

TRANSMISSION COMPANY OF NIGERIA

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

DAILY OPERATIONAL REPORT OF FRIDAY 04/01/2019

FOR: EVENTS OF THURSDAY 03/01/2019

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	23,020	22:00	03/01/2019
GENERATION CAPABILITY	5616.9	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	5031.1	-do-	-do-
PEAK GENERATION	4509.2	-do-	-do-
LOWEST GENERATION	477.0	12:00	03/01/2019
8-HOURLY DURATION PEAK	3934.5	0100-0800	-do-
	4107.8	0900-1600	-do-
	4509.2	1700-2400	-do-
PEAK GENERATION TO DATE	5222.3	21:00	18/12/2017
MAXIMUM AVAILABLE CAPACITY TO DATE	7652.6	06:00	14/04/2014
MAXIMUM ENERGY GENERATED (MWH) TO DATE	109,372.01	0000-2400	02/02/2016

1.2 CRITICAL VOLTAGE

DETAILS	KV	STATION	HRS
NOMINAL VOLTAGE	330		
STATUTORY LIMITS	280.5 - 346.6		
HIGHEST VOLTAGE FOR THE DAY	348	Omotosho T/S	15:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe T/S	09:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.77	11:45
LOWEST FREQUENCY	47.68	10:57

1.4 SYSTEM COLLAPSE UP DATE

Date of last total collapse: 3rd Jan., 2019		No. of days since last total collapse: 01												
Date of last partial collapse: 12th April, 2018		No. of days since last partial collapse: 267												
Highest No of days ever attained in-between total collapses: 134		Highest No of days ever attained in-between partial collapses: 240												
		Jan	Feb.	Mar.	Apr	May	Jun	Jul	Aug	Sep.	Oct	Nov	Dec	Total
2010	Total	---	3	1	--	3	3	3	--	2	2	1	4	22
	Partial	1	--	--	1	1	3	4	4	3	2	--	1	20
2011	Total	--	--	--	--	4	3	1	1	1	2	1	--	13
	Partial	--	1	1	--	--	--	--	1	--	1	2	--	6
2012	Total	--	--	2	1	5	2	1	--	--	2	2	1	16
	Partial	--	--	2	3	--	--	--	1	--	1	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	1	4	2	22
	Partial	--	--	--	--	--	--	--	--	2	--	--	--	2
2014	Total	2	--	--	2	0	3	1	0	0	1	0	0	9
	Partial	--	--	0	0	1	0	0	0	0	0	2	1	4
2015	Total	1	0	1	0	2	0	1	0	0	0	1	0	6
	Partial	--	--	1	0	2	0	--	0	0	1	0	0	4
2016	Total	--	--	2	3	6	5	0	0	1	1	2	2	22
	Partial	--	--	1	0	1	3	1	0	0	0	0	0	6
2017	Total	5	3	0	3	1	1	0	0	1	1	--	--	15
	Partial	1	0	1	0	0	0	1	0	3	3	--	--	9
2018	Total	5	1	0	0	0	1	1	--	--	--	1	--	11
	Partial	0	0	0	1	0	--	--	0	--	--	--	--	1
2019	Total	1	--	--	--	--	--	--	--	--	--	--	--	1
	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	416	0
2 JEBBA	HYDRO	452	91
3 SHIRORO	HYDRO	348	40
4 EGBIN ST2 - 5	STEAM	115	280
5 SAPELE	STEAM	0	0
6 DELTA	GAS	406	66
7 AFAM IV-V	GAS	49	0
8 GEREGU GAS	GAS	424	0
9 OMOTOSHO GAS	GAS	133.7	0
10 OLORUNSOGO GAS	GAS	156.5	0
11 GEREGU NIPP	GAS	118	0
12 SAPELE NIPP	GAS	94.8	0
13 ALAOJI NIPP	GAS	60.7	0
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	110.4	0
16 ODUKPANI NIPP	GAS	208.9	0
17 IHOVBOR NIPP	GAS	106	0
18 OKPAI	GAS	289	0
19 AFAM VI	GAS	145	0
20 IBOM POWER	GAS	108.6	0
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	57.3	0
24 TRANS AMADI	GAS	41.5	0
25 RIVERS IPP	(GAS)	150	0
26 AZURA - EDO IPP	(GAS)	369	0
27 EGBIN ST6	(GAS)	81	0
28 PARAS ENERGY	(GAS)	68.8	0
29 GBARAIN NIPP	GAS	0	0
TOTAL		4509.2	477

1.6 ENERGY GENERATED/ENERGY SENT OUT:

STATION	TURBINE	ENERGY GENERATED		ENERGY SENT OUT	
		MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	8081.00	336.71	8067.50	336.15
2 JEBBA	HYDRO	7263.00	302.63	7244.84	301.87
3 SHIRORO	HYDRO	5304.00	221.00	5278.03	219.92
4 EGBIN ST2 - 5	STEAM	1996.00	83.17	1889.80	78.74
5 SAPELE	STEAM	0.00	0.00	0.00	0.00
6 DELTA	GAS	7963.47	331.81	7829.00	326.21
7 AFAM IV-V	GAS	907.92	37.83	904.38	37.68
8 GEREGU GAS	GAS	5380.20	224.18	5353.16	223.05
9 OMOTOSHO GAS	GAS	2740.00	114.17	2719.70	113.32
10 OLORUNSOGO GAS	GAS	2951.96	123.00	2927.83	121.99
11 GEREGU NIPP	GAS	2893.88	120.58	2877.65	119.90
12 SAPELE NIPP	GAS	1784.12	74.34	1768.83	73.70
13 ALAOJI NIPP	GAS	734.00	30.58	721.00	30.04
14 OLORUNSOGO NIPP	GAS	0.00	0.00	0.00	0.00
15 OMOTOSHO NIPP	GAS	1932.80	80.53	1916.80	79.87
16 ODUKPANI NIPP	GAS	4313.82	179.74	4291.42	178.81
17 IHOVBOR NIPP	GAS	1860.00	77.50	1837.20	76.55
18 OKPAI	GAS	4540.00	189.17	4417.30	184.05
19 AFAM VI	GAS	2779.00	115.79	2685.00	111.88
20 IBOM	GAS	1849.36	77.06	1841.00	76.71
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	6535.90	272.33	6513.12	271.38
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	1024.90	42.70	995.77	41.49
25 TRANS AMADI	GAS	1062.50	44.27	1033.30	43.05
26 RIVERS IPP	GAS	1985.50	82.73	1979.60	82.48
27 EGBIN ST6	STEAM	2672.00	111.33	2520.50	105.02
28 PARAS ENERGY	GAS	1265.30	52.72	1259.10	52.46
29 GBARAIN NIPP	GAS	401.31	16.72	393.91	16.41
TOTAL		80,221.94	3,342.58	79,265.74	3,302.74

1.7A GENERATION POSITION AT 06:00HRS OF FRIDAY 04/01/2019

	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 50.22Hz.	REMARKS	
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	440	1G5, 6, 11 & 12 4	440	386	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	475	461	2G1, 4 & 5 3	286	286	2G2 & 3 - 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	450	411G1 & 4 2	300	105	411G1 & 4 - Generation reduced due to low load demand by the Discos. 411G2 - Shut down on water management. 411G3 - Out on annual maintenance.	
	EGBIN STEAM	6	ST4 & 6 2	440	440	ST4 & 6 2	216	216	ST1 - Out due to the unit transformer problem. ST2 - Out due to middle burner level problem. ST3 - Out on high vibration since 19th June 2017. ST5 - Tripped due to loss of lower burner and tube leakage. ST6 - Generation reduced due to a burner problem.	
	SAPELE (STEAM)	6	0 0	0	0	0 0	0	0	ST1 & 3 - Tripped on low water drum level. ST2 - Tripped on high vibration. ST4 & 5 - Awaiting major overhaul. ST6 - Tripped on gas control valve not following reference point.	
	DELTA (GAS)	18	GT6, 7, 9 - 13, 15, 16, 19 & 20 11	565	565	GT6, 7, 9 - 13, 15, 16 & 20 10	425	392	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. GT17 - Tripped on bearing vibration more than maximum. GT18 - Out due to generator lockout problem. GT19 - Out due to low load demand by the Discos. GT20 - Generation reduced due to low load demand by the Discos.	
	AFAM IV & V (GAS)	8	GT18 1	70	70	GT18 1	48	48	GT11 - 12 - De-commissioned and scrapped. GT13,14 & 16 - Out on blade failure. GT17 - Out due to oil leakage on the bearing compartment. GT19 & 20 - Awaiting major overhaul.	
	GEREGU GAS	3	GT11 - 13 3	435	435	GT11 - 13 3	435	304	GT11 - 13 - Generation reduced due to low load demand by the Discos.	
	OMOTOSHO GAS	8	GT2, 4, 6, 7 & 8 5	210	190	GT2, 6, 7 & 8 4	137	137	GT1, 3 & 5 - Out due to gas constraint. GT4 - Out due to low load demand by the Discos.	
	OLORUNSOGO GAS	8	GT1, 3, 4, 7 & 8 5	210	171.2	GT1, 3, 4, 5 & 7 5	171.2	171.2	GT2 & 6 - Out due to gas constraint. GT8 - Out due to low load demand by the Discos.	
	GEREGU NIPP	3	GT21 & 23 2	290	290	GT21 1	145	82	GT21 - Generation reduced due to low load demand by the Discos. GT22 - Out on maintenance. GT23 - Yet to be tied since the system collapse of 03/01/2019.	
	SAPELE NIPP	4	GT3 1	112.5	112.5	GT3 1	112.5	91.2	GT1 & 2 - Out due to low gas pressure. GT4 - Out due to high air filter differential pressure.	
	ALAOJI NIPP GAS	4	GT1 1	112.5	112.5	GT1 1	112.5	61.5	GT1 - Generation reduced due to low load demand by the Discos. GT2 - Out due to low gas pressure. GT3 - Shut down due to lack of spare part. GT4 - Tripped on over voltage lockout relay trip.	
NIPP	OLORUNSOGO NIPP	6	0 0	0	0	0 0	0	0	GT1 - 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	108.3	GT1, 3 & 4 - Out due to gas constraint.	
	ODUKPANI NIPP	5	GT3 & 4 2	225	225	GT3 & 4 2	225	204.3	GT1 - Out on fault. GT2 & 5 - Tripped on low gas pressure.	
	IHOVBOR NIPP	4	GT1 1	112.5	112.5	GT1 1	112.5	85.8	GT1 - On manual adjustment to frequency. GT2 - Tripped on main transformer oil temperature 2nd phase trip alarm. GT3 - Tripped on high vibration. GT4 - Out due to gas station maintenance.	
	GBARAIN NIPP GAS	1	0 0	0	0	0 0	0	0	GT2 - Out due to gas constraint.	
	IPP	OKPAI GAS/STEAM	3	GT11, 12 & ST18 3	450	370	GT11, 12 & ST18 3	265	252	GT11 & 12 - Generation reduced due to low load demand by the Discos. ST18 - Generation limited due to boiler problem.
		AZURA - EDO	3	GT11 - 13 3	461	461	GT11 - 13 3	461	287	GT11 & 12 - Generation reduced due to low load demand by the Discos.
AFAM VI GAS/STEAM		4	GT12, 13 & ST10 3	490	490	GT13 1	150	140	GT11 - Out on type C inspection. GT12 & ST10 - Out due to low load demand by the Discos.	
IBOM POWER GAS		3	GT3 1	115	115	GT3 1	115	92.7	GT1 & 2 - Out due to fire outbreak on the control panel. GT3 - On manual adjustment to frequency.	
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	63	GT1, 3 & 5 3	61	61	GT2 - Tripped on high vibration. GT4 - Out on major overhaul. GT6 - Out on maintenance.	
TRANS-AMADI		4	GT1, 2 & 4 3	75	63.1	GT1 & 2 2	42.2	42.2	GT3 - Out on fault. GT4 - Yet to be tied since the system collapse of 03/01/2019.	
RIVERS		1	GT1 1	180	160	GT1 1	160	110	GT1 - Generation reduced due to low load demand by the Discos	
SUB TOTAL	141	64	6118.5	5916.8	55	4539.9	3663.2	Frequency = 50.22Hz.		

1.7B GENERATION POSITION AT 06:00HRS OF FRIDAY 04/01/2019 FOR UNITS ON BILATERAL AGREEMENT

PARAS ENERGY	8	GT2 - 9	70.2	70.2	GT2 - 9	70.2	70.2	Available units on bar.
		8			8			
SUB TOTAL	8	8	70.2	70.2	8	70.2	70.2	
GRAND TOTAL	149	72	6188.7	5987	63	4,610.10	3,733.40	Frequency = 50.22Hz

1.7C		BILATERAL AGREEMENT UNITS DISPATCH - THURSDAY 02/01/2019						
		EGBIN 516 5MW GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY						
FEEDERS NAME	MAX. LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HRS IN SERVICE	TOTAL (MWH)	REMARK	
U-STEEL	ON	0100HRS			21		DUE TO SYSTEM COLLAPSE	
PTCEXPRESS	ON	0100HRS			21		DUE TO SYSTEM COLLAPSE	
SANKYO	ON	0100HRS			21		DUE TO SYSTEM COLLAPSE	
FEEDER 8	14	0900HRS			21		DUE TO SYSTEM COLLAPSE	
IKORODU	PULK IT	4	0500HRS		20		DUE TO SYSTEM COLLAPSE	
	INDUSTRIAL	2	0800HRS		20		DUE TO SYSTEM COLLAPSE	
	SPINTEX	7	2200HRS		10		TRIPPED ON O/C-B AND E/F	
	DANGOTE	2	2200HRS		20		DUE TO SYSTEM COLLAPSE	
	LAND CRAFT	43	2400HRS		20		DUE TO SYSTEM COLLAPSE	
ALAUUSA	TR4 15MVA	6.9	1000HRS		21		DUE TO SYSTEM COLLAPSE	
	TR5 -15MVA	5	1600HRS		*		DUE TO SYSTEM COLLAPSE	
	ALAUUSA	15.6	1000HRS		*		DUE TO SYSTEM COLLAPSE	
M/LAND	PTC (MARYLAND)	18	0900HRS		16		SYSTEM COLLAPSE AND SG	
TOTAL LOAD								

BILATERAL AGREEMENT LOAD DISPATCH 60MW PARAS ENERGY GENERATION TO CEB OF THURSDAY 03/01/2019									
FEEDER	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK		
Ikeja West/Sakete 330kV line	68.8	05:00	30	15:00	20	1265.3	DUE TO SYSTEM COLLAPSE.		
BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI LOAD DISPATCH TO THE FOLLOWING COMPANIES OF: THURSDAY 03/01/2019									
COMPANY NAME	VOLTAG E LEVEL	CON-TRAC-TUAL LOAD (MW)	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
INNER GALAXY	132kV line 2	0	46	09:00	0.1	01:00	23	460.8	OUT DUE TO SYSTEM COLLAPSE.
KAM STEEL		25.0	0.7	17:00	0.1	08:00	23	4.5	OUT DUE TO SYSTEM COLLAPSE.
ASHAKA CEMENT		0	9.7	03:00	6.9	21:00	23	188.7	OUT DUE TO SYSTEM COLLAPSE.
XING 1	33kV feeder	0	16.2	04:00	7.2	12:00	23	304.5	OUT DUE TO SYSTEM COLLAPSE.
XING 2		0	29	09:00	5.4	11:00	23	513.3	OUT DUE TO SYSTEM COLLAPSE.
KAM INTEGRATED		15	4.2	04:00	1.3	23:00	23	48.4	OUT DUE TO SYSTEM COLLAPSE.
OLAM FLOUR MILLS		3	1.8	01:00	0.9	05:00	23	29.3	OUT DUE TO SYSTEM COLLAPSE.
LORDSMITH		3	05:00	18:00	0.1	01:00	21	6.3	SYSTEM OUTAGE

1.8 HYDROLOGICAL DATA: FRIDAY 04/01/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	141.33	102.41	377.09
TAIL WATER ELEVATION (METERS)	104.55	74.2	270.8
GROSS OPERATING HEAD (METERS)	36.78	28.21	106.29
AVERAGE TURBINE DISCHARGE (M3/SEC)	1009.00	1198.00	242.00
AVERAGE SPILLAGE (M3/SEC)	200.00	0.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	1209.00	1198.00	242.00
COMPUTED INFLOW (M3/SEC)	1296.00	1302.00	64.00
STORAGE DIFFERENTIAL	87.00	104	-178
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 03/01/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	475.8	22:00	272.26	07:00	11:00
EKO	414.3	02:00	563.59	0	12:00
IKEJA	598.7	11:00	732.16	0	13:00

2.0 GAS POSITION: FRIDAY 04/01/2019

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	282	1100	261	261	839
DELTA (GAS)	416	915	435	435	480
OMOTOSHO GAS	134	336.8	137	137	199.8
OMOTOSHO NIPP	114.7	500	120	120	380
OLORUNSOGO (GAS)	172.6	336	171.2	171.2	164.8
OLORUNSOGO NIPP	0	750	0	0	750
SAPELE NIPP	0	500	112.5	112.5	387.5
SAPELE STEAM	0	720	0	0	720
AFAM IV-V	50	300	48	48	252
AFAM VI	134	650	150	150	500
GEREGU GAS	270	435	435	435	0
GEREGU NIPP	181	435	145	145	290
OKPAI (GAS/STEAM)	216	480	265	265	215
ALAOJI NIPP	0	504	112.5	112.5	391.5
IHOV/BOR NIPP	100.1	337.5	112.5	112.5	225
IBOM	97.8	198	115	115	83
ODUKPANI NIPP		625	225	225	400
TOTAL	2168.2	9122.30		2844.7	6277.6

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : THURSDAY 03/01/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF FRIDAY 04/01/2019 = 0MW FREQUENCY 50.22Hz.

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

4.0 UNAVAILABLE GENERATION CAPABILITY

The unavailable generation capability for Friday 04/01/2019 as at 0600Hrs was = 1626MW.

S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
			0	0	0
			0	0	
			0	0	
			0	0	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Azura-Edo GT11 & 12	307	150	157	1476
2	Jebba 2G2 & 3	180	0	180	
3	Delta GT19 & 20	210	65	145	
4	Olorunsogo GT8	38	0	38	
5	Omotosho GT4	38	0	50	
6	Shiroro 411G1 & 4	300	105	195	
7	Okpai GT11 & 12	290	195	95	
8	Afam VI GT12 & ST10	350	0	350	
9	Geregu Gas GT11 - 13	435	304	131	
10	Geregu NIPP GT23	145	0	135	
			0	0	
			0	0	
4.3 DUE TO WATER MANAGEMENT:					
1	Shiroro 411G2	150	0	150	150
Grand Total					1626

5.0 **OUTAGES:**

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

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

- 04:17 – 04:35Hrs, Mando/Jos 330kV line (cct M2S) CBs tripped at both ends on the following relay indications:
At Mando T/S: ABB relay- Distance protection, zone 2, Phase R –N, DEF carrier sent, lockout trip circuit supervision trip, main and back up protection trip. LHR = 4MW.
At Jos T/S: SEL relay - Phase A- N, location = 20.63km, 50.17Hz, shot = IP = O, 3-Phases = o, breakers 1 & 2 open, zone 1. LHR = 16MW.
- 04:17 – 04:44Hrs, Makurdi/Jos 330kV line 2 (cct A2S) CB tripped at Jos T/S on the following relay indications:
SEL relay: Phase A – N, location = 77.66km, 50.17Hz, shot = IP = O, 3-Phases = O, breakers 1 & 2 open, Over voltage relay trip. LHR = 174MW.
- 22:47 through 24:00Hrs, Mapherson T/S 40MVA 132/33kV transformer T1 both primary and secondary CBs tripped on E/F, O/C and differential protection. LHR = 1.3MW

SYSTEM COLLAPSE REPORT OF 03/01/2019 AT 10:57HRS

OBSERVATION FROM NCC CONTROL ROOM

10:57Hrs, System frequency sharply dropped from 50.16Hz to 47.68Hz and resulted in system collapse. Total load loss was 4107.8MW.

REPORT FROM STATIONS:

10:57-11:22Hrs, Osogbo/hovbor 330kv line (cct H7V) CB tripped at Osogbo T/S.
ABB relay: Start L1 & L2
Ohmega relay: Phases A, B & C, SOTF
Auxiliary relay: 86 ABC & T/2. Distance = 1168.94km. LHR = 271MW,

10:57 - 12:05Hrs, Jebba/Shiroro 330kV line 1 (cct. J3R) CB tripped at Jebba T/S.
On ABB relay: PLS – STFWL3, ZM1 TRIP, ZCOMCS, PSO start. Distance = 285KM
Auxiliary relay: K86 AB & C. LHR = 121MW.

10:57 – 13:12Hrs Jebba/Shiroro 330kV line 2 (cct. J7R) CB tripped at Shiroro T/S.
On trip 85 -> PHS – STFW L 1,2 & 3->PSD start. LHR = 81.9MW

10:57 - 14:28Hrs, Ugwuaji/Makurdi 330kV line 2 (cct U2A) CB tripped at Ugwuaji T/S on O/C
3 phases, zone 1. LHR = 240MW.

10:57 - 18:03Hrs, Benin/Ajaokuta 330kV line 2 (cct B12J) CB tripped at Ajaokuta T/S. Trip relay flagged. LHR=11MW
10:57 – 18:19Hrs, Ajaokuta/Lokoja 330kV lines 1 & 2 (ccts J1L & J2L) CBs tripped at Ajaokuta T/S without relay indication.
Cct J1L, LHR=278MW, cct J2L, LHR = 286MW.

NOTE: cct B12J was restored after disconnecting a faulty lightning arrester on the primary of the 162MVA 330/132/33kV transformer AT2.
Also, the grid has no spinning reserve and under frequency relay scheme is inadequate.

RESTORATION

11:00Hrs, Shiroro G/S was instructed to feed Abuja
11:01Hrs, Delta GT16 was tied.
11:02Hrs, Delta G/S was instructed to black start.
11:10Hrs, Delta GT13 was tied
11:11Hrs, Shiroro 411G1 was tied to feed Abuja.
11:15Hrs, Azura Edo IPP was instructed to black start

11:22Hrs, cct H7V was restored.
11:28Hrs, cct. R4B was restored to feed Abuja.
11:31Hrs, Azura Edo IPP tripped after black start attempt.
11:31Hrs, Delta GT15 was tied.
11:34Hrs, cct. G3B was restored.
11:39Hrs, ccts H7V and V7B were restored.
Restoration in progress.

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

5 (D) **URGENT OUTAGES:-**

- 05:28 through 24:00Hrs, Gbarain NIPP GT2 was shut down due to low gas pressure. Load loss = 78.5MW.

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

The under mentioned line was opened on frequency control.

- 15:43 – 16:02Hrs, Funtual/Gusau 132kV line. Load loss = 40MW. Frequency was 49.05Hz

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

- 10:57 – 12:24Hrs, Ikeja-West T/S 60MVA transformer T3. Load loss = 27.3MW

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

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

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

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

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

18:17 – 18:45Hrs, Ayede/Mcpherson/Shagamu 132kV line was taken out to restore potential to Shagamu T/S after the replacement of faulty 110V DC charger with new one. Load loss = 8MW

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.

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	6	2
330kV	19	7	12
132kV	102	80	22

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

6 WEATHER REPORT:- NIL

7 INTERNATIONAL LINES:-

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

Maximum load - 281MW at 21:00Hrs.
Minimum load - 26MW at 16:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 83.0MW at 21:00Hrs.
Minimum load - 46.0MW at 04:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 36.3MW at 20:00Hrs.
Minimum load - 16.5MW at 04:00Hrs.

8 MISCELLANEOUS:-

1 00:09Hrs, Delta GT20 was shut down due to low load demand by Discos. Load loss = 60MW.

2 03:42Hrs, Delta reduced generation by 10MW on small unit due to low load demand by Discos.

3 06:31Hrs, Odukpani GT5 was tied. The unit was out due to gas constraint.

4 05:43Hrs, Alaoji NIPP GT2 was tied. The unit was out due to gas constraint.

5 07:25Hrs, Azura –Edo GT12 was shut down due to low load demand by Discos. Load loss = 75MW.

6 22:45Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 90MW

7 23:01Hrs, Shiroro 411G2 was shut down due to low load demand by the Discos. Load loss = 50MW

8 23:43Hrs, 2G3 was shut down due to low load demand by the Discos.. Load loss = 90MW

**** 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.

BENIN REGION:

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

ENUGU REGION:

- 1 New Haven/Yandev 132kV line CB - Faulty Red phase CB pole. Protection is transferred to the bus coupler CB.
- 2 Abakaliki T/S 30MVA 132/33kV transformer T1A and 60MVA 132/33kV transformer T2 primary CBs - Breakers were not provided since commissioning but the
- 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) - 08056002757, CUG: 08129458475

