



NIGERIAN ELECTRICITY MANAGEMENT SERVICES AGENCY

NEMSA



No. 4, Dar es Salaam Crescent, Off Aminu Kano Crescent, Wuse II, Abuja, FCT.

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INSPECTION REPORT OF 330KV SWITCHING STATION AT IKOT EKPENE, AKWA IBOM STATE



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Please be informed that the inspection of the above project was carried out from 1st November to 4th November 2016, with the following in attendance:

a. Nigerian Electricity Management Service Agency (NEMSA) Officials:

- | | | |
|------|----------------------|---|
| i. | Engr. T.T Aliyu | Head (TS & IS), Abuja Headquarters |
| ii. | Engr. William Metieh | S.A. Technical , Abuja Headquarters |
| iii. | Engr Alaba Quadry | Area Inspecting Engineer (Benin Zonal Office) |
| iv. | Mrs. Yusuf Jamila | Ag. Area Inspecting Engineer (Port Harcourt Zonal Office) |
| v. | Engr Onome Ugolo | Officer 1, Abuja Headquarters |
| vi. | Tondei Leizou | Officer 1, (Port Harcourt Zonal Office) |
| vii. | Iwo Prince | Officer 111, (Port Harcourt Zonal Office) |

b. NDPHC Official:

- | | | |
|----|-----------------------|------------------|
| i. | Engr Fidelis Chimezie | DGM Transmission |
|----|-----------------------|------------------|

c. TCN Officials:

- | | | |
|----|------------|--------------------|
| i. | I.C. Nwosu | Station Supervisor |
|----|------------|--------------------|

d. Representatives of Cartlark International Company

- i. Engr Sulaimon Adeyemo Head Engineering & Technical Services
- ii. Engr Kingsley Agborume Station Manager

e. Representative of Colenco (Consultants)

Engr Ugwunna Wogu Site Engineer

Project details and objectives

Project Details

Client **Niger Delta Power Holding Company/NIPP**

Project Description

330000V X 4400A x 2 Switching Station	1 No.
Switching Station Arrangement	1 $\frac{1}{2}$ breakers
No. of Incoming Circuits	4 x Double circuits
No. of Outgoing Circuits	2 x Double circuits
No. of Conductors per phase	Two (2)
Conductor Type	ACSR
Conductor Size	800 mm ² (Double conductor)
Earth wire Type	Galvanized Steel earth shielding system
OPGW	Galvanized Steel wire with embedded optical fibre.

Type of Support	Lattice Galvanized Steel Gantries
Type of Foundation	Grillage/concrete, Chimney and Piled
Rated Voltage	330KV
Insulator Type	Glass disc set Insulators
No. of insulators per phase	1
No. of discs per insulator string	20/30 nos.

Project Objective:

The objective of this project is to get reliable and safe electric power supply for the national grid by receiving / harnessing stranded electricity supply from the following power station:

S/NO.	POWER STATION	CAPACITY (MW)	LOCATION/STATE
1	ALAOJI	450	ABIA STATE
2	AFAM - VI	650	RIVERS
3	CALABAR (ODUKPANI)	575	CROSS RIVER
4	IBOM POWER	188	AKWA IBOM
5	IKOT ABASI - <i>FUTURE</i>	500	AKWA IBOM
	TOTAL	2363	

The harnessed supplies are then re-transmitted to the East and North via two lines of double circuit 330KV transmission lines from Ikot Ekpene to Uguwaji, Enugu State, and then onward to Makurdi, Benue State, as part of the North-South loop of the National Grid.

NB: Currently, Alaoji and Calabar incoming 330KV transmission lines are confirmed ready for connecting to the Switching Station.

INSPECTION REPORT: 330KV SWITCHING STATION

General Physical Inspection of Switching Station

ITEM	REMARK
Switching Station location	IKOT EKPENE, AKWA IBOM STATE
Contractor	CARTLARK INTERNATIONAL
Switching station fence construction:	Chainlink Fence for Switchyard and Block Wall perimeter fencing
Gravelling of the station:	Done
Circuit Breaker SF6 level	Okay, except for D04+Q01C
300 KVA Auxiliary Transformer	
i. Oil leakage	No
ii. Temperature gauge Fitted	No
iii. Breather(Silica gel): Fitted	Bad - degenerated
The size of earth conductor used at the station	
i. Transformer body	
ii. Lightning arrester	70mm ²
iii. Metal Gates	70mm ²

iv. Gantries	Nil
v. Control room Panels	70mm ²
vi. Control room checker plates	70mm ²
	Nil
Cables and conductors used at the Switching station	
i. Type	ACSR
ii. Size	800mm ²

S/No	PROJECT AREA	OBSERVATIONS	PICTURES	RECOMMENDATIONS
1.	SWITCHYARD	<p>1. The Switch Yard has perimeter fencing with wire mesh adequately earthed at different points.</p> <p>2. The switchyard was well graveled and leveled.</p> <p>3. Drainage system was provided to discharge water outside the switchyard, but some drain pipes not yet covered completely with granite.</p> <p>4. The cable trench slabs were not designed uniformly (unsafe), and there are portions of the trenches not covered.</p> <p>5. The CCTV poles in the switchyard were not earthed.</p> <p>6. Flood lights were provided.</p> <p>7. Water retention observed on the walkway.</p>	<div data-bbox="954 252 1507 691" data-label="Image"> </div> <p data-bbox="1529 288 1671 475">Switch Yard Perimeter wire mesh fencing</p> <div data-bbox="954 691 1507 1114" data-label="Image"> </div> <p data-bbox="1529 735 1648 963">Well levelled and graveled switch yard</p>	<p>1. The cable trench slabs should be uniformly designed and arranged for safety. Handles should be flattened to prevent operation personnel tripping over them.</p> <p>2. 36 missing cable trench covers should be provided</p> <p>3. The CCTV poles in the switchyard should be earthed.</p> <p>4. Passage should be made/provided for the water retained on the walkway.</p> <p>5. Granite should cover all drain pipes</p> <p>6. Broken/cracked concrete slabs should be replaced.</p> <p>6. The unfinished areas of wire mesh fencing should be completed.</p>

8. Adequate lightning protection seen; both spikes and sky wire lattice.
9. Some pvc pipes through which cables are run into the ground and cable trenches were seen not sealed.


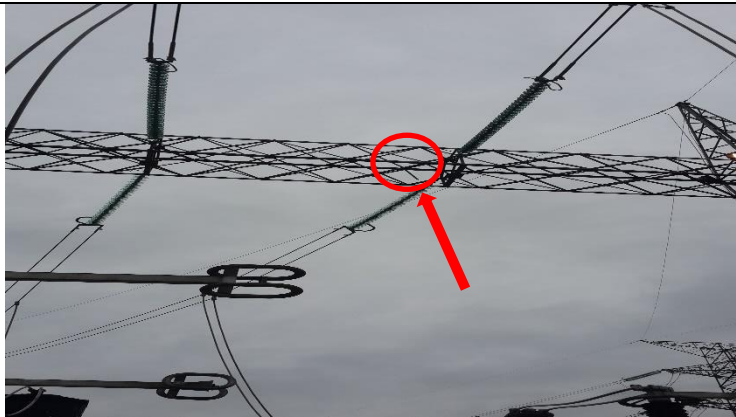
Uncovered drain pipes





7. The metal gates leading into the switchyard should both be earthed.
8. The surroundings of the switchyard should be kept tidy to avoid reptiles.
9. All pvc pipes through which cables are run into the ground and cable trenches should be sealed.



Exposed cable trenches






<p>2.</p>	<p>GANTRIES AND FOUNDATION</p>	<p>1. Gantries members were galvanized type; although rusting base plates for some of the equipment were observed on some gantries.</p> <p>2. Missing bracings/members, bolts and nuts were observed at:</p> <ul style="list-style-type: none"> ▪ D01 + Q11DS, D01 + Q22C, ▪ D02+T12C, D02+Q11C ▪ D05+Q12C, <p>3. Hanging/missing members, loose bolts and nuts, rusted bolts and nuts observed on :</p> <ul style="list-style-type: none"> ▪ D02+Q12C, D02+Q11C, D02+Q11B, D02+Q21B, ▪ D06+Q22A, D06+Q32A, ▪ D04+Q11B, D06+Q25C, D04+Q21C, D04+Q21, D06+Q21A <p>4. Poor grating foundation was observed at D02+Q12A.</p>	<p style="text-align: center;">Rusting gantry bases; No grouting.</p>   <p style="text-align: center;">Missing gantry member</p>	<ol style="list-style-type: none"> 1. The contractor should painstakingly go through all the gantries and replace missing members, bolts& nuts, rusted connecting plates and. 2. He should also tighten all loose bolts and nuts and members. 3. The foundations with grating defects should be corrected. 4. All rusted bolts and nuts must be replaced with galvanized types to ensure integrity of the structures and connections.
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<p>3.</p>	<p>INSULATORS/ ARCING HORNS</p>	<p>1. Only single string of insulators seen used unlike other stations where two are specified and used.</p> <p>2. All the insulators used were of glass type with 20 nos on the line side and 30 nos on the gantry side.</p> <p>3. No broken/cracked insulator was observed. However, we saw:</p> <ul style="list-style-type: none"> - Rusted insulator plate at D04+Q11B, line insulator D06+Q32A <p>4. ALL the arcing horns in the switchyard were not aligned with each other</p> <p>5. No arcing horn (inner) at DO2+F11A</p>		<p>1. The contractor is advised to thoroughly check the insulator plates and replace all rusted/non-galvanized types.</p> <p>2. The arcing horns should be aligned properly to guarantee safety of the insulators and the entire installation.</p> <p>3. All missing arcing horns should be fixed.</p>
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4.	BUS BARS	<p>1. The busbars sections/tubes were seen to be too long and already sagging even without carrying current. They may further sag with current and high ambient temperatures. The contractor explained that vibration dampers cables have been installed inside the bus bars and the weight may have caused the sag. This arrangement is said to be as per design.</p>	 <p style="text-align: center;">Sagging busbars</p>	<p>1. Ideally, use of shorter tube lengths or inserting intermediate supports will eliminate the obvious sag seen on the bus bars.</p>
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5.	EQUIPMENT LABELLING	<p>1. The equipment in the switchyard were well labeled for easy identification. However detached identification plate was observed at D03+Q22C. Also the labeling of the buses earthing switch did not tally with the one on the control panel.</p> <p>2. No phase identification plates/markers on all the lines, both incoming and outgoing.</p>	 <p style="text-align: center;">Equipment labels</p>	<p>1. Phase sequence identification plates/markers should be fixed visibly on all the lines, at both incoming and outgoing gantries/bays for easy identification. Likewise, at the Buses.</p> <p>2. Identification of the various lines should also be done to know easily which is Afam, Alaoji, Calabar, Ikot Abasi and Ugwuaji.</p> <p>3. The labeling of Equipment in the switch yard should tally with the labeling on the control panels.</p>
6.	EARTHING SYSTEM	<p>1. All the gantry legs were earthed at 2 points with 70mm² earth wire while hanging earth conductors were observed at D04 incoming Bay gantries (both legs) and D06 outgoing gantry.</p> <p>2. The earth readings obtained were between 0.10 and 2.01 Ohms. This is commendable. Full details of the earth readings are attached in</p>	 <p style="text-align: center;">Gantry leg earthing wire</p>	<p>1. The hanging earth conductors should be clamped properly to the gantries leg.</p> <p>2. All open earth pits should be covered with appropriate concrete slabs.</p>

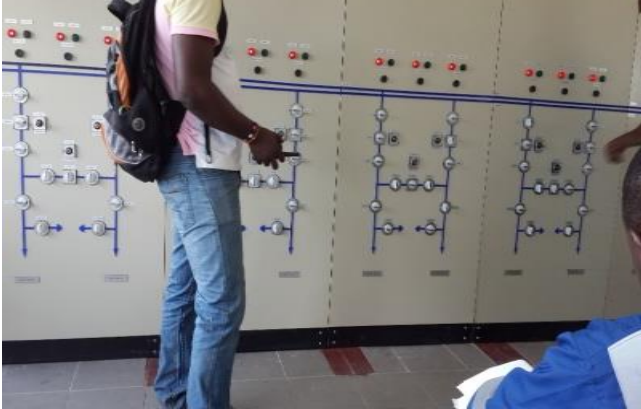

		<p>Appendix I. 3. The earth pit points were not covered.</p>		
<p>7.</p>	<p>CONDUCTORS /SPACERS</p>	<p>1. The conductor used observed to be ACSR. 2. Some protruding conductors were observed at various termination points 3. Some of the spacers and accompanying clamps were observed to be improvised, not well clamped/tightened around the conductors, and rusted bolts and nuts were seen used on the spacers. This has serious potential danger for arcing, melting of the conductors and eventual failure of the installation. 4. The conductor down-drops from the incoming lines to the lightning arrestors were seen not aligned properly and some seen were under strain</p>	<p style="text-align: center;">Improvised spacer</p>  	<p>1. The protruding conductors should be trimmed to flush at all termination points/ends. 2. The improvised spacers and clamps should be replaced with standard /specified type. 3. All the spacers not well clamped should be properly clamped and well tightened. 4. All conductors and terminations should not be under strain.</p>

<p>8.</p>	<p>FUNCTIONAL TESTS ON EQUIPMENT</p>	<p>The switchyard equipment operations were observed using:</p> <ol style="list-style-type: none"> 1. Local command test 2. Command via control panel 3. Earthing switches/mechanism operations 4. BCU command test. 5. Some of the equipment were not responding as expected e.g. <ul style="list-style-type: none"> • D02+Q01CB (Circuit Breaker), • D02+Q21 Isolator Switch, • D02+Q02CB, D02+Q03CB, D02+Q81&82 ES (Earth Switch) not aligned properly. 6. All equipment on D03 not responding 7. D04+Q01C SF6 gauges (phase A & B) were observed to be below 0.7bar mark 8. Isolator D05+Q91 (phase C) needs adjustment and earth switches D05+Q81 (phases B&C) not closing well. 	<p>Functional operation of the pantograph disconnectors</p> 	<ol style="list-style-type: none"> 1. The contractor should painstakingly go through ALL the equipment to ensure that they work properly as intended. 2. All isolator contacts should be greased with petroleum jelly. 3. All commutators of motors installed in control kiosks for the isolators should be cleaned to avoid arcing. 4. All cable glands to be fully secured.
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		<p>9. Circuit breakers D06+Q01CB, Q02CB, Q03CB not responding locally.</p> <p>10. Some cable glands on SF6 circuit breakers not properly fixed.</p>		
9.	<p>STATION TRANSFORMER (300KVA, 33/0.415KV) AND STATION GENERATOR (125KVA)</p>	<p>1. The 300KVA, 33/0.415KV is fed from an unreliable public utility line</p> <p>2. Undersized cables were used for the connection of the Secondary terminals of the transformer to the energy meter and from the energy meter directly to the control room and to the staff housing quarters.</p> <p>3. All the cross arm channel irons were not earthed.</p> <p>4. The Silica gel was saturated.</p> <p>5. The line isolators were not properly aligned.</p> <p>6. The earth resistance reading is very high (17.2 Ohms)</p> <p>7. The generator was not earthed (358Ω)</p> <p>8. The overhead water reservoir steel support close to</p>	 <p>300KVA, 33/0.415KV station transformer supplied from unreliable public power supply.</p>	<p>1. Reliable station power supply should be provided in the form of either a dedicated station transformer, or a dedicated 33KV public supply, or two synchronized station generators, each genset being capable of carrying the load of the station.</p> <p>2. Appropriately sized cables should be used for the auxiliary transformer connections to the control room and staff quarters. Protection circuit breakers should be provided on the transformer secondary.</p> <p>3. All the cross arm channel irons should be properly earthed</p> <p>4. The saturated silica gel</p>

		<p>the transformer was not earthed.</p> <p>9. The water tank stand/foundation bolts not grouted.</p>		<p>should be replaced</p> <p>5. The line insulator should be realigned to prevent arcing</p> <p>6. The earth resistance should be improved upon</p> <p>7. The generator and water reservoir tank should be earthed</p> <p>8. The water tank stand should be properly grouted.</p>
10.	BATTERY ROOM	<p>1. Wash hand basin was installed, extractor fan installed, smoke detector installed</p> <p>2. Hanging lightning point wire seen.</p> <p>3. Lighting fittings not working</p> <p>4. Metallic door not earthed</p>		<p>1. All the hanging light point wires should be fixed properly and lighting fittings fixed.</p> <p>2. Lighting should be improved upon generally and all lighting points should be functional.</p> <p>3. Metallic doors should be adequately earthed.</p>

Battery room

<p>11.</p>	<p>CONTROL ROOM</p>	<ol style="list-style-type: none"> 1. TCN trained operators were seen and demonstrated familiarity with the operations of the switching station. 2. Outside security light not working 3. Some inner lighting points were not working 4. All the metallic doors were not earthed 5. Insulation rubber mat was not provided for the control panels. 6. Electric shock treatment chart was not provided in the control room. 7. Cable trench metallic covers not earthed 8. Control panel labeling was in line with the labeling at the switch yard. 9. Air-conditioning in BCU room not functioning. 10. Ceramic tiles in corridor between control room and offices broken and constitutes danger of people tripping. 11. Cable trench behind 	<p style="text-align: center;">Front view of the control panels</p>  <p style="text-align: center;">Rear view of the control panel</p> 	<ol style="list-style-type: none"> 1. All the security lights should be fixed. 2. The inner lighting points should be made functional. 3. All the metallic doors should be earthed 4. Insulation rubber mat should be provided and laid around the control panels. 5. Electric shock treatment chart should be provided. 6. Cable trench metallic covers should be earthed. 7. The air-conditioners in the BCU room should be repaired and made functional. 8. Replace all missing /broken floor tiles. 9. Cover the cable trench and seal entry ducts to the control with appropriate compound. 10. SCADA communication with National Control Centre should be made operational.
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		<p>control room not covered and the entry points not seal. This could be a source of rodents entering the control room.</p> <p>12. SCADA panel installed but not demonstrated as working.</p>		
12.	SAFETY EQUIPMENT/SIGNS	<p>1. Danger / Warning signs were conspicuously not available in the entire switching station.</p> <p>2. Fire extinguishers were available in the control room but not in the switch yard.</p> <p>3. Artificial respiration procedures chart not seen in the control room.</p>		<p>1. Danger / Warning signs should be provided at strategic locations</p> <p>2. Fire extinguishers should be provided in the switchyard</p> <p>3. All unused constructional materials, equipment and tools should be moved out of the switchyard</p> <p>4. All constructional hanging cable strands, ropes, bolts & nuts etc should be removed</p> <p>5. The switchyard should be kept clean & tidy always.</p> <p>6. Emergency / Artificial Respiration Charts should be provided.</p>

APPENDIX I
GANTRY / SUPPORT STRUCTURE EARTH RESISTANCE VALUES
ALAOJI LINE 1

S/N	GANTRY	RED (Ω)	YELLOW (Ω)	BLUE (Ω)	REMARK
1	Lightning Arrestor	0.33	0.34	0.35	
2	Wave Trap	0.27	0.36	N/A	
3	VT	0.33	0.53	0.37	
4	Earth Switch	0.40	0.33	1.03	
5	Gantry 1	0.43		0.33	
6	Bus Bar 1	0.12		0.32	
7.	CVT	0.24	0.45		
8.	HV Disconnecter (D01+Q12C)	0.27		0.28	
9.	CT1	0.36	0.53	0.45	
10.	CB (420KV)	0.31	0.44	0.36	
11.	Camera Stand	2.04			
12.	CT2		0.24		
13.	Gantry 2 (Bus Bar)	0.7		0.54	

ALAOJI LINE 2

S/N	GANTRY	RED (Ω)	YELLOW (Ω)	BLUE (Ω)	REMARK
1	Lightning Arrestor	0.90	0.10		
2	Wave Trap	0.56		0.45	
3	Fence Wire Mesh	0.86			
4	Earth Switch	0.71	0.22		
5	Gantry 1	0.24		0.32	
6	Bus Bar 1	0.34	0.64	1.4	
7.	CVT	0.51	0.40	0.56	
8.	HV Disconnecter 1	0.31		0.50	
9.	CT1	0.26	0.27		
10.	CB (420KV)	0.53	0.19	0.45	
11.	Camera Stand	3.69			
12.	CT2	0.21	0.25		
13.	330KV JB	0.32			

UGWUAJI LINE 1

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.7	
2	Wave Trap	0.5	
3	VT	0.6	
4	330KV Current JB	0.4	
5	Gantry 1	0.34	
6	Bus Bar 1	0.41	
7.	CVT	0.65	
8.	HV Disconnecter (D01+Q12C)	0.23	
9.	CT1		
10.	CB (420KV)	0.19	

UGWUAJI LINE 2

S/N	GANTRY	RED (Ω)	YELLOW (Ω)	REMARK
1	Lightning Arrestor	0.60		
2	Wave Trap	0.88		
3	VT	0.74		
4	330KV Current JB	0.28		
5	330KV Voltage JB	0.66		
6	Gantry 1	0.82		
7	Bus Bar 1	0.21	0.40	
8.	CVT	0.28		
9.	HV Disconnecter 1	0.30		
10.	CT1	0.51		
11.	CB (420KV)	0.35		
12.	HV Disconnecter 2	0.32		
13.	CT2	0.57		
14.	Wire Mesh	1.68		
15.	Post Insulator	0.46		

AFAM

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.36	
2	Wave Trap	0.33	
3	VT	0.22	
4	Earth Switch	0.22	
5	Gantry 1	0.27	
6	Post Insulator	0.46	
7.	CVT	0.23	
8.	HV Disconnecter (D01+Q12C)	0.73	
9.	CT1	0.47	
10.	CB (420KV)	0.22	
11.	Current JB	0.21	
12.	CT2	0.25	
13.	HV Disconnecter 2	0.29	
14.	HV Disconnecter 3	0.63	

CALABAR LINE 1

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.27	
2.	Fence Wire Mesh	0.51	
3.	Wave Trap	0.28	
4.	VT	0.22	
5.	Bus Bar	0.19	
6.	Earth Switch	0.25	
7.	Gantry 1	0.26	
8.	Gantry 2	0.24	
9.	CVT	0.37	
10.	HV Disconnecter 1	0.19	
11.	CT1	0.22	
12.	CB (420KV)	0.25	
13.	330KV Voltage JB	0.48	
14.	330KV Current JB	0.22	
15.	CT2	0.18	
16.	Lightning panel	0.20	

CALABAR LINE 2

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.55	
2	Wave Trap	0.31	
3	VT	0.4	
4	Bus Bar	0.12	
5	Earth Switch	0.34	
6	Gantry 1	0.21	
7	Lightning Panel	0.50	
8.	CVT	0.51	
9.	HV Disconnecter 1	0.47	
10.	CT1	0.19	
11.	CB (420KV)	0.40	
12.	330KV Current JB	0.18	
13.	Voltage JB	0.29	
14.	CT2	0.19	
15.	HV Disconnecter 2	0.33	
16.	HV Disconnecter 3	0.41	

IKOT ABASI LINE 1

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.23	
2	Wave Trap	0.20	
3	Fence Wire Mesh	0.71	
4	Bus Bar	0.24	
5	Earth Switch	0.44	
6	Gantry 1	0.33	
8.	CVT	0.12	
9.	HV Disconnecter 1	0.51	
10.	CT1	0.11	
11.	CB (420KV)	0.30	
12.	330KV Current JB	0.14	
13.	Voltage JB		
14.	CT2	0.61	
15.	HV Disconnecter 2		
16.	HV Disconnecter 3		
17	Gantry 2	0.61	
18	CVT 2	0.11	

IKOT ABASI LINE 2

S/N	GANTRY	RED (Ω)	REMARK
1	Lightning Arrestor	0.41	
2	Wave Trap	0.32	
3	Fence Wire Mesh	0.84	
4	Bus Bar	0.09	
5	Earth Switch	0.37	
6	Gantry 1	0.29	
7	Lightning Panel		
8.	CVT	0.21	
9.	HV Disconnecter 1	0.31	
10.	CT1	0.17	
11.	CB (420KV)	0.18	
12.	330KV Current JB	0.16	
13.	Voltage JB	0.21	
14.	CT2	0.20	
15.	HV Disconnecter 2	0.34	
16.	HV Disconnecter 3	0.14	

GENERAL OBSERVATIONS

1. Alaoji and Calabar incoming 330KV transmission lines are ready with their 2 circuits completed, tested. Alaoji line is energized for security against vandalism. Calabar yet to be energized as the pressure test was completed on Friday evening.
2. The phase sequence identification marks were traced for all import and export lines; it was observed that Alaoji circuit 1 has a reversed sequence. However, on tracing the line further to bus bar 2, it was seen that the changes were taken care of.
3. Calabar incoming line may be ready in the coming few days as final inspection is on-going.
4. Only line 2, Circuits 3 & 4 of the outgoing Ugwuaji lines is ready.
5. Afam and Ikot Abasi lines, and circuits 1 & 2 of the Ugwuaji line 1, may still take a while to be completed. Stringing on Afam line is ongoing and nearing completion.
6. The lines termination points at the bays appear weak as only single vertical members hold the connecting plates.
7. The surrounding of the substation, especially from the gate, has been overtaken by shrubs/vegetation which can be abode for dangerous reptiles and rodents.
8. CCTV cameras were seen installed in the switchyard but their functionality could not be ascertained.

GENERAL RECOMMENDATIONS

1. The improvised spacers and clamps must be replaced to guarantee the safe operations of the switching station.
2. All the arcing horns must be properly aligned to ensure safety of the insulators and the entire switching station.
3. EPC Contractor should carry out a general re-greasing of all disconnecting switches, elbows of pantographs, and contact points of isolators. The hooking points for the insulators on the gantries should be strengthened.
4. The non-functioning energy meters on the control panels should be reactivated or replaced.
5. The CCTV system should be activated.
6. The access road to the station should be properly attended to and tarred.

7. Proper/adequate station power supply is a must for the proper and safe operations of the 330KV Ikot Ekpene switching station.

CONCLUSION

Please note that the re-inspection and certification of the project will be carried out on your compliance with the actions points/recommendations of this report and the necessary payment of inspection fees to the tune of <<**THIRTEEN MILLION FORTY TWO THOUSAND AND FIVE HUNDRED NAIRA (N13,042,500.00)**>> **ONLY** into TSA/CBN/ NIGERIAN ELECTRICITY MANAGEMENT SERVICES AGENCY ACCOUNT CBN/3000047706008.

Signed by:

CLIENT: NIGER DELTA POWER HOLDING COMPANY (NDPHC)/NIPP:.....DATE.....
CONTRACTOR: CARTLARK INTERNATIONAL COMPANY.....DATE.....
TRANSMISSION COMPANY OF NIGERIA [TCN]:.....DATE:.....
CONSULTANT COLENCO:.....DATE:.....
INSPECTING /TESTING AUTHORITY: NIGERIAN ELECTRICITY MANAGEMENT SERVICES AGENCY.....DATE.....

NOTE:

THIS IS NOT A CERTIFICATE



330KV SWITCHING STATION AT IKOT EKPENE, AKWA IBOM STATE

