

# TRANSMISSION COMPANY OF NIGERIA

To: MD (S/O, M/O), TCN - Abuja

From: Director (NCC), Osogbo

DAILY OPERATIONAL REPORT THURSDAY 16/03/2017

FOR: EVENTS OF WEDNESDAY 15/03/2017

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	17,720	20:45	15/03/2017
GENERATION CAPABILITY	7042.3	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	4251.8	-do-	-do-
PEAK GENERATION	4092.4	-do-	-do-
LOWEST GENERATION	3491.4	09:00	15/03/2017
8-HOURLY DURATION PEAK	3980.3	0000-0800	-do-
	3838.8	0900-1600	-do-
	4092.4	1700-2400	-do-
PEAK GENERATION TO DATE	5074.7	21:30	02/02/2016
MAXIMUM AVAILABLE CAPACITY TO DATE	7492.6	06:00	14/04/2014
MAXIMUM PEAK GENERATION CAPABILITY TO DATE	7099	07:00	13/04/2014
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	352	Omotosho T/S	01:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe T/S	04:00

## 1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	51.5	09:01
LOWEST FREQUENCY	48.4	20:21

## 1.4 SYSTEM COLLAPSE UP DATE

Date of last total collapse: 22 <sup>nd</sup> Feb, 2017		No. of days since last total collapse: 22												
Date of last partial collapse: 12 <sup>th</sup> Jan, 2017		No. of days since last partial collapse: 61												
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	
2009	Total	1	--	--	--	2	5	5	4	1	--	--	1	19
	Partial	--	5	4	3	3	--	1	--	2	1	1	1	20
2010	Total	--	3	1	--	3	3	--	2	2	1	4	22	
	Partial	1	--	--	1	1	3	4	4	3	2	--	1	20
2011	Total	--	--	--	--	4	3	1	1	1	2	1	--	13
	Partial	--	1	1	--	--	--	--	1	--	1	2	--	6
2012	Total	--	--	2	1	5	2	1	--	2	2	1	1	16
	Partial	--	--	2	3	--	--	--	--	1	--	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	4	2	2	22
	Partial	--	--	--	--	--	--	--	2	--	--	--	--	2
2014	Total	2	--	--	2	--	3	1	--	1	--	--	--	9
	Partial	--	--	--	--	1	1	--	--	--	2	1	4	4
2015	Total	1	--	1	--	2	--	--	--	--	1	--	--	6
	Partial	--	--	1	--	2	--	--	1	--	2	2	2	4
2016	Total	--	--	2	3	6	5	--	1	1	2	2	2	22
	Partial	--	--	1	--	1	3	1	--	--	--	--	--	6
2017	Total	5	3	--	--	--	--	--	--	--	--	--	--	8
	Partial	1	--	--	--	--	--	--	--	--	--	--	--	1

## 1.5 BREAKDOWN OF PEAK & OFF PEAK GENERATION (NATIONAL PEAK & OFF PEAK)

STATION	TURBINE	PEAK GEN. (MW)	OFF-PEAK GEN(MW)
1 KAINJI	HYDRO	405	409
2 JEBBA	HYDRO	284	280
3 SHIRORO	HYDRO	300	300
4 EGBIN ST2 - 5	STEAM	160	160
5 SAPELE	STEAM	0	0
6 DELTA	GAS	305	305
7 AFAM IV-V	GAS	0	0
8 GEREGU GAS	GAS	289	0
9 OMOTOSHO GAS	GAS	167.5	167.6
10 OLORUNSOGO GAS	GAS	118.9	124.4
11 GEREGU NIPP	GAS	131	0
12 SAPELE NIPP	GAS	218.6	204.3
13 ALAOJI NIPP	GAS	112.9	108.5
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	221.7	211
16 ODUKPANI NIPP	GAS	230.1	113
17 IHOVBOR NIPP	GAS	108.7	105
18 OKPAI	GAS	420	384
19 AFAM VI	GAS	146	146
20 IBOM POWER	GAS	82.8	81.4
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	54.5	56.2
24 TRANS AMADI	GAS	0	0
25 RIVERS IPP	(GAS)	0	0
26 EGBIN ST6	STEAM	160	164
27 PARAS ENERGY	GAS	65.8	65.8
28 GBARAIN NIPP	GAS	110.9	106.2
<b>TOTAL</b>		<b>4092.4</b>	<b>3491.4</b>

## 1.6 ENERGY GENERATED/ENERGY SENT OUT:

STATION	TURBINE	ENERGY GENERATED		ENERGY SENT OUT	
		MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	9,227.00	384.46	9,208.00	383.67
2 JEBBA	HYDRO	6,705.00	279.38	6,693.36	278.89
3 SHIRORO	HYDRO	6,780.00	282.50	6,748.80	281.20
4 EGBIN ST2 - 5	STEAM	3,841.00	160.04	3,525.70	146.90
5 SAPELE	STEAM	-	0.00	-	0.00
6 DELTA	GAS	6,707.24	279.47	6,552.30	273.01
7 AFAM IV-V	GAS	-	0.00	-	0.00
8 GEREGU GAS	GAS	4,756.20	198.18	4,732.02	197.17
9 OMOTOSHO GAS	GAS	4,040.00	168.33	4,005.70	166.90
10 OLORUNSOGO GAS	GAS	2,944.56	122.69	2,915.60	121.48
11 GEREGU NIPP	GAS	2,789.25	116.22	2,776.23	115.68
12 SAPELE NIPP	GAS	4,933.52	205.56	4,912.35	204.68
13 ALAOJI NIPP	GAS	2,675.37	111.47	2,652.57	110.52
14 OLORUNSOGO NIPP	GAS	-	0.00	-	0.00
15 OMOTOSHO NIPP	GAS	4,176.80	174.03	4,168.10	173.67
16 ODUKPANI NIPP	GAS	3,556.00	148.17	3,529.30	147.05
17 IHOVBOR NIPP	GAS	2,570.00	107.08	2,552.15	106.34
18 OKPAI	GAS	9,763.00	406.79	9,587.30	399.47
19 AFAM VI	GAS	3,523.99	146.83	3,423.70	142.65
20 IBOM	GAS	2,167.00	90.29	2,157.00	89.88
21 ASCO	GAS	-	0.00	-	0.00
22 A.E.S	GAS	-	0.00	-	0.00
23 OMOKU	GAS	1,303.00	54.29	1,268.43	52.85
24 TRANS AMADI	GAS	-	0.00	-	0.00
25 RIVERS IPP	GAS	-	0.00	-	0.00
26 EGBIN ST6	STEAM	3,895.00	162.29	3,895.40	153.98
27 PARAS ENERGY	GAS	1,592.20	66.34	1,588.30	66.18
28 GBARAIN NIPP	GAS	2,596.10	108.17	2,578.00	107.42
<b>TOTAL</b>		<b>90,542.23</b>	<b>3,772.59</b>	<b>89,270.31</b>	<b>3,719.60</b>

## GENERATION POSITION AT 06:00HRS OF THURSDAY 16/03/2017

	STATIONS	AVAILABLE UNITS	INSTALLED GENERATION CAPACITY (MW)	GENERATION CAPABILITY(MW)	UNITS ON BAR (MW)	CAPABILITY OF UNITS ON BAR (MW)	GENERATION AT 06:00HRS(MW)	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	1G5, 6, 11 & 12 4	440	440	1G5, 6, 11 & 12 4	409	409	1G7 - Out on stator winding failure. 1G8 - Out due to loss of supply to the auxiliary. 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	2G3 - 5 3	289.2	285	2G3 - 5 3	284	284	2G1 - Tripped on emergency shut down. 2G2 - Out on maintenance. 2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	411G2 & 3 2	300	300	411G2 & 3 2	300	300	411G1 & 4 - Out on maintenance.
	EGBIN STEAM	ST2, 3 & 5 3	660	660	ST2 1	160	160	ST1 - Tripped on generator CB trouble. ST2 - Not on spinning reserve due to Egbin G/S management decision and its generation limited to 160MW due to gas constraints. ST4 - Out of production since 17/11/2016. ST3 & 5 - Shut down due to gas constraints.
	SAPELE (STEAM)	0 0	0	0	0 0	0	0	ST1 - Shut down due to shortage of clean water. ST2 - Tripped on vacuum switch problem. ST3 - Undergoing rehabilitation. ST4 & 5 - Awaiting major overhaul. ST6 - Tripped on gas control valve not following reference point.
	DELTA (GAS)	GT4, 6 - 13, 15, 16 & 19 12	525	480	GT4, 7, 9 - 12, 16 & 19 8	305	305	GT3 & 5 - Out due to generator winding fault. GT 6, 8, 13 & 15 - Out due to gas constraints. GT14 - Out on major overhaul. GT17 - Out on excitation trouble. GT16 & 19 - Not on spinning reserve due to Delta G/S management decision. GT1 8 - Tripped on inlet guide vane trouble. GT20 - Out on major inspection.
	AFAM IV & V (GAS)	0 0	0	0	0 0	0	0	GT1 - 12 - De-commissioned and scrapped. GT13 - 16 - Out on blade failure. GT17 & 18 - Out due to burnt generator transformer. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	GT12 & 13 2	295	295	GT12 & 13 2	295	295	GT11 - Out on synchrocheck relay fault at 330kV switchyard. GT12 & 13 - On frequency response.
	OMOTOSHO GAS	GT1 - 8 8	336	304	GT2-4 & 6 - 8 6	228	170	GT1 - Out due to burnt isolator arm. GT2 - 4 & 6 - 8 - On frequency response. GT5 - Out due to gas constraints.
	OLORUNSOGO GAS	GT1 - 5, 7 & 8 7	294	266	GT1, 2, 4 & 5 4	152	118.6	GT1, 2, 4 & 5 - On frequency response. GT3 - Shut down due to high frequency. GT6 - Out on vibration trouble. GT7 & 8 - Out due to gas constraints.
NIPP	GEREGU NIPP	GT21 - 23 3	435	435	GT22 1	150	150	GT21 & 23 - Out due to gas constraints. GT22 - On frequency response.
	SAPELE NIPP	GT2 & 4 2	225	225	GT2 & 4 2	219.6	219.6	GT1 - Out on undisclosed fault. GT3 - Out on bearing lift pump trouble.
	ALAOJI NIPP GAS	GT1, 2 & 4 3	375	360	GT4 1	114.9	114.9	GT1 & 2 - Out due to gas constraints. GT3 - Shut down due to generator air inlet filter trouble.
	OLORUNSOGO NIPP GAS	GT1 - 3 3	375	360	0 0	0	0	GT1-3 - Out due to gas constraints. GT4 & ST2 - Out of production since 25/10/2016.
	OMOTOSHO NIPP GAS	GT1, 2 & 4 3	375	360	GT2 & 4 2	240	227.1	GT1 - Out due to gas constraints. GT2 & 4 - On spinning reserve. GT3 - Out of production since 28/11/2016.
	ODUKPANI NIPP	GT1 - 3 3	375	360	GT1 & 2 2	231.7	231.7	GT3 - Out due to gas constraints. GT4 - Out on unit transformer problem. GT5 - Tripped on loss of excitation
	IHOVBOR NIPP	GT1 - 3 3	337.5	337.5	GT3 1	110.7	110.7	GT1 & 2 - Out due to gas constraints.
	OKPAI GAS/STEAM	GT11, 12 & ST18 3	450	450	GT11, 12 & ST18 3	429	429	Available units on bar.
	AFAM VI GAS/STEAM	GT11 - 13 & ST10 4	650	650	GT13 1	146	146	GT11, 12 & ST10 - Out due to gas constraints.
	IBOM POWER GAS	GT3 1	115.3	115.3	GT3 1	83.8	83.8	Available unit on bar.
IPP	AES	0 0	0	0 0	0	0	0	Out of production since 27/09/2014.
	ASCO	0 0	0	0 0	0	0	0	GT1 - Shut down due to leakage in the furnace.
	OMOKU GAS	GT2, 3 & 5 3	75	60	GT2, 3 & 5 3	54.9	54.9	GT1 - Out on maintenance. GT4 - Out for overhaul. GT6 - Tripped on loss of flame.
	TRANS-AMADI	0 0	0	0 0	0	0	0	Out of production since 20/11/2016.
	RIVERS	0 0	0	0 0	0	0	0	Out of production since 16/09/2016.
	GBARAIN NIPP GAS	GT2 1	112.5	112.5	GT2 1	111.7	111.7	Available unit on bar.
	<b>SUB TOTAL</b>	<b>73</b>	<b>7039.5</b>	<b>6855.3</b>	<b>48</b>	<b>4025.3</b>	<b>3921</b>	Frequency = 50.67Hz.

1.7B **GENERATION POSITION AT 06:00HRS OF THURSDAY 16/03/2017 FOR UNITS ON BILATERAL AGREEMENT**

EGBIN	ST6	220	220	ST6	166	166	Available unit on bar.
	1			1			
PARAS ENERGY	GT2 - 9	72	72	GT2 - 9	68.5	68.5	Available units on bar.
	8			8			
<b>SUB TOTAL</b>	9	292	292	9	234.5	234.5	
<b>GRAND TOTAL</b>	<b>82</b>	<b>7331.5</b>	<b>7147.3</b>	<b>57</b>	<b>4,259.80</b>	<b>4,155.50</b>	Frequency = 50.67 Hz.

1.7C **BILATERAL AGREEMENT UNITS DISPATCH - WEDNESDAY 15/03/2017**

FEEDERS NAME	MAX. LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	REMARK	
<b>120MW EGBIN ST6 GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY</b>					
U-STEEL	on	0100hrs	24	nil	
PTCEXPRESS	9	0900hrs	24	nil	
SANKYO	out	out	out	Tripped on inst O/C	
FEEDER 8	11	1300hrs	24	nil	
IKORODU	PULK IT	5	1300hrs	24	nil
	INDUSTRIAL	16	200hrs	24	nil
	SPINTEX	5	0100hrs	24	nil
	DANGOTE	7	1500hrs	24	nil
	LAND CRAFT	24	0400hrs	24	nil
ALAU SA	TR4 -15MVA	3.9	2400hrs	24	nil
	TR5 -15MVA	5.1	1400hrs	24	nil
	ALAU SA	8.3	1200hrs	24	nil
MLAND	PTC (MARYLAND)	18	1500hrs	24	nil
<b>TOTAL LOAD</b>		<b>112.3</b>			

**BILATERAL AGREEMENT LOAD DISPATCH  
60MW PARAS ENERGY GENERATION TO CEB**

FEEDER	MAX	TIME	HOURS IN SERVICE	REMARK
SAKATE/IKEJA WEST 330KV LINE	68.5	21:00	24	NIL

**1.8 HYDROLOGICAL DATA: THURSDAY 16/03/2017**

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	140.43	102.12	365.66
TAIL WATER ELEVATION (METERS)	104.25	73.80	270.50
GROSS OPERATING HEAD (METERS)	<b>36.18</b>	<b>28.32</b>	<b>95.16</b>
AVERAGE TURBINE DISCHARGE (M3/SEC)	1228	1079	330
AVERAGE SPILLAGE (M3/SEC)	0	0	0
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	<b>1228</b>	<b>1079</b>	<b>330</b>
COMPUTED INFLOW (M3/SEC)	296	1229	15
STORAGE DIFFERENTIAL	<b>-932</b>	<b>150</b>	<b>-315</b>
MAXIMUM LEVEL FOR SPILLAGE COMMENCEMENT	141.73	103	382.5
MINIMUM LEVEL BELOW WHICH NO GENERATION	130	99	355

**1.9 MAXIMUM/ALLOCATED LOAD/MINIMUM LOADS FOR ABUJA AND LAGOS AS AT WEDNESDAY 15/03/2017**

DISCO	MAXIMUM LOAD(MW)	TIME(HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD(MW)	TIME(HRS)
ABUJA	435.8	20:00	516.13	250.4	03:00
EKO	456.5	08:00	381.08	282.4	19:00
IKEJA	528.4	07:00	435.18	418.4	10:00

**2.0 GAS POSITION: THURSDAY 16/03/2017**

STATION	SIGNED ACQ Annual Contracted Quantity MMSCF/D	NGC DECLARED QUANTITY (MMS317.578CF/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	160		1100		326	774
DELTA (GAS)	305		765		305	460
OMOTOSHO GAS	228		336.8		228	108.8
OMOTOSHO NIPP	240		500		240	260
OLORUNSOGO (GAS)	152		336		152	184
OLORUNSOGO NIPP	0		750		0	750
SAPELE NIPP	209		500		219.6	280.4
SAPELE STEAM	0		720		0	720
AFAM IV-V	0		300		0	300
AFAM VI	147		650		146	504
GEREGU GAS	296		435		295	140
GEREGU NIPP	151		435		150	285
OKPAI (GAS/STEAM)	432		480		429	51
ALAOJI NIPP	115.3		504		114.9	389.1
IHOVBOR NIPP	102.6		450		110.7	339.3
IBOM	80.3		198		83.8	114.2
ODUKPANI NIPP	116.4		625		231.7	393.3
<b>TOTAL</b>	<b>2654.3</b>		<b>9084.8</b>		<b>3031.7</b>	<b>6053.1</b>

1 MMSCF IS EQUIVALENT TO 3.75MW

**2.1 SYSTEM BLACK START CAPABILITY**

- 1 Delta, Shiroro & Egbin - Available.

**3.0 SYSTEM SPINNING RESERVE AS AT 0600HRS OF THURSDAY 16/03/2017 = 12.9 MW. FREQUENCY 50.67Hz.**

S/N	POWER STATION	UNIT ON SPINNING RESERVE	RESERVE CAPABILITY	ACTUAL RESERVE (MW)	TOTAL (MW)
1	Egbin	ST2	100	0	0
		ST4		0	
		ST5		0	
		ST6		0	
3	Delta	GT16	40	0	0
		GT17	40	0	
4	Olorunsogo NIPP	GT1	40	0	0
		GT2		0	
		GT3		0	
		GT4		0	
5	Geregu NIPP	GT22	35	0	0
6	Omotosho NIPP	GT1	40	0	12.9
		GT2		5.1	
		GT4		7.8	
<b>TOTAL (MW)</b>			<b>295</b>	<b>12.9</b>	<b>12.9</b>

**4.0 UNUTILIZED GENERATION CAPABILITY**

The unutilized generation capability for Thursday 16/03/2017 as at 0600Hrs was = 2632MW.

S/NO	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNUTILIZED GENERATION CAPABILITY (MW)	SUB -TOTAL
<b>4.1 DUE TO GAS CONSTRAINTS:</b>					
1	Ihovbor NIPP GT1 & 2	225	0	225	<b>2594</b>
2	Geregu NIPP GT21 & 23	290	0	290	
3	Olorunsogo NIPP GT1 - 3	360	0	360	
4	Omotosho NIPP GT1	120	0	120	
5	Egbin ST2, 3 & 5	660	160	500	
6	Delta GT4, 6 -13, 15,16 & 19	480	305	175	
7	Olorunsogo Gas GT7 & 8	76	0	76	
8	Omotosho Gas GT5	38	0	38	
9	Alaoji NIPP GT1 & 2	240	0	240	
10	Odukpani NIPP GT3	120	0	120	
11	Afam VI GTs 11, 12 & ST10	450	0	450	
				0	0
<b>4.2 DUE TO LINE CONSTRAINTS</b>					
				0	<b>0</b>
				0	
				0	
				0	
<b>4.3 DUE TO HIGH FREQUENCY OCCASIONED BY LOSS OF DISCOS' FEEDERS</b>					
1	Olorunsogo Gas GT3	38	0	38	<b>38</b>
				0	
				0	
				0	
				0	
				0	
<b>4.4 DUE TO WATER MANAGEMENT</b>					
				0	<b>0</b>
				0	
<b>Total</b>					<b>2632</b>

IT IS ENVISAGED WITH IMPROVED PLANT AVAILABILITY AND RELIEF FROM EXISTING POWER SYSTEM NETWORK RELATED CONSTRAINTS, ADDITIONAL 1614.16MMSCF OF GAS (EQUIVALENT TO 6053.1MW) WILL BE REQUIRED WHEN ALL THERMAL UNITS ARE ON BAR.

5.0 **OUTAGES:**

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

- 1 08:53Hrs, Geregu Gas GTs 12 & 13 went out on house load due to high system frequency of 51.50Hz LHR = 100MW each. At 09:10Hrs, GT12 was tied. At 09:19Hrs GT13 was tied.
- 2 08:53 - 09:09Hrs Geregu NIPP GT22 went on house load due to high system frequency of 51:50Hz. LHR= 104MW.
- 3 16:16 - 18:29Hrs, Geregu Gas GT13 tripped on thermo coupler >4. LHR = 60MW.

5 (B) **FORCED OUTAGES TRANSMISSION**

- 1 14:04 - 14:27Hrs, Gombe/Ashaka/Potsikum 132kV line CB tripped at Gombe T/S on distance protection relay, JS, JT, R, S, T Phases, IDMTL O/C e51, IDMTL E/F e52, Yellow phase pickup, Blue Phase pickup, alarm protection trip, distance protection started. LHR = 16MW.
- 2 17:17 - 17:31Hrs, New Haven/Nkalagu 132kV line 1 CB tripped on instantaneous O/C, E/F and lock out relay. LHR = 1.4MW.
- 3 17:17 - 17:32Hrs, New Haven/Nkalagu 132kV line 2 CB tripped on instantaneous O/C, E/F and lock out relay. LHR = 20.6MW.

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

- 1 09:08 - 15:37Hrs, Gombe T/S 45MVA 132/33kV transformer T1 was taken out for annual preventive maintenance on the transformer. LHR = 3.3MW.
- 2 10:35 - 16:38Hrs, Otta T/S 45MVA 132/33kV transformer T1 was taken out for annual preventive maintenance on the transformer. No load loss as the transformer was on soak.
- 3 10:54 - 17:50Hrs, Akure T/S 60MVA 132/33kV transformer T3A was taken out to remove defective 500KVA grounding transformer and commission the newly installed secondary CB and 300KVA 33/0.415kV grounding transformer GT3A. No load loss as the transformer was on soak.
- 4 11:10 - 17:26Hrs, Kaduna/Zaria 132kV line breaker was taken out for continuation of installation of new incomer breaker and associated equipment at Zaria T/S. The job was suspended to be continued on the 16/03/2017. LHR = 93MW.
- 5 11:12 - 15:24Hrs, Benin T/S 330kV 75MX shunt Reactor 6R1 was taken out for annual preventive maintenance on the Reactor.
- 6 12:03 – 13:00Hrs, Sapele T/S bus breaker MO2Q03 for ST3 & 5 was taken out for annual preventive maintenance. No load interruption as the units are already out on fault.
- 7 12:26 – 14:55Hrs, Akangba T/S 90MVA 330/132/13.8kV transformer 5T2B was taken out to replace over current electromechanical relay with Siemens siprotec numeric relay. LHR = 32MW.
- 8 12:44Hrs, Sapele/Benin 330kV lines 1 & 2 (ccts S3B & S4B) were taken out to remove dangerous trees along the line. About 150MW generation was reduced at Sapele NIPP and 55MW at Delta G/S to maintain service on cct S5B. 17:37Hrs, cct S4B was restored. 18:44Hrs, cct S3B was restored.

5(D) **URGENT OUTAGES:**

- 1 10:14 – 11:31Hrs, Osogbo T/S 60MVA 132/33kV transformer 4T3 was taken out to top up the conservator tank oil to normal level. LHR = 13.4MW.
- 2 11:20 – 12:30Hrs, Alaoji/Umuahia 132kV line 2 was taken out to work on the line breaker that was out on pole discordance. No load interruption as the line was on soak via tie CB.

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

The under mentioned lines were opened on frequency control:-

- 1 18:51 - 18:58Hrs, 19:24 - 19:28Hrs, 20:11 - 20:18Hrs, 21:16 - 21:20Hrs, 22:11 - 22:20Hrs, 22:27 - 22:31Hrs & 23:28 - 23:35Hrs, Osogbo /Akure/Ado 132kV line CB. LHR = 50MW, 48MW, 57MW, 45MW, 45MW, 31MW & 35MW respectively. Frequency was 48.88Hz, 49.01Hz, 48.82Hz, 48.86Hz, 48.90Hz, 48.86Hz & 48.84Hz respectively
- 2 20:21 - 20:35Hrs, New Haven T/S 60MVA 132/33kV transformer TR4 secondary CB. LHR = 34MW. Frequency was 48.40Hz.
- 3 20:22 - 20:50Hrs, Mando/Kaduna town 132kV line 1 CB. LHR = 62MW. Frequency was 48.70Hz.
- 4 22:26 - 23:14Hrs, Kaduna/Zaria 132kV line CB. LHR = 61MW. Frequency was 48.80Hz.

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

- 1 19:38 - 19:58Hrs, 20:10 - 17Hrs & 20:22 - 21:48Hrs, Mando T/S 3X60MVA 132/33kV T1, T2 and T3 secondary breaker. LHR = 44.2MW, 0.1MW & 0.1MW respectively.

5 (G) **330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:-**

ccts, U2A, A2K, K4U & J2L.

5 (H) **330KV LINES THAT ARE OUT ON FAULT:-**

ccts L7G & A1S.

4 (I) **330KV LINES THAT ARE OUT ON BREAKER PROBLEM:-**

ccts K1J & N4J.

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

NIL.

9 **WEATHER REPORT:**

Rainfall was reported in New Haven & Ugwuaji.

10 **INTERNATIONAL LINES:-**

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

Maximum load - 242MW at 09:00Hrs.  
Minimum load - 140MW at 10:00Hrs.

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

Maximum load - 83MW at 14:00Hrs  
Minimum load - 63MW at 08:00Hrs

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

Maximum load - 42.0MW at 21:00Hrs.  
Minimum load - 25.0MW at 09:00Hrs.

11 **MISCELLANEOUS:-**

- 1 09:20 - 16:42Hrs, Hold-off tag was placed on Kainji/Jebba 330kV line 2 (cct K2J) to allow live line crew guide conductor on tower #54

- 3 11:50 - 12:15Hrs, Papalantu T/S 30MVA 132/33kV transformer T2 was taken out to enable maintenance crew top up the low SF6 gas of the primary CB to normal pressure. LHR = 0.6MW.
- 4 11:52 - 12:48Hrs, Nkalagu T/S 30MVA 132/33kV transformer T2A was taken out to seal point of oil leakage on the transformer . No load loss as the transformer was on soak.
- 5 12:34 – 13:06Hrs, Akure T/S 30MVA 132/33kV transformer T2A was taken out to treat hot spot on the Blue Phase secondary isolator. LHR = 10MW.

**6 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY**

GROUP 1 - HYDRO IN HIGH FLOOD PERIOD SEASON, KAINJI, JEBBA AND SHIRORO.

GROUP 2 - ALL UNITS OFFERING REGULATING RESERVE.

GROUP 3 - ALL UNITS OFFERING SPINNING RESERVE.

GROUP 4 - ALL UNITS OFFERING FREE GOVERNOR FREQUENCY RESPONSE.

GROUP 5 - ALL UNITS OFFERING VOLTAGE SUPPORT OUTSIDE NORMAL LEVEL.

GROUP 6 - ALL UNITS USED TO AVOID OVERLOADING TRANSMISSION LIMITS.

GROUP 7 - ALL UNITS IN LOCATION TO DIMINISH LOSSES

**8 (A) COMMUNICATION MEDIA**

STATIONS	NO. INSTALLED	NO. WORKING
PLC/PAX	37	34
OPTIC FIBRE	13	11
PLS	14	7

**8 (B) SCADA RTU STATUS**

STATIONS	TOTAL NO OF STATIONS	NO OF RTU INSTALLED	NO OF RTU WORKING
POWER STATIONS	23	8	4
330kV	36	18	12
132kV	111	103	19

**12.0 UNAVAILABLE EQUIPMENTS**

**12(A) UNAVAILABLE TRANSFORMERS/REACTORS:**

**SHIRORO REGION:**

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

**KADUNA REGION:**

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

**ENUGU REGION:**

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

- 2 09:50 through 24:00Hrs of 14/03/2017, Ayede/Shagamu 132kV line CB tripped at Ayede T/S on Optimho distance protection relay ; DEF delay , location = 14328km, period = N/A. LHR = 44MW.
- 3 11:14Hrs, Omotosho/Ikeja West 330kV line (cct M5W) main CB was restored at Ikeja West T/S on observation. The CB has been out on fault.
- 4 11:58Hrs of 11/03/2017 - 15:55Hrs of 15/03/2017, Kaduna T/S 60MVA 330/132/13.8kV transformer T1A primary breaker tripped on back up protection relay while the secondary breaker tripped on REF and 86 T2. trip relay also operated. LHR = 21MW. comprehensive tests were conducted on the transformer and certified okay before restoration.
- 5 15:58Hrs, Odukpani NIPP GT2 was tied. The unit has been out on turbine fault.
- 6 19:00Hrs, Makurdi T/S 330kV 75MX Reactor R1 was placed in service on voltage control. Voltage profile = 344/333kV.
- 7 19:15Hrs of 11/03/2017 - 13:50Hrs of 15/03/2017, Calabar T/S 60MVA 132/33kV transformer T1 primary breaker tripped on REF, result of test conducted on the transformer were satisfactory before restoration. No load loss as the transformer was on soak.
- 8 20:31Hrs, Restoration failed on Ayede/Shagamu 132kV line after LMD crew had patrolled the line from towers #343 - 404 and 701 - 530 but nothing abnormal was found.
- 9 20:50Hrs, Paras Energy GT2 was tied. The unit has been out on standby.

**LAGOS REGION**

- 1 Egbin/Aja 330kV line 2 (cct N4J) - faulty breaker at Aja T/S.
- 2 132kV Akangba/Itire line 1- Faulty line isolator at Akangba T/S.
- 3 Aja/Alagbon 132kV line 2 - detached conductor on tower 56 and 57.
- 4 Agbara/Ojo line 1 on soak.

**SHIRORO REGION**

- 1 Lokoja/Gwagwalada 330kV line 2 - Cut sky wire between towers 339 & 340.

**12(E) UNAVAILABLE CAPACITOR BANK:**

**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 Jebba G.S./Jebba T.S 330kV line 2 CB at Jebba T/S.

**OSOGBO REGION:**

- 1 Omotosho 330kV T/S, 2nd series 330kV CB #3322 out due to control circuit problem.
- 2 Akure T/S 60MVA 132/33kV transformer T3A primary CB - defective spring charging mechanism.
- 3 Osogbo T/S 330kV bus coupler CB - Exploded Blue Phase CT
- 4 Jebba/Osogbo 330kV line 1 (cct J1H) - Defective line isolator mechanism at Osogbo T/S

**ENUGU REGION:**

- 1 New Haven/Yendev 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/Yendev 132kV By pass isolator - Canibalized to repair the line isolator.

**SHIRORO REGION**

- 1 Kainji/Jebba 330kV line 1 - CB problem at Kainji T/S.
- 2 Jebba T/S 75MX reactor 2R2 CB - exploded.

**12 (C) UNAVAILABLE/DEFECTIVE GROUND SWITCHES**

**Benin Region**

- 1 Irrua T/S: Benin/Irrua 132kV line Earth Switch - faulty.

**ENUGU REGION:**

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

(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 (F) LINES WITH MISSING SKY WIRE**

**LAGOS REGION**

- 1 Omotosho/Ikeja West line (M5W) and Egbin/Ikeja West line 3 (N6W) - 21
- 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 Apo T/S 132kV Keffi line - 36 spans
  
- 4 Shiroro T/S 330kV Jebba line 2 - 28 spans

**12 (G) UNAVAILABLE SYNCHROSCOPES :**

- 1 Benin , Ikeja West, Onitsha, Egbin, Uguwaji, Osogbo, Kaduna, 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) -08033711297, 08054911239, CUG Airtel No. 08129458479.
- e AGM (S/O) - 08066067487, CUG: 09021765320
- f Coordinator (S/O) - 08037868916, 08054353904, 08028332125, CUG Airtel 08129458481.
- g SYSTEM OPERATIONS WEB SITE: [www.nigeriasystemoperator.org](http://www.nigeriasystemoperator.org)