

TRANSMISSION COMPANY OF NIGERIA

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

DAILY OPERATIONAL REPORT OF WEDNESDAY 05/12/2018

FOR: EVENTS OF TUESDAY 04/12/2018

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	23,000	19:15	04/12/2018
GENERATION CAPABILITY	4805	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	4869.5	-do-	-do-
PEAK GENERATION	4458.8	-do-	-do-
LOWEST GENERATION	3667.3	04:00	04/12/2018
8-HOURLY DURATION PEAK	4220	0100-0800	-do-
	4142.3	0900-1600	-do-
	4458.8	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	353	Birin-Kebbi T/S	10:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe T/S	06:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.70	07:07
LOWEST FREQUENCY	49.02	06:33

1.4 SYSTEM COLLAPSE UP DATE

Date of last total collapse: 20th Sept, 2018		No. of days since last total collapse: 75												
Date of last partial collapse: 12th April, 2018		No. of days since last partial collapse: 236												
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	3	--	2	2	1	4	22
	Partial	1	--	--	1	1	3	4	4	3	2	--	1	20
2011	Total	--	--	--	--	4	3	1	1	1	2	1	--	13
	Partial	--	1	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	1	4	2	22
	Partial	--	--	--	--	--	--	--	--	2	--	--	--	2
2014	Total	2	--	--	2	0	3	1	0	0	1	0	0	9
	Partial	--	--	0	0	1	0	0	0	0	0	2	1	4
2015	Total	1	0	1	0	2	0	1	0	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	1	2	2	22
	Partial	--	--	1	0	1	3	1	0	0	0	0	0	6
2017	Total	5	3	0	3	1	1	0	0	1	1	--	--	15
	Partial	1	0	1	0	0	0	1	0	3	3	--	--	9
2018	Total	5	1	0	0	0	1	1	--	2	--	--	--	10
	Partial	0	0	0	1	0	--	--	--	0	--	--	--	1

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

STATION	TURBINE	PEAK GEN. (MW)	OFF-PEAK GEN.(MW)
1 KAINJI	HYDRO	408	367
2 JEBBA	HYDRO	435	429
3 SHIRORO	HYDRO	430	170
4 EGBIN ST2 - 5	STEAM	367	367
5 SAPELE	STEAM	50	50
6 DELTA	GAS	490	409
7 AFAM IV-V	GAS	0	0
8 GEREGU GAS	GAS	353	293
9 OMOTOSHO GAS	GAS	133.6	135.1
10 OLORUNSOGO GAS	GAS	199.9	168
11 GEREGU NIPP	GAS	108	127
12 SAPELE NIPP	GAS	0	0
13 ALAOJI NIPP	GAS	0	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	162.6	97.3
16 ODUKPANI NIPP	GAS	335.3	287.5
17 IHOVBOR NIPP	GAS	0	0
18 OKPAI	GAS	157	159
19 AFAM VI	GAS	0	0
20 IBOM POWER	GAS	88.4	92.3
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	79.3	71
24 TRANS AMADI	GAS	40.1	42.3
25 RIVERS IPP	(GAS)	0	0
26 AZURA - EDO IPP	(GAS)	444	225
27 EGBIN ST6	(GAS)	109	110
28 PARAS ENERGY	(GAS)	68.6	67.8
29 GBARAIN NIPP	GAS	0	0
TOTAL		4458.8	3667.3

1.6 ENERGY GENERATED/ENERGY SENT OUT:

STATION	TURBINE	ENERGY GENERATED (MWH)	AV.ENERGY GENERATED (MWH/H)	ENERGY SENT OUT (MWH)	AV. ENERGY SENT OUT (MWH/H)
1 KAINJI	HYDRO	9473.00	394.71	9457.50	394.06
2 JEBBA	HYDRO	9733.00	405.54	9710.32	404.60
3 SHIRORO	HYDRO	8581.00	357.54	8548.98	356.21
4 EGBIN ST2 - 5	STEAM	8713.00	363.04	8180.30	340.85
5 SAPELE	STEAM	1073.50	44.73	1000.60	41.69
6 DELTA	GAS	9984.99	416.04	9847.10	410.30
7 AFAM IV-V	GAS	0.00	0.00	0.00	0.00
8 GEREGU GAS	GAS	7109.30	296.22	7079.98	295.00
9 OMOTOSHO GAS	GAS	3205.00	133.54	3182.20	132.59
10 OLORUNSOGO GAS	GAS	4719.91	196.66	4688.53	195.36
11 GEREGU NIPP	GAS	2841.75	118.41	2828.72	117.86
12 SAPELE NIPP	GAS	0.00	0.00	0.00	0.00
13 ALAOJI NIPP	GAS	0.00	0.00	0.00	0.00
14 OLORUNSOGO NIPP	GAS	0.00	0.00	0.00	0.00
15 OMOTOSHO NIPP	GAS	2249.90	93.75	2225.80	92.74
16 ODUKPANI NIPP	GAS	7972.39	332.18	7933.39	330.56
17 IHOVBOR NIPP	GAS	0.00	0.00	0.00	0.00
18 OKPAI	GAS	3742.00	155.92	3660.70	152.53
19 AFAM VI	GAS	0.00	0.00	0.00	0.00
20 IBOM	GAS	2262.95	94.29	2254.00	93.92
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	8891.55	370.48	8860.90	369.20
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1810.60	75.44	1767.38	73.64
25 TRANS AMADI	GAS	767.30	31.97	750.50	31.27
26 RIVERS IPP	GAS	0.00	0.00	0.00	0.00
27 EGBIN ST6	STEAM	2607.00	108.63	2471.20	102.97
28 PARAS ENERGY	GAS	1632.60	68.03	1625.00	67.71
29 GBARAIN NIPP	GAS	0.00	0.00	0.00	0.00
TOTAL		97,370.74	4,057.11	96,073.10	4,003.05

1.7A GENERATION POSITION AT 06:00HRS OF WEDNESDAY 05/12/2018

	STATIONS	NO OF UNITS INSTALLED	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) AT 50.35Hz.	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	423	1G5, 6, 11 & 12 4	423	412	1G7 - Out on stator winding failure. 1G8 - Out due to oil leakage on governor runner head. 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	476	445	2G1 - 5 5	445	432	2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	4	411G1, 2 & 4 3	450	450	411G1, 2 & 4 3	450	340	411G1 - Generation reduced due to water management. 411G3 - Out on fault.
	EGBIN STEAM	6	ST2, 4, 5 & 6 4	880	477	ST2, 4, 5 & 6 4	477	477	ST1 - Out due to undisclosed fault since 04/09/2018. ST3 - Out on high vibration since 19th June 2017. Generation reduced due to gas constraint. Available units on bar.
	SAPELE (STEAM)	6	ST2 1	120	50	ST2 1	50	50	ST1 & 3 - Tripped on low drum level. ST4 & 5 - Awaiting major overhaul. ST6 - Tripped on gas control valve not following reference point.
	DELTA (GAS)	18	GT7, 9, 11 - 13, 15, 16 & 19 & 20 10	545	545	GT7, 9 - 13, 15, 16, 19 & 20 10	512	497	GT2 - Tripped on transformer differential lockout. GT3 & 5 - Out due to generator winding fault. GT4 - Out on loss of excitation. GT6, 8 & 14 - Out on major overhaul. GT17 - Tripped on bearing vibration more than maximum. GT18 - Out due to generator lockout problem.
	AFAM IV & V (GAS)	8	0 0	0	0	0 0	0	0	GT11 - 12 - De-commissioned and scrapped. GT13,14 & 16 - Out on blade failure. GT17 - Out due to gas constraint. GT18 - Out due to maintenance. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	3	GT11 - 13 3	435	435	GT11 - 13 3	435	345	GT11 & 12 - Generation reduced due to low load demand by the Discos. GT13 - Generation reduced due to inlet gas valve controller problem.
	OMOTOSHO GAS	8	GT1, 4, 6 & 7 4	152	152	GT1, 4, 6 & 7 4	138.9	138.9	GT2, 3, 5 & 8 - Out due to gas constraint. Available units on bar.
	OLORUNSOGO GAS	8	GT1 & 4 - 8 6	228	228	GT1 & 4 - 8 6	202.8	202.8	GT2 & 3 - Out due to gas constraint. Available units on bar.
NIPP	GEREGU NIPP	3	GT22 1	145	145	GT22 1	145	123	GT21 - Out on maintenance. GT23 - Out due to gas constraint.
	SAPELE NIPP	4	0 0	0	0	0 0	0	0	GT1 & 3 - Out due to low gas pressure. GT2 - Out on maintenance. GT4 - Out due to high air filter differential pressure.
	ALAOJI NIPP GAS	4	0 0	0	0	0 0	0	0	GT1 - Out on maintenance. GT2 - Out due to low gas pressure. GT3 - Shut down due to lack of spare part. GT4 - Tripped on over voltage lockout relay trip.
	OLORUNSOGO NIPP	6	0 0	0	0	0 0	0	0	GT1 & 2 - Shut down due to low gas pressure. GT3 - Out due to maintenance. GT4 - Out due to ignition failure and control relay failure alarm. ST13 & ST23 - Out on maintenance.
	OMOTOSHO NIPP GAS	4	GT2 1	125	120	GT2 1	120	99.9	GT1, 3 & 4 - Out due to gas constraint.
	ODUKPANI NIPP	5	GT3 - 5 3	360	353	GT3 - 5 3	353	344.9	GT1 - Out on fault. GT2 - Out due to gas leakage.
	IHOVBOR NIPP	4	0 0	0	0	0 0	0	0	GT1, 2 & 4 - Out due to gas station maintenance. GT3 - Tripped on high vibration.
	GBARAIN NIPP GAS	1	0 0	0	0	0 0	0	0	GT2 - Out on maintenance.
IPP	OKPAI GAS/STEAM	3	GT12 1	161	161	GT12 1	161	161	GT11 & ST18 - Out due to gas constraint. Available unit on bar.
	AZURA - EDO	3	GT11 - 13 3	461	461	GT11 - 13 3	461	380	GT13 - Generation reduced due to low load demand by the Discos.
	AFAM VI GAS/STEAM	4	0 0	0	0	0 0	0	0	GT11 - Out on type C inspection. GT12, 13 & ST10 - Out due to maintenance at gas station.
	IBOM POWER GAS	3	GT3 1	115	115	GT3 1	115	103.2	GT1 & 2 - Out due to fire outbreak on the control panel.
	AES	9	0 0	0	0	0 0	0	0	Out of production since 27/09/2014.
	ASCO	2	0 0	0	0	0 0	0	0	ST1 - Shut down due to leakage in the furnace.
	OMOKU GAS	6	GT1, 2, 3 & 5 4	100	78	GT1, 2, 3 & 5 4	78	78	GT4 - Out on major overhaul. GT6 - Out on maintenance.
	TRANS-AMADI	4	GT1 & 4 2	50	41	GT1 & 4 2	41	41	GT2 - Out due to gas constraint. GT3 - Out on fault. Available units on bar.
	RIVERS	1	0 0	0	0	0 0	0	0	GT1 - Out due to gas constraint
SUB TOTAL	141	56	5243	4679	56	4607.7	4225.7	Frequency = 50.35Hz.	

1.7B GENERATION POSITION AT 06:00HRS OF WEDNESDAY 05/12/2018 FOR UNITS ON BILATERAL AGREEMENT

PARAS ENERGY	8	GT2 - 9	70	69.4	GT2 - 9	69.4	69.4	Available units on bar.
		8			8			
SUB TOTAL	8	8	70	69.4	8	69.4	69.4	
GRAND TOTAL	149	64	5313	4748.4	64	4,677.10	4,295.10	Frequency = 50.35Hz

1.7C		BILATERAL AGREEMENT UNITS DISPATCH - TUESDAY 04/12/2018							
		EGBIN 516 5MW GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY							
FEEDERS NAME	MAX. LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HRS IN SERVICE	TOTAL (MWH)	REMARK		
OGBA	U-STEEL	ON	0100hrs		24		NIL		
	PTCEXPRESS	ON	0100hrs		24		NIL		
	SANKYO	4	0100hrs		24		NIL		
	FEEDER 8	18	0800hrs		22		LOAD SHEDDING		
IKORODU	PULK IT	4	0900hrs		24		NIL		
	INDUSTRIAL	9	0900hrs		24		NIL		
	SPINTEX	3	0100hrs		24		NIL		
	DANGOTE	2	2100hrs		24		NIL		
	LAND CRAFT	42	0600hrs		24		LOAD SHEDDING		
ALAUSA	TR4 15MVA	8.3	1000hrs		23		NIL		
	TR5 -15MVA	6.9	1100hrs		24		NIL		
	ALAUSA	19.3	1200hrs		24		NIL		
M/LAND	PTC (MARYLAND)	19	1400hrs		24		NIL		
	TOTAL LOAD	113.2							

BILATERAL AGREEMENT LOAD DISPATCH							
60MW PARAS ENERGY GENERATION TO CEB OF TUESDAY 04/12/2018							
FEEDER	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
Ikeja West/Sakete 330kV line	69.4	11:00	66.2	09:00	24	1627.2	NIL.

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI LOAD DISPATCH TO THE FOLLOWING COMPANIES OF: TUESDAY 04/12/2018									
COMPANY NAME	VOLTAG E LEVEL	CON-TRAC-TUAL LOAD (MW)	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
INNER GALAXY	132kV line 2	0	48	17:00	34	12:00	24	725	SUPPLY NOT INTERRUPTED
KAM STEEL		25.0	1.5	16:00	0.1	01:00	24	6.6	SUPPLY NOT INTERRUPTED
ASHAKA CEMENT		0	9.7	03:00	6.9	07:00	24	188.7	SUPPLY NOT INTERRUPTED
XING 1	33kV feeder	0	19	16:00	9.3	09:00	24	356.4	SUPPLY NOT INTERRUPTED
XING 2		0	25.8	05:00	12.5	13:00	24	457.2	SUPPLY NOT INTERRUPTED
KAM INTEGRATED		15	5	09:00	1.3	03:00	24	65.8	SUPPLY NOT INTERRUPTED
OLAM FLOUR MILLS		3	1.7	24:00	0.1	01:00	23	14.1	SUPPLY NOT INTERRUPTED
LORDSMITH		3	0.6	11:00	0.4	01:00	24	11.1	SUPPLY NOT INTERRUPTED

1.8 HYDROLOGICAL DATA: WEDNESDAY 05/12/2018

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	141.52	101.96	379.52
TAIL WATER ELEVATION (METERS)	104.3	74.7	271.0
GROSS OPERATING HEAD (METERS)	37.22	27.26	108.52
AVERAGE TURBINE DISCHARGE (M3/SEC)	1178.00	1661.00	378.00
AVERAGE SPILLAGE (M3/SEC)	446.00	0.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	1624.00	1661.00	378.00
COMPUTED INFLOW (M3/SEC)	1360.00	1730.00	158.00
STORAGE DIFFERENTIAL	-264.00	69	-220
MAXIMUM LEVEL FOR SPILLAGE COMMENCEMENT	141.73	103	382.50
MINIMUM LEVEL BELOW WHICH NO GENERATION	130	99	355.00

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

		TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	508.7	22:00	442.71	347.1	05:00
EKO					
IKEJA	555.5	07:00	577.44	371.9	22:00

2.0 GAS POSITION: WEDNESDAY 05/12/2018

STATION	SIGNED ACQ Annual Contracted Quantity MMSCF/D	INSTALLED CAPACITY OF THERMAL STATIONS (MW)	PREVIOUS DAY OFF-TAKE (MMSCF/D)	CAPABILITY OF UNITS ON BAR OF THERMAL STATIONS (MW)	DIFFERENCE (MW)
EGBIN P/S	457	1100		477	623
DELTA (GAS)	453	915		512	403
OMOTOSHO GAS	135.2	336.8		138.9	197.9
OMOTOSHO NIPP	96.3	500		120	380
OLORUNSOGO (GAS)	203.6	336		202.8	133.2
OLORUNSOGO NIPP	0	750		0	750
SAPELE NIPP	0	500		0	500
SAPELE STEAM	50	720		50	670
AFAM IV-V	0	300		0	300
AFAM VI	0	650		0	650
GERESU GAS	360	435		435	0
GERESU NIPP	127	435		145	290
OKPANI (GAS/STEAM)	151	480		161	319
ALAOJI NIPP	0	504		0	504
IHOVBOR NIPP	94.8	337.5		0	337.5
IBOM	93.8	198		115	83
ODUKPANI NIPP	0	625		351	274
TOTAL	2221.7	9122.30		2707.7	6414.6

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : TUESDAY 04/12/2018

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

S/N	POWER STATION	UNIT ON SPINNING RESERVE	CONTRACTED RESERVE	ACTUAL RESERVE (MW)	TOTAL (MW)
1	Egbin	ST2	100	0	0
		ST4		0	
		ST5		0	
		ST6		0	
2	Delta	GT16	40	0	0
		GT17	40	0	
3	Olorunsogo NIPP	GT1	40	0	0
		GT2		0	
		GT3		0	
		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 UNAVAILABLE GENERATION CAPABILITY

The unavailable generation capability for Wednesday 05/12/2018 as at 0600Hrs was = 250MW.

S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
			0	0	0
			0	0	
			0	0	
			0	0	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
			0	0	158
1	Delta GT16	100	0	100	
2	Geregu Gas GT11 & 12	290	259	31	
2	Azura-Edo GT13	153	126	27	
				0	
				0	
4.3 DUE TO WATER MANAGEMENT:					
1	Shiroro 411G1	150	58	92	92
					0
Grand Total					250

5.0 OUTAGES:

5 (A) FORCED OUTAGES (GENERATION):

- 1 06:32 - 08:31Hrs, Geregu gas GT12 tripped on low gas pressure. LHR = 136MW
- 2 07:42 - 14:19Hrs, Geregu gas GT13 tripped on temperature turbine outlet 1, 2, 3 & 5 (Thermocouple fault). LHR = 106MW
- 3 10:48 – 11:35Hrs, Kainji 1G6 tripped on turbine guide bearing temperature detector fault. LHR = 114MW
- 4 16:36Hrs, Omoku GTs 1-3 & 5 tripped due to tripping of Afam/IPP/Port Harcourt 132kV line 1. LHR = 71.5MW.
17:59Hrs, Omoku GT1 was tied, 18:03Hrs, GT5 was tied, 18:06Hrs, GT2 was tied & 18:10Hrs, GT3 was tied.
- 5 19:28 through 24:00Hrs, Kainji 1G6 tripped on governor fault. LHR = 100MW

5 (B) FORCED OUTAGES (TRANSMISSION):

- 1 01:05 - 01:28Hrs, Alaoji/Owerri 132kV line 2 tripped at Alaoji T/S on Siemens relay trip, instantaneous trip ie>, Red phase and back up protection. LHR = 18MW
- 2 01:05 - 01:28Hrs, Alaoji/Owerri 132kV line 1 tripped at Owerri T/S on DEF. LHR = 18MW
- 3 01:05 - 01:28Hrs, Owerri/Ahoada 132kV line 1 tripped at Owerri T/S on DEF. LHR = 18MW
- 4 11:36 – 11:49Hrs, Sapele/Delta 330kV line (cct S4G) CBs tripped at both ends on the following relay indications:
At Sapele T/S:
SEL relay: Zone 1 trip, Yellow phase to ground, distance = 11.34km
At Delta T/S:
Siprotec relay: Zone 1 trip, E/F, distance pickup = L2E, PU time = 160ms, trip time = 100ms, distance = 60.2km. No load loss as ccts G3B, S3B, S4B and S5B were in service.
- 5 12:23 – 12:47Hrs, Osogbo/Ikeja-West 330kV line (cct H1W) CBs tripped at both ends on the following relay indications:
At Osogbo T/S:
Siprotec relay: Relay trip, Yellow phase, E/F, distance pick up = L2E, PU time = 74ms, trip time = 20ms, distance = 211km.
Ohmega relay: Phase DEF, aided trip, carrier = 225.27km
Auxiliary relay: 85, X2, 86T
At Ikeja-West T/S:
Siprotec relay: General trip Yellow phase, fault zone 1 trip, Zcom trip, 21 pickup DG, PU time = 70ms, trip time = 5ms, distance = 38.6km
Micom relay: General trip, Yellow phase fault, distance Z-1 trip started phase DM, trip phase-D O/C start l>2, 3 & 4, earth fault start IN>1, 2, fault location = 39.77km.
No load loss as ccts R1W, R2A & H2A were in service.
- 6 16:36 – 16:52Hrs, Afam/IPP/Port Harcourt 132kV line 1 tripped at Afam T/S on instantaneous O/C Blue phase. LHR = 31.2MW.

5 (C) PLANNED OUTAGES:-

- 1 11:30 – 19:58Hrs, Maryland T/S 30MVA 132/33kV transformer T3 was taken out to carry out annual preventive maintenance on the transformer and its associated equipment. Load loss = 10MW.

5 (D) URGENT OUTAGES:-

- 1 09:57 - 15:27Hrs, Jebba 2G5 was shut down to carry out maintenance on the slip ring compartment of the unit. Load loss = 84MW
- 2 12:05 through 24:00Hrs, Trans-Amadi GT2 was shut down to build up low SF6 gas pressure of the line GCB at Trans-Amadi T/S to normal. Load loss = 20.5MW
- 3 12:09 - 18:48Hrs, Trans-Amadi GT1 was shut down to build up low SF6 gas pressure of the line GCB at Trans-Amadi T/S to normal. Load loss = 19.1MW
- 4 12:18 – 13:01Hrs, Trans-Amadi T/S line CB was taken out to build up low SF6 gas pressure to normal. Load loss = 40.2MW
- 5 16:25 – 17:12Hrs, Zaria T/S 60MVA 132/33kV transformer T3 was taken out to top up low oil in the conservator tank to normal. Load loss = 25MW

9 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY

5 (E) EMERGENCY OUTAGES:- The under mentioned lines were opened on frequency control.

- 1 06:33 - 06:45Hrs, Akangba/Ojo 132kV line 2. Load loss = 40MW. Frequency was 49.02Hz.
- 2 18:36 – 18:41Hrs, Ayede/Ibadan North/Iwo/Iseyin 132kV line. Load loss = 70MW Frequency was 49.36Hz.
- 3 21:59 – 22:30Hrs, Ayede/Ibadan North/Iwo/Iseyin 132kV line. Load loss = 60MW Frequency was 49.54Hz.

5 (F) AUTOMATIC UNDER FREQUENCY OPERATION:-

- 1 06:32 - 06:46Hrs, Akangba T/S 60MVA 132/33kV transformer 10T1A secondary CB tripped on U/F. LHR = 0.5MW

5 (G) 330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:- ccts A1S & U1A.

5 (H) 330KV LINES THAT ARE OUT ON BREAKER PROBLEM:- cct A1K.

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

5 (J) 330KV LINES THAT ARE OUT ON LINE FAULT:- ccts D3T, J2H, D2K, K3U & K4U

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

6 WEATHER REPORT:- NIL

7 INTERNATIONAL LINES:-

A IKEJA WEST/SAKETE 330KV LINE(TCN+PARAS)

Maximum load - 290MW at 15:00Hrs.
Minimum load - 230MW at 07:00Hrs.

B BIRNIN KEBBI/NAMEY 132KV LINE

Maximum load - 91MW at 17:00Hrs.
Minimum load - 58.MW at 05:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 28.8MW at 20:00Hrs.
Minimum load - 14.4MW at 11:00Hrs.

8 MISCELLANEOUS:-

- 1 09:53Hrs, Shiroro G/S increased generation by 100MW to improve system frequency.
- 2 10:12Hrs, Azura-Edo increased generation by 50MW to improve system frequency.
- 3 10:48Hrs, Kainji 1G11 deloaded from 98MW to 50MW due to the tripping of unit 1G6.
- 4 10:48Hrs, Kainji 1G12 deloaded from 89MW to 50MW due to the tripping of unit 1G6.
- 5 13:03Hrs, Delta GT16 was tied. The unit was out due to low load demand by the Discos.

- 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 GENERATING 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 CONTRACTED 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).

- 6 18:52Hrs, Trans-Amadi GT4 was tied. The unit was out due to gas constraint.
 7 19:06Hrs, Omotosho NIPP GT3 was tied. The unit was out due to gas constraint.
 8 19:23Hrs, Omotosho NIPP GT2 was shut down due to gas constraint. Load loss = 101MW
 **** 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.

10 **COMMUNICATION MEDIA**

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	37	34
OPTIC FIBRE	13	10
PLS	14	4

11 **SCADA RTU STATUS**

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	5	3
330kV	19	6	13
132kV	102	84	18

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-Ekpene T/S: No reactor installed.

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 Omotosho/Ikeja West 330kV line CB at Ikeja West T/S.

BENIN REGION:

- 1 Omotosho T/S 330kV, 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.

12(D) **UNAVAILABLE CAPACITOR BANK:**

- 1 (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.

12(E) **UNAVAILABLE SKYWIRES**

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/Osogbo 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 (F) **UNAVAILABLE SYNCHROSCOPES :**

- 1 Ikeja West, Onitsha, Egbin, Ugwuaji, 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.

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

e AGM (S/O) - 08056002757, CUG: 08129458475

SHIRORO REGION

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

