

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja

From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT OF FRIDAY 30/08/2019

FOR: EVENTS OF THURSDAY 29/08/2019

EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	25,790	21:30	29/08/2019
GENERATION CAPABILITY	5848.7	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	5439.1	-do-	-do-
PEAK GENERATION	4350.5	-do-	-do-
LOWEST GENERATION	3182.9	04:00	29/08/2019
8-HOURLY DURATION PEAK	3554.1	0100-0800	-do-
	3694.3	0900-1600	-do-
	4350.5	1700-2400	-do-
PEAK GENERATION TO DATE	5375	21:30	7/2/2019
MAXIMUM AVAILABLE CAPACITY TO DATE	7652.6	06:00	14/04/2019
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	354	Ikot-Ekpene T/S	17:00
LOWEST VOLTAGE FOR THE DAY	300	Yola & Gombe T/S	12:00 & 13:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.600	16:39
LOWEST FREQUENCY	48.900	13:05

1.4 SYSTEM COLLAPSE UPDATE

Date of last total collapse: 30th June, 2019		No. of days since last total collapse: 59											
Date of last partial collapse: 12th April, 2018		No. of days since last partial collapse: 496											
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	3	4	4	3	2	--	1	20
2011	Total	--	--	--	--	4	3	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	0	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	4	2	22
	Partial	--	--	--	--	--	--	--	2	0	--	--	2
2014	Total	2	--	--	2	0	3	1	0	0	0	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	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	--	--	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	302	198		
2	JEBBA	HYDRO	440	301		
3	SHIRORO	HYDRO	491	230		
4	EGBIN ST2 - 5	STEAM	529	419		
5	SAPELE	STEAM	46	35		
6	DELTA	GAS	455	340		
7	AFAM IV-V	GAS	32	30		
8	GEREGU GAS	GAS	264	159		
9	OMOTOSHO GAS	GAS	111.7	121.5		
10	OLORUNSOGO GAS	GAS	133.40	118		
11	GEREGU NIPP	GAS	130	80		
12	SAPELE NIPP	GAS	82.4	72.9		
13	ALAOJI NIPP	GAS	0	0		
14	OLORUNSOGO NIPP	GAS	0	0		
15	OMOTOSHO NIPP	GAS	102.6	70.3		
16	ODUKPANI NIPP	GAS	135	162.9		
17	IHOVBOR NIPP	GAS	98.2	68.5		
18	OKPAI	GAS	164	164		
19	AFAM VI	GAS	0	114		
20	IBOM POWER	GAS	67.9	68.3		
21	ASCO	GAS	0	0		
22	A.E.S	GAS	0	0		
23	OMOKU	GAS	72.2	61.7		
24	TRANS AMADI	GAS	59.3	39.8		
25	RIVERS IPP	(GAS)	154	110		
26	AZURA - EDO IPP	(GAS)	286	150		
27	EGBIN ST6	(GAS)	0	0		
28	PARAS ENERGY	(GAS)	62.7	0		
29	GBARAIN NIPP	GAS	72.1	70		
TOTAL		4350.5	3182.9			
1.6 6025						
STATION	TURBINE	ENERGY GENERATED	AV. POWER GENERATED	ENERGY SENT OUT	AV. POWER SENT OUT	
		MWH	MWHH	MWH	MWHH	
1	KAINJI	HYDRO	6615.00	275.63	6599.70	274.99
2	JEBBA	HYDRO	9265.00	386.04	9248.64	385.36
3	SHIRORO	HYDRO	9959.00	414.96	9929.77	413.74
4	EGBIN ST2 - 5	STEAM	11196.00	466.50	10555.40	439.81
5	SAPELE	STEAM	908.00	37.83	802.80	33.45
6	DELTA	GAS	8180.85	340.87	8010.40	333.77
7	AFAM IV-V	GAS	1115.72	46.49	1110.80	46.28
8	GEREGU GAS	GAS	4513.70	188.07	4488.91	187.04
9	OMOTOSHO GAS	GAS	2894.00	120.58	2873.60	119.73
10	OLORUNSOGO GAS	GAS	2923.50	121.81	2899.67	120.82
11	GEREGU NIPP	GAS	2218.37	92.43	2204.84	91.87
12	SAPELE NIPP	GAS	1726.13	71.92	1713.56	71.40
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	1818.30	75.76	1800.30	75.01
16	ODUKPANI NIPP	GAS	4451.50	185.48	4422.50	184.27
17	IHOVBOR NIPP	GAS	1850.00	77.08	1831.20	76.30
18	OKPAI	GAS	3881.00	161.71	3812.00	158.83
19	AFAM VI	GAS	1706.69	71.11	1633.63	68.07
20	IBOM	GAS	1436.70	59.86	1428.00	59.50
21	ASCO	GAS	0.00	0.00	0.00	0.00
22	AZURA - EDO IPP	GAS	4448.25	185.34	4424.70	184.36
23	A.E.S	GAS	0.00	0.00	0.00	0.00
24	OMOKU	GAS	1694.99	70.62	1660.95	69.21
25	TRANS AMADI	GAS	1068.00	44.50	1043.20	43.47
26	RIVERS IPP	GAS	2357.20	98.22	2346.80	97.78
27	EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28	PARAS ENERGY	GAS	999.00	41.63	992.20	41.34
29	GBARAIN NIPP	GAS	1060.00	44.17	1048.60	43.69
TOTAL		88,286.90	3,678.62	86,882.17	3,620.09	

1.7A GENERATION POSITION AT 06:00HRS OF FRIDAY 30/08/2019

	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 50.59Hz	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	330	1G5, 6, 11 & 12 4	330	165	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 & 4 3	285	225	2G2 & 5 - 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	380	411G 1 - 4 - Generation reduced due to low load demand by the Discos.
	EGBIN STEAM	6	ST1, 2, 5 & 6 4	880	655	ST1, 2, 5 & 6 4	655	328	ST3 - Tripped on suspected control valve abnormal. ST5 - Shut down due to compressor problem. Generation limited due to gas constraint. Generation reduced due to low load demand by the Discos.
	SAPELE (STEAM)	6	ST3 1	120	60	ST3 1	60	35	ST1 - Tripped due to loss of control oil pump. ST2 & 4 - Out on fault. Generation reduced due to low load demand by the Discos.
	DELTA (GAS)	18	GT6, 7, 10 - 13, 15 16, 19 & 20 10	575	513	GT6, 7, 10 - 13, 16, & 20 8	308	248	GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT15 & 19 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	30	GT11 - 12 - De-commissioned and scrapped. GT13, 14 & 16 - Out on blade failure. GT17 Out due to gas constraint. GT18 - Generation reduced due to low load demand by the Discos. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	3	GT11 - 13 3	435	435	GT12 1	145	80	GT11 & 13- Out due to low load demand by the Discos. GT12 - 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	72.4	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	GT3, 6 & 8 3	114	93.8	GT1, 2, 4 & 5 - Out due to low load demand by the Discos. GT7 - Out due to gas constraint. Generation reduced due to low load demand by the Discos.
NIPP	GEREGU NIPP	3	GT21 1	145	145	GT21 1	145	81	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	72.9	GT1 & 3 - Out due to gas constraint. GT4 - Out on maintenance.
	ALAOJI NIPP	4	0 0	0	0	0 0	0	0	GT1 - Shut down due to high air inlet differential pressure. 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	69.9	GT1 - Out on maintenance. GT3 - Out due to gas constraint.
	ODUKPANI NIPP	5	GT1 & 4 4	480	440	GT1 & 2 2	220	159.4	GT1 & 2 - On manual adjustment. GT3 & 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	82.4	GT1 - On manual adjustment. GT2 - Out on generator resistance temperature fault. GT3 & 4- Out on maintenance.
	GBARAIN NIPP	1	GT2 1	112.5	110	GT2 1	70.5	70.5	Available unit on bar.
	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	GT13 1	153	75	GT11 & 12 - Out due to low load demand by the Discos. GT13 - 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	63.7	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 - Out due to leakage in the furnace.
	OMOKU GAS	6	GT3 - 6 4	100	80	GT3 - 6 4	80	43.4	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	41.9	GT2 & 4 2	41.9	41.9	GT1 - Tripped on high voltage. GT3 - Out on generator transformer limitation. Generation reduced due to low load demand by the Discos.
	RIVERS	1	GT1 1	160	160	GT1 1	160	75	GT1 - Generation reduced due to low load demand by the Discos.
	SUB TOTAL	141	65	6476.4	5721.9	50	4281.4	2596.3	Frequency = 50.59Hz.

1.7B GENERATION POSITION AT 06:00HRS OF FRIDAY 30/08/2019 FOR UNITS ON BILATERAL AGREEMENT									
	PARAS ENERGY	8	GT3 - 10		70	65.7	GT3 - 10		Available units on bar.
			8	8			8	8	
SUB TOTAL		8			70	65.7			65.7
GRAND TOTAL		149	73		6546.4	5787.6	58		4,347.10

1.7C BILATERAL AGREEMENT UNITS DISPATCH - THURSDAY 29/08/2019								
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	0800HRS			24		NIL
	PTC EXPRESS	7	1400HRS			24		NIL
	SANKYO	2	0100HRS			24		NIL
	FEEDER 8	13	1000HRS			21		FORCED OUTAGE BY DISTRIBUTION
IKORODU	PULK IT	10	2300HRS			20		PLANNED OUTAGE BY DISTRIBUTION (IE)
	INDUSTRIAL	9	0800HRS			24		NIL
	SPINTEX	15	2000HRS			24		NIL
	DANGOTE	3	1500HRS			24		NIL
	LAND CRAFT	30	1200HRS			24		NIL
ALAUUSA	TR4 - 15MVA	6.9	1500HRS			24		NIL
	TR5 -15MVA	6	1100HRS			24		NIL
	ALAUUSA	13.8	1000HRS			24		NIL
M/LAND	PTC (MARYLAND)	15	0900HRS			24		NIL
TOTAL LOAD		131.7						

BILATERAL AGREEMENT LOAD DISPATCH							
60MW PARAS ENERGY GENERATION TO CEB OF THURSDAY 29/08/2019							
	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
	68.1	19:00	20.1	08:00	24	992.8	NIL

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI THURSDAY 29/08/2019										
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	48	20:00	16:00	04:00	24	709	NO TIME OUT	
KAM STEEL 2		25.0	17	02:00	0.1	07:00	24	67.6	NO TIME OUT	
ASHAKA CEMENT		0	6.2	05:00	2.8	23:00	24	111.2	NO TIME OUT	
XING 1	33kV feeder	0	22.5	14:00	7.8	09:00	24	361.8	NO TIME OUT	
XING 2		0	28.8	17:00	4.7	12:00	24	417	NO TIME OUT	
KAM INTEGRATED		15	2.2	24:00	1	03:00	24	37.9	NO TIME OUT	
OLAM FLOUR MILLS		3	0.7	10:00	0.1	1:00	24	6.9	NO TIME OUT	
LORDSMITH		3	0.6	1:00	0.5	16:00	24	14	NO TIME OUT	
KAM STEEL LINE 1		0	12	18:00	0.1	12:00	24	108.3	NO TIME OUT	

1.8 HYDROLOGICAL DATA: FRIDAY 30/08/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	136.05	102.72	374.85
TAIL WATER ELEVATION (METERS)	104.75	74.5	270.0
GROSS OPERATING HEAD (METERS)	31.30	28.22	104.85
AVERAGE TURBINE DISCHARGE (M3/SEC)	986.00	1536.00	462.00
AVERAGE SPILLAGE (M3/SEC)	0.00	480.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	986.00	2016.00	462.00
COMPUTED INFLOW (M3/SEC)	2648.00	1449.00	1234.00
STORAGE DIFFERENTIAL	1662.00	-567	772
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 THURSDAY 29/08/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	490.7	12:00	505.22	211	17:00
EKO	0.0	0	0	0	0
IKEJA	600.3	21:00	758.98	457.5	05:00

2.0 GAS POSITION: FRIDAY 30/08/2019

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		655	445
DELTA (GAS)	305	915		308	607
OMOTOSHO GAS	100.4	336.8		114	222.8
OMOTOSHO NIPP	104.3	500		120	380
OLORUNSOGO (GAS)	233.4	336		114	222
OLORUNSOGO NIPP	0	750		0	750
SAPELE NIPP	87.2	500		110	390
SAPELE STEAM	47	720		60	660
AFAM IV-V	50	300		50	250
AFAM VI	220	650		0	650
GEREGU GAS	216	435		145	290
GEREGU NIPP	80	435		145	290
OKPAI (GAS/STEAM)	170	480		300	180
ALAOJI NIPP	0	504		0	504
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		2561	6561.3

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : THURSDAY 29/08/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF FRIDAY 30/08/2019 = FREQUENCY = 50.59Hz.

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 Friday 30/08/2019 as at 0600Hrs =2963.9MW					
SN	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
			0	0	46.3
1	Ibom Power GT3	110	63.7	46.3	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Jebba 2G2 & 5	190	0	190	2917.6
2	Olorunsogo gas GT1 - 7	266	93.6	172.4	
3	Geregu Gas GT11 - 13	435	80	355	
4	Odukpani NIPP GT3 & 4	220	0	220	
5	Azura-Edo GT11 - 15	459	75	384	
6	Egbin ST1, 2, 4 & 6	655	320	335	
7	Shiroto 411G1 & 3	300	120	180	
8	Okpai GT11 & 12	300	104	196	
9	Afam VI GT12 & ST10	350	0	350	
10	Delta GT15, 16, 19 & 20	360	135	225	
11	Omotosho Gas GT1, 4, 5 & 8	152	72.4	79.6	
12	Afam IV GT18	50	30	20	
13	Geregu NIPP GT21	145	81	64	
14	Sapele steam ST3	60	35	25	
15	Omoku GT3 - 6	80	43.4	36.6	
16	Rivers IPP GT1	160	75	85	
			0	0	
			0	0	
4.3 DUE TO WATER MANAGEMENT					
			0	0	0
			0	0	
Grand Total					2963.9

5.0 OUTAGES:

5 (A) FORCED OUTAGES (GENERATION):

- 12:30Hrs, Delta GTs 10 - 13, 15 & 16 tripped due to tripping of cct G3B. Total LHR = 144MW.
13:30Hrs, GT13 was tied. 13:52Hrs, GTs 10, 11 & 12 were tied. 13:57Hrs, GT15 was tied. 13:59Hrs, GT16 was tied.
- 13:04 - 18:37Hrs, Rivers IPP GT1 tripped due to under voltage of 116kV. LHR =141MW
- 13:04 through 24:00Hrs, Afam VI GTs 11 & 13 tripped. Details yet to be relayed to NCC. LHR = 191MW.
- 13:35Hrs, Trans -Amadi GTs 1, 2 & 4 tripped due to high voltage. Total LHR = 34MW.
18:30Hrs, GT2 was tied. 18:55Hrs, GT4 was tied.

5 (B) FORCED OUTAGES (TRANSMISSION):

- 10:09 - 10:49Hrs, Mando/Kano 330kV line (cct M6N) CB tripped at Mando T/S on distance protection, DEF trip, DEF CS, MVAJ ABC, distance - No data.
LHR = 176MW. Simultaneously, Kano/Dangora 132kV line CB tripped on E/F. LHR = 12MW.
10:14Hrs, Kano/Dangora 132kV line was restored.
- 12:32 - 17:14Hrs, Delta/ Benin 330kV line (cct G3B) CBs tripped at both ends on the following relay indications:
At Benin T/S: ABB relay - Trip start L1 PE, zone 1 trip, AR close, Zoom CS, trip - trip, trip -TRL1, PHS -STFW (L1, PE) ZM - trip, AR - in progress, DEF - Block, ZM2 & 3-start ZIP -CSL1, TOC -STL1, HS -TRL1, fault loop = L1 - N, distance 52.7km
MVAJ K86A: Trip circuit supervision lock out trip, operated. LHR = 194MW.
At Delta T/S: Siprotec relay - Distance protection trip, zone 1, Red Phase, E/F, O/C pickup IP < 1, PU time = 67ms, trip time = 1ms, distance = 56km.
- 12:59 - 13:20Hrs, Osogbo/Keja West 330kV (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, PU time = 60ms, trip time = 1ms, distance = 69.9km.
Ohmega relay - zone 1, Earth, Phase A, distance = -125.7km, 86A/2. Auxiliary relay - 86T.
At Ikeja West T/S: Siprotec relay - General trip, Red Phase, ZCOM trip, 50N/51N pickup, PU time = 20ms, trip time = 30ms, distance = 189.6km.
Microm relay - General trip, Red Phase fault, distance Z1 trip, SNTP failure, started phase A -N, tripped Phase A, E/F start IN1 fault, duration = 172.4ms, fault location = 186.5km. No load loss as ccts H2A, R1W & R2A were in service.
- 13:04 - 13:34Hrs, Onitsha/Alaoji 330kV line (cct T4A) CB tripped at both ends on the following relay indications:
At Onitsha T/S: Ohmega relay - DEF forward and DEF reverse.
Microm relay: E/F trip, trip started A -N, O/C start > 1, E/F start IN > 1, fault duration = 3.971s, location = 1.821m.
At Alaoji T/S: Backup O/C, E/F, 6x2 Phase trip, 2x3 Phase trip. 152MW was diverted to cct A1K.
- 13:04 - 13:44Hrs, Alaoji/NIPP 330kV lines 1& 2 (ccts L7A & L8A) CBs tripped at both ends on line differential protection main, fault type A & G, respectively. No load loss as Alaoji NIPP was not generating.
- 13:04 - 13:37Hrs, Alaoji/Owerri 132kV lines 1 & 2 CBs tripped at Alaoji T/S on relay trip, E/F trip ie > backup. LHR = 34MW.
- 13:04 - 13:23Hrs, Onitsha T/S 90MVA 330/132/13.8kV transformer 9T1 secondary CB tripped on O/C stage 1. LHR = 39MW.
- 13:05 - 13:28Hrs, Alaoji/Afam 132kV line 2 CB tripped at Afam T/S on E/F. LHR = 64MW.
- 13:05 - 13:47Hrs, Alaoji/Aba 132kV line 1 CB tripped at Aba T/S on instantaneous O/C & instantaneous E/F. LHR = 25MW.
- 14:16 - 15:18Hrs, Kankia/Katsina 132kV line 1 CB tripped at Kankia T/S on O/C Blue Phase. LHR = 6MW.
- 16:56 - 17:20Hrs, Adioror/Calabar 132kV line 1 CB tripped at Adioror T/S on O/C. LHR = 26.1MW.
- 16:56 - 17:23Hrs, Adioror T/S 60MVA 132/33kV transformer T3 primary CB tripped on instantaneous fault type A, B & C while the secondary CB tripped without relay indication.
LHR = 12.8MW.

5 (C) PLANNED OUTAGES:-

- 08:30 - 18:44Hrs, Kainji 1G11 was shut down for annual preventive maintenance. Load loss = 67MW.
- 11:23 - 17:29Hrs, Port Harcourt main T/S 60MVA 132/33kV transformer T2B was taken out of service to allow maintenance crew carry out annual preventive maintenance on the CB and its associated equipment. Load loss = 0.05MW.

5 (D) URGENT OUTAGES

- 10:25 - 17:09Hrs, Kumbotso T/S 150MVA 330/132/33kV transformer T4A was taken out to allow maintenance crew top up the tap changer low oil to normal level.
No load loss as station was out of supply from Mando T/S.
- 10:40 - 11:59Hrs, Ganmo/Kam 132kV line 1 was taken out to allow maintenance crew carry out annual preventive maintenance on the line CB.
Load loss = 1.6MW.
- 11:47 - 13:43Hrs, Sapele/Delta 330kV line (cct S4G) was taken out to allow maintenance crew install energy meter at Sapele T/S. No load was interrupted as cct G3B was in service.
- 12:38 - 14:07Hrs, Ganmo/Kam 132kV line 2 was taken out to allow maintenance crew carry out annual preventive maintenance on the line CB.
Load loss = 0.1MW.
- 12:55 - 14:10Hrs, Ganmo/Kam 132kV lines 1 & 2 tie CB was released to allow maintenance crew carry out annual preventive maintenance on the line CB.. No load was interrupted as the CB was not in service.

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).

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

- 12:30 - 12:36Hrs, Osogbo/Akure/Ado-Ekiti 132kV line. Load loss = 34MW. Frequency was 49.20Hz.
- 12:32 - 12:45Hrs, Ayedel/badan North/Iwo/Iseyin 132kV line. Load loss = 45MW. Frequency was 49.35Hz.
- 13:05 - 13:07Hrs, Osogbo/Akure/Ado-Ekiti 132kV line. Load loss = 33MW. Frequency was 49.88Hz.

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 Katampe, New Haven & Osogbo

7 INTERNATIONAL LINES:-

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

Maximum load -104MW at 21:00Hrs.
Minimum load - 71.0MW at 08:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 120MW at 15:00Hrs.
Minimum load - 72.0MW at 07:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load -35.3MW at 23:00Hrs.
Minimum load - 26.4MW at 06:00Hrs.

8 MISCELLANEOUS

- 00:06 - 08:30Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 73MW.
- 00:19 through 24:00Hrs, Odukpani GT3 was shut down due to low load demand by the Discos. Load loss = 73MW.

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 SCADA RTU STATUS

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	5	3
330kV	19	4	15
132kV	102	79	23

12(A) UNAVAILABLE TRANSFORMERS/REACTORS:

SHIRORO REGION:

- Birin Kebbi 75MX Reactor R1.

ABUJA REGION

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

KADUNA REGION:

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

BAUCHI REGION:

- Gombe T/S - 30MX Reactor R2A.

ENUGU REGION:

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

LAGOS REGION:

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

PORT HARCOURT REGION

- Ikot-Ekpene T/S: No reactor installed.

12 (B) UNAVAILABLE BREAKERS/SOLATORS

LAGOS REGION:

- Akangba T/S. 132kV Bus Coupler CB - Serious Air leakage.(Undergoing repair)
- Egbin/Aja 330kV line 2 (cct N4J) - faulty breaker at Aja T/S
- Otta/Ogba 132kV line isolator - defective control shaft.
- Osogbo/Ikeja West and Olorunsogo/Ikeja West tie CB at Ikeja West T/S - defective pole .
- Oke-Aro/Ikeja West 330kV lines 1 & 2 tie CB at Ikeja West T/S - Defective pole.
- Omotosho/Ikeja West 330kV line CB at Ikeja West T/S.
- Egbin/Oke-Aro 330kV line 2 (N8K) Defective. Needs replacement.
- Egbin/Ikeja-West Tie CB Defective. Needs replacement.
- Egbin/Aja 330kV line 3 (cct N3J) - Tie CB defective.Needs replacement.

BENIN REGION:

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

PORT HARCOURT REGION:

- cct A1K CB

ENUGU REGION:

- New Haven/Yandev 132kV line CB - Faulty Red phase CB pole. Protection is transferred to the bus coupler CB.
- 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.
- 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.
- Oturkpo/Yandev 132kV By pass isolator - Canibalized to repair the line isolator.
- New Haven/Nkalagu 132kV line 2 ground switch - Canibalized Red phase female contact and canibalized Yellow phase male contact.

SHIRORO REGION

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

ABUJA REGION

- Gwagwalada/Katampe 330kV line CB cct J5B - Faulty breaker at Gwagwalada T/S

- 01:11Hrs, Egbin ST1 was tied. The unit was out on fault.
 - 06:24Hrs, Egbin/Oke-Aro 330kV line 2 (cct N8K) was restored. The line was out due to the tripping of Egbin ST1.
 - 07:55Hrs, 07:57Hrs, 07:58Hrs, 09:16Hrs, 19:17Hrs, 10:09Hrs, 10:11Hrs & 10:24Hrs, Paras Energy GTs3 – 10 were tied respectively. The units were out due to the tripping of Ikorodu/Shagamu 132kV line.
 - 10:27Hrs, Geregu Gas GT11 was tied to swap with GT13.
 - 10:43Hrs, Geregu Gas GT13 was shut down. Load of 80MW was transferred to GT11.
 - 12:55Hrs, Afam VI GT13 was tied. The unit was out due to low load demand by the Discos.
 - 13:15Hrs, Ikot-Ekpene/Ugwuaji 330kV line 3 (cct K3U) was taken out for voltage control. V/P: 359/353kV.
 - 20:05Hrs, Gbarain GT2 was tied. The unit was out due to line constraint.
 - 20:30Hrs, Azura GT11 was tied. The unit was out due to low load demand by the Discos.
 - 22:52 through 24:00Hrs, Jebba 2G5 was shut down due to low load demand by the Discos. Load loss = 85MW.
- **** 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(D) 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.

12(E) UNAVAILABLE SKYWIRES

LAGOS REGION

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

SHIRORO REGION

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

ABUJA REGION

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

12 (F) UNAVAILABLE SYNCHROSCOPES :

- Ikeja West, Onitsha, Egbin, Ugwuaji, Jos, Gwagwalada & Alaoji T/S.

FOR MORE INFORMATION: NCC Telephone Lines -

- Ikeja West, Onitsha, Egbin, Ugwuaji, Jos, Gwagwalada & Alaoji T/S.

FOR MORE INFORMATION: NCC Telephone Lines -

- PAX 09/300, 309, 303 & 305.
- NCC GSM - 08074888524, 08069379367, 08023572651 & 08051401331. CUG Nos. 08129458488, 08129458489, 08129929806; 08036665323.
- PLS - 622
- GM (NCC) - 08036744641.
- AGM (S/O) - 08105894708, CUG: 07016228668
- NCC e-mail address - nationalcontrol@gmail.com
- SYSTEM OPERATIONS WEB SITE: www.nigeriasystemoperator.org.

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.