

# TRANSMISSION COMPANY OF NIGERIA

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

DAILY OPERATIONAL REPORT OF TUESDAY 17/09/2019  
FOR: EVENTS OF MONDAY 16/09/2019

## EXECUTIVE OPERATIONS SUMMARY:

### 1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	25,790	20:45	16/9/2019
GENERATION CAPABILITY	6359.7	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	4676.1	-do-	-do-
PEAK GENERATION	4107.1	-do-	-do-
LOWEST GENERATION	2878.3	08:00	16/9/2019
8-HOURLY DURATION PEAK	3380.9	0100-0800	-do-
	3473.6	0900-1600	-do-
	4107.1	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 PEAK GENERATION CAPABILITY TO DATE	7099	07:00	13/04/2014
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	356	New Haven T/S	08:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe T/S	16:00

### 1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.710	17:19
LOWEST FREQUENCY	49.990	05:27

### 1.4 SYSTEM COLLAPSE UPDATE

Date of last total collapse: 30th August, 2019							No. of days since last total collapse: 17							
Date of last partial collapse: 12th April, 2018							No. of days since last partial collapse: 513							
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	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	0	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	4	2	22	
	Partial	--	--	--	--	--	--	--	2	0	--	--	2	
2014	Total	2	--	--	2	0	3	1	0	0	1	0	9	
	Partial	0	0	0	0	1	0	0	0	0	2	1	4	
2015	Total	1	0	1	0	2	0	1	0	0	1	0	6	

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

STATION	TURBINE	PEAK GEN. (MW)	OFF-PEAK GEN.(MW)
1 KAINJI	HYDRO	365	169
2 JEBBA	HYDRO	343	300
3 SHIRORO	HYDRO	570	385
4 EGBIN ST2 - 5	STEAM	580	300
5 SAPELE	STEAM	50	31
6 DELTA	GAS	371	285
7 AFAM IV-V	GAS	30	30
8 GEREGU GAS	GAS	133	80
9 OMOTOSHO GAS	GAS	101.8	121.6
10 OLORUNSOGO GAS	GAS	163.90	141.1
11 GEREGU NIPP	GAS	131	80
12 SAPELE NIPP	GAS	0	0
13 ALAOJI NIPP	GAS	99.6	72.5
14 OLORUNSOGO NIPP	GAS	0	0
15 OMOTOSHO NIPP	GAS	97.5	84.1
16 ODUKANI NIPP	GAS	212.2	168.4
17 IHOVBOR NIPP	GAS	95.3	84
18 OKPAI	GAS	120	70
19 AFAM VI	GAS	127	113
20 IBOM POWER	GAS	92.1	62.7
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	60.5	40.9
24 TRANS AMADI	GAS	61.8	43.5
25 RIVERS IPP	(GAS)	105	0
26 AZURA - EDO IPP	(GAS)	137	150
27 EGBIN ST6	(GAS)	0	0
28 PARAS ENERGY	(GAS)	60.4	66.5
29 GBARAIN NIPP	GAS	0	0
<b>TOTAL</b>		<b>4107.1</b>	<b>2878.3</b>

  

STATION	TURBINE	ENERGY GENERATED	AV. POWER GENERATED	ENERGY SENT OUT	AV. POWER SENT OUT
		MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	7947.00	331.13	7931.70	330.49
2 JEBBA	HYDRO	8168.00	340.33	8145.76	339.41
3 SHIRORO	HYDRO	9923.00	413.46	9891.99	412.17
4 EGBIN ST2 - 5	STEAM	7739.00	322.46	7272.40	303.02
5 SAPELE	STEAM	940.00	39.17	839.70	34.99
6 DELTA	GAS	8011.40	333.81	7792.30	324.68
7 AFAM IV-V	GAS	1081.30	45.05	1076.51	44.85
8 GEREGU GAS	GAS	3048.00	127.00	3023.59	125.98
9 OMOTOSHO GAS	GAS	2671.00	111.29	2649.80	110.41
10 OLORUNSOGO GAS	GAS	3491.19	145.47	3462.02	144.25
11 GEREGU NIPP	GAS	2098.13	87.42	2085.59	86.90
12 SAPELE NIPP	GAS	0.00	0.00	0.00	0.00
13 ALAOJI NIPP	GAS	1821.57	75.90	1802.15	75.09
14 OLORUNSOGO NIPP	GAS	0.00	0.00	0.00	0.00
15 OMOTOSHO NIPP	GAS	2247.10	93.63	2230.80	92.95
16 ODUKANI NIPP	GAS	4714.88	196.45	4684.88	195.20
17 IHOVBOR NIPP	GAS	2030.00	84.58	2010.27	83.76
18 OKPAI	GAS	1934.00	80.58	1892.40	78.85
19 AFAM VI	GAS	2939.08	122.46	2848.00	118.67

2015	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			2	12
	Partial	0	0	0	1	0	0	0		0				1
2019	Total	4	1	0	1	1	1	0	1					9
	Partial	0	0	0	0	0	0	0	0					0

20	IBOM	GAS	1486.44	61.94	1477.00	61.54
21	ASCO	GAS	0.00	0.00	0.00	0.00
22	AZURA - EDO IPP	GAS	3801.30	158.39	3778.05	157.42
23	A.E.S	GAS	0.00	0.00	0.00	0.00
24	OMOKU	GAS	1581.17	65.88	1548.00	64.50
25	TRANS AMADI	GAS	1144.10	47.67	1115.90	46.50
26	RIVERS IPP	GAS	1955.70	81.49	1950.10	81.25
27	EGBIN ST6	STEAM	0.00	0.00	0.00	0.00
28	PARAS ENERGY	GAS	1432.20	59.68	1424.80	59.37
29	GBARAIN NIPP	GAS	0.00	0.00	0.00	0.00
<b>TOTAL</b>			<b>82,205.56</b>	<b>3,425.23</b>	<b>80,933.71</b>	<b>3,372.24</b>

1.7A

## GENERATION POSITION AT 06:00HRS OF TUESDAY 17/09/2019

	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 50.31Hz	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12	440	390	1G5, 6, 11 & 12	390	352	1G5, 6, 11 & 12 - On frequency response. 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.
			4			4			
	JEBBA HYDRO	6	2G1, 2, 4 & 5	385.2	380	2G1, 2, 4 & 5	380	318	2G1, 2, 4 & 5 - On frequency response. 2G3 - On maintenance. 2G6 - Out due to burnt generator winding and AVR.
			4			4			
	SHIRORO HYDRO	4	411G1 - 4	600	600	411G1 - 4	600	410	411G1 & 2- Generation reduced due to low load demand by the Discos.
			4			4			
	EGBIN STEAM	6	ST2, 3, 5 & 6	880	650	ST2, 5 & 6	540	320	ST1 - Out on outage. ST3 - Out due to low load demand by the Discos. ST4 - Out due to boiler feed pump problem. Generation reduced due to low load demand by the Discos.
			4			3			
	SAPELE (STEAM)	6	ST3	120	60	ST3	60	31	ST1 - Tripped due to loss of control oil pump. ST2 & 4 - Out on fault. Generation reduced due to low load demand by the Discos.
			1			1			
DELTA (GAS)	18	GT6, 7, 10 - 13, 15 16, 19 & 20	575	545	GT6, 7, 10 - 13, 16, 19 & 20	415	330	GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT15 - Out due to low load demand by the Discos. GT17 & 18 - Out due to generator lockout problem. Generation reduced due to low load demand by the Discos.	
		10			9				
AFAM IV & V (GAS)	8	GT18	120	50	GT18	50	31	GT11 - 12 - De-commissioned and scrapped. GT13, 14 & 16 - Out on blade failure. GT17 Out due to gas constraint. GT19 & 20 - Awaiting major overhaul. Generation reduced due to low load demand by the Discos.	
		1			1				
GEREGU GAS	3	GT11 - 13	435	435	GT12	145	100	GT11 & 13 - Out due to low load demand by the Discos. GT12 - Generation reduced due to low load demand by the Discos.	
		3			1				
OMOTOSHO GAS	8	GT4 - 8	210	190	GT4, 5, 7 & 8	152	102.2	GT1 - 3 - Out due to gas constraint. GT6 - Out due to low load demand by the Discos. Generation reduced due to low load demand by the Discos.	
		5			4				
OLORUNSOGO GAS	8	GT2 - 8	294	266	GT2 - 5 & 8	190	114	GT1 - Out due to gas constraint. GT6 & 7 - Out due to low load demand by the Discos. Generation reduced due to low load demand by the Discos.	
		7			5				
NIPP	GEREGU NIPP	3	GT21	145	145	GT21	145	80	GT21 - Generation reduced due to low load demand by the Discos. GT22 & 23- Out due to gas constraint.
			1			1			
	SAPELE NIPP	4	0	0	0	0	0	0	GT1 & 3 - Out due to gas constraint. GT2 - Shut down due to alarm communication failure. GT4 - Out on maintenance.
			0			0			
	ALAOJI NIPP	4	GT1 & 4	240	230	GT1	115	72.5	GT2 - Tripped on over voltage lockout relay trip. GT3 - Out due to lack of spare part. GT4 - Out due to low load demand by the Discos. Generation reduced due to low load demand by the Discos.
			2			1			
	OLORUNSOGO NIPP	6	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.
			0			0			
	OMOTOSHO NIPP	4	GT2 & 3	240	240	GT2	120	90.6	GT1 & 4 - Out due to gas constraint. GT2 - On frequency response.
			2			1			
ODUKPANI NIPP	5	GT1 - 4	480	440	GT1 & 2	220	202.2	GT1 & 2 - On manual adjustment. GT3 & 4 - Out due to low load demand by the Discos. GT5 - Out on E/F.	
		4			2				
IHOVBOR NIPP	4	GT1 & 2	225	225	GT2	112.5	80.6	GT1 - Out due to low load demand by the Discos. GT3 & 4- Out on maintenance. GT2 - Generation reduced due to low load demand by the Discos.	
		2			1				
GBARAIN NIPP	1	0	0	0	0	0	0	GT2 - Out due to gas constraint.	
		0			0				
OKPAI GAS/STEAM	3	GT11	150	150	GT11	150	80	GT11 - Generation reduced due to low load demand by the Discos. GT12 - Out on outage. ST18 - Out on fault.	
		1			1				
AZURA - EDO	3	GT11 - 13	461	459	GT 11	150	125	GT11 - On frequency response. GT12 & 13 - Out due to low load demand by the Discos.	
		3			1				
AFAM VI GAS/STEAM	4	GT11 - 13 & ST10	650	585	GT13	165	122	GT13 - On frequency response. GT11, 12 & ST10 - Out due to low load demand by the Discos.	
		4			1				
IBOM POWER GAS	3	GT3	115	110	GT3	110	62.1	GT1 & 2 - Out due to fire outbreak on the control panel. GT3 - Generation reduced due to low load demand by the Discos.	

IPP			1			1			demand by the Discos.
	AES	9	0	0	0	0	0	0	Out of production since 27/09/2014.
			0			0			
	ASCO	2	0	0	0	0	0	0	ST1 - Out due to leakage in the furnace.
			0			0			
	OMOKU GAS	6	GT3 - 6	100	80	GT3 - 6	80	40.8	GT1 -Tripped on exhaust spread temperature high. GT2- Out on high vibration. Generation reduced due to low load demand by the Discos.
			4			4			
	TRANS-AMADI	4	GT1, 2 & 4	75	60	GT1, 2 & 4	60	42.6	GT3 - Out on generator transformer limitation.
			3			3			
	RIVERS	1	GT1	180	160	GT1	160	80	GT1 - Generation reduced due to low load demand by the Discos.
		1			1				
	SUB TOTAL	141	71	7120.2	6450	54	4509.5	3186.6	Frequency = 50.31Hz.

1.7B GENERATION POSITION AT 06:00HRS OF TUESDAY 17/09/2019 FOR UNITS ON BILATERAL AGREEMENT									
	PARAS ENERGY	8	GT7 - 10 4	36	24.4	GT7 - 10 4	24.4	24.4	GT3 - 6 - Out due to gas constraint.
	SUB TOTAL	8	4	36	24.4	4	24.4	24.4	
	GRAND TOTAL	149	75	7156.2	6474.4	58	4,533.90	3211	Frequency = 50.31Hz.

1.7C BILATERAL AGREEMENT UNITS DISPATCH - MONDAY 16/09/2019								
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							
	PTC EXPRESS							
	SANKYO							
	FEEDER 8							
IKORODU	PULK IT							
	INDUSTRIAL							
	SPINTEX							
	DANGOTE							
ALAUSA	LAND CRAFT							
	TR4 - 15MVA							
	TR5 -15MVA							
M/LAND	ALAUSA							
	PTC (MARYLAND)							
	<b>TOTAL LOAD</b>	0						

BILATERAL AGREEMENT LOAD DISPATCH 60MW PARAS ENERGY GENERATION TO CEB OF MONDAY 16/09/2019							
	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
	68.1	05:00	47.3	19:00	24	1430	NIL

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI MONDAY 16/09/2019									
COMPANY NAME	VOL-TAGE LEVEL	CON-TRAC-TUAL LOAD	MAX LOAD (MW)	TIME	MIN LOAD (MW)	TIME	HOURS IN SERVICE	TOTAL (MWH)	REMARK
INNER GALAXY	132kV line 2	0	36	23:00	10:00	18:00	12	294	NO TIME OUT
KAM STEEL 2		25.0	14.7	17:00	0.1	01:00	24	122.8	NO TIME OUT
ASHAKA CEMENT		0	11.6	02:00	3	10:00	24	181.2	NO TIME OUT
XING 1	33kV feeder	0	18.6	01:00	0	02:00	22	281.4	NO TIME OUT
XING 2		0	25.8	04:00	12.8	18:00	24	481.9	NO TIME OUT
KAM INTEGRATED		15	5.1	16:00	1.1	21:00	24	56.7	NO TIME OUT
OLAM FLOUR MILLS		3	1.4	24:00	0.1	02:00	24	15.8	Out between (12:00 - 16:00) Hrs
LORDSMITH		3	0.6	18:00	0.3	01:00	23	9.2	NO TIME OUT
KAM STEEL LINE 1		0	2.3	14:00	0.1	01:00	24	16.4	NO TIME OUT

1.8 HYDROLOGICAL DATA: TUESDAY 17/09/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	139.42	102.76	381.30
TAIL WATER ELEVATION (METERS)	104.7	75.6	271.0
GROSS OPERATING HEAD (METERS)	<b>34.72</b>	<b>27.16</b>	<b>110.30</b>
AVERAGE TURBINE DISCHARGE (M3/SEC)	1063.00	1393.00	442.00
AVERAGE SPILLAGE (M3/SEC)	919.00	1363.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	<b>1982.00</b>	<b>2756.00</b>	<b>442.00</b>
COMPUTED INFLOW (M3/SEC)	4352.00	3140.00	2065.00
STORAGE DIFFERENTIAL	<b>2370.00</b>	<b>384</b>	<b>1623</b>
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 MONDAY 16/09/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	469.7	14:00	566.85	134.8	16:00
EKO	0.0	0	0	0	0
IKEJA	632.8	20:00	839.35	412.6	05:00

2.0 GAS POSITION: TUESDAY 17/09/2019

STATION	SIGNED ACQ Annual Contracted Quantity MMSCF/D	INSTALLED CAPACITY OF THERMAL STATIONS (MW)	PREVIOUS DAY OFF-TAKE (MMSCF/D)	CAPABILITY OF UNITS ON BAR OF THERMAL STATIONS (MW)	DIFFERENCE (MW)
EGBIN P/S	265	1100		540	560
DELTA (GAS)	305	915		415	500
OMOTOSHO GAS	100.4	336.8		152	184.8
OMOTOSHO NIPP	104.3	500		120	380
OLORUNSOGO (GAS)	233.4	336		190	146
OLORUNSOGO NIPP	0	750		0	750
SAPELE NIPP	87.2	500		0	500
SAPELE STEAM	47	720		60	660
AFAM IV-V	50	300		50	250
AFAM VI	220	650		165	485
GEREGU GAS	216	435		145	290
GEREGU NIPP	80	435		145	290
OKPAI (GAS/STEAM)	170	480		150	330
ALAOJI NIPP	0	504		115	389
IHOVBOR NIPP	114	337.5		112.5	225
IBOM	88.9	198		110	88
ODUKPANI NIPP	206.4	625		220	405
<b>TOTAL</b>	<b>2287.6</b>	<b>9122.30</b>		<b>2689.5</b>	<b>6432.8</b>

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : MONDAY 16/09/2019

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

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF TUESDAY 17/09/2019 = FREQUENCY = 50.31Hz.

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	
<b>TOTAL (MW)</b>			<b>295</b>	<b>0</b>	<b>0</b>

4.0 UN-UTILIZED GENERATION CAPABILITY

The un-utilized generation capability for Tuesday 17/09/2019 as at 0600Hrs = 2996.8MW					
S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB -TOTAL
<b>4.1 DUE TO LINE CONSTRAINTS</b>					
				0	0
				0	
				0	
<b>4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS</b>					
1	Omotosho NIPP GT3	120	0	120	2996.8
2	Olorunsogo gas GT2 - 8	266	114	152	
3	Geregu Gas GT11 - 13	435	100	335	
4	Odukpani NIPP GT3 & 4	220	0	220	
5	Azura-Edo GT12 & 13	306	0	306	
6	Egbin ST2, 3, 5 & 6	650	320	330	
7	Ibom GT3	110	62.1	47.9	
8	Okpai GT11	150	80	70	
9	Afam VI GT12,13 & ST10	485	0	485	
10	Delta GT15, 16, 19 & 20	425	221	204	
11	Omotosho Gas GT4 - 8	190	102.2	87.8	
12	Shiroro 411G1 & 2	300	115	185	
13	Afam IV GT18	50	31	19	
14	Sapele ST3	60	31	29	
15	Omoku GT3 - 6	80	40.8	39.2	
16	Alaoji NIPP GT1 & 4	230	72.5	157.5	
17	Ihovbor GT1 & 2	225	80.6	144.4	
18	Geregu NIPP GT21	145	80	65	
<b>WATER MANAGEMENT</b>					
			0	0	0
				0	
<b>Grand Total</b>					<b>2996.8</b>

5.0 **OUTAGES:**

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

- 12:17 – 13:09Hrs, Egbin ST2 tripped during fast cut back test operation carried out on the unit from 60MW to 7MW. The test was unsuccessful.
- 14:37 - 16:23Hrs, Ibom Power GT3 Isolated feeding Eket & Uyo due to tripping of Aba/Itu 132kV line. Load reduced from 60MW to 24MW.

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

- 14:06 -14:45Hrs, Ganmo T/S 150MVA 330/132/33kV secondary CB tripped without relay indication. LHR = 65.5MW.  
At the same time 2x60MVA 132/33kV Transformers T1B & T2B tie CB tripped without relay indication and it was restored at 15:07Hrs.  
14:37 - 15:190Hrs, Aba/Itu 132kV line CB tripped at Aba T/S on E/F. LHR = 38MW.
- 15:36 - 16:00Hrs, Ayede/Ibadan North/Iwo/Iseyin 132kV line CB tripped at Ayede T/S on Optimho relay -DEF start, locaion = -546km.  
Siemens relay - Backup relay O/C R & B Phases. LHR = 46MW.
- 17:16 - 17:49Hrs, Egbin/Ikeja West 330kV line (cct N6W) CB tripped at Ikeja West T/S on Siprotec relay - General trip -Red Phase fault , zone 1 trip, 21 pickup, A -N,  
PU time = 90ms, trip time = 10ms, distance = 351km  
Micom relay - General trip, Red Phase fault, distance zone 1 , trip , started trip A-N, trip Phase A, start element distance ,  
O/C start 1> 2 & 4, E/F start IN > 1, distance trip zone 1. No load interruption as ccts N7K, N8K, K7W & K8W were in service.  
**At Egbin T/S:** The line did not trip but flagged on Micom relay - start RTZ1, started A -N, Phase A, started element, distance = 32.3km.
- 19:55 - 20:33Hrs, Adiaabor/Calabar 132kV line 1 CB tripped at Adiaabor T/S on O/C & E/F relay. LHR = 15MW.
- 20:10 through 24:00Hrs, Ayede/Mcpherson/Shagamu/Ijebu-Ode 132kV line CB tripped at Ayede T/S on Optimho relay - DEF , location = 74.62km.  
Micom relay - Instantaneous E/F. LHR = 25MW. Investigation revealed shattered Blue Phase line CB interrupter head at Shagamu T/S.
- 22:01 - 22:30Hrs, Alaoji/Owerri 132kV lines 1 & 2 CB tripped at Alaoji T/S on the following relay indications:  
**On line 1** - Siemens relay : E/F, ie > and back up protection. LHR = 24MW.  
**On line 2** - Optimho relay : DEF, location = 185.6km, Siemens relay - instantaneous O/C trip I >>, E/F trip, ie >, instantaneous E/F trip ie >>, Yellow Phase, backup trip.  
LHR = 34MW.

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

- 07:58 - 18:52Hrs, Olorungo/Ayede 330kV line was taken out for the continuation of Disc insulators replacement with composite type on tower #419 & 425.

5 (D) **URGENT OUTAGES**

- 00:18 through 24:00Hrs, Okpai GT12 was shut down for the continuation of work at Phase II station. Load loss = 10MW.
- 12:25 - 18:47Hrs, Ihovbor/Benin 330kV line (cct V7B) was taken out for maintenance crew to treat hot spot on the line isolator and also replace burnt clamp and Corona Ring on the Red Phase at Benin T/S. No load interruption as cct H7V was in service.
- 14:43 - 16:13Hrs, Iseyin T/S 45MVA 132/33kV Transformer T1 was taken out to allow maintenance crew mend the cut Red & Yellow Phases conductor strands to the secondary CB. Load loss = 16MW.
- 18:54 through 24:00Hrs, Ayede T/S 150MVA 330/132/33kV Transformer T1A primary CB was opened due to pole discordance. No load interruption as the Transformer was on soak.

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

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

5 (G) **330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:-** ccts U1A, B11J & K1U.

5 (H) **330KV LINES THAT ARE OUT DUE TO DEFECTIVE CIRCUIT BREAKER:-** cct K4U.

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

5 (J) **330KV LINES THAT ARE OUT ON LINE FAULT:-** cct K4U

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

5 (L) **330KV LINES THAT ARE OUT DUE TO UNAVAILABLE LIGHTNING ARRESTER:-** cct A1S

6 **WEATHER REPORT:-** Rainfall was reported at Port-Harcourt, Katampe, Kaduna, Olorungo, New Haven, Osogbo & Alaoji.

7 **INTERNATIONAL LINES:-**

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

Maximum load - 103.0MW at 15:00Hrs.  
Minimum load - 50.0MW at 14:00Hrs.

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

Maximum load - 119MW at 15:00Hrs.  
Minimum load - 96.0MW at 07:00Hrs.

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

Maximum load - 38.9MW at 20:00Hrs.  
Minimum load - 27.3MW at 07:00Hrs.

**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).

GROUP 6 - ALL PLANTS PROVIDING VOLTAGE SUPPORT ABOVE STATUTORY LIMIT (NOT YET IDENTIFIED).

**11A COMMUNICATION MEDIA**

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	38	31
OPTIC FIBRE	13	11
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	5	14
132kV	102	79	23

**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/SOLATORS**

**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 01:04Hrs, Ikot-Ekpene/Ugwuaji 330kV line 3 (cct K3U) was taken out for voltage control. V/P = 351/347kV.
  - 2 04:22 through 24:00Hrs, Geregu GT13 was shut down due to low load demand by the Discos. Load loss = 108MW.
  - 3 05:28Hrs, Geregu GT11 was tied. The unit was out due to low load demand.
  - 4 07:11 through 24:00Hrs, Geregu GT11 was shut down due to low load demand by the Discos by the Discos. Load loss = 80MW.
  - 5 07:26 – 10:39Hrs, Rivers IPP GT1 was shut down due to low load demand by the Discos. Load loss = 90MW.
  - 6 10:21Hrs, Afam VI GT13 was tied to swap with GT11.  
10:51Hrs, Afam VI GT11 was shut down. 122MW was transferred to GT13.
  - 7 15:39Hrs, Jebba/Shiroro 330kV line (cct J3R) was taken out for voltage control. V/P = 346/341kV.
  - 8 15:53Hrs, Alagbon T/S 60MVA 132/33kV Transformer TR2 was restored. The Transformer tripped at 10:05Hrs of 22/08/2019 due to fire incidence in the station.
  - 9 17:25 through 24:00Hrs, Azura -Edo GT13 was shut down due to low load demand by the Discos. Load loss = 75MW.
  - 10 17:28Hrs, Ayede T/S 150MVA 330/132/33kV Transformer T1B was restored after the conductor that pulled out of the CT was retightened and the test conducted on it was satisfactory.
  - 11 17:46Hrs, Ayede T/S 60MVA 132/33kV Transformer T3 was restored after the test conducted on it was satisfactory. The Transformer tripped at 14:23Hrs of 15/09/2019.
  - 12 17:53Hrs, Ayede T/S 100MVA 132/33kV Transformer T3 was restored after the test conducted on it was satisfactory. The Transformer tripped at 14:23Hrs of 15/09/2019.
  - 13 18:43Hrs, Ayede/Mcpherson/Shagamu/Ijebu -Ode 132kV line was restored. The line tripped at 14:23Hrs of 15/09/2019.
- \*\*\*\* 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 Osoqbo 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 Egbin/Oke-Aro 330kV line 2 (N8K) Defective. Needs replacement.
- 7 Egbin/Ikeja-West Tie CB Defective. Needs replacement.
- 8 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

**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

**CRITICAL VOLTAGE NODES IN THE GRID**

S/N	NODE	VOLTAGE	REMARKS
1	New Haven T/S	356kV	No Reactor
2	Delta T/S	354kV	Low VAR absorption by Delta P/S.
3	Sapele T/S	354kV	Low VAR absorption by Sapele P.S.
4	Lokoja T/S	354kV	Low VAR absorption by Geregu P.S & NIPP
5	Ugwuaji T/S	353kV	No Reactor
6	Onitsha T/S	353kV	One Reactor in service.

**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 -**

- 1 Ikeja West, Onitsha, Egbin, Ugwuaji, Jos, Gwagwalada & Alaoji T/S.
- 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 NCC e-mail address - nationalcontrol@gmail.com
- g SYSTEM OPERATIONS WEB SITE: www.nigeriasystemoperator.org.