

पॉवर सिस्टम ऑपरेशन कार्पोरेशन लिमिटेड

(पब्लिसिड की पूर्ण स्वामित्व प्राप्त सार्वजनिक कंपनी)



उत्तरी क्षेत्रीय भार प्रेषण केंद्र

CIN: U40105DL2009GOI188682

Power Supply Position in Northern Region for 14.08.2015
Date of Reporting : 15.08.2015

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
44568	3309	47877	49.99	41365	3309	44674	50.06	1026.5	68.29

* 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	58.32	25.46		83.78	128.26	127.03	-1.23	210.81	0.00
Haryana	25.03	0.38		25.41	132.42	132.06	-0.36	157.47	0.00
Rajasthan	90.52	7.02	6.78	104.31	60.40	60.32	-0.09	164.63	0.00
Delhi	14.04			14.04	91.12	90.06	-1.05	104.10	0.04
UP	120.01	6.98		134.77	149.08	151.89	2.81	286.66	56.64
Uttarakhand		18.17		18.17	14.47	14.45	0.02	36.62	2.89
HP		22.00		22.00	2.18	3.26	1.08	25.26	0.34
J & K		14.78	0.00	14.78	20.47	20.53	0.05	35.30	8.39
Chandigarh				0.00	6.20	5.63	0.27	5.63	0.00
Total	307.92	94.79	6.78	417.26	604.60	609.23	5.47	1026.49	68.29

* 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	9069	0	-32	1540	8015	0	-188	1785	9553
Haryana	7273	0	4	1913	6765	0	77	1782	7626
Rajasthan	7067	0	236	102	6634	0	73	194	7514
Delhi	4420	0	-66	589	4200	0	5	452	4862
UP	12000	2655	395	925	11996	3110	-35	1068	12646
Uttarakhand	1663	230	354	-227	1534	0	19	-496	1688
HP	1132	0	85	-1373	892	0	50	-1576	1234
J&K	1697	424	36	-474	1127	199	-121	-861	1800
Chandigarh	247	0	-18	0	202	0	-34	-20	273
Total	44568	3309	994	2994	41365	3309	-153	2327	45168

* 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 Net MU	
										UI
A. NTPC	Singrauli STPS (5*200+2*500)	2000	1664	2023	1512	39.86	1661	38.77	1.09	
	Rihand I STPS (2*500)	1000	868	989	989	20.21	842	20.04	0.17	
	Rihand II STPS (2*500)	1000	456	488	452	10.66	444	10.22	0.44	
	Rihand III STPS (2*500)	1000	480	462	517	10.89	454	10.81	0.07	
	Dadri I STPS (4*210)	840	810	534	457	10.70	446	10.90	-0.20	
	Dadri II STPS (2*490)	980	970	785	687	16.86	702	17.48	-0.62	
	Unchahar I TPS (2*210)	420	400	436	429	8.99	374	9.47	-0.49	
	Unchahar II TPS (2*210)	420	400	440	309	7.70	321	7.98	-0.28	
	Unchahar III TPS (1*220)	210	200	220	161	3.65	152	3.85	-0.20	
	ISTPP (Jhajjar) (3*500)	1500	1436	886	628	15.44	644	15.21	0.24	
	Dadri GPS (4*130.19+2*154.51)	830	800	179	181	4.21	175	4.39	-0.18	
	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	637	156	158	3.62	151	3.63	-0.01	
	Dadri Solar	5	1	0	0	0.01	1	0.01	0.00	
	Unchahar Solar	10	3	0	0	0.03	1	0.06	-0.03	
	Singrauli Solar	15	3	0	0	0.06	3	0.07	-0.01	
	KHEP	800	835	842	843	20.37	849	20.04	0.33	
	Sub Total (A)	12112	10357	8440	7323	173	7219	173	0	
	B. NPC	NAPS (2*220)	440	376	408	413	8.91	371	9.02	-0.12
RAPS- B (2*220)		440	387	432	432	9.30	387	9.29	0.01	
RAPS- C (2*220)		440	375	412	415	8.87	370	9.00	-0.13	
Sub Total (B)		1320	1138	1252	1260	27.07	1128	27.31	-0.24	
C. NHPC	Chamera I HPS (3*180)	540	521	368	549	12.38	516	12.52	-0.14	
	Chamera II HPS (3*100)	300	300	303	303	7.14	297	7.20	-0.06	
	Chamera III HPS (3*77)	231	0	0	0	0.00	0	0.00	0.00	
	Bairasuil HPS (3*60)	180	179	184	180	4.41	184	4.30	0.10	
	Salal-HPS (6*115)	690	651	665	668	16.06	669	15.62	0.44	
	Tanakpur-HPS (3*40)	94	91	95	94	2.25	94	2.19	0.07	
	Uri-I HPS (4*120)	480	411	468	451	10.24	427	9.90	0.34	
	Uri-II HPS (4*60)	240	230	233	232	5.52	230	5.52	0.00	
	Dhauliganga-HPS (4*70)	280	280	283	287	6.79	283	6.72	0.07	
	Dulhasti-HPS (3*130)	390	386	400	396	9.35	389	9.26	0.08	
	Sewa-II HPS (3*40)	120	119	130	129	2.95	123	2.86	0.10	
	Parbati 3 (4*130)	520	363	263	263	2.78	116	2.76	0.02	
	Sub Total (C)	4065	3532	3393	3550	80	3328	79	1	
	D. SJVNL	NJPC (6*250)	1500	1605	1605	1605	38.44	1602	38.52	-0.08
		Rampur HEP (6*68.67)	412	425	428	428	10.35	431	10.20	0.15
Sub Total (D)		1912	2030	2033	2033	48.79	2033	48.72	0.07	
E. THDC	Tehri HPS (4*250)	1000	1020	1024	1026	24.23	1010	24.00	0.23	
	Koteshwar HPS (4*100)	400	358	398	303	8.53	355	8.40	0.13	
	Sub Total (E)	1400	1378	1422	1329	32.76	1365	32.40	0.36	
F. BBMB	Bhakra HPS (2*108+3*126+5*157)	1379	1450	1459	1459	34.82	1451	34.80	0.02	
	Dehar HPS (6*165)	990	582	825	560	14.10	587	13.96	0.14	
	Pong HPS (6*66)	396	380	384	384	9.15	381	9.12	0.03	
	Sub Total (F)	2765	2412	2668	2403	58.07	2420	57.88	0.19	
G. IPP(s)/JV(s)	ALLAIN DUHANGAN HPS(IPP) (2*96)	192	0	231	230	5.01	209	4.62	0.39	
	KARCHAM WANGTOO HPS(IPP) (4*250)	1000	0	1200	1200	28.71	1196	28.51	0.20	
	Malana Stg-II HPS (2*50)	100	0	111	111	2.63	110	2.48	0.16	
	Shree Cement TPS (2*150)	300	0	297	299	6.79	283	6.76	0.03	
	Budhil HPS(IPP) (2*35)	70	0	0	0	0.00	0	0.00	0.00	
Sub Total (G)	1662	0	1839	1840	43.14	1797	42.37	0.77		
H. Total Regional Entities (A-G)	25237	20848	21047	19738	462.97	19290	460.47	2.50		

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

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	690	710	16.47	686	
	Guru Nanak Dev TPS(Bhatinda) (2*110+2*120)	460	80	80	1.80	75	
	Guru Hargobind Singh TPS(L.mbt) (2*210+2*250)	920	427	376	8.66	361	
	Goindwal(GVK)		0	0	0.00	0	
	Rajpura (2*700)	1400	1248	697	23.29	971	
	Talwandi Saboo (1*660)	660	393	338	8.10	338	
	Thermal (Total)	4700	2838	2201	58.32	2430	
	Total Hydro	1000	1075	790	25.46	1061	
	Total Punjab	5700	3913	2991	83.78	3491	
	Haryana	Panipat TPS (4*110+2*210+2*250)	1367	0	0	0.00	0
DCRTPP (Yamuna nagar) (2*300)		600	453	452	11.12	463	
Faridabad GPS (NTPC)		432	319	328	8.17	340	
RGTPP (khedar) (IPP) (2*600)		1200	0	373	5.74	239	
Magnum Diesel (IPP)		25	0	0	0.00	0	
Jhajjar(CLP) (2*660)		1320	0	0	0.00	0	
Thermal (Total)		4944	772	1153	25.03	1043	
Total Hydro		62	0	25	0.38	16	
Total Haryana		5006	772	1178	25.41	1059	
Rajasthan		kota TPS (2*110+2*195+3*210)	1240	839	768	18.86	786
		suratgarh TPS (6*250)	1500	798	918	20.78	866
		Chabra TPS (4*250)	1000	15	49	1.49	62
		Dholpur GPS (3*110)	330	0	78	0.92	38
		Ramgarh GPS (1*37.5 + 1*35.5 +2*37.5 +1*110 +1*50)	271	169	162	4.08	170
	RAPS A (NPC) (1*100+1*200)	300	184	184	4.27	178	
	Barsingsar (NLC) (2*125)	250	185	191	4.34	181	
	Giral LTPS (2*125)	250	79	71	1.53	64	
	Rajwest LTPS (IPP) (8*135)	1080	664	381	11.86	494	
	VS LIGNITE LTPS (IPP) (1*135)	135	0	0	0.00	0	
	Kalisindh Thermal(2*600)	1200	0	0	0.00	0	
	Kawai(Adani) (2*660)	1320	927	864	22.39	933	
	Thermal (Total)	8876	3860	3666	91	3772	
	Total Hydro	550	308	312	7.02	292	
	Wind power	3214	57	129	3.71	155	
	Biomass	99	27	27	0.65	27	
	Solar	730	0	0	2.42	101	
	Renewable/Others (Total)	4043	84	156	6.78	282	
	Total Rajasthan	13469	4252	4134	104.31	4346	
	UP	Anpara TPS (3*210+2*500)	1630	1366	1368	31.60	1317
		Obra TPS (2*50+2*94+5*200)	1194	456	438	10.30	429
Pancha TPS (2*110+2*220+2*250)		1140	782	711	17.90	746	
Panki TPS (2*105)		210	59	50	1.30	54	
Harduaganj TPS (1*60+1*105+2*250)		665	492	512	12.40	517	
Tanda TPS (NTPC) (4*110)		440	265	265	6.53	272	
Roza TPS (IPP) (4*300)		1200	849	824	17.12	713	
Anpara-C (IPP) (2*600)		1200	549	550	13.12	547	
Bajaj Energy Pvt.Ltd(IPP) TPS (10*45)		450	365	363	8.55	356	
Anpara-D(1*500)		500	0	0	0.00	0	
Lalitpur TPS(1*660)		660	0	0	0.00	0	
Thermal (Total)		9289	5183	5081	119	4950	
Vishnuparyag HPS (IPP)(4*110)		440	0	0	0.00	0	
Alakananda(4*82.5)		330	324	323	7.77	324	
Other Hydro		527	248	370	6.98	291	
Cogeneration		981	50	50	1.20	50	
Total UP	11567	5805	5824	135	5615		
Uttarakhand	Total Hydro	1398	578	1063	18.17	757	
	Total Uttarakhand	1398	578	1063	18.17	757	
Delhi	Rajghat TPS (2*67.5)	135	0	0	0.00	0	
	Delhi Gas Turbine (6x30 + 3x34)	282	32	28	0.71	29	
	Pragati Gas Turbine (2x104+ 1x122)	330	263	263	6.40	267	
	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	322	314	6.93	289	
	Thermal (Total)	2917	617	605	14.04	585	
	Total Delhi	2917	617	605	14.04	585	
HP	Baspa HPS (IPP) (3*100)	300	331	331	7.70	321	
	Malana HPS (IPP) (2*43)	86	103	82	2.32	97	
	Other Hydro	878	513	542	11.98	499	
	Total HP	1264	947	955	22.00	917	
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	17511	17382	417.26	17386	
J. Net Inter Regional Exchange [Import (+ve)/Export (-ve)]			2898.6	3116.51	163.44	6810	
Total Regional Availability(Gross)		67758	41456	40236	1043.67	43486	

IV. Total Hydro Generation:

Regional Entities Hydro	12234	11900	11699	276.22	11509
State Control Area Hydro	5811	3783	4147	94.79	3950
Total Regional Hydro	18045	15683	15846	371.01	15459

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	250	0	4.95	0.00	4.95
765 KV Gwalior-Agra (D/C)	-2408	-1549	2474	0	45.50	0.00	45.50
400 KV Zerda-Kankroli	-35	-147	0	234	0.00	3.32	-3.32
400 KV Zerda-Bhimmal	-10	-121	6	240	0.00	2.70	-2.70
220 KV Auraiya-Malanpur	-1	39	0	39	0.00	0.12	-0.12
220 KV Badod-Kota/Morak	10	-20	27	64	0.00	0.26	-0.26
Mundra-Mohinderqarh(HVDC Bipole)	2302	2401	2503	0	55.90	0.00	55.90
400 KV Vindhychal - Rihand	501	419	505	0	10.28	0.00	10.28
765 kV Phagi-Gwalior (D/C)	675	683	898	0	17.37	0.00	17.37
Sub Total WR	1234	1905			134.00	6.40	127.61
Pusauli Bypass/HVDC	400	400	400	0	9.03	0.00	9.03
400 KV MZP- GKP (D/C)	214	240	444	0	7.06	0.00	7.06
400 KV Patna-Balia(D/C) X 2	291	146	448	0	6.97	0.00	6.97
400 KV B'Sharif-Balia (D/C)	137	37	226	0	3.56	0.00	3.56
765 KV Pusauli-Balia	156	8	212	0	1.54	0.00	1.54
765 KV Gaya-Fatehpur	162	183	183	0	1.98	0.00	1.98
220 KV Pusauli-Sahupuri	160	140	199	0	3.04	0.00	3.04
132 KV K'nasa-Sahupuri	0	0	0	0	0.48	0.00	0.48
132 KV Son Ngr-Rihand	-40	-33	0	46	0.00	0.92	-0.92
132 KV Garhwa-Rihand	0	0	0	0	0.00	0.00	0.00
765 KV Sasaram - Fatehpur	-12	-82	46	171	0.00	1.20	-1.20
400 KV Barh -GKP (D/C)	197	172	260	0	4.30	0.00	4.30
Sub Total ER	1665	1212			37.97	2.13	35.84
Total IR Exch	2899	3117			171.97	8.52	163.44

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
27.54	3.77	31.31	16.90	12.41	15.04	0.00	2.08	-2.08
Total IR Schedule (MU)								
Through ER	Through WR Incids Mndra	Total	Through ER	Through WR	Total	Through ER	Through WR	Total
65.34	95.04	160.38	35.84	127.61	163.44	-29.50	32.57	3.07

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	-32	-35	0	39	0	1	-0.71

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	1.25	23.56	70.55	66.55	7.73	2.15	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	49.96	0.07	0.07	50.14	0.00
50.17	18.04	49.72	21.08					

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	508.27	1470.42	508.05	1455.60	1947.43	508.05
Pong	426.72	384.05	421.35	946.20	411.77	555.85	1228.78	523.35
Tehrri	829.79	740.04	811.30	828.22	808.65	774.00	886.24	569.00
Koteshwar	612.50	598.50	610.33	4.70	611.00	5.09	569.00	561.98
Chamera-I	760.00	748.75	0.00	0.00	0.00	0.00	489.68	335.26
Rihand	268.22	252.98	850.10	257.10	855.10	340.20	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	523.91	14.36	518.66	11.51	854.58	555.39

* 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	234	0	1400	140	0	36.92	4.44	41.36
Delhi	375	78	-2	431	160	-2	10.31	4.69	15.00
Haryana	1631	150	0	1683	230	0	39.36	4.55	43.91
HP	-1214	-362	0	-998	-375	0	-25.10	-8.80	-33.91
J&K	-766	-95	0	-489	15	0	-13.59	-1.30	-14.89
CHD	0	-20	0	0	0	0	0.24	-0.11	0.12
Rajasthan	-495	687	2	-495	595	2	-11.89	15.54	3.65
UP	1068	0	0	669	256	0	16.94	5.69	22.64
Uttarakhand	-346	-150	0	-256	29	0	-7.02	-0.76	-7.78
Total	1804	523	0	1944	1050	0	46.17	23.93	70.10

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

State	Bilateral (MW)		IEX (MW)		PXIL (MW)	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Punjab	1628	1400	263	138	0	0
Delhi	771	112	504	-118	0	-2
Haryana	1683	1631	257	5	0	0
HP	-913	-1251	-335	-410	0	0
J&K	-489	-766	15	-171	0	0
CHD	30	0	0	-25	0	0
Rajasthan	-495	-495	696	541	2	0
UP	1084	505	590	0	0	0
Uttarakhand	-256	-346	54	-150	0	0

XI. System Constraints:

XII. Grid Disturbance / Any Other Significant Event:

XIII. Weather Conditions For 14.08.2015 :

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 :