

Scope of Work

Notes:

All works shall be carried out in accordance with the current edition of the Bermuda Building Code and the referenced International Building Codes within as well as ANSI/NETA Standards.

1. Mobilization

- 1.1. Mobilize a work crew and all their equipment to complete the works including transportation costs, local accommodation costs and site facilities.
- 1.2. Meetings with Tynes Bay Operations to confirm laydown areas, set communications channels and facility use coordination to prevent delays.
- 1.3. Coordinate safety and health programs with Tynes Bay Operations.
- 1.4. Document the pre-mobilization conditions of the site and laydown areas and provide a copy to Tynes Bay operations.

2. Modification of the Transformer Enclosures, if required.

- 2.1. The existing transformer enclosures are to be inspected and analysed to confirm that they are suitable for the current standards for containment of liquids, fire protection and personnel safety.
- 2.2. If modifications are required the Proponent shall design the modifications and submit them to the Government for review and approval.
- 2.3. One transformer must be left in service during the works.
- 2.4. The Proponent shall make all the proposed modifications needed to completely satisfy the current code requirements.

3. Options for the Refurbishment of the 2000 kVA transformer(s)

- 3.1. Proponents shall supply, deliver, install and commission one or two 2000 kVA transformers complete with all ancillary equipment, couplings and connections such that the transformers and their systems are complete.
- 3.2. The Government would like to consider several ways to refurbish the two plant distribution transformers.
- 3.3. Proponents are requested to review the options listed in the Pricing Form and provide lump sum prices.
- 3.4. Proponents may select to price one option or any number of options.
- 3.5. Proponents are requested to include a scope of work for the proposed options so a proper evaluation can be made for each option.

- 3.6. The Proponent is not required to prepare a scope of work for every option, only for the options they include in the Pricing Form.
- 3.7. The Government shall review each option and select the option that best suits their needs.
- 3.8. The number of transformers and the type, either new, remanufactured or refurbished, shall be determined from the options.
- 3.9. All work to be in accordance with ANSI/NETA Standards.
- 3.10. The existing cables shall be reused if possible.

4. Refurbishing of Plant Distribution Transformer(s)

- 4.1. Depending on the options selected in the tender process, the transformer(s) may be a remanufactured transformer or the existing transformer(s) may be removed, refurbished and returned.
- 4.2. One transformer must stay in operation during these works.
- 4.3. The remanufacturing program shall be prepared and detailed in the Proponents proposal but it should contain the following as a minimum;
 - 4.3.1. 3-line drawing
 - 4.3.2. Control Schematic drawing
 - 4.3.3. Point-to-Point drawing
 - 4.3.4. Bill of Materials
 - 4.3.5. As found testing (TTR, Insulation Resistance, Winding Resistance)
 - 4.3.6. Internal inspection performed.
 - 4.3.7. Top cover removed.
 - 4.3.8. Insulating fluid removed.
 - 4.3.9. All bushings are removed and cleaned.
 - 4.3.10. All gaskets are replaced.
 - 4.3.11. All threaded fittings are removed, cleaned and reinstalled
 - 4.3.12. Unit is tested to assure proper connections.
 - 4.3.13. Unit is filled with new fluid retro fill (Mineral Oil, Cooper FR3 and Silicone).
 - 4.3.14. Top cover is reinstalled.
 - 4.3.15. 5 psi pressure test is performed

- 4.3.16. Unit is prepped for paint. Sandblasted, minor fabrication work and rust removal.
- 4.3.17. Unit is painted with a Urethane two part top coat.
- 4.3.18. Electrical Tests per NETA Standards
- 4.3.19. Insulation Resistance (Polarization Index)
- 4.3.20. Winding Resistance
- 4.3.21. Turn-to-Turn Ratio
- 4.3.22. Power Factor Insulation Test
- 4.3.23. Excitation Test
- 4.3.24. Bushing Hot Collar (If applicable)
- 4.3.25. Bushing Capacitance Test (If applicable)
- 4.3.26. Auxiliary Checks (If applicable)
- 4.3.27. Removal of core and coils for water/rust situations or other repairs.
- 4.3.28. Fabrication and replacement of severely depleted metals.
- 4.3.29. Leak Detection and Repair
- 4.3.30. Radiator Assessment and Repair
- 4.3.31. Bushing and Gasket Repair
- 4.3.32. Internal Inspection and Repair
- 4.3.33. Transformer Oil Dehydration and Degasification

5. Cabling, testing and commissioning

- 5.1. It is expected that the existing cable will be reused to connect the new transformers to the plant.
- 5.2. If the Proponent's option cannot use the existing cable then new cabling will be installed and this cost will be included in the pricing options.
- 5.3. If new cabling is required then all associated costs such as excavations, cable supply, removal, installation, connections, backfilling, repairing damage to walls or slabs made during the works, testing, etc., shall be included in the pricing options.
- 5.4. The Proponent shall prepare and implement a complete testing and commissioning program which will be reviewed and approved by the Government.

6. As-built drawings, documentation and maintenance schedules

6.1. A complete set of as-built drawings and documents are to be submitted after the work has been completed.

7. De-mobilization

7.1. Demobilize the work crew and all their equipment from the facility, including local transportation costs and return flights.

7.2. Return the site to the pre-mobilization conditions.

7.3. Obtain hand over sign off from Tynes Bay Operations confirming that the construction site and lay down areas are returned in pre-mobilization conditions, clean of all debris and construction equipment.