



ELECTRICITY MANAGEMENT SERVICES LIMITED

4, Dar Es Salem Crescent, Off Aminu Kano Crescent, Wuse II, Abuja, FCT



RE: CONSTRUCTION OF 132KV LINE AND 2 x 30 MVA, 132/33KV SUBSTATION AT OGHARA, DELTA STATE

SUMMARY OF OBSERVATIONS AND RECOMMENDATION

Dates of Inspection: 13th & 14th FEBRUARY, 2015

PROJECT OBJECTIVE: To Provide Power Supply to Oghara and Environs

Please find below the observations and recommendations of Electricity Management Services Limited (EMSL) inspection team for implementation and compliance.

CONTRACTOR: INCOME ELECTRIX LTD, NIGERIA

CLIENT: NIGER DELTA DEVELOPMENT COMMISSION OF NIGERIA

SUPERVISING BODY: TRANSMISSION COMPANY OF NIGERIA (TCN)

INSPECTING/TESTING/CERTIFICATION AUTHORITY: ELECTRICITY MANAGEMENT SERVICES LIMITED (EMSL)

S/N	OBSERVATION	RECOMMENDATION	PICTORIAL ILLUSTRATIONS
1.	Most of the earthing resistance readings obtained for the entire Sub-station range from 0.1ohms to 0.4ohms. These values are within specifications; however, the reading obtained for Transformer B was 14.6ohms which is above the specified range by regulations.	The earthing of the Transformer should be improved i.e. to 2.0ohms. Likewise all metallic frames of the control room main doors, gate of the substation active area, wire mesh fence and the take-off tower legs should be earthed.	
2.	The entire Sub-station equipment were well laid and graveled with adequate drainage for total drainage of water due to rainfall.	The protruding iron rods around Transformer B area should be cut/ removed to avoid possible injuries to personnel/operators.	
3.	The gantries support foundation were properly cast with adequate ground clearances, however, usage of non-galvanised foundation bolts and nuts had been observed. Other observation are non-grouting of foundation bolts and loosening/absence of nuts on some gantries foundations.	The non-galvanised gantries foundation bolts and nuts should be replaced with galvanized ones or adequately treated to prevent rusting/corroding. The missing nuts should be replaced while the loosening bolts should be re-tightened.	

4. During the substation equipment functional test demonstration, the following were observed:

- The switching/controlling equipment in the switching yard were not labelled at all for easy identification in relation to the labelling of the control panel.
- Some isolator were not opening fully on both remote and manual operation
- The circuit breakers for the 33kV outgoing feeders' Bus bar B were not operating remotely.
- Some earthing switches were not making proper contact on closing as a result of improper opening of the respective isolators.
- Isolators' mechanism for the 132kV side shook vigorously while in operation due to unfirm/solid gantries.

- The switching/controlling equipment in the substation should be properly labeled in line with the control room labeling.
- The affected isolators should be re-aligned/adjusted to open fully on both remote and manual operations.
- The wiring of the affected circuit breakers should be reviewed to ensure that they operate smoothly on both remote and manual operation.
- While re-aligning/adjusting the affected isolators, it should be ensured that the earthing switches are making proper contact.
- The support gantries for the isolator mechanism should be re-enforced for firmness/solid enough to withstand the switching/operations of the Isolator.



5. The arcing horns on the 132kV and 33kV sides of the substation gantries were not properly aligned.

All the arcing horns should be properly aligned in order to achieve its usefulness.



6. No insulation rubber mats provided for in front of the control panels in the control room. Likewise, on the metallic plate covering the cable ducts. Insulation rubber mats of adequate sizes should be provided and laid on the floor in front of the control panels in the control rooms and on the metallic plates covering the cable ducts.

7. Transformer A circuit breaker did not operate remotely and while in manual operation, some gantries shook vigorously due to loose bolts and nuts. The circuit breakers wiring should be reviewed and bolts and nuts be re-tightened to ensure smooth operation on both remote and manual operations

8. Transformer A 33kV outgoing lines breakers were operated remotely and manually, however, transformer B 33kV outgoing lines breakers were yet to be wired for remote operation. The transformer B 33kV outgoing lines breakers should be wired for remote operation.

9. The 110V and 48V batteries band rooms were spacious and have been provided with extractor fans. However, eyewash basin has not been installed in the battery rooms. Eyewash basin should be installed in both battery rooms.



10. The silica jell provided for the transformers were not the conventional types (blue) that turns brown upon saturation; that is when it has performed its function. The silica jell should be changed to the conventional type which is more familiar to our operators.



11. They were no phase identification marks at the turn-in-turn-out connecting bays.

Phase identification marks should be provided/fixed on the turn-in-turn-out connecting bays for easier phase identification.



12. Rusted/corroded gantries foundation bolts and nuts were observed within the substation yard.

All bolts and nuts used for the gantries should be galvanized.



13. Relay injection simulation test to verify differential, over-current and earth fault protection scheme were not demonstrated. Likewise, tripping of circuit breakers in response to actuation of buchoz relay/transformer pressure release valves were not demonstrated.

The contractor should carryout relay injection simulation test to verify differential, overcurrent and earth fault protection schemes functionality in the present of EMSL Engineers. Likewise, the tripping of circuit breakers in response to actuation of the buchoz relay and transformer pressure release valves.

14. It was generally observed that the substation equipment were not properly stored before their installation as the control boxes circuit terminal showed signs of rusting.

The contractor should diligently go through all the circuitries of the control boxes of the substation equipment to ensure non- existence of rusted/corroded terminal therein.

RECOMMENDATIONS:

1. Generally, it is advisable to diligently go through the switchyard, check and replace all non-galvanized bolts and nuts as well as the missing ones. All terminal connections, bolts and nuts etc., are also to be tightened
2. Inspection fees Payment: While expecting the complete implementation of the above recommendations, the sum of Four Hundred and Twenty Thousand, Seven Hundred Naira only (~~₦~~ 420,700) is to be paid for the inspection before the re-inspection and certification of the project.

GENERAL REMARKS:

The observations/recommendations highlighted above should be attended to urgently and EMSL notified for re-inspection. Please also note that the re-inspection and certification of the project will be carried out only following your compliance with the action points/ recommendations of this report and the payment of the inspection and re-inspection fees.

Signed by:

CONTRACTOR: INCOME ELECTRIX LIMIT ----- Date :-----

CLIENT: NIGER DELTA DEVELOPMENT COMMISSION OF NIGERIA----- Date:-----

SUPERVISING BODY: TRANSMISSION COMPANY OF NIGERIA ----- Date:-----

INSPECTION/TESTING/CERTIFICATION AUTHORITY: EMSL * ----- Date :-----

* NB: This is not a certificate.

APPENDIX I

CONSTRUCTION OF 132KV LINE AND 2 x 30 MVA, 132/33KV SUBSTATION AT OGHARA, DELTA STATE

Date: 13th and 14th February, 2015

ATTENDANCE

S/N	NAME	ORGANISATION	DESIGNATION
1	Engr. Tukur Gidado	EMSL	ED TS
2	Engr. T. T. Aliyu	EMSL	H (TS & IS)
3	Engr. Quadry Jimoh Alaba	EMSL	AIE – Benin Inspectorate Field Office
4	Engr Ins Mullah	Income Electrix Ltd.	Project Manager
5	Mr Emeka Odili	Income Electrix Ltd.	H.S.E Officer
6	Mr Ofogho Peter	Income Electrix Ltd.	Civil Engineer