

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja

From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT OF THURSDAY 11/07/2019

FOR: EVENTS OF WEDNESDAY 10/07/2019

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	25,790	20:45	10/07/2019
GENERATION CAPABILITY	6391.2	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	4913.6	-do-	-do-
PEAK GENERATION	4704.1	-do-	-do-
LOWEST GENERATION	3245.1	04:00	10/07/2019
8-HOURLY DURATION PEAK	3770.8	0100-0800	-do-
	4027.3	0900-1600	-do-
	4704.1	1700-2400	-do-
PEAK GENERATION TO DATE	5375	21:30	02-07-19
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	351	Delta T/S	09:00
LOWEST VOLTAGE FOR THE DAY	300	Yola & Gombe T/S	13:00 & 16:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.396	11:30
LOWEST FREQUENCY	49.697	20:12

1.4 SYSTEM COLLAPSE UPDATE

Date of last total collapse: 30th June 2019		No. of days since last total collapse: 10												
Date of last partial collapse: 12th April 2018		No. of days since last partial collapse: 448												
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	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	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	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	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	12
	Partial	0	0	0	1	0				0				1
2019	Total	4	1		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	223	148
2 JEBBA	HYDRO	331	159
3 SHIRORO	HYDRO	402	118
4 EGBIN ST2 - 5	STEAM	582	524
5 SAPELE	STEAM	40	40
6 DELTA	GAS	466	367
7 AFAM IV-V	GAS	49	50
8 GEREGU GAS	GAS	288	180
9 OMOTOSHO GAS	GAS	137.8	141
10 OLORUNSOGO GAS	GAS	169.9	161.1
11 GEREGU NIPP	GAS	144	79
12 SAPELE NIPP	GAS	101.9	84.6
13 ALAOJI NIPP	GAS	0	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	111.2	108
16 ODUKPANI NIPP	GAS	202	187.8
17 IHOVBOR NIPP	GAS	107.6	89.4
18 OKPAI	GAS	285	100
19 AFAM VI	GAS	164	137
20 IBOM POWER	GAS	102.3	87.8
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	62	40.5
24 TRANS AMADI	GAS	65.3	48.6
25 RIVERS IPP	(GAS)	145	105
26 AZURA - EDO IPP	(GAS)	456	225
27 EGBIN ST6	(GAS)	0	0
28 PARAS ENERGY	(GAS)	69.1	64.3
29 GBARAIN NIPP	GAS	0	0
TOTAL		4704.1	3245.1

1.6 ENERGY GENERATED/ENERGY SENT OUT:		ENERGY GENERATED	AV. POWER GENERATED	ENERGY SENT OUT	AV. POWER SENT OUT
STATION	TURBINE	MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	4817.00	200.71	4798.80	199.95
2 JEBBA	HYDRO	6691.00	278.79	6663.16	277.63
3 SHIRORO	HYDRO	5727.00	238.63	5697.57	237.40
4 EGBIN ST2 - 5	STEAM	13417.00	559.04	12675.90	528.16
5 SAPELE	STEAM	967.50	40.31	868.20	36.18
6 DELTA	GAS	8676.77	361.53	8530.20	355.43
7 AFAM IV-V	GAS	1197.79	49.91	1192.80	49.70
8 GEREGU GAS	GAS	5731.50	238.81	5705.69	237.74
9 OMOTOSHO GAS	GAS	3093.00	128.88	3068.70	127.86
10 OLORUNSOGO GAS	GAS	3886.25	161.93	3856.76	160.70
11 GEREGU NIPP	GAS	2671.37	111.31	2655.59	110.65
12 SAPELE NIPP	GAS	2148.70	89.53	2136.40	89.02
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	2575.30	107.30	2555.70	106.49
16 ODUKPANI NIPP	GAS	4619.06	192.46	4592.36	191.35
17 IHOVBOR NIPP	GAS	1852.00	77.17	1831.50	76.31
18 OKPAI	GAS	4089.00	170.38	3955.30	164.80
19 AFAM VI	GAS	4260.21	177.51	4157.84	173.24
20 IBOM	GAS	1926.95	80.29	1918.00	79.92
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	7137.70	297.40	7110.70	296.28
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1506.80	62.78	1470.18	61.26
25 TRANS AMADI	GAS	1492.92	62.21	1465.00	61.04
26 RIVERS IPP	GAS	3319.50	138.31	3293.90	137.25
27 EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28 PARAS ENERGY	GAS	1588.40	66.18	1580.20	65.84
29 GBARAIN NIPP	GAS	170.00	7.08	162.30	6.76
TOTAL		93,562.72	3,898.45	91,942.75	3,830.95

	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 50.13Hz.	REMARKS	
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 11 & 12 3	340	250	1G5, 11 & 12 3	250	190	1G11 & 12 - On frequency response. 1G5 - Generation reduced due to low load demand by the Discos. 1G6 - Out on annual maintenance. 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	482	475	2G1, 3 & 5 3	285	225	2G1, 3 & 5 - Generation reduced due to low load demand by the Discos. 2G2 & 4 - Out due to low load demand by the Discos. 2G6 - Out due to burnt generator winding and AVR.	
	SHIRORO HYDRO	4	411G1, 2 & 4 3	450	435	411G1 & 2 2	290	200	411G3 - Out on units transformer fault. 411G4 - Out due to low load demand by the Discos.	
	EGBIN STEAM	6	ST1 - 4 4	880	652	ST1 - 4 4	652	512	ST2 - On frequency response. ST6 - Out on maintenance.	
	SAPELE (STEAM)	6	ST3 1	120	40	ST3 1	40	40	ST1 - Tripped on boiler feed pump. ST2 & 4 - Out on fault. ST5 - Awaiting major overhaul.	
	DELTA (GAS)	18	GT6, 7, 10 - 12, 19 & 20 7	325	283	GT6, 7, 10 - 12, 19 & 20 7	283	283	GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT9 - Out on gas constraint. GT13 - Out on compressure bleed valve trouble. GT15 & 16 - Out due to gas constraint. GT17 & 18 - Out due to generator lockout problem.	
	AFAM IV & V (GAS)	8	GT18 1	120	51	GT18 1	51	51	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	GT12 & 13 2	290	290	GT12 & 13 2	290	224	GT11 - tripped on excitation trip. GT12 - Generation reduced due to low load demand by the Discos. GT13 - On frequency response.	
	OMOTOSHO GAS	8	GT2 - 4 & 7 4	168	137.9	GT2 - 4 & 7 4	137.9	137.9	GT1, 5, 6 & 8 - Out due to gas constraint.	
	OLORUNSOGO GAS	8	GT1 - 7 7	294	266	GT2, 3, 5 - 7 5	156.8	156.8	GT1 & 4 - Out due to low load demand by the Discos. GT8 - Out due to gas constraint.	
	NIPP	GEREGU NIPP	3	GT21 & 23 2	290	290	GT23 1	145	132	GT21 - Out due to low load demand by the Discos. GT22 - Out due to line constraint. GT23 - On frequency response.
		SAPELE NIPP	4	GT2 1	112.5	110	GT2 1	110	86.1	GT1, 3 & 4 - Out on maintenance. GT2 - On frequency response.
		ALAOJI NIPP	4	0 0	0	0	0 0	0	0	GT1 - Out due to high air inlet differential pressure. GT2 - Shut down due to low gas 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	105.6	GT1 - Out on maintenance. GT2 - On frequency response. GT3 & 4 - Out due to gas constraint.	
ODUKPANI NIPP		5	GT2 - 5 4	460	440	GT4 & 5 2	220	200	GT1 - Tripped due to air inlet filter very high pressure drop. GT2 & 3 - Out due to line constraint. GT4 & 5 - on frequency response.	
IHOVBOR NIPP		4	GT1 1	112.5	110	GT1 1	110	93	GT1 - On frequency response. GT2 & 3 - Out on maintenance. GT4 - Out due to gas constraint.	
GBARAIN NIPP		1	GT2 1	112.5	110	0 0	0	0	GT2 - Tripped due to the tripping of Owerri/Ahoadia 132kV line.	
IPP		OKPAI GAS/STEAM	3	GT11 & 12 2	300	300	GT11 & 12 2	300	179	GT11 - Generation reduced due to low load demand by the Discos. GT12 - On frequency response. ST18 - Tripped due to steam valve control trouble.
		AZURA - EDO	3	GT11 - 13 3	461	461	GT11 & 13 2	461	272	GT11 - Out due to low load demand by the Discos. GT12 & 13 - On frequency response.
	AFAM VI GAS/STEAM	4	GT11 - 13 & ST10 4	640	640	GT11 1	165	110	GT11 - Generation reduced due to low load demand by the Discos. GT12 & 13 - Out due to low load demand by the Discos. ST10 - Out due to low load demand by the Discos.	
	IBOM POWER GAS	3	GT3 1	120	115	GT3 1	115	100.3	GT1 & 2 - Out due to leakage in the furnace. GT3 - On frequency response.	
	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	GT1, 3 & 5 3	75	57.6	GT1, 3 & 5 3	57.6	57.6	GT2 - Out on high vibration. GT4 - Out on major overhaul. GT6 - Out on maintenance.	
	TRANS-AMADI	4	GT1, 2 & 4 3	75	64.1	GT1, 2 & 4 3	64.1	64.1	GT3 - Out on fault.	
	RIVERS	1	GT1 1	160	150	GT1 1	150	143	GT1 - On frequency response.	
	SUB TOTAL	141	64	6507.5	5847.6	51	4453.4	3562.4	Frequency = 50.24Hz.	

1.7B GENERATION POSITION AT 06:00HRS OF THURSDAY 11/07/2019 FOR UNITS ON BILATERAL AGREEMENT											
PARAS ENERGY	8	GT4 - 11		70	64.9	GT4 - 11		64.9	64.9	GT3 - Out on maintenance.	
		8				8					
SUB TOTAL		8	8		70	64.9	8		64.9	64.9	
GRAND TOTAL		149	72		6577.5	5912.5	59		4,518.30	3627.3	Frequency = 50.24Hz.

1.7C BILATERAL AGREEMENT UNITS DISPATCH - WEDNESDAY 10/07/2019									
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	2	1100HRS			24	NIL		
	PTC EXPRESS	6	1100HRS			15	DUE TO LOAD SHEDDING		
	SANKYO	1.5	1700HRS			24	NIL		
	FEEDER 8	11	1300HRS			23	DUE TO LOAD SHEDDING		
IKORODU	PULK IT	ON	0100HRS			24	NIL		
	INDUSTRIAL	9	0800HRS			24	NIL		
	SPINTEX	ON	0100HRS			24	NIL		
	DANGOTE	3	2100HRS			24	PLANNED OUTAGE		
	LAND CRAFT	1	0100HRS			24	NIL		
ALAUSA	TR4 - 15MVA	7.5	1600HRS			24	NIL		
	TR5 -15MVA	5.7	1200HRS			24	NIL		
	ALAUSA	15	1300HRS			24	NIL		
M/LAND	PTC (MARYLAND)	15	1300HRS			22	PLANNED OUTAGE ON T2-60MVA 132/33KV T/F		
TOTAL LOAD		76.7							

BILATERAL AGREEMENT LOAD DISPATCH							
60MW PARAS ENERGY GENERATION TO CEB OF WEDNESDAY 10/07/2019							
FEEDER	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
	69.9	20:00	62.7	24:00	24	1580.2	NIL

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI WEDNESDAY 10/07/2019									
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	44	21:00	8	13:00	24	691	ON SOAK
KAM STEEL 2		25.0	20	10:00	0.1	20:00	24	164.7	NO TIME OUT
ASHAKA CEMENT		0	12.5	17:00	3.4	12:00	24	238.4	NO TIME OUT
XING 1	33kV feeder	0	19.2	19:00	6.3	22:00	24	354.4	NO TIME OUT
XING 2		0	32.8	04:00	10.05	15:00	24	530.9	NO TIME OUT
KAM INTEGRATED		15	4.8	24:00	2.1	20:00	24	82.4	NO TIME OUT
OLAM FLOUR MILLS		3	2	01:00	0.6	08:00	24	24.6	NO TIME OUT
LORDSMITH		3	0.6	20:00	0.5	01:00	24	11.9	NO TIME OUT
KAM STEEL LINE 1		0	9	07:00	1.5	15:00	24	78.4	NO TIME OUT

1.8 HYDROLOGICAL DATA: THURSDAY 11/07/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	133.76	100.89	363.17
TAIL WATER ELEVATION (METERS)	103.2	74.6	271.0
GROSS OPERATING HEAD (METERS)	30.56	26.29	92.17
AVERAGE TURBINE DISCHARGE (M3/SEC)	717.00	1178.00	303.00
AVERAGE SPILLAGE (M3/SEC)	856.00	740.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	1573.00	1918.00	303.00
COMPUTED INFLOW (M3/SEC)	416.00	1744.00	414.00
STORAGE DIFFERENTIAL	-1157.00	-174	111
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 WEDNESDAY 10/07/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	539.80	21:00	529.05	310.10	22:00
EKO					
IKEJA	605.10	20:00	724.85	413.40	02:00

2.0 GAS POSITION: THURSDAY 11/07/2019

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	512	1100		652	448
DELTA (GAS)	283	915		283	632
OMOTOSHO GAS	137.9	336.8		137.9	198.9
OMOTOSHO NIPP	105.6	500		120	380
OLORUNSOGO (GAS)	156.8	336		156.8	179.2
OLORUNSOGO NIPP	0	750		0	750
SAPELE NIPP	86.1	500		110	390
SAPELE STEAM	40	720		40	680
AFAM IV-V	51	300		51	249
AFAM VI	110	650		150	500
GEREGU GAS	224	435		290	145
GEREGU NIPP	132	435		145	290
OKPAI (GAS/STEAM)	179	480		300	180
ALAOJI NIPP	0	504		0	504
IHOV/BOR NIPP	93	337.5		112.5	225
IBOM	100.3	198		115	83
ODUKPANI NIPP	200	625		220	405
TOTAL	2410.7	9122.30		2883.2	6239.1

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : WEDNESDAY 10/07/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF THURSDAY 11/07/2019 = FREQUENCY 50.24Hz.

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 Thursday 11/07/2019 as at 0600Hrs was = 2029MW

S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
1	Odukpani GT2 & 3	220	0	220	475
2	Gbarain GT2	110	0	110	
3	Geregu NIPP GT21	145	0	145	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Jebba 2G1, 3 & 5	270	0	270	1554
2	Egbin ST1 & 3	286	235	51	
3	Shiroro 411G2 & 4	290	60	230	
4	Rivers IPP GT1	150	105	45	
5	Azura-Edo GT11	153	0	153	
6	Okpai GT11	150	55	95	
7	Olorunsogo gas GT1 & 4	76	0	76	
8	Afam VI GT11 - 13 & ST10	650	110	540	
9	Kainji 1G5	100	61	39	
10	Geregu GT12	145	90	55	
				0	
				0	
				0	
				0	
				0	
4.3 DUE TO WATER MANAGEMENT					
				0	
				0	
Grand Total					2029

5.0 OUTAGES:

5 (A) FORCED OUTAGES (GENERATION):

- 1 06:56 - 11:11Hrs, Gbarain GT2 tripped due to the tripping of Owerri/Ahoada 132kV line 2. LHR = 50MW.
- 2 11:35 - 16:15Hrs, Ihovbor GT1 tripped on auto loading alarm. LHR = 95.8MW.
- 3 12:14 - 22:15Hrs, Gbarain GT1 tripped due to the tripping of Owerri/Ahoada 132kV line 2. Load loss = 80MW.
- 4 23:52 through 24:00Hrs, Gbarain GT2 tripped due to the tripping of Owerri/Ahoada 132kV line 2. LHR = 80MW.

5 (B) FORCED OUTAGES (TRANSMISSION):

- 1 06:56 - 07:19Hrs, Owerri/Ahoada 132kV line 2 CB tripped at Owerri T/S on E/F. LHR = 10MW.
- 2 10:03 - 10:25Hrs & 11:19 - 11:33Hrs, Kumbotso/Dakata 132kV line CB tripped at Kumbotso T/S on O/C Blue phase. LHR = 40MW & 44MW respectively
- 3 12:14 - 12:30Hrs, Owerri/Ahoada 132kV line 2 CB tripped at Owerri T/S on E/F. LHR = 1.7MW.
- 4 19:15 - 19:38Hrs, Osogbo/Ikeja West 330kV line (cct H1W) tripped at both ends on the following relay indications:
At Osogbo T/S: Siprotec Relay: Trip, Blue Phase, zone 1 trip, E/F, Distance pickup = L3E, PU time = 101ms, trip time = 28ms, distance = 179.5km.
Ohmega Relay: Zone 1 trip, Phase C, Earth, aided trip carrier received 86C/2, Distance = 192.56km, 86x2 & 86T.
At Ikeja West T/S: Siprotec Relay: General trip, Blue Phase fault, zone 1 trip, ZCOM trip, 21 pick-up C-G, PU time = 70ms, trip time = 5ms, Distance = 56.8km.
ASTOM: General trip, Blue Phase fault, Distance zone 1 trip, started Phase C-N, Trip Phase C, start element distance, O/C start I>2, 3 & 4, E/F start IN>I, Distance trip zone 1. LHR = 80MW.
- 5 23:25 - 23:56Hrs, Alaoji T/S 300MVA 330/132/33kV transformer primary and secondary CBs tripped on SEL Relay – GND/NEUTRAL O/C AG. LHR = 50MW.
- 6 23:25 through 24:00Hrs, Alaoji T.S/Alaoji NIPP 330kV line 2 CBs tripped at both ends on the following relay indications:
At Alaoji T/S: Differential protection main fault type ABC.
At Alaoji NIPP: Differential protection main fault type ACG. No load interrupted as NIPP was not generating.
- 7 23:25 through 24:00Hrs, Alaoji/Owerri 132kV line 1 CB tripped at Owerri T/S on DEF. LHR = 38.8MW.
- 8 23:25 through 24:00Hrs, Owerri/Ahoada 132kV line 1 CB tripped at Owerri T/S on DEF. LHR = 13.8MW.
- 9 23:25 through 24:00Hrs, Owerri/Ahoada 132kV line 2 CB tripped at Owerri T/S on E/F. LHR = 0.001MW.

5 (C) PLANNED OUTAGES:-

- 1 09:55 - 11:05Hrs, Gombe/Biu/Dambo/Maiduguri 132kV line was taken out on planned outage for annual preventive maintenance on the line circuit breaker. Load loss = 6MW.
- 2 10:44 - 15:14Hrs, Afam T/S 150MVA 330/132/33kV transformer T1B was taken out on planned outage. This was to deaden the 330kV Bus II for Valence contractor to connect Afam IV 18AC – Q03 CB bay to Afam IV 330kV Bus Bar II. No load was lost.
- 3 11:27 - 14:10Hrs, Makurdi T/S 150MVA 330/132/33kV transformer T2 was taken out for maintenance crew to install pressure relief valve on the transformer. Load loss = 48MW.
- 4 11:29 - 14:13Hrs, Makurdi T/S 132kV main and reserve bus coupler isolators were taken out for maintenance crew to carryout annual preventive maintenance on the equipment. Load loss = 21MW.

5 (D) URGENT OUTAGES:-

- 1 08:45 - 16:12Hrs, Delta GT19 was shut down for gas pipe line maintenance by the gas supplier. Load loss = 60MW.
- 2 09:05 - 15:25Hrs, Delta GT15 was shut down for gas pipe line maintenance. Load loss = 50MW.
- 3 11:02 - 11:18Hrs, Benin 330kV line (cct S4G) bus breaker was taken out to enable maintenance crew build up the SF6 gas to normal level. No load was lost as the tie breaker was intact to take care of the line load.
- 4 15:42 through 24:00Hrs, Omotosho GT6 was shut down as the plant started deloading itself. Load loss = 33.5MW.

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:- Nil.

5 (F) AUTOMATIC UNDER FREQUENCY OPERATION:-

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

5 (H) 330KV LINES THAT ARE OUT DUE TO DEFECTIVE CIRCUIT BREAKER:- ccts A1K, D2K & K3U.

5 (J) 330KV LINES THAT ARE OUT ON LINE FAULT:- ccts D3T, J2H & 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 reported at Jos & Katampe.

7 INTERNATIONAL LINES:-

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

Maximum load - 228MW at 21:00Hrs.

Minimum load - 139MW at 11:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 108MW at 22:00Hrs.

Minimum load - 81MW at 07:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 41.4MW at 21:00Hrs.

Minimum load - 25.5MW at 08:00Hrs.

8 MISCELLANEOUS:-

1 00:08 - 13:13Hrs, Shiroro 411G4 was shut down due to low load demand by the Discos. Load loss = 55MW.

2 00:50 through 24:00Hrs, Geregu NIPP GT21 was shut down due to line constraint. Load loss = 80MW.

3 01:48 - 06:15Hrs, Jebba 2G5 was shut down due to low load demand by the Discos. Load loss = 75MW.

4 03:03 - 20:59Hrs, Afam IV GT13 was shut down due to low load demand by the Discos. Load loss = 110MW.

5 05:57Hrs, Omoku GT1 was tied. The unit was out due to low load demand by the Discos.

6 06:46Hrs, Gbarain GT2 was tied. The unit was out due line fault.

7 09:12Hrs, Jebba 2G2 was tied. The unit was out due to low load demand by the Discos.

8 11:29 - 12:16Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 78MW.

9 17:05Hrs, Ondo T/S 30MVA 132/33kV transformer T2 was restored. The transformer was taken out to carry out insulation resistance test on its grounding transformer GT2 on 09/07/2019

10 18:45 - 20:15Hrs, Omoku GT1 was deloaded to FSNL due to low load demand by the Discos.

11 20:24Hrs, Omotosho GT4 was tied. The unit was out due to gas constraint.

**** 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.

11A COMMUNICATION MEDIA

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	38	26
OPTIC FIBRE	13	9
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	10	9
132kV	102	98	14

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.
- 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, cct D2K CB & cct K3U 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

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, Uguwaji, 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 Coordinator (S/O) - 08037868916, 08054353904, 08028332125, CUG Airtel 08129458481.
- g SYSTEM OPERATIONS WEB SITE: www.nigeriaoperator.org

CRITICAL VOLTAGE NODES IN THE GRID

S/N	NODE	VOLTAGE	REMARKS
1	Delta T/S	351KV	Low VAR absorption by Delta P/S
2	Sapele T/S	350kV	Low VAR absorption by Sapele P/S & Sapele NIPP