

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja
From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT OF FRIDAY 13/04/2018

FOR: EVENTS OF THURSDAY 12/04/2018.

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	23,030	01:00	12/04/2018
GENERATION CAPABILITY	7222.4	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	4990.9	-do-	-do-
PEAK GENERATION	4313.5	-do-	-do-
LOWEST GENERATION	351.3	16:00	12/04/2018
8-HOURLY DURATION PEAK	4313.4	0100-0800	-do-
	4307.3	0900-1600	-do-
	3540.5	1700-2400	-do-
PEAK GENERATION TO DATE	5222.3	21:00	18/12/2017
MAXIMUM AVAILABLE CAPACITY TO DATE	7652.6	06:00	14/04/2014
MAXIMUM ENERGY GENERATED (MWH) TO DATE	109,372.01	0000-2400	02/02/2016

1.2 CRITICAL VOLTAGE

DETAILS	KV	STATION	HRS
NOMINAL VOLTAGE	330		
STATUTORY LIMITS	280.5 - 346.6		
HIGHEST VOLTAGE FOR THE DAY		Omotosho T/S	14:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe & Kumbotso T/S	11:00 & 13:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75 - 50.25	
HIGHEST FREQUENCY	50.99	17:02
LOWEST FREQUENCY	47.60	15:19

1.4 SYSTEM COLLAPSE UP DATE

Date of last total collapse: 1st Feb., 2018		No. of days since last total collapse: 64																						
Date of last partial collapse: 12 th April, 2018		No. of days since last partial collapse: 01																						
Highest No of days ever attained in-between total collapses: 134													Highest No of days ever attained in-between partial collapses: 240											
	Jan	Feb.	Mar.	Apr	May	Jun	Jul	Aug	Sep.	Oct	Nov	Dec	Total											
2010	Total	--	3	1	--	3	3	--	2	2	1	4	22											
	Partial	1	--	--	1	1	3	4	4	3	2	--	1											
	Total	--	--	--	4	3	1	1	1	2	1	--	13											
	Partial	--	1	--	--	--	--	1	--	1	2	--	6											
2012	Total	--	2	1	5	2	1	--	--	2	2	1	16											
	Partial	--	--	2	3	--	--	--	1	--	1	1	8											
2013	Total	--	1	2	2	3	4	1	1	1	4	2	22											
	Partial	--	--	--	--	--	--	--	2	--	--	--	2											
2014	Total	2	--	--	2	0	3	1	0	0	1	0	9											
	Partial	--	--	0	0	1	0	0	0	0	2	1	4											
2015	Total	1	0	1	0	2	0	1	0	0	1	0	6											
	Partial	--	--	1	0	2	0	0	0	1	0	0	4											
2016	Total	--	--	2	3	6	5	0	0	1	2	2	22											
	Partial	--	--	1	0	1	3	1	0	0	0	0	6											
2017	Total	5	3	0	3	1	1	0	0	1	1		15											
	Partial	1	0	1	0	0	1	0	0	3	3		9											
2018	Total	5	1										6											
	Partial												0											

1.5 BREAKDOWN OF PEAK & OFF PEAK GENERATION (NATIONAL PEAK & OFF PEAK)

STATION	TURBINE	PEAK GEN. (MW)	OFF-PEAK GEN.(MW)
1 KAINJI	HYDRO	320	0
2 JEBBA	HYDRO	325	0
3 SHIRORO	HYDRO	200	0
4 EGBIN ST2 - 5	STEAM	571	0
5 SAPELE	STEAM	55	0
6 DELTA	GAS	556	99
7 AFAM IV-V	GAS	0	0
8 GEREGU GAS	GAS	322	0
9 OMOTOSHO GAS	GAS	2107	0
10 OLORUNSOGO GAS	GAS	165.6	0
11 GEREGU NIPP	GAS	109	0
12 SAPELE NIPP	GAS	185.9	0
13 ALAQJI NIPP	GAS	0	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	104.2	0
16 ODUKPANI NIPP	GAS	203.4	0
17 IHOVBOR NIPP	GAS	103.2	0
18 OKPAI	GAS	121	0
19 AFAM VI	GAS	375	113
20 IBOM POWER	GAS	90.7	65.8
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	75.4	73.5
24 TRANS AMADI	GAS	0	0
25 RIVERS IPP	(GAS)	145	0
26 AZURA - EDO IPP	(GAS)	0	0
27 EGBIN ST6	(GAS)	0	0
28 PARAS ENERGY	(GAS)	69.4	0
29 GBARAIN NIPP	GAS	0	0
TOTAL		4313.5	351.3

1.6 ENERGY GENERATED/ENERGY SENT OUT:

STATION	TURBINE	ENERGY GENERATED		ENERGY SENT OUT	
		MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	7169.00	298.71	7151.80	297.99
2 JEBBA	HYDRO	5721.00	238.38	5696.64	237.36
3 SHIRORO	HYDRO	4263.00	177.63	4232.63	176.36
4 EGBIN ST2 - 5	STEAM	11055.00	460.63	10522.50	438.44
5 SAPELE	STEAM	731.70	30.49	720.20	30.01
6 DELTA	GAS	11520.53	480.02	11396.80	474.87
7 AFAM IV-V	GAS	0.00	0.00	0.00	0.00
8 GEREGU GAS	GAS	5971.40	248.81	5942.47	247.80
9 OMOTOSHO GAS	GAS	3743.00	155.96	3715.40	154.81
10 OLORUNSOGO GAS	GAS	2836.50	118.19	2811.31	117.14
11 GEREGU NIPP	GAS	2114.25	88.09	2098.89	87.45
12 SAPELE NIPP	GAS	3024.18	126.01	3003.58	125.15
13 ALAQJI NIPP	GAS	0.00	0.00	0.00	0.00
14 OLORUNSOGO NIPP	GAS	279.40	11.64	243.60	10.15
15 OMOTOSHO NIPP	GAS	1933.60	80.57	1908.00	79.50
16 ODUKPANI NIPP	GAS	3085.56	128.57	3065.16	127.72
17 IHOVBOR NIPP	GAS	2170.00	90.42	2156.94	89.87
18 OKPAI	GAS	2325.00	96.88	2274.60	94.78
19 AFAM VI	GAS	7222.61	300.94	7120.80	296.70
20 IBOM	GAS	1786.39	74.43	1773.00	73.88
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	0.00	0.00	0.00	0.00
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1534.70	63.95	1502.10	62.59
25 TRANS AMADI	GAS	0.00	0.00	0.00	0.00
26 RIVERS IPP	GAS	2254.40	93.93	2249.18	93.72
27 EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28 PARAS ENERGY	GAS	1304.50	54.35	1298.50	54.10
29 GBARAIN NIPP	GAS	0.00	0.00	0.00	0.00
TOTAL		82,045.72	3,418.57	80,884.10	3,370.17

1.7A GENERATION POSITION AT 06:00HRS OF FRIDAY 13/04/2018

	STATIONS	NO OF INSTALLED UNITS	AVAILABLE UNITS	INSTALLED CAPACITY OF AVAILABLE UNITS(MW)	GENERATION CAPABILITY OF AVAILABLE UNITS(MW)	UNITS ON BAR	CAPABILITY OF UNITS ON BAR (MW)	GENERATION AT 06:00HRS (MW)	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	440	1G5, 6, 11 & 12 4	440	320	1G7 - Out on stator winding failure. 1G8 - Out due to loss of supply to the auxiliary. 1G9 - Out due to burnt 7.5MVA 33/0.415kV & 183.6MVA 16/330kV station service transformer and generator transformer. 1G10 - Shut down due to thrust bearing temperature problem.
	JEBBA HYDRO	6	2G1 - 5 5	475	475	2G1, 2 & 5 3	285	241	2G3 & 4 - Out on water management. 2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	4	411G2 & 3 2	300	300	411G2 & 3 2	215	199	Available units on bar.
	EGBIN STEAM	5	ST2, 4 & 5 3	660	660	ST2, 4 & 5 3	583	583	ST1 - Shut down on Egbin P/S management decision. ST3 - Tripped on high vibration since 19th June 2017.
	SAPELE (STEAM)	6	0 0	0	0	0 0	0	0	ST1 - Tripped on low drum level. ST2 - Out on fault. ST3 - Out on stator winding problem. ST4 & 5 - Awaiting major overhaul. ST6 - Tripped on gas control valve not following reference point.
	DELTA (GAS)	18	GT7, 9 - 13, 15, 16 & 18 - 20 11	635	635	GT7, 10 - 13, 16, 18- 20 9	500	473	GT3 & 5 - Out due to generator winding fault. GT4 - Tripped on inner guard problem. GT6 & 14 - Out on major overhaul. GT9 & 15 - Out on frequency management. GT17 - Out on excitation trouble.
	AFAM IV & V (GAS)	8	0 0	0	0	0 0	0	0	GT1 - 12 - De-commissioned and scrapped. GT13 - 16 - Out on blade failure. GT17 - Tripped on loss of excitation. GT18 - Out on 4000Hrs inspection and maintenance since 04/04/2018. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	3	GT11 - 13 3	435	435	GT11 - 13 3	435	381	Available units on bar.
	OMOTOSHO GAS	8	GT1 - 8 8	336	304	GT1, 2, 4 & 6- 8 5	228	211	GT3 & 5 - Out due to gas constraint.
	OLORUNSOGO GAS	8	GT1 - 8 8	336	304	GT2, 4, 6 & 8 4	152	136.9	GT1, 3, 5 & 7 - Out due to gas constraint.
NIPP	GEREGU NIPP	3	GT22 & 23 2	290	290	GT22 1	145	110	GT21 - Out on maintenance. GT23 - Out due to gas constraint.
	SAPELE NIPP	4	GT1 & 4 2	225	225	GT1 & 4 2	225	175	GT2 & 3 - Out due to high air inlet differential pressure.
	ALAOJI NIPP GAS	4	GT1, 2 & 4 3	375	360	0 0	0	0	GT1, 2 & 4 - Tripped due to low gas pressure. GT3 - Shut down due to generator air inlet filter trouble.
	OLORUNSOGO NIPP	6	GT1 - 3 3	375	360	GT1 1	120	112.1	GT2 & 3 - Out due to gas constraint. GT4 - Out due to ignition failure and control relay failure alarm. ST13 & ST23 - Out on maintenance.
	OMOTOSHO NIPP GAS	4	GT1, 2 & 4 3	375	360	GT4 1	120	87.7	GT1 & 2 - Out due to gas constraint. GT3 - Shut down due to oil leakage on the unit.
	ODUKPANI NIPP	5	GT4 & 5 2	240	230	GT4 1	116	116	GT1 - Out on fault. GT2 - Out due to malfunctioning gas regulating valve. GT3 - Tripped on high air inlet differential pressure.
	IHOVBOR NIPP	4	GT1 & 3 2	225	225	GT3 1	112.5	90.1	GT1 - Out due to gas constraint. GT2 - Out due to gas outlet valve problem. GT4 - Out on maintenance.
	GBARAIN NIPP GAS	1	0 0	0	0	0 0	0	0	GT2 - Out on maintenance.
IPP	OKPAI GAS/STEAM	3	GT12 1	150	150	GT12 1	150	100	GT11 & ST18 - Out on maintenance.
	AZURA - EDO	3	GT11 & 13 2	300	300	0 0	0	0	GT12 - Awaiting commissioning. GT11 & 13 - Shut down after test.
	AFAM VI GAS/STEAM	4	GT11- 13 & ST10 4	650	650	GT12 & 13 2	300	248	GT11 & ST10 - Shut down on frequency management.
	IBOM POWER GAS	3	GT3 1	115	115	GT3 1	115	86.6	GT1 & 2 - Out on fault.
	AES	0	0 0	0	0	0 0	0	0	Out of production since 27/09/2014.
	ASCO	1	0 0	0	0	0 0	0	0	GT1 - Shut down due to leakage in the furnace.
	OMOKU GAS	6	GT1, 2, 5 & 6 4	100	80	GT1, 2, 5 & 6 4	80	75	GT3 - Out due to gas leakage. GT4 - Awaiting major overhaul.
	TRANS-AMADI	4	GT1 & 2 2	50	40	0 0	0	0	GT1 & 2 - Out due to line constraint. GT3 - Out on fault. GT4 - Tripped on generator differential lockout.
	RIVERS	1	GT1 1	180	160	GT1 1	160	105	Available unit on bar.
	SUB TOTAL	130	76	7267	7098	49	4481.5	3850.4	Frequency = 50.39Hz.

1.7B GENERATION POSITION AT 06:00HRS OF FRIDAY 13/04/2018 FOR UNITS ON BILATERAL AGREEMENT

EGBIN	1	0	0	0	0	0	0	ST6 - Shut down to clean condenser.	
		0			0				
PARAS ENERGY	8	GT2 - 9	69.4	69.4	GT2 - 9	69.4	69.4	Available units on bar.	
		8			8				
SUB TOTAL		9	69.4	69.4	8	69.4	69.4		
GRAND TOTAL		139	84	7336.4	7167.4	57	4,550.90	3,919.80	Frequency = 50.39Hz.

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1.7C BILATERAL AGREEMENT UNITS DISPATCH - THURSDAY 12/04/2018

FEEDERS NAME	MAX. LOAD (MW)	TIME (HRS)		REMARK
Egbin ST6 120MW GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY				

OGBA	U-STEEL				
	PTCEXPRESS				
	SANKYO				
	FEEDER 8				
IKORODU	PULK IT				
	INDUSTRIAL				
	SPINTEX				
	DANGOTE				
	LAND CRAFT				
ALAUSA	TR4 15MVA				
	TR5 -15MVA				
	ALAUSA				
MLAND	PTC (MARYLAND)				
TOTAL LOAD		125.2			

BILATERAL AGREEMENT LOAD DISPATCH
60MW PARAS ENERGY GENERATION TO CEB

FEEDER	MAX	TIME	HOURS IN SERVICE	REMARK
Ikeja West/Sakete 330kV line	69.4	01:00	19	Partial system disturbance

1.8 HYDROLOGICAL DATA: FRIDAY 13/04/2018

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	136.34	99.90	369.82
TAIL WATER ELEVATION (METERS)	103.36	73.9	270.20
GROSS OPERATING HEAD (METERS)	33.98	26.00	99.62
AVERAGE TURBINE DISCHARGE (M3/SEC)	681.00	1051.00	209.00
AVERAGE SPILLAGE (M3/SEC)	0.00	0.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	681	1051	209
COMPUTED INFLOW (M3/SEC)	207.00	1016.00	24.00
STORAGE DIFFERENTIAL	-474.00	-35	-185
MAXIMUM LEVEL FOR SPILLAGE COMMENCEMENT	141.73	103	382.5
MINIMUM LEVEL BELOW WHICH NO GENERATION	130	99	355

1.9 MAXIMUM/ALLOCATED LOAD/MINIMUM LOADS FOR ABUJA AND LAGOS AS AT THURSDAY 12/04/2018

DISCO	MAXIMUM LOAD(MW)	TIME(HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD(MW)	TIME(HRS)
ABUJA	561.30	11:00	561.98	0	16:00
EKO	493.8	15:00	637.55	0	17:00 & 18:00
IKEJA	552.40	11:00	488.30	0	17:00,18:00 & 19:00

2.0 GAS POSITION: FRIDAY 13/04/2018

STATION	SIGNED ACO Annual Contracted Quantity MMSCFD	INSTALLED CAPACITY OF THERMAL STATIONS (MW)	PREVIOUS DAY OFF-TAKE (MMSCFD)	CAPABILITY OF UNITS ON BAR OF THERMAL STATIONS (MW)	DIFFERENCE (MW)
EGBIN P/S	577	1100		583	517
DELTA (GAS)	402	915		500	415
OMOTOSHO GAS	177.9	336.8		228	108.8
OMOTOSHO NIPP	99.4	500		120	300
OLORUNSGO (GAS)	111.5	336		152	184
OLORUNSGO NIPP	101.4	750		120	630
SAPELE NIPP	174.3	500		225	275
SAPELE STEAM	0	720		0	720
AFAM IV-V	0	300		0	300
AFAM VI	350	850		300	350
GEREGU GAS	172	435		435	0
GEREGU NIPP	100	435		145	290
ORPAI (GAS/STEAM)	114	480		150	330
ALAOJI NIPP	0	504		0	504
IHOVBOR NIPP	0	450		112.5	337.5
IBOM	72.7	198		116	83
ODUKPANI NIPP	285.1	625		116	509
TOTAL	2737.3	9235.88		3301.5	5933.3

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : THURSDAY 12/04/2018

	(MW)	TIME	FREQUENCY
Maximum (MW)			
Minimum (MW)			
AVERAGE (MW)			

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF FRIDAY 13/04/2018 = 0MW. FREQUENCY Hz.

S/N	POWER STATION	UNIT ON SPINNING RESERVE	CONTRACTED RESERVE	ACTUAL RESERVE (MW)	TOTAL (MW)
1	Egbin	ST2	100	0	0
		ST4		0	
		ST6		0	
		ST6		0	
2	Delta	GT16	40	0	0
		GT17	40	0	
3	Olorunsogo NIPP	GT1	40	0	0
		GT2		0	
		GT3		382.5	
		GT4		0	
4	Geregu NIPP	GT22	35	0	0
5	Omotosho NIPP	GT1	40	0	0
		GT2		0	
		GT3		0	
		GT4		0	
TOTAL (MW)			295	0	0

4.0 UNUTILIZED GENERATION CAPABILITY

The unutilized generation capability for Friday 13/04/2018 as at 0600Hrs was = 2160.5MW.

S/NO	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNUTILIZED GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO GAS CONSTRAINTS:					
1	Omotosho NIPP GT1 & 2	240	0	240	1325.5
2	Ihobar GT1	112.5	0	112.5	
3	Alaoji NIPP GT1, 2 & 4	360	0	360	
4	Olorunsogo Gas GT1, 3, 5 & 7	152	0	152	
5	Olorunsogo NIPP GT2 & 3	240	0	240	
6	Omotosho gas GT3 & 5	76	0	76	
7	Geregu NIPP GT23	145	0	145	
IT IS ENVISAGED WITH IMPROVED PLANT AVAILABILITY AND RELIEF FROM EXISTING POWER SYSTEM NETWORK RELATED CONSTRAINTS, ADDITIONAL 1582.21MMSCF OF GAS (EQUIVALENT TO 5933.3MW) WILL BE REQUIRED WHEN ALL THERMAL UNITS ARE ON BAR.					
4.2 DUE TO LINE CONSTRAINTS					
1	Trans-Amadi GT1 & 2	40	0	40	40
4.3 DUE TO FREQUENCY MANAGEMENT OCCASIONED BY DISCOS' LOAD DEMAND					
1	Afam VI GT11 & ST10	350	0	350	485
2	Delta GT9 & 15	135	0	135	
				0	
				0	
				0	
4.4 DUE TO WATER MANAGEMENT					
1	Jebba 203 & 4	190	0	190	190
Grand Total				2040.5	2040.5

5.0 **OUTAGES:**

5 (A) **FORCED OUTAGES (GENERATION):-**

- 1 10:58Hrs, Omoku P/S GTs 1, 2, 5 & 6 tripped on reverse power due to tripping of Alaoji/Owerri 132kV line 2. Total LHR = 68.4MW. 11:45Hrs – GT5 was tied, 11:48Hrs – GT2 was tied, 11:50Hrs – GT1 was tied & 11:52Hrs – GT6 was tied.

5 (B) **FORCED OUTAGES (TRANSMISSION):-**

- 1 00:01 - 19:19Hrs, Okenne T/S 60MVA 132/33kV transformer T2 primary & secondary CBs tripped on the following relay indications:
On primary CB: SBEF & REF.
On secondary CB: O/C Red Phase. LHR = 10.7MW.
- 2 00:03 – 00:20Hrs, Ilupeju T/S 2 x 15MVA 132/11kV transformers T1 & T3 secondary CBs tripped on standby E/F. LHR = 3.8MW each.
- 3 07:06 – 07:15Hrs, New Haven/Nkalagu 132kV line 2 CB tripped at New Haven T/S on instantaneous O/C Blue Phase and lockout relay. LHR = 2.8MW.
- 4 10:58 – 11:25Hrs, Alaoji/Owerri 132kV line 2 CB tripped at Alaoji T/S on Micom relay: >L1, L2, T1 >L2, L3. LHR = 40MW.
- 5 13:51 – 14:11Hrs, Omotosho/Ikeja West 330kV line (cct M5W) CBs tripped at both ends on the following relay indications:
At Omotosho T/S: PSL 601 (GA): RTIP Phase A, Distance and Z-S protection, ground distance zone 1 trip, Phase A trip, Phase A grounded, zero-S, zone 1 trip, Distance = 21.52km.
PSL 602 (GA): RTIP, Phase A, Distance and Z-S protection, ground distance, zone 1 trip Phase trip, Phase A grounded, zero-S zone trip, distance = 21.65km.
Auxiliary Relay – Trip ABC stages 1 & 2.
At Ikeja West T/S: Siprotec Relay: 50N/51N pickup, PU time 575ms, Trip time 497ms, distance = 32.3km, General trip, Red Phase fault, DEF operated. No load loss as ccts B5M, B6N & N6W were in service.
- 6 11:36 – 12:25Hrs, Maryland/Ilupeju 132kV line 2 CB tripped at Maryland T/S on general trip, CMD and Phase B pickup. LHR = 7.4MW.
REPORT OF PARTIAL SYSTEM COLLAPSE 12/04/2018 AT 15:19HRS
15:19Hrs, System frequency sharply dropped from 50.28Hz to 47.60Hz. Lagos, Abuja, Osogbo, Kainji, Jebba & Shiroro lost supply while the Eastern axis survived. Total load loss was 3487.3MW.
15:19 – 21:44Hrs, Benin/Onitsha 330kV line 2 (cct B2T) CB tripped at Benin T/S on REL relay: Trip zone 1, location – no data, main 1 master trip relay also operated. LHR = 45MW.
15:19 – 17:52Hrs, Onitsha/Alaoji 330kV line (cct T4A) CB tripped at Alaoji T/S on trip relay: 86A, 86C & 86T. LHR = 160MW.
15:19Hrs, Alaoji/Ikot-Ekpene 330kV line 1(cct A1K) CB tripped at Alaoji T/S without relay indications. LHR = 160MW.
15:19 – 19:13Hrs, Omotosho/Ikeja West 330kV line (cct M5W) CB tripped at Ikeja West T/S on the following relay indications:
On siprotec relay – Red, Yellow & Blue Phases fault PSB detected, zone 1, pickup ABC, PU time = 15ms, distance = 231.3km.
On micom relay – General trip, Red, Yellow & Blue Phases fault, distance = 32.3km, zone 1 trip. LHR = 354MW.
15:19 – 21:43Hrs, Benin/Ajaokuta 330kV line 1 (cct B11J) CB tripped at Ajaokuta T/S on ABB relay – trip start L1 – L3. LHR = 95MW.
15:19 – 18:41Hrs, Benin/Ajaokuta 330kV line 2 (cct B12J) CB tripped at Ajaokuta T/S on ABB relay – trip start L1 & L2. LHR = 90MW.
15:19 – 20:46Hrs, Ajaokuta/Lokoja 330kV line 1 (cct J1L) CB tripped at Ajaokuta T/S on Instantaneous 3-Phases, O/C zone 1, distance = 45.5km, SEL relay. LHR = 265MW.
15:19 – 18:44Hrs, Ajaokuta/Lokoja 330kV line 2 (cct J2L) CB tripped at Ajaokuta T/S on Instantaneous 3-Phases, O/C zone 1, distance = 45.66km, SEL relay. LHR = 269MW.
15:19 – 21:20Hrs, Lokoja/Gwagwalada 330kV line 1 (cct L6G) CB tripped at Lokoja T/S on main distance protection, trip zone 1. LHR = 273MW.
15:19Hrs, Lokoja/Gwagwalada 330kV line 2 (cct L7G) CB tripped at Lokoja T/S on main distance protection, trip zone 1, B & C Phases. LHR = 271MW.
15:19 – 18:25Hrs, Osogbo/Ikeja West 330kV line (cct H1W) CB tripped at Osogbo T/S on siprotec relay – main 1, distance pickup L31, PU time = 73ms, trip time = 0ms, distance = 652.8km, relay trip, Red & Yellow Phases, PSB, Phase fault. Auxiliary relay – 86T. LHR = 43.7MW.
15:19Hrs, Alaoji NIPP /Alaoji T.S 330kV line (cct L7A) CB tripped at Alaoji T/S on SEL relay, line differential protection main trip 87, fault type BC –G. No load loss as Alaoji NIPP was not generating.
15:19Hrs, Alaoji/Owerri 132kV line 2 CB tripped at Alaoji T/S on Siemens relay: E/F trip IE> back up protection trip, lockout relay. No load loss as line 1 was in service.
15:19 – 21:11Hrs, Makurdi/Jos 330kV line 1 (cct A1S) CB tripped at Jos T/S on SEL relay – trip Phases ABC, shot IP = 0, 3-Phases =0, fault location = 79.76km. LHR = 229MW.

5 (E) **EMERGENCY OUTAGES:-** NIL

5 (F) **AUTOMATIC UNDER FREQUENCY OPERATION:-** NIL

5 (G) **330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:-** ccts A2K & A1S.

5 (H) **330KV LINES THAT ARE OUT ON BREAKER PROBLEM:-** NIL.

5 (I) **330KV LINES THAT ARE OUT ON PLANNED OUTAGE:-** NIL

5 (J) **330KV LINES THAT ARE OUT ON LINE FAULT:-** ccts U1A, J2H & S5B.

5 (K) **330KV LINES THAT ARE ON SOAK:-** ccts N4J & F1K.

6 **WEATHER REPORT:-** No rainfall was reported.

7 **INTERNATIONAL LINES:-**

A **IKEJA WEST/SAKETE 330KV LINE(TCN+PARAS)**
Maximum load - 227MW at 10:00Hrs.
Minimum load - 24MW at 21:00Hrs.

15:19Hrs, Alaoji NIPP /Alaoji T.S 330kV line (cct L7A) CB tripped at Alaoji T/S on SEL relay, line differential protection main trip 87, fault type BC –G. No load loss as Alaoji NIPP was not generating.

15:19Hrs, Alaoji/Owerri 132kV line 2 CB tripped at Alaoji T/S on Siemens relay: E/F trip IE > back up protection trip, lockout relay. No load loss as line 1 was in service.

15:19 – 21:11Hrs, Makurdi/Jos 330kV line 1 (cct A1S) CB tripped at Jos T/S on SEL relay – trip Phases ABC, shot IP = 0, 3-Phases =0, fault location = 79.76km. LHR = 229MW.

15:19 – 19:13Hrs, Omotosho/Ikeja West 330kV line (cct M5W) CB tripped at Ikeja West T/S on the following relay indications:
On siprotec relay – Red, Yellow & Blue Phases fault PSB detected, zone 1, pickup ABC, PU time = 15ms, distance = 231.3km.
On micom relay – General trip, Red, Yellow & Blue Phases fault, distance = 32.3km, zone 1 trip. LHR = 354MW.

15:19 – 21:43Hrs, Benin/Ajaokuta 330kV line 1 (cct B11J) CB tripped at Ajaokuta T/S on ABB relay – trip start L1 – L3. LHR = 95MW.

15:19 – 18:41Hrs, Benin/Ajaokuta 330kV line 2 (cct B12J) CB tripped at Ajaokuta T/S on ABB relay – trip start L1 & L2. LHR = 90MW.

15:19 – 20:46Hrs, Ajaokuta/Lokoja 330kV line 1 (cct J1L) CB tripped at Ajaokuta T/S on Instantaneous 3-Phases, O/C zone 1, distance = 45.5km, SEL relay. LHR = 265MW.

15:19 – 18:44Hrs, Ajaokuta/Lokoja 330kV line 2 (cct J2L) CB tripped at Ajaokuta T/S on Instantaneous 3-Phases, O/C zone 1, distance = 45.66km, SEL relay. LHR = 269MW.

15:19 – 21:20Hrs, Lokoja/Gwagwalada 330kV line 1 (cct L6G) CB tripped at Lokoja T/S on main distance protection, trip zone 1. LHR = 273MW.

15:19Hrs, Lokoja/Gwagwalada 330kV line 2 (cct L7G) CB tripped at Lokoja T/S on main distance protection, trip zone 1, B & C Phases . LHR = 271MW.

15:19 – 18:25Hrs, Osogbo/Ikeja West 330kV line (cct H1W) CB tripped at Osogbo T/S on siprotec relay – main 1, distance pickup L31, PU time = 73ms, trip time = 0ms, distance = 652.8km, relay trip, Red & Yellow Phases, PSB, Phase fault. Auxiliary relay – 86T. LHR = 43.7MW.

15:19 – 16:03Hrs, Osogbo/hovbor 330kV line (cct H7V) CB tripped at Osogbo T/S on ABB relay – main 1, trip –trip, trip –TRL1-3, start L1 & L3, power swing, 86ABC/1, fault location- no data. LHR = 90.3MW.

RESTORATION

15:04Hrs, Delta GT16 was tied.

15:43Hrs, Delta GT13 was tied.

15:45Hrs, Delta GT12 was tied.

15:54Hrs, 330kV cct G3B was restored.

5 (C) PLANNED OUTAGES:-

- 1 11:05 – 12:31Hrs, Egbin/Aja 330kV line 2 (cct N4J) CB (#52-19) was taken out for annual preventive maintenance. No load loss as the line was on soak.

5(D) URGENT OUTAGES:

- 1 12:30 – 12:59Hrs, Gombe T/S 45MVA 132/33kV transformer T1 primary CB was taken out to top up low oil level to normal on the Red Phase pole of the CB. Load loss = 23.52 through 24:00Hrs, Delta GT16 was shut down due to high load flow on cct G3B (430MW). Load loss = 70MW.
- 2

9 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY

GROUP 1 - HYDRO UNITS (LEAST COST) ON FREE GOVERNOR CONTROL AND ANCILLARY SERVICE .

GROUP 2A - UNITS FROM ODUKPANI, AZURA, SHELL AFAM VI AGIP OKPAI, OLORUNSOGO POWER PLC AND OMOTOSHO POWER PLC.

GROUP 2B - OTHER GENERATOR UNITS IDENTIFIED TO BE ON FREE GOVERNOR CONTROL.

GROUP 3 - OTHER UNITS IDENTIFIED TO BE OFFERING REGULATORY RESERVE.

GROUP 4 - OTHER UNITS OFFERING SPINNING RESERVE (THE POWER PLANTS CONTACTED FOR THE ANCILLARY SERVICE)

GROUP 5 - ALL PLANTS DISPATCHED SUBJECT TO TRANSMISSION CONSTRAINT (NOT YET IDENTIFIED).

GROUP 6 - ALL PLANTS PROVIDING VOLTAGE SUPPORT ABOVE STATUTORY LIMIT (NOT YET IDENTIFIED).

B BIRNIN KEBBI/NAMEY 132KV LINE

Maximum load - 105MW at 24:00Hrs.
Minimum load - 90MW at 02:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 37.9MW at 23:00Hrs.
Minimum load - 27.1MW at 08:00Hrs.

8 MISCELLANEOUS:-

- 1 03:04 - 19:39Hrs, Jebba 2G2 was shut down on frequency management. Load loss = 70MW.
- 2 06:59Hrs, Shiroro T/S placed Hold Off Tag (OF12) on cct J7R for continuation of Optic Fibre work.
- 3 08:46Hrs, Benin T/S placed Hold Off Tag (OF12) on ccts B5M & B6N for continuation replacement of corroded glass insulators with silicone composite type.
- 4 13:09Hrs, Omotosho Gas GT6 was tied to swap with GT5.
- 5 14:08 through 24:00Hrs, Omotosho Gas GT5 was shut down. No load loss as 30MW was transferred
- 6 23:32Hrs, Omotosho Gas GT1 was tied to swap with GT3
- 7 23:38Hrs, Omotosho Gas GT3 was shut down. No load loss as 28.3MW was transferred to GT1.

***** LACK OF REACTOR AND UNRELIABLE STATION SERVICE SUPPLY AT IKOT-EKPENE T/S ARE HINDERING SMOOTH OPERATION.

***** THE SCADA COVERAGE OF ONLY LIMITED AREAS IS NOT GOOD FOR THE SMOOTH OPERATION OF THE GRID.

11 (A) **COMMUNICATION MEDIA**

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	37	32
OPTIC FIBRE	13	10
PLS	14	5

11 (B) **SCADA RTU STATUS**

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	6	2
330kV	19	6	13
132kV	102	78	24

12(A) UNAVAILABLE TRANSFORMERS/REACTORS:

SHIRORO REGION:

- 1 Birnin Kebbi 75MX Reactor R1.

ABUJA REGION

- 1 Apo T/S 60MVA 132/33kV transformer TR3 - Burnt.

KADUNA REGION:

- 1 Kumbotso 150MVA 330/132/33kV transformer T1A - Burnt control cables.

BAUCHI REGION:

- 1 Gombe T/S -30MX Reactor R2A.

ENUGU REGION:

- 1 Onitsha T/S 90MVA 330/132/13.8kV transformer 9T2 - Out due to differential fault.

LAGOS REGION:

- 1 Oke-Aro T/S 75MX Reactor R1.

PORT HARCOURT REGION

- 1 Ikot-Ekperne T/S: No available reactor.

12 (B) UNAVAILABLE BREAKERS/ISOLATORS

LAGOS REGION:

- 1 Akangba T/S. 132kV Bus Coupler CB - Serious Air leakage.(Undergoing repair)
- 2 Egbin/Aja 330kV line 2 (cct N4J) - faulty breaker at Aja T/S
- 3 Otta/Ogba 132kV line isolator - defective control shaft.
- 4 Osogbo/Ikeja West and Olorunsogo/Ikeja West tie CB at Ikeja West T/S - defective pole
- 5 Oke-Aro/Ikeja West 330kV lines 1 & 2 tie CB at Ikeja West T/S - Defective pole.
- 6 Jebba G.S/Jebba T.S 330kV line 2 CB at Jebba T/S.
- 7 Omotosho/Ikeja West 330kV line CB at Ikeja West T/S.

BENIN REGION:

- 1 Omotosho 330kV T/S, 2nd series 330kV CB #3322 out due to control circuit problem.

ENUGU REGION:

- 1 New Haven/Yandev 132kV line CB - Faulty Red phase CB pole. Protection is transferred to the bus coupler CB.
- 2 Abakaliki T/S 30MVA 132/33kV transformer T1A and 60MVA 132/33kV transformer T2 primary CBs - Breakers were not provided since commissioning but the transformers are protected by Nkalagu 132kV line CB.
- 3 Oji River T/S 30MVA 132/33kV transformer T1A primary CB - The breaker is completely out of service and bypassed. The transformer is either protected by Onitsha/Oji 132kV line CB or New Haven/Oji 132kV line CB.
- 4 Oturkpo/Yandev 132kV By pass isolator - Canibalized to repair the line isolator.

SHIRORO REGION

- 1 Jebba T/S 75MX reactor 2R2 CB - exploded.

PORT HARCOURT REGION

- 1 New Haven/Nkalagu 132kV line 2 ground switch - Canibalized Red phase female contact and canibalized Yellow phase male contact.

12(D) LAGOS REGION

- 1 Agbara/Ojo 132kV line 1 on soak from Agbara end.

12(E) UNAVAILABLE CAPACITOR BANK:

- (i) Ogba T.S, (ii) Maiduguri T/S, (iii) Isolo T/S, (iv) Ado-Ekiti T/S, (v) Ilorin T/S, (vi) Akure T/S.

LAGOS REGION

- 1 Omotosho/Ikeja West line (M5W) and Egbin/Ikeja West line 3 (N6W) - 21 spans.
- 2 Ikeja West/Olorunsogo line (cct R1W) - 80 spans.
- 3 330kV Ikeja West/Osobgo line. - 95 spans.
- 4 Ikeja West/Alimosho/Ogba 132kV lines 1 & 2 - 15 spans.
- 5 Ikeja West/Akangba 330kV line 2 - 1 span.
- 6 Ikeja West/ Ilupeju 132kV lines 1 & 2 - 8 spans.
- 7 Akangba/Iire 132kV lines 1 & 2 - 1 span.
- 8 Ikeja West/Agbara 132kV lines 1 & 2 - 61 spans.
- 9 Ikeja West/Otta 132kV lines 1 & 2- 17 spans.

SHIRORO REGION

- 1 Jebba T/S 330kV Osogbo lines 1 & 2 and Ganmo line - 9 spans
- 2 Minna T/S 132kV Bida line - 32 spans
- 3 Shiroro T/S 330kV Jebba line 2 - 28 spans

ABUJA REGION

- 1 Apo T/S 132kV Keffi line - 36 spans

12 (G) UNAVAILABLE SYNCHROSCOPES :

- 1 Benin, Ikeja West, Onitsha, Egbin, Ugwuaji, Osogbo, Kaduna, Jos, Gwagwalada & Alaoji T/S.

FOR MORE INFORMATION: NCC Telephone Lines -

- a PAX 09/300, 309, 303 & 305.
- b NCC GSM - 08074888524, 08069379367, 08023572651 & 08051401331. CUG Nos. 08129458488, 08129458489, 08129929806; 08036665323.
- c PLS - 622
- d GM (NCC) - 08036744641.
- e AGM (S/O) - 08056002757, CUG: 08129458475

