

TRANSMISSION COMPANY OF NIGERIA

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

DAILY OPERATIONAL REPORT OF SATURDAY 23/02/2019

FOR: EVENTS OF FRIDAY 22/02/2019

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	23,960	23:00	22/02/2019
GENERATION CAPABILITY	6027	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	5648.5	-do-	-do-
PEAK GENERATION	5036.3	-do-	-do-
LOWEST GENERATION	3852.4	15:00	22/02/2019
8-HOURLY DURATION PEAK	4415.3	0100-0800	-do-
	4480.1	0900-1600	-do-
	5081.3	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	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	350	New Haven T/S	16:00
LOWEST VOLTAGE FOR THE DAY	300	Kumbotso T/S	10:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.39	14:48
LOWEST FREQUENCY	48.60	14:45

1.4 SYSTEM COLLAPSE UP DATE

Date of last total collapse: 20th Feb., 2019		No. of days since last total collapse: 03											
Date of last partial collapse: 12th April, 2018		No. of days since last partial collapse: 315											
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
2011	Total	--	--	--	--	4	3	1	1	--	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	4	2	22
	Partial	--		--	--	--	--	--	2				2
2014	Total	2			2	0	3	1	0	0	1	0	9
	Partial			0	0	1	0	0	0	0	2	1	4
2015	Total	1	0	1	0	2	0	1	0	0	1	0	6
	Partial	--	--	1	0	2	0		0	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	3		9
2018	Total	5	1	0	0	0	1	1				1	11
	Partial	0	0	0	1	0			0				1
2019	Total	4	1										4
	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	379	375
2 JEBBA	HYDRO	382	330
3 SHIRORO	HYDRO	332	284
4 EGBIN ST2 - 5	STEAM	483	475
5 SAPELE	STEAM	60	60
6 DELTA	GAS	339	334
7 AFAM IV-V	GAS	46	52
8 GEREGU GAS	GAS	267	208
9 OMOTOSHO GAS	GAS	136.8	130.8
10 OLORUNSOGO GAS	GAS	197.7	195.2
11 GEREGU NIPP	GAS	275	216
12 SAPELE NIPP	GAS	95.6	80.8
13 ALAQJI NIPP	GAS	80.6	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	108.9	106.3
16 ODUKPANI NIPP	GAS	396.9	282.7
17 IHOVBOR NIPP	GAS	91.7	88.7
18 OKPAI	GAS	188	0
19 AFAM VI	GAS	290	132
20 IBOM POWER	GAS	93.1	82.6
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	56	1.7
24 TRANS AMADI	GAS	21.7	0
25 RIVERS IPP	(GAS)	140	0
26 AZURA - EDO IPP	(GAS)	415	353
27 EGBIN ST6	(GAS)	0	0
28 PARAS ENERGY	(GAS)	66.2	64.6
29 GBARAIN NIPP	GAS	95.1	0
TOTAL		5036.3	3852.4

1.6 ENERGY GENERATED/ENERGY SENT OUT:					
STATION	TURBINE	ENERGY GENERATED	AV. ENERGY GENERATED	ENERGY SENT OUT	AV. ENERGY SENT OUT
		MWH	MWHH	MWH	MWHH
1 KAINJI	HYDRO	9283.00	386.79	9266.70	386.11
2 JEBBA	HYDRO	8142.00	339.25	8119.52	338.31
3 SHIRORO	HYDRO	5531.00	230.46	5499.51	229.15
4 EGBIN ST2 - 5	STEAM	11542.00	480.92	10877.40	453.23
5 SAPELE	STEAM	1453.80	60.58	1353.80	56.41
6 DELTA	GAS	8104.90	337.70	8029.80	334.58
7 AFAM IV-V	GAS	934.42	38.93	929.45	38.73
8 GEREGU GAS	GAS	5619.70	234.15	5593.11	233.05
9 OMOTOSHO GAS	GAS	3207.00	133.63	3183.60	132.65
10 OLORUNSOGO GAS	GAS	4686.20	195.26	4654.14	193.92
11 GEREGU NIPP	GAS	5881.19	245.05	5860.43	244.18
12 SAPELE NIPP	GAS	2336.35	97.35	2319.85	96.66
13 ALAQJI NIPP	GAS	1339.16	55.80	1330.25	55.43
14 OLORUNSOGO NIPP	GAS	0.00	0.00	0.00	0.00
15 OMOTOSHO NIPP	GAS	2557.40	106.56	2536.80	105.70
16 ODUKPANI NIPP	GAS	7774.41	323.93	7735.81	322.33
17 IHOVBOR NIPP	GAS	2200.00	91.67	2180.62	90.86
18 OKPAI	GAS	3213.00	133.88	3093.00	128.88
19 AFAM VI	GAS	4774.31	198.93	4668.24	194.51
20 IBOM	GAS	1764.41	73.52	1756.00	73.17
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	8821.10	367.55	8787.60	366.15
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1241.60	51.73	1205.50	50.23
25 TRANS AMADI	GAS	201.00	8.38	195.20	8.13
26 RIVERS IPP	GAS	1669.00	69.54	1657.80	69.08
27 EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28 PARAS ENERGY	GAS	1580.90	65.87	1572.70	65.53
29 GBARAIN NIPP	GAS	473.00	19.71	464.10	19.34
TOTAL		104,330.85	4,347.12	102,870.93	4,286.29

1.7A GENERATION POSITION AT 06:00HRS OF SATURDAY 23/02/2019

	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 50.21Hz.	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	440	1G5, 6, 11 & 12 4	440	382	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 - 4 4	384	359	2G1 - 4 4	359	359	2G5 - Out for annual maintenance. 2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	4	411G1 & 4 2	450	450	411G1 & 2 2	300	115	411G1 & 2 - Generation reduced due to low load demand by the Discos. 411G3 - Out due to radiators oil leakage. 411G4 - Out on water management.
	EGBIN STEAM	6	ST1, 2, 4 & 5 4	880	479	ST1, 2, 4 & 5 4	479	479	ST1, 2, 4 & 5 - Generation reduced due to gas constraints. GT3 - Out due to technical problems. GT6 - Out on gas constraints.
	SAPELE (STEAM)	6	ST3 1	120	60	ST3 1	60	60	ST1 & 2 - Tripped on high vibration. ST4 - Out on fault. ST5 - Awaiting major overhaul.
	DELTA (GAS)	18	GT6, 7, 10 - 13, 15, 16 & 20 9	475	350	GT6, 7, 10 - 13, 15, 16 & 20 9	350	322	GT2 - Tripped on transformer differential lockout. GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT9 - Out due to gas constraint. GT17 - Tripped on bearing vibration more than maximum. GT18 - Out due to generator lockout problem. GT19 - Out on gas constraints. Generation reduced due to gas constraints.
	AFAM IV & V (GAS)	8	GT18 1	70	52	GT18 1	52	52	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	GT11 & 13 2	290	212	GT12 - Out due to line constraints. GT13 - Generation reduced due to low load demand by the Discos.
	OMOTOSHO GAS	8	GT2, 4, 7 & 8 4	168	136.2	GT2, 4, 7 & 8 4	136.2	121.7	GT1, 3, 5 & 6 - Out due to gas constraint. Generation reduced due to low load demand by the Discos.
	OLORUNSOGO GAS	8	GT1, 2, 4, 5, 6 & 7 6	252	201.2	GT1, 2, 4, 5, 6 & 7 6	201.2	201.2	GT3 & 8 - Out due to gas constraint.
NIPP	GEREGU NIPP	3	GT21 - 23 3	435	435	GT21 & 22 2	290	217	GT22 - Generation reduced due to low load demand by the Discos. GT23 - Out due to line constraints.
	SAPELE NIPP	4	GT1 1	112.5	112.5	GT1 1	112.5	92.8	GT2 - Out due to leakage on the vent line. GT3 - Out due to gas constraint. GT4 - Out due to high air inlet differential pressure.
	ALAOJI NIPP GAS	4	GT1 1	120	112.5	GT1 1	112.5	71.8	GT2 - Out due to gas constraint. 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 & 3 - Shut down due to low gas pressure. 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	108.6	GT1 - Out on maintenance. GT3 & 4 - Out due to gas constraint.
	ODUKPANI NIPP	5	GT1 - 5 5	575	575	GT1, 3 & 4 3	345	297.1	GT2 & 5 - Out due to low load demand by the Discos.
	IHOVBOR NIPP	4	GT1 1	112.5	112.5	GT1 1	112.5	89.3	GT1 - On manual adjustment to frequency. GT2 & 4 - Out due to gas constraints. GT3 - Tripped on high vibration.
	GBARAIN NIPP GAS	1	GT2 1	112.5	112.5	GT2 1	112.5	94.1	Available unit on bar.
IPP	OKPAI GAS/STEAM	3	GT12 & ST18 2	220	186	GT12 & ST18 2	186	186	GT11 - Out on maintenance.
	AZURA - EDO	3	GT11 - 13 3	461	461	GT11 - 13 3	461	352	GT12 - Generation reduced due to low load demand by the Discos.
	AFAM VI GAS/STEAM	4	GT11 & 13 2	300	300	GT11 & 13 2	300	260	GT11 - Generation reduced due to low load demand by the Discos. GT12 & ST10 - Out due to gas constraint.
	IBOM POWER GAS	3	GT3 1	120	115	GT3 1	115	93.3	GT1 & 2 - Out due to fire outbreak on the control panel. GT3 - 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 - Shut down due to leakage in the furnace.
	OMOKU GAS	6	GT1, 3 & 5 3	75	56	GT1, 3 & 5 3	56	56	GT2 - Tripped on high vibration. GT4 - Out on major overhaul. GT6 - Out on maintenance.
	TRANS-AMADI	4	GT2 1	25	21.7	GT2 1	21.7	21.7	GT1, 2 & 4 - Out due to gas constraint. GT3 - Out on fault.
	RIVERS	1	GT1 1	180	50	GT1 1	50	50	GT1 - Generation reduced due to gas constraints.
	SUB TOTAL	141	64	6647.5	5732.1	60	5062.1	4293.6	Frequency = 50.21Hz.

1.7B GENERATION POSITION AT 06:00HRS OF SATURDAY 23/02/2019 FOR UNITS ON BILATERAL AGREEMENT									
	PARAS ENERGY	8	GT3 -10	70	64.6	GT3 -10	64.6	64.6	Available units on bar.
			8			8			
	SUB TOTAL	8	8	70	64.6	8	64.6	64.6	
	GRAND TOTAL	149	72	6717.5	5796.7	68	5,126.70	4,358.20	Frequency = 50.21Hz

1.7C BILATERAL AGREEMENT UNITS DISPATCH - FRIDAY 22/02/2019								
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	ON	0100HRS			24		NIL
	PTC EXPRESS	ON	0100HRS			24		NIL
	SANKYO	2	0100HRS			24		NIL
	FEEDER 8	13.5	0900HRS			24		NIL
IKORODU	PULK IT	5	0600HRS			24		NIL
	INDUSTRIAL	7	0900HRS			24		NIL
	SPINTEX	14	0100HRS			24		NIL
	DANGOTE	3	0100HRS			24		NIL
	LAND CRAFT	25	0300HRS			24		NIL
ALAUSA	TR4 15MVA	8.2	1200HRS			24		NIL
	TR5 -15MVA	5.3	1600HRS			24		NIL
	ALAUSA	14.4	1100HRS			24		NIL
MLAND	PTC (MARYLAND)	21	1200HRS			24		NIL
	TOTAL LOAD							

BILATERAL AGREEMENT LOAD DISPATCH 60MW PARAS ENERGY GENERATION TO CEB OF FRIDAY 22/02/2019							
FEEDER	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
Ikeja West/Sakete 330kV line	67.8	10:00	63	24:00	24	1580.9	NIL

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI FRIDAY 22/02/2019									
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	10:00	20	03:00	17	478	SUPPLY NOT INTERRUPTED
KAM STEEL		25.0	0.9	11:00	0.2	02:00	24	15.4	SUPPLY NOT INTERRUPTED
ASHAKA CEMENT		0	10.5	17:00	4.5	22:00	23	189	SUPPLY NOT INTERRUPTED
XING 1	33kV feeder	0	21.85	13:00	10.25	06:00	24	428.1	SUPPLY NOT INTERRUPTED
XING 2		0	1:12	11:00	9.25	04:00	24	390.7	SUPPLY NOT INTERRUPTED
KAM INTEGRATED		15	4.5	09:00	1.5	01:00	24	69.1	SUPPLY NOT INTERRUPTED
OLAM FLOUR MILLS		3	1.8	10:00	0.1	17:00	24	24.5	SUPPLY NOT INTERRUPTED
LORDSMITH		3	0.5	11:00	0.4	01:00	24	15.6	SUPPLY NOT INTERRUPTED

1.8 HYDROLOGICAL DATA: SATURDAY 23/02/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	141.76	103.21	372.49
TAIL WATER ELEVATION (METERS)	105.25	73.8	270.4
GROSS OPERATING HEAD (METERS)	36.51	29.41	102.09
AVERAGE TURBINE DISCHARGE (M3/SEC)	1160.00	1211.00	261.00
AVERAGE SPILLAGE (M3/SEC)	365.00	2.57	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	1525.00	1213.57	261.00
COMPUTED INFLOW (M3/SEC)	2097.00	1492.00	0.00
STORAGE DIFFERENTIAL	572.00	278.43	-261
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 22/02/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	566.8	24:00	524.2	334.7	07:00
EKO					
IKEJA	594.0	23:00	683.75	384.8	02:00

2.0 GAS POSITION: SATURDAY 23/02/2019

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	501	1100		479	621
DELTA (GAS)	336	915		350	565
OMOTOSHO GAS	133.6	336.8		136.2	200.6
OMOTOSHO NIPP	101	500		120	380
OLORUNSOGO (GAS)	198.4	336		201.2	134.8
OLORUNSOGO NIPP	0	0		0	750
SAPELE NIPP	99.1	500		112.5	387.5
SAPELE STEAM	0	720		60	660
AFAM IV-V	0	300		52	248
AFAM VI	140	650		300	350
GEREGU GAS	273	435		290	145
GEREGU NIPP	422	435		290	145
OKPAI (GAS/STEAM)	50	480		186	294
ALAOJI NIPP	111.7	504		112.5	391.5
IHOVBOR NIPP	100.7	337.5		112.5	225
IBOM	86.9	198		115	83
ODUKPANI NIPP	318.5	625		345	280
TOTAL	2871.9	9122.30		3261.9	5860.4

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : FRIDAY 22/02/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF SATURDAY 23/02/2019 = 0MW. FREQUENCY 50.21Hz.

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 Saturday 23/02/2019 as at 0600Hrs was = 1165.4MW.

S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
1	Ibom GT3	115	93.3	21.7	311.7
2	Geregu GT12	145	0	145	
3	Geregu NIPP GT23	145	0	145	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Odukoani GT2 & 5	230	0	230	853.7
2	Geregu Gas GT13	145	80	65	
3	Geregu NIPP GT21	145	80	65	
4	Afam VI GT13	150	110	40	
5	Azura-Edo GT12	153	75	78	
6	Alaoji NIPP GT1	112.5	71.8	40.7	
7	Shiroro 411G1 & 2	300	115	185	
4.3 DUE TO WATER MANAGEMENT:					
1	Shiroro 411G4	150	0	150	150
Grand Total					1165.4

5.0 OUTAGES:-

5 (A) FORCED OUTAGES (GENERATION):-

- 1 14:45Hrs, Okpai P/S GT12 & ST10 tripped due to voltage surge. LHR = 185MW
- 2 14:45 – 16:06Hrs, Rivers IPP GT1 tripped due to tripping of Alaoji/Afam 132kV line 2. LHR = 150MW
- 3 14:45 through 24:00Hrs, Trans-Amadi P/S GT4 tripped due to tripping of Alaoji/Afam 132kV line 2. LHR = 20MW
- 4 14:45 – 22:30Hrs, Alaoji NIPP GT2 tripped due to the tripping of Alaoji/NIPP 330kV lines 1 & 2. LHR = 80.6MW
- 5 14:45Hrs, Omoku P/S GTs 1, 3 & 5 tripped due to tripping of Afam/Alaoji 132kV line 2. LHR = 50MW
16:35Hrs, GT1 was tied, 16:40Hrs, GT3 was tied and 16:37Hrs, GT5 was tied.

5 (B) FORCED OUTAGES (TRANSMISSION):-

- 1 07:26 – 15:38Hrs, Kaduna Town T/S 60MVA 132/33kV transformer primary & secondary CBs tripped on differential protection relay and lockout trip relay. LHR = 2.2MW. Simultaneously OLAMS 33kV feeder CB tripped on Instantaneous E/F and IDMT O/C lock out relay.
- 2 10:54 – 11:15Hrs, Gombe/Yola 330kV line (cct E1Y) CB tripped at Gombe T/S only on CB lock out trip relay operation, phases not together trip and time delay. LHR = 71MW
- 3 11:35 – 11:51Hrs, Gombe/Yola 330kV line (cct E1Y) CB tripped at Gombe T/S only on CB lock out trip relay operation, phases not together trip and time delay. LHR = 21MW
- 4 13:17 – 14:20Hrs, Zaria/Kona-Dangora 132kV line CB tripped at Zaria T/S on instantaneous IDMT O/C relay. LHR = 13MW
- 5 14:45 – 14:53Hrs, Afam T/S 162MVA 330/132/33kV Auto transformer T1A secondary CB tripped on O/C time delay operation. LHR = 113.3MW
- 6 14:45 – 16:47Hrs, Alaoji/Afam 132kV line 2 CB tripped at Alaoji T/S on Microm relay I> phase L3, TI> phases L1, 2 &3. LHR = 84MW.
- 7 14:45 – 16:50Hrs, Alaoji/Owerri 132kV line 2 protected by Afam/Alaoji 132kV line tie breaker tripped without relay indications. No load loss as line 1 was in service.
- 8 14:58 – 16:47Hrs, Aba T/S 60MVA 132/33kV transformer T1B secondary CB tripped on SBEF. LHR = 13.2MW
- 9 14:59 – 16:32Hrs, Alaoji/NIPP 330kV lines 1 & 2 CB tripped at both ends on the following relay indications:
At Alaoji T/S on line differential protection main fault type ABC.
At Alaoji NIPP: Line differential protection main fault type ACG. LHR = 81.2MW
- 10 14:59 - 16:45Hrs, Alaoji T/S 150MVA 330/132/33kV transformer T3A primary & secondary CBs tripped on secondary SBEF. No load loss as 150MVA transformer T2A was in service.
- 11 14:59 – 16:35Hrs, Alaoji/Aba 132kV line 1 CB tripped at both ends on the following relay indications:
At Alaoji T/S: E/F & back up
At AbaT/S: Instantaneous O/C Red phase. LHR = 30MW
- 12 14:59 – 16:43Hrs, Alaoji/Owerri 132kV line 1 CB tripped at Alaoji T/S on Siemen relay, E/F trip ie> and back up. LHR = 24MW
- 13 14:59 – 16:50Hrs, Aba/Itu 132kV line CB tripped at Aba T/S on instantaneous E/F. LHR = 40MW
- 14 15:05 – 16:20Hrs, Adiorbor/Calabar 132kV line 1 CB tripped at Adiorbor T/S on O/C & E/F. LHR = 27MW

5 (C) PLANNED OUTAGES:- NIL

5 (D) URGENT OUTAGES:-

- 1 15:42 – 16:08Hrs, Ikeja-West/Akangba 330kV line 1 was taken out of service to enable isolation of the tie breaker that locked out at Ikeja-West T/S. Load was reduced from 300MW to 200MW and was diverted to line 2 before the operation.
- 2 16:09 – 16:25Hrs, Ikeja-West/Akangba 330kV line 2 was taken out of service to enable isolation of the tie breaker that locked out at Ikeja-West T/S. No load loss as 186MW was diverted to Ikeja-West/Akangba 330kV line 1.
- 3 20:39 - 21:04Hrs, Jos/Gombe 330kV line (cct S1E) CB was opened due to serious arching observed on the terminal tower at Jos T/S. Load loss = 253MW

9 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY

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

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

5 (E) EMERGENCY OUTAGES:-

The under mentioned lines were opened on frequency control.

- 1 00:34 - 00:47Hrs, Akangba/Isolo 132kV line 2. Load loss = 24MW. Frequency was 50.12Hz
- 2 04:41 - 04:48Hrs, Akangba/Itire 132kV line 2. Load loss = 20MW. Frequency was 50.19Hz.
- 3 09:23 – 09:26Hrs, Ayede/Iwo/Iseyin/Ibadan-North 132kV line. Load loss = 65MW. Frequency was 49.98Hz.
- 4 14:45 - 14:58Hrs, Mando/Kano 330kV line CB (cct M6N). Load loss = 233MW. Frequency was 48.70Hz
- 5 14:45 - 15:01Hrs, Ayede/Jericho 132kV line. Load loss = 40MW. Frequency was 49.25Hz
- 6 14:45 - 15:39Hrs, Ayede/Ibadan North/Iwo/Iseyin 132kV line. Load loss = 55MW. Frequency was 48.60Hz

5 (F) AUTOMATIC UNDER FREQUENCY OPERATION:-

- 1 14:45 - 16:52Hrs, Alaoji/Umuahia 132kV line 1. LHR = 10MW. Frequency was 48.70Hz
- 2 14:45 - 15:14Hrs, Mando T/S 2 X 60MVA 132/33kV transformer T1 & T2 secondary CBs. LHR = 77MW. Frequency was 48.69Hz.

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 & K4U

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

6 WEATHER REPORT:- Rainfall reported at Alaoji, Ugwuaji, New Haven,

7 INTERNATIONAL LINES:-

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

Maximum load - 260MW at 11:00Hrs.
Minimum load - 217MW at 18:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 105.0MW at 15:00Hrs.
Minimum load - 68.0MW at 08:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 33.5MW at 21:00Hrs.
Minimum load - 17.2MW at 05:00Hrs.

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).

10 COMMUNICATION MEDIA

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	38	34
OPTIC FIBRE	13	12
PLS	14	4

11 SCADA RTU STATUS

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	4	4
330kV	19	6	13
132kV	102	78	24

12(A) UNAVAILABLE TRANSFORMERS/REACTORS:

SHIRORO REGION:

1 Birnin Kebbi 75MX Reactor R1.

ABUJA REGION

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

KADUNA REGION:

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

BAUCHI REGION:

1 Gombe T/S -30MX Reactor R2A.

ENUGU REGION:

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

LAGOS REGION:

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

PORT HARCOURT REGION

1 Ikot-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

8 MISCELLANEOUS:-

- 1 03:32Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 72MW
 - 2 05:19 - 20:28Hrs, Odukpami NIPP GT5 was shut down due to low load demand by the Discos. Load loss = 90.1MW
 - 3 06:24Hrs, Afam IV GT18 was tied. The unit was out due to gas constraints.
 - 4 08:06Hrs, Rivers IPP GT1 was tied. The unit was out due to gas constraints.
 - 5 10:47Hrs, Omotosho gas GT8 was tied to swap with GT1.
11:07Hrs, GT1 was shut down. The load (32.1MW) was transferred to GT8
 - 6 12:42Hrs, Jebba 2G2 was tied. The unit was out due to low load demand by the Discos.
 - 7 17:53Hrs of 21/02/2019, Oke-Aro T/S 60MVA 132/33kV transformer T5 was restored. The transformer was taken out of service for annual preventive maintenance at 13:05Hrs of 21/02/2019. No load was interrupted as 60MVA transformer T6 was in service.
 - 8 13:42Hrs, Trans-Amadi GT4 was tied. The unit was out due to gas constraints.
 - 9 14:15through 24:00Hrs, Osogbo T/S 330kV 75MX Shunt Reactor 4R1 was taken out of service for voltage control. V/P = 315/320kV
 - 10 17:45 - 20:33Hrs, Shiroro 411G4 was shut down for water management. Load loss = 141MW
 - 11 19:01Hrs, Gbarain GT2 was tied. The unit was out due to gas constraints.
 - 12 19:06Hrs, Trans-Amadi GT1 was tied. The unit was out due to gas constraints.
 - 13 19:54Hrs, 330kV cct B5M was restored. The line was out on fault.
 - 14 20:28Hrs, Odukpami GT5 was tied. The unit was out due to low load demand by the Discos.
 - 15 17:42Hrs, Shiroro 411G2 was tied to swap with 411G4.
 - 16 20:38 – 20:50Hrs, Mando T/S 90MVA 330/132/13.8kV transformer T2A common primary CB was opened by control in order to switch off 75MX Reactor from service for voltage control. V/P = 313/323kV. No load loss as the transformer was on soak.
 - 17 20:46Hrs, Afam GT13 was tied. The unit was out due to low load demand by the Discos.
 - 18 22:30 through 24:00Hrs, Trans-Amadi GT1 was taken shut down due to low gas pressure. LHR = 9.7MW
 - 19 22:36Hrs, Ibom GT3 was tied. The unit was on island operation due to tripping of Aba/Itu 132kV line at Aba T/S.
- **** **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:

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

- 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:

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
- 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 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.
- e AGM (S/O) - 08105894708, CUG: 07016228668

