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NEWSLETTER

TRANSMISSION COMPANY OF NIGERIA (TCN)

- **FG approves transmission lines & substations contract**
- **TCN boss tasks stakeholders on efficient grid management**
- **Maintenance, Upgrade & Expansion: key to grid stability**

FG Approves Contracts for Three Transmission Sub-Stations & Transmission Lines Extension

By Grace Sambe-Jauro

The Federal Executive Council (FEC), has approved the construction of three transmission sub-stations, two in Kano State and one in Benue State, and the extension of transmission lines in Abia and Imo States.

Minister of Power, Engr. Sale Mamman

The Minister of Power, Engr. Mamman Sale, made the disclosure after the 37th virtual federal cabinet meeting presided over by President Muhammadu Buhari, on Wednesday, 10th March 2021, in the State House, Abuja.

According to him, the breakdown of cost implication for those projects show that the extension of transmission lines in Abia and Imo States will be executed at the cost of $506,324.40 plus N34,034,000 local content, while the proposed sub-station in Zaki-Biam, Benue State will cost $8.6 million with local content put at N2.08 billion. The cost of the substation in Bichi in Kano State is $9.6 million plus N1.7 billion local content, while that of the substation in Kanyi, Kano State is $9.5 million plus N1.7 billion local content.

Engr. Mamman further explained that the Ministry of Power embarked on these new projects as part of efforts aimed at expanding the national grid for sustainable supply of electricity, and to improve the wheeling capacity of TCN.

Validating the Minister's position, the Minister of Information and Culture, Mr. Lai Mohammed said, "You see, before now, there's been complaints that more power is being produced compared to what is being wheeled out. "So, what he has been doing recently, is to improve the capacity of the Transmission Company of Nigeria (TCN), to transmit more power. So, all these contracts are about improving the capacity of TCN so that when electricity is produced, it will get to our homes."

Commenting on the development, the Ag. MD/CEO of TCN, Engr. Sule Abdulaziz noted that the approval of funds for the substation and line projects further shows that the Federal Government was bent on ensuring incremental expansion of the capacity of the nation's transmission grid in line with its plan for the sector. He expressed appreciation to the Federal government and pledged to ensure the timely delivery of the projects by the contractors.

ED (ISO) Engr. Maman Lawal

GM, System Operations (SO), Engr. Nafisa Ali

GM, (NCC), Engr. Balarabe Abdullahi

TCN TASKS ELECTRICITY STAKEHOLDERS ON STRATEGIES FOR EFFICIENT GRID MANAGEMENT

By Bili Kazah Akau

The Ag. Managing Director and Chief Executive Officer of the Transmission Company of Nigeria (TCN), Engr. Sule Ahmed Abdulaziz, has tasked electricity stakeholders in the generation, transmission and distribution subsectors to come up with strategies that will enable them handle risks associated with the management of the nation's power grid as every player is an important component of the structure that produces an efficiently managed grid.

Engr. Abdulaziz, represented by the Executive Director Independent System Operator (ISO), Engr. Maman Lawal, made this known during a two-day Joint Generation/Operation/ Distribution Planning meeting on Wednesday 17th March 2021, to appraise operational performance related to generation data, available units, water, gas constraints and load intake in the last six months, as well as projected data for the next six months. The data will aid efficient operational planning and management for enhanced system performance and stability.

He posited that all stakeholders should adopt the principal objective of planning which entails maximizing profit and conversely minimizing losses, managing uncertainties and coming up with ways to handle risk involved in grid management. He equally harped on the importance of critical observations in reshaping the industry.

Engr. Lawal explained that the process of attaining an efficient grid includes setting the right environment which would inspire confidence amongst industry players, contrive the process that players can look up to and calibrate the same to ensure an efficient, viable and economic model. All these, he noted, cannot be done without first having a proper planning mechanism in place.

Speaking also in the meeting, the General Manager, System Operations (SO), Engr. Nafisa Ali, opined that the sector had generally performed well in 2020 with records of multiple maximum daily energy peak generation amid prevalent challenges, including the Covid-19 pandemic. She pointed out that in less than three months into the year 2021, the system has continued to record increase in both generation

Engr. Abdullahi highlighted achievements by all stakeholders within this appraisal period to include; all-time peak generation and transmission of 5,801.60MW on 1st of March, 2021 and the reduced incidents of system collapses

peak and daily maximum energy peak. This, she said, signals hope that the sector would do better moving forward.

She lauded the efforts of participants and noted that any success recorded in the sector is a result of collective effort, and urged participants to sustain the momentum for a more efficient management of the country's grid network.

In his remark, the General Manager, National Control Centre (NCC), Engr. Balarabe Abdullahi, explained that the Joint Generation/Operation/ Distribution Planning bi-annual meeting is a forum where operators come together to appraise grid operations and make forecast based on critical technical assessments.

He also explained that the forum is an avenue to inform the DisCos of expected load supply for the next six (6) months and make recommendations on ways to improve grid facilities. The outcome of the meeting, he said, is expected to form the fulcrum for making salient decisions on the operational aspect of the power sector.

Engr. Abdullahi highlighted achievements by all stakeholders within this appraisal period to include; an increase in generation capacity to 13,014.40MW, maximum daily Energy ever attained of 119,471.15 MWH recorded on 5th March, all-time peak generation and transmission of 5,801.60MW on 1st of March, 2021, and the reduced incidents of system collapses among others.

In a communiqué signed by the Executive Director, ISO, Engr. Maman Lawal, the participants appraised the industry's activities in the last six

Participants

months and gave a high score to the performance of industry players within the period, evidently revealed in the multiple maximum peaks in energy and generation experienced on the grid.

They also adopted resolutions expressing the concern of all participating companies on a number of issues which include the provision of spinning reserve for improved grid stability, deployment of a SCADA system with a coverage area beyond legacy generation stations and fast-tracking the upgrade and completion of various transmission projects that would further expand the grid and provide quality power delivery to more electricity users in the country.

Also mentioned in the communiqué is the low load utilization by DisCos which impacts negatively no grid stability and load evacuation from GenCos as well as recruitment of plant and system operators and general infrastructural challenges bewailing the industry. The communiqué also noted the poor implementation of past communiqué recommendations and constituted a committee to monitor and report progress made on issues cited in subsequent bi-annual meetings.

Group Photograph with representative of Generation Companies

MAINTENANCE, UPGRADE AND EXPANSION: KEY TO GRID STABILITY

TCNœ MD/CEO

Q. System collapse has reduced, what changed?

A: This was achieved through more rigorous enforcement of the rules by TCN through the National Control Center (NCC). Also, generating stations are complying more with free governor control of their generators. We have increased preventive maintenance of the transmission system which is also a key factor in ensuring grid stability. These have drastically reduced spurious tripping in the network and forced outages of the network components.

Q. How stable is the national grid?

A: In the last ten months since we assumed duty, the nation's grid has been relatively stable. However, stability of the national grid is a function of the network and operational conditions. Given our current status, the grid is sufficiently stable considering that the grid operates without spinning reserve and SCADA/EMS amidst the dynamic fragilities of demand and supply from the DisCos and the GenCos. Grid stability will greatly improve with deployment of Spinning Reserve and SCADA/EMS in the grid operations; these are being pursued with all seriousness. We are intentionally implementing proactive, preventive maintenance to ensure much higher level of efficiency and stability.

We are also pursuing more collaborations with the DisCos and the GenCos, to ensure strict compliance with the Grid Code as regards the Free Governor Mechanism for the GenCos and to facilitate stable operations of the grid as the uptake of more energy by the DisCos is gradually increasing. I would like to note that we cannot tell our story without acknowledging that the Ministry of Power has been quite instrumental in creating an enabling environment for us to do our job.

Q. TCN's strategies for more power transmission?

A: Optimization and reinforcement of the existing infrastructure to address the identified weaknesses in the system is our key strategy towards delivering more power to the end-users. While expansion is being pursued to cater for new and future demands, we would continue to upgrade our network components and build new substations and lines. These are to increase our capacity to move electricity more efficiently in

The Ag. Managing Director and Chief Executive Officer of TCN, Engr. Sule Abdulaziz in this interview speaks about the strategy deployed by TCN to deliver more bulk power to the end-users in the country. Abdulaziz explains that grid stability is equally predicated on the deployment of Spinning Reserve and SCADA/EMS amidst demand and supply from DisCos and GenCos. Transmission News provides the excerpts:

Ag. MD/CEO TCN, Engr. Sule Abdulaziz

anticipation of more load up-take by the DisCos. Recently, we completed some new transformers installation and reconductoring of lines in different parts of the country. Presently, contracts for several new transmission substations and lines are in the process of being awarded while efforts are in top gear to complete on-going projects, including reinforcement of existing substations and reconductoring of existing transmission lines for higher capacity.

It is equally important to mention here that scheduled maintenance of the existing network is religiously being implemented as part of our top priorities, and spare parts are being stocked to ensure drastic reduction in downtime.

Q. TCN's short-term goals?

A: Our goal in TCN is not different with that of the Federal Government, which is to wheel stable and quality electricity to all the nooks and crannies of the country. We have in place a well-articulated plan for grid improvement which we are already implementing; this has enabled us to significantly reduce the number of grid collapses in the country. We are also working hard to ensure TCN attains the level of service delivery that would be at par with international best practices. Our goal is to continue to reposition TCN for optimal service delivery while maintaining a well-motivated and trained workforce.

> *"Our goal in TCN is not different with that of the Federal Government, which is to wheel stable and quality electricity to all the nooks and crannies of the country. We have in place, a well-articulated plan for grid improvement, which we are already implementing"*

Q. Challenges of TCN at the moment?

A: There are some notable challenges in TCN, which include the need for a very functional and efficient Supervisory Control and Data Acquisition (SCADA) system and Automated Meter Reading System, poor budgetary

“The issue of whether TCN should be privatized has been an ongoing discussion in the public space. Even though I do not advocate for the privatization of TCN, the future has a lot of unravelled mysteries, which could make TCN's privatization the next big step in the sector, but until then, we are doing our best to build TCN into a world class transmission company comparable to any standard grid.”

allocation for government funded projects. Other challenges are delay in release of approved budget, bottlenecks in the processing of IDEC and other port clearing documents and difficulty in acquisition of land and Right of Way for our projects.

Q. TCN Achievements from assumption of office

A: We have recorded a number of milestone achievements in the last 10 months. They include the successful transmission of an all-time peak generation of 5,801.6MW in March this year as well as recorded the highest daily energy peak of 119,471.15MW. Others are the implementation of re-conductoring of Sokoto-Birnin–Kebbi line from 70MW to 150MW, Ikeja West-Alimosho-Ogba-Alausa lines from 120MW to 240MW and the award of the contract for the reconductoring of Onitsha-New Haven line from 680MW to 1,320MW.

we also added 246MW at 132/33kV level by completion of 1x100MVA, 2x60MVA, 1x60MVA and 1x30MVA projects at Ogba, Gagarawa, Rumuosi and Iseyin Substations respectively, among others.

We have successfully reduced frequency of system collapse in the last 8 months through ensuring grid stability by recalibration and reconfiguration of transmission lines, we set up a functional protection department that efficiently tackled transformers protection schemes which were faulty, and also resolved a number of Way-Leave/Compensation issues across the country that have lingered for many years. Contracts and projects which were under litigation and stagnated have also been resolved.

We have also made progress in donor funded projects by the World Bank (WB), African Development Bank (AfDB), Agence Française de Developpment (AFD), and Japan International Cooperation Agency (JICA) which are at different stages of implementation, among these is the Abuja Ring Project funded by AFD and expected to address green fields transmission lines and substations aimed at reinforcing the High-Voltage Transmission Ring around Abuja.

Q. TCN's role in Presidential Power Initiative involving Siemens?

A: TCN, as a power sector participant, would be one of the beneficiaries of the Federal Government initiative to improve services in the power sector value chain. We have made our submission with regards to the projects that we would want the Siemens project to intervene in, in line with our grid expansion plans.

Apart from engineering and design support that we may render to the SPV and Siemens as the need arises, our role basically would be to take over the projects and operate them as part of newly completed projects in the grid. When they are completed, the projects would further contribute to our grid capacity expansion efforts.

Q. Privatization of TCN, what are your thoughts?

A: The Federal Government in its wisdom privatized the Generation and Distribution companies; I am certain this must have been done after consultations and with regards to the Nigerian electricity supply environment. Do not forget that the business of bulk electricity transmission all over the world is very capital intensive, much more than distribution and generation. Moreover, our terrains are quite challenging with issues of vandalism, Right of Way, illegal mining, insecurity, among others, which TCN have had to grapple with.

The issue of whether TCN should be privatized in the future has been an ongoing discussion in the public space. Even though I do not advocate for the privatization of TCN, the future has a lot of unravelled mysteries, which could make TCN's privatization the next big step in the sector, but until then, we are doing our best to build TCN into a world class transmission company comparable to any standard grid. We are determined and are diligently executing plans as laid out in our Nigerian Electricity Grid Maintenance, Expansion and Rehabilitation Programme (NEGMERP).

TCN Management and KEDCO team led by Engr. David Omoloye

TCN ASSURES TRANSPARENCY AT SLA MEETING WITH KEDCO

By Kazah Bili Akau

Sequel to a formal complaint filed by the Kano Electricity Distribution Company (KEDCO) Plc to the Nigerian Electricity Regulatory Commission (NERC) on disagreements with issues contained in the Service Level Agreement (SLA) signed with the Transmission Company of Nigeria (TCN), the Acting Managing Director of TCN, Engr. Sule Ahmed Abdulaziz has assured KEDCO of transparency and openness.

Engr. Abdulaziz gave the assurance when a team from KEDCO Plc led by the Chief Technical Officer to the Managing Director/CEO, KEDCO, Engr. David Omoloye, met with TCN on 23rd February, 2021 at the TCN Corporate Headquarters in Abuja, to reconcile areas of dispute in the SLA.

In his remark, the Executive Director, Transmission Service Provider (TSP), Engr. Victor Adewumi, also assured that TCN engineers were prepared to work with KEDCO to resolve all issues of electricity supply to feeders of their choice within their network and opined that issues of this nature are best tackled by field engineers rather than regulators.

Responding, Engr. David Omoloye outlined issues affecting KEDCO to include over allocation of load, misapplication of load schedule and wrong compilation of invoices as topmost among other issues contained in their formal complaint.

The Market Operator (MO), Engr. Edmond Eje, requested that KEDCO provides data such as the number of 33kV feeders affected and load lost; the number of 132kV interruptions with time of interruptions and Megawatts lost, among others.

Engr. Eje also noted that KEDCO would also need to disclose the availability or otherwise of its own facility especially the 33kV feeders upon which the SLA depends to enable TCN align appropriately.

At a subsequent meeting held on 1st March, 2020, both TCN and KEDCO were requested to reconcile and submit actual data of faulty equipment by undertaking an on the spot evaluation of their facilities in the affected areas and submit a report to the Market Operator within the specified period.

TCN COMPLETES NEW TOWER, RECOVERS SECOND 600MW EGBIN-AJAH TRANSMISSION LINE

By Ndidi Mbah

TCN recently completed the construction of a new transmission tower in Ajah, Lagos, and also strung the old and a new 330kilovolts Egbin - Ajah transmission lines. Both lines have been energized.

The new line increased the transmission lines capacity on that line route by 600 megawatts (MW) bringing it to a total of 1,200MW. The old line was re-energized on Saturday 13th March, 2021 while the new line was energized on Monday 15th March, 2021.

Prior to resuscitation of the second Egbin-Ajah Transmission Line, the Ajah 330/132/33kV Substation operated through a single circuit 330kV transmission line, after the second line was isolated in 2013 due to Ajah GIS Substation insulation failure. Within the period, the lone 330kV line had a maximum capacity of 600MW, but with the resuscitation of the second 330kV line and the diversion of both lines along the new tower line route, the transmission lines capacity doubled.

TCN has fulfilled the N-1 reliability criteria on that line route with the additional 330kV transmission line, and equally provided redundancy. Each of the lines can therefore serve as 'back-up' for the other during maintenance; this has increased transmission efficiency and reduced downtime on that line route.

The 13.8 kilometre transmission line receives power supply from Egbin 330kV Transmission Substation and supplies the Ajah 330kV Substation, Lekki 330kV Substation, and Alagbon 330kV Transmission Substation.

The additional 330kV transmission line, equally means that more bulk power is now supplied to the substations of Eko Electricity Distribution Company taking supply from the listed transmission substations.

...HISTORY

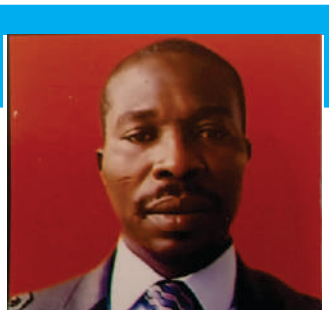
The 330kV GIS Ajah was commissioned about 36 years ago (1985) in December 2013; the Substation had insulation failure which affected four (4) of its chambers and associated Egbin-Ajah 330kV transmission Line. Since then, the Line was isolated from the terminal equipment.

The insulation failure which affected the line, equally resulted in a 150MVA, 330/132/33kV Power Transformer becoming redundant in the substation.

As an interim measure, TCN Management decided to divert the Egbin-Ajah line to the proposed Omotosho/ Epe 330kV Line, pending the complete rehabilitation of the GIS chambers. This gave birth to the construction of 330kV terminal Tower at Ajah Station, necessary to string the transmission line conductors through the terminal gantry to the new Omotosho-Ajah 330kV bay at Ajah Sub Station.

TCN REGIONAL OPERATION MANAGERS

ROM OSOGBO REGION



Mr. Olaniyi Yisa Gbadebo is the Regional Operations Manager (ROM) Osogbo. Prior to this, he was the Regional Operations Coordinator (ROC), Osogbo RCC.

He holds a BSC in Accounting from University of Lagos and HND in Electrical Electronics from Osun State College of Technology Esa-Oke.

He is an experienced Electrical Operator who has passed through K1-K5 from Professional Skill Training Centre, Kainji and as well as Senior Electrical Operator Course and other System Operator Courses.

He attended several Workshops for System Electrical Operators and served in a good number of Committees.

ROM BENIN REGION

Engr. Wasiu Adedeji Tijani is the Regional Operations Manager (ROM) Benin Region. Prior to his appointment, Engr. Wasiu Tijani was the Assistant General Manager (AGM) – Corporate Planning, at Lagos Region.

Engr. Wasiu Tijani holds a Master's Degree, MBA (Production and Operations Management) from Lagos State University, Post Graduate Diploma and a Higher National Diploma in Electrical/Electronics from the Federal University of Technology, Akure, and Ibadan Polytechnic respectively.

He is a member of Nigerian Society of Engineers (NSE), Nigerian Institute of Management (NIM), Council for the Regulation of Engineering in Nigeria (COREN), and Member, Certified, Project Management Professional (PMI, USA).

ROM BAUCHI REGION

Engr. Muhammad Nasir Umar is the Regional Operations Manager (ROM) Bauchi Region. Prior to his appointment, Engr. Muhammad Nasir Umar was the Principal Manager (Communications) supervising the installation and commissioning of all communication equipment within Kano, Dutse, Azare and Gombe Transmission Substations.

Engr. Nasir Umar holds a Higher National Diploma (Electrical Engineering) from Kaduna State Polytechnic.

He is a member of Nigerian Association of Technologists in Engineering (NATE) and the Council for the Regulation of Engineering in Nigeria (COREN).

ROM ABUJA OSOGBO

Engr. Sobande Adekoyejo Oladipo is the Regional Operations Manager (ROM), Abuja Region. Before his appointment, he was the Assistant General Manager, NCC, SCADA and RTU Maintenance NCC and the Technical Head, Operation and Maintenance of TCN SCADA and RTU networks and adaptation writing for TCN grid.

He had earlier served as the Team Lead and Technical Support, TCN SCADA Reactivation Project.

He holds a B.Sc in Electronic and Electrical Engineering, specialized in High Voltage Engineering from the then University of Ife, Ile Ife.

He is a Fellow of the Nigerian Institute of Power Engineers (NIPE), and Corporate Member, Nigerian Society of Engineers (NSE).

ROM LAGOS REGION

Engr. Joseph Johnson Olugbenga is the Regional Operations Manager (ROM), Lagos Region. Prior to his appointment, Engr. Joseph Johnson Olugbenga was the Principal Manager (Communications), Lagos Region, where he brought to bear his experience in the installation and maintenance of power systems communication equipment in the region.

Engr. Joseph J. Olugbenga, holds a Masters in Business Administration, from the University of Calabar, a Post Graduate Diploma (PGD) in Electronics and Computer Engineering, from Lagos State University and Higher National Diploma (H. N. D.) in Electronics from the Federal Polytechnic Bauchi.

He is a member of the Council for the Regulation of Engineering in Nigeria (COREN), and the Nigerian Society of Engineers (NSE).

ROM SHIRORO REGION

Engr. Sani B. Gwarzo is the Regional Operations Manager (ROM) for Shiroro. Before his appointment, Engr. Sani B. Gwarzo was the Acting Assistant General Manager Transitional Electricity Market (TEM). National Control Centre, Osogbo.

Engr. Sani B. Gwarzo developed the present frame work template of the Service Level Agreement (SLA) signed between TCN and the DisCos. He also participated in the review of Operational Procurement for System Operators.

He holds a Bachelor of Engineering (Mechanical) Degree and Post Graduate Diploma (Electrical) from Bayero University Kano. He has attended many conferences within and outside the country.

He is a member of the Council for the Regulation of Engineering in Nigeria (COREN), Nigerian Society of Engineers (NSE) and Nigeria Institute of Power Engineers (NIPE)

ROM PORTHARCOURT REGION

Engr. Agupusi Jude Ikechukwu is the Regional Operation Manager for Port Harcourt. Before his appointment, Engr. Agupusi was the Principal Manager (Communications), Benin Region in charge of planning, installation, commissioning and maintenance of power line carrier equipment, optic fibre and SCADA equipment.

Engr. Jude Agupusi holds a Masters of Engineering (Communication System Engineering) and a Post Graduate Diploma (PGD) both in Electronics / Telecomm from Enugu State University of Science and Technology, and a Higher National Diploma from Federal Polytechnic, Bida, Niger State. He has attended various local and International trainings.

He is a member of Council for the Regulation of Engineering in Nigeria (COREN), the Nigerian Society of Engineers (NSE), and a fellow of the Nigerian Institution of Power Engineers (NIPE).

ROM ENUGU REGION

Engr. Michael Ndubueze Nwagu is the Regional Operations Manager (ROM) for Enugu Region. Prior to his appointment, Engr. Michael Nwagwu was the principal Manager (Communication) responsible for coordination of all communication equipment maintenance activities in Enugu Region.

He holds a Masters Degree in (Electronics / Telecomms Engineering) from Nnamdi Azikiwe University, Awka, Anambra State and also obtained a Bachelors degree in (Electrical / Electronics Engineering) from Enugu State University of Science and Technology), Enugu State.

He is a member of Council for the Registration of Engineering in Nigeria (COREN) and corporate member of Nigerian Society of Engineers (NSE).

ROM KADUNA REGION

Engr. Abdulkareem Abdullahi Shafa is the Regional Operations Manager, Kaduna Region. Before his appointment, he was the Principal Manager (Regional Operations Coordinator, Kaduna Region), and also the Area Control Coordinator, Gombe.

Engr. Abdulkareem Abdullahi Shafa holds a Bachelors degree in (MIT Computer Science) from Ladoke Akintola University of Technology, Ogbomosho in Osun State. He also obtained a Post Graduate Diploma in Electrical / Electronic Engineering Technology from Abubakar Tafawa Belewa University, Bauchi, Bauchi State and a Higher National Diploma in Electrical / Electronic Engineering Technology from Federal Polytechnic, Bauchi State.

He is a member of Council for the Registration of Engineering in Nigeria (COREN) and corporate member of Nigerian Society of Engineers (NSE).

TCN ENGINEERS INSTALL AND ENERGIZE 40MVA TRANSFORMER AND 330kV REACTOR

The new 330kV reactor

The new 40MVA transformer

By Uloma Osuagwu

TCN has again successfully installed and energized a 40MVA, 132/33kV power transformer and a new R2 75MVAR 330kV Reactor at the Yauri and Jos transmission substations respectively.

The newly commissioned 40MVA 132/33kV power transformer brings the capacity of Yauri Substation capacity to 80MVA. With the new transformer, the substation now has six outgoing 33kV feeders, four of the feeders, the Yauri, Koko, Zuru and Ingaski feeders are now in service while two others are for future demand by Kaduna Electricity Distribution Company.

The Yauri 2x40MVA 132/33kV Substation project was awarded in 2007. However, the inability of the contractor to complete the project caused TCN to take over the project, and TCN engineers installed the first 40MVA transformer which was successfully commissioned in 2019. To further boost bulk power in the area, TCN engineers equally installed and commissioned the second 40MVA power transformer which was energized on Thursday 18th March, 2021.

The new transformer has upgraded the substation capacity by 32MW and consequently improved bulk power supply to the southern part of Kebbi State, through Kaduna Electricity Distribution Company.

In the same vein, TCN engineers have installed a new R2 75MVAR 330kV Reactor at the Jos 330/132/33kV Transmission Substation which was also commissioned on the 18th of March, 2021. The new reactor will complement the existing R1 75MVAR 330kV in the substation.

With two standard reactors in place at the substation, TCN now transmits stable and quality voltage to Plateau, Bauchi, Gombe and parts of Benue, Taraba, Yobe and Kaduna States.

The Yauri and Jos Substations projects are part of projects articulated in TCN's Nigerian Electricity Grid Maintenance, Expansion and Rehabilitation Programme (NEGMERP), and TCN intends to continue to ensure the diligent implementation of the projects which is geared towards putting in place a robust and very efficient grid.

ENUGU REGION STAFF ATTEND SLA SENSITIZATION WORKSHOP

By Mary Philip Udom

The staff of Enugu Region of TCN recently participated in a Service Level Agreement workshop aimed at sensitizing staff on the proper implementation of service level agreement for improved and more efficient service delivery.

The Regional Transmission Manager Enugu Region, Engr Emmanuel Nwani, in his opening remarks said that the sensitization programme was necessary for both technical and non-technical staff as everyone in the region has a role to play in improving the quality of services rendered to the distribution companies. He enjoined participants to be attentive to ensure that they understand and key into the goal of the sensitization programme.

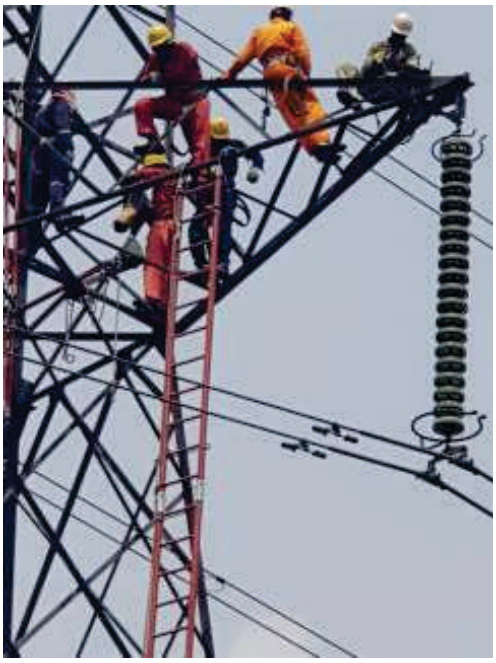
Addressing participants, the leader of the SLA sensitization team and the General Manager (Engineering) TCN, Engr. Geoffrey Nwokoye, advised participants to see themselves as referees in the implementation of Service Level Agreements and to take their jobs more seriously to enhance system maintenance and grid balance.

Engr. Nwokoye who defined SLA as improved service delivery to end users of electricity, said that the concept should not evoke apprehension, rather, the determination to play ones's role efficiently in a proactive manner, bearing in mind that TCN as the leader and strongest link in the Nigerian Electricity Supply Industry (NESI) should equally lead by example.

He emphasized that the SLA was majorly aimed at addressing interface problems between TCN and DisCos, and called for attitudinal change to work, such as maintaining good record of data for proper accountability of energy wheeled. He further informed that any lapse on the side of TCN in fulfilling its part of the agreement would attract monetary penalty. Engr. Nwokoye advised the AGMs of the Sub Regions to extend the campaign to their various work centres and effectively supervise them to ensure compliance.

The main presentation during the programme which was held on Monday, 1st March 2021, was titled "TCN's obligations, violations and penalties", by Barr. Zainab Saka Abdulrahim AGM (Legal). Participants

Participants at the workshop



TCN engineers replacing insulators

BENIN REGION REPLACES GLASS INSULATORS

By Rufus Imafidon

The Benin Region of TCN has embarked on the replacement of glass insulators on live transmission lines with composite insulators along tower 403, on Benin- Egbin-Ikeja West 330kV double circuit line in Ondo State, to enhance evacuation of bulk power on the grid.

The Assistant General Manager, Live line, Engr. Abdulahi Sule, made this known when he played host to his colleague, the Assistant General Manager, Transmission, Omotosho Sub–Region, Engr. Nuhu Abdulraheem, on Tuesday, 8th March 2021, in Benin, Edo State. The meeting strategized on the methodology to adopt in efficiently replacing detached insulators on live lines along Ondo axis.

Speaking during the meeting, Engr. Sule explained that Benin Region had embarked on replacing glass insulators with composite insulators as a result of corrosion which sometimes causes the glass insulators to detach from conductors. He noted that air pollution and salty rain witnessed regularly in the area are the major causes of corrosion of glass insulators.

According to him, TCN management considered it wise to replace the glass insulators with composite insulators to solve the problem of corrosion. He noted that glass insulators were easily affected by weather conditions, while composite insulators are more weather friendly, and can withstand all weather conditions.

Engr. Sule further informed that TCN's live line crew has been detailed to tackle the job. The crew, he said, is very experienced and would efficiently replace the conductors to solve the challenge of corrosion which causes the drooping of conductors.

In his remarks, the Assistant General Manager, Transmission, Omotosho Sub-Region, Engr. Nuhu Abdulraheem, revealed that the Omotosho Ikeja West 330kV Lines had four detachments on the same spot within a month last year, which informed the exercise. The complete change of the insulators, he noted, would permanently solve the corrosion problem.

Engr. Abdulraheem further explained that the ongoing replacement work would affect about 500 towers along the Benin-Egbin-Ikeja West 330kV transmission lines. He said that the exercise would impact positively on TCN's wheeling capacity in the region while at the same time, ensure that the conductors are properly separated and secured.

POWER GRID TO GET 4,000MW WITH ONGOING TRANSMISSION PROJECTS

The Acting Managing Director of TCN, Engineer Sule Ahmed Abdulaziz has said that the company has acquired a new office for its Project Implementation Units (PIUs), to enhance the delivery of projects that would add about 4,000 megawatts wheeling capacity to the national grid when they are completed.

Engr. Abdulaziz, while speaking about the PIUs and the ongoing projects being executed during an official visit to the office complex, said that it is a specialized unit of TCN that ensures critical transmission line and substation projects are delivered according to specification, quality and time frame.

He noted that the new office for the PIUs houses four Project Units financed by donor agencies such as the World Bank (WB), Agence Française de Developpment (AFD), the African Development Bank (AfDB) and the Japan International Cooperation Agency (JICA). TCN, he continued, has ensured that the offices are conducive for TCN project managers, engineers and support staff in line with international standards.

The MD/CEO added that the project units are already implementing projects that will definitely add to TCN's 8,100MW grid capacity. He noted that proper organization of the PIUs is to promote efficiency in line with the goal of TCN management, pointing out that management was also making the same effort in the mainstream TCN which had enabled the company successfully transmit successive all-time generation peaks recently.

Explaining further, the General Manager and Coordinator of the PIU office at TCN, Engineer Joseph Ciroma, said that presently, there are so many ongoing projects being supervised by the PIUs such as the Abuja Feeding Scheme, among others.

The AFD-funded Abuja high voltage transmission feeding scheme is currently ongoing, all the six contracts under the project are effective. The project will bring an additional 330kilovolts (kV) transmission

line through Lafia, bringing to three the source of bulk power transmission into Abuja. The new Lafia line is a green field (new) project. Also, the project will build five new transmission substations in the FCT, comprising two number 330kV substations and three number 132kV substations, all part of the ongoing Abuja Feeding Scheme project being executed simultaneously alongside the 330kV transmission line.

The additional bulk power supply into Abuja will ensure reliability and availability of power supply in the Federal Capital Territory.

The World Bank project unit, Ciroma said, will address a nationwide transmission upgrade, and that over 30No power transformers will be affected during the substations upgrade. He noted that 30MVA transformers will be replaced with 60MVA and 100MVA, depending on the planned capacity upgrade for the substation. The 30MVA transformers that would be removed, he said, would be installed in areas with lower electricity demand. This will invariably add to the capacity of the network.

The African Development Bank (AfDB) project unit on the other hand, is working on strengthening the 330kV Alaoji (Abia State) to Onitsha (Anambra State) transmission line. The line currently evacuates only 400MW of power but after the line is reconductored, its capacity would increase to 1200MW which is three times the current capacity. AfDB would also fund a new transmission line from Benin to Delta to increase power evacuation on that line route from 400MW to 1200MW, and also another new 1200MW capacity transmission line that would complement the 400MW capacity line running from Kaduna to Kano.

The JICA-funded project unit targets transmission projects in Lagos and Ogun States where TCN will build four 330kV substations, two 132/33kV substations and four 120MW capacity 330kV transmission lines. These lines will also connect the West African Power Pool (WAPP) to enable Nigeria export more power when the projects are completed.

...The Archives

The first Project Management Unit (PMU) in TCN, was created in 2003, as requirement for World Bank (WB) credit. The sole aim of the PMU is to ensure effective and efficient Management of projects, without interference from TCN, in accordance with world best practices. TCN has successful managed and completed the following projects from the WB;

- The Nigeria Transmission Development Project (NTDP) - USD100 Million between 2002 – December 2005
- National Energy Development Project (NEDP) - USD180 Million between 2005 – December 2012
- Nigeria Electricity and Gas Improvement Project (NEGIP) – USD300Million between 2012 – December 2018
- Niger Basin Water Resources Development and Sustainable Ecosystems Management Project (NB-WRDSEMP) under Fed. Ministry of Water Resources for the Rehabilitation works in Kainji and Jebba Power Stations – USD135 Million between 2007 – June 2016

Currently, the Nigeria Electricity Transmission Project (NETAP) funded by the WB in 2018, with a credit amount of – USD486 Million, is ongoing and is scheduled to be completed within 5 years. The successes recorded attracted several International Donor Funding Agencies to fund other power projects. TCN consequently created three (3) additional Project Implementation Units (PIUs) to manage these loans. These donors are;

I. Agence FranÇaise de Developpment (AFD) Project – USD170 Million

II. African Development Bank (AfDB) Project - USD210 Million

III. Japan International Corporation Agency (JICA) Project – USD235 Million

The projects being implemented by these PIU/PMUs are all linked to the umbrella programme of the TCN referred to as Transmission Rehabilitation Expansion Programme (TREP). The activities of the PIU/PMUs are discussed next.

Table 2.2. PMU/PIU Funding Sources

Funding Agency	Total Amount (USD Million)	Effectiveness
Agence FranÇaise de Developpment (AFD)	170	Effective
African Development Bank (AfDB)	210	Not Yet Effective
Japan International Cooporation Agency (JICA)	238	Not Yet Effective
World Bank	486	Effective
	1104	

1. JICA FUNDED PROJECT

The project has recorded some milestone achievements within the project preparation conditions, but has not been made effective as fund is yet to be made available by JICA for drawdown.

KEY PROJECT STATISTICS

The key project statistics for the JICA project are shown in Table 2.3.

Table 2.3. JICA- Project Impact on Completion

Voltage Level in KV	330	132
Total Transformers Capacity in MW	2,040	680
Total Transmission Lines Route Length in KM	102	106
Total Transmission Lines Capacity in MW	5,280	2,550
Total Substations	4	2

2. THE AFRICAN DEVELOPMENT BANK (AfDB)

The African Development Bank (AfDB) loan is about USD 210 Million and will finance the phase one of Nigeria Transmission Expansion Project (NTEP-1), with projects drawn in both brownfield and Greenfield from the North West, South East and South South regions of Nigeria, and cutting across Kano, Kaduna, Delta, Edo, Anambra, Imo and Abia States. The project has met most of the conditions for project effectiveness but no fund has been made available by AfDB, hence no draw down has been made on the project by TCN.

KEY PROJECT STATISTICS

The key project statistics for the NTEP-1 are shown in Table 2.4.

Table 2.4. AFD Northern Corridor - Project Impact on Completion

Voltage Level in KV	330	132
Total Transformers Capacity in MW	480	384
Total Transmission Lines Route Length in KM	467	NIL
Total Transmission Lines Capacity in MW	9,300	NIL
Total Substations	2	2

3. AGENCE FRANÇAISE DE DEVELOPPMENT (AFD)

The AFD credit is about USD 170 Million with USD 40.2 Million as counterpart fund from FGN and is to address green fields transmission lines and substations aimed at Reinforcing the High-Voltage Transmission Ring around Abuja.

KEY PROJECT STATISTICS

The key project statistics for the AFD Abuja Ring project are shown in Table 2.5

Table 2.5. AFD Abuja Ring Project- Project Impact on Completion

Voltage Level in KV	330	132
Total Transformer Capacity in MW	480	624
Total Transmission Line Route Length in KM	143	81
Total Transmission Lines Capacity in MW	1,146	318
Total Substations	2	3

ENTERPRISE RESOURCE PLANNING (ERP) –

Part of the proceeds from this credit is intended to be utilized for the supply and installation of Enterprise Resource Planning systems (ERP) and software. The ERP solution is expected to further streamline TCN internal processes for more efficiency and transparency in line with international best practice. This activity is yet to commence

4. NIGERIA ELECTRICITY TRANSMISSION AND ACCESS PROJECT (NETAP) – WORLD BANK (WB); USD 486 Million

The Nigerian Electricity Transmission and Access Project (NETAP) became effective in June 2019, and will close in December, 2023. The credit is about USD 486 Million with USD 4 Million counterpart funding from the FGN. The selection of the projects cuts across the six geopolitical zones of the country, and were based on the Company's strategic goals for the network reinforcement, and expansion plan to achieve 10,000MW to 13,000MW transmission wheeling capacity.

Table 2.6. World Bank- Project Impact on Completion

Voltage Level in KV	330	132
Total Transformers Capacity in MW	5,062	5,820
Total Transmission Lines Route Length in KM	102	106
Total Transmission Lines Capacity in MW		2,450
Total Substations	17	46

Management Commends TCN's Regional Managers,

Assures Provision of Equipment And Spare Parts

By Eric Ephraim Ene

The Management of TCN has assured its regional offices across the country of provision of necessary tools, equipment, spare parts and support to ensure enhanced efficiency in their operations and drastically reduce downtime.

The Ag. Managing Director and Chief Executive Officer of TCN, Engr. Sule Abdulaziz, gave the assurance while addressing Regional Transmission Managers (RTMs) and General Managers of Transmission Service Provider (TSP), on Thursday, 11th March 2021, in Abuja.

Engr. Abdulaziz stated that TCN had already procured some work vehicles, spare parts, and major HV equipment some of which were on ground and that plans are ongoing to procure more. He commended the RTMs for their support and dedication to duty, and urged them to keep up the good work, noting that reward for good work is more work.

According to him, TCN had made significant progress in various areas of operations since their last meeting, with the completion and commissioning of new transmission lines and substations and other rehabilitation projects across the grid to enhance the company's wheeling capacity.

He explained that improved and efficient maintenance has also helped in stabilizing the system, reducing equipment down-time and ultimately improving overall system performance which is the main reason for the consistent increase in peak generated that is successfully transmitted, and maximum daily energy peak. "The latest peak was 5,801MW on 1st March, 2021 and highest daily energy peak of 119,471.15MWH on 5 th March, 2021. This kind of progress, he said, can only get better with the support of all.

Engr. Abdulaziz also disclosed that so much has also been done in the area of staff welfare and that efforts would be made to further deal with other issues pertaining to the staff.

He charged the RTMs to do more to ensure challenges posed by trace clearing is eradicated, saying that each RTM would be held responsible and accountable for the performance of their substation as well as general maintenance of all substations, equipment in their regions. He harped on the need to ensure quick resolution to interface issues, especially with the signing of Service Level Agreement with the DisCos.

The Executive Director, Transmission Service Provider (TSP), Engr. Victor Adewumi, expressed appreciation for their contributions in the area of maintenance and transformers installation, which enabled TCN efficiently transmit the new generated peak of 5,801.60MW to distribution load centers nationwide.

He stated that the meeting will address important issues that impact transmission services, saying that there is need for the RTMs to challenge themselves in order to take the company to the next level.
He revealed that the System Planning department came up with a study on how TCN can increase its wheeling capacity from 8,100MW to about 13,000MW within three years through projects execution.

While presenting a paper on "Grid Capacity Development Study", the Assistant General Manager (System Planning) ISO, Engr. Kabiru Adamu, said that System Planning department conducted the Grid Capacity Development study to determine the priority projects which will increase wheeling capacities.

According to him, the result of the study identified critical transmission projects (transmission lines and transformers on 330kV and 132kV voltage levels) necessary for the addition of every milestone. He noted that the list of identified projects for each milestone had a combination of ongoing and proposed solutions from different project packages to address some of the critical constraints on the grid.

In his presentation on Service Level Agreement (SLA), the General Manager, Programme Coordination, TCN, Engr. Joseph Ciroma, disclosed that 107 number projects approved in line with the SLA with 11 DisCos, have a proposed budget of N114.8billion which has been sent to the Nigerian Electricity Regulatory Commission (NERC) for approval by Central Bank of Nigeria (CBN).

The meeting featured robust submissions from all RTMs on the way forward which would ultimately further strengthen the transmission network in Nigeria.

ACCOMPLISHMENT

Highlights of some works by TCN engineers as the company continues to rehabilitate and expand the grid

1. Installation of 60MVA 132/33kV Transformer at Kubwa T/S
2. Installation of 40MVA, 132/33kV power transformer at Yauri T/S
3. Installation of a new R2 75MVAR 330kV Reactor at Jos T/S
4. Restringing of detached conductor along 330kV Benin-Egbin Line (T202)
5. Rehabilitation of T1 150MVA 330/132/33kV transformer at Yola T/S
6. Commissioning of new Akure 132kV line and bus-bar isolator at Akure T/S
7. Installation of new GT02 33/0.415kV 500KVA Ground Transformer at Rumuosi
8. Star Pipe Company 132/33kV Sub-Station was connected to the Grid via 30MVA 132/33kV Transformer at Egbin T/S
9. Energizing of new KRPC (Kaduna Refinery) Feeder at Kaduna Town T/S.
10. Replacement of failed Siemens 33kV Circuit Breaker on Steel Feeder-2 at Benin TS with a new 33kV Circuit Breaker
11. Commissioning of a new 110V DC Battery and Charger system at 132kV Control Room in Benin TS.
12. Restringing of detached Conductor (T119) along Benin-Egbin Line and (T168) on Benin- Ajaokuta line
13. Replacement of failed Battery Bank and Charger with a 110VDC, 80A Battery Bank and Charger at 132kV Control Room in Delta, Yenegoa, PortHarcourt, Apir TS and Installation of new 110V D.C Battery Bank at Calabar and Rumuosi TS.
14. Re-stringing of detached yellow phase conductor on Tower 192 along Ife-Ondo 132kV line
15. Replacement of faulty 132kV Circuit Breaker on TR2, 60MVA Transformer at Dan Agundi T/S, and 33kV Circuit Breaker on T4 132/33kV Transformer at Agbara T/S.
16. Installation of 132kV Circuit Breaker to restore back supply on Agbara/Ojo 132kV Line1 at Agbara TS.
17. Installation of 33kV CB on new feeder bay at Ondo TS, 60MVA 132/33kV TR1 secondary, 33kV MTN Feeder at Dataka TS,Water Works Feeder at Old Abeokuta TS, Arewa feeder at Kaduna Town TS, Geta Glass 33kV Feeder at Delta TS and H31 Feeder at Apo and Yola TS respectively.
18. Replacement of 33kV Vacuum EPZ1 line CB with a new one at Calabar T/S
19. Installation of 2No 330kV CT on 330kV Benin-Onitsha Line 1, 330/132/33kV Transformer at Ajaokuta and Replacement of 3kV CB on TR13 60MVA 132/33kV Sec at Onitsha T/S
20. Installation of 48V Battery Bank on T2 40 MVA Transformer at Jericho, Ibadan

TCN CHARGES HYDRO GENERATION STAKEHOLDERS TO OBEY GRID CODE TO ENHANCE GRID NETWORK

By Omideji Oluwakayode


Engr. Balarabe Abdullahi, GM NCC

TCN has charged the Hydro generation stakeholders to obey and respect the Grid Code, and follow all operational instructions from the National Control Centre (NCC), to enhance smooth operation of the national grid.

The charge was made by the General Manager, NCC, Engr. Balarabe Abdullahi, during the 43rd bi-annual hydro generation planning meeting which was held recently at the National Control Center, Osogbo. Welcoming participants to the meeting, Engr. Abdullahi said the meeting was holding at such an auspicious time that the power sector was witnessing a stream of transformation initiatives.

According to him, the meeting started over twenty-five years ago with the aim of bringing the various hydro stations together to reconcile hydro data before the operational planning meeting. He described planning as an integral part of reservoir management particularly in hydro power plants where daily monitoring of reservoir is necessary for proper and efficient operation. Reservoir operation planning therefore, he explained, "is a decision-making tool in the process of hydro power generation activities so that a near balance between inflow and outflow of water may be achieved;. hence the importance and necessity of such meeting, as no reservoir is to be operated by trial and error.

Speaking further, Engr. Abdullahi drew the attention of the participants to the role of the National Control Center as the operational nucleus of the Nigerian electric power grid, and NCC's efforts to ensure effective management of available water for generation of electricity especially by hydro plants, among other functions.

He therefore urged the hydro stations to cooperate with NCC to ensure seamless operation of the Grid for the benefit of everyone and disclosed that there have been reports of inconsistencies by several hydro stations, including making inaccurate day ahead declaration etc, and charged them to shun every act that will be inimical to the progress of the industry. The meeting addressed several issues affecting Generation and the National Control Center (NCC) operations, with participants agreeing on the need to make specific changes towards a more robust power delivery.

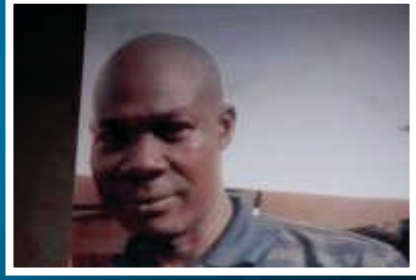
Attendees of the Sensitization Planning meeting

DID YOU KNOW ???

- That the history of power industry in Nigeria would be incomplete if the old Public Works Department (PWD) of Government, which in 1896 installed the first 60 kW generating set in Lagos, is not mentioned.
- that in 1895, preliminary investigation and planning carried out by PWD in Lagos was at a cost of 3,206 pounds.
- that in 1896, 12,000 pounds was allocated for the establishment of the first power station which was sited at the present location of former NEPA Headquarters in Lagos.
- that Mr. T. Rooke was the Chief Electrical Engineer of this establishment, which was known as the Lagos Electricity Supply. The power station operated from 6.00pm to 11.00pm daily and the maximum power demand was only 24kW.
- that in 1915, due to the extension of power to Iddo and Ebute Meta areas, generating capacity increased to 320kW. In 1921 it was further increased to 420kW.
- that in 1924, the two phase three wire 80 cycles system was replaced with the three phase four wire 50 cycles which is still being maintained today.
- that in 1929, Meter Section was established. A two-part tariff was introduced as against the flat rate hitherto being charged. Domestic consumers paid 10p per unit up to a certain number of units and 1.5 per unit for consumption in excess.
- that following an electrical exhibition at Glover Hall, Lagos, during which the various uses of electricity were demonstrated, consumer population in the Lagos area rose from 1,560 in 1930 to 3,550 in 1932.
- that the exhibition highlighted the fact that use of electricity was not an exclusive preserve of the rich but an essential factor in development, and following the success in Lagos area, the Government in 1926 started an electricity development scheme throughout the country.

FAREWELL

Late Engr. Mike Oyigbo, AGM (TS)
Enugu Region

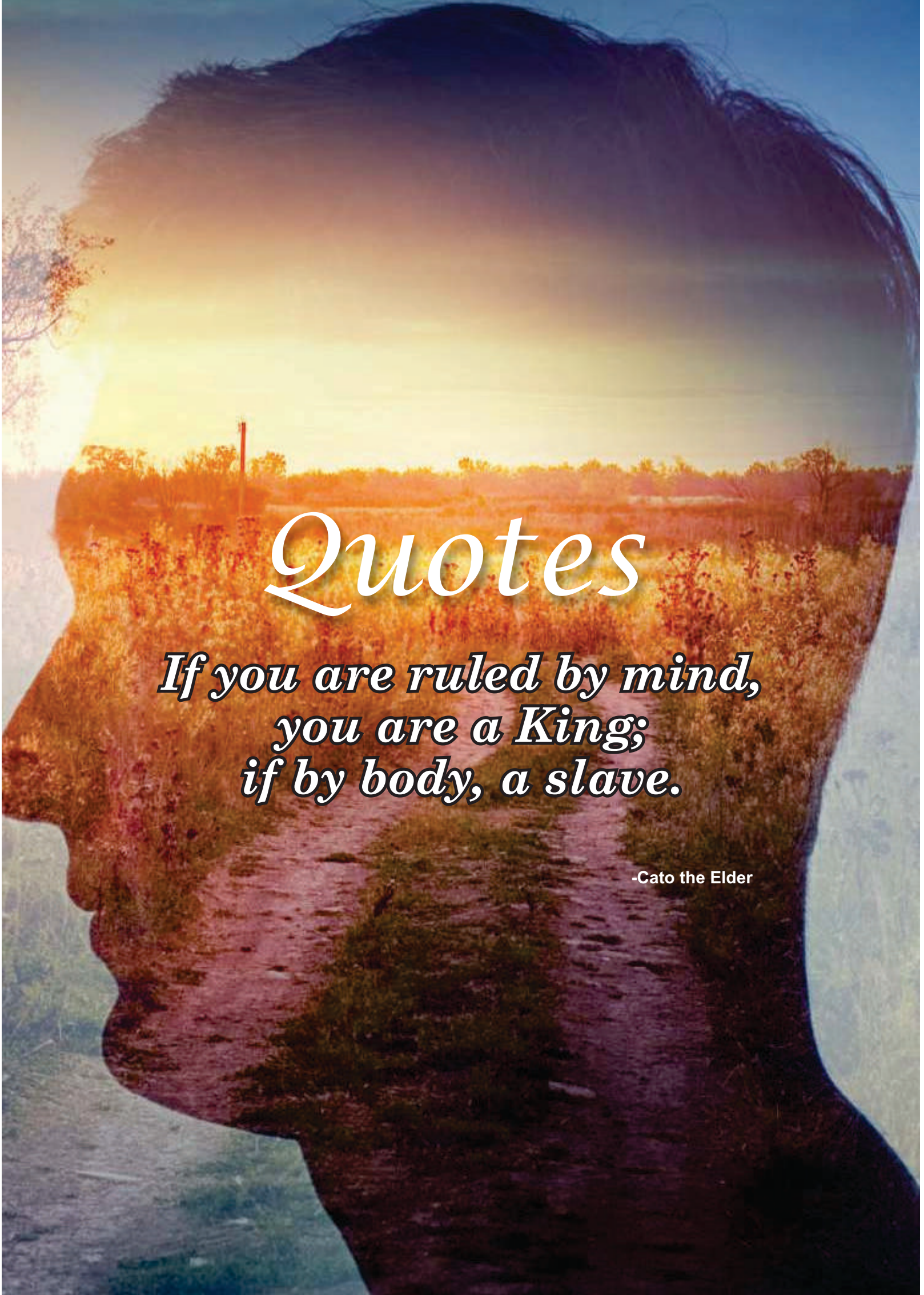


Late Mr Kingsley Ogedengbe,
Offr. IV (Security), Lagos Region

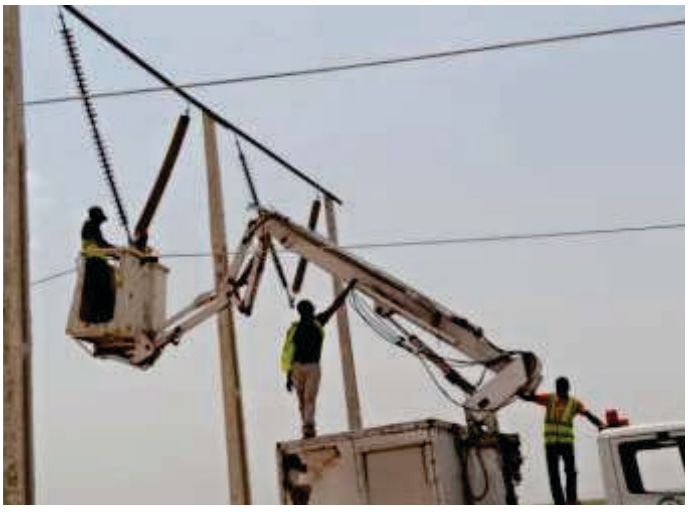
When the lights go out
for our loved ones, the memories
of their existence remain.
When like flowers they fall off the stalk,
wither, disintegrate, become soil.
The pain from our loss, our helplessness
become our grief
But time like the balm, will in time
preserve in us the joys, dreams and
laughter's we once shared
And in time we would come to realise
we were privileged to have loved
and be loved.

Late Mr Adetokunbo Ashogbon,
SM (HR), Lagos Region

Late Mr Libi Gambo, Staff I (Security),
Abuja Sub Region

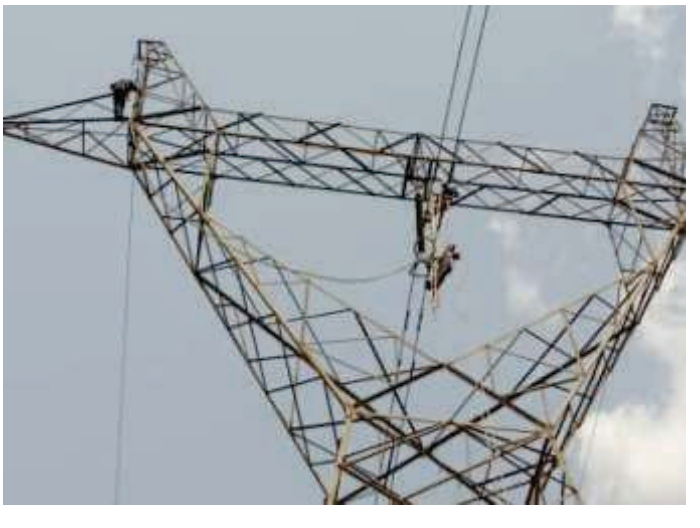

Quotes
If you are ruled by mind,
you are a King;
if by body, a slave.
-Cato the Elder

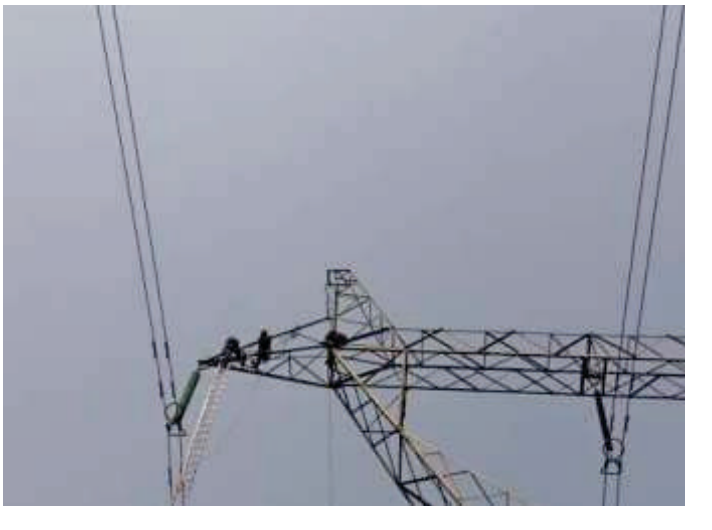
IN-HOUSE ENGINEERS AT WORK



TCN engineers working on the transmission line by-pass in Maiduguri

On-going work on 20/30MVA power transformer at the new 132 /33kV Bichi substation in Kano State





Replacement of corroded glass disc insulators on Tower number 425 at Ikeja West - Osogbo 330kV line.

BRAND NEW 60MVA POWER TRANSFORMER COMMISSIONED IN KUBWA SUBSTATION

By Grace Sambe-Jauro

The brand new 60MVA transformer

Third Left, ED TSP, Engr. Victor Adewumi during the site visit

A brand new 60MVA 132/33kV power transformer has been successfully installed and energized Kubwa Transmission Sub-station, Abuja.

During an on-the-site visit to the Kubwa Substation, the Executive Director, Transmission Service Provider, (TSP), Engr. Victor Adewumi, commended TCN in-house engineers who carried out the installation for their relentless effort in ensuring that the transformer was installed and energised on time. He noted management's commitment to improving bulk power delivery to Abuja and the entire nation, pointing out that TCN engineers were currently installing transformers in different substations nationwide.

Engr Adewumi further informed that in Abuja, TCN is presently executing substations and line projects aimed at improving bulk power delivery to the Federal Capital Territory (FCT), and noted that the projects when completed will add two 330kV sub-stations and three 132/33kV sub-stations to Abuja. The project, he said, will also add another transmission line to the two existing ones supplying Abuja. This would upgrade line supply into Abuja to N-2 status for guaranteed power supply.

He said that TCN has delivered another 60/66MVA power transformer to Kumbotso Substation in Kano, while a 30MVA mobile transformer has been moved to the new Bichi Substation in the state. Both transformers are currently being installed.

In his remarks, the Regional Transmission Manager, Abuja Region, Engr. Ali Sharifai, said that TCN has capable in-house engineers with exceptional technical skills, and that over the time, in-house engineers have continued to install transformers that have enhanced TCN's capacity.

Speaking also, the transformer installation team lead, Engr. Ramat Musa, revealed that it was an exciting time for the engineers as they coupled and installed the transformer, and noted that TCN engineers are team players, enthusiastic in learning and are ready to exceed management's expectations.

The installed transformer has 33kV feeders; the Dam, Dawaki and Deidei feeders and all of them are in circuit carrying a cumulative load of 21MW. The transformer has added 48MW to the capacity of the substation and is now more able to meet the increasing demands of AEDC through the substation.

www.tcn.org.ng

WE WILL GET THERE

Our goal is to ensure that the nation's transmission grid is comparable world wide. Together we will make it.

Yes we Can!

We salute the Federal Government and State Governments for providing the enabling environment for projects execution.