

पॉवर सिस्टम ऑपरेशन कार्पोरेशन लिमिटेड

(पब्लिसिड की पूर्ण स्वायत्तता प्राप्त सार्वजनिक कंपनी)



उत्तरी क्षेत्रीय भार प्रेषण केंद्र

CIN: U40105DL2009GOI188682

Power Supply Position in Northern Region for 31.08.2015
Date of Reporting : 01.09.2015

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
49009	2146	51155	49.89	46199	201	46401	50.03	1133.8	57.79

* 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	75.90	24.03		99.93	122.98	122.21	-0.77	222.13	0.00
Haryana	52.76	0.63		53.39	130.36	127.56	-2.80	180.95	0.22
Rajasthan	121.83	1.52	22.33	145.68	81.59	80.63	-0.96	226.31	0.00
Delhi	14.28			14.28	96.00	94.67	-1.32	108.95	0.01
UP	137.29	11.70		148.99	138.86	142.36	3.49	291.34	47.81
Uttarakhand		21.31		21.31	13.36	15.53	2.17	36.84	1.38
HP		22.60		22.60	2.11	3.23	1.12	25.83	0.03
J & K		14.31	0.00	14.31	19.99	20.80	0.81	35.11	8.34
Chandigarh				0.00	6.67	6.32	0.27	6.32	0.00
Total	402.06	96.09	22.33	520.49	611.92	613.30	2.00	1133.78	57.79

* 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	9906	0	-61	1588	8568	0	-36	1778	9993
Haryana	8706	0	-126	1778	7538	0	-101	1821	8743
Rajasthan	8950	0	-267	754	9624	0	95	1116	10028
Delhi	4654	0	-187	736	4553	3	170	777	5278
UP	11740	1600	-344	296	12313	0	-1	319	12929
Uttarakhand	1704	75	144	-124	1408	0	89	-224	1716
HP	1176	0	40	-1312	862	0	25	-1494	1259
J&K	1885	471	165	-429	1123	198	-172	-604	1885
Chandigarh	288	0	-30	0	212	0	-32	0	330
Total	49009	2146	-666	3286	46199	201	37	3487	50230

* 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	1882	2061	2057	45.81	1909	45.00	0.81	
	Rihand I STPS (2*500)	1000	900	973	977	20.96	873	20.73	0.23	
	Rihand II STPS (2*500)	1000	963	981	1039	22.27	928	21.66	0.61	
	Rihand III STPS (2*500)	1000	480	508	521	11.11	463	10.84	0.27	
	Dadri I STPS (4*210)	840	600	582	440	10.73	447	10.69	0.04	
	Dadri II STPS (2*490)	980	970	886	763	18.23	760	18.51	-0.28	
	Unchahar I TPS (2*210)	420	400	414	435	9.23	385	9.26	-0.03	
	Unchahar II TPS (2*210)	420	400	415	438	8.96	373	8.83	0.13	
	Unchahar III TPS (1*220)	210	200	220	190	4.38	182	4.12	0.26	
	ISTPP (Jhajjar) (3*500)	1500	1436	768	617	14.98	624	14.63	0.35	
	Dadri GPS (4*130.19+2*154.51)	830	800	390	279	8.13	339	8.37	-0.24	
	Anta GPS (3*88.71+1*153.2)	419	396	217	233	5.62	234	5.54	0.08	
	Auraiya GPS (4*111.19+2*109.30)	663	635	301	282	6.73	280	6.82	-0.09	
	Dadri Solar	5	1	0	0	0.02	1	0.03	0.00	
	Unchahar Solar	10	3	0	0	0.03	1	0.06	-0.04	
	Singrauli Solar	15	3	0	0	0.06	3	0.08	-0.02	
	Sub Total (A)	12112	10914	9561	9114	206	8568	203	2	
B. NPC	NAPS (2*220)	440	369	408	411	8.87	370	8.86	0.02	
	RAPS- B (2*220)	440	183	209	213	4.44	185	4.39	0.05	
	RAPS- C (2*220)	440	400	429	430	9.22	384	9.60	-0.38	
	Sub Total (B)	1320	952	1046	1054	22.53	939	22.85	-0.32	
C. NHPC	Chamera I HPS (3*180)	540	534	539	508	10.76	448	10.53	0.23	
	Chamera II HPS (3*100)	300	300	304	304	7.27	303	7.20	0.08	
	Chamera III HPS (3*77)	231	229	232	200	5.02	209	4.80	0.22	
	Bairasuil HPS(3*60)	180	120	122	0	2.08	87	1.95	0.13	
	Salal-HPS (6*115)	690	581	674	565	14.85	619	13.83	1.02	
	Tanakpur-HPS (3*40)	94	91	94	95	2.26	94	2.18	0.08	
	Uri-I HPS (4*120)	480	294	352	310	7.73	322	7.05	0.68	
	Uri-II HPS (4*60)	240	176	179	171	4.38	183	4.22	0.17	
	Dhauliganga-HPS (4*70)	280	280	223	285	6.27	261	6.04	0.23	
	Dulhasti-HPS (3*130)	390	386	392	397	9.37	390	9.26	0.10	
	Sewa-II HPS (3*40)	120	119	130	0	0.79	33	0.60	0.19	
	Parbati 3 (4*130)	520	299	130	132	2.73	114	2.70	0.04	
	Sub Total (C)	4065	3409	3370	2966	74	3063	70	3	
	D.SJVNL	NJPC (6*250)	1500	1605	1618	1627	38.51	1605	38.52	-0.01
Rampur HEP (6*68.67)		412	427	429	426	10.16	423	10.19	-0.04	
Sub Total (D)		1912	2032	2047	2053	48.67	2028	48.71	-0.05	
E. THDC	Tehri HPS (4*250)	1000	1050	1002	467	10.40	433	10.23	0.17	
	Koteshwar HPS (4*100)	400	144	395	91	3.53	147	3.45	0.08	
	Sub Total (E)	1400	1194	1397	558	13.93	581	13.68	0.26	
F. BBMB	Bhakra HPS (2*108+3*126+5*157)	1379	893	1463	669	21.86	911	21.43	0.44	
	Dehar HPS (6*165)	990	576	825	560	13.89	579	13.82	0.07	
	Pong HPS (6*66)	396	283	384	192	6.82	284	6.78	0.04	
	Sub Total (F)	2765	1751	2672	1421	42.57	1774	42.03	0.54	
G. IPP(s)/JV(s)	ALLAIN DUHANGAN HPS(IPP) (2*96)	192	0	109	109	2.60	108	2.47	0.12	
	KARCHAM WANGTOO HPS(IPP) (4*250)	1000	0	1150	1125	27.13	1130	26.99	0.14	
	Malana Stg-II HPS (2*50)	100	0	110	70	1.96	82	1.84	0.11	
	Shree Cement TPS (2*150)	300	0	148	149	3.51	146	3.54	-0.03	
	Budhil HPS(IPP) (2*35)	70	0	76	37	1.49	62	1.46	0.04	
Sub Total (G)	1662	0	1593	1491	36.69	1529	36.30	0.39		
H. Total Regional Entities (A-G)	25237	20253	21686	18656	443.53	18481	437.27	6.26		

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	1060	1060	24.18	1008	
	Guru Nanak Dev TPS(Bhatinda) (2*110+2*120)	460	380	360	8.01	334	
	Guru Hargobind Singh TPS(L.mbt) (2*210+2*250)	920	939	786	18.33	764	
	Goindwal(GVK)		0	0	0.00	0	
	Rajpura (2*700)	1400	1366	721	25.38	1058	
	Talwandi Saboo (1*660)	660	0	0	0.00	0	
	Thermal (Total)	4700	3745	2927	75.90	3162	
	Total Hydro	1000	945	952	24.03	1001	
	Total Punjab	5700	4690	3879	99.93	4164	
	Haryana	Panipat TPS (4*110+2*210+2*250)	1367	446	437	10.17	424
DCRTPP (Yamuna nagar) (2*300)		600	492	449	11.87	494	
Faridabad GPS (NTPC)		432	0	0	0.00	0	
RGTPP (khedar) (IPP) (2*600)		1200	829	755	20.82	867	
Magnum Diesel (IPP)		25	0	0	0.00	0	
Jhajjar(CLP) (2*660)		1320	403	372	9.91	413	
Thermal (Total)		4944	2170	2013	52.76	2198	
Total Hydro		62	29	28	0.63	26	
Total Haryana		5006	2199	2041	53.39	2224	
Rajasthan		kota TPS (2*110+2*195+3*210)	1240	1033	1037	25.12	1047
		suratgarh TPS (6*250)	1500	772	756	18.79	783
		Chabra TPS (4*250)	1000	154	185	4.10	171
		Dholpur GPS (3*110)	330	82	80	2.03	85
		Ramgarh GPS (1*37.5 + 1*35.5 +2*37.5 +1*110 +1*50)	271	192	208	3.97	165
	RAPS A (NPC) (1*100+1*200)	300	158	161	3.94	164	
	Barsingsar (NLC) (2*125)	250	69	68	1.55	65	
	Giral LTPS (2*125)	250	0	0	0.00	0	
	Rajwest LTPS (IPP) (8*135)	1080	961	875	19.99	833	
	VS LIGNITE LTPS (IPP) (1*135)	135	0	0	0.00	0	
	Kalisindh Thermal(2*600)	1200	903	660	19.50	813	
	Kawai (Adani) (2*660)	1320	1185	880	22.85	952	
	Thermal (Total)	8876	5509	4910	122	5076	
	Total Hydro	550	70	69	1.52	63	
	Wind power	3214	305	1313	19.37	807	
	Biomass	99	26	26	0.61	26	
	Solar	730	0	0	2.36	98	
	Renewable/Others (Total)	4043	331	1339	22.33	931	
	Total Rajasthan	13469	5910	6318	145.68	6070	
	UP	Anpara TPS (3*210+2*500)	1630	1208	1176	26.90	1121
Obra TPS (2*50+2*94+5*200)		1194	298	293	7.50	313	
Panicha TPS (2*110+2*220+2*250)		1140	787	811	18.90	788	
Panki TPS (2*105)		210	50	0	1.00	42	
Harduaganj TPS (1*60+1*105+2*250)		665	421	447	10.60	442	
Tanda TPS (NTPC) (4*110)		440	190	185	4.49	187	
Roza TPS (IPP) (4*300)		1200	1085	1085	25.60	1067	
Anpara-C (IPP) (2*600)		1200	1035	1085	25.80	1075	
Bajaj Energy Pvt.Ltd(IPP) TPS (10*45)		450	256	363	8.20	342	
Anpara-D(1*500)		500	0	0	0.00	0	
Lalitpur TPS(1*660)		660	334	338	7.10	296	
Thermal (Total)		9289	5664	5783	136	5670	
Vishnuparyag HPS (IPP)(4*110)		440	0	0	0.00	0	
Alakananda(4*82.5)		330	333	334	7.30	304	
Other Hydro		527	155	230	4.40	183	
Cogeneration		981	50	50	1.20	50	
Total UP		11567	6202	6397	149	6208	
Uttarakhand	Total Hydro	1398	901	842	21.31	888	
	Total Uttarakhand	1398	901	842	21.31	888	
Delhi	Rajghat TPS (2*67.5)	135	0	0	0.02	1	
	Delhi Gas Turbine (6x30 + 3x34)	282	33	32	0.77	32	
	Pragati Gas Turbine (2x104+ 1x122)	330	263	263	6.39	266	
	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	334	313	7.11	296	
	Thermal (Total)	2917	630	608	14.28	595	
	Total Delhi	2917	630	608	14.28	595	
HP	Baspa HPS (IPP) (3*100)	300	333	302	7.73	322	
	Malana HPS (IPP) (2*43)	86	90	82	1.84	77	
	Other Hydro	878	546	547	13.03	543	
	Total HP	1264	969	931	22.60	942	
J & K	Baglihar HPS (IPP) (3*150)	450	450	450	10.80	450	
	Other Hydro/IPP	560	162	124	3.51	146	
	Gas/Diesel/Others	190	0	0	0.00	0	
	Total J & K	1200	612	574	14.31	596	
Total State Control Area Generation		42521	22113	21590	520.49	21687	
J. Net Inter Regional Exchange (Import (+ve)/Export (-ve))			7719	8065	191.54	7981	
Total Regional Availability(Gross)		67758	51518	48311	1155.56	48148	

IV. Total Hydro Generation:

Regional Entities Hydro	12234	11700	9145	228.76	9532
State Control Area Hydro	6581	4014	3960	96	4004
Total Regional Hydro	18815	15714	13105	324.85	13536

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)	-250	-150	0	250	0.00	5.17	-5.17
765 KV Gwalior-Agra (D/C)	2379	2210	2686	0	53.05	0.00	53.05
400 KV Zerda-Kankroli	-60	-64	0	234	0.00	2.21	-2.21
400 KV Zerda-Bhimmal	-36	-51	73	212	0.00	1.08	-1.08
220 KV Auraiya-Malanpur	-67	-61	0	90	0.00	1.23	-1.23
220 KV Badod-Kota/Morak	-16	15	48	49	0.03	0.46	-0.43
Mundra-Mohinderqarh(HVDC Bipole)	2402	2196	2505	0	54.96	0.00	54.96
400 KV Vindhychal - Rihand	506	503	513	0	12.08	0.00	12.08
765 kV Phagi-Gwalior (D/C)	1104	1039	1284	0	26.71	0.00	26.71
Sub Total WR	5962	5637			146.83	10.15	136.68
Pusauli Bypass/HVDC	400	400	400	0	9.17	0.00	9.17
400 KV MZP- GKP (D/C)	384	684	756	0	14.32	0.00	14.32
400 KV Patna-Balia(D/C) X 2	148	333	400	0	6.81	0.00	6.81
400 KV B'Sharif-Balia (D/C)	88	195	285	0	4.59	0.00	4.59
765 KV Pusauli-Balia	86	93	159	0	1.24	0.00	1.24
765 KV Gaya-Fatehpur	241	246	376	0	6.91	0.00	6.91
220 KV Pusauli-Sahupuri	152	128	170	0	3.41	0.00	3.41
132 KV K'nasa-Sahupuri	0	0	0	0	0.00	0.00	0.00
132 KV Son Ngr-Rihand	-43	-40	0	43	0.00	0.93	-0.93
132 KV Garhwa-Rihand	0	0	0	0	0.00	0.00	0.00
765 KV Sasaram - Fatehpur	55	110	254	0	3.57	0.00	3.57
400 KV Barh -GKP (D/C)	246	279	306	0	5.77	0.00	5.77
Sub Total ER	1757	2428			55.79	0.93	54.86
Total IR Exch	7719	8065			202.62	11.08	191.54

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
24.78	3.97	28.75	24.77	9.85	29.81	2.05	2.23	-2.23
Total IR Schedule (MU)								
Through ER	Through WR Incids Mndra	Total	Through ER	Through WR	Total	Through ER	Through WR	Total
85.57	105.12	190.68	54.86	136.68	191.54	-30.71	31.56	0.86

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	-7	0	0	23	0	0	-0.15

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	0.00	2.57	34.43	80.54	60.16	4.68	0.74	0.00	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	Hz				
50.13	6.02	49.74	13.19	49.93	0.095	0.071	50.17	49.89

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	405	08:18	399	00:06	0.0	0.0	0.0	0.0
Gorakhpur	400	416	08:02	396	00:06	0.0	0.0	0.0	0.0
Bareilly	400	409	09:03	392	11:46	0.0	0.0	0.0	0.0
Kanpur	400	412	06:02	394	11:19	0.0	0.0	0.0	0.0
Dadri	400	412	06:02	394	11:19	0.0	0.0	0.0	0.0
Ballabgarh	400	416	06:01	394	11:15	0.0	0.0	0.0	0.0
Bawana	400	411	08:02	393	11:42	0.0	0.0	0.0	0.0
Bassi	400	415	06:02	391	10:43	0.0	0.0	0.0	0.0
Hissar	400	409	06:01	389	11:42	0.0	1.1	0.0	0.0
Moga	400	408	06:01	389	14:35	0.0	0.8	0.0	0.0
Abdullapur	400	408	06:01	388	11:43	0.0	1.1	0.0	0.0
Nalagarh	400	414	06:02	392	14:34	0.0	0.0	0.0	0.0
Kishenpur	400	414	06:01	399	19:20	0.0	0.0	0.0	0.0
Wagoora	400	409	03:50	383	19:59	0.0	11.9	0.0	0.0
Amritsar	400	408	06:07	386	14:33	0.0	15.0	0.0	0.0
Kashipur	400	416	07:29	406	11:46	0.0	0.0	0.0	0.0
Hamirpur	400	0	00:00	9999	00:00	0.0	0.0	0.0	0.0
Rishikesh	400	401	18:26	372	14:31	3.7	35.1	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	768	06:03	731	11:22	0.0	27.7	0.0	0.0
Balia	765	767	08:03	734	11:51	0.0	16.8	0.0	0.0
Moga	765	782	06:05	746	11:46	0.0	0.0	0.0	0.0
Agra	765	782	06:03	741	11:20	0.0	0.0	0.0	0.0
Bhiwani	765	785	05:59	749	11:20	0.0	0.0	0.0	0.0
Unnao	765	762	01:42	762	01:42	0.0	0.0	0.0	0.0
Lucknow	765	772	08:04	735	11:24	0.0	10.9	0.0	0.0
Meerut	765	793	06:05	750	11:20	0.0	0.0	0.0	0.0
Jhatikara	765	788	06:01	750	14:35	0.0	0.0	0.0	0.0
Bareilly	765	781	08:04	744	11:19	0.0	0.0	0.0	0.0
Anta	765	783	06:01	764	12:36	0.0	0.0	0.0	0.0
Phagi	765	780	06:00	748	10:52	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	511.16	1605.30	509.72	1530.03	919.25	660.23
Pong	426.72	384.05	422.77	1020.81	416.01	718.14	357.75	383.01
Tehri	829.79	740.04	817.90	960.00	814.45	890.00	369.46	235.00
Koteshwar	612.50	598.50	609.67	5.20	610.52	4.97	235.00	232.89
Chamera-I	760.00	748.75	750.75	0.00	0.00	0.00	215.24	291.77
Rihand	268.22	252.98	853.20	307.90	854.50	329.80	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	519.89	13.00	513.24	11.02	330.44	468.86

* 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	1551	227	0	1461	127	0	36.50	4.83	41.34
Delhi	471	305	0	521	215	0	11.24	9.83	21.07
Haryana	1648	172	0	1564	214	0	38.51	1.86	40.37
HP	-1154	-340	0	-903	-408	0	-23.67	-9.37	-33.04
J&K	-539	-65	0	-489	60	0	-12.22	-0.02	-12.25
CHD	0	0	0	0	0	0	0.24	0.36	0.59
Rajasthan	-250	1365	2	-414	1166	2	-8.00	32.77	24.77
UP	319	0	0	296	0	0	7.95	0.00	7.95
Uttarakhand	-185	-40	0	-144	19	0	-3.61	0.12	-3.49
Total	1861	1624	2	1891	1393	2	46.94	40.37	87.31

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

State	Bilateral (MW)		IEX (MW)		PXIL (MW)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Punjab	1583	1461	270	125	0	0
Delhi	745	186	971	106	0	0
Haryana	1668	1522	241	-595	0	0
HP	-887	-1161	-322	-453	0	0
J&K	-489	-539	125	-166	0	0
CHD	30	0	49	0	0	0
Rajasthan	-250	-495	1952	532	2	2
UP	402	269	0	0	0	0
Uttarakhand	-133	-185	47	-40	0	0

XI. System Constraints:

XII. Grid Disturbance / Any Other Significant Event:

Northern Region met all time highest demand of 50,430MW at 22:28hrs on 31/08/2015.

XIII. Weather Conditions For 31.08.2015 :

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 :