

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja

From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT MONDAY 07/08/2017

FOR: EVENTS OF SUNDAY 06/08/2017

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

| DETAILS | MW | HRS | DATE |
|--|------------|-----------|------------|
| PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD) | 17,720 | 20:30 | 06/08/2017 |
| GENERATION CAPABILITY | 7522.5 | -do- | -do- |
| UNITS ON BAR CAPABILITY AT PEAK | 4557.6 | -do- | -do- |
| PEAK GENERATION | 4066.6 | -do- | -do- |
| LOWEST GENERATION | 2876.6 | 11:00 | 06/08/2017 |
| | 3394.2 | 0000-0800 | -do- |
| | 3172 | 0900-1600 | -do- |
| | 4066.6 | 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 | 364 | Omotosho T/S | 04:00 |
| LOWEST VOLTAGE FOR THE DAY | 300 | Gombe T/S | 12:00 |

1.3 FREQUENCY RANGE

| DETAILS | HZ | HRS |
|-------------------|-------------|-------|
| NOMINAL FREQUENCY | 50 | |
| STATUTORY LIMITS | 49.75-50.25 | |
| HIGHEST FREQUENCY | 50.88 | 03:02 |
| LOWEST FREQUENCY | 49.45 | 19:25 |

1.4 SYSTEM COLLAPSE UP DATE

| Date of last total collapse: 27th June, 2017 | | No. of days since last total collapse: 38 | | | | | | | | | | | | |
|--|---------|--|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-------|----|
| Date of last partial collapse: 19 th July, 2017 | | No. of days since last partial collapse: 18 | | | | | | | | | | | | |
| 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 | 20 |
| 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 | 8 |
| 2013 | Total | -- | 1 | 2 | 2 | 3 | 4 | 1 | 1 | 1 | 1 | 4 | 2 | 22 |
| | Partial | -- | -- | -- | -- | -- | -- | -- | -- | 2 | | | | 2 |
| 2014 | Total | 2 | | | 2 | 3 | 1 | | | 1 | | | | 9 |
| | Partial | | | | | | | | | | | | | 2 |
| 2015 | Total | 1 | | 1 | | 2 | | 1 | | | 2 | 1 | 4 | 6 |
| | Partial | -- | -- | 1 | | 2 | | | | 1 | | | | 4 |
| 2016 | Total | -- | -- | 2 | 3 | 6 | 5 | | 1 | 1 | 2 | 2 | 2 | 22 |
| | Partial | -- | -- | 1 | | 1 | 3 | 1 | | | | | | 6 |
| 2017 | Total | 5 | 3 | | 3 | 1 | 1 | | | | | | | 13 |
| | Partial | 1 | | 1 | | | 1 | | | | | | | 3 |

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

| STATION | TURBINE | PEAK GEN. (MW) | OFF-PEAK GEN(MW) | |
|--------------|-----------------|----------------|------------------|------|
| 1 | KAINJI | HYDRO | 312 | 208 |
| 2 | JEBBA | HYDRO | 378 | 320 |
| 3 | SHIRORO | HYDRO | 552 | 292 |
| 4 | EGBIN ST2 - 5 | STEAM | 494 | 370 |
| 5 | SAPELE | STEAM | 60 | 60 |
| 6 | DELTA | GAS | 482 | 416 |
| 7 | AFAM IV-V | GAS | 0 | 0 |
| 8 | GEREGU GAS | GAS | 292 | 100 |
| 9 | OMOTOSHO GAS | GAS | 76 | 75.9 |
| 10 | OLORUNSOGO GAS | GAS | 103 | 91.1 |
| 11 | GEREGU NIPP | GAS | 138 | 79 |
| 12 | SAPELE NIPP | GAS | 0 | 0 |
| 13 | ALAOJI NIPP | GAS | 0 | 0 |
| 14 | OLORUNSOGO NIPP | GAS | 111.1 | 74.4 |
| 15 | OMOTOSHO NIPP | GAS | 106.9 | 86.1 |
| 16 | ODUKPANI NIPP | GAS | 102.6 | 0 |
| 17 | IHOVBOR NIPP | GAS | 112 | 84 |
| 18 | OKPAI | GAS | 274 | 190 |
| 19 | AFAM VI | GAS | 147 | 115 |
| 20 | IBOM POWER | GAS | 0 | 0 |
| 21 | ASCO | GAS | 0 | 0 |
| 22 | A.E.S | GAS | 0 | 0 |
| 23 | OMOKU | GAS | 71.9 | 56.2 |
| 24 | TRANS AMADI | GAS | 16 | 15.9 |
| 25 | RIVERS IPP | (GAS) | 0 | 0 |
| 26 | EGBIN ST6 | (GAS) | 168 | 172 |
| 27 | PARAS ENERGY | (GAS) | 70.1 | 71 |
| 28 | GBARAIN NIPP | GAS | 0 | 0 |
| TOTAL | | 4066.6 | 2876.6 | |

1.6 ENERGY GENERATED/ENERGY SENT OUT:

| STATION | TURBINE | ENERGY GENERATED | | ENERGY SENT OUT | | |
|--------------|-----------------|------------------|------------------|-----------------|------------------|-----------------|
| | | MWH | MWH/H | MWH | MWH/H | |
| 1 | KAINJI | HYDRO | 6,365.00 | 265.21 | 6,348.90 | 264.54 |
| 2 | JEBBA | HYDRO | 8,728.00 | 363.67 | 8,704.00 | 362.67 |
| 3 | SHIRORO | HYDRO | 10,038.00 | 418.25 | 10,008.81 | 417.03 |
| 4 | EGBIN ST2 - 5 | STEAM | 9,809.70 | 408.74 | 9,429.20 | 392.88 |
| 5 | SAPELE | STEAM | 1,290.10 | 53.75 | 1,289.00 | 53.71 |
| 6 | DELTA | GAS | 10,420.57 | 434.19 | 10,210.50 | 425.44 |
| 7 | AFAM IV-V | GAS | - | 0.00 | - | 0.00 |
| 8 | GEREGU GAS | GAS | 3,519.90 | 146.66 | 3,495.89 | 145.66 |
| 9 | OMOTOSHO GAS | GAS | 1,818.00 | 75.75 | 1,797.50 | 74.90 |
| 10 | OLORUNSOGO GAS | GAS | 2,289.68 | 95.40 | 2,269.78 | 94.57 |
| 11 | GEREGU NIPP | GAS | 2,185.63 | 91.07 | 2,174.47 | 90.60 |
| 12 | SAPELE NIPP | GAS | - | 0.00 | - | 0.00 |
| 13 | ALAOJI NIPP | GAS | - | 0.00 | - | 0.00 |
| 14 | OLORUNSOGO NIPP | GAS | 2,121.70 | 88.40 | 2,090.50 | 87.10 |
| 15 | OMOTOSHO NIPP | GAS | 2,144.50 | 89.35 | 2,118.40 | 88.27 |
| 16 | ODUKPANI NIPP | GAS | 1,274.30 | 53.10 | 1,263.18 | 52.63 |
| 17 | IHOVBOR NIPP | GAS | 2,070.00 | 86.25 | 2,052.36 | 85.52 |
| 18 | OKPAI | GAS | 4,949.00 | 206.21 | 4,793.20 | 199.72 |
| 19 | AFAM VI | GAS | 2,902.34 | 120.93 | 2,867.80 | 119.49 |
| 20 | IBOM | GAS | 288.98 | 12.04 | 282.00 | 11.75 |
| 21 | ASCO | GAS | - | 0.00 | - | 0.00 |
| 22 | A.E.S | GAS | - | 0.00 | - | 0.00 |
| 23 | OMOKU | GAS | 1,680.60 | 70.03 | 1,646.44 | 68.60 |
| 24 | TRANS AMADI | GAS | 383.40 | 15.98 | 372.10 | 15.50 |
| 25 | RIVERS IPP | GAS | - | 0.00 | - | 0.00 |
| 26 | EGBIN ST6 | STEAM | 4,069.00 | 169.54 | 3,867.00 | 161.13 |
| 27 | PARAS ENERGY | GAS | 1,246.20 | 51.93 | 1,240.70 | 51.70 |
| 28 | GBARAIN NIPP | GAS | 260.20 | 10.84 | 251.50 | 10.48 |
| TOTAL | | | 79,854.80 | 3,327.28 | 78,573.23 | 3,273.88 |

GENERATION POSITION AT 06:00HRS OF MONDAY 07/08/2017

| | STATIONS | 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) | REMARKS |
|----------------------|---------------------|----------------------------------|---|--|----------------------------------|---------------------------------|---|--|
| PRIVATISED COMPANIES | KAINJI HYDRO | 1G5, 6, 11 & 12 | 440 | 440 | 1G5, 6, 11 & 12 | 440 | 257 | 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. |
| | | 4 | | | 4 | | | |
| | JEBBA HYDRO | 2G2 - 5 | 386 | 380 | 2G3 - 5 | 225 | 225 | 2G1 - Out on maintenance. 2G2 - On standby due to high frequency. 2G6 - Out due to burnt generator winding and AVR. |
| | | 4 | | | 3 | | | |
| | SHIRORO HYDRO | 411G1 - 4 | 600 | 600 | 411G1 - 4 | 500 | 407 | 411G2 & 3 - Load reduced due to high frequency. |
| | | 4 | | | 4 | | | |
| | EGBIN STEAM | ST2, 4 & 5 | 660 | 660 | ST2 & 4 | 440 | 334 | ST1 - Tripped on generator CB trouble. ST3 - Tripped on high vibration. ST5 - Out for frequency management. |
| | | 3 | | | 2 | | | |
| | SAPELE (STEAM) | ST2 | 120 | 60 | ST 2 | 60 | 60 | ST1 - Tripped on low drum level. ST4 & 5 - Awaiting major overhaul. ST6 - Tripped on gas control valve not following reference point. |
| | DELTA (GAS) | GT4, 7, 10 - 13, 15, 16, 18 & 19 | 565 | 535 | GT4, 7, 10 - 13, 15, 16, 18 & 19 | 535 | 492 | GT3 & 5 - Out due to generator winding fault. GT6 & 8 - Out on maintenance. GT9 - Tripped on excitation system major trouble. GT14 - Out on major overhaul. GT17 - Out on excitation trouble. GT20 - Out on major inspection. |
| 10 | | 10 | | | | | | |
| AFAM IV & V (GAS) | 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 | GT11 - 13 | 435 | 435 | GT11 & 12 | 290 | 199 | GT13 - Out for frequency management. | |
| OMOTOSHO GAS | GT1 - 8 | 336 | 304 | GT1, 5 & 7 | 114 | 77.3 | GT2, 3, 4, 6 & 8 - Out for frequency management. | |
| | 8 | | | 3 | | | | |
| OLORUNSOGO GAS | GT1 - 8 | 336 | 304 | GT1, 2, 6 & 7 | 152 | 104.7 | GT3 - 5 & 8 - Out for frequency management. | |
| | 8 | | | 4 | | | | |
| NIPP | GEREGU NIPP | GT21 & 22 | 290 | 290 | GT22 | 145 | 118 | GT21 - Out due to gas constraints. GT23 - Tripped on ventilation system trip. |
| | | 2 | | | 1 | | | |
| | SAPELE NIPP | 0 | 0 | 0 | 0 | 0 | 0 | GT1 - Out on undisclosed fault. GT2 - Out due to auxiliary oil pump problem. GT3 - Out on bearing lift pump trouble. GT4 - Tripped on loss of auxiliary. |
| | | 0 | | | 0 | | | |
| | ALAOJI NIPP GAS | GT1, 2 & 4 | 375 | 360 | 0 | 0 | 0 | GT1 & 4 - Out due to gas constraints. GT2 - Out for frequency management. GT3 - Shut down due to generator air inlet filter trouble. |
| | | 3 | | | 0 | | | |
| | OLORUNSOGO NIPP GAS | GT1 - 3 | 375 | 360 | GT1 | 120 | 104.4 | GT2 & 3 - Out for frequency management. GT4 & ST2 - Out of production since 25/10/2016. |
| | | 3 | | | 1 | | | |
| | OMOTOSHO NIPP GAS | GT1, 2 & 4 | 375 | 360 | GT1 | 120 | 91.1 | GT2 - Out for frequency management. GT3 - Out of production since 02/08/2016. GT4 - Out due to gas constraints. |
| | | 3 | | | 1 | | | |
| ODUKPANI NIPP | GT1, 3 & 5 | 375 | 360 | GT1 | 117.2 | 117.2 | GT2 - Tripped on busbar 1 under voltage. GT3 & 5 - Out for frequency management. GT4 - Out on unit transformer problem. | |
| | 3 | | | 1 | | | | |
| IHOVBOR NIPP | GT1 - 3 | 337.5 | 337.5 | GT3 | 112.5 | 80.3 | GT1 & 2 - Out for frequency management. | |
| | 3 | | | 1 | | | | |
| GBARAIN NIPP GAS | GT2 | 112.5 | 112.5 | 0 | 0 | 0 | GT2 - Out due to tripping of Alaoji/Owerri 132kV lines 1 & 2. | |
| | 1 | | | 0 | | | | |
| IPP | OKPAI GAS/STEAM | GT11, 12 & ST18 | 450 | 305 | GT11, 12 & ST18 | 305 | 190 | Generation limited to 305MW due to unavailability of one boiler and fault on GT11 turbine. |
| | | 3 | | | 3 | | | |
| | AFAM VI GAS/STEAM | GT11, 13 & ST10 | 433.3 | 433.3 | GT11 | 150 | 116 | GT12 - Shut down due to power oil pump system fault. GT13 & ST10 - Out for frequency management. |
| | | 3 | | | 1 | | | |
| | IBOM POWER GAS | 0 | 0 | 0 | 0 | 0 | 0 | GT2 - Out due to the fire outbreak on the control panel. GT3 - Out on maintenance work. Generation reduced due to high air inlet differential pressure. |
| | | 0 | | | 0 | | | |
| | AES | 0 | 0 | 0 | 0 | 0 | 0 | Out of production since 27/09/2014. |
| | ASCO | 0 | 0 | 0 | 0 | 0 | 0 | GT1 - Shut down due to leakage in the furnace. |
| | OMOKU GAS | GT1, 2, 5 & 6 | 100 | 80 | GT1, 2, 5 & 6 | 80 | 79.5 | GT3 - Tripped on generator differential lockout. GT4 - Out for overhaul. |
| | | 4 | | | 4 | | | |
| TRANS-AMADI | 0 | 0 | 0 | 0 | 0 | 0 | GT4 - Out due to faulty breaker. | |
| RIVERS | 0 | 0 | 0 | 0 | 0 | 0 | Out of production since 16/09/2016. | |
| | 0 | | | 0 | | | | |
| | SUB TOTAL | 73 | 7101.3 | 6716.3 | 46 | 3905.7 | 3052.5 | Frequency = 50.32Hz. |

1.7B GENERATION POSITION AT 06:00HRS OF MONDAY 07/08/2017 FOR UNITS ON BILATERAL AGREEMENT

| GENERATOR | UNIT | GEN. CAP (MW) | GEN. POS (MW) | UNIT | GEN. CAP (MW) | GEN. POS (MW) | REMARKS |
|--------------------|---------|---------------|---------------|-----------|-----------------|-----------------|-------------------------|
| EGBIN | ST6 | 220 | 220 | ST6 | 170 | 170 | Available unit on bar. |
| | 1 | | | | | | |
| PARAS ENERGY | GT2 - 9 | 72 | 72 | GT2 - 9 | 70.3 | 70.3 | Available units on bar. |
| | 8 | | | | | | |
| | 8 | | | | | | |
| SUB TOTAL | | 9 | 292 | 9 | 240.3 | 240.3 | |
| GRAND TOTAL | | 82 | 7393.3 | 55 | 4,146.00 | 3,292.80 | Frequency = 50.32Hz. |

1.7C BILATERAL AGREEMENT UNITS DISPATCH - SUNDAY 06/08/2017

| FEEDERS NAME | MAX. LOAD (MW) | TIME (HRS) | HOURS IN SERVICE | REMARK | |
|--|----------------|-------------|------------------|--------|-----|
| Egbin ST6 120MW GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY | | | | | |
| OGBA | U-STEEL | ON | 1:00 | 24 | NIL |
| | PTCEXPRESS | 8 | 14:00 | 24 | NIL |
| | SANKYO | ON | 1:00 | 24 | NIL |
| | FEEDER 8 | 7 | 17:00 | 24 | NIL |
| IKORODU | PULK IT | ON | 1:00 | 24 | NIL |
| | INDUSTRIAL | 17 | 20:00 | 24 | NIL |
| | SPINTEX | 3 | 1:00 | 24 | NIL |
| | DANGOTE | ON | 1:00 | 24 | NIL |
| | LAND CRAFT | 5 | 3:00 | 24 | NIL |
| ALAUUSA | TR4 15MVA | 1.8 | 19:00 | 24 | NIL |
| | TR5 -15MVA | 3.2 | 13:00 | 24 | NIL |
| | ALAUUSA | 6.9 | 13:00 | 24 | NIL |
| MLAND | PTC (MARYLAND) | 11 | 15:00 | 24 | NIL |
| TOTAL LOAD | | 62.9 | | | |

BILATERAL AGREEMENT LOAD DISPATCH
60MW PARAS ENERGY GENERATION TO CEB

| FEEDER | MAX | TIME | HOURS IN SERVICE | REMARK |
|------------------------------|------|-------|------------------|--|
| IKEJA WEST/SAKATE 330KV LINE | 72.6 | 08:00 | 18 | Out due to planned outage at Ikorodu/Shagamu 132kV line. |
| | | | | |

1.8 HYDROLOGICAL DATA: MONDAY 07/08/2017

| | KAINJI | JEBBA | SHIRORO |
|--|--------------|--------------|-------------|
| HEAD WATER ELEVATION (METERS) | 136.74 | 103.13 | 367.2 |
| TAIL WATER ELEVATION (METERS) | 105.12 | 74.50 | 271.00 |
| GROSS OPERATING HEAD (METERS) | 31.62 | 28.63 | 96.2 |
| AVERAGE TURBINE DISCHARGE (M3/SEC) | 936 | 1375 | 505 |
| AVERAGE SPILLAGE (M3/SEC) | 0 | 159 | 0 |
| AVERAGE TOTAL STATION DISCHARGE (M3/SEC) | 936 | 1534 | 505 |
| COMPUTED INFLOW (M3/SEC) | 2186 | 1569 | 630 |
| STORAGE DIFFERENTIAL | 1250 | 35 | 125 |
| 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 SUNDAY 06/08/2017

| DISCO | MAXIMUM LOAD(MW) | TIME(HRS) | ALLOCATED LOAD (MW) | MINIMUM LOAD(MW) | TIME(HRS) |
|-------|------------------|-----------|---------------------|------------------|-----------|
| ABUJA | 443.4 | 23:00 | 520.49 | 310 | 09:00 |
| EKO | 318.6 | 06:00 | 461.16 | 209.5 | 11:00 |
| IKEJA | 456.2 | 08:00 | 729.76 | 353.7 | 13:00 |

2.0 GAS POSITION: MONDAY 07/08/2017

| 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 | 457 | | 1100 | | 440 | 660 |
| DELTA (GAS) | 318 | | 765 | | 535 | 230 |
| OMOTOSHO GAS | 75.9 | | 336.8 | | 114 | 222.8 |
| OMOTOSHO NIPP | 86.2 | | 500 | | 120 | 380 |
| OLORUNSOGO (GAS) | 89.4 | | 336 | | 152 | 184 |
| OLORUNSOGO NIPP | 82.5 | | 750 | | 120 | 630 |
| SAPELE NIPP | 0 | | 500 | | 0 | 500 |
| SAPELE STEAM | 60 | | 720 | | 60 | 660 |
| AFAM IV-V | 0 | | 300 | | 0 | 300 |
| AFAM VI | 103 | | 650 | | 150 | 500 |
| GEREGU GAS | 40 | | 435 | | 290 | 145 |
| GEREGU NIPP | 0 | | 435 | | 145 | 290 |
| OKPAI (GAS/STEAM) | 190 | | 480 | | 305 | 175 |
| ALAOJI NIPP | 0 | | 504 | | 0 | 504 |
| IHOVBOR NIPP | 0 | | 450 | | 112.5 | 337.5 |
| IBOM | 39.9 | | 198 | | 0 | 198 |
| ODUKPANI NIPP | 62.5 | | 625 | | 117.2 | 507.8 |
| TOTAL | 1604.4 | | 9084.80 | | 2660.7 | 6424.1 |

1 MMSCF IS EQUIVALENT TO 3.75MW

SYSTEM BLACK START CAPABILITY
Delta, Shiroro & Egbin - Available.

SPINNING RESERVE FOR : SUNDAY 06/08/2017

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

3.0 SYSTEM SPINNING RESERVE AS AT 0600HRS OF MONDAY 07/08/2017 = 0MW. 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 | |
| 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 | 0 |
| | | GT2 | | 0 | |
| | | GT3 | | 0 | |
| | | GT4 | | 0 | |
| TOTAL (MW) | | | 295 | 0 | 0 |

4.0 UNUTILIZED GENERATION CAPABILITY

The unutilized generation capability for Monday 07/08/2017 as at 0600Hrs was = 2223.8MW.

| S/NO | STATION | ACTUAL GENERATION CAPABILITY (MW) | GENERATION AT 0600HRS (MW) | UNUTILIZED GENERATION CAPABILITY (MW) | SUB-TOTAL |
|--|-------------------------------|-----------------------------------|----------------------------|---------------------------------------|-----------|
| 4.1 DUE TO GAS CONSTRAINTS: | | | | | |
| 1 | Geregu NIPP GT21 | 145 | 0 | 145 | 505 |
| 2 | Alaoji NIPP GT1 & 4 | 240 | 0 | 240 | |
| 3 | Omotosho NIPP GT4 | 120 | 0 | 120 | |
| | | | | 0 | |
| | | | | 0 | |
| | | | | 0 | |
| | | | | 0 | |
| | | | | 0 | |
| | | | | 0 | |
| | | | | 0 | |
| IT IS ENVISAGED WITH IMPROVED PLANT AVAILABILITY AND RELIEF FROM EXISTING POWER SYSTEM NETWORK RELATED CONSTRAINTS, ADDITIONAL 1713.09MMWSCF OF GAS (EQUIVALENT TO 6424.1MW) WILL BE REQUIRED WHEN ALL THERMAL UNITS ARE ON BAR. | | | | | |
| 4.2 DUE TO LINE CONSTRAINTS | | | | | |
| | | | | 0 | 0 |
| | | | | 0 | |
| | | | | 0 | |
| 4.3 DUE TO FREQUENCY MANAGEMENT OCCASIONED BY DISCOS' LOAD DEMAND | | | | | |
| 1 | Afam VI GT13 & ST10 | 283.3 | 0 | 283.3 | 1718.8 |
| 2 | Ihovbor GT1 & 2 | 225 | 0 | 225 | |
| 3 | Olorunsogo NIPP GT2 & 3 | 240 | 0 | 240 | |
| 4 | Omotosho Gas GT2, 3, 4, 6 & 8 | 190 | 0 | 190 | |
| 5 | Geregu Gas GT13 | 145 | 0 | 145 | |
| 6 | Olorunsogo Gas GT3-5 & 8 | 152 | 0 | 152 | |
| 7 | Olorunsogo NIPP GT2 | 120 | 0 | 120 | |
| 8 | Sapele NIPP GT2 | 112.5 | 0 | 112.5 | |
| 9 | Shiroro 411G2 & 3 | 250 | 119 | 131 | |
| 10 | Egbin ST5 | 120 | 0 | 120 | |
| | | | | 0 | |
| | | | | 0 | |
| 4.4 DUE TO WATER MANAGEMENT | | | | | |
| | | | | 0 | 2223.8 |
| Total | | | | | |

5.0 OUTAGES:

5 (A) FORCED OUTAGES (GENERATION):-

- 03:02 through 24:00Hrs, Gbarain P/S GT2 tripped on reverse power due to tripping of Alaoji/Owerri 132kV lines 1 & 2. LHR = 83.5MW.
- 11:24Hrs, Paras Energy GTs 2 –9 tripped on reverse power due to tripping of Ikorodu/Shagamu 132kV line. LHR = 67MW.
17:35Hrs, 17:37Hrs, 17:39Hrs, 17:40Hrs, 17:42Hrs, 17:44Hrs, 17:46Hrs, 17:48Hrs, GTs 3,9, 7, 8, 2, 5, 6 & 4 were tied respectively.

5 (B) FORCED OUTAGES TRANSMISSION:-

- 03:02 – 03:27Hrs, Alaoji/Owerri 132kV lines 1 & 2 CB tripped at Alaoji T/S on the following relay indications:-
At Alaoji T/S:
Line 1: Optimho relay – Relay trip, Z1, B –N, location = 51.29km, period = 55.5km.
Siemens relay – Relay trip, 1>>, IE >> Yellow Phase. LHR = 26MW.
Line 2: Siemens relay – Relay trip, IE >> Yellow Phase. LHR = 26MW.
- 03:02 - 03:38Hrs, Owerri/Ahoada 132kV line 1 CB tripped at Owerri T/S on DEF. LHR = 18.9MW. Also, Owerri T/S 60MVA 132/33kV transformer TR2 primary CB tripped on E/F. LHR = 30.5MW.
07:03Hrs, 60MVA transformer TR2 was restored.
- 09:54 – 12:07Hrs, Afam 1 T/S 30MVA 132/33kV transformer T1 was taken out to treat hot spot on the Yellow Phase secondary CT clamp. No load interruption as transformer was on soak.
- 11:02- 11:35Hrs, Alaoji/Owerri 132kV line 2 CB tripped at Alaoji T/S on directional O/C. LHR = 66.6MW.
- 11:24 - 16:53Hrs, Ikorodu/Shagamu 132kV line CB tripped at Ikorodu T/S on distance protection, zone 1 trip, Phase B –N, location = 19.7km. LHR = 6MW.
11:47Hrs, trial restoration failed on SOTF relay, location = 17.3km.
- 13:13 through 24:00Hrs, Alimosho T/S 100MVA 132/33kV transformer T2 primary and secondary breakers tripped on the following relay indications:-
Primary CB - instantaneous O/C.
Secondary CB – instantaneous O/C, instantaneous E/F and trip relay. LHR = 10.7MW.
At the same time, tower 33kV feeder CB tripped on instantaneous E/F & E/F. Inspection revealed shattered secondary CB and the transformer was left out for test.

5 (C) PLANNED OUTAGES:

- 08:51 - 20:24Hrs, Odukpani NIPP GT1 was shut down for continuation of breakers & isolators replacement at Ikot-Ekpene T/S. Load loss = 115.8MW.
- 09:21 - 19:08Hrs, Kainji/Birin 330kV line (cct K3R) was taken out for replacement of broken insulators on the line. Load loss = 48MW
- 09:37 - 19:31Hrs, Odukpani/Ikot-Ekpene 330kV line 1 (cct D1K) was taken out for safe working space for continuation of job at Ikot-Ekpene T/S. Load loss = 14.7MW.
- 09:40 - 19:33Hrs, Alaoji/Ikot-Ekpene 330kV line 1 (cct A1K) was taken out for safe working space for continuation of job at Ikot-Ekpene T/S. No load loss as transformer was on soak.
- 09:44- 19:31Hrs, Ikot- Ekpene/Ugwuaji 330kV line 3 (cct K3U) was taken out for safe working space for continuation of job at Ikot-Ekpene T/S. Load loss = 19MW.

5(D) URGENT OUTAGES:

- 08:31 through 24:00Hrs, Ibom Power GT3 was shut down to carry out hot gas inspection in the station. Load loss = 53MW.

5 (E) EMERGENCY OUTAGES:-

The under mentioned lines were opened on frequency control:-

- 19:25 – 19:30Hrs, Osogbo/Akure/Ado-Ekiti 132kV line CB. LHR = 21MW.
Frequency was 49.50Hz.
- 20:20 – 20:29Hrs, Osogbo/Offa/Omuaran 132kV line CB. LHR = 17MW.
Frequency was 49.60Hz.

5 (F) AUTOMATIC UNDER FREQUENCY OPERATION: NIL

5 (G) 330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:- cct U2A.

5 (I) 330KV LINES THAT ARE OUT ON BREAKER PROBLEM:- ccts K1J, A2K & N4J.

5 (J) 330KV LINES THAT ARE OUT ON PLANNED OUTAGE:- cct H1W.

5 (K) 330KV LINES THAT ARE OUT ON LINE FAULT:- NIL

9 WEATHER REPORT: Rainfall was reported in Osogbo, Kano, Benin & Onitsha.

10 INTERNATIONAL LINES:-

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

Maximum load - 165MW/ at 20:00Hrs.

Minimum load - 77MW at 11:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 77MW at 23:00Hrs.

Minimum load - 23MW at 08:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 34.3MW at 21:00Hrs.

Minimum load - 17.8MW at 10:00Hrs.

11 MISCELLANEOUS:-

- 00:07Hrs, Shiroro P/S was instructed to reduce generation by 100MW.
Frequency was 50.57Hz.
- 00:27Hrs, Olorunsogo was instructed to reduce generation by 20MW.
Frequency was 50.50Hz.

6 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY

GROUP 1 - ALL UNITS OFFERING FREE GOVERNOR FREQUENCY RESPONSE.

GROUP 2 - ALL UNITS OFFERING REGULATING RESERVE.

GROUP 3 - ALL UNITS OFFERING SPINNING RESERVE.

GROUP 4 - HYDRO IN HIGH FLOOD PERIOD SEASON, KAINJI, JEBBA AND SHIRORO.

GROUP 5 - ALL UNITS USED TO AVOID OVERLOADING TRANSMISSION LIMITS.

GROUP 6 - ALL UNITS OFFERING VOLTAGE SUPPORT OUTSIDE NORMAL LEVEL.

GROUP 7 - ALL UNITS IN LOCATION TO DIMINISH LOSSES

GROUP 8 - ALL UNITS NOT OFFERING ANY SERVICES.

8 (A) COMMUNICATION MEDIA

| STATIONS | NO. INSTALLED | NO. WORKING |
|-------------|---------------|-------------|
| PLC/PAX | 37 | 35 |
| OPTIC FIBRE | 13 | 10 |
| PLS | 14 | 5 |

8 (B) SCADA RTU STATUS

| STATIONS | TOTAL NO OF STATIONS | NO OF RTU INSTALLED | NO OF RTU WORKING |
|----------------|----------------------|---------------------|-------------------|
| POWER STATIONS | 23 | 8 | 3 |
| 330kV | 41 | 17 | 13 |
| 132kV | 119 | 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.

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.
- 3 Otta/Ogba 132kV line isolator - defective control shaft.

- 3 00:34Hrs, Delta P/S was instructed to reduce generation by 50MW. Frequency was 50.51Hz.
- 4 00:50Hrs, Geregu P/S was instructed to reduce generation by 74MW. Frequency was 50.56Hz.
- 5 00:54Hrs, Okpai P/S was instructed to reduce generation by 30MW. Frequency was 50.55Hz.
- 6 01:45Hrs, Shiroro P/S was instructed to reduce generation by 100MW. Frequency was 50.60Hz.
- 7 08:07Hrs, Delta P/S was instructed to reduce generation by 50MW. Frequency was 50.55Hz.
- 8 08:10Hrs, Geregu P/S was instructed to reduce generation by 50MW. Frequency was 50.55Hz.
- 9 08:14Hrs, Egbin P/S was instructed to reduce generation by 50MW. Frequency was 50.55Hz.
- 10 08:16Hrs, Olorunsogo NIPP was instructed to reduce generation by 25MW. Frequency was 50.55Hz.
- 11 14:15Hrs, Tegina T/S 30MVA 132/33kV transformer T1 was restored after the replacement of the defective primary CB with a new PINGAO SF6 CB . **Note:** The transformer was taken out at 11:30Hrs of 26/06/2017.
- 12 20:02Hrs, Alaoji T/S 75MX 330kV Reactor R1 was taken out of service for voltage control. V/P = 318/325kV and 133/136kV.
- 13 20:07 – 23:25Hrs of 05/08/2017, Ugwuaji T/S 150MVA 330/132/34.5kV transformer TR1 primary and secondary CBs tripped on REF LV side and lockout. No load loss as transformer was on soak.
- 14 21:27Hrs, Egbin ST4 was removed from free governor control due to hunting gas pressure.
- 15 23:11Hrs, Egbin P/S was directed to reduce generation by 110MW. Frequency was 50.56Hz.

12(D) LAGOS REGION

- 1 Egbin/Aja 330kV line 2 (cct N4J) - faulty breaker at Aja T/S.
- 2 Agbara/Ojo line 1 on soak.

SHIRORO REGION:- Nil

12(E) UNAVAILABLE CAPACITOR BANK:

- (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 spans.
- 2 Ikeja West/Olorunsogo line (cct R1W) - 80 spans.

- 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.
- 7 Omotosho/Ikeja West 330kV line CB at Ikeja West T/S.

OSOGBO REGION:

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

PORT HARCOURT REGION

- 1 Alaoji/Ikot-Ekpene 330KV line 2 (cct A2K) Yellow Phase isolator not latching property.

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.

- 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/tire 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, Ugwuaji, 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) -08036744641.
- e AGM (S/O) - 08056002757, CUG: 08129458475