

पॉवर सिस्टम ऑपरेशन कार्पोरेशन लिमिटेड

(पावरसिड की पूर्ण स्वामित्व प्राप्त सहायक कंपनी)



उत्तरी क्षेत्रीय भार प्रेषण केंद्र

CIN: U40105DL2009GOI188682

Power Supply Position in Northern Region for 31.10.2015
Date of Reporting : 01.11.2015

I. Regional Availability/Demand:

Evening Peak (19:00 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
36706	1113	37818	50.09	28470	1448	29919	50.11	772.0	39.12

* 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	38.88	10.70		49.57	46.86	46.44	-0.42	96.02	0.00
Haryana	46.72	0.40		47.12	63.70	63.64	-0.06	110.76	0.00
Rajasthan	113.49	5.15	12.49	131.13	62.06	63.53	1.47	194.66	0.00
Delhi	11.96			11.96	49.55	49.26	-0.29	61.22	0.16
UP	94.83	7.90		102.73	108.52	107.57	-0.95	210.30	29.61
Uttarakhand		9.69		9.69	20.95	22.56	1.61	32.24	0.00
HP		6.97		6.97	16.12	17.06	0.94	24.03	0.07
J & K		9.93	0.00	9.93	29.28	29.42	0.14	39.35	9.28
Chandigarh				0.00	3.49	3.39	0.27	3.39	0.00
Total	305.88	50.74	12.49	369.11	400.54	402.85	2.69	771.96	39.12

* 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 (19:00 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	4496	0	-609	-431	3330	0	-158	-400	4575
Haryana	6074	0	-54	-299	3427	0	-269	-292	6074
Rajasthan	8501	0	-41	381	7818	0	-10	625	9298
Delhi	3190	52	92	-118	1870	0	-132	-548	3245
UP	9546	590	-187	30	8395	1170	-175	125	10090
Uttarakhand	1656	0	104	295	1185	0	111	257	1656
HP	1187	3	48	-387	774	0	55	116	1284
J&K	1871	468	34	77	1577	278	46	203	1902
Chandigarh	185	0	-20	-76	95	0	-6	-10	185
Total	36706	1113	-633	-528	28470	1448	-538	77	36871

* STOA figures are at sellers boundary & PX figures are at regional boundary.

figures may not be at simultaneous hour.

UI [OD:(+ve), UD:Export: (-ve)]

UI [OG:(+ve), UG: (-ve)]

III. Regional Entities :

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	
								UI	Net MU
A. NTPC									
Singrauli STPS (5*200+2*500)	2000	1898	1987	1887	44.29	1845	43.91		0.38
Rihand I STPS (2*500)	1000	862	862	725	17.99	750	17.97		0.02
Rihand II STPS (2*500)	1000	963	699	705	18.93	789	18.61		0.32
Rihand III STPS (2*500)	1000	564	459	350	12.03	501	11.55		0.48
Dadri I STPS (4*210)	840	810	131	137	3.54	147	3.40		0.14
Dadri II STPS (2*490)	980	980	324	308	7.85	327	8.31		-0.46
Uncharhar I TPS (2*210)	420	404	321	285	6.51	271	6.92		-0.41
Uncharhar II TPS (2*210)	420	400	298	268	6.20	258	6.72		-0.52
Uncharhar III TPS (1*220)	210	200	155	133	3.10	129	3.36		-0.26
ISTPP (Jhajjar) (3*500)	1500	1436	697	626	15.34	639	14.93		0.41
Dadri GPS (4*130.19+2*154.51)	830	688	300	290	6.97	291	7.07		-0.09
Anta GPS (3*88.71+1*153.2)	419	414	0	0	0.00	0	5.00		-5.00
Auraiya GPS (4*111.19+2*109.30)	663	652	201	205	4.73	197	4.71		0.02
Dadri Solar	5	1	0	0	0.02	1	0.02		-0.01
Uncharhar Solar	10	3	0	0	0.03	1	0.06		-0.03
Singrauli Solar	15	1	0	0	0.01	0	0.03		-0.03
KHEP	800	650	651	0	4.42	184	4.20		0.22
Sub Total (A)	12112	10926	6900	5919	152	6331	157		-5
B. NPC									
NAPS (2*220)	440	403	441	442	9.64	402	9.67		-0.04
RAPS- B (2*220)	440	404	442	442	9.60	400	9.70		-0.09
RAPS- C (2*220)	440	410	449	455	9.75	406	9.84		-0.09
Sub Total (B)	1320	1217	1332	1339	28.99	1208	29.21		-0.22
C. NHPC									
Chamera I HPS (3*180)	540	540	362	0	2.39	99	2.26		0.12
Chamera II HPS (3*100)	300	300	301	0	2.05	86	2.07		-0.01
Chamera III HPS (3*77)	231	229	224	0	1.27	53	1.13		0.14
Bairasuli HPS(3*60)	180	179	155	0	0.86	36	0.86		0.00
Saikal-HPS (6*115)	690	238	450	334	6.39	266	5.73		0.67
Tanakpur-HPS (3*40)	94	36	35	35	0.87	36	0.87		0.00
Uri-I HPS (4*120)	480	443	470	436	10.90	454	10.61		0.29
Uri-II HPS (4*60)	240	238	241	238	5.72	238	5.72		0.00
Dhauliganga-HPS (4*70)	280	280	274	0	1.43	60	1.30		0.13
Dulhasti-HPS (3*130)	390	387	394	0	5.09	212	4.69		0.41
Sewa-II HPS (3*40)	120	119	127	0	0.80	33	0.70		0.10
Parbati 3 (4*130)	520	260	261	0	0.81	34	0.59		0.22
Sub Total (C)	4065	3249	3293	1043	39	1608	37		2
D.SJVNL									
NJPC (6*250)	1500	1605	1600	0	11.71	488	11.64		0.07
Rampur HEP (6*68.67)	412	432	446	0	3.32	139	3.24		0.09
Sub Total (D)	1912	2037	2046	0	15.04	627	14.87		0.16
E. THDC									
Tehri HPS (4*250)	1000	1080	1071	0	6.27	261	6.07		0.20
Koteshwar HPS (4*100)	400	92	100	90	2.25	94	2.20		0.05
Sub Total (E)	1400	1172	1171	90	8.51	355	8.27		0.24
F. BBMB									
Bhakra HPS (2*108+3*126+5*157)	1379	521	1059	385	12.89	537	12.50		0.38
Dehar HPS (6*165)	990	206	495	165	5.06	211	4.95		0.11
Pong HPS (6*66)	396	187	318	66	4.56	190	4.48		0.08
Sub Total (F)	2765	914	1872	616	22.51	938	21.93		0.58
G. IPP(s)/JV(s)									
ALLAIN DUHANGAN HPS(IPP) (2*96)	192	0	100	0	0.80	33	0.77		0.03
KARCHAM WANGTOO HPS(IPP) (4*250)	1000	0	850	0	6.23	259	6.36		-0.13
Malana Stg-II HPS (2*50)	100	0	0	0	0.32	13	0.30		0.02
Shree Cement TPS (2*150)	300	0	259	255	6.07	253	6.12		-0.05
Budhil HPS(IPP) (2*35)	70	0	75	0	0.30	13	0.30		0.00
Sub Total (G)	1662	0	1285	255	13.72	572	13.85		-0.13
H. Total Regional Entities (A-G)	25237	19514	17899	9262	279.30	11638	281.42		-2.12

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	160	160	3.51	146	
	Guru Nanak Dev TPS(Bhatinda) (2*110+2*120)	460	160	160	3.98	166	
	Guru Hargobind Singh TPS(L.mbt) (2*210+2*250)	920	204	201	4.53	189	
	Goindwal(GVK)		0	0	0.00	0	
	Rajpura (2*700)	1400	345	336	8.64	360	
	Talwandi Saboo (2*660)	1320	982	864	18.22	759	
	Thermal (Total)	5360	1851	1721	38.88	1620	
	Total Hydro	1000	415	372	10.70	446	
Total Punjab	6360	2266	2093	49.57	2066		
Haryana	Panipat TPS (4*110+2*210+2*250)	1367	0	0	0.00	0	
	DCRTPP (Yamuna nagar) (2*300)	600	556	450	11.63	485	
	Faridabad GPS (NTPC)	432	0	0	0.00	0	
	RGTTP (khedar) (IPP) (2*600)	1200	565	766	15.15	631	
	Magnum Diesel (IPP)	25	0	0	0.00	0	
	Jhajjar(CLP) (2*660)	1320	1031	739	19.94	831	
	Thermal (Total)	4944	2152	1955	46.72	1947	
	Total Hydro	62	10	19	0.40	17	
	Total Haryana	5006	2162	1974	47.12	1964	
	Rajasthan	kota TPS (2*110+2*195+3*210)	1240	696	988	19.16	798
suratgarh TPS (6*250)		1500	211	221	5.42	226	
Chabra TPS (4*250)		1000	394	382	9.47	395	
Dholpur GPS (3*110)		330	0	0	0.00	0	
Ramgarh GPS (1*37.5 + 1*35.5 +2*37.5 +1*110 +1*50)		271	216	212	5.33	222	
RAPS A (NPC) (1*100+1*200)		300	160	161	3.96	165	
Barsingar (NLC) (2*125)		250	186	184	4.31	180	
Giral LTPS (2*125)		250	0	0	0.00	0	
Rajwest LTPS (IPP) (8*135)		1080	829	685	18.16	757	
VS LIGNITE LTPS (IPP) (1*135)		135	0	0	0.00	0	
Kalisindh Thermal(2*600)		1200	940	900	23.27	970	
Kawati(Adani) (2*660)		1320	1158	856	24.40	1017	
Thermal (Total)		8876	4790	4589	113	4729	
Total Hydro		550	255	225	5.15	215	
Wind power		3214	304	634	9.50	396	
Biomass		99	0	0	0.70	29	
Solar		730	0	0	2.30	96	
Renewable/Others (Total)		4043	304	634	12.49	520	
Total Rajasthan		13469	5349	5448	131.13	5464	
UP		Anpara TPS (3*210+2*500)	1630	1324	1355	32.20	1342
		Obra TPS (2*50+2*94+5*200)	1194	430	449	10.50	438
		Paricha TPS (2*110+2*220+2*250)	1140	653	605	15.10	629
		Panki TPS (2*105)	210	59	54	1.40	58
	Haridwar TPS (1*60+1*105+2*250)	665	518	516	10.70	446	
	Tanda TPS (NTPC) (4*110)	440	136	140	3.43	143	
	Roza TPS (IPP) (4*300)	1200	194	198	4.70	196	
	Anpara-C (IPP) (2*600)	1200	645	640	15.50	646	
	Bajaj Energy Pvt.Ltd(IPP) TPS (10*45)	450	29	29	0.70	29	
	Anpara-D(1*500)	500	0	0	0.00	0	
	Lalitpur TPS(1*660)	660	0	0	0.00	0	
	Thermal (Total)	9289	3988	3986	94	3926	
	Vishnuparyag HPS (IPP)(4*110)	440	147	137	3.30	138	
	Alakanada(4*82.5)	330	80	165	2.30	96	
	Other Hydro	527	142	66	2.30	96	
	Cogeneration	981	25	25	0.60	25	
	Total UP	11567	4382	4379	103	4281	
	Uttarakhand	Total Hydro	1398	468	389	9.69	404
Total Uttarakhand		1398	468	389	9.69	404	
Delhi	Rajghat TPS (2*67.5)	135	0	0	0.00	0	
	Delhi Gas Turbine (6x30 + 3x34)	282	37	34	0.91	38	
	Pragati Gas Turbine (2x104+ 1x122)	330	150	145	3.58	149	
	Rithala GPS (3*36)	95	0	0	0.00	0	
	Bawana GPS (4*216+2*253)	1370	250	26	3.97	165	
	Badarpur TPS (NTPC) (3*95+2*210)	705	158	157	3.50	146	
	Thermal (Total)	2917	595	362	11.96	498	
	Total Delhi	2917	595	362	11.96	498	
HP	Baspa HPS (IPP) (3*100)	300	59	29	1.85	77	
	Malana HPS (IPP) (2*43)	86	52	0	0.37	16	
	Other Hydro	878	203	183	4.75	198	
	Total HP	1264	314	212	6.97	291	
J & K	Baglihar HPS (IPP) (3*150)	450	380	289	7.58	316	
	Other Hydro/IPP	560	110	90	2.35	98	
	Gas/Diesel/Others	190	0	0	0.00	0	
	Total J & K	1200	490	379	9.93	414	
Total State Control Area Generation		43181	16026	15236	369.11	15380	
J. Net Inter Regional Exchange (Import (+ve)/Export (-ve))			4907	4352	131.55	5481	
Total Regional Availability(Gross)		68418	38832	28850	779.96	32498	

IV. Total Hydro Generation:

Regional Entities Hydro	12234	9983	1749	96.40	4017
State Control Area Hydro	6581	2321	1964	51	2114
Total Regional Hydro	18815	12304	3713	147.14	6131

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

Element	Peak(19:00 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	-250	0	-250	6.06	-6.06	-6.06
765 KV Gwalior-Agra (D/C)	1943	1467	2380	0	47.69	0.00	47.69
400 KV Zerda-Kankrol	-173	-254	0	279	0.00	3.69	-3.69
400 KV Zerda-Bhinmal	-56	-200	60	280	0.00	2.44	-2.44
220 KV Auraiya-Malanpur	-41	-91	0	93	0.00	1.60	-1.60
220 KV Badoh-Kota/Morak	-65	-208	0	208	0.00	2.66	-2.66
Mundra-Mohindergarh(HVDC Bipole)	1998	1899	2006	0	45.79	0.00	45.79
400 KV Vindhychal - Rihand	0	0	0	0	0.00	0.00	0.00
765 kV Phagi-Gwalior (D/C)	641	601	915	0	16.82	0.00	16.82
Sub Total WR	3997	2964			110.30	16.45	93.84
Pusaali Bypass/HVDC	50	400	400	0	4.69	0.00	4.69
400 KV MZP- GKP (D/C)	-240	-156	132	308	0.00	2.20	-2.20
400 KV Patna-Balia(D/C) X 2	305	297	522	0	8.96	0.00	8.96
400 KV B'Shanif-Balia (D/C)	-168	-146	137	189	0.00	1.46	-1.46
765 KV Gaya-Balia	55	60	255	0	1.50	0.00	1.50
765 KV Gaya-Fatehpur	-109	-48	73	172	0.00	0.09	-0.09
220 KV Pusaali-Sahupuri	150	106	150	0	2.39	0.00	2.39
132 KV K'nasa-Sahupuri	0	0	0	0	0.96	0.00	0.96
132 KV Son Ngr-Rihand	-25	-36	0	36	0.00	0.66	-0.66
132 KV Garhwa-Rihand	0	0	0	0	0.00	0.00	0.00
765 KV Sasaram - Fatehpur	-238	-229	0	-286	0.00	3.42	-3.42
400 KV Barh -GKP (D/C)	330	340	398	0	7.90	0.00	7.90
Sub Total ER	110	588			26.40	7.84	18.56
+/- 800 KV BiswanathChariali-Agra	800	800	800	0	19.14	0.00	19.14
Sub Total NEH	800	800			19.14	0.00	19.14
Total IR Exch	4907	4352			155.84	24.29	131.55

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

ER	ISGS/LT Schedule (MU)		Bilateral Schedule (MU)		Power Exchange Shdi (MU)		Wheeling (MU)	
	Bhutan	Total	Through ER	Through WR	Through ER	Through WR	Through ER	Through WR
29.12	1.24	30.37	3.35	-21.12	11.81	8.57	1.20	-1.20
Total IR Schedule (MU)								
Through ER	Through WR Incids Mndra	Total	Through ER	Through WR	Total	Through ER	Through WR	Total
46.73	87.19	133.92	18.56	93.84	112.41	-28.17	6.65	-21.52

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

Element	Peak(19:00 Hrs)	Off Peak(03:00 Hrs)	Maximum Interchange (MW)		Energy (MU)		Net Energy MU
	MW	MW	Import	Export	Import	Export	
132 KV Tanakpur - Mahendarnagar	0	0	0	0	0	0	0.00

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	0.07	0.76	10.69	53.82	73.82	10.76	4.72	0.00	0.00

<----- Frequency (Hz) ----->				Average Frequency	Frequency Variation Index	Std. Dev.	Frequency in 15 Min Block	
Maximum		Minimum					MAX	MIN
Freq	Time	Freq	Time	Hz	(Hz)	(Hz)	(Hz)	(Hz)
50.17	8.02	49.69	18.12	49.99	0.050	0.070	50.20	49.94

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	410	00:00	400	18:46	0.0	0.0	0.0	0.0
Gorakhpur	400	420	13:01	401	18:11	0.0	0.0	0.0	0.0
Bareilly	400	418	02:01	397	18:09	0.0	0.0	0.0	0.0
Kanpur	400	411	02:00	404	18:09	0.0	0.0	3.0	0.0
Dadri	400	425	02:55	404	18:10	0.0	0.0	28.4	0.0
Ballabhgarh	400	429	02:00	407	18:10	0.0	0.0	41.2	0.0
Bawana	400	428	21:52	407	18:10	0.0	0.0	37.9	0.0
Bassi	400	428	20:49	398	06:36	0.0	0.0	9.1	0.0
Hissar	400	422	21:45	400	06:45	0.0	0.0	1.4	0.0
Moga	400	423	00:56	403	18:09	0.0	0.0	15.6	0.0
Abdullapur	400	428	00:57	404	06:37	0.0	0.0	28.0	0.0
Nalagarh	400	430	02:58	406	18:45	0.0	0.0	36.4	0.0
Kishenpur	400	425	02:56	398	18:39	0.0	0.0	14.0	0.0
Wagoora	400	408	02:57	379	18:39	0.2	32.9	0.0	0.0
Amritsar	400	428	00:50	408	18:09	0.0	0.0	35.2	0.0
Kashipur	400	419	00:27	409	18:11	0.0	0.0	0.0	0.0
Hamirpur	400	425	02:57	400	18:26	0.0	0.0	16.2	0.0
Rishikesh	400	412	01:06	387	18:11	0.0	2.4	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	773	21:50	740	18:10	0.0	0.3	0.0	0.0
Balia	765	778	13:00	746	18:11	0.0	0.0	0.0	0.0
Moga	765	798	01:01	763	18:10	0.0	0.0	0.0	0.0
Agra	765	798	20:57	760	18:11	0.0	0.0	0.0	0.0
Bhiwani	765	808	21:44	770	18:11	0.0	0.0	6.3	0.0
Unnao	765	764	21:49	732	18:11	0.0	6.5	0.0	0.0
Lucknow	765	780	13:01	746	18:11	0.0	0.0	0.0	0.0
Meerut	765	810	20:57	765	02:55	0.0	0.0	5.3	0.0
Jhatikara	765	800	00:00	765	00:00	0.0	0.0	0.0	0.0
Bareilly	765	800	00:00	765	00:00	0.0	0.0	0.0	0.0
Anta	765	784	20:38	759	06:53	0.0	0.0	0.0	0.0
Phagi	765	798	20:58	745	14:31	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	509.38	1515.08	507.14	1411.35	243.67	337.34
Pong	426.72	384.05	418.57	821.34	413.71	622.40	66.71	270.40
Tehri	829.79	740.04	817.60	954.25	823.55	1077.00	73.50	142.00
Koteshwar	612.50	598.50	610.19	4.69	608.76	3.98	142.00	147.93
Chamera-I	760.00	748.75	756.87	0.00	0.00	0.00	77.91	64.72
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	511.25	4.33	510.13	0.64	67.68	160.88

* NA: Not Available

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

State	Off- Peak Hours (03:00 Hrs)			Peak Hours (19:00 Hrs)			Day Energy (MU)		
	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MW)	IEX (MW)	PXIL (MW)	Bilateral (MU)	IEX / PXIL (MU)	Total (MU)
Punjab	-695	295	0	-700	269	0	-13.46	7.12	-6.34
Delhi	-186	-362	0	-87	-31	0	-3.47	-0.87	-4.34
Haryana	-544	252	0	-544	244	0	-13.05	4.35	-8.70
HP	-50	166	0	127	-514	0	1.33	-0.68	0.65
J&K	203	0	0	203	-126	0	4.88	-0.27	4.61
CHD	0	-10	0	0	-76	0	0.00	-0.31	-0.31
Rajasthan	-5	630	0	-5	386	0	1.62	14.19	15.82
UP	125	0	0	30	0	0	1.71	0.00	1.71
Uttarakhand	196	60	0	196	99	0	4.71	3.52	8.22
Total	-955	1032	0	-780	252	0	-15.72	27.05	11.32

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

State	Bilateral (MW)		IEX (MW)		PXIL (MW)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Punjab	-295	-700	318	231	0	0
Delhi	-87	-186	415	-392	0	0
Haryana	-544	-544	265	-126	0	0
HP	127	-50	166	-630	0	0
J&K	203	203	0	-141	0	0
CHD	0	0	15	-76	0	0
Rajasthan	189	-5	803	282	0	0
UP	160	-2	0	0	0	0
Uttarakhand	196	196	384	-90	0	0

XI. System Constraints:

XII. Grid Disturbance / Any Other Significant Event:

XIII. Weather Conditions For 31.10.2015 :
Normal.

XIV. Synchronisation of new generating units :

XV. Synchronisation of new 220 / 400 / 765 KV lines and energising of bus / substation :
0.00

XVI. Tripping of lines in pooling stations :

XVII. Complete generation loss in a generating station :