

पॉवर सिस्टम ऑपरेशन कार्पोरेशन लिमिटेड

(पब्लिसिड की पूर्ण स्वायत्तिय प्राप्त सार्वजनिक कंपनी)



उत्तरी क्षेत्रीय भार प्रेषण केंद्र

CIN: U40105DL2009GOI188682

Power Supply Position in Northern Region for 13.08.2015
Date of Reporting : 14.08.2015

I. Regional Availability/Demand:

Evening Peak (20:00 Hrs) MW				Off Peak (03:00 Hrs) MW				Day Energy (Net MU)	
Demand Met	Shortage	Requirement	Freq* (Hz)	Demand Met	Shortage	Requirement	Freq* (Hz)	Demand Met	Shortage
44607	3005	47612	49.93	40652	3086	43738	50.08	1021.1	75.16

* Half hourly (two 15 minutes block—one block each before and after the designated time) average frequency

II. A. State's Load Details (At States periphery) in MUs:

State	State's Control Area Generation (Net MU)				Drawal Schedule (Net MU)	Actual Drawal (Net MU)	UI (Net MU)	Consumption (Net MU)	Shortages* (MU)
	Thermal	Hydro	Renewable/others \$	Total					
Punjab	59.81	25.68		85.48	125.61	125.00	-0.61	210.48	0.00
Haryana	28.38	0.58		28.96	132.51	130.69	-1.82	159.65	0.00
Rajasthan	93.40	7.05	6.68	107.13	60.53	59.88	-0.65	167.01	0.00
Delhi	13.68			13.68	90.72	89.30	-1.42	102.98	0.12
UP	117.11	6.80		131.71	143.60	147.74	4.15	279.46	63.93
Uttarakhand		23.48		23.48	10.83	12.27	1.44	35.75	2.90
HP		23.28		23.28	0.69	2.62	1.94	25.91	0.12
J & K		14.78	0.00	14.78	19.04	19.34	0.30	34.11	8.09
Chandigarh				0.00	6.32	5.75	0.27	5.75	0.00
Total	312.37	101.63	6.68	428.49	589.85	592.59	3.59	1021.08	75.16

* Shortage furnished by the respective constituent. \$ Others include UP Co-generation and JK Diesel

II. B. State's Demand Met in MWs:

State	Evening Peak (20:00 Hrs) MW				Off Peak (03:00 Hrs) MW				# Max(hourly) Demand Met of Day (MW)
	Demand Met	Shortage	UI	STOA/PX transaction	Demand Met	Shortage	UI	STOA/PX transaction	
Punjab	9154	0	-81	1526	8008	0	-62	1817	9424
Haryana	7745	0	-69	1900	6729	0	-30	1874	7869
Rajasthan	7085	0	-200	142	6766	0	81	110	7496
Delhi	4370	0	-135	650	4057	0	-66	393	5009
UP	11318	2415	28	669	11451	2885	-57	1024	12401
Uttarakhand	1795	155	145	-231	1421	0	66	-491	1795
HP	1135	0	104	-1373	893	0	71	-1557	1302
J&K	1741	435	159	-474	1137	201	-113	-836	1848
Chandigarh	264	0	-13	0	190	0	-35	-30	291
Total	44607	3005	-62	2809	40652	3086	-145	2304	45638

* STOA figures are at sellers boundary & PX figures are at regional boundary. # figures may not be at simultaneous hour.

III. Regional Entities :

Entity	Station/Constituent	Inst. Capacity (Effective) MW	Declared Capacity (MW)	Peak MW (Gross)	Off Peak MW (Gross)	Energy (Net MU)	Average Sentout (MW)	Schedule Net MU	UI [OG:(+ve), UG: (-ve)]	
									Net MU	Net MU
A. NTPC	Singrauli STPS (5*200+2*500)	2000	1370	1562	1511	34.20	1425	32.81	1.39	
	Rihand I STPS (2*500)	1000	889	997	980	20.94	872	20.74	0.20	
	Rihand II STPS (2*500)	1000	316	359	344	7.87	328	7.41	0.46	
	Rihand III STPS (2*500)	1000	480	504	515	11.45	477	11.34	0.11	
	Dadri I STPS (4*210)	840	810	620	635	12.87	536	13.52	-0.65	
	Dadri II STPS (2*490)	980	906	990	680	18.90	788	19.87	-0.97	
	Unchahar I TPS (2*210)	420	400	434	394	8.93	372	9.48	-0.55	
	Unchahar II TPS (2*210)	420	400	440	379	8.93	372	9.31	-0.38	
	Unchahar III TPS (1*220)	210	200	219	170	4.33	181	4.58	-0.25	
	ISTPP (Jhajjar) (3*500)	1500	1436	884	631	15.75	656	15.92	-0.17	
	Dadri GPS (4*130.19+2*154.51)	830	598	179	182	4.19	174	4.39	-0.20	
	Anta GPS (3*88.71+1*153.2)	419	396	0	0	0.00	0	0.00	0.00	
	Auraiya GPS (4*111.19+2*109.30)	663	638	155	157	3.64	152	3.66	-0.02	
	Dadri Solar	5	1	0	0	0.02	1	0.03	0.00	
	Unchahar Solar	10	3	0	0	0.03	1	0.06	-0.03	
	Singrauli Solar	15	2	0	0	0.07	3	0.06	0.02	
	Sub Total (A)	12112	9676	8186	7425	172	7185	173	-1	
B. NPC	NAPS (2*220)	440	376	408	416	8.92	372	9.02	-0.11	
	RAPS-B (2*220)	440	389	429	434	9.51	396	9.34	0.17	
	RAPS-C (2*220)	440	375	412	410	8.77	365	9.00	-0.23	
	Sub Total (B)	1320	1140	1249	1260	27.20	1133	27.36	-0.16	
C. NHPC	Chamera I HPS (3*180)	540	537	552	548	13.19	550	12.89	0.31	
	Chamera II HPS (3*100)	300	300	304	305	7.25	302	7.20	0.05	
	Chamera III HPS (3*77)	231	0	0	0	0.00	0	0.00	0.00	
	Bairasuil HPS (3*60)	180	179	186	181	4.37	182	4.30	0.07	
	Salal-HPS (6*115)	690	644	668	669	15.81	659	15.46	0.35	
	Tanakpur-HPS (3*40)	94	91	95	96	2.26	94	2.19	0.07	
	Uri-I HPS (4*120)	480	442	455	451	10.80	450	10.63	0.18	
	Uri-II HPS (4*60)	240	230	233	233	5.55	231	5.52	0.03	
	Dhauliganga-HPS (4*70)	280	280	284	285	6.80	283	6.72	0.08	
	Dulhasti-HPS (3*130)	390	386	397	397	9.36	390	9.26	0.10	
	Sewa-II HPS (3*40)	120	119	130	130	3.05	127	2.86	0.20	
	Parbati 3 (4*130)	520	390	390	280	7.68	320	7.64	0.04	
	Sub Total (C)	4065	3599	3694	3575	86	3588	85	1	
D. SJVNL	NJPC (6*250)	1500	1493	1351	1595	35.78	1491	35.90	-0.12	
	Rampur HEP (6*68.67)	412	405	375	436	9.87	411	9.73	0.14	
	Sub Total (D)	1912	1899	1726	2031	45.64	1902	45.63	0.02	
E. THDC	Tehri HPS (4*250)	1000	1016	1008	1017	24.19	1008	24.00	0.19	
	Koteshwar HPS (4*100)	400	351	401	302	8.45	352	8.42	0.03	
	Sub Total (E)	1400	1367	1409	1319	32.64	1360	32.42	0.22	
F. BBMB	Bhakra HPS (2*108+3*126+5*157)	1379	1450	1459	1457	34.87	1453	34.80	0.07	
	Dehar HPS (6*165)	990	598	660	580	13.87	578	14.35	-0.48	
	Pong HPS (6*66)	396	380	384	384	9.09	379	9.12	-0.03	
	Sub Total (F)	2765	2428	2503	2421	57.83	2410	58.27	-0.44	
G. IPP(s)/JV(s)	ALLAIN DUHANGAN HPS(IPP) (2*96)	192	0	231	216	4.89	204	4.43	0.46	
	KARCHAM WANGTOO HPS(IPP) (4*250)	1000	0	1200	1200	28.69	1195	28.51	0.18	
	Malana Stg-II HPS (2*50)	100	0	111	111	2.63	110	2.48	0.15	
	Shree Cement TPS (2*150)	300	0	296	295	6.82	284	6.82	0.00	
	Budhil HPS(IPP) (2*35)	70	0	0	0	0.00	0	0.00	0.00	
Sub Total (G)	1662	0	1838	1821	43.02	1793	42.23	0.79		
H. Total Regional Entities (A-G)	25237	20109	20606	19853	464.90	19371	463.66	1.24		

I. State Entities	Station	Effective Installed Capacity (MW)	Peak MW	Off Peak MW	Energy(MU)	Average(Sent out MW)	
Punjab	Guru Gobind Singh TPS (Ropar) (6*210)	1260	730	690	16.07	669	
	Guru Nanak Dev TPS(Bhatinda) (2*110+2*120)	460	90	80	1.97	82	
	Guru Hargobind Singh TPS(L.mbt) (2*210+2*250)	920	461	376	8.62	359	
	Goindwal(GVK)		0	0	0.00	0	
	Rajpura (2*700)	1400	1403	710	25.06	1044	
	Talwandi Saboo (1*660)	660	368	359	8.09	337	
	Thermal (Total)	4700	3052	2215	59.81	2492	
	Total Hydro	1000	1073	1075	25.68	1070	
	Total Punjab	5700	4125	3290	85.48	3562	
	Haryana	Panipat TPS (4*110+2*210+2*250)	1367	0	0	0.00	0
DCRTPP (Yamuna nagar) (2*300)		600	450	451	11.06	461	
Faridabad GPS (NTPC)		432	233	333	7.56	315	
RGTPP (khedar) (IPP) (2*600)		1200	385	368	9.75	406	
Magnum Diesel (IPP)		25	0	0	0.00	0	
Jhajjar(CLP) (2*660)		1320	0	0	0.00	0	
Thermal (Total)		4944	1068	1152	28.38	1182	
Total Hydro		62	24	22	0.58	24	
Total Haryana		5006	1092	1174	28.96	1207	
Rajasthan		kota TPS (2*110+2*195+3*210)	1240	851	785	19.52	813
		suratgarh TPS (6*250)	1500	958	760	19.71	821
		Chabra TPS (4*250)	1000	0	144	0.64	27
		Dholpur GPS (3*110)	330	79	79	1.93	80
	Ramgarh GPS (1*37.5 + 1*35.5 +2*37.5 +1*110 +1*50)	271	159	154	4.37	182	
	RAPS A (NPC) (1*100+1*200)	300	183	184	4.27	178	
	Barsingar (NLC) (2*125)	250	191	146	4.12	172	
	Giral LTPS (2*125)	250	77	46	1.00	42	
	Rajwest LTPS (IPP) (8*135)	1080	395	457	14.90	621	
	V/S LIGNITE LTPS (IPP) (1*135)	135	0	0	0.00	0	
	Kalisindh Thermal(2*600)	1200	0	0	0.06	3	
	Kawai(Adani) (2*660)	1320	850	864	22.89	954	
	Thermal (Total)	8876	3743	3619	93	3892	
	Total Hydro	550	267	266	7.05	294	
	Wind power	3214	688	161	6.06	252	
	Biomass	99	26	26	0.62	26	
	Solar	730	0	0	0.00	0	
	Renewable/Others (Total)	4043	714	187	6.68	278	
	Total Rajasthan	13469	4724	4072	107.13	4464	
	UP	Anpara TPS (3*210+2*500)	1630	1346	1350	32.30	1346
Obra TPS (2*50+2*94+5*200)		1194	331	337	7.90	329	
Panicha TPS (2*110+2*220+2*250)		1140	741	548	15.10	629	
Panki TPS (2*105)		210	54	54	1.40	58	
Harduaganj TPS (1*60+1*105+2*250)		665	495	485	11.60	483	
Tanda TPS (NTPC) (4*110)		440	268	267	6.51	271	
Roza TPS (IPP) (4*300)		1200	811	810	19.50	813	
Anpara-C (IPP) (2*600)		1200	549	540	13.10	546	
Bajaj Energy Pvt.Ltd(IPP) TPS (10*45)		450	365	363	8.50	354	
Anpara-D(1*500)		500	0	0	0.00	0	
Lalitpur TPS(1*660)		660	0	0	0.00	0	
Thermal (Total)		9289	4960	4754	116	4830	
Vishnuparyag HPS (IPP)(4*110)		440	0	0	0.00	0	
Alakananda(4*82.5)		330	325	324	7.80	325	
Other Hydro		527	343	292	6.80	283	
Cogeneration		981	50	50	1.20	50	
Total UP		11567	5678	5420	132	5488	
Uttarakhand	Total Hydro	1398	1073	1028	23.48	978	
	Total Uttarakhand	1398	1073	1028	23.48	978	
Delhi	Rajghat TPS (2*67.5)	135	0	0	0.00	0	
	Delhi Gas Turbine (6x30 + 3x34)	282	34	34	0.81	34	
	Pragati Gas Turbine (2x104+ 1x122)	330	144	261	5.95	248	
	Riithala GPS (3*36)	95	0	0	0.00	0	
	Bawana GPS (4*216+2*253)	1370	0	0	0.00	0	
	Badarpur TPS (NTPC) (3*95+2*210)	705	314	327	6.92	288	
	Thermal (Total)	2917	492	623	13.68	570	
	Total Delhi	2917	492	623	13.68	570	
HP	Baspa HPS (IPP) (3*100)	300	332	332	7.66	319	
	Malana HPS (IPP) (2*43)	86	102	103	2.43	101	
	Other Hydro	878	520	525	13.19	549	
	Total HP	1264	954	960	23.28	970	
J & K	Baglihar HPS (IPP) (3*150)	450	450	450	10.80	450	
	Other Hydro/IPP	560	177	182	3.98	166	
	Gas/Diesel/Others	190	0	0	0.00	0	
	Total J & K	1200	627	632	14.78	616	
Total State Control Area Generation		42521	18765	17199	428.49	17854	
J. Net Inter Regional Exchange [Import (+ve)/Export (-ve)]			7662	4958	151.71	6321	
Total Regional Availability(Gross)		67758	47033	42009	1045.10	43546	

IV. Total Hydro Generation:

Regional Entities Hydro	12234	11718	11720	278.77	11616
State Control Area Hydro	5811	4361	4275	101.63	4235
Total Regional Hydro	18045	16079	15995	380.41	15850

V(A). Inter Regional Exchange [Import (+ve)/Export (-ve)] [Linkwise]

Element	Peak(20:00 Hrs)	Off Peak(03:00 Hrs)	Maximum Interchange (MW)		Energy (MU)		Net Energy MU
	MW	MW	Import	Export	Import	Export	
Vindhychal(HVDC B/B)	200	200	200	0	4.81	0.00	4.81
765 KV Gwalior-Agra (D/C)	2262	855	2279	0	39.18	0.00	39.18
400 KV Zerda-Kankroli	-61	-129	0	248	0.00	3.70	-3.70
400 KV Zerda-Bhimmal	-85	-96	0	242	0.00	3.06	-3.06
220 KV Auraiya-Malanpur	-20	-111	0	111	0.00	1.28	-1.28
220 KV Badod-Kota/Morak	6	-23	18	43	0.45	0.00	0.45
Mundra-Mohinderqarh(HVDC Bipole)	2410	2198	2418	0	54.11	0.00	54.11
400 KV Vindhychal - Rihand	499	405	500	0	10.45	0.00	10.45
765 kV Phagi-Gwalior (D/C)	915	611	520	0	16.02	0.00	16.02
Sub Total WR	6126	3910			125.03	8.04	116.99
Pusauli Bypass/HVDC	400	400	400	0	8.97	0.00	8.97
400 KV MZP- GKP (D/C)	222	172	470	0	7.34	0.00	7.34
400 KV Patna-Balia(D/C) X 2	232	158	310	0	5.07	0.00	5.07
400 KV B'Sharif-Balia (D/C)	37	31	216	0	2.17	0.00	2.17
765 KV Pusauli-Balia	73	5	127	0	0.80	0.00	0.80
765 KV Gaya-Fatehpur	183	106	183	0	3.07	0.00	3.07
220 KV Pusauli-Sahupuri	165	128	195	0	3.45	0.00	3.45
132 KV K'nasa-Sahupuri	0	0	1	0	0.00	0.00	0.00
132 KV Son Ngr-Rihand	-46	-33	0	50	0.00	0.98	-0.98
132 KV Garhwa-Rihand	0	0	0	0	0.00	0.00	0.00
765 KV Sasaram - Fatehpur	10	-55	59	106	0.00	0.28	-0.28
400 KV Barh -GKP (D/C)	260	136	268	0	5.10	0.00	5.10
Sub Total ER	1536	1048			35.98	1.26	34.72
Total IR Exch	7662	4958			161.00	9.30	151.71

V(B). Inter Regional Schedule & Actual Exchanges [Import (+ve)/Export (-ve)] [Corridor wise]

ER	ISGS/LT Schedule (MU)		Bilateral Schedule (MU)		Power Exchange Shdl (MU)		Wheeling (MU)	
	Bhutan	Total	Through ER	Through WR	Through ER	Through WR	Through ER	Through WR
25.52	3.91	29.42	16.35	11.70	7.98	-0.10	1.98	-1.98
Total IR Schedule (MU)								
Through ER	Through WR Incids Mndra	Total	Through ER	Through WR	Total	Through ER	Through WR	Total
55.73	86.43	142.16	34.72	116.99	151.71	-21.01	30.56	9.55

V(C). Inter National Exchange with Nepal [Import (+ve)/Export (-ve)] [Linkwise]

Element	Peak(20:00 Hrs)	Off Peak(03:00 Hrs)	Maximum Interchange (MW)		Energy (MU)		Net Energy MU
	MW	MW	Import	Export	Import	Export	
132 KV Tanakpur - Mahendarnagar	-36	-35	0	40	0	1	-0.68

VI. Frequency Profile <----- % of Time Frequency ----->

<49.2	<49.7	<49.8	<49.9	<50.0	49.9-50.05	50.05-50.10	50.10-50.20	>50.20	>50.50
0.00	1.24	4.48	20.98	71.00	70.16	7.08	1.75	0.03	0.00

<----- Frequency (Hz) ----->				Average Frequency Hz	Frequency Variation Index	Std. Dev.	Frequency in 15 Min Block	
Maximum		Minimum					MAX (Hz)	MIN (Hz)
Freq	Time	Freq	Time	49.96	0.09	0.08	50.18	49.81
50.21	15.04	49.66	19.40					

VII. Voltage profile 400 kV

Station	Voltage Level (kV)	Maximum		Minimum		Voltage (in % of Time)			
		Voltage(KV)	Time	Voltage (KV)	Time	<380 kV	<390 kV	>420 kV	>430 kV
Rihand	400	406	04:10	400	22:09	0.0	0.0	0.0	0.0
Gorakhpur	400	416	07:05	400	00:11	0.0	0.0	0.0	0.0
Bareilly	400	414	00:00	414	00:00	0.0	0.0	0.0	0.0
Kanpur	400	418	04:05	400	19:33	0.0	0.0	0.0	0.0
Dadri	400	413	05:18	397	19:26	0.1	0.1	0.0	0.0
Ballabgarh	400	419	04:02	400	19:33	0.0	0.0	0.0	0.0
Bawana	400	415	04:10	398	19:17	0.0	0.0	0.0	0.0
Bassi	400	427	04:03	404	19:33	0.0	0.0	32.1	0.0
Hissar	400	412	18:03	394	19:34	0.0	0.0	0.0	0.0
Moga	400	410	04:16	396	19:17	0.0	0.0	0.0	0.0
Abdullapur	400	411	18:02	396	19:17	0.0	0.0	0.0	0.0
Nalagarh	400	413	03:58	401	14:34	0.0	0.0	0.0	0.0
Kishenpur	400	415	04:15	402	19:18	0.0	0.0	0.0	0.0
Wagoora	400	409	04:11	387	20:24	0.0	6.5	0.0	0.0
Amritsar	400	411	04:02	393	08:18	0.0	0.0	0.0	0.0
Kashipur	400	417	03:00	409	22:13	0.0	0.0	0.0	0.0
Hamirpur	400	402	00:00	402	00:00	0.0	0.0	0.0	0.0
Rishikesh	400	405	06:49	387	14:35	0.0	11.6	0.0	0.0

VIII. Voltage profile 765 kV

Station	Voltage Level (kV)	Maximum		Minimum		Voltage (in % of Time)			
		Voltage(KV)	Time	Voltage (KV)	Time	<728 kV	<742 kV	>800 kV	>820 kV
Fatehpur	765	778	04:05	744	19:27	0.0	0.0	0.0	0.0
Balia	765	771	06:04	747	00:07	0.0	0.0	0.0	0.0
Moga	765	786	05:04	757	19:27	0.0	0.0	0.0	0.0
Agra	765	798	04:04	758	19:40	0.0	0.0	0.0	0.0
Bhiwani	765	793	04:02	761	19:28	0.0	0.0	0.0	0.0
Unnao	765	762	07:05	735	22:14	0.0	14.6	0.0	0.0
Lucknow	765	774	18:02	742	22:14	0.0	0.0	0.0	0.0
Meerut	765	800	04:05	766	19:18	0.0	0.0	0.0	0.0
Jhatikara	765	794	05:18	760	19:28	0.0	0.0	0.0	0.0
Bareilly	765	773	07:03	742	22:14	0.0	0.0	0.0	0.0
Anta	765	767	00:00	767	00:00	0.0	0.0	0.0	0.0
Phagi	765	800	04:04	764	19:33	0.0	0.0	0.0	0.0

IX. Reservoir Parameters:

Name of Reservoir	Parameters		Present Parameters		Last Year		Last day	
	FRL (m)	MDDL (m)	Level (m)	Energy (MU)	Level (m)	Energy (MU)	Inflow (m ³ /s)	Usage (m ³ /s)
Bhakra	513.59	445.62	507.83	1440.82	507.53	1426.07	1840.73	1144.17
Pong	426.72	384.05	421.25	946.20	410.30	504.32	1372.52	523.80
Tehri	829.79	740.04	810.10	802.26	808.35	770.00	837.38	571.00
Koteshwar	612.50	598.50	610.39	4.70	610.86	4.95	571.00	557.00
Chamera-I	760.00	748.75	0.00	0.00	0.00	0.00	511.13	357.20
Rihand	268.22	252.98	0.00	0.00	0.00	0.00	0.00	0.00
RPS	352.80	343.81	0.00	0.00	0.00	0.00	0.00	0.00
Jawahar Sagar	298.70	295.78	0.00	0.00	0.00	0.00	0.00	0.00
RSD	527.91	487.91	524.17	14.27	518.91	11.20	986.64	423.52

* NA: Not Available

X(A). Short-Term Open Access Details:

State	Off- Peak Hours (03:00 Hrs)			Peak Hours (20:00 Hrs)			Day Energy (MU)		
	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MU)	IEX / PXIL (MU)	Total (MU)
Punjab	1487	331	0	1336	190	0	35.06	6.46	41.52
Delhi	375	20	-2	550	102	-2	10.78	4.06	14.84
Haryana	1631	243	0	1683	217	0	39.36	2.82	42.18
HP	-1214	-343	0	-998	-375	0	-25.10	-8.83	-33.94
J&K	-741	-95	0	-489	15	0	-13.44	-1.33	-14.77
CHD	0	-30	0	0	0	0	0.24	-0.06	0.18
Rajasthan	-495	603	2	-495	636	2	-11.89	14.95	3.06
UP	1024	0	0	669	0	0	16.65	0.00	16.65
Uttarakhand	-345	-146	0	-255	24	0	-6.70	-1.40	-8.10
Total	1722	582	0	2000	809	0	44.96	16.66	61.62

X(B). Short-Term Open Access Details:

State	Bilateral (MW)		IEX (MW)		PXIL (MW)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Punjab	1523	1336	331	186	0	0
Delhi	802	112	492	-167	0	-2
Haryana	1683	1631	245	-420	0	0
HP	-913	-1251	-321	-407	0	0
J&K	-489	-741	15	-171	0	0
CHD	30	0	0	-35	0	0
Rajasthan	-495	-495	693	168	2	0
UP	1039	505	0	0	0	0
Uttarakhand	-233	-365	44	-150	0	0

XI. System Constraints:

XII. Grid Disturbance / Any Other Significant Event:

XIII. Weather Conditions For 13.08.2015 :

Normal

XIV. Synchronisation of new generating units :

XV. Synchronisation of new 220 / 400 / 765 KV lines and energising of bus //substation :

XVI. Tripping of lines in pooling stations :

XVII. Complete generation loss in a generating station :