EXHIBIT A - STATEMENT OF WORK

Tier III 5-7 Year OEM Electrically Operated Breaker Service

Tier III breaker maintenance is defined as: Visual and mechanical inspection by the **Original Equipment Manufacturer** (OEM) to ensure the proper operation of all factory and vender installed meters, breakers, controls, and remote power monitoring equipment associated with the switch gear breaker. Inspection of the entire switchgear for loose parts, connections, and functioning indicator lights. Cleaning, wiping down and vacuuming of each cradle compartment, inside and outside cabinets.
Preforming testing on electrically operated breakers with appropriate breaker test equipment. Racking breakers out and in. Lubricating all lubrication points per manufactures recommended procedures and timetables.

I. GENERAL INFORMATION:

The United States Embassies: **Abuja** in **Nigeria** require professional services and contractor cost proposals to perform preventive maintenance services of the facility's electrical switchgear(s) Breaker.

II. PROJECT REQUIREMENTS:

The Contractor shall perform preventive maintenance as described in this STATEMENT OF WORK. The objective of scheduled preventive maintenance is to eliminate system malfunction, breakdown, and deterioration when units are activated/running.

DESCRIPTION OF EQUIPMENT *:

- See the attached equipment list provided for details of the equipment to be maintained.

III. GENERAL REQUIREMENTS:

The Contractor shall provide the labor, tools and materials required to perform all preventive maintenance as outlined in this SOW. Embassy staff may have service manuals for switchgears on-site.

IV. QUALIFIED CONTRACTORS: A LICENSED ELECTRICAL CONTRACTOR.

The approved contractor must provide a **Factory Certified Technician (OEM)** with a minimum of five years breaker maintenance experience for the corresponding make of breaker(s) being serviced, for example, Eaton to service Eaton, Schneider to service Schneider and ABB to service GE/ABB etc. to perform the factory service work on the United States Government switchgear circuit breakers and equipment. These qualified technicians are required to be on-site for the servicing of the switchgear breakers and must be accompanied by one Master or Journeyman electrician for the switchgear shutdown and servicing. Credentials as proof of training and valid electrical licenses must be provided to the COR prior to the execution of the work. The requirement for electrical safety training also applies to this contract.

V. QUALIFIED ORGINAL EQUIPMENT MANUFACTURER (OEM) TECHNICIAN:

A Factory Certified Technician (OEM) with a minimum of five years breaker maintenance experience for the corresponding make of breaker(s) being serviced, for example, Eaton to service Eaton, Schneider to service Schneider and ABB to service GE/ABB etc. to perform the factory service work on the United States Government switchgear circuit breakers and equipment. These qualified technicians are required to be on-site for the servicing of the switchgear breakers and must be accompanied by a Post qualified electrician/electrical engineer for the switchgear shutdown and servicing. The requirement for electrical safety training also applies to this contract.

Approved (Manufacturer) Breaker Original Equipment Manufacturer (OEM):

Eaton

VI. SAFETY & SPECIAL INSTRUCTIONS:

SAFETY: Safety is the highest priority on this and all OBO/CFSM/FAC projects/operations. OBO SHEM policy is to work de-energized! The team leader shall direct all of those under his/her charge to work safely. Regular safety meetings shall be held among on-site personnel and safety concerns shall be brought to the attention of the Post Safety and Health Officer (POSHO) and/or the COR/COTR. The contractor is expected to provide all required PPE for the technicians to work safely on all OBO locations worldwide. (LOTO) lock out tag out is to be strictly enforced.

VII. SCOPE OF WORK - - ELECTRICAL BREAKER PREVENTIVE MAINTENANCE AND SERVICE

Contractor shall provide all materials, supervision, labor, tools and equipment to perform preventive maintenance. All personnel working in the vicinity shall wear and/or use appropriate safety protection while all work is performed? Any questions or injuries shall be brought to the attention of the Post COR and Occupation Safety and Health Officer (POSHO) **immediately.** Material Safety Data Sheets (MSDS) for all HAZMAT shall be provided by the Contractor. Copies shall be provided to the COR for approval.

The systems and components to be maintained include power conducting equipment such as switches, circuit breakers and fuses; and control systems such as control panels, current transformers and protective relays. The attached equipment list provides details.

1. The contractor shall provide the COR with a list of necessary parts and materials.
2. The Government will not provide equipment for switchgear testing: Circuit breaker lifting truck or trolley is available at post.

If any discrepancies are found with the switchgear(s) that are not covered under this scope of work, then the contractor shall provide the following:

1. Detailed report noting the discrepancy found.

2. Bill of Materials (BOM) to include component name, quantity, part # and price for any repair material required and material lead-time.
3. Price quote for repair labor.

At a minimum, the following work must be done:

1. Use appropriate personal protective equipment (PPE) when performing work
2. Check all work areas, tools and equipment to ensure unsafe conditions are eliminated or guarded against.
3. Follow site safety procedures.
4. Schedule maintenance with operating personnel and affected offices (security).
5. Follow approved lock out/tag out procedures.
6. Lock out and disconnect the main power before tightening the main supply lugs in order to avoid the hazard of electrical shock, which could result in serious personal injury or death.
7. Review and follow the manufacturer's instructions for the service requirements of the breaker.
8. Record results in the equipment history log.
9. Remove lock out/tag out in accordance with appropriate procedures.
10. Report all incidents and near miss incidents to COR and assist as requested in the investigation and corrective action.

At a minimum, the contractor shall comply with the following:

Notes:

- Contractor shall submit to the COR for review, worksheet/checklist that will be used for performing maintenance service.
- A discrepancy report shall be submitted to the COR immediately upon discovery of any condition that could result in equipment failure.
- Test and inspection report shall be submitted to the COR within two days of completing the work.
- All test sheets and reports shall be in English.

MAINTENANCE PROCEDURES:

The purpose of this Statement of Work is to ensure the switchgear(s) for this facility are maintained according to manufacturer's recommendations to ensure the readiness and proper operation of the system.

Coordination of scheduling maintenance shall begin 90 days in advance. (Intent: Contractor needs to contact post to begin scheduling and outage coordination 90 days in advance).

A. Five- seven-year OEM Schedule:

I. Step-one, Verification: N/A for this SOW.

II. Step-Two, Verification: N/A for this SOW.

III. Step-Three, Inspect/Clean/Correct:

NOTE: Outage requires off hours work, Saturday and/or Sunday.

1. Schedule power interruptions/outages for servicing of air circuit breakers. Re-route power and use Post spares, when available, to reduce power outages when servicing feeder breakers. Coordinate any required outage with the COR and FM.
2. Photos of any deficiencies found.
3. Document the manufacture serial number and/or G.O. number and catalog number.
4. Supply an OEM test sheet for each breaker.
5. Each test sheet should have all documented breaker information and trip unit setting.
6. **Supply and replace all trip unit batteries.**
7. Supply and replace, if requested, all internal open coils, close coils actuators for the main utility, generators and tie breakers.
8. Supply and replace specified open coils in breakers: 13
9. Supply and replace specified close coils in breakers: 13
10. Supply and replace specified UVRs in breakers: 13
11. Perform proper Lock out/Tag out and ensure the system is de-energized before removing panel covers and exposing any electrical bus or cabling. Under no circumstances should the equipment be energized during the maintenance operation.
12. Inspect anchorage, alignment, grounding for the equipment.
13. The breaker must be racked in and out by the OEM technician.
14. Inspect the breaker bus bar connections and safety shutters (if applicable) for damage.
15. Clean each breaker cradle compartment. Check for damage, excessive wear, or corrosion.
16. Lubricate the primary and ground contacts and all moving joints (shutters, mechanism-operated cell (MOC), truck-operated cell (TOC), etc.). Inspect the chains/sprocket and the lifting rail of lift truck, if used for normal operation. Lubricate per manufacturer recommendations.
17. Check for and correct any lose control wires connections.
18. Apply appropriate dielectric lubrication on moving current-carrying parts and on mechanical moving and sliding surfaces. All friction surfaces and articulation in the circuit breaker, disconnect and/or earth-inn switch drives must be lubricated. Refer to manufacturer's recommendations for approved lubricants and points of lubrication.
19. Correct any faulty, damaged, discolored, and worn components using government provided spares.
20. With breaker open, inspect:
    A. Primary leads, insulators, current transformer mounting and terminations and secondary disconnects.
    B. Trip unit mounting and connectors.
    C. Frame condition.
    D. Mechanical and safety interlocks.
    E. Ground contact.
    F. Verify the manual operation of the breaker.
    G. Charge closing spring using manual charge handle.
    H. Close breaker manually ten (10) times in the CONNECT position (to be documented in the report).
    I. Trip breaker manually ten (10) times in the CONNECT position (to be documented in the report).

J. Remove and inspect arc chutes for cracks and defects.
K. Inspect for cracks and defects.

21. With the breaker closed:
    A. Inspect main contact over travel.
    B. Inspect arcing contact engagement.
    C. Measure contact resistance.
22. Perform “CLOSED” portions of the insulation resistance test (to be documented in the report).
23. Open breaker:
    A. With the breaker open, Inspect the condition of the main and arcing contacts.
    B. Clean the contacts.
    C. Perform the “OPEN” portion of the insulation resistance test (to be documented in the report).
24. Inspect insulating links/push rods and interphase barriers for cracks and defects.
25. Reinstall or replace defective arc chutes from step 18J above.
26. Rack the breaker into the cell (“Test Position” if applicable) using the standard breaker maintenance accessories and check for binding or hesitation and the movement of the breaker position indicator.
27. Verify the proper operation of all breaker /cell safety interlocks.
28. Inspect all grounding connections for cleanliness and alignment.
29. Inspect neutral CT polarity, connections, and mounting.
30. Verify that all accessible moving components are adequately lubricated.
31. Verify proper operation of all status indicator lights.
32. Document all breakers information and location in each switchgear cabinet(s).
33. Refer to coordination study for trip unit settings.
34. Verify the calibration of all functions of the trip unit by means of secondary current injection:
    A. Test and record long - time pick up and delay.
    B. Test and record short – time pick up and delay.
    C. Test and record instantaneous pick up.
    D. Test and record ground - fault pick up and delay.
    E. Reset trip flags and restore all settings changed during testing.
    F. Supply and replace all trip units’ batteries.
    G. Record all actual trip unit settings on breakers and compare to as found settings.
    H. Record counter as left value if equipped.
    I. Record all close coil voltage for each electrically operated breaker.
    J. Record all open coil voltage for each electrically operated breaker.
    K. Record all under voltage Relay if equipped voltage for each electrically operated breaker.
    L. Finish recording data on the test data form, completely filling in all the appropriate blocks.
35. Apply an E-ESS test sticker to the equipment (OEM SERVICE STICKER, tech signature required) and photo documentation for every breaker serviced.
36. Remove and account for all test equipment, jumper wires, and tools used during testing.
37. Replace all barriers and covers, close all doors, and secure all latches.
38. Review and organize all test results and forms.

39. Verify control power for close and trip functions prior to racking breaker into cell.
40. Verify the electrical operation of each breaker (document in the report).
41. Perform trip, close and anti-pump tests (manually charging the breaker).
42. Verify operation of the breaker from all local and remote-control switches or terminal blocks.
43. Close and open the breaker from each controllable device in the circuit.
44. Inspect mechanical indicating devices for correct operation.
45. Make calibration corrections as necessary to ensure accurate voltage and power readings on permanently installed switchgear metering.
46. Check all control circuits by tugging on each wire to verify a snug fit.
47. Insert all of the circuit breakers to the home and close the compartment doors. Connect the control power source.
48. Remove lock out/tag out in accordance with appropriate procedures.
49. After re-energizing the equipment, ensure that all components are up and functioning properly.
50. Test all sequence of operation to confirm per design the system is fully functional.
51. Make the COR and FM aware of all components that are not functioning properly.
52. A copy of all breaker test sheets, and the TOTAL COUNT of electrically operated breakers should be emailed to PowerSupport@State.gov within 2 days after service is completed. A copy must also be left with the FM at post.
53. Verify the switchgear PLC has no LOW battery light on (RED)
54. Supply Post with 2 open coils for bench stock. See Section C.
55. Supply Post with 2 close coils for bench stock. See Section C.
56. Supply post with 2 digital trip units for bench stock. See Section C.
57. Supply Post with 2 Charging Motor for bench stock. See Section C.
58. Supply Post with complete set of Close/open and UVR coils for the Generator breakers if the system is paralleling common buss within.

B. Additional maintenance required per manufacturers recommendations.

1. Electrical Tests – perform the following.
    - Visual inspection of all control and instrument transformers.
    - Visual inspections for accuracy of all meters and calibrate watt-hour meters.
    - Verify function of control transfer relays located in switchgear with multiple power sources.

C. Additional:

1. The contractor shall supply to post: (include items below if needed)
    - Updated/Current troubleshooting and repair manuals for Switchgear(s).

Spare Parts and Expendables Inventory.

Provide a list of minimum required, OEM recommended expendable and common parts to be maintained on-site by Post for normal maintenance such as breakers, indicators, fuses, connectors, oil, chemicals, filters, grease, and sealant.

Equipment List:

	GMMS ID#	Breaker Name: CB1, CBE-2, CBU1, PSGE1, E4, etc	Breaker Manufacturer: Eaton, Schneider, G.E, etc	Serial #	Model: Wave Pro, MasterPact, Spectra, Sentron, etc	Cat#	Amps	Trip Unit Model	Shunt Trip VAC	Spring Release VAC	Motor Charge	UVR	Location:
1	4682	Utility CBM	Eaton	GO#CAN1300848	Magnum DS MDS 84N	MDS84N4WEA 401FC PCN4Y PNNAX	4000	Digitrip 1150+	24 VDC	24 VDC	208/277 VAC	NA	GENSG
2	4687	Gen Main CBT	Eaton	GO#CAN1300848	Magnum DS MDS 84N	MDS84N4WEA 401FC PCN4Y PNNAX	4000	Digitrip 1150+	24 VDC	24 VDC	208/277 VAC	NA	GENSG
3	4688	Gen 1	Eaton	GO#CAN1300847	Magnum DS MDS 620	MDS6203WEA 161FC PCC4Y PNNAX	2000AF 1600AT	Digitrip 1150+ 24-48 vdc	24 VDC	24 VDC	208/277 VAC	24 VDC	GENSG
4	4689	Gen 2	Eaton	GO#CAN1300847	Magnum DS MDS 620	MDS6203WEA 161FC PCC4Y PNNAX	2000AF 1600AT	Digitrip 1150+ 24-48 vdc	24 VDC	24 VDC	208/277 VAC	24 VDC	GENSG
5	4690	Gen 3	Eaton	GO#CAN1300847	Magnum DS MDS 620	MDS6203WEA 161FC PCC4Y PNNAX	2000AF 1600AT	Digitrip 1150+ 24-48 vdc	24 VDC	24 VDC	208/277 VAC	24 VDC	GENSG
6	4691	Gen 4	Eaton	GO#IELY009797	Magnum DS MDS 620	MDS620WEA 081FC PCN4Y PNNAX	2000AF 1600AT	Digitrip 1150+	24 VDC	24 VDC	208/277 VAC	NA	GENSG
7	4683	CB1 NOXSWBD E feeder	Eaton	GO#CAN1300847	Magnum DS MDS 632	MDS6323WEA 301FC PCN4Y PNNAX	3200AF 3000AT	Digitrip 1150+	24 VDC	24 VDC	208/277 VAC	NA	GENSG

8	4684	CB2 UB1-MDS-U feeder	Eaton	GO#CAN1300847	Magnum DS MDS 632	MDS6203WEA 161FC PCN4Y PNNAX	3200AF 3000AT	Digitrip 1150+ 24-48 VDC	24 VDC	24 VDC	208/277 VAC	24 VDC	GENSG
9	4685	CB3 NOXSWBD U feeder	Eaton	GO#CAN1300847	Magnum DS MDS 632	MDS6323WEA 301FC PCN4Y PNNAX	3200AF 3000AT	Digitrip 1150+	24 VDC	24 VDC	208/277 VAC	NA	GENSG
10	4686	CB4 UB1-MDS-E feeder	Eaton	GO#CAN1300847	Magnum DS MDS 620	MDS6203WEA 161FC PCN4Y PNNAX	2000AF 1600AT	Digitrip 1150+ 24-48 VDC	24 VDC	24 VDC	208/277 VAC	24 VDC	GENSG
11	4679	CBA	Eaton	GO#DBN218976	Magnum SB SBS630	SBS6303WEA 301GA NAN6Y NNNAX	3000	Digitrip 1150+ LSIG 120 Vac	110/127 VAC 110/125 VDC	110/127 VAC 110/125 VDC	110/125 VAC	NA	NOX SWBD
12	4680	CBC	Eaton	GO#DBN218977	Magnum SB SBS631	SBS6303WEA 301GA NAN6Y NNNAX	3000	Digitrip 1150+ LSIG 120 Vac	110/127 VAC 110/125 VDC	110/127 VAC 110/125 VDC	110/125 VAC	NA	NOX SWBD
13	4681	Tie Breaker CBB	Eaton	GO#DBN218976	Magnum SB SBS630	SBS6303WEA 301GA NAN6Y NNNAX	3000	Digitrip 1150+ LSIG 120 Vac	110/127 VAC 110/125 VDC	110/127 VAC 110/125 VDC	110/125 VAC	NA	NOX SWBD
14		Spare 1	Eaton	GO#CAPR559071 001	Magnum DS	MDS84N4WEA 401FC PCN4Y PNNAX	4000	Digitrip 1150+ LSIG 24-48 VDC	24 VDC	24 VDC	220-277 vac		

Sample Breaker Check Sheet, OEM check sheets required for brand of breaker being serviced:

EATON
Powering Business Worldwide

Electrical Services & Systems

LOW VOLTAGE POWER CIRCUIT BREAKER TEST

CUSTOMER:	U. S. Department of State; ,	JOB NUMBER:	ELY10714
USER:	U.S. Department of State; ,	PLANT:	N/A
SUBSTATION:	N/A	EQUIPMENT POSITION:	N/A
DEVICE / FEEDER ID:	N/A	DATE TESTED:	N/A

MANUFACTURER _____ SN / SO NO. _____ FRAME SIZE(F) _____
BREAKER TYPE _____ SENSOR TAPS _____ MOUNTING ◯ D.O. ◯ B.I.
FUSE CAT. NO. _____ CUBICLE CODE _____ THERMAL MEMORY ◯ ON ◯ OFF
TRIP UNIT TYPE _____ CATALOG NO. _____ ZONE INTLK ☐ TARGETS ☐

DESCRIPTION	INSPECTED	CONDITION	CLEAN/LUBE
CUBICLE AND RACKING DEVICES	☐		
CONTACT FINGERS	☐		
LOADING AND ARCING CONTACTS	☐		
OVERCURRENT DEV. BATTERY	☐		

DESCRIPTION	INSPECTED	CONDITION	CLEAN/LUBE
ARC CHUTES	☐		
AUXILIARY DEVICES	☐		
GROUND CONNECTION	☐		
LOAD CONDUCTOR NO.	SIZE	CU ◯	AL ◯

SETTINGS AS FOUND	FUNCTION	PICKUP	DELAY	CURVE	DRAWING
RATING PLUG(R)	LONG ☑	x A = A			
SENSOR TAP	SHORT ☐				
	INST. ☐				
GRD. FLT. ◯ 3W ◯ 4W	GRD. FLT. ☐				

SETTINGS AS LEFT	FUNCTION	PICKUP	DELAY	CURVE	DRAWING
RATING PLUG(R)	LONG ☑	x A = A			
SENSOR TAP	SHORT ☐				
	INST. ☐				
GRD. FLT. ◯ 3W ◯ 4W	GRD. FLT. ☐				

☐ PAIR CURRENT AND TIME ON ALL TESTS

FUNCTION	TEST AMPERES	CURRENT MULTIPLE	TIME BAND MINIMUM	TIME BAND MAXIMUM	POLE 1 AS FOUND (seconds)	POLE 1 AS LEFT (seconds)	POLE 2 AS FOUND (seconds)	POLE 2 AS LEFT (seconds)	POLE 3 AS FOUND (seconds)	POLE 3 AS LEFT (seconds)
LONG TIME										
	LTPU (amps)									
	VOLTAGE DROP @ LONG TIME TEST CURRENT									
SHORT TIME										
	STPU (amps)									
INSTANTANEOUS										
	IPU (amps)									
GROUND FAULT										
	GFPU (amps)									

EQUIPMENT TEMPERATURE _____ °C TEMPERATURE CORRECTION FACTOR TO 20°C, TCF _____

INSULATION RESISTANCE	POLE 1 MΩ (P1-P2) READING	POLE 1 MΩ (P1-P2) 20°C	POLE 2 MΩ (P2-P3) READING	POLE 2 MΩ (P2-P3) 20°C	POLE 3 MΩ (P3-P1) READING	POLE 3 MΩ (P3-P1) 20°C
POLE TO POLE						
POLE TO FRAME						
LINE TO LOAD						

POLE RESISTANCE - MICRO-OHMS READING		
POLE 1	POLE 2	POLE 3

CONTROL WIRING			COUNTER READING BEG/END	
READING		20°C		

COMMENTS: _____
DEFICIENCIES: _____

Tested By: _____ Date Tested: N/A
Work By: _____ Inspected By: _____

END OF STATEMENT OF WORK