through 220 kV Misa-Kopili I Line at 12:36 Hrs, Khliehriat Station through 132 kV Badarpur-Khliehriat Line at 12:29 Hrs, Mustem Sub- Station through 132 kV Khliehriat-Mustem Line at 12:41 Hrs and to Umrangsho Substation through 132 kV Khandong-Umrangsho Line at 12:44 Hrs on 09.11.2017.**																			
	Root Cause	DR output of Kopili Power station for Misa-Kopili I line shows that **open circuit fault** occurred in R-Phase. At 12:14:11 Hrs R-Phase current dropped to zero ampere and In increased to 0.16 kA.After 1.1 sec, line tripped. Relay operation is not captured in DR. As informed by Kopili, **R-phase CB maloperated and other phase CBs tripped in PD after 1 sec**.Due to tripping of 220 kV Misa-Kopili I line, other lines tripped due to over loading.																			
	Remedial Measures	**Condition based monitoring of equipments/lines is to be done by all utilities to avoid these kind of unwanted tripping. Kopili, NEEPCO is to intimate the eaxct reason for tripping of R-phase CB. PD setting of 1 sec at Kopili for Misa I line is to be increased to 1.5 sec.**																			

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/006	132 kV Aizawl - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	16-11-2017 20:36:00	16-11-2017 21:10:00	DP, ZII, B-E	No tripping	3	31	GD-I	0.002	Not Furnished	Not Applicable	No	No	No	No	No SPS	1360	5.2 (R) , 5.9.6 (a) of IEGC and 3 (e) of CEA Grid Standard Regulations
	132 kV Badarpur - Kolasib Line	POWERGRID	POWERGRID	P&ED, Mizoram	16-11-2017 20:36:00	16-11-2017 21:08:00	DP, ZII, B-E	No tripping					Not Furnished	Not Applicable	No	No	No	No	No SPS		
	Brief Description of the Incident	**Kolasib area of Mizoram Power System was connected with rest of NER Grid through 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line. At 20:36 Hrs on 16.11.2017, 132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line tripped. Due to tripping of these elements, Kolasib area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																			
	Antecedent Conditions of NER Grid	**Antecedent Load: 1730 MW, Antecedent Generation: 1936 MW**																			
	***Substation Affected**	**Bairabi Power Station, Turial Power Station and Kolasib Substation**																			
	Restoration Details	**Power supply extended to Bairabi Power Station, Turial Power Station and Kolasib Substation through 132 kV Badarpur - Kolasib Line at 21:08 Hrs on 16.11.2017.**																			
	Root Cause	DR from Badarpur shows B-E fault in Z-II (fault cleared after 530 msec since inception), fault current of around 1.1 kA, not much dip in voltage (touched 67 kV) and angle between Vb & IB around 70-73 degrees **solid nature of fault**. As informed by POWERGRID, cable failure occured in ICT-II, 33 kV side at Kolasib state. Fault was cleared by 132 kV Badarpur-Kolasib line & 132 kV Aizwal- kolasib line.																			
	Remedial Measures	**Healthiness of Unit Protections and HV side Protections of ICT-II at Kolasib are to be checked by P&ED Mizoram and test results to be submitted to NERPC/NERLDC.**																			

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/010	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-11-2017 15:04:00	23-11-2017 15:29:00	Direct Trip received	Earth Fault	16	16	GD-I	0.016	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	120	5.2 (R) & 5.9.6 (a) of IEGC
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept idle charged from Kohima, 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 15:04 Hrs on 23.11.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																			
	Antecedent Conditions of NER Grid	**Antecedent Load: 1479 MW, Antecedent Generation: 1678 MW**																			
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																			
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 15:29 Hrs on 23.11.2017.**																			
	Root Cause	As informed by POWERGRID**, line tripped during NTAMC works.**																			
	Remedial Measures	**R & M works to be carried out carefully and SoPs to be followed strictly by power utilities to avoid unwanted tripping of elements.**																			

Gid Disturbance in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Load Loss in MW	Generation Loss in MW	Category of GD/GI as per CEA Standards	Energy Unserved (in MU)	Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation	Fault clearing time in ms	Violation of Regulation / Standard
			End A	End B			End A	End B					End A	End B	End A	End B	End A	End B			
NERLDC/GD/17/11/011	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	30-11-2017 12:34:00	30-11-2017 12:48:00	Tripped during NTAMC adaptation work	No tripping	19	8	GD-I	0.004	Not Applicable	Not Applicable	No	Yes	No	No	No SPS	80	5.2 (R) & 5.9.6 (a) of IEGC
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima(DoP, Nagaland) line. 132 kV Karong - Kohima line kept idle charged from Kohima, 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 12:34 Hrs on 30.11.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**																			
	Antecedent Conditions of NER Grid	**Antecedent Load: 1447 MW, Antecedent Generation: 1580 MW**																			
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**																			
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 12:48 Hrs on 30.11.2017.**																			
	Root Cause	As informed by POWERGRID**, line tripped during NTAMC works.**																			
	Remedial Measures	**R & M works to be carried out carefully and SoPs to be followed strictly by power utilities to avoid unwanted tripping of elements.**																			

***Affected substation of voltage level of 132 kV and above**

Note: Root Cause and Remedial Measures for these events is available in folder "Root Cause & Remedial Measures of Grid Events" in the following link: http://nerldc.org/Monthly_DB.aspx

Grid Incidents in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/11/001	AGBPP Unit III	NEEPCO	NEEPCO		03-11-2017 15:37:00	03-11-2017 16:50:00	GT Electrical Trip (86 T2)		No		No		No		No SPS
	Root Cause	Due to mal-operation of Geneartor Transformer trip relay.													
	Remedial Measures	Rectified.Relay may be repaced. Connection of input wires may be checked.													
NERLDC/GI/17/11/002	Khandong Unit II	NEEPCO	NEEPCO		03-11-2017 16:28:00	03-11-2017 19:01:00	Rotor earth fault		No		No		No		No SPS
	Root Cause	From DR output from Khandong shows Voltage in all the phases differ by approx 100 Volt and magnitude of maximum assymetric current of all the phase is approx 200 A which is due to asymmetric magnetic pole. Which clearly indicate **Rotor Earth fault.** Phase difference between Generator and system current is 180 degree and fault is cleared in 570 ms.													
	Remedial Measures	**Cleaning of Dust on bearing of slip ring of Rotor circuit may be done on regular basis. Arrangements may be done for cleaning of dust in running mode of Generator shaft.**													
NERLDC/GI/17/11/003	BgTPP Unit 2	NTPC	NTPC		05-11-2017 15:45:00	05-11-2017 19:14:00	Loss of flame		No		No		No		No SPS
	Root Cause	**De linking of PA fans blade pitch control actuator.**													
	Remedial Measures	**PA header controller/ Running PA fan blade pitch to be kept in "Manual" while checking blade pitch control of the 2nd fan. Same practice will be ensured in FD fans.**													
NERLDC/GI/17/11/004	BgTPP Unit 2	NTPC	NTPC		05-11-2017 22:45:00	06-11-2017 01:47:00	Loss of fuel		No		No		No		No SPS
	Root Cause	**De linking of PA fans blade pitch control actuator.**													
	Remedial Measures	**PA header controller/ Running PA fan blade pitch to be kept in "Manual" while checking blade pitch control of the 2nd fan. Same practice will be ensured in FD fans.**													
NERLDC/GI/17/11/005	BgTPP Unit 2	NTPC	NTPC		07-11-17 1:41	07-11-17 15:12	Due to problem in Auxiliary supply		No	No	No	No	No	No	No SPS
	Root Cause	**Tripping of Tie Transformer # 2 resulted in loss of station supply & subsequent tripping of Air Compressors on loss of PLC supply which is fed from station ACDB.**													
	Remedial Measures	**The de-bouncing time in the Relay changed to 20 milli second as per Standard Practice to avoid this type of spurious tripping.**													

Grid Incidents in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/11/005	BgTPP Unit 1	NTPC	NTPC		07-11-17 1:51	07-11-17 8:12	Due to problem in Auxiliary supply		No	No	No	No	No	No	No SPS
	Root Cause	**Tripping of Tie Transformer # 2 resulted in loss of station supply & subsequent tripping of Air Compressors on loss of PLC supply which is fed from station ACDB.**													
	Remedial Measures	**The de-bouncing time in the Relay changed to 20 milli second as per Standard Practice to avoid this type of spurious tripping.**													
NERLDC/GI/17/11/006	BgTPP Unit 2	NTPC	NTPC		08-11-17 23:56	09-11-17 1:41	Mill Trip		No	No	No	No	No	No	No SPS
	Root Cause	**Mill tripped due to looseness / less insulating portion at the termination point in control supply wires connected to module**													
	Remedial Measures	**The control supply wires tightened with proper insulation, Control fuse replaced.**													
NERLDC/GI/17/11/007	BgTPP Unit 2	NTPC	NTPC		10-11-17 15:45	10-11-17 18:18	Drum Level low		No	No	No	No	No	No	SPS not operated
	Root Cause	**Due to low boiler drum level.**													
	Remedial Measures	**BgTPP may intimate the reason for low boiler drum level for suggesting remedial measures.**													
NERLDC/GI/17/11/008	AGBPP Unit 2	NEEPCO	NEEPCO		13-11-2017 20:17:00	14-11-2017 13:12:00	Minimum SF6 gas pressure lockout		No		No		No		No SPS
	Root Cause	**Tripped due to low SF6 gas pressure in GT breaker of Unit 2.**													
	Remedial Measures	**Gas pressure need to monitor on regular basis.**													
NERLDC/GI/17/11/009	BgTPP Unit 2	NTPC	NTPC		18-11-2017 13:47:00	18-11-2017 16:21:00	I.D fan Tripped		No		No		No		No SPS
	Root Cause	**It was found that both the UPS 1 & 2 has tripped on over voltage & UPS supply has changed over to bypass mode. It is suspected that UPS supply interruption might have caused the problem in VFD. However, no disturbance was observed in other systems.**													
	Remedial Measures	**Subsequently on 22-11-17 during shutdown, the UPS was checked by the OEM & UPS 1 IGBT transistor, IGBT drive card & also problem in AC inverter transformer winding rectified. Checking of UPS supply changeover from UPS to bypass & bypass to UPS was done in all 4 channels in ON condition & no problem was found.**													
NERLDC/GI/17/11/010	AGTCCPP Unit 1	NEEPCO	NEEPCO		18-11-2017 21:01:00	Not yet restored	Neutral Voltage Displacement Relay operated		No		No		No		No SPS
	Root Cause	As informed by AGTCCPP, **R-phase bus duct fault (insulation failure)** occurred. Due to unbalanced fault, Neutral Voltage Displacement occurred.													
	Remedial Measures	Repaired.													

Grid Incidents in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/11/011	Kopili Unit 1	NEEPCO	NEEPCO		20-11-2017 15:00:00	21-11-2017 12:14:00	Excitation Failure		No		No		No		No SPS
	Root Cause	Mal-operation of excitation system.													
	Remedial Measures	Kopili to rectify the problem at the earliest.													
NERLDC/GI/17/11/012	AGBPP Unit 4	NEEPCO	NEEPCO		20-11-2017 23:30:00	20-11-2017 23:58:00	Gas booster tripped		No		No		No		No SPS
NERLDC/GI/17/11/012	AGBPP Unit 8	NEEPCO	NEEPCO		20-11-2017 23:30:00	21-11-2017 02:01:00	Gas booster tripped		No		No		No		No SPS
NERLDC/GI/17/11/013	AGBPP Unit 6	NEEPCO	NEEPCO		20-11-2017 23:51:00	21-11-2017 12:12:00	Gas booster tripped		No		No		No		No SPS
	Root Cause	Gas booster triopped due to Unit Bypass Valve limit switch damage													
	Remedial Measures	Rectified													
NERLDC/GI/17/11/014	Khandong Unit 2	NEEPCO	NEEPCO		23-11-2017 12:30:00	23-11-2017 17:18:00	Generator rotor eart fault		No		No		No		No SPS
	Root Cause	Tripped due to Rotor Earth Fault due to carbon dust.													
	Remedial Measures	Cleaning of Dust on bearing of slip ring of Rotor circuit may be done on regular basis. Arrangements may be done for cleaning of dust in running mode of Generator shaft.													
NERLDC/GI/17/11/015	AGBPP Unit 4	NEEPCO	NEEPCO		24-11-2017 10:10:00	24-11-2017 12:03:00	due to low fuel gas pressure		No		No		No		No SPS
NERLDC/GI/17/11/015	AGBPP Unit 5	NEEPCO	NEEPCO		24-11-2017 10:10:00	24-11-2017 10:48:00	due to low fuel gas pressure		No		No		No		No SPS
	Root Cause	Tripped due to low fuel gas pressure.													
	Remedial Measures														

Grid Incidents in NER Grid for the month of November 2017

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted		DR & EL submitted		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GI/17/11/016	AGTCCPP Unit 2	NEEPCO	NEEPCO		24-11-2017 16:02:00	24-11-2017 19:23:00	Due to generator cooling problem		No		No		No		No SPS
	Root Cause	Water Cooling Pump problem													
	Remedial Measures	Repaced with spare													
NERLDC/GI/17/11/017	Kopili Unit 1	NEEPCO	NEEPCO		27-11-2017 03:07:00	27-11-2017 12:42:00	Field Supply failure		No		No		No		No SPS
	Root Cause	Exicitation failure due to DC supply failure													
	Remedial Measures	Reliability of DC supply to be ensured by Kopili,NEEPCO.													
NERLDC/GI/17/11/018	BgTPP Unit 2	NTPC	NTPC		27-11-2017 09:24:00	28-11-2017 06:42:00	Excitation Failure		No		No		No		No SPS
	Root Cause	Exicitation failure													
	Remedial Measures	NTPC may intimate the root cause and remedial actions taken.													
NERLDC/GI/17/11/019	BgTPP Unit 2	NTPC	NTPC		29-11-2017 05:39:00	29-11-2017 09:08:00	Due to tripping of Feed water pump		No		No		No		No SPS
	Root Cause	Due to tripping of Feed water pump													
	Remedial Measures	NTPC may intimate the root cause and remedial actions taken.													

भारत सरकार

सत्यमेव जयते

Government of India

विधुत मंत्रालय

Ministry of Power

केंद्रिय विधुत प्राधिकरण

Central Electricity Authority

राष्ट्रीय विद्युत समिति

National Power Committee

No. 3/NRCE(P&C)/NPC/CEA/2017/548-554 Date:30th August 2017

विषय: **Record Notes of Discussions in the 5th Meeting of Subgroup in respect of "Preparation of reliability Standards for Protection System and Communication System" – reg.**

महोदय/Sir,

The record notes of discussions in the 5th meeting of the Subgroup for preparation of reliability standards for Protection System and Communication System held on 18.08.2017 at New Delhi is enclosed for kind information please.

भवदीय / Yours faithfully

(धी.कु.श्रीवास्तव / D.K.Srivastava)

निदेशक, सदस्य संयोजक / Director, Member Convener

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To:

1. Shri Upendra Kumar, Superintending Engineer (O), NRPC, New Delhi.
2. Shri Y.K. Swarnkar Director, PSETD Div., CEA, New Delhi.
3. Vikram Singh, Director (GM), CEA, New Delhi.
4. Shri Rajil Srivastava, AGM (Engg-S/s.), POWERGRID, Gurgaon.
5. Shri N.Gunasekaran, EE/P&C, TANTRANSCO, Guindy, Chennai.
6. Shri N.L Jain, DGM, POSOCO, New Delhi.
7. Shri A.K. Haldar, GM (OS- Elec), NTPC, COS, EOC, Noida

CENTRAL ELECTRICITY AUTHORITY
NATIONAL POWER COMMITTEE

Summary Record of Discussions in the Fifth Meeting of Subgroup for Preparation of Reliability Standards for Protection System and Communication System held on 18th August 2017 at New Delhi

1. **Introduction:**

1.1 The 5th Meeting of the Subgroup for preparation of "Reliability Standards for Protection System and Communication System" for Indian Power System was held on 18th August, 2017 in NRPC Conference Hall, Katwaria Sarai, New Delhi. The list of participants is at Annexure-I.

1.2 Chief Engineer, NPC & Chairperson, Subgroup welcomed the members and participants to the meeting. He requested for valuable contribution from all members for finalizing the proposed broad areas. He requested Director (NPC) to take up the agenda for discussion.

1.3 Director, NPC & Member Convener of the Subgroup that new members Shri. Upendra Kumar SE (O), NRPC and Shri. Vikram Singh, Director, GM Division, CEA have joined this group. He extended warm welcome to all the members and participants to the meeting. He informed that the Sub group in its first meeting had finalized 15 broad areas for preparation of Reliability standards for Protection System. Out of the 15 broad areas, the Standards for the following 6 broad areas have been finalized in the four meetings of the Subgroup:

i. Definition of Protection System and its Philosophy & aspects related to Protection Coordination
ii. Regional Disturbance Monitoring and Reporting
iii. Protection Misoperation Reporting and Monitoring of Corrective Action
iv. Reporting of Special Protection Scheme Misoperation
v. Transmission and Generation Protection System Maintenance and Testing
vi. Special Protection System Review Procedure

The Subgroup had observed that it is not feasible to implement voltage collapse system in complex Indian Power System and accordingly it was decided to drop the broad area

Need for voltage collapse system from the scope of the subgroup. The broad area *Sudden Pressure Release Relay* had also been dropped in view of no significance sudden pressure release relay in Indian power system.

He further informed that the standards in respect of the following broad areas were proposed for deliberation in this meeting:

- Transmission Relay Loadability
- Generator Relay Loadability
- Relay Performance During Stable Power Swings
- Time Synchronization Issues:
- DC system
- Minimum event list for Event logging facility
- Compliance Monitoring

2. CONFIRMATION OF THE RECORD NOTES OF DISCUSSIONS IN THE FOURTH MEETING OF SUBGROUP

The Record Notes of the 4th meeting held on 27th March 2017 was issued on 13th April 2017. No comments were received.

The Record Notes of the 4th meeting held on 27th March 2017 were confirmed.

3. SUMMARY OF DELIBERATIONS IN THE MEETING:

3.1 The sub group deliberated on the following items:

- Transmission Relay Loadability
- Generator Relay Loadability
- Relay Performance During Stable Power Swings
- Time Synchronization Issues
- DC system
- Minimum event list for Event logging facility
- Compliance Monitoring

3.2 In the previous meeting, PGCIL was requested to provide material on Transmission Relay Loadability. Subgroup has deliberated on the material provided by PGCIL and finalised the standard for this broad area.

3.3 Regarding the broad area Generator Relay Loadability, Subgroup was of the view that preparation of standard for Generator side protection is not in the scope of the subgroup. Hence, it was decided to drop this broad area.

3.4 The broad area "Minimum event list for Event logging facility" has been already covered under Requirement 2 of broad area *Disturbance Monitoring and Reporting*. Hence, Subgroup decided to not cover this broad area separately.

3.5 It was agreed by all the Members that to provide the inputs on the broad area for "Relay Performance during Stable Power Swing" after detailed study. Based on the inputs received from the members the broad area would be finalized.

3.6 In line with the deliberations in the meeting and based on the inputs received from the members, the standards for the following broad areas have been finalized:

- ✓ Transmission Relay Loadability
- ✓ Relay Performance During Stable Power Swings
- ✓ Time Synchronization Issues
- ✓ DC system
- ✓ Compliance Monitoring

4. It was decided that the complete draft standard would be circulated to all the members and RPCs for their final inputs/observation, if any. Accordingly, the completed draft wrt eleven (11) broad areas of "Reliability Standards for Protection System" is enclosed at **Annexure II**.

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ANNEXURE-I

List of Participants in the 5th Meeting of Sub-Group of NRCE for Preparation of "Protection Standards and Communication Standards for Power System" held on 18th August 2017 at New Delhi.

Central Electricity Authority (CEA)

1. Shri Pardeep Jindal, Chief Engineer (NPC)
2. Shri D.K. Srivastava, Director (NPC)
3. Shri Y.K. Swarnkar, Director(PSETD)
4. Shri Vikram Singh, Director (GM)
5. Shri Meka Ramakrishna, Deputy Director (NPC)
6. Shri Himanshu Lal, Assistant Director-I (NPC)
7. Shri Deepanshu Rastogi, Assistant Director-I (NPC)

Northern Regional Power Committee (NRPC)

1. Shri Upendra Kumar, Superintending Engineer

Western Regional Power Committee (WRPC)

1. Shri P.D. Lone, Executive Engineer

Eastern Regional Power Committee (WRPC)

1. J.G. Rao, Executive Engineer

National Thermal Power Corporation (NTPC)

1. Shri Somes Bandyopadhyay, Assistant General Manager

Power System Operation Corporation (POSOCO)

1. Shri N.L. Jain, Deputy General Manager

Tamil Nadu Transmission Corporation Limited (TANTRANSCO)

1. Shri N. Gunasekaran, Executive Engineer

ANNEXURE-II

(1) DEFINITIONS RELATED TO PROTECTION SYSTEM

1.1 DEFINITIONS:

This part of the standard will be formed after the completion of the whole document.

1.2 GENERAL PHILOSOPHY OF PROTECTION SYSTEM:

There shall be protection philosophy which shall be prepared and adopted by each RPC in coordination with stakeholders in the concerned region in accordance with below mentioned objectives, design criteria and other details. However, protection design in a particular system may vary depending upon judgment and experience in the broad contours of above protection philosophy. Consideration must also be given to the type of equipment to be protected as well as the importance of this equipment to the system. Further, protection must not be defeated by the failure of a single component:

1.2.1 Objectives:

The basic objectives of any protection schemes should be to:

(i) Mitigate the effect of short circuit and other abnormal conditions in minimum possible time and area.

(ii) Indicate the location and type of fault and

(iii)Provide effective tools to analyze the fault and decide remedial measures.

1.2.2 Design Criteria: To accomplish the above objectives, the four design criteria for protection that should be considered are: (i) fault clearing time; (ii)selectivity; (iii)sensitivity and (iv) reliability (dependability and security).

1.2.2.1 Fault clearing time: In order to minimize the effect on customers and maintain system stability, fault clearing time shall be as per CEA Grid Standard Regulations 2010.

1.2.2.2 Selectivity: To ensure Selectivity, coordination shall be ensured with the adjacent protection schemes including breaker failure, transformer downstream relays, generator protection and station auxiliary protection.

1.2.2.3 Sensitivity: To ensure Sensitivity, the settings must be investigated to determine that they will perform correctly for the minimum fault current envisaged in the system, yet remain stable during transients and power swings from which the system can recover.

1.2.2.4 Reliability: To ensure Reliability, two independent auxiliary direct current-supplies shall be provided for Main-I and Main-II relays. The Main-I and Main-II relays should be from two different makes or operating with different algorithm. The CB´s shall have two independent trip coils and two independent trip circuits. Each protection device should trip at least one of them by independent auxiliary DC- supplies.

1.2.2.5 Security: To ensure Security, the protection shouldn't limit the maximum transmission capacity of the element. Distance protection in particular could cause spurious tripping due to specific grid conditions, in case of high load operation. Therefore, any special topologies must be known and considered for

protection parameterization. For parallel Over Head Lines it is necessary to consider the rapid increase of load current in the healthy line when the faulty line trips and the protection operation must allow such conditions The load encroachment detection function of the relays must be used, when the highest distance zone resistance reach conflicts with the maximum transmitted load on the protected element.

1.3 PHILOSOPHY OF LINE PROTECTION:

Transmission circuit construction can be considered in three main categories viz.: Overhead construction, Underground cable construction and Composite (overhead plus underground) construction. The requirements of overhead line and cable protection systems vary greatly, due to the exposure of transmission circuits to a wide variety of environmental hazards and are subjected to the wide variations in the format, usage and construction methodologies of transmission circuits. The type of protection signaling (tele- protection) or data communication systems required to work with the protection systems will also influence protection scheme requirements.

Transmission circuit Main protection is required to provide primary protection for the line and clear all type of faults on it within shortest possible time with reliability, selectivity and sensitivity. Transmission circuit back-up protection shall cater for failure of any main protection system to clear any fault that it is expected to clear. A protection function that offers back-up for most faults may also provide main protection for some fault conditions. Combinations of main and back-up protection systems should be used to address the main and application specific requirements for transmission circuits.

1.3.1 Design Criterions: While designing the scheme for protection of transmission lines following criteria shall be included:

(i) The systems applied must be capable of detecting all types of faults, including maximum expected arc resistance that may occur at any location on the protected line.

(ii) The protection should be set not to trip under system transient conditions, which are not short circuits. Conversely where the short circuit current is low due to local grid conditions (weak network) or due to high resistance of the arc, this must be taken into consideration to trip the relay by using the most appropriate criterion, without jeopardizing the unwanted tripping during heavy load conditions. Protection relays must allow the maximum possible loadability of the protected equipment, while ensuring the clearing of anticipated faults according to the simulation studies.

(iii) The design and settings of the transmission line protection systems must be such that, with high probability, operation will not occur for faults external to the line or under non-fault conditions.

(iv) Settings related to the maximum possible loadability of the protected equipment shall be specified after a suitable load flow study and contingency analysis.

1.3.2 Reliability Criterions:

A. For transmission line having voltages at 220kV and above: High speed Duplicated Main Protection (Main-I and Main-II) shall be provided and at least one of them being carrier aided non-switched four zone distance protection. The other protection may be a phase segregated current differential (this may require digital communication) or a carrier aided non-switched distance protection. Wherever OPGW or separate optic fibre laid for the Communication is available, Main-I and Main-II protection shall be the line differential protection with distance protection as backup (builtin Main relay or standalone). For very short line (less than 10 km), line differential protection with distance protection as backup (built-in Main relay or standalone) shall be provided mandatorily as Main-I and Main-II.).

In addition to above, following shall also be provided:

(i) Two stage over-voltage protection. However, in case of 220 kV lines, in cases where system has grown sufficiently or in case of short lines, utilities on their discretion may decide not to provide this protection.
(ii) Auto reclose relay suitable for 1 ph or 3 ph (with deadline charging and synchro-check facility) reclosure.
(iii) Sensitive IDMT directional E/F relay (standalone or as built-in function of Main-I & Main-II relay).

Main Protection shall have following features:

a. The Main-I and Main-II protection shall be numerical relays of different makes or employ different fault detection algorithm.
b. Each distance relay shall protect four independent zones (three forward zones and one reverse zone). It shall be provided with carrier aided tripping.
c. The relays should have sufficient speed so that they will provide the clearing times as defined in the latest revision of CEA Grid Standards Regulations.
d. The Main-I and Main-II relays shall be powered by two separate DC source.
e. Both, Main-I and Main-II shall send separate initiation signal to Breaker Failure Relay.
f. Internal Directional Earth Fault function shall be set to trip the line in case of high resistance earth faults.
g. The Broken Conductor detection shall be used for alarm purpose only.
h. The internal overvoltage function shall be used to protect the line against over voltages. The protection shall be set in two stages. The lines emanating from same substation shall be provided with pick-up as well as time grading to avoid concurrent trippings. The overvoltage relay shall have better than 97% drop-off to pick-up ratio.

B. For transmission line having voltages at 132kV: There should be at least one carrier aided non-switched four zone distance protection scheme. In addition to this, another non-switched/switched distance scheme or directional over current and earth fault relays should be provided as back up. Main protection should be suitable for single and three phase tripping. Additionally, auto-reclose relay suitable for 1 ph or3 ph (with dead line charging and synchro-check facility) reclosure shall be provided. In case of both line protections being Distance

Protections, IDMT type Directional E/F relay (standalone or as built-in function of Main-I & Main-II relay) shall also be provided additionally.

1.3.3 Following types of protection scheme may be adopted to deal with faults on the lines:

1.3.3.1. Distance Protection scheme: The scheme shall be based on the measuring the impedance parameters of the lines with basic requirements as below:

a. Each distance relay shall protect four independent zones (three forward zones and one reverse zone). It shall be provided with carrier aided tripping.

b. Each Distance Relay:

i. Shall include power swing detection feature for selectively blocking, as required.

ii. Shall include suitable fuse-failure protection to monitor all types of fuse failure and block the protection.

iii. Shall include load encroachment prevention feature like Load blinder.

iv. Shall include Out of Step trip function.

v. Distance relay as Main protection should always be complemented by Directional ground protection to provide protection for high resistive line faults.

vi. Shall be capable to protect the series compensated lines from voltage inversion, current inversion phenomenon. Special measures must be taken to guard against these phenomenon.

1.3.3.2 Line Differential Protection: The scheme shall be based on the comparing the electrical quantities between input and output of the protected system. Provided that:

(a) Due to the fact that short lines and/or cables do not have enough electrical length, the current differential relay should always be used.

(b) For Cables, at least a differential line protection shall be used in order to guarantee fast fault clearing while maintaining security. The reason being that there are many sources of errors associated to other protection principles, especially for ground faults in cables.

The differential protection shall have following requirements:

(i) Line differential as Main-I with inbuilt Distance Protection shall be installed for all the lines irrespective of length (subject to technical limitations). The inbuilt distance protection feature shall get automatically enabled in case of communication failure observed by the differential relay.

(ii) The differential relays provided in 220kV and above system must operate in less than 30 ms.

(iii) The current differential protection should a reliable type (preferably digital). The protection should be of the segregate phase type, i.e. it should be able to detect the phase in fault and therefore for the case of single line-

ground (SLG) faults to trip only the phase in fault (also to establish single phase A/R). The synchronization of the measured values is done via a communication system. The communication system for differential line protection should be based on fiber optic and any equipment should comply with the IEC 60834.

1.3.4. Auto Reclosing:

The single phase high speed auto-reclosure (HSAR) at 220 kV level and above shall be implemented, including on lines emanating from generating stations. If 3-phase autoreclosure is adopted in the application of the same on lines emanating from generating stations should be studied and decision taken on case to case basis by respective RPC.

1.3.4.1 AR Function Requirements:

It shall have the following attributes:

(i) Have single phase or three phase reclosing facilities.
(ii) Have a continuously variable single phase dead time.
(iii) Have continuously variable three phase dead time for three phase reclosing.
(iv) Have continuously variable reclaim time.
(v) Incorporate a facility of selecting single phase/three phase/single and three phase auto-reclose and non-auto reclosure modes.
(vi) Have facilities for selecting check synchronizing or dead line charging features.
(vii) Be of high speed single shot type
(viii) Suitable relays for SC and DLC should be included in the overall auto-reclose scheme if three phase reclosing is provided.
(ix) Should allow sequential reclosing of breakers in one and half breaker or double breaker arrangement.

1.3.4.2. Scheme Special Requirements:

(i) Modern numerical relays (IEDs) have AR function as built-in feature. However, it is recommended to use standalone AR relay or AR function of Bay control unit (BCU) for 220kV and above voltage lines. For 132kV lines, AR functions built-in Main distance relay IED can be used.
(ii) Fast simultaneous tripping of the breakers at both ends of a faulty line is essential for successful auto-reclosing. Therefore, availability of protection signaling equipment is a pre-requisite.
(iii) Starting and Blocking of Auto-reclose Relays:
Some protections start auto-reclosing and others block. Protections which start A/R are Main-I and Main-II line protections. Protections which block A/R are:

a. Breaker Fail Relay
b. Line Reactor Protections
c. O/V Protection
d. Received Direct Transfer trip signals
e. Busbar Protection
f. Zone 2/3 of Distance Protection

g. Carrier Fail Conditions
h. Circuit Breaker Problems.
i. Phase to Phase Distance Trip

When a reclosing relay receives start and block A/R impulse simultaneously, block signal dominates. Similarly, if it receives 'start' for 1-phase fault immediately followed by multi-phase fault the later one dominates over the previous one.

1.3.4.3 Requirement for Multi breaker Arrangement:

Following schemes shall be adhered to multi-breaker arrangements of one and half breaker or double breaker arrangement:

(i) In a multi-C.B. arrangement one C.B. can be taken out of operation and the line still be kept in service. After a line fault only those C.Bs which were closed before the fault shall be reclosed.
(ii) In multi-C.B. arrangement it is desirable to have a priority arrangement so as to avoid closing of both the breakers in case of a permanent fault.
(iii) A natural priority is that the C.B. near the busbar is reclosed first. In case of faults on two lines on both sides of a tie C.B. the tie C.B. is reclosed after the outer C.Bs. The outer C.Bs. do not need a prioritizing with respect to each other.
(iv) In case of bus bar configuration arrangement having a transfer breaker, a separate auto- reclosure relay for transfer breaker is recommended.

1.3.4.4 Setting Criteria:

(i) Auto reclosing requires a dead time which exceeds the de-ionising time. The circuit voltage is the factor having the predominating influence on the de-ionising time. Single phase dead time of 1.0 sec. is recommended for 765 kV, 400 kV and 220 kV system. For the lines emanating from generating stations single-phase dead time upto 1.5 sec may be adopted.
(ii) According to IEC 62271-101, a breaker must be capable of withstanding the following operating cycle with full rated breaking current:

O - 0.3 s - CO - 3 min - CO

The recommended operating cycle at 765kV, 400 kV and 220 kV is as per the IEC standard. Therefore, reclaim time of 25 Sec. is recommended.

1.3.5. Power Swing Blocking and Out of Step (OOS) Function

Large interconnected systems are more susceptible to Power Swings in comparison to the erstwhile smaller standalone systems. Inter-area Power Swings can be set up even due to some event in far flung locations in the system. During the tenure of such swings, outage of any system element may aggravate the situation and can lead to instability (loss of synchronism). It is hence extremely important that unwanted tripping of transmission elements need to be prevented, under these conditions. Distance protection relays demand special consideration under such a situation, being susceptible to undesirable mis-operation during Power swings which may be recoverable or

irrecoverable power swings. Following steps may be adopted to achieve above objective:

A. Block all Zones except Zone-I

This application applies a blocking signal to the higher impedance zones of distance relay and allows Zone 1 to trip if the swing enters its operating characteristic. Breaker application is also a consideration when tripping during a power swing. A subset of this application is to block the Zone 2 and higher impedance zones for a preset time (Unblock time delay) and allow a trip if the detection relays do not reset.

In this application, if the swing enters Zone 1, a trip is issued, assuming that the swing impedance entering the Zone-1 characteristic is indicative of loss of synchronism. However, a major disadvantage associated with this philosophy is that indiscriminate line tripping can take place, even for recoverable power swings and risk of damage to breaker.

B. Block All Zones and Trip with Out of Step (OOS) Function

This application applies a blocking signal to all distance relay zones and order tripping if the power swing is unstable using the OOS function (function built in modern distance relays or as a standalone relay). This application is the recommended approach since a controlled separation of the power system can be achieved at preselected network locations. Tripping after the swing is well past the 180-degree position is the recommended option from CB operation point of view.

Normally relay is having Power Swing Un-block timer which unblocks on very slow power swing condition (when impedance locus stays within a zone for a long duration). Typically, the Power swing un-blocking time setting is 2sec.

However, on detection of a line fault, the relay has to be de-blocked.

C. Placement of OOS trip Systems

Out of step tripping protection (Standalone relay or built-in function of Main relay) shall be provided on all the selected lines. The locations where it is desired to split the system on out of step condition shall be decided based on system studies.

The selection of network locations for placement of OOS systems can best be obtained through transient stability studies covering many possible operating conditions. Based on these system studies, either of the option above may be adopted after the approval of Appropriate Sub-Committee of RPC.

While applying PSB in the distance protection relay a few other important aspects also needs to be considered.

- PSB function should not block if negative sequence or zero sequence currents are present. Once blocked, the PSB should unblock if negative sequence or zero sequence currents are detected. Power Swing is a balanced three phase phenomenon and unbalance can only occur in the case of an asymmetrical fault.
- It will be desirable that during tenure of PSB, the distance protection is capable of detecting a fault and tripping. If such a feature is not available in the relay, PSB should be unblocked after a time delay, corresponding to the half cycle period of the slowest expected Swing Frequency (usually 2s corresponding to the slowest swing

frequency of 0.25Hz is considered as default), to avoid the protection remaining perpetually blocked.

1.4 PROTECTION COORDINATION:

A protection-coordination study shall be done to determine the trip settings of each protective device in the power system so that maximum protection with minimum interruption is provided for all faults that may happen in the system. System studies shall be conducted using computer- aided tools to assess the security of protection by finding out trajectory of impedance in various zones of distance relay under abnormal or emergency system condition on case-to-case basis particularly for critical lines / corridors.

Relay coordination calculation module must consider the operating characteristics of the relays, normal operating and thermal or mechanical withstand characteristics of the equipment and must determine the optimum relay settings to achieve the protection objectives stated under Para 1.2.1.

In addition, the settings must be fine-tuned, simulating faults using Real Time Digital Simulator on case-to-case basis particularly for critical lines / corridors.

Part 1 (Requirements)

The purpose is to ensure system protection is coordinated among operating entities. The Protection coordination requirement shall include the following:

(1) Each Transmission Licensee, LDC and Generator Company shall keep themselves familiarized with the purpose and limitations of Protection System schemes applied in its area of control.
(2) Each Transmission licensee shall coordinate its Protection System schemes with concerned transmission system, sub-transmission system and generators.
(3) Each Generating Company shall coordinate its Protection System schemes with concerned transmission system and station auxiliaries.
(4) Each Transmission Licensee and Generation Company shall be responsible for settings calculations for protection of elements under its ownership. It shall be the responsibility of the respective asset owner to obtain the inputs (adjacent line settings, infeed values etc.) from CTU/STU/RPC necessary for calculation of the settings.
(5) CTU/STU shall provide the infeed values/latest network model to the requesting entity, within 15 days of receipt of such a request from the entity. The RPC shall provide the existing settings of the adjacent substations within 15 days of such a request from the requesting entity.
(6) Each Generating Company and Transmission Licensee shall submit the protection settings along with the calculation sheets, co-ordination study reports and input data, in advance, to respective RPC for every new element to be commissioned. The mentioned information shall be submitted to the RPC by first week of each month for all the elements proposed to be commissioned in the following month.
(7) The appropriate sub-committee of RPC shall review the settings to ensure that they are properly coordinated with adjacent system and comply with the existing guidelines. The onus to prove the correctness of the calculated settings shall lie with the respective

Transmission licensee/Generation Company. In case, the sub-committee feels that the adjacent transmission system settings need to be changed, in view of the new element, it shall inform the concerned entity for revision of the existing settings.

(8) If the RPC feels the need, it may recommend carrying out the dynamic study for the concerned system to ensure that the present settings are sufficient for maintaining the dynamic stability of the system. In such a case, on being directed by RPC, the respective CTU/STU shall carry out the necessary dynamic studies and submit the report to the RPC.

(9) The appropriate sub-committee of RPC shall review and approve the settings based on the inputs/report submitted by the entities.

(10) The approved settings shall be implemented by the entity and proper record of the implemented settings shall be kept. The modern numerical relays have several settings for various features available in the relay. It shall be ensured that only the approved features and settings are enabled in the relay. No additional protection/setting shall be enabled without the prior approval by respective Regional Power Committee.

(11) Each Transmission licensee and Generation Company shall co-ordinate the protection of its station auxiliaries to ensure that the auxiliaries are not interrupted during transient voltage decay.

(12) Any change in the existing protection settings shall be carried out only after prior approval from the RPC. The owner entity shall inform all the adjacent entities about the change being carried out.

(13) In case of failure of a protective relay or equipment failure, the Generator Company and Transmission Licensee shall inform appropriate LDC. The Generator Company and Transmission Licensee shall take corrective action as soon as possible.

(14) Each Transmission Licensee shall coordinate Protection Systems on major transmission lines and interconnections with neighboring Generator Company, Transmission Licensee, and appropriate LDC.

(15) Each Transmission Licensee, Generator Company and Distribution Licensee shall monitor the status of each Special Protection System in their area, and shall inform to concerned RLDC about each change in status.

Part 2 (Measures of Compliance)

The measures to be done for Protection coordination are as follows:

(1) Each Generator Company and Transmission Licensee shall have and provide upon request evidence that could include but is not limited to, revised fault analysis study, protection relay settings, notifications of changes, or other equivalent evidence that will be used to confirm that there was coordination of their Protection System, new Protection System or changes in it.

(2) Each Transmission Licensee, Generator Company and Distributor shall have and provide upon request evidence that could include but is not limited to, documentation, electronic logs, computer printouts, or computer demonstration or other equivalent evidence that will be used to confirm that it monitors the Special Protection Systems in its area confirm and that it informed to concerned RLDC about changes in status of one of its Special Protection Systems.

2.0 DISTURBANCE MONITORING AND REPORTING

The Purpose is to ensure that adequate disturbance data is available to facilitate Bulk Electric System event analyses. The analysis of power system disturbances is an important function that monitors the performance of protection system which can provide information related to correct behavior of the system, adoption of safe operating limits, isolation of incipient faults, The Disturbance Monitoring Requirements Shall include the following:

(1) Each Transmission Licensee and Generator Company shall provide Sequence of Event (SOE) recording capability by installing Sequence of Event recorders or as part of another device, such as a Supervisory Control and Data Acquisition (SCADA) Remote Terminal Unit (RTU), a generator plants Digital (or Distributed) Control System (DCS) or part of Fault recording equipment.

This capability shall be provided at all substations and at locations to record all the events in accordance with CEA Grid Standard Regulation, 2010. The following shall also be monitored at each location:

1.1.1 Transmission and Generator circuit breaker positions

1.1.2 Protective Relay tripping for all Protection Groups that operate to trip circuit breakers identified in 1.1.1.

1.1.3 Tele protection keying and receive

(2) In either case, a separate work station PC shall be identified to function as the event logger front end. The event logger work-station PC should be connected to UPS (Uninterrupted Power Supply).

The event logger signals shall include but not limited to

- All Circuit Breaker and isolator switching Operations
- Auxiliary supply (AC, DC and DG) supervision alarms
- Auxiliary supply switching signals
- Fire-fighting system operation alarms
- Operation signals (Alarm/Trip from all the protection relays.)
- Communication Channel Supervision Signals.
- Intertrip signals receipt and send.
- GPS Clock healthiness.
- Control Switching Device healthiness (if applicable).
- RTU/Gateway PC healthiness
- All Circuit Breaker Supervision Signals.
- Trip Circuit Supervision Signals.

(3) Each Transmission Licensee shall provide Disturbance recording capability for the following Elements at facilities:

3.1 All transmission lines.

3.2 Autotransformers or phase-shifters connected to busses.

3.3 Shunt capacitors, shunt reactors.

3.4 Individual generator line interconnections.

3.5 Dynamic VAR Devices.

3.6 HVDC terminals.

3.7 Bus Bars

(4) The Disturbance recording feature shall be enabled and configured in all the numerical relays installed.

(5) Each Generator Company shall provide Disturbance recording capability for Generating Plants in accordance with the CEA Technical Standards for Connectivity and CEA Technical Standards for Construction of Plants.

(6) Each Transmission Licensee and Generator Company shall record for Faults, sufficient electrical quantities for each monitored Element to determine the following:

6.1 Three phase-to-neutral voltages. (Common bus-side voltages may be used for lines.)

6.2 Three phase currents and neutral currents.

6.3 Polarizing currents and voltages, if used.

6.4 Frequency.

6.5 Real and reactive power.

The Minimum parameters to be monitored in the Fault record shall be specified by the respective RPC.

(7) Each Transmission Licensee and Generator Company shall provide Disturbance recording with the following capabilities:

7.1 The data files shall be capable of being viewed, read, and analyzed with a generic COMTRADE analysis tool as per the latest revision of IEEE Standard C37.111.

7.2 Each Fault record duration and the trigger timing shall be settable and set for a minimum 2 second duration including 300ms pre-fault time.

7.3 Each Fault recorder shall have a minimum recording rate of 64 samples per cycle.

7.4 Each Fault recorder shall be set to trigger for at least the following:

Internal protection trip signals, external trigger input, analog triggering (any phase current exceeding 1.5 pu of CT secondary current or any phase voltage below 0.8pu, neutral/residual overcurrent greater than 0.25pu of CT secondary current). Additional triggers may be assigned as necessary.

(8) Each Transmission Licensee and Generator Company shall establish a maintenance and testing program for Disturbance Recorder (DR) that includes

8.1 Maintenance and testing intervals and their basis.

8.2 Summary of maintenance and testing procedures.

8.3 Monthly verification of communication channels used for accessing records remotely (if the entity relies on remote access and the channel is not monitored to a control center staffed around the clock, 24 hours a day, 7 days a week (24/7)).

8.4 Monthly verification of time synchronization (if the loss of time synchronization is not monitored to a 24/7 control center).

8.5 Monthly verification of active analog quantities.

8.6 A requirement to return failed units to service within 90 days. If a Disturbance Recorder (DR) will be out of service for greater than 90 days, the Transmission Licensee and Generator Company shall keep a record of efforts aimed at restoring the DR to service.

(9) Each LDC, Transmission Licensee and Generator Company shall share requisite data within 15 days upon request. Each LDC, Transmission Licensee and Generator

Company shall provide appropriate recorded disturbance data from DRs within 15 days of receipt of the request in each of the following cases:

9.1 CEA, RPCs/State, other LDC.

9.2 Request from other Transmission Licensee and Generator Company connected with ISTS.

(10) Each Transmission Licensee and Generator Company shall submit the data files to the appropriate RLDC conforming to the following format requirements:

10.1 The data files shall be submitted in COMTRADE and PDFFormat.

10.2 File shall have contained the name of the Relay, name of the Bay, station name, date, time resolved to milliseconds, event point name, status.

The DR archives shall be retained for a period of three years.

(11) A separate work-station PC, powered through UPS (Uninterrupted Power Supply) shall be identified with access to all the relays for extraction of DR. Auto-Download facility shall be established for automatic extraction of the DR files to a location on the work- station PC.

(12) Time Sync Equipment

12.1 Each substation shall have time synch equipment to synchronize all the numerical relays installed. Before any extension work, the capability of the existing Time-sync equipment shall be reviewed to ensure the synchronization of upcoming numerical relays.

12.2 The status of healthiness of the time-sync device shall be wired as "Alarm" to SCADA and as an "Event" to Event Logger.

12.3 The time synch status of all the installed numerical relays and event logger shall be monitored monthly and recorded. The Monthly records for relays not in time-sync shall be reported to appropriate RLDC and RPC. This record shall be archived for a period of three years by each concerned agency.

(13) Disturbance Analysis and Reporting

13.1 Subsequent to every tripping event, the concerned utility shall submit all the relevant DR files in COMTRADE and PDF format along with SOE, to the appropriate Load Dispatch Centre, regional power committee, Remote End Entity and the entity connected to the downstream of transformers (in case of transformer tripping).

13.2 Each utility shall develop internal procedure of disturbance analysis. Necessary software shall be available with the entities to view and analyse the fault record files in COMTRADE and PDF format. The detailed analysis report shall identify the reason of fault, detailed sequence of events, mis-operations identified (if any), reason of protection mis- operation and corrective actions taken. Every entity shall submit the detailed analysis report within one week of the date of event occurrence, to the appropriate load dispatch center.

13.3 A monthly report shall be prepared by each utility, mentioning the events of protection misoperations whose reasons could not be identified and require further follow-up. This report for each month shall be submitted to RPC and RLDC within the first week of the subsequent month.

13.4 The detailed analysis reports shall be archived periodically. The archive shall be retained for a period of three years by each concerned agency.

13.5 The analysis reports shall be discussed in the Appropriate Sub-Committee meetings of the RPC to be held periodically. The Appropriate Sub-Committee shall identify the lessons learnt during the events being discussed. The Appropriate Sub-Committee shall scrutinize the correctness of operation of subject protection systems put in place by the concerned Constituents. It shall also recommend the appropriate remedial measures for system improvement.

13.6 Each RPC/RLDC shall develop and maintain a web based portal to act as a data repository with the facility for utilities to upload the fault records, analysis reports and protection relay settings.

3.0 Protection System Misoperation Reporting and Monitoring of Corrective Action:

(1) Definition of Misoperation:

1. Any failure of a Protection System element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection.
2. Any operation of a Protection System for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone).
3. Any unintentional Protection System operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity.

(2) Objectives:

1. Review all Protection System operations to identify the misoperations of Protection Systems.
2. Analyze misoperations of Protection Systems to identify the cause(s).
3. Develop and implement Corrective Action Plans to address the cause(s) of misoperations of Protection Systems.
4. Monitoring of implementation of corrective action plans.

(3) Requirements

1. Each Transmission Licensee, Generator Company, and Distribution Licensee that owns interrupting device that operated under the circumstances in Parts 1.1 through 1.3 shall, within 24 hours of the interrupting device operation, identify and report to respective SLDC/RLDC or NLDC whether its Protection System component(s) caused a Misoperation.
   1.1 The interrupting device operation was caused by a Protection System or by manual intervention in response to a Protection System failure to operate; and
   1.2 The interrupting device owner owns all or part of the Composite Protection System; and
   1.3 The interrupting device owner identified that its Protection System component(s) caused the interrupting device(s) operation or was caused by manual intervention in response to its Protection System failure to operate.
2. When Protection System is shared among two or more utilities, each Transmission Licensee, Generator Company, and Distribution Licensee that owns an interrupting device that operated by protection system or by manual intervention in response to a protection system failure to operate, shall, within 24 hours of the interrupting device operation, provide information to the other utilities as well as respective SLDC/RLDC

or NLDC that share Misoperation identification responsibility for the Protection System under the following circumstances:

2.1 The interrupting device owner has determined that a Misoperation occurred or cannot rule out a Misoperation; and

2.2 The interrupting device owner has determined that its Protection System component(s) did not cause the interrupting device(s) operation or cannot determine whether its Protection System components caused the interrupting device(s) operation.

For an interrupting device operation by a Protection System component intended to operate as backup protection for a condition on another entity's Power System Element, information of the operation shall be provided to the other Protection System utilities for which that backup protection was provided.

3. Each Transmission Licensee, Generator Company, and Distribution Licensee that receives information, pursuant to Requirement 2 shall, within 48 hours of the interrupting device(s) operation, identify whether its Protection System component(s) caused a Misoperation.
4. Each Transmission Licensee, Generator Company, and Distribution Licensee that has not determined the cause(s) of a Misoperation, for a Misoperation identified in accordance with Requirement 1 or 3, shall perform investigative action(s) to determine the cause(s) of the Misoperation at least once in a month after the Misoperation was first identified, until one of the following completes the investigation. The duration of investigation shall not be more than 3 months from the date of misoperation.
   - The identification of the cause(s) of the Misoperation; or
   - A declaration that the operation is not misoperation.
5. Each Transmission Licensee, Generator Company, and Distribution Licensee that owns the Protection System component(s) that caused the Misoperation shall, within one month of first identifying a cause of the Misoperation:
   - Develop a Corrective Action Plan (CAP) along with the root cause analysis/ investigation report for the identified Protection System component(s), and an evaluation of the CAP's applicability to the entity's other Protection Systems including other locations and submit the same to RPCs; or
   - Explain in a declaration why corrective actions are beyond the entity's control or would not improve Grid reliability, and that no further corrective actions will be taken.
6. Each Transmission Licensee, Generator Company, and Distribution Licensee shall implement each CAP developed in Requirement 5, and update each CAP if actions or timetables change, until completed.
7. RPCs shall deliberate the reported misoperation in Protection Sub- Committee meetings and monitor the implementation of CAP.

(4) Measures of Compliance:

Each Transmission Licensee, Generator Company, and Distribution Licensee shall have dated evidence that demonstrates the followings:

1. It identified and reported the Misoperation of its Protection System component(s), if any, that meet the circumstances in Requirement 1 within the allotted time period.
2. It informed to the other owner(s), within the allotted time period for Requirement 2.

3. It identified whether its Protection System component(s) caused a Misoperation within the allotted time period for Requirement 3.
4. It performed at least one investigative action according to Requirement 4 at least once in a month until a cause is identified or a declaration is made.
   Acceptable evidence for Requirement 1,2,3 & 4 may include, but is not limited to the following dated documentation (electronic or hardcopy format): reports, databases, spreadsheets, emails, facsimiles, lists, logs, records, declarations, analyses of sequence of events, relay targets, Disturbance Recorder (DR) and Event Logger (EL) records, test results, or transmittals.
5. It developed a CAP and an evaluation of the CAP's applicability to other Protection Systems and locations, or a declaration in accordance with Requirement 5. Acceptable evidence may include, but is not limited to the following dated documentation (electronic or hardcopy format): CAP and evaluation, or declaration.
6. It implemented each CAP, including updating actions or timetables. Acceptable evidence may include, but is not limited to the following dated documentation (electronic or hardcopy format): records that document the implementation of each CAP and the completion of actions for each CAP including revision history of each CAP. Evidence may also include work management program records, work orders, and maintenance records.
7. RPCs shall maintain the updates of implementation of CAP.

4.0 Monitoring of Special Protection System (SPS) Misoperation:

(1) Definition of SPS Misoperation:

SPS misoperations are defined as follows:

1. Failure to Operate – Any failure of a SPS to perform its intended function within the designed time when system conditions intended to trigger the SPS occurs;
2. Failure to Arm – Any failure of a SPS to automatically arm itself for system conditions that are intended to result in the SPS being automatically armed;
3. Unnecessary Operation – Any operation of a SPS that occurs without the occurrence of the intended system trigger condition(s);
4. Unnecessary Arming – Any automatic arming of a SPS that occurs without the occurrence of the intended arming system condition(s); and
5. Failure to Reset – Any failure of a SPS to automatically reset following a return of normal system conditions if that is the system design intent.

(2) Objectives:

1. Reporting of all Special Protection System (SPS) Misoperations
2. Analysis of all Special Protection System (SPS) Misoperations and/or
3. Mitigation of all Special Protection System (SPS) Misoperations.

(3) Requirements:

1.System Operational Personnel and System Protection personnel of the Transmission Licensee and Generator Company shall analyze all SPS operations.

1.1. System Operational Personnel and System Protection Personnel shall report and review all SPS operations to RPCs/RLDCs/NLDC to identify apparent Misoperations within 24 hours.

1.2. System Protection Personnel shall analyze all operations of SPS within seven working days for correctness to characterize whether a Misoperation has occurred that may not have been identified by them.

2.Transmission Licensee and Generator Company shall perform the following actions for each Misoperation of the SPS. If SPS actions that appear to be entirely reasonable and correct at the time of occurrence and associated system performance is fully compliant with IEGC/ CEA Standards the following requirements shall not be applicable. If the Transmission Licensee or Generator Company later finds the SPS operation to be incorrect through their analysis, the following requirements become applicable at the time the Transmission Licensee or Generator Company identifies the Misoperation:

2.1. If there is an SPS Misoperation Transmission Licensee and Generator Company shall repair and place back in service within 24 hours the SPS that misoperated. If this cannot be done, then

2.1.1 Transmission Licensee and Generator Company shall report to respective SLDC/RLDC or NLDC for necessary action to adjust generation and line flows to a reliable operating level.

2.1.2 SLDC/RLDC/NLDC shall give instructions to concerned utilities to operate the facilities within permissible limits.

2.1.3 Transmission Licensee and Generator Company shall perform the instructions of SLDC/RLDC/NLDC as soon as they received and report back to respective SLDC/RLDC or NLDC for the implementation of the same.

3.Transmission Licensee and Generator Company shall submit Misoperation incident reports to NLDC/RLDCs/RPCs within seven working days for the following.

3.1. Identification of a Misoperation of a SPS,

3.2. Completion of repairs or the replacement of SPS that misoperated.

4.SPS shall be reviewed at least once in a year or whenever any change in network/ modification.

(4) Measures of Compliance:

1. System Operational Personnel and System Protection personnel of the Transmission Licensee and Generator Company shall have evidence that they reported and analyzed all SPS operations.

1.1 Transmission Licensee and Generator Company shall have evidence that they reviewed all operations of SPS within 24 hours.

1.2 Transmission Licensee and Generator Company shall have evidence that they analyzed all operations of SPS for correctness within seven working days.

2. Transmission Licensee and Generator Company shall have evidence that they have repaired and replaced the SPS that misoperated from service within 24 hours following identification of the SPS Misoperation.

2.1 The Generator Company and Transmission Licensee shall have documentation describing all actions in accordance with Requirements 2.1.1 and 2.1.3.SLDC/RLDC/NLDC shall have the evidence in accordance with the Requirements 2.1.2.

3. Transmission Licensee and Generator Company shall have evidence that they reported to NLDC/RLDCs/RPCs about the following within seven working days.

3.1 Identification of all SPS Misoperations and corrective actions taken or planned.
3.2 Completion of repair, replacement of, or SPS that misoperated.

4. Transmission Licensee and Generator Company shall have evidence that they reviewed SPS at least once in a year or whenever any change in network/ modification.

7.0 Transmission and Generation Protection System Maintenance and Testing

(1) Definitions:

1. **Protection System:** The Protection System includes Protection relays, associated communication system, Special Protection Systems, voltage and current sensing devices, DC control circuit, battery, circuit breakers & associated Trip Circuits etc. Protection relays shall also include Under Frequency Relays and Under Voltage Relays.
2. **Maintenance**: An ongoing program by which Protection System function is proved, and restored if needed. A maintenance program comprises verification of individual protection systems, which in turn is achieved by of a combination of monitoring, testing, and calibration.
3. **Testing:** Application of signals to a Protection System or component removed from service, to observe functional performance or output behavior.

(2) Objective:

To ensure all transmission and generation Protection Systems affecting the Grid reliability are maintained and tested.

(3) Requirements:

1. Each Transmission Licensee and each Generator Company that owns a generator interconnection Facility Protection System shall have a Protection System maintenance and testing program for Protection Systems that connected to Grid. The program shall include:
   1.1. Preventive maintenance and testing intervals and their basis.
   1.2. Summary of maintenance and testing procedures.
   1.3. Responsibilities of concerned wings of Licensee
2. Each Transmission Licensee and each Generator Company that owns a generator interconnection Facility Protection System shall provide documentation of its Protection System maintenance and testing program and the implementation of that program to the concerned RPCs as per the Table A. The documentation of the program implementation shall include:
   2.1. Evidence of Protection System devices were maintained and tested within the defined intervals.
   2.2. Date of each Protection System device was last tested/maintained.

(4) Measures of Compliance:

1. Each Transmission Licensee and each Generator Company that owns a generator interconnection Facility Protection System that affects the Grid reliability, shall have an associated Protection System maintenance and testing program as defined in Requirement 1.

2. Each Transmission Licensee and each Generator Company that owns a generator interconnection Facility Protection System that affects the Grid reliability, shall have evidence it provided documentation of its associated Protection System maintenance and testing program and the implementation of its program as defined in Requirement 2.
3. Retention of Records: The verification records for a particular protection system or component should be retained at least until successful completion should be retained for at least three years.

TABLE A- Maximum Allowable Testing Intervals by Equipment Category				
Category	**Component**	**Maximum verification interval**		**Verification Activities**
		Unmonitored	**Monitored**	
1.	Testing and calibration of protective Relays.	3 years	Continuous monitoring and verification	Test the functioning of relays with simulated inputs, including calibration. Verify that settings are as specified.
2.	Verification of Instrument transformer outputs and correctness of connections to protection system.	3 years	Continuous monitoring and verification	Verify the current and voltage signals to the protection system, and instrument transformer circuit grounding
3.	Verification of protection system tripping including circuit breaker tripping, auxiliary tripping relays and devices, lockout relays, telecommunications assisted tripping schemes, and circuit breaker status indication required for correct operation of protection system.	3 years	Continuous monitoring and verification	Perform trip tests for the whole system at once, and/or component operating tests with overlapping of component verifications. Every operating circuit path must be fully verified, although one check of any path is sufficient. A breaker only need be tripped once per trip coil within the specified time interval. Telecommunications-assisted line protection systems may be verified either by end-to-end tests, or by simulating internal or external faults with forced channel signals.
4.	Station battery supply	1 month	Continuous monitoring and verification	Verify voltage of the station battery once a month if not monitored.

5.	Protection system telecommunications equipment and channels required for correct operation of protection systems.	3 months	Continuous monitoring and verification	Check signal level, signal to noise ratio, or data error rate within the specified interval. This includes testing of any function that inhibits undesired tripping in the event of communications failure detected by partial or thorough monitoring. For partially or thoroughly monitored communications, verify channel adjustments and monitors not verified by telecommunications self-monitoring facilities (such as performance and adjustment of line tuners and traps in power line carrier systems). For thoroughly monitored systems, check for proper functioning of alarm notification.
6.	Testing and calibration of UVLS and UFLS relays that comprise a protection scheme distributed over the power system.	3 years	Continuous monitoring and verification	Test the functioning of relays with simulated inputs, including calibration. Verify that settings are as specified. Verification does not require actual tripping of loads.
7.	SPS, including verification of end-to-end performance, or relay sensing for centralized UFLS or UVLS systems.	1 year	Continuous monitoring and verification	Perform all of the verification actions for Categories 1 through 5 above as relevant for components of the SPS, UFLS or UVLS systems. The output action may be breaker tripping, or other control action that must be verified. A grouped output control action need be verified only once within the specified time interval, but all of the SPS, UFLS, or UVLS components whose operation leads to that control action must each be verified.

Unmonitored – Applies to electromechanical and analog solid-state protection systems.

Monitored – Applies to microprocessor relays and associated protection system components in which every element or function required for correct operation of the protection system is monitored continuously or verified, including verification of the means by which failure alarms or indicators are transmitted to a central location for immediate action. For monitored systems or segments, documentation is required that shows how every possible failure, including a failure in the verification or monitoring system or alarming channel, is detected.

8.0 Special Protection System Review Procedure

(1). Definition:

A documented SPS review procedure to ensure that SPSs comply with Regional criteria and various Standards and Regulations.

(2). Objective:

1.To ensure that all Special Protection Systems (SPS) are properly designed, meet performance requirements, and are coordinated with other protection systems.

2.To ensure that maintenance and testing programs are developed and misoperations are analysed and corrected.

(3). Requirements:

1. Each RPC that uses or is planning to use an SPS shall have a documented SPS review procedure to ensure that SPSs comply with Regional criteria and various Standards and Regulations. The Regional SPS review procedure shall include:
   1.1. Description of the process for submitting a proposed SPS for RPC review.
   1.2. Requirements to provide data that describes design, operation, and modeling of an SPS.
   1.3. Requirements to demonstrate that the SPS are designed so that a single SPS component failure, when the SPS was intended to operate, does not prevent the power system elements from meeting the requirements Central Electricity Authority (Grid Standards) Regulations.
   1.4. Requirements to demonstrate that the inadvertent operation of an SPS shall meet the requirement of CEA's Transmission Planning Criterion as that required of the contingency for which it was designed.
   1.5. Requirements to demonstrate the proposed SPS will coordinate with other protection and control systems and applicable emergency procedures.
   1.6. Definition of mis-operation (In consistent with the definition mentioned in the item of these standards" Monitoring of Special Protection System (SPS) Mis-operation").
   1.7. Requirements for analysis and documentation of corrective action plans for all SPS mis-operations.
   1.8. Identification of the Subgroup at the regional level responsible for the SPS review procedure and the process for approval of the procedure.
   1.9. Determination, as appropriate, of maintenance and testing requirements.

2. The RPC shall provide other RPCs and CEA/NLDC with documentation of its SPS review procedure on request (within 30 calendar days).

(4). Measures of Compliance:

1. The RPC using or planning to use an SPS shall have a documented review procedure as defined in Requirement 1.
2. The RPC shall have evidence it provided other RPCs and CEA/NLDC with documentation of its SPS review procedure on request (within 30 calendar days).

9.0 Transmission Relay Loadability

(1). Definition:

Transmission Relay Loadability means the loading permitted in the transmission line by the relay including a security margin. The relay Loadability is to be arrived in such a way as far as possible not to interfere with system operator actions, while allowing for short-term overloads, with sufficient margin to allow for inaccuracies in the relays and instrument transformers. Transmission relay do not prematurely trip the transmission elements out-of-service and allow the system operators from taking controlled actions consciously to alleviate the overload.

(2). Objective:

Protective relay settings shall

1. Not limit transmission loadability;
2. Not interfere with system operators' ability to take remedial action to protect system reliability and;
3. Be set to reliably detect all fault conditions and protect the electrical network from these faults.
4. This standard includes any protective functions which could trip with or without time delay, on load current i.e. load responsive phase protection systems including but not limited to:
    i. Phase distance.
    ii. Out-of-step tripping.
    iii. Switch-on-to-fault.
    iv. Overcurrent relays.
    v. Communications aided protection schemes including but not limited to:
        - Permissive overreach transfer trip (POTT).
        - Permissive under-reach transfer trip (PUTT).
        - Directional comparison blocking (DCB).
        - Directional comparison unblocking (DCUB).
    vi. Phase overcurrent supervisory elements (i.e., phase fault detectors) associated with current based, communication-assisted schemes (i.e., pilot wire, phase comparison, and line current differential) where the scheme is capable of tripping for loss of communications.

5. The following protection systems are excluded from requirements of this standard:
    i. Relay elements that are only enabled when other relays or associated systems fail. For example:
        - Overcurrent elements that are only enabled during loss of potential conditions.
        - Elements that are only enabled during a loss of communications except as noted in section 4 (vi)
    ii. Protection systems intended for the detection of ground fault conditions.
    iii. Protection systems intended for protection during stable power swings.
    iv. Relay elements used only for Special Protection Systems.
    v. Protection systems that are designed only to respond in time periods which allow 15 minutes or greater to respond to overload conditions.
    vi. Thermal emulation relays which are used in conjunction with dynamic Facility Ratings.
    vii. Relay elements associated with dc lines.
    viii. Relay elements associated with dc converter transformers.

(3). Requirements:

1. Each Transmission Licensee, Generator Company, or Distribution Licensee shall use any one of the following criteria for any specific circuit terminal to prevent its phase protective relay settings from limiting transmission system loadability while maintaining reliable protection of the Grid for all fault conditions. Each Transmission Licensee, Generator Company, or Distribution Licensee shall evaluate relay loadability at 0.90 per unit voltage and a power factor angle of 30 degrees.

   Criteria:

   i. For Distance protection relays of transmission lines, the Zone-3 shall prevent load encroachment, considering the following criteria
      a. Maximum load current (Imax) may be considered as 1.2 times the thermal rating of the line or 1.5 times the associated bay equipment current rating (the Minimum of the bay equipment individual rating) whichever is lower.
         (The rating considered is approximately 15 minutes rating of the Transmission facility).
      b. For setting angle for load blinder, a value of 30 degree may be adequate in most cases.
      c. The Distance protection relays shall have provision for load blinder characteristic or load encroachment detection.

   ii. For Directional Overcurrent relays, wherever used in a transmission line (132kV level), the following shall be adopted.
      a. An overload alarm shall be set at 110% of the thermal rating of the line with sufficient delay. This alarm shall allow the operator to take corrective action.
      b. The Directional Overcurrent relay shall allow the line to carry 1.5 times of the associated line or bay equipment current rating (whichever is lower) till 10 minutes.

   iii. For transformer protection relays the following shall be adopted
      - Set the definite time transformer overload relay at 105% of the transformer ratings with sufficient delay. It shall be wired for alarm purpose only to allow the operator to take corrective action. No tripping shall be issued from this relay.
      - Set the transformer overload tripping at 110% of the transformer nameplate rating.
      - The back-up overcurrent relays shall use IDMT characteristics and be suitably coordinated with the upstream transmission network.
      - Install supervision for the transformer using either a top oil or simulated winding hot spot temperature element. The alarm and trip settings for these relays shall be set by individual entities based on the manufacturer's recommendation.

2. Each Transmission Licensee, Generator Company, or Distribution Licensee that uses thermal rating of circuit as described in above requirement may use the thermal ratings as specified in CEA's Manual on Planning Criterion.
3. Each Transmission Licensee, Generator Company, or Distribution Licensee which experience the load encroachment (despite setting the relay in accordance with this standard) or overloading of transmission line/ transformers, shall submit a report in this regard to respective RPC within a month to allow the RPC to compile a list of all elements that have persistent overloading or load encroachment condition.

(4). Measures of Compliance:

1. Each Transmission Licensee, Generator Company, or Distribution Licensee shall have evidence such as spreadsheets or summaries of calculations to show that each of its transmission relays is set according to the standard and do not expose the transformer to fault levels and durations beyond those indicated in the standard.
2. Each Transmission Licensee, Generator Company, or Distribution Licensee shall have evidence such as rating spreadsheets or rating database to show that it used the thermal rating as per Requirement 2.
3. Each Transmission Licensee, Generator Company, or Distribution Licensee shall have evidence such as dated correspondence that it provided an updated list of the elements in accordance with the Requirement 3 of this standard. The updated list may either be a full list, a list of incremental changes to the previous list, or a statement that there are no changes to the previous list.

10.0 Generator Relay Loadability

[Subgroup had decided to remove this Broad area since it comes in the purview of generator side protection.]

11.0 Relay Performance During Stable Power Swings

(1). Definition:

1. **Power Swing**: A variation in three phase power flow which occurs when the generator rotor angles are advancing or retarding relative to each other in response to changes in load magnitude and direction, line switching, loss of generation, faults, and other system disturbances.
2. **Stable Power Swing**: A power swing is considered stable if the generators do not slip poles and the system reaches a new state of equilibrium, i.e. an acceptable operating condition.
3. **Unstable Power Swing:** A power swing that will result in a generator or group of generators experiencing pole slipping for which some corrective action must be taken.

(2). Objective:

1. To ensure that load-responsive protective relays are expected to not trip in response to stable power swings during non-Fault conditions.
2. This standard applies to the following protective functions including, but not limited to:
   - Phase distance
   - Phase overcurrent
   - Out-of-step tripping
   - Loss-of-field

   The following protection functions are excluded from Requirements of this standard:
   - Relay elements supervised by power swing blocking
   - Relay elements that are only enabled when other relays or associated systems fail. For example:
     - Overcurrent elements that are only enabled during loss of potential conditions.
     - Relay elements that are only enabled during a loss of communications
   - Thermal emulation relays which are used in conjunction with dynamic Facility Ratings
   - Relay elements associated with direct current (dc) lines
   - Relay elements associated with dc converter transformers

- Phase fault detector relay elements employed to supervise other load-responsive phase distance elements (i.e., in order to prevent false operation in the event of a loss of potential)
- Relay elements associated with switch-onto-fault schemes
- Reverse power relay on the generator
- Generator relay elements that are armed only when the generator is disconnected from the system, (e.g., non-directional overcurrent elements used in conjunction with inadvertent energization schemes, and open breaker flashover schemes)
- Current differential relay, pilot wire relay, and phase comparison relay
- Voltage-restrained or voltage-controlled overcurrent relays

(3). Requirements:

1. Each RPC shall, at least once each calendar year, provide information of generator, transformer, transmission line or other Grid element in its area that meets one or more of the following criteria, if any, to the respective Generator Company and Transmission Licensee:

   Criteria:

   i. Generator(s) having an angular stability constraint that is addressed by a SPS and Elements of Associated Transmission System.
   ii. Transmission elements having limitation due to angular stability limit and elements of Inter-regional and Inter-area importance.
   iii. Elements that form the boundary of an island that are formed by tripping the Elements based on angular instability.
   iv. Elements identified in the most recent Grid Disturbance/Grid Incidence where relay tripping occurred due to a stable or unstable power swing or the Elements identified in the most recent Planning system studies where relay tripping occurs due to a stable or unstable power swing during a simulated disturbance.

2. Each Generator Company and Transmission Licensee in consultation with CTU/STU and respective RLDC/RPC shall:

   2.1 Within 3 calendar months of notification of a Grid Element pursuant to Requirement 1, determine whether its load-responsive protective relay(s) applied to that Grid Element meets the following criteria.

   Criterion A:

   An impedance-based relay used for tripping is expected to not trip for a stable power swing, when the relay characteristic is completely contained within the unstable power swing region. The unstable power swing region is formed by the union of three shapes in the impedance (RX) plane; (1) a lower loss-of-synchronism circle based on a ratio of the sending-end to receiving-end voltages of 0.7; (2) an upper loss-of-synchronism circle based on a ratio of the sending-end to receiving-end voltages of 1.43; (3) a lens that connects the endpoints of the total system impedance (with the parallel transfer impedance removed) bounded by varying the sending-end and receiving-end voltages from 0.0 to 1.0 per unit, while maintaining a constant system separation angle across the total system impedance where:

   i. The system separation angle is:
      - At least 120 degrees, or

- An angle less than 120 degrees where a documented transient stability analysis demonstrates that the expected maximum stable separation angle is less than 120 degrees.

ii. All generation is in service and all transmission Grid Elements are in their normal operating state when calculating the system impedance.

iii. Saturated (transient or sub-transient) reactance is used for all machines.

Criterion B:

The pickup of an overcurrent relay element used for tripping, that is above the calculated current value (with the parallel transfer impedance removed) for the conditions below:

i. The system separation angle is:
- At least 120 degrees, or
- An angle less than 120 degrees where a documented transient stability analysis demonstrates that the expected maximum stable separation angle is less than 120 degrees.

ii. All generation is in service and all transmission Grid Elements are in their normal operating state when calculating the system impedance.

iii. Saturated (transient or sub-transient) reactance is used for all machines.

iv. Both the sending-end and receiving-end voltages at 1.05 per unit.

2.2 Within 3 calendar months of becoming aware of a generator, transformer, or transmission line Grid Element that tripped in response to a stable or unstable power swing due to the operation of its protective relay(s), determine whether its load-responsive protective relay(s) applied to that Grid Element meets the criteria A & B.

3. Each Generator Company and Transmission Licensee shall, within 3 calendar months of determining a load-responsive protective relay does not meet the criteria A & B pursuant to Requirement 2, develop a Corrective Action Plan (CAP) to meet one of the following:
- The Protection System meets the criteria A & B, while maintaining dependable fault detection and dependable out-of-step tripping (if out-of- step tripping is applied at the terminal of the Grid Element); or
- The Protection System is excluded as mentioned in objective of this standard (e.g., modifying the Protection System so that relay functions are supervised by power swing blocking or using relay systems that are immune to power swings), while maintaining dependable fault detection and dependable out-of-step tripping (if out-of-step tripping is applied at the terminal of the Grid Element).

4. Each Generator Company and Transmission Licensee shall implement each CAP developed pursuant to Requirement 3 and update each CAP if actions or timetables change until all actions are complete.

(4). Measures of Compliance:

1. Each RPC shall have dated evidence that demonstrates it provides the information of the generator, transformer, and transmission line/Grid Element(s) that meet one or more of the criteria in Requirement 1, if any, to the respective Generator Company and Transmission Licensee. Evidence may include, but is not limited to, the following documentation: emails, facsimiles, records, reports, transmittals, lists, or spreadsheets.

2. Each Generator Company and Transmission Licensee shall have dated evidence that demonstrates the evaluation was performed according to Requirement 2. Evidence may include, but is not limited to, the following documentation: apparent impedance

characteristic plots, email, design drawings, facsimiles, R-X plots, software output, records, reports, transmittals, lists, settings sheets, or spreadsheets.

3. The Generator Company and Transmission Licensee shall have dated evidence that demonstrates the development of a CAP in accordance with Requirement 3.
4. The Generator Company and Transmission Licensee shall have dated evidence that demonstrates implementation of each CAP according to Requirement 4, including updates to the CAP when actions or timetables change.

   Evidence in Measures 3 & 4 may include, but is not limited to, the following documentation: corrective action plans, maintenance records, settings sheets, project or work management program records, or work orders.

12.0 Time Synchronization:

(1) Definition:

Time/clock synchronization in Power system means to coordinate independent clocks with the reference to an accurate external time source, such as a GPS time signal.

[Intelligent electrical devices (IEDs) have their own clocks, but electronic clocks are subject to drift. Even when updated frequently over a network by application software, their clocks may vary from each other by as much as a second. Because several events can occur during this time frame, modern power systems require more precise coordination to ensure high reliability]

(2) Objective:

1. To have precise time synchronization for a variety of Intelligent Electronic Devices (IEDs).
2. To have accurate time synchronization to ensure high reliability of power system
3. To have accurate time synchronization for proper fault analysis.
4. Time synchronization for substations with integrated protection and system control functions, as well as data collection require a target architecture that distributes synchronized time in several ways.

(3) Requirements:

1. Each substation shall have time synchronization equipment including external time source to synchronize all the numerical relays installed. Before any extension work, the capability of the existing time synchronization equipment shall be reviewed to ensure the synchronization of upcoming numerical relays.
2. The status of healthiness of the time synchronization equipment shall be wired as “Alarm” to SCADA and as an “Event” to Event Logger.
3. The time synchronization status of all the installed numerical relays and event logger shall be monitored monthly and recorded.
4. The Monthly records for relays not in time synchronization shall be reported to concerned SLDC/RLDC and RPC. This record shall be archived for a period of three years by each concerned agency.
5. Remedial action shall be taken by the concerned substation/ Protection department immediately to make the relays in time synchronization with reference to external time source.
6. All the new Grid elements/Bay extension shall have accurate and precise Time synchronization equipment.

(4) Measures of Compliance:

1. Each substation shall have evidence that it reviewed the capability of the existing time synchronization equipment before any extension work for synchronization upcoming numerical relays.
2. Each substation shall review the status of healthiness of the time synchronization equipment being recorded.
3. Each substation shall have evidence that the time synchronization status of all the installed numerical relays and event logger are monitored monthly and recorded.
4. Each substation shall have evidence that the monthly records for relays not in time synchronization are reported to concerned SLDC/RLDC and RPC.
5. Each substation or concerned protection department shall have evidence that remedial action was taken to make the relays in time synchronization with reference to external time source.
6. Each entity, which has commissioned new Grid elements/Bay extension, shall have evidences that it has provided precise and accurate time synchronization equipment.

13.0 DC system

(1) Definition:

DC system consists of battery charger and battery sets**.** DC batteries are used to provide back up to control power supply to all the protection, control, communication and automation equipment for fail safe operation of the substation.

(2) Objective:

To have the required capacity and to test the condition of DC system for a reliable, dependable and secured DC Power Supply Block and form essential part of the protection control, communication and automation equipment in the substation.

(3) Requirements:

1. DC system shall comprise of Battery and a Battery Charger in parallel operation. In this mode, the charger shall be required to not only continuously feed a variable load but also deliver trickle/boost charging current for the battery at desired rate. Battery will be capable of feeding the DC load requirement of the Sub-station in case of failure of the charger. DC system at each voltage level shall have minimum of two sets of batteries. Each battery set shall cater 100% of its DC system load. One float-cum-boost charger shall be provided for each battery. Battery shall conform to relevant IS.

2. Each battery shall have sufficient capacity considering continuous and intermittent loads for the periods specified below and for all bays (i.e. present and future bays) with the charger out of service:
   a) Continuous DC load for protection, control, indications, alarms and interlock for 10 hours.
   b) Intermittent DC load for closing and tripping operation of Circuit Breakers, Isolators and Earth Switches. This load shall be determined considering simultaneous tripping of breakers on bus-bar protection for 220kV and above substations. Duration of intermittent load shall be considered as one minute.

3. Each utility shall carry out testing activities of Battery sets and Battery chargers as per procedures and periodicity as mentioned in the manufacturer's manual.

4. Each utility shall follow the maintenance schedules of DC system as given in Table.

Table

Daily	• Checking of DCDB: P-E, N-E & P-N voltage for earth fault in Main DCDBs. • Charger: Trickle/ Float charging Current(1.4mA/Ah for Lead Acid, & 2.0mA/Ah for Ni-Cd): Adjustment if required to be done in Float voltage of the charger. • Checking of pilot cell* voltage (2.25 ± 0.02V at 20-35degC for Lead Acid & 1.4-1.42V for Ni-Cd). • Checking of pilot cell*specific gravity (not applicable for Ni-Cd& VRLA) (Sp Gr 1.200 ± 0.005 at 27 degC)
Weekly	• Checking of Electrolyte level and any spillage / crack cells. • General appearance, cleanliness of the battery and battery area. • Any evidence of sulphation / corrosion at either terminals or connectors. • Battery Room: Condition of ventilation equipment. • Availability of tap water/safety shower in Battery room. • Ambient temperature to be recorded and maintained.
Monthly	• Charger output current and voltage recording and adjustment if required, • Voltage of each cell and total battery terminal voltage. • Checking for AC/DC mixing in DCDBs.
Quarterly	• Specific gravity of each cell (not applicable for Ni-Cd& VRLA) • Temperature of electrolyte of representative cells.
Half yearly	• Boost Charging of battery sets for Ni-Cd battery only.
Yearly	• Batteries of all types: Capacity Test as per procedure of OEM for the installed battery type or IS14782 / IEEE 450 to be followed for lead acid and IEEE-1106 for Ni-Cd battery banks. The tightness of cell connections on individual terminals should be ensured. • Chargers: Load Test of chargers & overhauling. Ripple Content measurement of chargers (3-4%). Record and compare with charger spec. If ripple is high, check & rectify filters. • Overhauling of DCDB

(4). Measures of Compliance:

1. Each utility shall have evidence as per Requirement 1.
2. Each utility shall have evidence that substation battery sets have sufficient capacity considering continuous, emergency and intermittent loads for the periods specified under Requirement 2.
3. Each utility shall keep the testing reports of charger and battery sets in substation at least for the duration of 3 years.

4. Each utility shall keep the evidence of maintenance schedules of DC system carried out according to the Requirement 4 at least for the duration of 3 years.

15.0 Compliance Monitoring of Reliability Standard for Protection system

1. RPC shall be responsible for the compliance monitoring for Reliability Standard for Protection system.
2. The following methods shall be used to assess compliance:
   (i) Self-certification (annually and submit to RPC)
   (ii) Periodic Protection Audit (Conduct once in a year for critical substations as listed by RPC and once in four years for other substations according to schedule prepared by RPC)
   (iii)Triggered Protection Audit (Conduct within 30 days for the substation where Grid Incident/ Disturbance occurred or complaint of noncompliance.)
3. The RPC shall constitute a Protection Audit team with representative of RPC / NPC Secretariat, CTU or POSOCO, STU/entity other than STU/entity being audited to assess compliance. The checklist for the protection audit shall be finalized in the appropriate subcommittee of RPC.
4. The review of the Protection Audit report shall be carried out in appropriate subcommittee of RPC.
5. The owner of the new transmission asset shall submit the Reliability Standard compliance certificate to respective SLDC/RLDC or NLDC for allowing the connection of the respective asset to the grid under intimation to RPC.
6. All the Transmission licensee, Generator Company and Distribution Licensee shall keep evidence to validate the compliance of the Reliability standard for Protection system and protection audit reports.
7. RPC shall keep all compliance monitoring reports/audit reports at least for five years.

Tripura Disturbance - Annexure II

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/029	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	19-07-2017 13:37:00	19-07-2017 14:03:00	Not Furnished	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	Yes	Yes	No SPS
NERLDC/GD/17/07/029	132 kV AGTCCPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	19-07-2017 13:37:00	19-07-2017 13:58:00	Not Furnished	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Dhalabil - Kamalpur 1 Line	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 14:02:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	19-07-2017 13:31:00	19-07-2017 13:37:00	No tripping	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132 kV Rokhia - Monarchak 1 Line	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 14:03:00	Not Furnished	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 1 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 2 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	132/66 kV Auto-Transformer 3 Udaipur	TSECL	TSECL	TSECL	19-07-2017 13:37:00	19-07-2017 13:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/07/029	AGTCCPP Extn Unit STG-1	NEEPCO	NEEPCO		19-07-2017 13:30:00	19-07-2017 18:13:00	High Frequency		No		No		No		No SPS
NERLDC/GD/17/07/029	AGTCCPP Extn Unit STG-2	NEEPCO	NEEPCO		19-07-2017 13:30:00	20-07-2017 21:59:00	High Frequency		No		No		No		No SPS

Tripura Disturbance - Annexure II

NERLDC/GD/17/07/029	Monarchak Unit 1	NEEPCO	NEEPCO		19-07-2017 13:30:00	19-07-2017 14:46:00	Reversed Power		No		No		No		No SPS
Root Cause	**Relay indications of Tripura substations are not received properly due to which proper analysis of the event could not be done.**														
Remedial-Measures	Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.														
NERLDC/GD/17/07/030	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	21-07-2017 11:08:00	21-07-2017 11:14:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/030	132 kV Agartala - AGTCCPP 2 Line	POWERGRID	TSECL	NEEPCO	21-07-2017 11:08:00	21-07-2017 11:13:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in downstream of Agartala likely due to **vegetation** (Angle between Vr & Ir around 55 degrees).														
Remedial-Measures	In 47th PCC, it was decided to disable the E/F & O/C features of DPR at AGTCCPP. As informed by NEEPCO, O/C & E/F features of DPR are disabled on 21.08.17.														
NERLDC/GD/17/07/037	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	25-07-2017 10:49:00	25-07-2017 11:03:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/037	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	25-07-2017 10:49:00	25-07-2017 11:17:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/037	Monarchak GTG	NEEPCO	NEEPCO		25-07-2017 10:49:00	25-07-2017 12:00:00	Loss of Voltage		No		No		No		No SPS
Root Cause	**DR output is not available. Likely due to fault in downstream of Monarchak.**														
Remedial-Measures	Relay Settings at Monarchak, Rokhia & Udaipur to be reviewed by NEEPCO & TSECL and downstream co-ordination to be done. DR ouputs to be submitted by NEEPCO & TSECL.														
NERLDC/GD/17/07/039	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	26-07-2017 19:04:00	26-07-2017 19:55:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TSECL	26-07-2017 19:04:00	26-07-2017 19:53:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	26-07-2017 19:04:00	26-07-2017 19:12:00	No tripping	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TSECL	26-07-2017 19:04:00	26-07-2017 20:44:00	No tripping	Not Furnished	Not Applicable	Not Applicable	No	No	No	No	No SPS

Tripura Disturbance - Annexure II

NERLDC/GD/17/07/039	132/66 kV Auto Transformer 1, 2 & 3 at Udaipur	TSECL	TSECL	26-07-2017 19:04:00	26-07-2017 19:10:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
NERLDC/GD/17/07/039	Monarchak GTG	NEEPCO	NEEPCO	26-07-2017 19:04:00	26-07-2017 20:19:00	High Frequency		Yes		Yes		No		No SPS
NERLDC/GD/17/07/039	Monarchak STG	NEEPCO	NEEPCO	26-07-2017 19:04:00	26-07-2017 21:30:00	High Frequency		No		No		No		No SPS
Root Cause	**Relay indications of Tripura substations are not received properly due to which proper analysis of the event could not be done.**													
Remedial-Measures	Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.													
Aug'17														
NERLDC/GD/17/08/003	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	02-08-2017 12:55:00	02-08-2017 13:38:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/08/003	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	02-08-2017 12:55:00	02-08-2017 13:37:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/08/003	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	02-08-2017 12:55:00	02-08-2017 16:23:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/08/003	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	02-08-2017 12:55:00	02-08-2017 13:39:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
NERLDC/GD/17/08/003	Monarchak Unit GTG	NEEPCO	NEEPCO		02-08-2017 12:55:00	02-08-2017 14:52:00	Over Frequency		Not Applicable		No		No		No SPS
NERLDC/GD/17/08/003	Monarchak Unit STG	NEEPCO	NEEPCO		02-08-2017 12:55:00	02-08-2017 17:35:00	Over Frequency		Not Applicable		No		No		No SPS
Root Cause	Unwanted tripping of lines connected to Monarchak. Root cause/Fault location could not be concluded due to unavailability of DR outputs.													
Remedial-Measures	TSECL to submit the patrolling report. Relay Settings at Rokhia, 79 Tilla & Monarchak need to reviewed by TSECL & NEEPCO.													

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/011	132 kV Palatana - Surajmaninagar 1 Line	POWERGRID	OTPCL	TSECL	09-08-2017 05:17:00	09-08-2017 05:40:00	DP, ZIII, R-E	No tripping	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	132 kV AGTCCPP - Kumarghat 1 Line	POWERGRID	NEEPCO	POWERGRID	09-08-2017 05:17:00	09-08-2017 06:35:00	Over current	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Agartala - AGTCCPP 1 Line	POWERGRID	TSECL	NEEPCO	09-08-2017 05:17:00	09-08-2017 06:47:00	Not Furnished	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Agartala - AGTCCPP 2 Line	POWERGRID	TSECL	NEEPCO	09-08-2017 05:17:00	09-08-2017 05:58:00	Not Furnished	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	09-08-2017 05:17:00	09-08-2017 06:14:00	No tripping	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV P K Bari - Kumarghat 1 Line	TSECL	TSECL	POWERGRID	09-08-2017 05:17:00	09-08-2017 06:43:00	Over current	No tripping	Not Applicable	Not Applicable	Yes	No	No	No	No SPS
	Brief Description of the Incident	**Bangladesh (South Comilla) Power system, AGTCCPP and Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Surajmaninagar I line, 132 kV Palatana - Udaipur I line, 132 kV Kumarghat – P K Bari I line and 132 kV AGTCCPP - Kumarghat I line (132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded, 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc N. 124, 125, 126, 137, 138 and 139, 132 kV & 132 kV Dullavcherra – Hailakandi I line was under outage since 06:06 Hrs on 02.04.2017 due to tower collapsed at Loc No. 134). At 05:17 Hrs on 09.08.2017, 132 kV Palatana - Surajmaninagar I line, 132 kV Palatana - Udaipur I line, 132 kV Kumarghat – P K Bari I line and 132 kV AGTCCPP - Kumarghat I line tripped. Due to tripping of these elements, Bangladesh (South Comilla) power system, AGTCCPP and Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to no source in this area.**											
	Antecedent Conditions of NER Grid	**Antecedent Load: 1700 MW , Antecedent Generation: 1809 MW**													
	***Substation Affected**	**Tripura (Rokhia Power Station, Monarchak Power Station, Agartala, Ambasa, Budhjungnagar, Dhalabil, Dharmanagar, Dullavchera, Jirania, Kamalpur, P K Bari, Rabindranagar, Surajmaninagar, Teliamura (Gamaitilla), Udaipur (Banduar) and Baramura), Bangladesh (South Comilla) & AGTCCPP Power Station**													
	Restoration Details	**Power Supply extended to Surajmaninagar through 132 kV Palatana - Surajmaninagar I line at 05:40 Hrs, to Agartala through 132 kV Agartala - Surajmaninagar II line at 05:41 Hrs, to AGTCCPP Power Station through 132 kV Agartala - AGTCCPP II line at 05:58 Hrs, to Rokhia Power Station through 132 kV Agartala - Rokhia II line at 05:59 Hrs, to Udaipur through 132 kV Palatana – Udaipur I line at 06:25 Hrs, to Monarchak Power Station through 132 kV Monarchak – Rokhia I line at 08:25 Hrs, to P K Bari through 132 kV P K Bari – Kumarghat I line at 06:43 Hrs. Power supply was extended to Bangladesh (South Comilla) through 132 kV Surjamaninagar – South Comilla I at 06:27 Hrs on 09.08.2017. The system was progressively restored at Hrs.**													
	Root Cause	**Fault in the tripura system. Root Cause could not be concluded due to unavailability of DR Output/Proper Relay indications.**													
	Remedial Measures	**TSECL may intimate the root cause. OTPC may furnish the DR output of Palatana end.**													

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/014	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	09-08-2017 14:01:00	09-08-2017 14:12:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur I line was under outage since 12:22 Hrs on 09.08.2017). At 13:59 Hrs on 09.08.2017, 132 kV Monarchak - Rokhia I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1698 MW , Antecedent Generation: 1699 MW**												
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**												
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 14:12 Hrs, Rabindranagar Substation through 132 kV Monarchak - Rabindranagar 1 Line at 14:24 Hrs on 09.08.2017.**												
	Root Cause	**DR output not avaialable. Fault in the line likely due to vegetation as this line passes through rubber plantation as informed by TSECL.**												
	Remedial Measures	**Vegetation clearance to be done by TSECL.**												

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/018	132 kV Agartala - Rokhia I Line	TSECL	TSECL	TPGL	10-08-2017 00:26:00	10-08-2017 01:03:00	Over current	Over current	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Agartala - Rokhia II Line	TSECL	TSECL	TPGL	10-08-2017 00:26:00	10-08-2017 00:55:00	Hand tripped	Closed	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	10-08-2017 00:26:00	10-08-2017 01:05:00	Hand tripped	Directional Over Current	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Agartala-Rokhia I & II lines and 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur 1 Line was under shutdown since 12:30 Hrs on 09.08.2017, 66 kV Bagafa-Belonia line & 66 kV Rokhia-Badarghat line kept open for system requirement). At 00:26 Hrs on 10.08.2017, 132 kV Agartala-Rokhia I & II lines and 132 kV Monarchak - Rokhia I line tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station and Rabindranagar area were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1852 MW , Antecedent Generation: 2112 MW**													
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station and Rabindranagar Substation**													
	Restoration Details	**Power supply extended to Rokhia Power Station through 132 kV Agartala - Rokhia II Line at 00:55 Hrs, to Monarchak Power Station through 132 kV Monarchak - Rokhia I Line at 01:05 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar I Line at 01:06 Hron 10.08.2017.**													
	Root Cause	Fault in 132 kV Agartala-Rokhia I line due to jumper snap. Tripping of 132 kV Monarchak - Rokhia line needs to be reviewed.													
	Remedial Measures	Over Current relay settings at Rokhia to be reviewed.													

Tripura Disturbance - Annexure II

NERLDC/GD /17/08/024	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	11-08-2017 10:41:00	11-08-2017 10:46:00	Not Furnished	Directional Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	11-08-2017 10:41:00	11-08-2017 10:59:00	Not Furnished	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line & 132 kV Monarchak - Udaipur I line. At 10:42 Hrs on 11.08.2017, 132 kV Monarchak - Rokhia I line & 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1507 MW , Antecedent Generation: 2044 MW**												
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**												
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 10:46 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Udaipur 1 Line at 10:49 Hrs on 11.08.2017.**												
	Root Cause	Fault in any one the tripped line or downstream of Monarchak.												
	Remedial Measures	Relays settings at Monarchak to be reviewed. Relay Coordination of downstream substations of Monarchak to be done by TSECL in consultation with Monarchak,NEEPCO.												

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/030	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	16-08-2017 12:45:00	16-08-2017 13:28:00	DP, ZI, B-E	Not Furnished	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	16-08-2017 12:45:00	16-08-2017 13:39:00	No tripping	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	16-08-2017 12:45:00	16-08-2017 13:05:00	No tripping	Directional Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Palatana - Udaipur I line (66 kV Gokulnagar - Badarghat I line, 66 kV Bagafa - Belonia I line and 66 kV Udaipur - Jatan Bari I line were kept open due to phase sequence issue). At 12:45 Hrs on 16.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Palatana - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar area and Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1720 MW , Antecedent Generation: 2121 MW**													
	***Substation Affected**	**Monarchak, Rabindranagar and Udaipur**													
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 13:05 Hrs, to Udaipur through 132 kV Palatana - Udaipur 1 Line at 13:28 Hrs.**													
	Root Cause	Fault in 132 kV Palatana - Udaipur line/ downstream of Monarchak. TSECL may intimate the root cause.													
	Remedial Measures	Earth Fault settings at Rokhia to be reviewed by TSECL. Tripping at Udaipur end of 132 kV Monarchak-Udaipur line to be reviewed. DR output of 132 kV Palatana-Udaipur line to be furnished by OTPC.													

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/040	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	21-08-2017 08:40:00	21-08-2017 15:56:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	21-08-2017 08:40:00	21-08-2017 09:04:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	21-08-2017 08:40:00	21-08-2017 09:30:00	No tripping	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 08:40 Hrs on 21.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1827 MW , Antecedent Generation: 1549 MW**												
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**												
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 09:04 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 09:04 Hrs on 21.08.2017.**												
	Root Cause	Fault in 132 kV Agartala - Rokhia 1 Line / downstream of Monarchak. TSECL may intimate the root cause.												
	Remedial Measures	Earth Fault and Over Current relay settings at Rokhia,Udaipur & Monarchak to be reviewed by TSECL & Monarchak,NEEPCO.												

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/042	132 kV Palatana - Udaipur 1 line	TSECL	OTPCL	TSECL	21-08-2017 23:45:00	21-08-2017 23:52:00	High Speed Relay	Not Furnished	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 KV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	21-08-2017 23:45:00	22-08-2017 01:18:00	Earth Fault	Hand Tripped	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	132 KV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	21-08-2017 23:45:00	22-08-2017 01:25:00	Hand Tripped	Earth Fault	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur I line and 132 KV Agartala - Rokhia 1&2 Lines (66 kV Rokhia - Badarghat I line, 66 kV Gokulnagar - Badarghat I line, 66 kV Bagafa - Belonia I line and 66 kV Amarpur - Gumti I line were kept open due to phase sequence issue). At 23:45 Hrs on 21.08.2017, 132 kV Palatana - Udaipur I line and 132 KV Agartala - Rokhia 1&2 Lines tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1930 MW , Antecedent Generation: 1440 MW**													
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station, Rabindranagar and Udaipur Substation**													
	Restoration Details	**Power Supply extended to Udaipur through 132 kV Palatana - Udaipur 1 Line at 23:52 Hrs on 21.08.2017, to Monarchak Power Station through 132 kV Monarchak - Udaipur 1 Line at 23:58 Hrs on 21.08.2017, to Rokhia Power Station through 132 KV Agartala - Rokhia 1 Line at 01:18 Hrs on 22.08.2017.**													
	Root Cause	TSECL may intimate the root cause. Root cause could not be concluded due to unavailability of DR outputs/Proper relay indications.													
	Remedial Measures	Earth Fault and Over Current relay settings at Palatana,Udaipur & Rokhia to be reviewed by OTPC & TSECL.													

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/044	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	22-08-2017 13:12:00	22-08-2017 13:43:00	Hand Tripped	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	22-08-2017 13:12:00	22-08-2017 15:20:00	Hand Tripped	Hand Tripped	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 13:12 Hrs on 22.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1976 MW , Antecedent Generation: 1430 MW**												
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**												
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 13:43 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 13:43 Hrs on 22.08.2017.**												
	Root Cause	TSECL may intimate the root cause. Root cause could not be concluded due to unavailability of DR outputs/Proper relay indications.												
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.												
NERLDC/GD/17/08/051	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	26-08-2017 17:14:00	26-08-2017 17:25:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	26-08-2017 17:14:00	26-08-2017 17:38:00	Not Furnished	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line. At 17:14 Hrs on 26.08.2017, 132 kV Monarchak - Rokhia I line and 132 kV Monarchak - Udaipur I line tripped. Due to tripping of these elements, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 2041 MW , Antecedent Generation: 1408 MW**												
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**												
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 17:25 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 17:25 Hrs on 26.08.2017.**												
	Root Cause	TSECL may intimate the root cause. Likely due to fault in the downstream of Monarchak.												
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.												

Tripura Disturbance - Annexure II

NERLDC/GD/17/08/052	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TSECL	27-08-2017 09:21:00	27-08-2017 09:28:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia I line (132 kV Monarchak - Udaipur I line was under shutdown since 09:18 Hrs on 27.08.2017). At 09:21 Hrs on 27.08.2017, 132 kV Monarchak - Rokhia I line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1830 MW , Antecedent Generation: 1415 MW**													
	***Substation Affected**	**Monarchak Power Station and Rabindranagar Substation**													
	Restoration Details	**Power Supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 09:28 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 09:28 Hrs on 27.08.2017.**													
	Root Cause	TSECL may intimate the root cause.													
	Remedial Measures	Earth Fault and Over Current relay settings at Monarchawk, Udaipur & Rokhia to be reviewed by Monarchak,NEEPCO & TSECL.													
NERLDC/GD/17/08/058	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	31-08-2017 15:46:00	31-08-2017 16:02:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line (132 kV Monarchak - Udaipur line was under shutdown since 12:45 Hrs on 31.08.2017). At 15:46 Hrs on 31.08.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1806 MW, Antecedent Generation: 1434 MW													
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation													
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia 1 Line at 16:02 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar 1 Line at 16:02 Hrs on 31.08.2017.													
	Root Cause	**TSECL may intimate the root cause.**													
	Remedial Measures	**Earth Fault relay settings at Rokhia to be reviewed by TSECL.**													

Tripura Disturbance - Annexure II

Sep'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
1	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	03-09-2017 11:02:00	03-09-2017 11:33:00	No tripping	Direction Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line. 132 kV Palatana - Udaipur line was under shutdown since 06:29 Hrs on 03.09.17, 66 kV Udaipur - Gokulnagar line, 66 kV Amarpur - Gumti line and 66 kV Bagafa - Belonia line were kept open (Cause: phase sequence issue). At 11:02 Hrs on 03.09.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station, Rabindranagar and Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1619 MW , Antecedent Generation: 1588 MW													
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation													
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 11:14 Hrs, to Rabindranagar through 132 kV Monarchak - Rabindranagar Line also at 11:14 Hrs on 03.09.17.													
	Root Cause	DR outputs/Tripping details of downstream elements are not available for analysis. From relay indication, fault was likely in downstream of Rokhia/fault in 132 kV Monarchak-Rokhia line which has stretches of rubber plantations.													
	Remedial Measures	**Tripping of 132 kV Agartala-Rokhia II line at Rokhia needs to be analysed. DEF setting at Rokhia end is to be checked by TSECL.Rubber plantations in vicinity of line to be cleared.** Relay coordination of downstream substation of Rokhia to be reviewed by TSECL. TSECL is to check Circuit Breaker operation of downstream elements.													
NERLDC/GD/17/09/006	400 kV Palatana - Silchar 1 Line	NETCL	OTPCL	POWERGRID	05-09-2017 08:16:00	05-09-2017 13:04:00	DPR, Z-IV, B-E	Direct Trip received	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/09/006	132 kV Palatana - Udaipur 1 Line	TSECL	OTPCL	TSECL	05-09-2017 08:16:00	05-09-2017 09:16:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/09/006	132 kV Rokhia - Monarchak 1 Line	TSECL	TPGL	NEEPCO	05-09-2017 08:16:00	05-09-2017 08:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/09/006	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	05-09-2017 08:16:00	05-09-2017 09:00:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS

Tripura Disturbance - Annexure II

	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur line and 132 KV Monarchak - Rokhia Line. 66 kV Gokulnagar - Udaipur line kept open (Cause : phase sequence issue), 66 kV Amarpur - Gumti line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 08:16 Hrs on 05.09.2017, 132 kV Monarchak - Rokhia line and 132 kV Palatana - Udaipur lines tripped. Due to tripping of these elements, Monarchak Power Station,Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1821 MW, Antecedent Generation: 1728 MW													
	*Substation Affected	Monarchak Power Station, Udaipur and Rabindranagar Substation													
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 09:16 Hrs, to Monarchak Power Station through 132 kV Rokhia - Monarchak Line at 08:40 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 08:40 Hrs on 05.09.2017.													
	Root Cause	As informed by OTPC, Tripping of lines were due to wrong operation of earth switch of 132 kV Palatana-SM Nagar line at Palatana. Tripping of 400 kV Palatana-Silchar I line in reverse zone at Palatana, 132 kV Rokhia - Monarchak Line and 132 kV Monarchak - Udaipur Line need review.													
	Remedial Measures	OTPC to review the reverse zone settings of 400 kV Silchar-Palatana D/C. Earth Fault Relay settings at Rokhia, Monarchak & Udaipur need to be reviewed by concerned utilities.													
3	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TPGL	08-09-2017 11:22:00	08-09-2017 11:49:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	08-09-2017 11:22:00	08-09-2017 11:51:00	No tripping	DP, ZI, R-E	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Monarchak Power Station and Rabindranagar area of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia line (132 kV Monarchak - Udaipur line was under shutdown since 09:51 Hrs on 08.09.2017). At 11:22 Hrs on 08.09.2017, 132 kV Monarchak - Rokhia line tripped. Due to tripping of this element, Monarchak Power Station and Rabindranagar area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1817 MW, Antecedent Generation: 2025 MW													
	*Substation Affected	Monarchak Power Station and Rabindranagar Substation													
	Restoration Details	Power supply extended to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 11:51 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 11:51 Hrs on 08.09.2017.													
	Root Cause	It is likely that fault was in 132 kV Monarchak - Rokhia line which has stretches of rubber plantations . DR and EL output is not furnished by Rokhia(TPGL). Also, TSECL may please confirm the reason for tripping of 132 kV Agartala - Rokhia I line.													
	Remedial Measures	Rubber plantations/Vegetation in vulnerable locations to be removed. Earth Fault settings at Agartala for Rokhia line-I is to be reviewed by TSECL. **Also, relay setting at Monarchak Power System is to be checked and coordinated with TSECL as per Ramakrishna Task Force Settings.**													

Tripura Disturbance - Annexure II

	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	13-09-2017 15:20:00	13-09-2017 15:51:00	No tripping	Earth Fault	Not Furnished	Not Applicable	No	No	No	No	No SPS
	66 kV Amarpur - Gumti Line	TSECL	TSECL	TPGL	13-09-2017 15:20:00	13-09-2017 16:40:00	Over current	Over current	Not Furnished	Not Applicable	No	No	No	No	No SPS
4	Brief Description of the Incident	Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia Line and 66 kV Amarpur - Gumti 1 Line. 132 kV Palatana - Udaipur 1 Line was under shutdown since 09:50 Hrs on 13.09.2017, 66 kV Rokhia - Badarghat line, 66 kV Agartala - Badarghat line, 66 kV Bagafa - Belonia line were kept open (Cause: phase sequence issue). At 15:20 Hrs on 13.09.2017, 132 kV Monarchak - Rokhia Line and 66 kV Amarpur - Gumti line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.											
	Antecedent Conditions of NER Grid	Antecedent Load: 1870 MW, Antecedent Generation: 2060 MW													
	*Substation Affected	Monarchak Power Station, Rabindranagar and Udaipur Substation													
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 17:19 Hrs, to Monarchak Power Station through 132 kV Rokhia - Monarchak Line at 15:51 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 15:51 Hrs.													
	Root Cause	At the same time, 132 kV Palatana - Surajmaninagar line, 132 kV Surajmaninagar - Budhjungnagar I & II Line, 132 kV Agartala - Budhjungnagar I Line and 132 kV Jirania - Budhjungnagar I Line tripped. **TSECL may carry out patrolling of the lines and intimate the root cause.** Due to unavailability of DR and proper relay indications, root cause could not be concluded.													
	Remedial Measures	Patrolling report to be furnished to NERPC and NERLDC. Also, Relay Settings at Rokhia, 79 Tilla, Budhjangnagar, Surajmaninagar & Monarchak need to reviewed by TSECL & NEEPCO. Also, directional nature of Earth Fault setting at Rokhia to be confirmed by TPGL													

Tripura Disturbance - Annexure II

5	132 kV Palatana - Udaipur Line	TSECL	OTPCL	TSECL	28-09-2017 13:15:00	28-09-2017 14:02:00	Over current	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Udaipur Line	TSECL	NEEPCO	TSECL	28-09-2017 13:15:00	28-09-2017 14:09:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Udaipur area of Tripura Power System were connected with rest of NER Grid through 132 kV Palatana - Udaipur line and 132 KV Monarchak - Udaipur Line. 66 kV Gokulnagar - Udaipur line kept open (Cause : phase sequence issue), 66 kV Amarpur - Gumti line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 13:15 Hrs on 28.09.2017, 132 kV Monarchak - Udaipur line and 132 kV Palatana - Udaipur line tripped. Due to tripping of these elements, Udaipur area of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1864 MW, Antecedent Generation: 2030 MW													
	*Substation Affected	Udaipur Substation													
	Restoration Details	Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 14:02 Hrs on 28.09.2017.													
	Root Cause	At the same time , 132 kV Palatana - Surajmaninagar line tripped with Over current relay indication at Palatana. POWERGRID may comfirm the reason for tripping of this line. Also, from relay indication, it was fault was likely occurred in 132 kV Palatana - Udaipur line. **TSECL may provide reason for tripping of 132 kV Monarchak - Udaipur line at Udaipur.**													
	Remedial Measures	Line patrolling is to be done and report is to be furnished to NERLDC and NERPC. Also, Earth Fault and Over current relay settings is to be reviewed at Palatana, Udaipur and Monarchak by OTPCL, TSECL and NEEPCO.													

6	132 kV AGTPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:44:00	DP, ZII, B-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Kumarghat - P K Bari Line	TSECL	POWERGRID	TSECL	28-09-2017 17:22:00	29-09-2017 00:32:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Badarpur - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:42:00	DP, ZII, Y-E	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Aizawl - Kumarghat Line	POWERGRID	POWERGRID	POWERGRID	28-09-2017 17:22:00	28-09-2017 17:48:00	DP, ZII, Y-E	DP, ZIV, Y-E	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV P K Bari - Ambassa Line	TSECL	TSECL	TSECL	28-09-2017 17:22:00	28-09-2017 17:28:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Dhalabil - Kamalpur Line	TSECL	TSECL	TSECL	28-09-2017 17:22:00	28-09-2017 17:26:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	P K Bari area of Tripura Power System consisting load of P K Bari, Kamalpur, Dharmanagar, Kailashshahar & Dullavcherra area of Assam Power System were connected with rest of NER Grid through 132 kV P K Bari - Kumarghat Line, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line. 132 kV Ambassa - Kamalpur Line kept open at Ambassa end, 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr, 2016 (Cause: Tower collapesd), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc No. 124, 125, 126, 137, 138 and 139 . At 17:22 Hrs on 28.09.2017, 132 kV P K Bari - Kumarghat Line, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line tripped. Due to tripping of these elements, P K Bari, Kamalpur, Dharmanagar, Kailashshahar area of Tripura Power System and Dullavcherra area of Assam Power System were separated from rest of NER Grid and subsequently collapsed due to no source in these areas. Also, at 17:22 Hrs 132 kV AGTCCPP-Kumarghat , 132 kV Kumarghat - Aizawl and 132 kV Kumarghat - Badarpur lines tripped resulting in bus dead at Kumarghat Substation.												
	Antecedent Conditions of NER Grid	Antecedent Load: 2276 MW, Antecedent Generation: 2209 MW													
	*Substation Affected	P K Bari, Kamalpur, Dharmanagar, Kailashahar and Dullavcherra Substation													
	Restoration Details	Power supply extended to Kamalpur Substation through 132 kV Dhalabil - Kamalpur Line at 17:26 Hrs, to Kailashahar through 132 kV P K Bari - Kailashahar Line at 17:28 Hrs on 28.09.2017.													

	Root Cause	DR output from Kumarghat for tripping of 132 kV AGTCCPP-Kumarghat line shows Y-E fault with fault current up to 0.894 kA. The fault was cleared in 550 msec. DR output from Badarpur for tripping of 132 kV Badarpur - Kumarghat Line shows Y-E in ZII with fault current up to 0.889 kA and angle between Vy & Iy is around 60-66 degrees which indicates **solid nature of fault** . The fault was cleared in 565 msec. Auto-reclose was not attempted. DR output from Aizawl shows Y-E in ZII with fault current up to 0.503 kA and angle between Vy & Iy is around 65-70 degrees which indicates **solid fault** . The fault was cleared in 563 msec. Auto-reclose was not attempted. DR output from Kumarghat for tripping of 132 kV Aizawl - Kumarghat Line shows Y-E fault in Z IV with fault current up to 0.514 kA. The fault was cleared in 550 msec. DR and EL output is not furnished by PK Bari for tripping of 132 kV PK Bari-Kumarghat line. **As informed by TSECL, fault was in 132 kV PK Bari- Kumarghat line due to jumper issue.TSECL may intimate the exact reason of fault. Due to non operation of relay at Kumarghat end, the fault was cleared by all the lines from remote end of Kumarghat Substation.**TSECL may confirm the root cause after patrolling of the line.												
	Remedial Measures	Patrolling of 132 kV PK Bari - Kumarghat line is to be done and report is to be furnished to NERPC and NERLDC . Also, relay settings at Kumarghat end is to be reviewed by POWERGRID and coordination to be done with TSECL to avoid unwanted trippings of healthy lines. **Considering the short nature of the 132 kV PK Bari-Kumarghat line, line diffrential relay may be installed / POP-Z-II scheme may be implemented in DPR at both ends. Non-directional O/C and E/F relays at PK bari to be changed to Directional.**												
7	132 kV P K Bari - Ambassa Line	TSECL	TSECL	TSECL	28-09-2017 17:32:00	28-09-2017 17:40:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Dhalabil - Kamalpur Line	TSECL	TSECL	TSECL	28-09-2017 17:32:00	28-09-2017 17:36:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	P K Bari area of Tripura Power System consisting load of P K Bari, Kamalpur, Dharmanagar, Kailashshahar & Dullavcherra area of Assam Power System were connected with rest of NER Grid through 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line. 132 kV Ambassa - Kamalpur Line kept open at Ambassa end, 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr, 2016 (Cause: Tower collapesd), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc N. 124, 125, 126, 137, 138 and 139 . 132 kV P K Bari - Kumarghat Line tripped at 17:22 Hrs on 28.09.17. While charging 132 kV PK Bari - Kumarghat line at 17:32 Hrs on 28.09.17, 132 kV P K Bari - Ambassa Line and 132 kV Dhalabil - Kamalpur Line lines tripped. Due to trippng of these elements, PK Bari was separated from rest of NER Grid and												
	Antecedent Conditions of NER Grid	Antecedent Load: 2312 MW, Antecedent Generation: 2206 MW												
	*Substation Affected	P K Bari, Kamalpur, Dharmanagar, Kailashahar and Dullavcherra Substations												
	Restoration Details	Power supply extended to Kamalpur Substation through 132 kV Dhalabil - Kamalpur Line at 17:36 Hrs, to P K Bari through 132 kV P K Bari - Kamalpur Line at 17:36 Hrs on 28.09.2017, to Dharmanagar Substation through 132 kV P K Bari - Dharmanagar Line at 17:38 Hrs on 28.09.2017.												
	Root Cause	**It is likely that fault was in 132 kV PK Bari- Kumarghat line**. Due to non operation of relay at Kumarghat end at 17:22 Hrs, the fault was cleared by all the lines from remote end of Kumarghat Substation. However, while charging this line at 17:32 Hrs, the line tripped again along with all the other lines connected to PK Substation.												
	Remedial Measures	Patrolling of 132 kV PK Bari - Kumarghat line is to be done and report is to be furnished to NERPC and NERLDC. Installation of Numerical Relays at PK Bari to be expedicted..Also, Earth Fault Relay settings at Kumarghat, PK Bari,Ambassa and Kamalpur is to be reviewed by POWERGRID and coordination to be done with TSECL to avoid unwanted trippings of healthy lines.												

Tripura Disturbance - Annexure II

Oct'17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data To Be Furnished by		Date & Time of Event	Date & Time of restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hours		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
1	132 kV Palatana - Udaipur Line	TSECL	OTPC	TSECL	04-10-2017 09:37:00	04-10-2017 09:46:00	No tripping	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Rokhia line	TSECL	NEEPCO	TPGCL	04-10-2017 09:37:00	04-10-2017 09:48:00	No tripping	Directional Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were connected with rest of NER Grid through 132 kV Monarchak - Rokhia Line and 132 kV Palatana - Udaipur Line. 66 kV Udaipur - Badarghat line, 66 kV Bagafa - Belonia line and 66 kV Amarpur - Gumti line were kept open (Cause : phase sequence issue). At 09:37 Hrs on 04.10.2017, 132 kV Palatana - Udaipur Line and 132 kV Monarchak - Rokhia Line tripped. Due to tripping of these elements, Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1655 MW, Antecedent Generation: 2304 MW**													
	***Substation Affected**	**Monarchak Power Station, Rabindranagar and Udaipur Substation**													
	Restoration Details	**Power supply extended to Udaipur Substation through 132 kV Palatana - Udaipur Line at 09:46 Hrs, to Monarchak Power Station through 132 kV Monarchak - Rokhia Line at 09:48 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 10:56 Hrs.**													
	Root Cause	DR Output and FIR not available.													
	Remedial Measures	Relay setting of important nodes of Tripura is to be tested/modified.													

2	132 kV Agartala - Rokhia 1 Line	TSECL	TSECL	TSECL	14-10-2017 01:15:00	15-10-2017 14:57:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Agartala - Rokhia 2 Line	TSECL	TSECL	TPGL	14-10-2017 01:15:00	14-10-2017 01:30:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Rokhia 1 Line	TSECL	NEEPCO	TPGL	14-10-2017 01:15:00	14-10-2017 02:38:00	No tripping	Over current	Not Applicable	Not Applicable	No	No	No	No	No SPS
	132 kV Monarchak - Udaipur 1 Line	TSECL	NEEPCO	TSECL	14-10-2017 01:15:00	14-10-2017 01:21:00	Hand Tripped	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia areas of Tripura Power System were connected with rest of NER Grid through 132 kV Agartala - Rokhia I & II lines and 132 KV Monarchak - Udaipur Line. 66 kV Rokhia - Badarghat line kept open (Cause : phase sequence issue) and 66 kV Bagafa - Belonia line kept open (Cause : phase sequence issue). At 01:15 Hrs on 14.10.2017, 132 kV Agartala - Rokhia I & II lines and 132 KV Monarchak - Rokhia Line tripped and 132 KV Monarchak - Udaipur Line hand tripped. Due to tripping of these elements, Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia areas of Tripura Power Systems were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1945 MW, Antecedent Generation: 1936 MW**													
	***Substation Affected**	**Monarchak Power Station, Rokhia Power Station, Rabindranagar, Boxnagar and Belonia Substation**													
	Restoration Details	**Power supply extended to Monarchak Power Station through 132 kV Monarchak - Udaipur 1 Line at 01:21 Hrs, to Rokhia Power Station through 132 kV Agartala - Rokhia 2 Line at 01:30 Hrs, to Rabindranagar Substation through 132 kV Monarchak - Rabindranagar Line at 01:22 Hrs on 14.09.17.**													
	Root Cause	DR output and FIR has not been received.													
	Remedial Measures	TSECL to intimate if any problems have been found at lines emanating from Rokhia.													

	132 kV Palatana - Surajmaninagar Line	POWERGRID	OTPCL	TSECL	21-10-2017 09:26:00	21-10-2017 10:42:00	DP, ZII, R-B-E	No tripping	Not Furnished	Not Furnished	No	No	Yes	No	No SPS
	132 kV AGTCCPP - Kumarghat Line	POWERGRID	NEEPCO	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:45:00	No tripping	DP, ZIII & Earth Fault	Not Furnished	Not Furnished	Yes	No	No	Yes	No SPS
	132 kV P K Bari - Kumarghat Line	POWERGRID	TSECL	POWERGRID	21-10-2017 09:26:00	21-10-2017 09:55:00	No tripping	DP, ZIII & Earth Fault	Not Furnished	Not Furnished	Yes	No	No	Yes	No SPS
	132 kV Monarchak - Rokhia Line	TSECL	NEEPCO	TPGL	21-10-2017 09:26:00	21-10-2017 10:53:00	Over Voltage	Over current	Not Furnished	Not Furnished	No	Yes	No	No	No SPS
3	**Brief Description of the Incident**	**Tripura Power System (except Udaipur area), Dullavchera area of Assam Power System and Bangladesh(South Comilla) Power System were connected with rest of NER Grid through 132 kV Palatana-Surajmaninagar line, 132 kV Monarchak - Rokhia Line, 132 KV AGTCCPP - Kumarghat Line and 132 KV Kumarghat - P K Bari Line. 132 kV Dullavcherra - Hailakandi was under continuous shutdown from Apr,2016 (Cause: Tower collapsed), 132 kV P K Bari – Silchar I line was under outage since 13:40 Hrs on 10.07.2017 to avoid electrocution from falling of ERS system as entire area is flooded and 132 kV P K Bari – Silchar II line was under outage since 06:07 Hrs on 02.04.2017 due to tower collapsed at Loc No. 124, 125, 126, 137, 138 and 139. At 09:26 Hrs on 21.10.2017, 132 kV Palatana - Surajmaninagar line, 132 KV Monarchak - Rokhia Line, 132 KV AGTCCPP - Kumarghat Line and 132 KV Kumarghat - P K Bari Line tripped. Due to tripping of these elements, Tripura Power System (except Udaipur area), Dullavchera area of Assam Power System and Bangladesh(South Comilla) Power System were separated from rest of NER Grid and**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1481 MW, Antecedent Generation: 1883 MW**													
	***Substation Affected**	**NEEPCO: AGTCCPP Power Station; TSECL: Agartala, Bodhjungnagar, Jirania, Surajmaninagar, Rokhia, Rabindranagar, Baramura, Gamaitila, Ambassa, Kamalpur, Dhalabil, P K Bari and Dharmanagar Substation, Assam: Dullavchera Substation, Bangladesh: South Comilla**													
	Restoration Details	**Power supply extended to AGTCCPP Power Station through 132 kV AGTCCPP – Kumarghat line at 09:45 Hrs, to part of Tripura power system through 132 kV P K Bari – Kumarghat line at 09:55 Hrs and to Bangladesh(South Comilla) Power System through 132 kV Surajmaninagar- Comilla I line at 09:55 Hrs, to Dullavchera area of Assam Power System through 132 kV Dharmanagar – Dullavchera line at 09:55 Hrs on 21.10.2017 .**													
	Root Cause	DR output from Palatana for 132 kV Palatana-Surajmaninagar line shows R-Y fault in ZIII with gradual increasing of fault current upto 2.134 kA. The fault was cleared in around 850 msec. Fault distance was 89.7 km from Palatana. Line was not tripped at SurajmaniNagar end.													
	Remedial Measures	The constituents may discuss a method to avoid such kind of cascaded tripping													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/001	132 kV Dimapur (PG) - Kohima 1 Line	DoP Nagaland & POWERGRID	POWERGRID	DoP, Nagaland	01-07-2017 17:12:00	01-07-2017 17:22:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	High resistive fault due to **vegetation**														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														
NERLDC/GD/17/07/002	132 kV Dimapur (PG) - Kohima 1 Line	DoP Nagaland & POWERGRID	POWERGRID	DoP, Nagaland	02-07-2017 13:11:00	02-07-2017 13:24:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
Root Cause	High resistive fault due to **vegetation**														
Remedial-Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.														
NERLDC/GD/17/07/005	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	04-07-2017 08:54:00	04-07-2017 09:06:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland.														
NERLDC/GD/17/07/006	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	04-07-2017 21:15:00	04-07-2017 21:24:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/011	132 kV Dimapur (PG) - Kohima 1 Line	DoP, Nagaland	POWERGRID	DoP, Nagaland	10-07-2017 14:10:00	10-07-2017 14:18:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	DR not available/submitted. Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/017	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-07-2017 11:30:00	15-07-2017 11:37:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/021	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	16-07-2017 02:02:00	16-07-2017 12:30:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
Root Cause	Fault in the **downstream** of Kohima likely due to **Vegetation.**														
Remedial-Measures	Proper vegetation clearance and Relay coordination of downnstream of Kohima are to be done by DoP Nagaland. DR output of Dimapur end is to be submitted by POWERGRID.														
NERLDC/GD/17/07/025	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-07-2017 14:52:00	17-07-2017 15:06:00	Earth Fault	Over Current	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	Y-E Solid Transient Fault (Angle between Vy & Iy around 65-71 degrees).														
Remedial-Measures	Resistive reach of DPR at Dimapur(PG) to be reviewed by POWERGRID as fault cleared after 500 msec. POWERGRID & DoP Nagaland to identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/026	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-07-2017 15:27:00	17-07-2017 15:37:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	Y-E Solid Transient Fault (Angle between Vy & Iy around 68 degrees).														
Remedial-Measures	Resistive reach of DPR at Dimapur(PG) to be reviewed by POWERGRID as fault cleared after 250 msec. POWERGRID & DoP Nagaland to identify the lightning prone areas and measure the footing resistance of towers in identified areas. TLSAs may be installed in case of frequent tripping.														
NERLDC/GD/17/07/028	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	19-07-2017 05:03:00	19-07-2017 05:15:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault (38 degrees between Vb & Ib)**. Fault cleared in Zone-I timing from Dimapur end. However, fault fed from Kohima end for 570 msec (fault voltage in tripped phase)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. Earth Fault Relay setting at Kohima to be reviewed by DoP Nagaland considering the LHEP generation & latest fault contribution.														
NERLDC/GD/17/07/032	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-07-2017 11:23:00	22-07-2017 11:35:00	Earth Fault	No tripping	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (R-E fault initially and turned in to R-Y-E fault with angle between Vr & Ir around 23 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														
NERLDC/GD/17/07/033	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-07-2017 13:05:00	22-07-2017 13:13:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (B-E fault with angle between Vr & Ir around 23 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/034	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-07-2017 13:28:00	23-07-2017 13:35:00	Earth Fault	Not Furnished	Not Applicable	Not Applicable	Yes	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/035	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	24-07-2017 09:15:00	24-07-2017 09:22:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/07/036	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	24-07-2017 09:35:00	24-07-2017 09:42:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/038	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	26-07-2017 15:08:00	26-07-2017 15:16:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/07/040	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-07-2017 09:25:00	27-07-2017 09:35:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
NERLDC/GD/17/07/041	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-07-2017 10:17:00	27-07-2017 10:35:00	Over current	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														
NERLDC/GD/17/07/042	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	30-07-2017 15:50:00	30-07-2017 16:53:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Fault during high way construction activities**.														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	

Aug-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/005	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	02-08-2017 21:06:00	02-08-2017 21:15:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (B-E fault with angle between Vb & Ib around 36-40 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland. DR outputs of Dimapur(PG) end to be submitted by POWERGRID. Resistive reach of the DPR settings at Dimapur to be doen by POWERGRID.														
NERLDC/GD/17/08/008	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	06-08-2017 18:03:00	07-08-2017 12:49:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
Root Cause	**Vegetation Fault**. (Y-E fault with angle between Vy & Iy around 30 degrees)														
Remedial-Measures	Vegetation clearance to be done by DoP Nagaland.														

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/012	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-08-2017 13:09:00	09-08-2017 13:20:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG) - Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 13:09 Hrs on 09.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1671 MW , Antecedent Generation: 1567 MW**													
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 13:20 Hrs on 09.08.2017.**													
	Root Cause	**Fault in the line likely due to vegetation.**													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland. DR output of Dimapur end to be submitted by POWERGRID.**													
NERLDC/GD/17/08/013	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-08-2017 17:42:00	09-08-2017 17:49:00	DP, ZI, R-E	No tripping	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 17:42 Hrs on 09.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 2112 MW , Antecedent Generation: 2057 MW**													
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 17:49 Hrs on 09.08.2017.**													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
	Root Cause	DR output shows R-E fault with 3 kA fault current and angle between Vr & Ir around 60-61 degrees indicate transient fault due to **vegetation infringement.**Dimapur end opened within 60 msec of fault initiation. However, Fault cleared after 650 msec as seen from DR (tripping at remote end).													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland.**													
NERLDC/GD /17/08/026	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	13-08-2017 12:22:00	13-08-2017 12:32:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line & 66 kV Tuensang - Likhimro line were kept open). At 12:22 Hrs on 13.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**													
	Antecedent Conditions of NER Grid	**Antecedent Load: 1630 MW , Antecedent Generation: 2054 MW**													
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:32 Hrs on 13.08.2017.**													
	Root Cause	Vegetation Fault													
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/028	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	14-08-2017 12:01:00	14-08-2017 12:09:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line kept open due to improper relay cordination of Dimapur-Kohima-Wokha link & 66 kV Tuensang - Likhimro line kept open for construction activities). At 12:09 Hrs on 14.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to no source in this area.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1664 MW , Antecedent Generation: 2158 MW**													
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:09 Hrs on 14.08.2017.**													
	Root Cause	Vegetation Fault													
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
NERLDC/GD/17/08/029	132 kV Dimapur (PG) - Kohima 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-08-2017 12:03:00	15-08-2017 12:13:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line (132 kV Karong - Kohima line kept open as 132 kV Dimapur(PG)-Kohima line gets overloaded in case of keeping this line in loop, 132 kV Wokha - Kohima line kept open due to improper relay cordination of Dimapur-Kohima-Wokha link & 66 kV Tuensang - Likhimro line kept open for construction activities). At 12:03 Hrs on 15.08.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1650 MW , Antecedent Generation: 2267 MW**													
	***Substation Affected**	**Kohima, Meluri, and Khiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima 1 Line at 12:13 Hrs on 15.08.2017.**													
	Root Cause	Vegetation Fault													
	Remedial Measures	Proper vegetation clearance to be done by DoP Nagaland & POWERGRID.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	

Sep-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
2	132 kV Dimapur (PG) - Kohima Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	03-09-2017 16:38:00	03-09-2017 16:49:00	DP, ZI, Y-E	No Indication	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line .132 kV Karong - Kohima line was kept open (Cause: Overloading of 132 kV Dimapur(PG) - Kohima line), 132 kV Wokha - Kohima line kept open (Cause of opening the line: improper relay cordination of Dimapur - Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open(Cause of opening the line: construction activities)). At 16:38 Hrs on 03.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1710 MW , Antecedent Generation: 1657 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima through 132 kV Dimapur (PG) - Kohima Line at 16:49 Hrs on 03.09.17													
	Root Cause	DR output from Dimapur shows Y-E fault in ZI with fault current upto 3.846 kA and angle between Vy and Iy is around 59-66 deg which indicate fault **likely due to vegetation**.The fault was cleared in around 78 msec. **AR was not attempted.**													
	Remedial Measures	**Vegetation clearance to be done by POWERGRID & DoP Nagaland. Relay coordination of downstream of Kohima and 132 kV Nagaland Substations to be done by DoP Nagaland.**													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
8	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 10:35:00	07-09-2017 10:46:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:35 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1723 MW, Antecedent Generation: 1699 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 10:46 Hrs on 07.09.2017.													
	Root Cause	DR output from Dimapur shows Zone III start, B-E fault with fault current upto 1.247 kA and angle between Vb & Ib around 70 degrees indicate solid fault likely due to **lightning in downstream of Kohima** . Back up protection was operated and the line tripped. The fault was cleared in around 220 msec.													
	Remedial Measures	Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
9	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 10:54:00	07-09-2017 11:17:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:54 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1758 MW, Antecedent Generation: 1673 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 11:17 Hrs on 07.09.2017.													
	Root Cause	DR output from Dimapur shows Zone III start,B-E fault with fault current upto 1.269 kA . Angle between Vb and Ib is around 70 deg which indicate solid fault. Back up protection was operated and the line tripped. The fault was cleared in around 220 msec.													
	Remedial Measures	Line to be patrolled and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
10	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	07-09-2017 12:12:00	07-09-2017 12:20:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 12:12 Hrs on 07.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1686 MW, Antecedent Generation: 1645 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 12:20 Hrs on 07.09.2017.													
	Root Cause	Root cause of this event could not be found as FIR (First Information Report), DR and EL output not yet furnished by Dimapur(PG). Likely due to downstream fault.													
	Remedial Measures	Line to be patrolled and report to be furnished to NERLDC and NERPC. Relay coordination of downnstream of Kohima is to be done by DoP Nagaland.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
11	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	08-09-2017 07:36:00	08-09-2017 07:47:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 07:36 Hrs on 08.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1851 MW, Antecedent Generation: 2024 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 07:47 Hrs on 08.09.2017													
	Root Cause	DR output from Dimapur shows Zone III start, B-E fault with fault current upto 1.351 kA . Back up protection was operated and the line tripped. The fault was cleared in around 219 msec.Angle between Vb and Ib is around 70 deg which indicate solid fault likely due to **lightning.** Earth fault also operated at Kohima end which suggest that **fault was in line.**													
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
14	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-09-2017 04:48:00	09-09-2017 05:00:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 04:48 Hrs on 09.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1716 MW, Antecedent Generation: 2074 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 05:00 Hrs on 09.09.2017.													
	Root Cause	DR output from Dimapur shows Zone 3 start, B-E fault with fault current upto 1.290 kA .Angle between Vb and Ib is around 69-71 deg which indicate **solid fault likely due to lightning**. Back up protection was operated and the line tripped. The fault was cleared in around 218 msec.													
	Remedial Measures	Relay coordination of downnstream of Kohima is to be done by DoP Nagaland. Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.DPR settings at Dimapur(PG) to be reviewed.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
15	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	09-09-2017 16:27:00	09-09-2017 16:35:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line . 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 16:27 Hrs on 09.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1867 MW, Antecedent Generation: 2285 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima Line at 16:35 Hrs on 09.09.2017.													
	Root Cause	DR output from Dimapur shows Zone 3 start,B-E fault with fault current upto 1.336 kA . Angle between Vb and Ib is around 65-70 deg which indicate solid fault. Back up													
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
16	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	11-09-2017 09:56:00	11-09-2017 10:10:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 09:56 Hrs on 11.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load:1558 MW, Antecedent Generation: 1852 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 10:10 Hrs on 11.09.2017													
	Root Cause	DR output from Dimapur shows Zone II start, R-E fault with fault current upto 1.827 kA . Angle between Vr and Ir is around 61-67 deg which indicate fault likely due to lightning. Back up protection was operated and the line tripped. The fault was cleared in around 179 msec. Earth fault also operated at Kohima end which suggest that fault was in line.													
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
18	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	13-09-2017 12:48:00	13-09-2017 13:06:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 12:48 Hrs on 13.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1755 MW, Antecedent Generation:2064 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:06 Hrs on 13.09.2017													
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2 kA . Angle between Vb and Ib is around 25-30 deg which indicate fault likely due to **vegetation.** The fault was cleared in around 95 msec, suggesting transient nature of fault.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, relay setting at Kohima to be reviewed by DoP, Nagaland for no tripping.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
20	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	15-09-2017 06:06:00	15-09-2017 06:21:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 06:06 Hrs on 15.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1487 MW, Antecedent Generation: 2064 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 06:21 Hrs on 15.09.2017													
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2.412 kA . Angle between Vb and Ib is around 26-34 deg which indicate fault likely due to **vegetation.** The fault was cleared in around 88 msec. Earth fault also operated at Kohima end which suggest that fault was in line.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
24	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	17-09-2017 08:50:00	17-09-2017 08:56:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 08:50 Hrs on 17.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1855 MW, Antecedent Generation: 2001 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 08:56 Hrs on 17.09.2017.													
	Root Cause	DR output from Dimapur shows Zone III start, R-E fault in ZI with fault current upto 1.130 kA . Angle between Vr and Ir is around 66-67 deg which indicate **solid fault likely due to lightning.** Back up protection operated and the line tripped.The fault was cleared in around 168 msec. Earth fault also operated at Dimapur (PG) which suggest that fault was in line.													
	Remedial Measures	Patrolling of line is to be done report to be submitted by DoP Nagaland.Lightning prone areas/locations to be identified and measurement of tower footing resistance to be done. In case of high tower footing resistance, measures to be taken to keep the resistance within 10 ohms. TLSA may be installed in case of frequent tripping due to lightning.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
28	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-09-2017 16:43:00	23-09-2017 16:52:00	DP, ZI, B-E	No tripping	Not Furnished	Not Applicable	No	No	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 16:43 Hrs on 23.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.													
	Antecedent Conditions of NER Grid	Antecedent Load: 1794 MW, Antecedent Generation: 1568 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 16:52 Hrs on 23.09.2017													
	Root Cause	DR output from Dimapur shows B-E fault in ZI with fault current upto 2.589 kA . Angle between Vb and Ib is around 27-38 deg which indicate fault likely due to **vegetation.**The fault was cleared in around 87 msec.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities. Also, relay setting of this element at Kohima is to be checked as there was no relay tripping.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
29	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRD & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-09-2017 13:26:00	27-09-2017 13:55:00	DP, ZI, R-Y-E	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 13:26 Hrs on 27.09.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.												
	Antecedent Conditions of NER Grid	Antecedent Load: 1906 MW, Antecedent Generation: 2118 MW													
	*Substation Affected	Kohima, Meluri and Kiphire Substation													
	Restoration Details	Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:55 Hrs on 27.09.2017.													
	Root Cause	DR output from Dimapur shows R-Y-E fault in ZI with fault current upto 6.442 kA.The fault was cleared in around 86 msec, suggesting transient nature of fault likely due to **vegetation**.													
	Remedial Measures	Trees/Vegetation in vulnerable locations to be removed by concerned utilities.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	

Oct-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
10	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	11-10-2017 10:52:00	11-10-2017 11:00:00	Over current	Over current	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 10:52 Hrs on 11.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1855 MW, Antecedent Generation: 1930 MW**													
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 11:00 Hrs on 11.10.2017.**													
	Root Cause	DR Output and FIR has not been received from either ends. As seen from SCADA the flow in the line was about 8 MW. So, the line was not tripping due to over load of the line.													
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
11	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	12-10-2017 13:12:00	12-10-2017 13:20:00	Earth Fault	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 13:12 Hrs on 12.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1787 MW, Antecedent Generation: 1841 MW**													
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 13:20 Hrs on 12.10.17.**													
	Root Cause	DR Output and FIR has not been received from either ends.													
	Remedial Measures	DoP, Nagaland to carry out patrolling activities to find the reason of tripping													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
20	132 kV Dimapur (PG) - Kohima (DoP, Nagaland)Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	22-10-2017 00:10:00	22-10-2017 00:17:00	Earth Fault	No tripping	Not Applicable	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept open (Cause : Overloading of 132 kV Dimapur - Kohima line), 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 00:10 Hrs on 22.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1129 MW, Antecedent Generation: 1780 MW**													
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 00:17 Hrs on 22.10.17.**													
	Root Cause	DR output has not been received. Fault appears to be in the line or in downstream of Kohima													
	Remedial Measures	DoP, Nagaland to conduct patrolling activities to find any vegetation clearnace issue in the line.													

List of 132 kV Dimapur Kohima tripping - Annexure 8.A

Jul-17

Event ID	Name of tripping element (End A - End B)	मालिक / Owner of the element	Data to be furnished by		Date & Time of Event	Date & Time of Restoration	Relay indications		Operation of Auto Reclose		Preliminary report submitted within 24 Hrs		DR & EL submitted within 24 Hours		Details of SPS operation
			End A	End B			End A	End B	End A	End B	End A	End B	End A	End B	
23	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) 1 Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	27-10-2017 08:24:00	27-10-2017 08:29:00	DP, ZI, B-E	Earth Fault	Not Furnished	Not Applicable	No	Yes	No	No	No SPS
	Brief Description of the Incident	**Capital area of Nagaland Power System was connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept idle charged at Kohima, 132 kV Wokha - Kohima line was kept open (Cause : improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause : construction activities). At 08:24 Hrs on 27.10.2017, 132 kV Dimapur(PG) - Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.**												
	Antecedent Conditions of NER Grid	**Antecedent Load: 1522 MW, Antecedent Generation: 1973 MW**													
	***Substation Affected**	**Kohima, Meluri and Kiphire Substation**													
	Restoration Details	**Power supply extended to Kohima Substation through 132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line at 08:29 Hrs on 27.10.17.**													
	Root Cause	DR output and FIR has not been received. Relay reading indicates fault in the line section.													
	Remedial Measures	POWERGRID and DoP, Nagaland to conduct a detailed patrolling report and submit a report to NERLDC													

Nov-17

NERLDC/GD/17/11/010	132 kV Dimapur (PG) - Kohima (DoP, Nagaland) Line	POWERGRID & DoP, Nagaland	POWERGRID	DoP, Nagaland	23-11-2017 15:04:00	23-11-2017 15:29:00	Direct Trip received	Earth Fault	Not Applicable	Not Applicable	No	Yes	No	No	No SPS

RELAY SETTINGS OF 132/66/33/11KV S/STATION NAGARJAN DIMAPUR

Feeder/ICT		CT RATIO	Current Setting (Iset)				TMS (Sec)	
			%		Ampere			
			O/C	E/F	O/C	E/F	O/C	E/F
1	**132KV PGCIL INCOMING I**	1200/1	0.3	0.2	360	240	0.38	0.4
	132KV PGCIL INCOMING II	1200/1	0.3	0.2	360	240	0.35	0.4
2	**132KV KOHIMA OUTGOING**	450/1						
3	**132/66KV 100MVA TRANS**							
	(A) 132KV SIDE	600/1	0.75	0.2	450	120	0.22	0.3
	(B) 66KV SIDE	1200/1	0.75	0.2	900	240	0.18	0.25
4	**66KV OUTGOING FEEDERS**							
	(A) 66KV Powerhouse	600/1	0.5	0.2	300	120	0.2	0.2
	(B) 66KV Ganeshnagar	300/1	0.5	0.2	150	60	0.2	0.2
	(C) 66KV Chumukedima	300/1	0.5	0.2	150	60	0.2	0.2
5	**66/33KV 20MVA TR-1**							
	(A) 66KV Side	250/1	0.75	0.2	187.5	50	0.2	0.2
	(B) 33KV Side	500/1	0.75	0.2	375	100	0.16	0.16
6	**66/33KV 20MVA TR-2**							
	(A) 66KV Side	250/1	0.75	0.2	187.5	50	0.2	0.2
	(B) 33KV Side	500/1	0.75	0.2	375	100	0.16	0.16
7	**66/33KV 20MVA TR-3**							
	(A) 66KV Side	250/1	0.75	0.2	187.5	50	0.2	0.2
	(B) 33KV Side	500/1	0.75	0.2	375	100	0.16	0.16
8	**33KV OUTGOING FEEDERS**							
	(A) 33KV Referral	200/1	100	0.2	200	40	0.12	0.12
	(B) 33KV Medziphema	200/1	100	0.2	200	40	0.12	0.12
	(C) 33KV Powerhouse	200/1	50	0.2	100	40	0.12	0.12
	(D) 33KV Industrial	200/1	50	0.2	100	40	0.12	0.12
	(E) 33KV R.Pahar Army	200/1	50	0.2	100	40	0.12	0.12
	(F) 33KV Metha Colony	500/1	0.75	0.2	375	100	0.12	0.12

RELAY SETTINGS OF 132/33KV S/STATION KOHIMA

Feeder/ICT		CT RATIO	Current Setting (Iset)				TMS (Sec)		Remarks
			%		Ampere				
			O/C	E/F	O/C	E/F	O/C	E/F	
1	**(PGCIL End)**	300/1	1	0.2	300	60	0.12	0.12	
2	**INCOMING**	400/1	0.75	0.2	300	80	0.08	0.08	
3	**132KV WOKHA O/G**	300/1	0.5	0.2	150	60	0.04	0.04	
4	**132KV KARONG O/G**	250/1	0.5	0.2	125	50	0.04	0.04	
5	**132KV MELURI O/G**	150/1	1	0.2	150	30	0.04	0.04	
6	**132/33kV TRANSFORMERS**								
i	132KV Side	150/1	0.7	0.2	105	30	0	0	Instantaneous
ii	33KV Side	600/1	0.7	0.2	420	120			
7	**TRANSFORMER**								
i	33KV Side TRF-I	200/1	0.75	0.20	150	40			
ii	33KV Side TRF-II	200/1	0.75	0.20	150	40			
iii	11KV Side TRF-I	600/1	0.75	0.20	450	120			
iv	11KV Side TRF-II	600/1	0.75	0.20	450	120			
8	**33KV OUTGOING FEEDERS**								
i	33KV ITI	200/5	0.75	0.20	150	40			
ii	33KV BOTSA	150/5	0.50	0.20	75	30			
iii	33KV LALMATI	50/5	0.75	0.20	37.5	10			
iv	33KV CHAKHABAMA	100/5	0.75	0.20	75	20			
v	33KV AP-I	200/5	0.75	0.20	150	40			
vi	33KV KRM-I	200/1	0.75	0.20	150	40			
vii	33KV KRM-II	200/1	0.70	0.20	140	40			

RELAY SETTINGS OF 132/66/33/11KV S/STATION MOKOKCHUNG

	Feeder/ICT	CT RATIO	Current Setting (Iset)				TMS	
			%		Ampere			
			O/C	E/F	O/C	E/F	O/C	E/F
1	**132KV PGCIL I (C7)**	300/1	1	0.2	300	60	0.306	0.39
2	**132KV PGCIL II (C6)**	300/1	1	0.2	300	60	0.306	0.39
3	**132KV MKG I (C7)**	300/1	1	0.2	300	60	0.306	0.39
4	**132KV MKG II (C6)**	300/1	1	0.2	300	60	0.306	0.39
5	**132KV MKG DYNG**	300/1	0.75	0.2	225	60	0.3	0.35
6	**132KV DOYANG MKG**	300/1	1.25	0.2	375	60	0.1	0.15
7	**132KV BUS COUPLER**	300/1	0.50	0.2	150	60	0.2	0.2
8	**132 KV MKG MARIANI**	300/1	0.5	0.2	150	60	0.05	0.05
9	**132/66KV TRANSFORMERS (2x25MVA)**							
i	132KV Side TRF-I	150/1	0.75	0.2	112.5	30	0.26	0.3
ii	132KV Side TRF-II	150/1	0.75	0.2	112.5	30	0.26	0.3
iii	66KV Side TRF-I	300/1	0.75	0.2	219	60	0.21	0.25
iv	66KV Side TRF-II	300/1	0.75	0.2	219	60	0.21	0.25
10	**66/33 KV TRANSFORMER (2x7.5 MVA)**							
i	66KV Side TRF-I	150/1	1	0.2	150	30	0.17	0.21
ii	66KV Side TRF-II	150/1	1	0.2	150	30	0.17	0.21
iii	33KV Side TRF-I	300/1	0.5	0.2	150	60	0.13	0.16
iv	33KV Side TRF-II	300/1	0.5	0.2	150	60	0.13	0.16
11	**66KV OUTGOING FEEDERS**							
i	66KV TULI	200/1	0.75	0.2	150	40	0.16	0.2
ii	66KV TUENSANG	200/1	1.00	0.2	200	40	0.07	0.07
iii	66KV ZUNHEBOTO	200/1	0.75	0.2	150	40	0.06	0.036
12	**33KV OUTGOING FEEDERS**							
i	33 KV Feeder -1 (Mokokch	200/1	1.00	0.2	200	40	0.09	0.11
ii	33 KV Feeder -2 (Spare)	100/1	1.00	0.2	100	20	0.08	0.08
iii	33 KV Feeder - 3 (Lumami)	100/1	0.5	0.2	50	20	0.03	0.03
iv	33 KV Feeder -4 (Spare)	50/1	1	0.2	50	10	0.1	0.1
v	33 KV Feeder -5 (Spare)	300/1	0.50	0.2	150	60	0.05	0.05
vi	33 KV Feeder - 6 (Akuluto)	100/1	125.00	0.2	1.25	20	0.05	0.05

ID	Voltage Level	ElementName	Element Type	Element No	Outage Date & Time	Restoration Date & Time	ReasonEnd1	ReasonEnd2	Length_Capacity
1795	132	Gelyphu - Salakati	Line	1	04/Jul/17 0:01	04/Jul/17 0:54	N/A	R-Y-B ph , Z-1, 20.39 KM, A/R successful	49.2
1882	132	Gelyphu - Salakati	Line	1	19/Jul/17 4:52	19/Jul/17 5:27	R-Ph, Z-I	Not Tripped	49.2
1890	132	Motonga - Rangia	Line	1	20/Jul/17 17:03	20/Jul/17 17:20	O/C	NIL	49
1956	132	Gelyphu - Salakati	Line	1	01/Aug/17 18:25	02/Aug/17 18:48	N / A	RYB ph, Z2,52.49 KM	49.2
1957	132	Motonga - Rangia	Line	1	01/Aug/17 18:25	01/Aug/17 19:13	N/A	Not tripped	49
1968	132	Motonga - Rangia	Line	1	02/Aug/17 18:07	02/Aug/17 20:30	Details awaited	-	49
1982	132	Gelyphu - Salakati	Line	1	05/Aug/17 15:18	05/Aug/17 15:43	R-Phase	Y-Phase, Z-1, 19.62km	49.2
1983	132	Motonga - Rangia	Line	1	05/Aug/17 18:15	05/Aug/17 18:16	Details awaited	not Tripped	49
2047	132	Motonga - Rangia	Line	1	13/Aug/17 23:20	13/Aug/17 23:56	Details awaited	O/C & EF	49
2048	132	Motonga - Rangia	Line	1	13/Aug/17 23:56	15/Aug/17 16:48	Details awaited	O/C & EF	49
2149	132	Gelyphu - Salakati	Line	1	25/Aug/17 21:43	26/Aug/17 0:23	Backup EF	DP, B-Ph, Z3, 65.02 Km	49.2
2151	132	Gelyphu - Salakati	Line	1	26/Aug/17 1:19	26/Aug/17 1:42	EF	DP, B-PH, , Z2, 54.8 Km	49.2
2152	132	Motonga - Rangia	Line	1	25/Aug/17 21:44	25/Aug/17 22:42	details awaited	not tripped	49
2153	132	Motonga - Rangia	Line	1	26/Aug/17 1:28	26/Aug/17 2:02	details awaited	not tripped	49
2154	132	Gelyphu - Salakati	Line	1	26/Aug/17 2:08	26/Aug/17 2:27	EF	RY PH, Z2, 46.88 Km	49.2
2174	132	Motonga - Rangia	Line	1	28/Aug/17 5:48	28/Aug/17 6:10	Details awaited	Not tripped	49
2184	132	Motonga - Rangia	Line	1	29/Aug/17 23:56	30/Aug/17 0:46	Downstream fault	No Tripping	49
2187	132	Motonga - Rangia	Line	1	30/Aug/17 10:50	30/Aug/17 11:11	O/C	No Trip	49
2221	132	Motonga - Rangia	Line	1	05/Sep/17 0:57	05/Sep/17 1:23	Not available	Not Tripped	49
2228	132	Motonga - Rangia	Line	1	05/Sep/17 18:17	05/Sep/17 18:52	Generation trip	No trip	49
2233	132	Motonga - Rangia	Line	1	07/Sep/17 0:33	07/Sep/17 0:47	Details awaited	No Tripping	49
2234	132	Motonga - Rangia	Line	1	07/Sep/17 1:10	07/Sep/17 1:16	Auto trip	No Trip	49
2237	132	Gelyphu - Salakati	Line	1	07/Sep/17 2:21	07/Sep/17 2:42	Z-1	Z-1, R-PH, D=6.3 KM	49.2
2244	132	Gelyphu - Salakati	Line	1	08/Sep/17 2:59	08/Sep/17 3:14	Yph, Z1, 39 KM	Yph, Z1, 4 KM	49.2
2260	132	Gelyphu - Salakati	Line	1	09/Sep/17 15:29	09/Sep/17 15:57	Not available	Y-B, Z-II, 45.32km	49.2
2262	132	Gelyphu - Salakati	Line	1	10/Sep/17 0:05	10/Sep/17 0:37	DP, R-N	DP, R-N, Z1, 19.65	49.2
2264	132	Gelyphu - Salakati	Line	1	10/Sep/17 2:38	10/Sep/17 2:51	Details awaited	3-ph to ground, Z-1,23.68 km	49.2
2316	132	Motonga - Rangia	Line	1	17/Sep/17 15:05	17/Sep/17 16:56	Not available	No Tripping	49
2336	132	Motonga - Rangia	Line	1	19/Sep/17 14:23	19/Sep/17 14:48	B Ph fault	No Tripping	49
2348	132	Motonga - Rangia	Line	1	23/Sep/17 1:14	23/Sep/17 1:40	O/C E/F	No Tripping	49
2349	132	Gelyphu - Salakati	Line	1	23/Sep/17 6:15	23/Sep/17 11:19	RYB Ph, Z-1, D=14KM	Z-1,R Ph, D=33.37 KM	49.2
2461	132	Gelyphu - Salakati	Line	1	08/Oct/17 12:38	08/Oct/17 13:09	Details awaited	RYB-ph, Z-3, 62.9 km	49.2
2482	132	Motonga - Rangia	Line	1	11/Oct/17 10:37	11/Oct/17 10:55	No Tripping	Details awaited	49
2608	132	Motonga - Rangia	Line	1	01/Nov/17 23:23	02/Nov/17 5:20	Details awaited	E/F	49
2624	132	Motonga - Rangia	Line	1	06/Nov/17 3:10	06/Nov/17 3:58	O/C, E/F	No trip	49

Annexure-VIII

Tripping of 132 kV Khliehriat(MePTCL)-Khliehriat(PG) D/C

ID	Voltage Level	ElementName	Element Type	ElementNo	Outage Date & Time	Revival Date & Time	Reason End1	Reason End2	Length Capacity
2120	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	1	23/Aug/17 13:45	23/Aug/17 13:57	No Indication	No Trip	7.3
2121	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	23/Aug/17 13:45	23/Aug/17 14:01	No Trip	**R-N, Z-III, 66.22**	5.35
2122	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	23/Aug/17 14:55	23/Aug/17 21:40	R-ph conductor snapped at Khliehriat(PG) SS end	R-ph conductor snapped at Khliehriat(PG) SS end	5.35
2192	132	Khandong - Khliehriat	Line	2	31/Aug/17 10:47	31/Aug/17 11:06	Z-I, RYB, 12.6km	Z-I, RYB, 31.9km	40.93
2194	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	31/Aug/17 10:47	31/Aug/17 10:58	**E/F, Z-III,, 53.59km**	No Trip	5.35
2195	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	1	31/Aug/17 13:28	31/Aug/17 13:42	Not tripped	YB ph, Z2, 8.29 KM	7.3
2196	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	31/Aug/17 13:28	31/Aug/17 13:43	Not tripped	Yb ph, Z1, 5.89 KM	5.35
2200	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	31/Aug/17 13:58	31/Aug/17 14:15	**Z3**	RB-N,	5.35
2242	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	07/Sep/17 15:37	07/Sep/17 15:46	NO TRIP	O/C,E/F	5.35
2255	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	09/Sep/17 1:07	09/Sep/17 1:22	**Z3, 9.7 KM**	NO Trip	5.35
2271	132	Khandong - Khliehriat	Line	1	12/Sep/17 10:09	12/Sep/17 10:39	Tripped on DP, Z1, 26.16KM	Tripped on DP, Z1, YB ph, 15.27 KM	42.48
2272	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	12/Sep/17 10:09	12/Sep/17 10:24	Tripped on DP, YB Ph, Z3, 40.99 KM	No Trip	5.35
2361	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	24/Sep/17 23:16	24/Sep/17 23:43	Z-1, RYB, D=1.15 KM	Z-1, RYB,3.442 KM	5.35
2363	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	24/Sep/17 23:45	25/Sep/17 0:45	Z-1, RYB	No Tripping	5.35
2364	132	Khandong - Khliehriat	Line	1	24/Sep/17 23:46	25/Sep/17 23:50	D/P, Z-1, ABC, D=35.74 KM	Np Tripping	42.48
2365	132	Khandong - Khliehriat	Line	1	24/Sep/17 23:53	25/Sep/17 0:07	D/P, Z-1, ABC, D=33.67 KM	No Tripping	42.48
2419	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	03/Oct/17 15:38	03/Oct/17 15:56	**OC, Z3, earth fault**	Not tripped	5.35
2420	132	Khandong - Khliehriat	Line	1	03/Oct/17 15:38	03/Oct/17 16:01	DP, Z-I	Not tripped	42.48
2421	132	Khandong - Khliehriat	Line	2	03/Oct/17 15:42	03/Oct/17 16:31	R-Y-B Ph	Not tripped	40.93

Annexure-VIII

Tripping of 132 kV Khliehriat(MePTCL)-Khliehriat(PG) D/C

ID	Voltage Level	ElementName	Element Type	ElementNo	Outage Date & Time	Revival Date & Time	Reason End1	Reason End2	Length Capacity
2442	132	Khandong - Khliehriat	Line	1	06/Oct/17 13:08	06/Oct/17 20:06	Tripped on DP, Z1, 32.43 KM	Tripped on DP,Rph, Z1, 13.52 KM	42.48
2443	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	06/Oct/17 13:08	06/Oct/17 13:27	Tripped on O/C & E/F	No trip	5.35
2447	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	06/Oct/17 23:58	07/Oct/17 0:05	Over current E/F.	Not tripped.	5.35
2462	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	08/Oct/17 15:17	08/Oct/17 15:26	Tripped on DP	No Trip	5.35
2463	132	Khandong - Khliehriat	Line	2	08/Oct/17 15:16	08/Oct/17 15:35	CB auto Trip	Tripped on DP. RY ph, Z1, 25.6 KM	40.93
2467	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	08/Oct/17 19:58	08/Oct/17 20:03	D/P, B-N Ph	No Tripping	5.35
2484	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	11/Oct/17 11:31	11/Oct/17 11:42	No Tripping	**Z-3, RYB, D=67.15 KM**	5.35
2486	132	Khliehriat (MePTCL) - Khliehriat (PG)	Line	2	11/Oct/17 12:10	11/Oct/17 12:18	Only master trip relay	No Tripping	5.35
2502	132	Khandong - Khliehriat	Line	2	13/Oct/17 11:08	13/Oct/17 11:25	No Trip	B-Ph , Z2, 49.11 km	40.93

Annexure IX

220 kV Balipara-Sonabil Tripping List

ID	Voltage Level	ElementName	Element Type	Element No	Outage Date & Time	Revival Date & Time	ReasonEnd1	ReasonEnd2	Length_Capacity
1978	220	Balipara - Sonabil	Line	1	04/Aug/17 22:34	05/Aug/17 22:53	OC, R Ph	D/P, Z-2, R-Y-B, D=11.80 KM	10
1980	220	Balipara - Sonabil	Line	1	04/Aug/17 22:53	05/Aug/17 12:53	SOTF	RYB, SOTF	10
2173	220	Balipara - Sonabil	Line	1	28/Aug/17 7:01	28/Aug/17 7:09	B ph, OC	No Tripping	10
2490	220	Balipara - Sonabil	Line	1	12/Oct/17 11:50	12/Oct/17 12:01	E/F	No Tripping	10
2590	220	Balipara - Sonabil	Line	1	29/Oct/17 10:18	29/Oct/17 11:28	OC, Y-ph	No tripping	10

North Eastern Regional Power Committee

AGENDA OF THE 48TH PROTECTION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date of Meeting : **17/01/2018 (Wednesday)**

Time of Meeting : **10:00 Hrs**

Venue : **"Hotel Nandan", Guwahati.**

A. CONFIRMATION OF MINUTES

CONFIRMATION OF THE MINUTES OF 47th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC

The minutes of 47th meeting of Protection Sub-committee held on 24th July 2017 at Guwahati were circulated vide letter No. NERPC/SE/PCC/2017/2565-589 dated 17th August 2017.

As no comments/observations were received from any of the constituents, the Sub-Committee confirmed the minutes of 47th PCCM of NERPC

B. OLD ITEMS FOR DISCUSSION

1. Third Party Protection audit of NER Sub-Stations

It was discussed in the **subgroup meeting held on 23rd Jan'17** that the last 3rd party Protection audit was done 4 years back. As per recommendations of Enquiry Committee, thorough third party protection audit need to be carried out in time bound manner. This exercise should be repeated periodically and monitored by RPCs. Subgroup agreed that it was necessary to carry out 3rd party protection audit at the earliest and referred the matter to PCC forum.

In 46th PCCM, Sr. Executive, OTPC informed the forum that OTPC has already implemented the recommendations of audit committee and submitted the report to NERPC. Forum requested subgroup to review the relay settings submitted by OTPC. Sr. Manager, TSECL informed the forum that they have implemented the recommendations for distance protection and will be implementing for other relays at the earliest. Forum requested TSECL to submit report by 30th April, 2017 to NERPC.

After detailed deliberation, it was decided to carry out third party protection audit of 1/3rd of NER substation. Forum decided to form 8 teams with 2 members from NERPC, NERLDC, POWERGRID, NEEPCO, AEGCL, MePTCL & TSECL each and one member each from DoP, Nagaland, P&ED, Mizoram, MSPCL & all ISGS in NER. In POWERGRID substation audit, members from 2 states & NERLDC/NERPC shall be present. And in state substation audit, members from POWERGRID, NERPC/NERLDC and other state shall be present. All

constituents are requested to send their nominee(s) to SE(P), NERPC before 30th April, 2017. Formation of teams, identification of stations and utility wise coordinators & preparation of audit schedule are to be completed within 30th April'17 by subgroup. Forum requested hosting station to arrange logistics, food & accommodation facilities to the audit team. Audit will be starting from May 2017.

During Subgroup Meeting held on 17th July, 2017, NERPC requested DGM, NERLDC to brief the Subgroup about the strategy for conducting 3rd Party Protection Audit. NERLDC informed the subgroup that 3rd Party Protection Audit of one-third of the total substations and generating stations may be carried out in the 1st phase. In view of this, NERLDC highlighted the following **substations and generating stations of respective constituents to be carried out in 1st phase considering the most critical Substation and Generating Station and based on protection related issues**.

1. **POWERGRID**: **Substations** at +/- 800 kV HVDC Biswanath Chariali, 400/132 kV Silchar, 220/132 kV Mariani, 220/132 kV Mokokchung, 220/132 kV Dimapur, 132/33 kV Imphal **(Total 6 Substations).**
   Switching Stations at 132 kV Aizawl and 132 kV Khleihriat **(Total 2 Switching Stations).**
2. **NEEPCO**: Generating Stations at 220 kV AGBPP, 132 kV AGTCCPP, 132 kV Doyang HEP and 132 kV TGBPP, Monarchak **(Total 4 Generating Stations).**
3. **NHPC**: 132 kV Loktak HEP.
4. **NTPC**: 400 kV BgTPP.
5. **OTPC**: 400 kV Palatana GBPP.
6. **DoP, Arunachal Pradesh**: Substation at 132/33 kV Khupi, 132/33 kV Pasighat, 132/33 kV Chimpu and 132/33 kV Daporijo **(Total 4 Substations).**
7. **AEGCL**: Substations at 400/ 220 kV Azara, 220/132/33 kV BTPS, 220/132/33 kV Agia, 220/132/33 kV Samaguri, 220/132/66/33 kV Mariani, 220/132/66/33 kV Tinsukia, 220/132/33 kV Sonabil, 220/33 kV Jawaharnagar, 220/132/33 kV Boko, 132 kV/33 Gohpur, 132/33 kV Kahilipara, 132/33 kV Rangia, 132/33 kV Dhaligaon, 132/33 kV Panchgram, 132/33 kV Srikona, 132/33 kV Umrangsho, 132/33 kV Dibrugarh, 132/33 kV Depota, 132/33 kV Pailapool and 132/33 kV Bokajan Substation **(Total 20 Substations)**
   Generating Stations at 132 kV NTPS, 132 kV LTPS and 132 kV Karbi Langpi HEP **(Total 3 Generating Stations).**
8. **MSPCL**: Substations at 132/33 kV Imphal, 132/33 kV Ningthoukhong, 132/33 kV Karong and 132/33 kV Kakching **(Total 4 Substations).**
9. **MePTCL**: Substations at 132/33 kV Khliehriat, 132/33 kV Mawlai, 132/33 kV NEHU, 132/33 kV Nangalbibra and 132/33 kV EPIP-II **(Total 5 Substations)**
   Generating Stations at 132 kV Leska HEP and 132 kV Umiam Stage-III HEP **(Total 2 Generating Stations).**
10. **P & ED, Mizoram**: Substations at 132/33 kV Zuangtui, 132/33 kV Luangmual and 132/33 kV Kolasib **(Total 3 Substations).**

11. **DoP, Nagaland**: Substations at 132/66/33 kV Dimapur, 132/33 kV Kohima and 132/33 Mokokchung **(Total 3 Substations).**
12. **TSECL**: Substations at 132/66/33 kV Agartala, 132/66/33 kV Udaipur, 132/33 kV Surajmaninagar, 132/33 kV PK Bari, 132/33 kV Budhjangnagar and 132/33 kV Dharmanagar **(Total 6 Substations)**

Generating Stations at 132 Rokhia, 132 kV Baramura and 66 kV Gumti **(Total 3 Generating Station).**

It was discussed in the meeting that a group comprising of one member each of NERPC/NERLDC, NTPC/NHPC/NEEPCO/OTPC/POWERGRID and state constituent shall be nominated for carrying out the 3rd Party Protection Audit.

Data as per Ramakrishna Task Force format and NERPC format should be available prior to protection audit.

Subgroup concluded the discussion by stating that the above Substations and Generating Stations may be audited w.e.f. 1st week of August, 2017 and referred the matter to PCC forum.

In 47th PCC Meeting, after detailed deliberation, forum agreed to carry out 3rd party protection audit in substations and generating stations suggested by sub group. Considering the fact that minimum 3 days are required for audit of one station and 5 months required for completion of 1st phase of Audit. It was also decided to form different groups of nearby sub-stations/Power Stations which are to be audited to reduce travel time.
The audit will start from first week of August, 2017 and will cover 1/3rd of NER substation. NERLDC requested the forum that next phase of protection audit may be
outsourced, for which funds may be arranged from PSDF. Member Secretary, NERPC informed the forum that getting fund from PSDF is a lengthy process. So the constituent may continue the present process of auditing by constituents.

The 1st phase of 3rd Party Protection Audit of NER substations has been completed on 29.11.17. 69 Nos. of Substations has been audited in the 1st phase. Subgroup appreciated the support and commitment of all the utilities in making the 1st phase of the Protection Audit a success.

In the subgroup meeting on 6th Dec'17, after detailed deliberation, it was decided to form a **committee to study the protection audit findings and data collected from site**. Members of the committee are as follows:

Sl. No	Name	Organization	Contact No
1	H. Talukdar (**Team Leader**)	POWERGRID	09436335237
2	S. K Singh	POWERGRID	09435706099
3	Bikram Bordoloi	AEGCL	09435558545
4	Abhishek Kalita	AEGCL	08486213068
5	Joypal Roy	NEEPCO	09435577726

6	Ashim Kr. Sarmah	NEEPCO	09435078860
7	Ban Nikhla	MePTCL	09436314163
8	A G Thum	MePTCL	09774664034
9	C B Thapa	POSOCO	07002018913
10	Jerin Jacob	POSOCO	09402120113
11	A. Agrawal	NERPC	08986666366
12	Sadiq Imam	NERPC	07424064484

Committee has to submit the final report by **15th Jan'18**.

After detailed deliberation, **substations to be audited in next phase were identified and referred to PCC Meeting**. List of substations to be audited in the next phase is attached as **Annexure B.1.A**.

Under section 15.0.2 (ii) of draft standard for "Reliability Standards for Protection System", **Periodic Protection Audit to be conducted once in a year for critical substations** as listed by RPC and once in four years for other substations according to schedule prepared by RPC.

After detailed deliberation, **subgroup identified the critical substations of NER and referred to PCC forum**. List of identified critical substations is attached as **Annexure B.1.B**.

1st meeting of committee for preparation of final report of 3rd Party Protection Audit was held on 8th Jan'18 at NERLDC, Shillong. The relay setting calculation as per Ramakrishna Task Force Recommendations was practiced for the following lines by members from different utilities:

a) 132 kV Khliehriat - Leshka at Khliehriat
b) 132 kV AGTCCPP - Kumarghat line at AGTCCPP
c) 220 kV Tinsukia - AGBPP D/C at Tinsukia
d) 220 kV Mariani(AS) - Samaguri at Mariani
e) 132 kV NEHU - Mustem at NEHU

The task of relay settings calculation and preparation of report was divided among the members as follows:

a) POWERGRID: POWERGRID and Tripura Substations
b) MePTCL: Meghalaya and Mizoram Substations
c) AEGCL: Assam and Arunachal Pradesh Substations
d) NERLDC: Manipur and Nagaland Substations
e) NEEPCO: All ISGS

Finally, all the reports will be compiled for the final Committee Report of 1st Phase of Third Party Protection Audit. The committee members decided to start the work and **target date of completion of report will be intimated in the PCC Meeting**.

Members may please discuss. Format for self-audit may please be formulated.

2. Identification of short lines to install line differential protection

During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC informed the forum that for purpose of installation of line differential protection on Short lines, it is necessary to identify the list of lines for this purpose.

The identification exercise for installation of Differential Protection relays has to be completed for all Transmission Lines of NER Grid level on a priority basis.

As informed by BgTPP-NTPC & POWERGRID, the installation of Differential Protection on 400 kV BgTPP – Bongaigaon D/C has been completed. As the 1st stage, differential protection is to be installed on important short lines like 132 kV Silchar – Srikona D/C, 132 kV Imphal(PG) – Imphal(MSPCL) D/C etc.

In 45th PCC meeting, forum decided that in the absence of uniformity of specific length criteria for installation of differential protection installation on short lines (valid for both existing and new transmission lines), the criteria adopted by SRPC could be referred for North-Eastern Region. After detailed deliberation, the following criterion was decided for adoption for identification of short line for differential protection:-

a) All 132 kV transmission lines of length <5 Kms.
b) All 220 kV transmission lines of length <10 Kms
c) All 400 kV transmission lines of length <50 Kms
d) All 132 kV & above dedicated transmission lines of Generators with installed capacity > 50 MW

The short lines as identified would be considered on basis of importance for installation of Differential Protection relays. The process of installation may be started wherever no additional investments in terms of Communication links between two ends of the line are required. Constituents of NER are requested to identify the lines in which line differential protections are to be installed under above criteria.

In 46th PCCM, it was decided that all constituents should identify short lines (integrated) only and submit the list of such lines to NERPC & NERLDC by 30th April, 2017. Subgroup will compile and come out with complete list of all such short line where differential protection is required by 30th April 2017. MePTCL informed that they have already identified the short lines.

After detailed deliberation, it was decided to exclude short lines that are radially connected to NER Grid from installing differential protection.

AEGCL informed that they have placed order to ABB for differential protection in line between LV side of ICT-2 at BgTPP and 220 kV BTPS bus. NTPC informed that this link shall not be treated as line, as there is no 220 kV Bus at BgTPP end. Due to difference in opinion amongst AEGCL, NTPC, PGCIL and NERLDC it was decided that NERPC & NERLDC will arrange a separate meeting with AEGCL and NTPC to sort out this matter.

MePTCL & AEGCL have replied to NERLDC/NERPC with the list of lines for installation of line differential relay but the list submitted by AEGCL is not complete.

In 47th PCC Meeting, after detailed deliberation, it was decided that all utilities shall identify the short lines for installation of Line Differential Protection **by 31st Jul'17**. Power Utilities may refer List of Important Grid Element document which is available at NERLDC website (url: http://www.nerldc.org/IE.aspx) for identification of short lines.

Utilities shall furnish the list of short lines identified for installation of Line Differential Protection to NERPC/NERLDC along with availability of OPGW in the identified short lines. Member Secretary, NERPC informed that funding for installation of Line Differential Protection & OPGW can be awarded from PSDF for state utilities and PSUs may include these expenses in PoC Charges.

NERLDC informed the forum that approval is to be taken by concerned utilities from the forum, in special cases where line length is more than the approved criterion and repeated tripping occurs in account of over reach like 132 kV AGTCCPP-Agartala D/C etc.

NERPC informed that Meghalaya has already made the DPR for PSDF funding. Other state utilities are also requested to do the same. The forum really appreciated the effort made by MePTCL in preparing DPR for PSDF funding.

Comments were received from only Khandong, MePTCL & AEGCL even after repeated email communications on 25th Jul'17, 18th Aug'17 and 4th Oct'17.

Power utilities are requested to intimate the identified short lines for installation of Line Differential Protection and availability of OPGW in the identified short lines.

Members may please review the Criteria of short lines for implementation of differential protection.

3. Finalization of draft model maintenance procedures that are to be followed by utilities.

During 46th PCC Meeting, it was decided that all constituent has to give suggestions and feedback on Draft model maintenance procedure for transmission system prepared by group comprising of NERLDC, PGCIL and AEGCL on or before 30th April, 2017. **After 30th April, 2017, the sub-committee will finalize the maintenance procedure**.

Also, Forum requested all members to furnish list of plant wise available diagnostic tools to NERPC & NERLDC by 30th April 2017. MePTCL informed that they submitted the list of diagnostic tools to NERPC.

Forum also requested power utilities of NER to assess the number of new kits for measurement of tower footing resistance without the need to disconnect earth shielding wire. Possibilities of funding from PSDF for this purpose may be explored.

However, no feedback has been received from constituents regarding draft model maintenance procedure for

transmission utilities.

The draft model maintenance procedure for transmission utilities is considered as final and transmission utilities may please follow the maintenance procedure.

In 47th PCC Meeting, after detailed deliberation, it was decided to circulate the draft maintenance procedure once again to all constituent for their comments. The forum requested all constituents to go through the draft model maintenance procedure and give their valuable feedback by **31st Jul'17**. Member Secretary, NERPC requested subgroup to make necessary changes as per inputs from utilities and finalize model maintenance procedure. In case of no inputs/comments from utilities, the draft model maintenance procedure for transmission utilities may be considered as final. He also informed that finalized model maintenance procedure will be discussed in next RPC meeting. The forum also requested all ISGS to submit the maintenance procedure followed by them to NERLDC and NERPC by 20.08.17.

No comments/feedbacks were received from Power Utilities.

Document on model maintenance procedure may please be considered as final document.

4. Calculation of Relay Settings as per recommendation of V. Ramakrishna Task Force

The relay settings details as formulated by NERTS in line with recommendations of V. Ramakrishna Task Force on Power system contingencies, had been circulated by NERLDC to all constituents of NER for comments. During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was agreed that the same can be implemented at the earliest for uniformity in protection systems.

In 45th PCC meeting, it was informed to the forum that MePTCL has started the exercise while AEGCL has started implementing but having problem in the Resistive Reach setting and will come up with detailed analysis of the issue in the next meeting. TSECL has assured that it will start the work at the earliest. NTPC told that they can start implementing as per NERTS formulation only after receiving comments from their Corporate Office and will communicate the same to NERPC at the earliest.

The status as per 47th PCCM is given in the table below:

Sl. No.	**Constituent**	**Status of implementation as per 47th PCCM**	**Completion Date**
1.	Assam	Implemented in 400 kV Silchar - Azara, 220 kV Tinsukia-AGBPP, 220 kV BTPS – Salakati lines.	By September, 2017
2.	Arunachal Pradesh	No representative present	By September, 2017
3.	Manipur	No representative present	By September, 2017
4.	Meghalaya	Completed except for substation in Garo hills.	By September, 2017
5.	Mizoram	No representative present	By September, 2017

6.	Nagaland	Started	By September, 2017
7.	Tripura	Completed	Completed
8.	NERTS	Completed	Completed
9.	NEEPCO	Started (RHEP & AGBPP Completed)	By September, 2017
10.	NHPC	Completed	Completed
11.	NTPC	Started	By September, 2017
12.	OTPC	Completed	Completed

The committee requested all constituent to implement recommendation of V. Ramakrishna task Force by **September, 2017** and sent report of the same to NERPC.

NERLDC requested all constituents to take approval from NERPC prior to changing of any protection settings other than recommendation of V. Ramakrishna task Force.

Members may please intimate the status of implementation of Relay Settings as per Ramakrishna task force. Also, members may please intimate the availability of PLCC/OPGW for protection in the transmission lines in their system for the implementation of POR/PUR scheme.

5. Review of Zone-II relay settings:

During Sub Group Committee Meeting of PCC held on 24th Oct'16, the forum discussed the relay settings document finalized by NERTS, POWERGRID for adoption in NER, for fulfillment with recommendations of V. Ramakrishna Committee Task Force. The forum had agreed for implementation of Zone-II / Zone-III settings accordingly.

NERLDC has circulated the impedances of shortest and longest lines for review of the reach of Zone-II Relay Settings by the constituents. Till now NERLDC has received comments from Assam, Meghalaya, OTPC and Kopili (NEEPCO). Forum asked AEGCL to furnish the guidelines of Zone-2 timing followed by them at the earliest to NERPC & NERLDC.

In 46th PCCM, after detailed deliberation it was decided that Zone –II setting to be completed for all important lines by 30th April, 2017. Forum requested subgroup to circulate list of important lines where settings have to be implemented at the earliest. The list of important lines was circulated to all the utilities by subgroup. The same was discussed in subgroup meeting on 18th April'17.

In 47th PCCM, after detailed deliberation, it was decided that Zone –II setting to be completed for all important lines by 15th August, 2017. AEGCL will implement the zone –II settings for all critical lines by 15th August, 2017 and for the remaining lines by September, 2017. Forum requested all power utilities to inform latest status to NERPC/NERLDC by 31st Jul'17. NERLDC requested that all power utilities refer List of Important Grid Elements document for implementation of the scheme on priority basis.

Members may please intimate the status of implementation.

6. **Review of relay settings- Substation wise (including downstream state substation):**

During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was informed that due to ill-coordination in relay settings between State systems and ISTS, frequent tripping of elements is occurring. Most of the Grid disturbances in NER Grid are due to this. **P&E Dept., Mizoram and DoP, Nagaland** were requested to co-ordinate their relay settings with ISTS systems and implement the same as suggested by NERTS.

NERPC may take up with P&E Dept., Mizoram and DoP, Nagaland in this regard for quick implementation.

Decision taken in sub group meeting held at Shillong on 24.10.16 are to be implemented at the earliest and status to be reported to NERPC&NERLDC.

In 46th PCCM, EE, DoP Nagaland informed the forum that they will discuss with POWERGRID and implement the required relay settings in downstream elements of DoP, Nagaland within 1 month to avoid unnecessary tripping of ISTS lines due to downstream fault.

In 47th PCC Meeting, NERLDC informed the forum that frequent tripping of upstream elements is occurring due to improper relay coordination at downstream state-substations (33 kV & 11 kV) especially in Tripura, Mizoram & Nagaland power systems. DoP, Nagaland representative informed the forum that relay setting at Dimapur (DoP,

Nagaland) has already been reviewed and implemented. He also informed that report of the same will be submitted to NERPC within 1 week. The forum requested DoP, Nagaland to check whether breaker is operational in 33/11 kV substations, so that downstream fault is not propagated and to inform NERLDC/NERPC.

DoP Nagaland, TSECL & P&ED Mizoram may please intimate the status.

7. **Details of PSS installed and activated in all Hydro stations:**

During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC requested all power stations to provide details where PSS is installed. It was also requested to activate existing PSS after tuning and inform the same through mail.

NEEPCO vide mail dated 27th Oct'16 informed that all hydro stations of NEEPCO have PSS installed and activated. NERLDC vide email dtd. 27th Oct'16 had requested NEEPCO for further details of PSS. NERLDC requested NEEPCO and NHPC to furnish details and settings of existing PSS (Time constant, PSS gain, PSS output limiter Max, Min etc.).

Only Palatana CCGT has provided the details of PSS installed and activated for damping oscillations to NERLDC, whereas the details provided by NEEPCO is not sufficient and to be submitted to NERPC/NERLDC. NEEPCO has given parameters of block diagram of some of their generators (Khandong, etc.), which do not convey any practical meaning in sense of damping of Low Frequency Oscillations. NERLDC requested NEEPCO to furnish the following details of PSS – Make, Date installed, Last date of tuning by OEM, Tuned frequency range.

In the 45th PCCM, NERLDC expressed concern in the matter of several cases of Poorly Damped/Negatively Damped Oscillations in Southern part of NER Grid, and requested NHPC to tune their PSS if it is already installed, and furnish details of PSS to NERPC&NERLDC.

In 46th PCCM, the committee requested NEEPCO to provide the necessary details to NERLDC at the earliest. Manager, NHPC informed that PSS is not installed in Loktak generating station. NERLDC requested NHPC to install PSS for the better system operation.

In 47th PCC Meeting, Sr. Manager, NEEPCO informed the forum that they have already provided the data available with them. DGM, NERLDC requested NEEPCO to obtain the remaining data from OEM as the data provided is not sufficient. **Forum requested NEEPCO to take up issues with OEM** and submit required data to NERLDC at the earliest.

Status of PSS in Gas Stations of NEEPCO:

AGBPP - No PSS

AGTCCPP GTGs - Under procurement process

AGTCCPP STGs - Enabled

NEEPCO may intimate the status.

8. Standardization of Disturbance Recorder Channels:

Disturbance Recorders on Transmission elements are necessary for post disturbance analysis, and identification & rectification of any protection operation. As per CBIP's manual on Protection of Generators, GT, Transformers and Networks, it is recommended to have minimum 8(eight) analog signals and 16(sixteen) binary signals per bay or circuit. Also, it should have a minimum of 5 sec of total recording time, minimum pre-fault recording time of 100 msec and minimum post-fault recording time of 1000 msec.

POWERGRID had standardized Disturbance Recorder Channels for lines, transformers & reactors. The Sub-committee requested NERPC/NERLDC to circulate the above standardization to all constituents of NER for giving comments and suggestion by 24.07.15. NERLDC had sent this document to all constituents of NER for giving comments and suggestion by 24.07.15.

During 42nd PCC meeting, the forum requested NTPC to provide their standardized DR Channels for generator so that it may be standardized for all generating units of NER. NTPC representative readily agreed. S.E. (O) once again requested all the constituents to kindly furnish their comments so that the process may be completed.

During the 43rd PCCM, DGM (SO-II), NERLDC stated since no comments/observations were received from the constituents it may be assumed that the DR channels for line, transformer and reactor are finalized. After detailed deliberation, forum decided DR channels as finalized have to be implemented in all ISTS lines and intra-state lines with numerical relays, within 31.07.2016 and gradually for all 220kV and 132kV lines.

The forum agreed that since Assam power system is the largest state system of NER Grid, standardization of DR

channels in lines of Assam is felt necessary. It was decided that AEGCL may complete implementation of standardized DR channels by 31st August 2016, and take help from NERTS, if necessary.

NTPC agreed to submit standardized DR channels for generator by 20.07.2016, which can then be discussed for adoption by all generators of NER Grid.

In 44th PCCM, AEGCL representative informed the forum that the work of DR standardization will be completed by 30th November 2016.

In 46th PCCM, AGM, AEGCL informed that they have already standardized DR channels for all 200KV and above lines. NERLDC informed forum that after repeated request to OTPC, their DR digital channels are not standardized, so proper analysis of events related to Palatana could not be done. OPTC informed that they will look in to this matter at the earliest. TSECL informed that they have not done the DR standardization. The forum requested NERLDC to provide list of all lines where standardization of DR Channel is required. All members are requested to provide update of Standardization of channel to NERLDC at the earliest.

In 47th PCC Meeting, AM, AEGCL informed the forum that they have implemented the standardization of DR channel in all substations wherever possible. But in some sub-stations, it is not possible to modify the DR channels in old numerical relays. It will be done once new panels are installed. NERLDC requested all power utilities to provide details of substation where standardization of DR channels is already completed and where ever it is not possible because of old relays by **31st July, 2017**. AGM, NTPC informed the forum that they have standardized DR channels and will send a confirmation to NERLDC.

Members may please intimate the latest status.

9. Implementation of SPAR

During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC indicated that SPAR (Single Phase Auto Reclosure) is not available in 132 kV AGTPP – Agartala D/C lines, which was resulting in multiple tripping of these lines on transient fault. NERTS was requested for changing of Auto-reclosure scheme to SPAR.

It was also decided that utilities should identify those transmission lines which have no SPAR scheme for implementation of the same. Implementation of SPAR is considered necessary in view of reliability of the power system.

In 45th PCCM, Forum requested all constituents to furnish status report of SPAR implementation to NERPC.

In 46th PCCM, Forum requested subgroup to circulate list of important lines to get the latest information regarding implementation of 1-phase/3-phase Auto-Reclosure scheme. All members to furnish the required information to NERLDC & NERPC by 30th April'17.

In 47th PCCM, the committee requested all constituent to furnish the status report of SPAR implementation to NERPC and NERLDC latest by 31st July, 2017.

Members may please intimate the latest status.

10. Installation of Polymer Insulator and Transmission Line Surge Arrestor in Lightning Prone Areas

It was noted that most of tripping of transmission lines in NER Grid occur either on account of lightning strikes or due to vegetation infringement problem. It was decided that all utilities will identify the lightning prone areas and conduct checking of high tower footing resistance in transmission lines in these areas.

Since tripping of line on lightning occurs due to arcing, to prevent that it is required to either maintain low value of tower footing resistance or install of lightning arrester for the particular towers having consistent high tower footing resistance due to prevailing ground conditions.

In 45th PCCM, the forum requested all the constituents to complete the process of identification of lightning prone line sections, and initiate action in this regard.

Forum requested members to identify lightning prone areas and measure tower footing resistance in these locations. AEGCL & MePTCL informed that they don't have proper earth resistance measuring tool at present and they are planning to procure the same at the earliest.

POWERGRID informed that additional shield wire earthing and counterpoise earthing are not helping much to arrest lightning. Better way is to install TLSA as chemical earthing cost (around RS. 80,000) is double the cost of installation of TLSA (around RS. 40,0000).

In 46th PCC Meeting, forum requested members to identify lightning prone areas and measure tower footing resistance in these locations. AEGCL & MePTCL informed that they don't have proper earth resistance measuring tool at present and they are planning to procure the same at the earliest. POWERGRID had informed that additional shield wire earthing and counterpoise earthing are not helping much to arrest lightning. Better way is to install TLSA as chemical earthing cost (around RS. 80,000) is double the cost of installation of TLSA (around RS. 40,0000).

During Subgroup Meeting held on 17th July, 2017, DGM(NERLDC) suggested MePTCL and NETC to identify the lightning prone areas of all the lines of MePTCL and NETC respectively and install polymer insulators and line arrestors to those lightning prone areas.

In 47th PCC Meeting, after detailed deliberation, DGM NERTS suggested to the forum that installation of polymer insulator in existing line has huge cost implication and is not feasible. Also it is required in area where pollution level is very high. He recommended that it may be implemented for new lines. He also suggested that for installation of lightning arrester following steps may be followed.

1. It is to identify the lightning prone lines and lightning prone areas by using one year tripping data which may be collected from respective SLDCs.
2. Once the lines and areas are identified, the tower footing resistance of all the towers in that area needs to be measured.
3. Once the tower footing resistance value is available, the number of lightning arrestor required and hence cost

can be estimated. The constituent may then approach for PSDF.

Power Utilities may please intimate the progress status.

POWERGRID may please give a presentation on the performance of already installed TLSAs.

11. Mock Testing of SPS related to Palatana

During Sub Group Committee Meeting of PCC held on 17th July'17, members addressed the importance of mock testing of SPS related to Palatana at the earliest to avoid the disturbance in Southern part of NER Grid.

POWERGRID informed that there is time stamping issue of DT signal at Silchar. POWERGRID informed that the matter will be resolved in few days. **POWERGRID and Palatana agreed to do mock test of all SPS related to Palatana on 24th July, 2017 subject to good weather condition.** DGM, NERLDC further stated that time of both ends is to be synchronized with GPS before doing mock testing of SPS related to Palatana.

In 47th PCCM, Sr. Executive, OTPC informed the forum that the Mock SPS Test planned on 24th July, 2017 was differed due to bad weather condition. It will be conducted as soon as the weather improves. The information for the said test will be intimated 24 Hr in advance. Forum requested POWERGRID and OTPC to submit a detailed mock test report immediately after mock test to NERPC & NERLDC.

In 139th OCCM, Sr. Engineer, NERTS presented the modus-operandi for Mock testing of SPS-2&3. The forum requested OTPC to append the sequences at Palatana GBPP to the modus-operandi and submit at the earliest. The date for mock testing would be decided after that and with prior notice of at least 3 days to all concerned utilities.

Members may please discuss.

12. Desynchronization of AGTCCPP Machines due to Under Voltage issue

During Sub Group Committee Meeting of PCC held on 17th July'17, NEEPCO informed the Subgroup that it is difficult to run their machines under under-voltage condition.

Subgroup decided that system study has to be done by TSECL to identify the nodes where under-voltage issue exists and plan for the installation of Capacitor Banks for improvement of voltage profile.

In 47th PCCM, Tripura representative were absent. The issue could not be discussed. It was referred to next OCC meeting.

In 136th OCCM, Sr. Manager, TSECL opined that AGTCCPP and Monarchak GBPP are not providing reactive power support as per capability curve. Sr. Manager, NEEPCO countered that is not the case and generators are supplying reactive power according to grid conditions. DGM(MO), NERLDC stated that as a practice, generators are not supposed to provide reactive power support to beneficiaries, rather Tripura should have its own Capacitor banks in place to support the grid. He further opined that generators are rated to operate under normal circumstances at around 0.8/0.9 pf lag and inject accordingly. The forum requested TSECL to regulate Bangladesh MVAR drawal and conduct meeting at appropriate level in this regard. **Member Secretary, NERPC**

concluded that Tripura should conduct studies and submit DPR of scheme for installation of Capacitor banks at the earliest.

In 137th OCCM, after detailed deliberation the forum requested SLDC Tripura & Mizoram to conduct detailed studies in association with respective distribution utilities at the earliest.

In 137th OCCM, Sr. Manager, TSECL informed that currently there are no low voltage problems in Tripura sub-system. After detailed deliberation the forum decided to drop the agenda item and review later on if required. ***This is for the information of members please.***

13. Low Frequency Oscillations (LFOs) at 132 kV Agartala

In subgroup meeting held on 9th March 2017, NERLDC showed the PMU plots of several instances of oscillations observed at 132 kV Agartala PMU and raised concern on proper tuning of Automatic Voltage Regulator (AVR) of AGTPP units considering the oscillation in voltage and many of the cases involved switching of AGTPP units. He also requested NEEPCO to take this matter seriously as these localized oscillations can spread to other generating stations connected to grid.

Sr. Manager, NEEPCO informed that there was a change in control systems of AGTTP Units 3 & 4. OEM has informed them that oscillation may be due to change in control system as oscillations were observed only in these units. He also informed that control systems of AGTPP Units 1 & 2 will be replaced soon with new ones. If those machines also experience oscillation problem, OEM will install additional equipment to damp the oscillation.

DGM (SO-II), NERLDC asked NEEPCO to check and inform forum whether PSS is enabled and functioning properly. He also requested NEEPCO to carry out AVR tuning and take necessary actions to damp out oscillations at the earliest as these oscillations can lead to wide spread oscillations in grid.

In 46th PCCM, it was discussed that Sr. Manager, NEEPCO informed that the oscillation started after changing the control panel of units 1 and 2. NEEPCO also informed that matter is already reported to OEM and OEM is yet to provide any solution. The forum requested NEEPCO to pursue the matter very seriously with the OEM as low frequency oscillation endangers the stability of grid and come up with solution at the earliest.

In 47th PCC Meeting, after detailed deliberation, the forum requested NEEPCO to take urgent steps to damp the oscillation as it is endangering the grid security. NERLDC requested NEEPCO to take up this matter with OEM at the earliest.

AGTCCPP, NEEPCO may intimate the status.

14. Analysis & Discussion on Events, Grid Incidences, Grid Disturbances which occurred in NER Grid w.e.f 1st July 2017 - 30th November 2017.

The following numbers of Grid Disturbances (GD) & Grid Incidents (GI) occurred during the period **w.e.f 1st**

July 2017 - 30th November 2017 and 1st January to 30th November 2017 :-

Sl. No.	Control Area	Grid Incidents in nos.	Grid Disturbance in nos.	Grid Incidents in nos.	Grid Disturbance in nos.
		Jul'17 to Nov'17	Jul'17 to Nov'17	Jan'17 to Nov'17	Jan'17 to Nov'17
1	Palatana	5	0	24	5
2	AGBPP	11	0	17	0
3	AGTPP	18	3	36	14
4	Ranganadi	0	0	0	0
5	Kopili	7	1	10	1
6	Khandong	7	2	14	2
7	Doyang	9	1	9	5
8	Loktak	1	0	2	5
9	BgTPP	12	0	19	0
10	Arunachal Pradesh	0	17	0	35
11	Assam	0	17	0	33
12	Manipur	0	15	0	38
13	Meghalaya	0	5	0	32
14	Mizoram	0	12	0	26
15	Nagaland	0	58	0	79
16	Tripura	0	27	0	54

Sl. No.	Category of GD/GI	Grid Disturbance in nos.	
		Jul'17 to Nov'17	Jan'17 to Nov'17
1	GI-I	35	61
2	GI-II	35	69
3	GD 1	133	257
4	GD 2	2	6
5	GD 3	0	1
6	GD 4	0	1
7	GD 5	0	0

8	Total GI	70	130
9	Total GD	135	265

This is for information to the members.

The root cause analysis and remedial measures to prevent the Grid Events for the period w.e.f 1st Jul'17 to 30th Nov'17 were discussed during **Sub-group meeting of PCC held on 6th Dec'17**. Tripping of few elements could not be concluded due to non-submission of DR output (For example: tripping related to Doyang ATS, Disturbance in Tripura Power System, etc.)

Events for the period July, 2017 to November, 2017 are categorized as listed below. **Utilities may please take suggested remedial measures accordingly within stipulated time.**

i. Tripping due to Vegetation
ii. Tripping due to Lightning
iii. Tripping due to improper relay coordination
iv. Tripping due to mis-operation.
v. Tripping due to Equipment Failure**.**

The report of the GD, GI and Element Tripping along with root cause, remedial measures and action to be taken is attached at **Annexure - B.14.**

Tripping of many elements could not be concluded due to non-submission of DR output (For example: tripping related to 220/132 kV BTPS Substation, tripping in Tripura System , etc.)

In the subgroup meeting held on 17th Jul'17, Subgroup requested that installation of DR, EL output Software by Substation Owner is to be done at the earliest. The procedure for downloading the file is also to be shown to the operator of the station. DR/ EL output after each tripping has to be furnished by the owner of the station even if he is not the owner of the protection system.

Also, in the subgroup meeting on 17th Jul'17, DGM, NERLDC requested to the Subgroup that root cause analysis of the events should be done based on the weekly events report sent by NERLDC on weekly basis for identifying the root cause and take the remedial measures immediately and the report is to be sent to NERPC and NERLDC on weekly basis.

It is observed that only few generating stations like Khandong, OTPC etc. are furnishing this report.

It is requested to all Power Utilities to send this report on weekly basis to NERPC and NERLDC.

In the 47th PCCM, to resolve protection issues which need to be attended / rectified immediately, NERLDC requested NERPC to organize PCC meeting bi-monthly and subgroup meeting monthly. MS, NERPC agreed to consider holding PCC meeting bi-monthly and subgroup meeting monthly.

It is requested to hold subgroup meetings in every month to resolve protection issues which need to be attended / rectified immediately.

In Sub-group meeting of PCC held on 6th Dec'17, Subgroup once again requested to bay owner to provide necessary accessories for downloading DR & EL to substation owner where ever Sub-Station Owner & Bay Owner are of different Power Utilities.

C. NEW ITEMS FOR DISCUSSION

1. Draft Reliability Standards on Protection System -NRCE

In the 5th meeting of Subgroup in respect of "preparation of reliability standards for Protection System and Communication System" held on 18.08.17 at New Delhi, it was decided that the complete draft standard would be circulated to all the members and RPCs for their final inputs/observation, if any. Accordingly, the completed draft w.r.t eleven (11) broad areas of "Reliability Standards for Protection System" is enclosed at ***Annexure C.1*****.**

In subgroup meeting on 6th Dec'17, NERLDC gave a presentation on the draft standard for "Reliability Standards for Protection System". As all members were not present, forum suggested that Draft Standard for "Reliability Standards for Protection System" would also be discussed in detail in the next PCC Meeting. **All constituents are requested to give their valuable feedback and inputs in the next PCC Meeting**.

Members may please discuss.

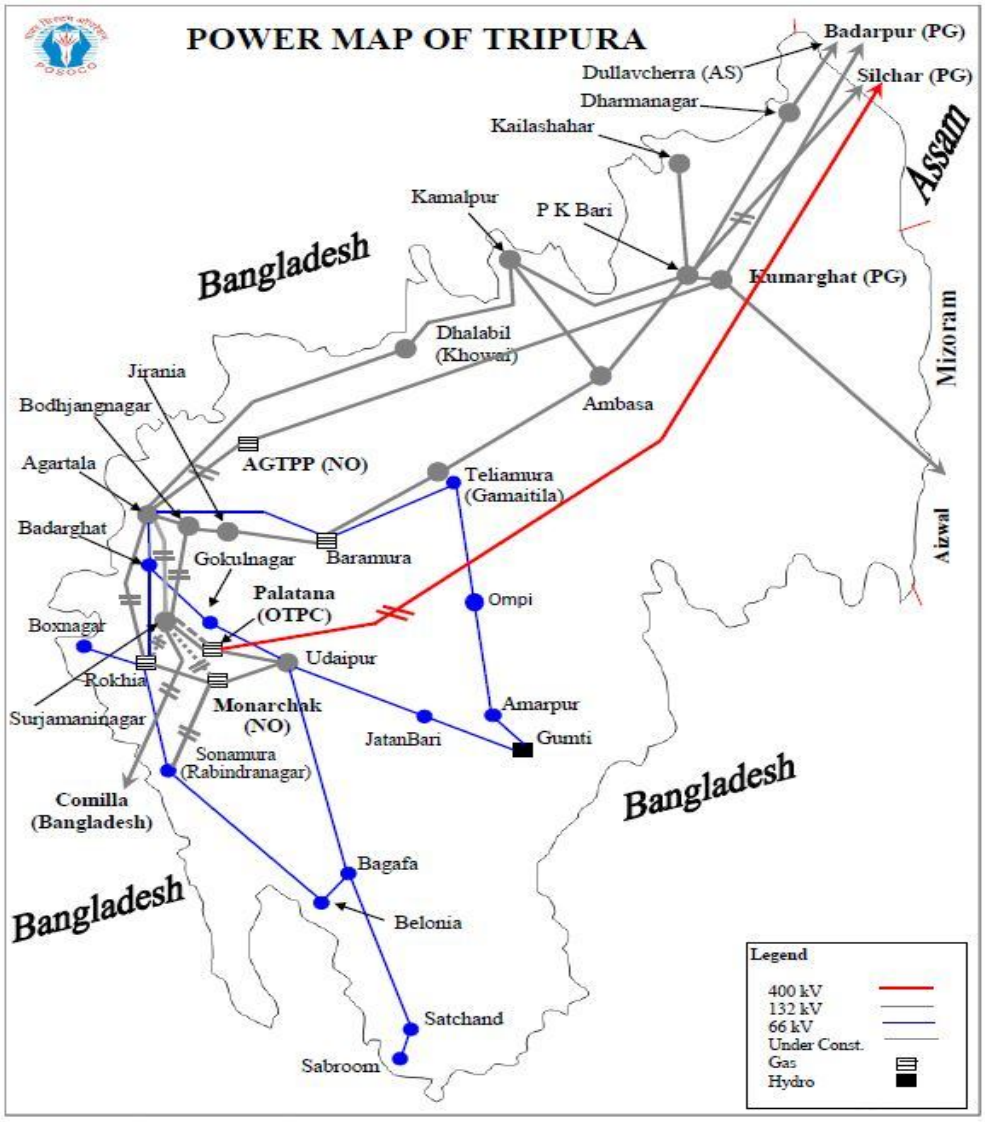
2. Voltage Collapse observed in Tripura Power System at 16:11 Hrs on 23rd Sep'17

a. While charging HVCB of ICT-I at Palatana, B-phase CB failed to close due to unhealthy operating mechanism, resulted unbalance neutral current in ICT-II at Palatana.
b. Before tripping of HVCB of ICT-I in Pole Discrepancy (settings-1.5 sec), ICT-II tripped in Sensitive Earth fault Protection (HV side).
c. Subsequently, voltage collapse observed in Tripura Power System. Agartala voltage touched 4 kV (from PMU).
d. At 16:11:58 Hrs, 132 kV AGTCCPP - Kumarghat (PG) 1 Line tripped on DPR, Z-I, R-Y-B due to low system voltage.
e. At 16:12 Hrs, 132 kV Agartala – AGTCCPP I and II lines was hand tripped due to low system voltage.
f. At 16:13 Hrs, Monarchak (61 MW), Rokhia (36 MW), Baramura (21 MW) and Gumti (6 MW) Units were de-synchronized due to low voltage in power system of Tripura as informed by TSECL.
g. Tripura Power System was connected to the power system of NER through 132 kV Agartala - Budhjangnagar – Jirania – Baramura – Gamaitilla – Ambassa – P K Bari - Kumarghat(PG) link. Due to Voltage instability problem, voltage dependent load was stalled in Tripura Power System and Bangladesh

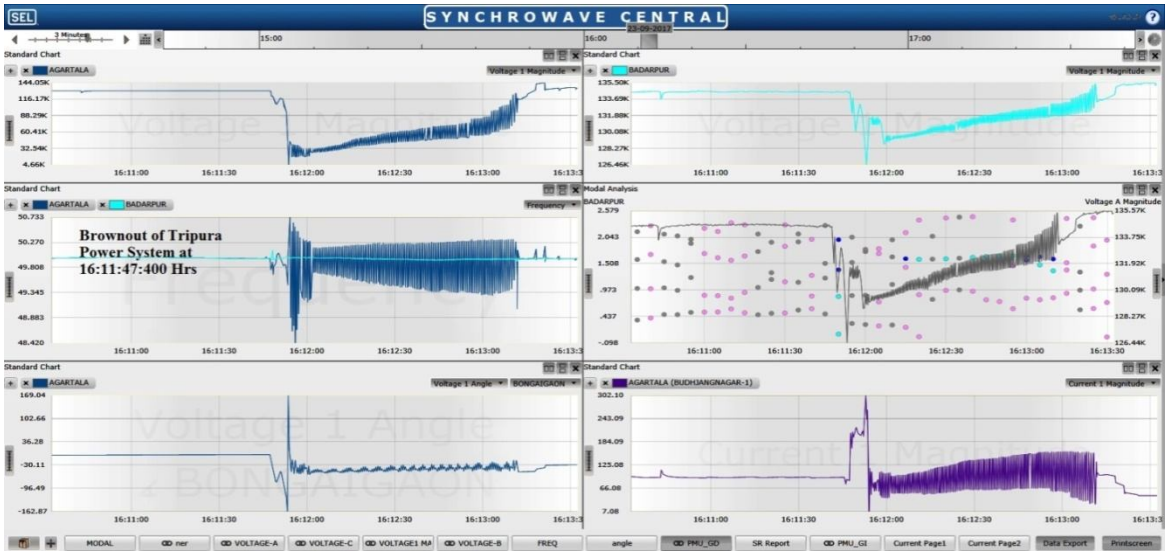
Power System.

h. 132 kV Surajmani Nagar - South Comilla (Bangladesh) D/C was also hand tripped from Surajmani Nagar at 16:46 Hrs for Voltage Control in Tripura power system.

i. Total Load Loss in Tripura Power System was around 163 MW and Generation Loss in Tripura power system was 124 MW (Monarchak – 61 MW, Rokhia - 36 MW, Baramura - 21 MW, Gumati - 6 MW). Central Sector Generation loss was 445 MW (AGTCCPP - 71 MW, Palatana - 374 MW)



Network diagram of affected area



PMU plots of brownout incident dated 23-Sep-17

In subgroup meeting on 6th Dec'17, after detailed deliberation, subgroup concluded that tripping of both ICTs at Palatana led to voltage collapse in Tripura Power System. OTPC informed the subgroup that B-phase HVCB of ICT-I at Palatana was failed to close due to problem in spring mechanism.

Settings of Sensitive Earth Fault (MiCOM P127) Relay of ICT-II are as follows:

Characteristics: Definite Time, Non Directional

Pickup Current: 40 A

Time Delay: 1.4 Sec

Subgroup requested OTPC to review the Sensitive Earth Fault settings and this function should be made directional. Subgroup also requested OTPC to check the correctness of Isef input to DR as well as CT inputs to the Sensitive Earth Fault Relay as Isef component is greater than In component as seen from DR for an unbalance.

After detailed deliberation, subgroup requested POWERGRID to inform the standard PD setting of ICT / Transformer that is to be followed by all utilities, in the next PCCM.

Members may please discuss.

3. 132 kV Kumarghat(PG) black out on 28th Sep'17

At 17:22 Hrs on 28.09.17, all lines emanating from Kumarghat(PG) & PK Bari tripped. Tripping details are as follows:

Sl. No.	Name of tripping element (End A - End B)	Date & Time of Event	Date & Time of Restoration	Relay indications	
				End A	End B
1	132 kV AGTPP - Kumarghat Line	28-09-2017 17:22:00	28-09-2017 17:44:00	DP, ZII, B-E	No tripping

2	132 kV Kumarghat - P K Bari Line	28-09-2017 17:22:00	29-09-2017 00:32:00	No tripping	Earth Fault
3	132 kV Badarpur - Kumarghat 1 Line	28-09-2017 17:22:00	28-09-2017 17:42:00	DP, ZII, Y-E	No tripping
4	132 kV Aizawl - Kumarghat Line	28-09-2017 17:22:00	28-09-2017 17:48:00	DP, ZII, Y-E	DP, Z-IV, Y-E
5	132 kV P K Bari - Kailashahar Line	28-09-2017 17:22:00	28-09-2017 17:28:00	Earth Fault	No tripping
6	132 kV P K Bari - Ambassa Line	28-09-2017 17:22:00	28-09-2017 17:28:00	No tripping	Earth Fault
7	132 kV Dhalabil - Kamalpur Line	28-09-2017 17:22:00	28-09-2017 17:26:00	Earth Fault	No tripping

And at 17:32 Hrs, following lines tripped while charging 132 kV P K Bari - Kumarghat from P K Bari end.

Sl.	**Name of tripping element (End A - End B)**	**Date & Time of Event**	**Date & Time of Restoration**	**Relay indications**	
				End A	**End B**
1	132 kV P K Bari - Ambassa Line	28-09-2017 17:32:00	28-09-2017 17:40:00	Earth Fault	No tripping
2	132 kV Dhalabil - Kamalpur Line	28-09-2017 17:32:00	28-09-2017 17:36:00	Earth Fault	No tripping
3	132 kV P K Bari - Dharmanagar Line	28-09-2017 17:32:00	28-09-2017 17:38:00	Earth Fault	No tripping
4	132 kV P K Bari - Kamalpur 1 Line	28-09-2017 17:32:00	28-09-2017 17:36:00	No tripping	Earth Fault

DR output of PK Bari substation is not available. Non-Directional Electro mechanical Over Current & Earth Fault relays are only available at PK Bari for protection of 132 kV lines.

In subgroup meeting on 6th Dec'17, NERLDC informed that prima facie fault was in the 132 kV PK Bari – Kumarghat line. However, DR output from PK Bari is also required to confirm the fault in this line.

Subgroup requested TSECL to intimate the status of installation of Numerical Relays at 132 kV PK Bari

in the next PCC Meeting. As length of this line is less than 5 Kms., **installation of line differential protection** is to be expedited by TSECL & POWERGRID.

Subgroup also requested TSECL to replace the Non-Directional Electro mechanical Over Current & Earth Fault relays at PK Bari for protection of 132 kV lines with Directional Over Current & Earth Fault relays.

Members may please discuss.

4. Blackout of Aizawl(PG) at on Oct'17

At 15:15 Hrs on 18th Oct'17, 132 kV Aizwal - Kumarghat line tripped. While charging this line, all lines emanating from Aizwal(PG) tripped.

ID	Element Name	Outage Date	Outage Time	Revival Date	Revival Time	Reason End1	Reason End2	Len. (Km)
1	Aizawl - Kumarghat	18-Oct-17	15:15	18-Oct-17	15:30	R-B, Z1, 159.1 Kms.	R-B, Z1, 89.14 Kms.	131
2	Aizawl - Kumarghat	18-Oct-17	15:30	18-Oct-17	18:55	NOT TRIPPED	R PH, Z3, 87.37 Kms.	131
3	Aizawl - Jiribam	18-Oct-17	15:30	18-Oct-17	15:42	R-Y PH, Z1, 35.6 KM	R-Y PH, Z1, 132.8 Kms.	172
4	Aizawl - Kolasib	18-Oct-17	15:30	18-Oct-17	16:00	NOT TRIPPED	Earth Fault	66

a. Z-3, 87 Kms from Kumarghat and Z-1, 159.1 Kms from Aizwal of 132 kV Aizwal - Kumarghat line need investigation. Line Length: 131 Kms.

b. Tripping of 132 kV Aizwal - Kolasib line on Earth Fault.

In subgroup meeting on 6th Dec'17, POWERGRID informed that there were subsequent faults in 132 kV Aizwal – Jiribam line and 132 kV Aizwal – Kumarghat line at 15:30 Hrs on 18th Oct'17 resulted in blackout of 132 kV Aizwal (PG).

a. Vegetation fault in 132 kV Aizwal – Jiribam line. Y-E fault initially evolved in to R-Y-E fault and cleared in Z-I. R-Y-E fault persisted for 100 msec and fault was cleared from both ends.

b. Subsequently, high resistive fault likely due to vegetation infringement occurred in 132 kV Aizawl – Kumarghat line and was cleared in Z-III. Due to this delayed fault clearance, 132 kV Aizwal – Kolasib tripped at Kolasib on Earth Fault Protection. **Earth Fault relay settings at Kolasib is to be reviewed by P&ED Mizoram considering the latest fault contribution.**

Subgroup requested POWERGRID to clear the vegetation in vulnerable locations to avoid unwanted tripping of lines. Subgroup also requested POWERGRID to review the resistive reach of Distance Protection for those lines with high chance of resistive faults considering the fault clearing time of the recent events.

Members may please discuss.

5. Tripping related to Palatana Generating System

a. At 08:16 Hrs on 5th Sep'17, while taking shutdown of 132 kV Palatana - Surajmani Nagar line, **due to wrong operation of earth switch (20589D isolator earth switch as informed by OTPC)**, following lines tripped:

ID	Name of tripping element (End A - End B)	Owner of the element	Date & Time of Event	Date & Time of Restoration	Relay indications	
					End A	End B
1	400 kV Palatana - Silchar 1 Line	NETCL	05-09-2017 08:16:00	05-09-2017; 13:04:00	DPR,Z-4, R-E	Direct Trip received
2	132 kV Palatana - Udaipur Line	TSECL	05-09-2017 08:16:00	05-09-2017; 09:16:00	Earth Fault	No tripping
3	132 kV Rokhia - Monarchak Line	TSECL	05-09-2017 08:16:00	05-09-2017 ;08:40:00	Earth Fault	No tripping
4	132 kV Monarchak - Udaipur Line	TSECL	05-09-2017 08:16:00	05-09-2017; 09:00:00	No tripping	Earth Fault

Due to tripping of these elements, Monarchak Power Station, Rabindranagar and Udaipur areas of Tripura Power System were separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.

Following points may be discussed:

1. Z-4 tripping of 400 kV Palatana - Silchar 1 Line
2. Tripping of 132 kV Rokhia - Monarchak Line & 132 kV Monarchak - Udaipur Line

b. Tripping of 132 kV Palatana – Surajmani Nagar line (Jul'17-Oct'17)

There were 3 instances of tripping of 132 kV Palatana – Surajmani Nagar line wherein, Tripura system collapsed in first two cases.

At 13:15 Hrs on 28th Sep'17 (Puja week), 132 kV Palatana – Surajmani Nagar & 132 kV Palatana - Udaipur line (Earth Fault, Z-1 at Palatana) tripped.

ID	Element Name	Outage Date & Time	Outage Date & Time	Reason End1	Reason End2	Length
1	Palatana - Surajmaninagar	09-Aug-17 5:17	09-Aug-17 5:40	DPR, Z-2, R-Ph, 65.5 km	No Tripping	35
2	Palatana -	13-Sep-17	13-Sep-17	DPR, Z2,	No	35

	Surajmaninagar	15:20	15:38	46.4 KM	Tripping	
3	Palatana - Surajmaninagar	28-Sep-17 13:15	28-Sep-17 13:31	Tripped on O/C	No Tripping	35

POWERGRID/OTPC/TSECL may please intimate the root cause.

c. Tripping of Palatana GTG- I & II at 18:05 Hrs on 21st Sep'17

Palatana GTG- I & II at 18:05 Hrs on 21st Sep'17 due to suspected mal-operation of SPS-3.

In the special meeting of NERPC held on 11th Oct'17 at Shillong, it was decided that spurious operation of SPS-3 on 21st Sep'17 will be investigated by POWERGRID and come out with report within 1 week.

Discussion in subgroup meeting on 6th Dec'17:

a. Z-4 time setting and PSL logic of 400 kV Silchar Palatana I line to be reviewed by OTPC. Also, Over Current & Earth Fault settings of ICTs at Palatana to be coordinated with lines to avoid unwanted tripping of 400 kV lines for fault in 132 kV system.

Subgroup requested TSECL to review the Over Current & Earth Fault settings of all lines emanating from Rokhia & Udaipur substations. Settings should be as per recommendations of Ramakrishna Task Force considering the latest fault contribution of each feeder for fault in next adjacent bus. Fault Contribution factor should cover all possible grid conditions and this should be reviewed half yearly basis.

b. Subgroup requested TSECL to intimate the root cause for the first two events and also for 132 kV Palatana – Uadipur line tripping at 13:15 Hrs on 28-Sep-17 which resulted in tripping of 132 kV Palatana – Surajmaninagar line.

Subgroup requested OTPC to check whether Over Current reverse setting is enabled for 132 kV Palatana – Surajmaninagar line.

Subgroup also requested OTPC to review the Over Current & Earth Fault settings of 132 kV Surajmani Nagar & Udaipur lines. Settings should be as per recommendations of Ramakrishna Task Force considering the latest fault contribution of each feeder for fault in next adjacent bus. Fault Contribution factor should cover all possible grid conditions and this should be reviewed half yearly basis.

c. As seen from Event Logger Output from Silchar, time of operation of earth switch of 400 kV line reactors of Byrnihat & Azara lines at Silchar matches with the DT receipt at Palatana. **POWEGRID**

may please check whether earth switch operation of 400 kV line reactors of Byrnihat & Azara lines at Silchar and spurious SPS-3 signal generation are related.

Report of spurious operation of SPS-3 on 21st Sep'17 is to be submitted to NERPC/NERLDC by POWERGRID at the earliest.

d. Tripping of ICT-II at Palatana and 132 kV Palatana – Udaipur line at 02:08 Hrs on 3rd Dec'17:

Over Current Protection of 132 kV Bus Coupler at 132 kV Palatana is to be coordinated with 132 kV lines emanating from Palatana.

Testing of Distance Protection of 132 kV Palatana – Udaipur line at Palatana is to be done by OTPC and test results to be submitted to NERPC.

Members may please discuss.

6. Grid Disturbances in Tripura Power System and Tripping of Monarchak Generation due to loss of evacuation path

There were 26 no of Grid disturbances in Tripura Power System.

July: 4

August: 12

September: 7

October: 3

November: 0

24 No. of times, Monarchak generation tripped on Over Speed Protection (Reason: loss of evacuation path).

Due to unavailability of proper relay indication, details of downstream tripping (11/33/66 kV elements) and relevant DR&EL outputs, analysis of these disturbances could not be done. Concerned utilities may furnish these details for proper analysis of all events in subgroup.

Details are attached as *Annexure-6.*

The issue could not be discussed in **subgroup meeting on 6th Dec'17** as Tripura representatives were absent. **The agenda item was referred to next PCC meeting.** The forum requested NERPC to write to TSECL regarding the frequent tripping of the associated transmission lines of Monarchak Generation as well as unavailability of relay indications and relevant DR & EL outputs for analysis of grid events in Tripura power system.

TSECL may intimate the status. Members may please discuss.

7. Tripping of 132 kV Dimapur - Kohima line

Number of tripping of 132 kV Dimapur - Kohima line in the last 4 months is as follows:

July: 19

August: 7

September: 13

October: 4

November: 1

Tripping Details is attached as ***Annexure C.7.A***, Letter from EE, Transmission, DoP Nagaland is attached as ***Annexure-C.7.B*** and settings of Kohima SS is attached as ***Annexure C.7.C.***

Capital area of Nagaland Power System is connected with rest of NER Grid through 132 kV Dimapur(PG) - Kohima line. 132 kV Karong - Kohima line kept idle charged from Kohima end, 132 kV Wokha - Kohima line was kept open (Cause: improper relay co-ordination of 132 kV Dimapur-Kohima-Wokha link) & 66 kV Tuensang - Likhimro line kept open (Cause: construction activities).

Tripping of this element will result in collapse of this area due to load generation mismatch.

Members may please discuss.

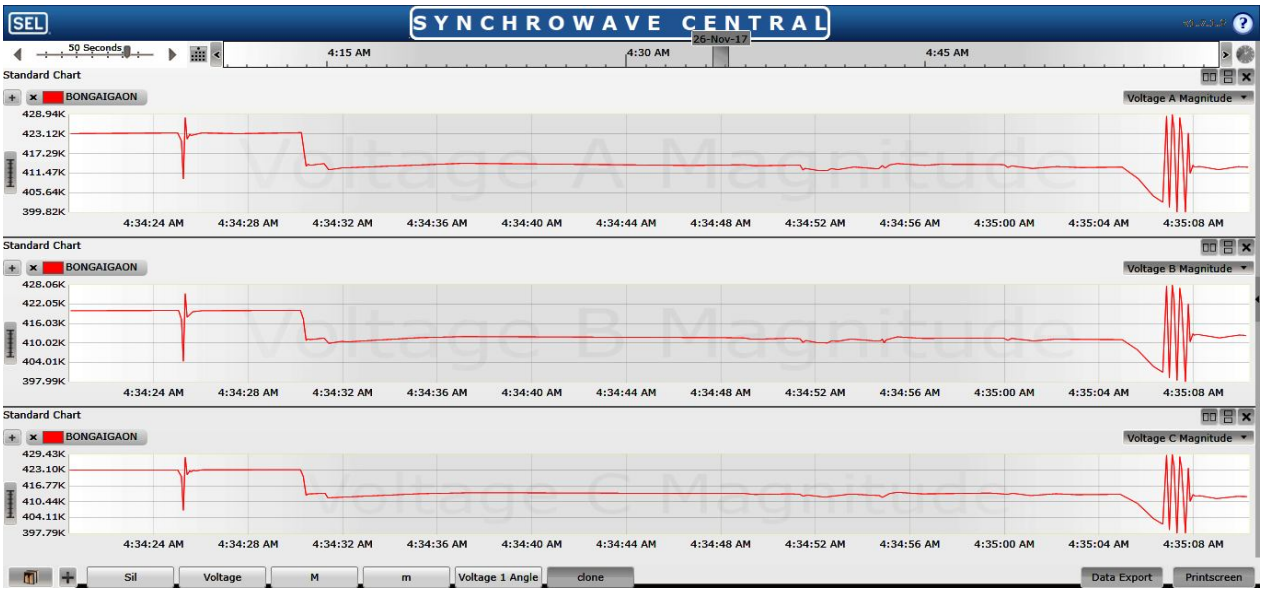
8. Inter-Regional line tripping:

It was observed that inter-regional lines of NER tripped many times in the last 5 months. Few occasions, tripping occurred without any relay indication at Bongaigaon / Salakati (tripping only at remote end) during testing.

List of tripping of for the period w.e.f Jul'17 to Nov'17 is attached as ***Annexure C.8.*** Apart from reliability issues, tripping of these lines may lead to curtailment of energy transactions in the power market.

Sl. No.	Details (w.e.f Jul'17 to Nov'17)	No. of Tripping
1	400 kV Bongaigaon - New Siliguri I	3 (2+0+1+0+0)
2	400 kV Bongaigaon - New Siliguri II	0
3	400 kV Bongaigaon - Alipurduar I	5 (0+0+3+1+1)
4	400 kV Bongaigaon - Alipurduar II	5 (2+1+0+2+0)
5	220 kV Salakati - Alipurduar I	3 (0+0+2+1+0)
6	220 kV Salakati - Alipurduar II	2 (0+1+0+1+0)
7	+/- 800 kV Biswanath Chariali - Agra Pole I HVDC	10 (1+2+5+1+1)
8	+/- 800 kV Biswanath Chariali - Agra Pole II HVDC	5 (1+1+1+1+1)

At 04:35 Hrs on 26th Nov'17, HVDC pole-I tripped at BNC due to disturbance in 400/220 kV Alipurduar substation. Oscillation in voltage for few cycles also observed during in this event.



Voltage Plot during the event at 04:34 Hrs on 26th Nov'17

In subgroup meeting on 6th Dec'17, NERTS representative informed that the line is maintained by Eastern Region and details are with ERTS. **Subgroup requested NERTS, POWERGRID to collect details from ERTS and intimate the root cause of each event and actions taken against each event in the next PCC Meeting**.

POWERGRID may intimate the root cause of these events and remedial measures taken so far.

9. Tripping of Inter-national Lines: 132 kV Rangia - Motonga and 132 kV Salakati - Gelephu lines:

Tripping details are attached as **Annexure C.9**

Sl. No	Details (w.e.f Jul'17 to Nov'17)	No of Tripping
1	132 kV Rangia - Motonga	21 (1+10+7+1+2)
2	132 kV Salakati - Gelephu	14 (2+5+6+1+0)

As informed by AEGCL, TMS of overcurrent and earth fault relay at Rangia of 132kV Rangia - Motonga line has been modified to 0.2 from 0.9 & 1**.**

Testing of Distance relay available at Rangia may be done by POWERGRID. Adopted CT ratio for protection of Motonga line may be intimated by POWERGRID. Over Current & Earth Fault Relay settings have to be co-ordinated at Rangia with those of the remote ends of other lines connected to Rangia considering the latest fault contribution.

As informed by NERTS, POWERGRID; power flow in the line from Motonga to Rangia exceeds 60 MW, the line trips on over Current protection at Motonga. Therefore the CT ratio and relay settings at Motonga also need to be reviewed.

In subgroup meeting on 6th Dec'17, after detailed deliberation, it was decided that **testing of Distance relay available at Rangia to be done by POWERGRID and testing results to be submitted to NERPC within 15 days from date of the meeting i.e 6th Dec'17**. **Adopted CT ratio for protection of Motonga line is to be intimated by POWERGRID. Over Current & Earth Fault Relay settings have to be co-ordinated at Rangia with those of the remote ends of other lines connected to Rangia considering the latest fault contribution**.

POWERGRID may intimate the status.

10. Z-III tripping of 132 kV Kopili – Khandong - I line at Kopili

132 kV Kopili – Khandong – I line tripped on 24.09.17 at 23:45 Hrs with the following relay indications at Kopili:

Zone: 3, Phase: R-Y-B, Distance to Fault: 49.6 Km

The line did not trip at Khandong.

Simultaneously, the 132 kV Khandong – Khliehriat –I line tripped at both ends with the following relay indications:

At Khandong : Zone : 1, Phase : R-Y-B, Distance to Fault : 11.36 Km

At Khliehriat : Zone : 1, Phase : R-Y-B, Distance to Fault : 35.79 Km

Prima facie, a three phase fault occurred in the 132 kV Khandong – Kopili-I line , probably due to lightening, which was detected by the Distance Protection relay at Kopili forthe 132 kV Kopili - Khandong-I line in Zone-3.

From the DR of Khandong end for the 132 kV Khandong – Khliehriat-I line, it is seen that the fault was cleared in 70 mS.

Therefore operation of the Distance Protection Relay at Kopili for 132 kV Kopili – Khandong Line – I seems to be erroneous. **DPR settings at Kopili may be reviewed.**

In subgroup meeting on 6th Dec'17, Kopili, NEEPCO informed that Z-3 timing in PSL was instantaneous for 132 kV Kopili – Khandong Line – I at Kopili and the same has been changed to 800 msec.

This is for the kind information of members please.

11. Review of DPR settings at 132 kV Khliehriat (PG) and Khliehriat (MePTCL)

132 kV Khliehriat(PG) - Khliehriat(MePTCL) I line tripped at Khliehriat (MePTCL) several times for fault in other lines especially fault in 132 kV Khliehriat(PG) - Khandong D/C.

Tripping details is attached as **Annexure C.11.**

In subgroup meeting on 6th Dec'17, MePTCL informed that DPR settings were changed on 12th Oct'17. Distance Protection of 132 kV Khliehriat (PG) – Khliehriat (MePTCL) II line is kept out of service due to substation earthing issue. Subgroup requested to take this Distance Protection in service at the earliest.

Memebers may please discuss.

12. Tripping of 220 kV Balipara – Sonabil line at Balipara for faults outside line section:

Few instances of tripping of 220 kV Balipara – Sonabil line from Balipara on Earth Fault Protection is observed for fault in other line sections especially in 220 kV Samaguri - Sonabil II line.

Before clearing of the fault by relays of the faulty section, 220 kV Balipara – Sonabil line tripped in earth fault at Balipara end**.**

Tripping details is attached as **Annexure C.12.**

In subgroup meeting on 6th Dec'17, Subgroup requested POWERGRID to review the earth fault settings of 220 kV Balipara – Sonabil line at Balipara at the earliest and inform the status in the next PCCM.

POWERGRID may intimate the status

13. Implementation of R&M works of Protection System funded from PSDF

The status as informed in 139th OCC:

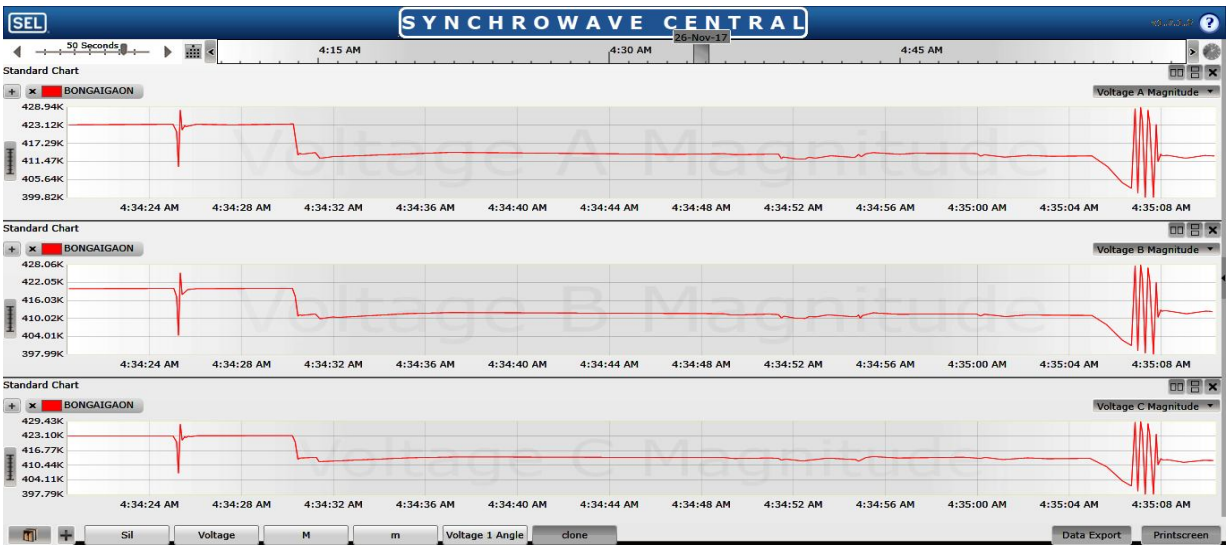
State	Protection System	Work Progress
Arunachal Pradesh	Tendering in process	
Nagaland	Work under execution. Completion by 31.12.17.	
Mizoram	Main Equipment and Diagnostic Tools LOA issued. Civil Works LOA by 14.12.17	
Manipur	By Dec'17 all LOAs' to be issued.	
Tripura	To submit UC by 31.01.18.	
Assam	Remaining tenders by Jan'18 and all LOAs' by Aug'18.	
Meghalaya	MePTCL& MePGCL –LOA completed.	

Members may please intimate the status.

14. Review of Over Voltage Settings of ISTS lines in NER

At around 04:34 Hrs on 26th Nov'17, 400/220 kV Alipurduar sub-station blacked out due to tripping of 400 KV Alipurduar- Bongaigaon ckt I, 400 KV Alipurduar-Binaguri double ckt, 220 KV Alipurduar - Birpara double ckt on account of over voltage at Alipurduar (220 kV Alipurduar-Salakati D/C was under planned shutdown and 400 KV Alipurduar -Bongaigaon ckt II was kept open to control over voltage).

Considering the criticality of 400 kV/220 kV substations of NER, to avoid unwanted tripping of lines on account of over voltage, Over Voltage Settings of ISTS lines in NER may be reviewed.



Voltage Plot of Bongaigaon

Members may please discuss

15. Formation of Committee for periodic review of relay settings of grid elements

It is very much essential to review the relay settings of elements connected to grid periodically to ensure reliable operation of relays considering the drastic changes occurring in the grid. Also, review of relay settings of upcoming elements is also critical to ensure the safe and secure operation of NER Grid.

It is requested to form a committee to review relay settings.

Review of relay settings may be done half yearly for elements already connected to grid and review of relay settings of upcoming elements may be done at the earliest.

Members may please discuss.

ID	Voltage Level	ElementName	Element Type	ElementNo	Outage Date & Time	Restoration Date & Time	ReasonEnd1	ReasonEnd2	Length_Capacity
1845	400	Bongaigaon - New Siliguri (Binaguri)	Line	1	13/Jul/17 10:21	13/Jul/17 10:37	Not tripped	Suspected PLCC mal operation	218
1846	400	Bongaigaon - New Siliguri (Binaguri)	Line	1	13/Jul/17 11:31	13/Jul/17 13:02	Not tripped	Suspected PLCC maloperation	218
1859	800	Biswanath Chariali - Agra	HVDC	2	16/Jul/17 3:38	16/Jul/17 4:39	Maloperation of VESDA(fire trip)	N/A	1729
1868	800	Biswanath Chariali - Agra	HVDC	1	17/Jul/17 8:18	17/Jul/17 11:31	DC Line Fault	DC Line Fault	1729
1879	400	Bongaigaon - Alipurduar	Line	2	18/Jul/17 15:03	19/Jul/17 14:28	DP, R-ph ,Z-2 ,86.42km	DP, R-ph ,Z-1 ,105 km	105.69
1941	400	Bongaigaon - Alipurduar	Line	2	30/Jul/17 2:36	30/Jul/17 19:33	DP,Z1,RB -Ph ,62.71 km	DP ,Z1,RB -Ph,33 km	105.69
1954	220	Salakati - Alipurduar	Line	2	01/Aug/17 14:00	01/Aug/17 14:32	Tripped W/O Indication.	Not Trip	106
2035	800	Biswanath Chariali - Agra	HVDC	1	12/Aug/17 8:54	13/Aug/17 1:36	reason yet to be known, details awaited	reason yet to be known, details awaited	1729
2068	800	Biswanath Chariali - Agra	HVDC	2	17/Aug/17 12:55	17/Aug/17 14:07	Line fault. D=232 KM	Details awaited	1729
2129	800	Biswanath Chariali - Agra	HVDC	1	24/Aug/17 13:05	24/Aug/17 14:01	Details awaited	Details awaited	1729
2155	800	Biswanath Chariali - Agra	HVDC	1	26/Aug/17 12:25	26/Aug/17 16:22	DC line protection trip	DC line protection trip	1729
2177	400	Bongaigaon - Alipurduar	Line	2	28/Aug/17 21:03	31/Aug/17 15:41	Main-1:-Z-1, Y Ph, D=133.6 KM, Fault Current=2.06 KA	Y-N, 7.60KM, Fault Current-7 KA	105.69
2253	220	Salakati - Alipurduar	Line	1	08/Sep/17 23:23	09/Sep/17 0:00	AR sucessful	Y-Ph ,Z2,100.6 km	106
2283	800	Biswanath Chariali - Agra	HVDC	1	13/Sep/17 16:56	13/Sep/17 19:05	Line Protection operated, 79.5 kM	Line fault	1729
2285	220	Salakati - Alipurduar	Line	1	13/Sep/17 19:01	13/Sep/17 19:33	A/R	Tripped on DP, Z2, Rph, 83.9KM	106
2293	400	Bongaigaon - New Siliguri (Binaguri)	Line	1	15/Sep/17 11:37	15/Sep/17 12:02	Not tripped	Not available	218
2302	800	Biswanath Chariali - Agra	HVDC	1	15/Sep/17 13:01	15/Sep/17 14:05	Line fault,118.2 km	details awaited	1729
2320	800	Biswanath Chariali - Agra	HVDC	1	17/Sep/17 17:13	17/Sep/17 17:52	DC Line fault, 179.3	DC DC Line fault	1729

ID	Voltage Level	ElementName	Element Type	ElementNo	Outage Date & Time	Restoration Date & Time	ReasonEnd1	ReasonEnd2	Length_Capacity
2325	800	Biswanath Chariali - Agra	HVDC	1	17/Sep/17 22:01	17/Sep/17 22:21	line fault, 244 Km	transient fault tripping	1729
2326	400	Bongaigaon - Alipurduar	Line	1	18/Sep/17 0:18	18/Sep/17 0:57	Y Ph, Z2	Z1, Y-N fault	105.69
2331	400	Bongaigaon - Alipurduar	Line	1	18/Sep/17 6:39	18/Sep/17 7:17	Yph, Z-2, Dis 91.41 km	Z1 Y-N fault, Yph to E fault	105.69
2332	400	Bongaigaon - Alipurduar	Line	1	18/Sep/17 7:34	18/Sep/17 15:28	Y ph,Z-2, distance 96.39 km	Z1 Y-N fault, Yph to E fault	105.69
2335	800	Biswanath Chariali - Agra	HVDC	1	19/Sep/17 14:24	19/Sep/17 15:10	Line fault, D-179.90 KM, Tower No. 480/A-2	No Tripping	1729
2408	800	Biswanath Chariali - Agra	HVDC	2	29/Sep/17 10:44	29/Sep/17 11:18	Line fault, 161.6 Km	-	1729
2456	400	Bongaigaon - Alipurduar	Line	2	07/Oct/17 10:58	07/Oct/17 11:30	R-N, Z1, 38.63 kM, AR successful	R-N, Z1, 74.3 kM,	105.69
2457	800	Biswanath Chariali - Agra	HVDC	2	07/Oct/17 22:12	07/Oct/17 23:10	Line fault , D=271KM, Tower Loc. No. 574/A-2	Details awaited	1729
2493	800	Biswanath Chariali - Agra	HVDC	1	12/Oct/17 13:25	12/Oct/17 14:54	Line fault near gantry tower ,D=0 KM	Details awaited	1729
2504	800	Biswanath Chariali - Agra	HVDC	2	13/Oct/17 18:44	13/Oct/17 20:12	Line fault, D=168.90 KM	Details awaited	1729
2524	400	Bongaigaon - Alipurduar	Line	2	17/Oct/17 9:32	17/Oct/17 10:15	R phase, Z2, 83.85 KM, 1.79 kA	R phase, Z1, 45.25 KM, 4.8 kA	105.69
2584	400	Bongaigaon - Alipurduar	Line	1	28/Oct/17 8:54	28/Oct/17 9:13	Z-1, R-PH, FD=34.60 KM, F.C.=1.39 kA	Z-2, R-Ph, FD=73.80 KM	105.69
2597	220	Salakati - Alipurduar	Line	1	30/Oct/17 18:10	30/Oct/17 19:00	RB PHASE, Z1, 38.49 KM, 2.83 kA	RB PHASE, Z1, 61 KM,	106
2598	220	Salakati - Alipurduar	Line	2	30/Oct/17 18:10	30/Oct/17 19:08	RB PHASE, Z1, 38.16 KM, 3.124 kA	RB PHASE, Z1, 61km	106
2609	800	Biswanath Chariali - Agra	HVDC	2	02/Nov/17 16:09	02/Nov/17 21:34	no indication	High resistive fault	1729
2718	800	Biswanath Chariali - Agra	HVDC	1	26/Nov/17 4:35	26/Nov/17 6:25	Fault on station 2	Details awaited	1729
2720	400	Bongaigaon - Alipurduar	Line	1	26/Nov/17 4:34	26/Nov/17 6:19	DT recieved	O/V	105.69

Phase II Protection Audit Schedule

Sl. No.	Name of the Station	Owner	Group	Accomodation arranged by	Audit to be conducted by			Host Constituent	Onward Journey Date	Proposed Audit Date	Return Journey Date	Remarks
					NERPC/NERLDC	POWERGRID/ State Constituent	ISGS/ State Constituent					
1	Bhalupong	DoP AP	Group 1	Balipara(PG)	NERPC/NERLDC	POWERGRID		DoP AP				Stay at Balipara PG on 1st Day, Return to Balipara after Bhalupang then Khupi
2	Khupi	NEEPCO			NERPC/NERLDC	POWERGRID		NEEPCO				
3	Balipara	POWERGRID			NERPC/NERLDC							
4	Rowta	AEGCL		Guwahati	NERPC/NERLDC	POWERGRID		AEGCL				
5	Sipajhar	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
6	Roing	POWERGRID	Group 2	Namsai	NERPC/NERLDC			POWERGRID				
7	Tezu	POWERGRID			NERPC/NERLDC			POWERGRID				
8	Rupai	AEGCL		AGBPP	NERPC/NERLDC	POWERGRID		AEGCL				
9	Ledo	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
10	Deomali	DoP AP			NERPC/NERLDC	POWERGRID		DoP AP				
11	Sonari	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
12	Moran & Behiating	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
13	Pavoi	AEGCL	Group 3	BNC	NERPC/NERLDC	POWERGRID		AEGCL				Majuli in Jorhat group
14	North Lakhimpur	AEGCL		North Lakhimpur	NERPC/NERLDC	POWERGRID		AEGCL				
15	Dhemaji	AEGCL		Nirjuli	NERPC/NERLDC	POWERGRID		AEGCL				
16	Nirjuli	POWERGRID			NERPC/NERLDC	POWERGRID		POWERGRID				
17	Lekhi & Itanagar	DoP AP			NERPC/NERLDC	POWERGRID		DoP AP				
18	Kakching	MSPCL	Group 4	Imphal(PG)	NERPC/NERLDC	POWERGRID		MSPCL				
19	Chandel	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
20	Kongba	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
21	Churachandpur	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
22	Elangkangpokpi	MSPCL	Group 5	Imphal(PG)	NERPC/NERLDC	POWERGRID		MSPCL				
23	Yaingangpokpi	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
24	Hundung	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
25	Kiphiri	DoP Nagaland	Group 6	Kiphiri	NERPC/NERLDC	POWERGRID		DoP Nagaland				Stay at Kohima, 1 day travel for Kiphiri, Stay at Kiphiri, Next day Audit then night stay at Kiphiri
26	Meluri	DoP Nagaland		Meluri	NERPC/NERLDC	POWERGRID		DoP Nagaland				1 day travel from Kiphire to Meluri, Stay at Meluri, Next day Audit then night stay at Meluri
27	Sanis	DoP Nagaland		Doyang	NERPC/NERLDC	POWERGRID		DoP Nagaland				1 day travel from Meluri to Doyang, Stay at Doyang, Next day Audit at Sanis, Stay at Doyang
28	Wokha	DoP Nagaland			NERPC/NERLDC	POWERGRID		DoP Nagaland				Stay at Doyang
29	Champai	P&ED Mizoram	Group 7	Aizwal(PG) & Champai	NERPC/NERLDC	POWERGRID		P&ED Mizoram				1 day travel from Aizwal to Champai
30	Khawzawl	P&ED Mizoram		Khawzawl	NERPC/NERLDC	POWERGRID		P&ED Mizoram				
31	Saitual	P&ED Mizoram		Aizwal(PG)	NERPC/NERLDC	POWERGRID		P&ED Mizoram				
32	Bairabi	P&ED Mizoram			NERPC/NERLDC	POWERGRID		P&ED Mizoram				
33	Tuirial	NEEPCO			NERPC/NERLDC	POWERGRID		NEEPCO				
34	Melriat(PG)	POWERGRID	Group 8	Melriat(PG)	NERPC/NERLDC	POWERGRID		POWERGRID				
35	Lunglei	P&ED Mizoram		Lunglei	NERPC/NERLDC	POWERGRID		P&ED Mizoram				
36	Serchhip	P&ED Mizoram		Serchhip	NERPC/NERLDC	POWERGRID		P&ED Mizoram				
37	Dhalabil	TSECL	Group 9	Agartala	NERPC/NERLDC	POWERGRID		TSECL				
38	Gamatilla	TSECL			NERPC/NERLDC	POWERGRID		TSECL				
39	Rabindranagar	TSECL			NERPC/NERLDC	POWERGRID		TSECL				
40	Jirania	TSECL			NERPC/NERLDC	POWERGRID		TSECL				
41	Nongstoin	MePTCL	Group 10	Shillong	NERPC/NERLDC	POWERGRID		MePTCL				
42	Mawngap	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
43	Sohra	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
44	Mustem	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
45	Umiam	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
46	NEIGRIHMS	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
47	Tura	MePTCL	Group 11	Tura	NERPC/NERLDC	POWERGRID		MePTCL				
48	Nangalbibra	MePTCL			NERPC/NERLDC	POWERGRID		MePTCL				
49	Bongaigaon	POWERGRID	Group 12	Bongaigaon(PG)	NERPC/NERLDC	POWERGRID		POWERGRID				
50	Salakati	POWERGRID			NERPC/NERLDC	POWERGRID		POWERGRID				
51	Gaouripur	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
52	Gossaigaon	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
53	Bilasipara & Jogigopa	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
54	Kokrajhar	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
55	Kamalpur	AEGCL	Group 13	Guwahati	NERPC/NERLDC	POWERGRID		AEGCL				
56	CTPS	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
57	Bornagar	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
58	Narengi	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
59	Sisugram	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
60	Nalbari	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
61	Bagjhap	AEGCL		Langpi	NERPC/NERLDC	POWERGRID		AEGCL				
62	Langpi	AEGCL										
63	Khalaigaon	AEGCL		Misa	NERPC/NERLDC	POWERGRID		AEGCL				
64	Shankardev Nagar	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
65	Diphu	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
66	Misa	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
67	Panchgram	AEGCL	Group 15	Badarpur(PG)	NERPC/NERLDC	POWERGRID		AEGCL				
68	Hailakandi	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
69	Dullavcherra	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				
70	Jiribam	POWERGRID		Jiribam(PG)	NERPC/NERLDC	POWERGRID		POWERGRID				
71	Jirbam(MSPCL)	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
72	Rengpang	MSPCL			NERPC/NERLDC	POWERGRID		MSPCL				
73	Kopili	NEEPCO	Group 16	Umrangshu	NERPC/NERLDC	POWERGRID		NEEPCO				
74	Khandong	NEEPCO		NEEPCO Guest	NERPC/NERLDC	POWERGRID		NEEPCO				
75	Umrangshu	AEGCL		House	NERPC/NERLDC	POWERGRID		AEGCL				
76	Haflong	POWERGRID		Haflong(PG)	NERPC/NERLDC	POWERGRID		POWERGRID				
77	Haflong(AEGCL)	AEGCL			NERPC/NERLDC	POWERGRID		AEGCL				