

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja

From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT OF SATURDAY 31/08/2019

FOR: EVENTS OF FRIDAY 30/08/2019

EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	25,790	14:00	30/08/2019
GENERATION CAPABILITY	5726.4	-do-	-do-
UNIT'S ON BAR CAPABILITY AT PEAK	4650.2	-do-	-do-
PEAK GENERATION	3547.6	-do-	-do-
LOWEST GENERATION	20.0	15:00	30/08/2019
8-HOURLY DURATION PEAK	3263.9	0100-0800	-do-
	3547.6	0900-1600	-do-
	3524.1	1700-2400	-do-
PEAK GENERATION TO DATE	5375	21:30	7/2/2019
MAXIMUM AVAILABLE CAPACITY TO DATE	7652.6	06:00	14/04/2014
MAXIMUM ENERGY GENERATED (MWH) TO DATE	111,004.89	0000-2400	03/04/2019

1.2 CRITICAL VOLTAGE

DETAILS	KV	STATION	HRS
NOMINAL VOLTAGE	330		
STATUTORY LIMITS	280.5 - 346.6		
HIGHEST VOLTAGE FOR THE DAY	360	Ugwuaji T/S	21:45
LOWEST VOLTAGE FOR THE DAY	293	Yola T/S	14:01

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.830	21:45
LOWEST FREQUENCY	47.600	14:01

1.4 SYSTEM COLLAPSE UPDATE

Date of last total collapse: 30th June, 2019		No. of days since last total collapse: 60												
Date of last partial collapse: 12th April, 2018		No. of days since last partial collapse: 497												
Highest No of days ever attained in-between total collapses: 134		Highest No of days ever attained in-between partial collapses: 243												
	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	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	0	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	4	2	22	
	Partial	--	--	--	--	--	--	--	--	2	0	0	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	0	1	0	4	
2016	Total	--	--	2	3	6	5	0	0	1	1	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	0	1	0	3	3		9	
2018	Total	5	1	0	0	0	1	1	1		2		12	
	Partial	0	0	0	1	0			0				1	
2019	Total	4	1		1	1							7	
	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	327	0
2 JEBBA	HYDRO	352	0
3 SHIRORO	HYDRO	510	20
4 EGBIN ST2 - 5	STEAM	373	0
5 SAPELE	STEAM	35	0
6 DELTA	GAS	384	0
7 AFAM IV-V	GAS	50	0
8 GEREGU GAS	GAS	272	0
9 OMOTOSHO GAS	GAS	339	0
10 OLORUNSOGO GAS	GAS	102.90	0
11 GEREGU NIPP	GAS	80	0
12 SAPELE NIPP	GAS	71.9	0
13 ALAOJI NIPP	GAS	0	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	72	0
16 ODUKPANI NIPP	GAS	169.9	0
17 IHOVBOR NIPP	GAS	0	0
18 OKPAI	GAS	104	0
19 AFAM VI	GAS	0	0
20 IBOM POWER	GAS	61.1	0
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	48.5	0
24 TRANS AMADI	GAS	41.1	0
25 RIVERS IPP	(GAS)	120	0
26 AZURA - EDO IPP	(GAS)	216	0
27 EGBIN ST6	(GAS)	0	0
28 PARAS ENERGY	(GAS)	63.3	0
29 GBARAIN NIPP	GAS	0	0
TOTAL		3547.6	20.0

STATION	TURBINE	ENERGY GENERATED	AV. POWER GENERATED	ENERGY SENT OUT	AV. POWER SENT OUT
		MWH	MWHH	MWH	MWHH
1 KAINJI	HYDRO	5718.00	238.25	5704.10	237.67
2 JEBBA	HYDRO	6176.00	257.33	6157.96	256.58
3 SHIRORO	HYDRO	9872.00	411.33	9843.15	410.13
4 EGBIN ST2 - 5	STEAM	5786.00	241.08	5416.10	225.67
5 SAPELE	STEAM	497.70	20.74	418.50	17.44
6 DELTA	GAS	4937.82	205.74	4704.10	196.00
7 AFAM IV-V	GAS	713.77	29.74	710.27	29.59
8 GEREGU GAS	GAS	2782.80	115.95	2759.20	114.97
9 OMOTOSHO GAS	GAS	1333.00	55.54	1318.00	54.92
10 OLORUNSOGO GAS	GAS	1763.06	73.46	1747.18	72.80
11 GEREGU NIPP	GAS	1807.75	75.32	1795.07	74.79
12 SAPELE NIPP	GAS	1277.14	53.21	1267.12	52.80
13 ALAOJI NIPP	GAS	155.38	6.47	152.99	6.37
14 OLORUNSOGO NIPP	GAS	0.00	0.00	0.00	0.00
15 OMOTOSHO NIPP	GAS	1250.40	52.10	1242.50	51.77
16 ODUKPANI NIPP	GAS	2785.60	116.07	2763.09	115.13
17 IHOVBOR NIPP	GAS	1440.00	60.00	1421.02	59.21
18 OKPAI	GAS	2227.00	92.79	2155.70	89.82
19 AFAM VI	GAS	0.00	0.00	0.00	0.00
20 IBOM	GAS	1004.17	41.84	996.00	41.50
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	3313.30	138.05	3292.20	137.18
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1130.62	47.11	1099.09	45.80
25 TRANS AMADI	GAS	767.60	31.98	750.70	31.28
26 RIVERS IPP	GAS	1717.60	71.57	1712.80	71.37
27 EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28 PARAS ENERGY	GAS	908.60	37.86	902.70	37.61
29 GBARAIN NIPP	GAS	1010.00	42.08	1000.70	41.70
TOTAL		60,375.31	2,515.64	59,330.24	2,472.09

	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 50.49Hz	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	330	1G5, 6, 11 & 12 4	330	194	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	578.4	475	2G1, 3 & 5 3	285	245	2G2 & 4 - Out due to low load demand by the Discos. 2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	4	411G1 - 4 4	600	600	411G1 - 4 4	600	496	411G2 - Generation reduced due to low load demand by the Discos.
	EGBIN STEAM	6	ST1, 2, 5 & 6 4	880	655	ST2 & 5 2	440	200	ST1 & 6 - Yet to be tied since collapse of 30/08/2019. ST3 - Tripped on suspected control valve abnormal. ST5 - Shut down due to compressor problem. Generation reduced due to low load demand by the Discos.
	SAPELE (STEAM)	6	0 0	0	0	0 0	0	0	ST1 - Tripped due to loss of control oil pump. ST2 & 4 - Out on fault. ST3 - Yet to be tied since collapse of 30/08/2019.
	DELTA (GAS)	18	GT6, 7, 10 - 13, 15 16, 19 & 20 10	575	513	GT6, 7, 10, 12, 16, 19 & 20 7	346	299	GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT11 & 13 - Yet to be tied since collapse of 30/08/2019. GT15 - Out due to low load demand by the Discos. GT17 & 18 - Out due to generator lockout problem. Generation reduced due to low load demand by the Discos.
	AFAM IV & V (GAS)	8	GT18 1	120	50	GT18 1	50	50	GT11 - 12 - De-commissioned and scrapped. GT13, 14 & 16 - Out on blade failure. GT17 Out due to gas constraint. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	3	GT11 - 13 3	435	435	GT12 & 13 2	290	160	GT11 - Out due to low load demand by the Discos. GT12 & 13 - Generation reduced due to low load demand by the Discos.
	OMOTOSHO GAS	8	GT1, 4, 5 & 8 4	168	152	GT4, 5 & 8 3	114	71.5	GT1 & 7 - Out due to low load demand by the Discos. GT2, 3 & 6 - On maintenance Generation reduced due to low load demand by the Discos.
	OLORUNSOGO GAS	8	GT1 - 6 & 8 7	294	266	GT2, 4 & 5 3	98.8	98.8	GT1, 3, 6 & 8 - Out due to low load demand by the Discos. GT7 - Out due to gas constraint.
NIPP	GEREGU NIPP	3	GT21 1	145	145	GT21 1	145	80	GT21 - Generation reduced due to low load demand by the Discos. GT22 & 23- Out due to gas constraint.
	SAPELE NIPP	4	GT2 1	112.5	110	GT2 1	110	74.5	GT1 & 3 - Out due to gas constraint. GT4 - Out on maintenance.
	ALAOJI NIPP	4	GT1 1	112.5	112.5	GT1 1	75.5	75.5	GT3 - Out 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 - 3 - Out due to gas constraint. GT4 - Out due to ignition failure and control relay failure alarm. ST13 & ST23 - Out on maintenance.
	OMOTOSHO NIPP	4	GT2 1	120	120	GT2 1	120	75.1	GT1 - Out on maintenance. GT3 - Out due to gas constraint.
	ODUKPANI NIPP	5	GT1 - 4 4	480	440	GT1 & 3 2	220	175.8	GT1 & 3 - On manual adjustment. GT2 & 4 - Out due to low load demand by the Discos. GT5 - Out on E/F.
	IHOVBOR NIPP	4	GT1 1	112.5	110	GT1 1	110	75.3	GT1 - On manual adjustment. GT2 - Out on generator resistance temperature fault. GT3 & 4- Out on maintenance.
	GBARAIN NIPP	1	0 0	0	0	0 0	0	0	GT2 - Out due to tripping of Owerrri/Ahoada 132kV line
	OKPAI GAS/STEAM	3	GT11 & 12 2	300	300	GT11 & 12 2	300	104	GT11 & 12 - Generation reduced due to low load demand by the Discos. ST18 - Out on fault.
	AZURA - EDO	3	GT11 - 13 3	461	459	GT12 & 13 2	306	200	GT11 - Out due to low load demand by the Discos. GT12 - Generation reduced due to low load demand by the Discos.
IPP	AFAM VI GAS/STEAM	4	0 0	0	0	0 0	0	0	GT11 & 13 - Tripped. Details awaited. GT12 & ST10 - Out due to low load demand by the Discos.
	IBOM POWER GAS	3	GT3 1	112.5	110	GT3 1	110	62.1	GT1 & 2 - Out due to fire outbreak on the control panel. Generation reduced due to line constraint.
	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 - Out due to leakage in the furnace.
	OMOKU GAS	6	GT3 - 6 4	100	80	GT3 - 6 4	80	40.7	GT1 - Tripped on exhaust spread temperature high. GT2- Out on high vibration. Generation reduced due to low load demand by the Discos.
	TRANS-AMADI	4	GT2 & 4 2	50	35.7	GT2 & 4 2	35.7	35.7	GT1 - Tripped on high voltage. GT3 - Out on generator transformer limitation.
	RIVERS	1	GT1 1	160	160	GT1 1	160	90	GT1 - Generation reduced due to low load demand by the Discos.
	SUB TOTAL	141	64	6356.4	5658.2	48	4326	2903	Frequency = 50.49Hz.

1.7B GENERATION POSITION AT 06:00HRS OF SATURDAY 31/08/2019 FOR UNITS ON BILATERAL AGREEMENT										
PARAS ENERGY	8	GT3 - 10		70	52.9	GT3 - 10		52.9	52.9	Available units on bar.
		8				8				
SUB TOTAL	8			70	52.9			52.9	52.9	
GRAND TOTAL	149	72		6426.4	5711.1	56		4,378.90	2955.9	Frequency = 50.47Hz.

1.7C BILATERAL AGREEMENT UNITS DISPATCH - FRIDAY 30/08/2019								
EGBIN ST6 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	1	0700HRS			20		SYSTEM COLLAPSE
	PTC EXPRESS	6	0900HRS			20		SYSTEM COLLAPSE
	SANKYO	1	0700HRS			20		SYSTEM COLLAPSE
	FEEDER 8	13	0900HRS			17		SYSTEM COLLAPSE
IKORODU	PULK IT	10	0700HRS			18		SYSTEM COLLAPSE
	INDUSTRIAL	8	0100HRS			18		SYSTEM COLLAPSE
	SPINTEX	17	0300HRS			18		SYSTEM COLLAPSE
	DANGOTE	3	0100HRS			18		SYSTEM COLLAPSE
	LAND CRAFT	27	0300HRS			19		SYSTEM COLLAPSE
ALAUUSA	TR4 - 15MVA	6.9	1200HRS			20		SYSTEM COLLAPSE
	TR5 -15MVA	6	1000HRS			20		SYSTEM COLLAPSE
	ALAUUSA	13.3	1400HRS			20		SYSTEM COLLAPSE
M/LAND	PTC (MARYLAND)	14	2300HRS			14		SYSTEM COLLAPSE
TOTAL LOAD		126.2						

BILATERAL AGREEMENT LOAD DISPATCH							
60MW PARAS ENERGY GENERATION TO CEB OF FRIDAY 30/08/2019							
	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
	66.5	01:00	61.7	13:00	14	901.2	Out due to system collapse.

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI FRIDAY 30/08/2019										
COMPANY NAME	VOL-TAGE LEVEL	CON-TRAC-TUAL LOAD (MW)	MAX LOAD (MW)	TIME	MIN LOAD (MW)	TIME	HOURS IN SERVICE	TOTAL (MWH)	REMARK	
INNER GALAXY	132kV line 2	0	40	01:00	0.1	20:00	19	506.1	SYSTEM COLLAPSE	
KAM STEEL 2		25.0	17	22:00	0.1	01:00	21	75.8	SYSTEM COLLAPSE	
ASHAKA CEMENT		0	5.4	01:00	0	13:00	16	46.1	SYSTEM COLLAPSE	
XING 1	33kV feeder	0	21.3	09:00	0	15:00	14	247.6	SYSTEM COLLAPSE	
XING 2		0	26.5	09:00	0.0	15:00	14	293.9	SYSTEM COLLAPSE	
KAM INTEGRATED		15	3.5	10:00	0.5	18:00	21	49.3	SYSTEM COLLAPSE	
OLAM FLOUR MILLS		3	2.5	24:00	1.2	19:00	21	42.3	SYSTEM COLLAPSE	
LORDSMITH		3	0.6	01:00	0.2	19:00	20	10.8	SYSTEM COLLAPSE	
KAM STEEL LINE 1		0	10	04:00	0.1	0.75	21	84.1	SYSTEM COLLAPSE	

1.8 HYDROLOGICAL DATA: SATURDAY 31/08/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	136.35	102.67	375.20
TAIL WATER ELEVATION (METERS)	104.65	74.5	270.0
GROSS OPERATING HEAD (METERS)	31.70	28.17	105.20
AVERAGE TURBINE DISCHARGE (M3/SEC)	851.00	1059.00	452.00
AVERAGE SPILLAGE (M3/SEC)	0.00	480.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	851.00	1539.00	452.00
COMPUTED INFLOW (M3/SEC)	4113.00	1331.00	1291.00
STORAGE DIFFERENTIAL	3262.00	-208	839
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 FRIDAY 30/08/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	448.1	12:00	540.35	30.6	16:00
EKO					
IKEJA	524.8	01:00	804.81	32.7	19:00

2.0 GAS POSITION: SATURDAY 31/08/2019

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	265	1100		440	660
DELTA (GAS)	305	915		346	569
OMOTOSHO GAS	100.4	336.8		114	222.8
OMOTOSHO NIPP	104.3	500		120	380
OLORUNSOGO (GAS)	233.4	336		88.8	237.2
OLORUNSOGO NIPP	0	750		0	750
SAPELE NIPP	87.2	500		110	390
SAPELE STEAM	47	720		0	720
AFAM IV-V	50	300		50	250
AFAM VI	220	650		0	650
GEREGU GAS	216	435		290	145
GEREGU NIPP	80	435		145	290
OKPAI (GAS/STEAM)	170	480		300	180
ALAOJI NIPP	0	504		75.5	428.5
IHOVBOR NIPP	114	337.5		110	227.5
IBOM	88.9	198		110	88
ODUKPANI NIPP	206.4	625		220	405
TOTAL	2287.6	9122.30		2529.3	6593

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : FRIDAY 30/08/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF SATURDAY 31/08/2019 = FREQUENCY = 50.49Hz.

SN	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
		GT1		0	
5	Omotosho NIPP	GT2	40	0	0
		GT3		0	
		GT4		0	
		GT4		0	
TOTAL (MW)			295	0	0

4.0 UN-UTILIZED GENERATION CAPABILITY

The un-utilized generation capability for Saturday 31/08/2019 as at 0600Hrs = 2566.9MW

SN	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
			0	0	47.9
1	Ibom Power GT3	110	62.1	47.9	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Jebba 2G2 & 5	190	0	190	2519
2	Olorunsogo gas GT1 - 7	266	98.8	167.2	
3	Geregu Gas GT11 - 13	435	160	275	
4	Odukpani NIPP GT2 & 4	220	0	220	
5	Azura-Edo GT11 & 12	306	75	231	
6	Egbin ST2 & 6	440	200	240	
7	Shiroto 411G2	150	120	30	
8	Okpai GT11 & 12	300	104	196	
9	Afam VI GT11 - 13 & ST10	620	0	620	
10	Delta GT15, 16, 19 & 20	360	227	133	
11	Omotosho Gas GT4, 5 & 8	114	71.5	42.5	
12	Rivers IPP GT1	160	90	70	
13	Geregu NIPP GT21	145	80	65	
14	Omoku GT3 - 6	80	40.7	39.3	
			0	0	
			0	0	
			0	0	
			0	0	
4.3 DUE TO WATER MANAGEMENT					
			0	0	0
			0	0	
Grand Total					2566.9

5.0 **OUTAGES:**

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

1 13:23 through 24:00Hrs, Gbarain GT2 tripped due to tripping of Owerri/Ahoada 132kV line 1. LHR =72.4MW

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

- 1 01:33 – 01:52Hrs, Benin/Omotoso 330kV line (cct B5M) CBs tripped on the following relay indications:
At Benin T/S: ABB relay – trip – trip, trip – TRL1, PHS – STFN, (L1, LE) ZM1 – trip, EFC –CS, AR –in progress, DEF –block, ZM2, 3-start ZCIT –CS L1, TOC – STL1, HS –TRL1, fault loop L1 L2, distance = 22.8km. MVAJ – K –Earth 6A.
At Omotoso T/S: PSL 601 GA- RTIPA zero sequence ZN1 trip, Phase A trip, phase A ground, distance = 45.95km, impedance = 3.104 + 5172, 977, fault current 0.9383A. Auxiliary relay: Trip A, B & C stages 1 & 2. LHR = 144MW.
- 2 01:25 – 01:44Hrs, Ayede/Mcpherson/Shagamu/Ijebu –Ode 132kV line CB tripped at Ayede T/S on Optimho relay : DEF delay , location = 53ms. Micom relay – Instantaneous O/C Red Phase. LHR = 43MW.
- 3 01:25 – 01:45Hrs, Mcpherson T/S 40MVA 132/33kV transformer T1 primary CB tripped on Nari relay- General trip, instantaneous O/C . LHR = 1MW.
- 4 08:48 – 09:23Hrs, Uyo T/S 60MVA 132/33kV transformer T3 primary & secondary CBs tripped without relay indication. LHR = 1MW.
- 5 10:41 – 11:02Hrs, Ayede/Shagamu 132kV line CB tripped at Ayede T/S on O/C Red Phase and E/F. LHR = 24MW.
- 6 11:40 - 21:58Hrs, Osogbo/keja West 330kV line (cct H1W) CBs tripped at both ends on the following relay indications:
At Osogbo T/S: Siprotec relay – Relay trip red Phase, zone 1 trip, E/F, O/C PUL1, PU time = 60ms, trip time = 1ms, distance = 70.1km. Ohmega relay – zone 1, Phase A, Earth. Auxiliary relay – 86T, distance = -125.96km.
At Ikeja West T/S: Siprotec relay – General trip, Red Phase trip, ZCOM trip, Z1 pickup AG, PU time = 95ms, trip time = 20ms, distance = 187.6km.
Micom relay: General trip, Red Phase fault, distance Z1, trip , started phase AN, tripped phase A, start element distance , E/F start IN1, distance Z1, fault duration = 145.8ms, relay trip time = 79.51, fault location = 184.2km. No load loss as ccts R1W, R2A & H2A were in service.
11:59Hrs, Trial restoration failed at Ikeja West T/S on the following relay indication.
Siprotec relay – General trip, Red Phase fault, zone 1 trip, 50N/51N pickup, PU time = 90ms, trip time = 5ms, distance = 198.3km.
Micom relay – General trip, Red Phase fault, distance Z1 trip, carrier send, started Phase AN, tripped Phase A, start element distance , E/F start IN1, distance trip Z1, fault duration = 102.7ms, relay trip time = 79.51, fault location = 189.9km.
- 7 11:58 – 12:35Hrs, Sapele/Benin 330kV line 2 (cct S4B) CBs tripped at both ends on the following relay indications:
At Benin T/S: ABB relay – trip, start L, PE zone 1 trip, AR close , fuse VTSZ, ZCOM CR, ZCOM CS, DEF CR, DEF CS, trip – trip, trip – TRL1, PHS –STFW (LIPE) ZM1 – trip, EFC –CS, DEF –block, fuse VTSZ, ZM2 – start, ZM3 – start, ZCIP –CSL1, TOC –STL1, distance = 4.2km.
At Sapele T/S: SEL 421 relay: Tripping zone 1, general phase A, distance = 19.4km. No load loss as ccts S3B & S5B were in service.
- 8 12:06 – 12:43Hrs, Delta/Benin 330kV line (cct G3B) CBs tripped at both ends on the following relay indications:
At Delta T/S: Siprotec relay – Distance protection trip zone 1, Red Phase, E/F, O/C, pickup time = 67ms, trip time = 1ms, distance = 54.4km.
At Benin T/S: ABB relay: Trip , start L1, PE, zone 1 trip, AR close , ZCOM CS, DEF CS, trip – trip, trip – TRL1, PHS – STFW (LIPE), ZM1 – TRIP, EFC CS, AR in progress , DEF block, ZM2, 3 – start , ZCIP – CSL1, TOC – STL1, distance = 52.5km.
MVAJ K86A, trip cct supervision, lockout trip open. No load loss as cct S4G was in service.
- 9 12:52 – 13:29Hrs, Benin/Delta 132kV line CB tripped at Benin T/S on E/F Red Phase, period = 217.0ms, distance = 20.2km. LHR = 10.7MW.
- 10 13:23 – 13:41Hrs, Alaoji/Owerri 132kV line 1 CB tripped at Alaoji T/S on Siemens relay – E/F trip and backup. LHR = 18MW.
- 11 13:23 – 13:42Hrs, Alaoji/Owerri 132kV line 2 CB tripped at Alaoji T/S on E/F. LHR = 24.2MW.
- 12 13:23 – 13:52Hrs, Owerri/Ahoada 132kV line 1 CB tripped at Owerri T/S on DEF. LHR = 3.1MW.

5 (C) **PLANNED OUTAGES:-** NIL

5 (D) **URGENT OUTAGES**

1 12:20 through 24:00Hrs, Ihovbor NIPP GT1 was shut down to allow maintenance crew carry out off line down load on engineering work station. Load loss = 88.9MW.

6 **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 WITH EFFECTIVE POWER PURCHASE AGREEMENT (PPA)
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).

11A **COMMUNICATION MEDIA**

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	38	33
OPTIC FIBRE	13	10
PLS	14	4

11B **SCADARTU STATUS**

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	5	3

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

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

5 (G) **330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:-** ccts U1A,K3U, B11J & K1U.

5 (H) **330KV LINES THAT ARE OUT DUE TO DEFECTIVE CIRCUIT BREAKER:-** cct A2K.

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

5 (J) **330KV LINES THAT ARE OUT ON LINE FAULT:-** ccts A2K & K4U

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

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

6 **WEATHER REPORT:-** Rainfall was reported at Birnin -Kebbi, Lagos, Akangba, New Haven, Osogbo.

7 **INTERNATIONAL LINES:-**

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

Maximum load - 82MW at 01:00Hrs.
Minimum load - 68.0MW at 08:00Hrs.

B **BIRNIN KEBBI/NIAMEY 132KV LINE**

Maximum load - 112MW at 22:00Hrs.
Minimum load - 43.0MW at 19:00Hrs.

C **KATSINA/GAZAOUA/MARADI 132KV LINE**

Maximum load -31.1MW at 01:00Hrs.
Minimum load - 21.2MW at 07:00Hrs.

8 **MISCELLANEOUS**

- 1 00:27 through 24:00Hrs, Trans-Amadi GT1 was shut down due to low load demand by the Discos. Load loss = 19.2MW.
- 2 00:55 - 09:57Hrs, Delta GT15 was shut down due to low load demand by the Discos. Load loss = 55MW.
- 3 01:18 - 21:25Hrs, Olorunsogo Gas GT4 was shut down due to low load demand by the Discos. Load loss = 28.4MW.
- 4 01:48 through 24:00Hrs, Olorunsogo Gas GT1 was shut down due to low load demand by the Discos. Load loss = 27.82MW.
- 5 01:53 - 15:31Hrs, Azura -Edo GT12 was shut down due to low load demand by the Discos. Load loss = 75MW.
- 6 02:21 - 21:30Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 74MW.
- 7 03:36 through 24:00Hrs, Geregu Gas GT11 was shut down due to low load demand by the Discos. Load loss = 80MW.
- 8 04:12 - 19:07Hrs, Delta GT19 was shut down due to low load demand by the Discos. Load loss = 58MW.
- 9 08:54Hrs, Odukpani NIPP GT3 was tied. The unit was out due to low load demand by the Discos.

330kV	19	4	15
132kV	102	79	23

- 10 09:36Hrs, Jebba 2G5 was tied. The unit was out due to low load demand by the Discos.
- 11 10:50 - 23:05Hrs, Odukpiani NIPP GT3 was shut down due to low load demand by the Discos. Load loss = 70MW.
- 12 11:37Hrs, Geregu Gas GT11 was tied. The unit was out due to low load demand by the Discos.
- 13 12:40Hrs, Azura-Edo GT12 was tied. The unit was out due to low load demand by the Discos.
- 14 13:30Hrs, Jebba 2G2 was tied to swap with 2G5.
- 15 13:31Hrs, Jebba 2G5 was shut down. No load loss as 78MW was transferred to 2G2.
- **** **THE SCADA COVERAGE OF ONLY LIMITED AREAS IS NOT GOOD FOR THE SMOOTH OPERATION OF THE GRID.**
- **** **LACK OF REACTOR AND UNRELIABLE STATION SERVICE SUPPLY AT IKOT-EKPENE T/S ARE HINDERING SMOOTH OPERATION.**

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/SOLATORS

- 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.
- 7 Egbin/Oke-Aro 330kV line 2 (N8K) Defective. Needs replacement.
- 8 Egbin/Ikeja-West Tie CB Defective. Needs replacement.
- 9 Egbin/Aja 330kV line 3 (cct N3J) - Tie CB defective.Needs replacement.

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

- PORT HARCOURT REGION:**
- 1 cct A1K CB

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

- SHIRORO REGION**
- 1 Jebba T/S 75MX reactor 2R2 CB - exploded.
- ABUJA REGION**
- 1 Gwagwalada/Katampe 330kV line CB cct J5B - Faulty breaker at Gwagwalada T/S

CRITICAL VOLTAGE NODES IN THE GRID

S/N	NODE	VOLTAGE	REMARKS
1	Lokoja T/S	352kV	One Reactor in service.
2	Ugwuaji T/S	352kV	No Reactor
3	Ikot-Ekpene T/S	354kV	Reactor at the sit but not installed.
4	New Haven T/S	351kV	No Reactor
5	Makurdi T/S	348kV	One Reactor in service. 2nd not yet installed
6	Delta T/S	348kV	Low VAR absorption by Delta G/S.

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/Itire 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 -

- 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.
- e AGM (S/O) - 08105894708, CUG: 07016228668
- f NCC e-mail address - nationalcontrol@gmail.com
- g SYSTEM OPERATIONS WEB SITE: www.nigeriasystemoperator.org.

