

B52 / B53 Exhaust Flex Seal Replacement FY27

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1.0 Location of Property

1.1 JEA – Brandy Branch Generating Station (BBGS)

15701 West Beaver Street

Jacksonville, FL 32234

2.0 Plant Information

2.1 Brandy Branch Generating Station is preparing for a planned outage for the spring of 2027. The overall scope of the planned outage is for:

2.1.1 Unit B52 – GE 7FA with .05 upgrade – Turbine and Generator Major, HRGS maintenance and upgrades

2.1.2 Unit B53 – GE 7FA with .05 upgrade – Turbine and Generator Major, HRGS maintenance and upgrades

2.1.3 Unit B54 – GE D-11 – Turbine and Generator Major

2.1.4 Balance of Plant – multiple other scopes

2.2 The planned outage dates for Brandy Branch combined cycle are tentatively March 11, 2027, through April 18, 2027. The Company will have 38 days available to perform scope of work thus allowing operational shutdown, startup, and testing activities.

3.0 Scope of Work

3.1 This specification covers the removal and replacement of the flex seal plate type expansion joint between the end of the 0706 exhaust diffuser and the start of the A042 diffuser duct on both units B52 and B53. The intent of this specification is that this is a turnkey project to include the demolition, preparation, fabrication, installation, inspection and turnover.

3.2 The work includes replacement of the following components:

3.2.1 Complete set of flex seals (multi-layer arrangements).

- a. All necessary hardware including bolts, nuts, washers, gaskets, and clamping bars

3.2.2 Fabric expansion joint and ceramic fiber insulation

- a. All necessary hardware and components to support installation of insulation at the joint which may include frames to be welded to diffuser and diffuser duct

3.2.3 All necessary fasteners, gaskets, and supporting components.

3.3 All Contractor procedures shall be subject to owner review.

3.4 The contractor shall provide all necessary support to include but not limited to scaffolding, access platforms, confined space attendants with CPR and First Aid training, fire watches, insulation removal and installation, necessary power and air.

4.0 Codes and Standards

4.1 All work shall comply with the applicable industry standards including:

4.1.1 ASME

4.1.2 AWS structural welding requirements

4.1.3 OSHA safety regulations

4.2 All Contractor procedures shall be subject to owner review.

4.3 Contractors are responsible for having all required JEA training prior to performing any work on the plant site. Contractor Safety information can be found at https://www.jea.com/About/Procurement/Contractor_Safety/

5.0 Existing Equipment

5.1 The exhaust gas flow after .05 upgrade of the GE Frame 7FA gas turbine is 3718 kpph with an average exhaust temperature of 1210 degrees F. The design internal temperature is 1250 degrees F.

5.2 The existing flex seals were installed in 2016 by IPS. The system consists of two layers of fifty (50) Inconel 718 0.04-inch flex plate, and one layer of twenty-five (25) Inconel 718 0.02-inch flex plate. Plates are arranged in 3-layers with staggered seams.

5.2.1 Recent inspections show wear of the flex seals and missing flex seal plates at some locations.

5.3 The exterior of the Flex Seal joint is insulated, including a fabric joint that allows for movement.

6.0 Demolition and Removal

- 6.1 Extreme care must be taken so that no damage is done to the JEA's station facilities during the demolition work. It is emphasized that facilities located adjacent to and below grade in the working area are very essential elements of the plant. All such adjacent facilities must be kept safe during all demolition and installation work. When possible, these facilities will be de-energized by JEA personnel. JEA will provide a lock-out of these facilities.
- 6.2 The Contractor shall note immediately any as found damage that may impact installation of new Flex Seal components and inform JEA project management.
- 6.3 The Contractor shall erect and properly maintain at all times such danger signs, barricades, lights and other safeguards as may be required for safe working conditions.
- 6.4 All materials from the demolition become the property of the Contractor and shall be removed promptly from the site. Removal of debris from the site shall be done frequently so as to avoid any collection of debris.
- 6.5 The Contractor shall submit along with the bid proposal, the names of the sub-contractor(s), if any, who may be used for demolition, disposal, and installation. The Contractor shall also include the proposed disposal location for the material removed. The Contractor shall obtain the required permits necessary for the disposal of the removed material. The Contractor shall provide copies of disposal records/logs and certificate of recycle.

7.0 Hazardous Material Removal

7.1 Potential Asbestos Removal

- 7.1.1 It is not expected that the Company will encounter any asbestos containing material in the demolition of the existing equipment. If the Company suspects that any components of the equipment contain asbestos, the Company shall notify the JEA Project Manager. The Company is advised that any material suspected of containing asbestos will have to be treated as asbestos containing material until cleared by testing. The Company shall observe all safety standards and procedures required to handle potential asbestos in accordance with JEA Safety Procedures. **JEA shall arrange and be responsible for testing any**

suspected asbestos. JEA shall reimburse the Company additional costs associated with the finding of components containing asbestos. The Company shall not include in its bid contingency funds for potential asbestos-related work.

7.2 Painted Surfaces

- 7.2.1 The Company is advised that the existing equipment is not coated with a lead-containing paint system. If the company suspects that any components of the equipment contain lead then the Company shall notify the JEA Project Manager. **JEA shall arrange and be responsible for testing any suspected lead paint. JEA shall reimburse the Company additional costs associated with the finding of components containing lead. The Company shall not include in its bid contingency funds for potential lead-related work.**

8.0 Replacement

- 8.1 The Company shall engineer, design, fabricate, deliver to site and install a new replacement multi-layered flex seal system for two units. The flex seal is located between the end of the 0706 exhaust diffuser and the start of the A042 diffuser duct.
- 8.2 The Company shall engineer, design, fabricate and install the insulated fabric expansion joint on the external side of the flex seal to insulate the equipment.
- 8.2.1 The Company shall be responsible for securing the insulation and fabric expansion joint in place.
- a. The Company may fit and weld new seal frame outer rings to the diffuser duct casing, and exhaust diffuser outer surfaces for the attachment of insulation and the fabric expansion joint.
 - b. The Company may use existing anchor locations for the fabric expansion joint and insulation, however no information for the method used is available.

9.0 Materials and Fabrication

9.1 Flex Seals

- 9.1.1 Material: Inconel 718, pre-cut to shape with pre-drilled holes matching existing bolt patterns

9.1.2 Quantity: 75 per unit (or as otherwise detailed)

9.1.3 Configuration: 3 – layers with alternating seams

9.1.4 All manufactured components shall have edges, smooth and burr free

9.2 Insulated Fabric Expansion Joint

9.2.1 Multi-layer high temperature fabric suitable for 1250F and +/- 2 psig combustion turbine exhaust conditions

9.2.2 Installed to accommodate thermal expansion and maintain gas tightness

9.2.3 Must be compatible with ceramic fiber blanket insulation to fill void between, exhaust diffuser, diffuser duct and fabric joint.

a. Minimum: 8 lb/ft³

b. Recommended for high vibration areas: 10 lb/ft³

9.3 All necessary hardware and gaskets required to install components as designed which may include but is not limited to:

9.3.1 Hex Nuts, Bolts, Washers, Lock Washers and Screws

a. Interior components in contact with exhaust gases should be capable of withstanding the internal design parameters mentioned in 5.1

9.3.2 Rope Gasket

9.3.3 Clamping Bars

9.3.4 Frames

9.4 Fabrications

9.4.1 High-temperature alloys fabrications must have ASME material specifications

9.4.2 Welds performed to AWS standards with certified procedures.

10.0 Welding and Fabrication Tolerances

10.1 Fabrication tolerances shall be in accordance with industrial standards and shall be in accordance with the Contractor's design drawings.

10.2 Quality and appearance of welding is extremely important and shall be in accordance with the practices and procedures of the AWS D1.1, Structural Welding Code, steel, and AWS D1.3, Structural Welding Code, Sheet Metal.

10.3 All surfaces to be welded shall be suitably prepared and free of all foreign materials detrimental to welding such as grease, oil, dirt and paint.

- 10.4 Proper welding electrodes shall be selected from AWS keeping in mind the base metal to be welded and the welding process to be used.
- 10.5 Only certified welders shall perform the welding.
- 10.6 Flatness of exterior sheet surfaces shall be within one-fourth of an inch.
- 10.7 Bolt hole location tolerance shall be plus or minus one-sixteenth of an inch.
- 10.8 Unless otherwise noted on the design drawings, the inside bend radii for stainless steel parts shall be 3 times the plate thickness, minimum.

11.0 Protective Coating

- 11.1 Applicable components shall be coated per Coating 60.0600 document
- 11.2 Components to be coated may include but are not limited to:
 - 11.2.1 External frames from materials not listed in section 1.2.2 of the Coatings document
 - 11.2.2 Surrounding components impacted by company modifications shall be touched by the company up per the Coatings document

12.0 Shipment

- 12.1 The Contractor shall be fully responsible for the safe shipment, storage, and handling of the components, and shall be fully responsible for the material on the job site until the system is turned over to the Plant. The Contractor is responsible for all shipping costs and for all truck loading and unloading of material at the job site.
- 12.2 Miscellaneous parts shall be packaged in suitable boxes for the storage at the job site.

13.0 Documentation

- 13.1 The contractor shall provide within 30 days of completion of project a report in PDF format to include but not limited to:
 - 13.1.1 Description of work performed
 - 13.1.2 Photos documenting work performed to include as found condition and as left condition
 - 13.1.3 Recommendations for future work, if any

14.0 Reference Drawings, Documents and Photos

14.1 List of Included Reference Drawings, Documents, and Photos

Photos	Description
Flex_Seal_Photos	Photos of Flex Seal Joint
Documents	Description
Coatings 60.0600	Coatings Specification

15.0 Construction

15.1 Temporary Utilities

15.1.1 JEA will provide limited 110V - 20 ampere single-phase and 480V - 60 ampere three-phase electrical power at designated locations in the gas turbine area. Contractor shall be responsible for additional power supply (Generator) requirements and transformers to provide any other required voltages. Contractors shall make electrical connections and supply sufficient quantities and lengths of cables and electrical connectors in safe working order.

15.1.2 Service air for construction activities is not available.

15.1.3 Isolating and tagging out of equipment prior to work by the Contractor will be provided by JEA.

15.1.4 Contractor to provide designated trash dumpsters, labeled by debris type.

15.1.5 Company shall provide all necessary facilities required by crew, to include but not limited to:

- a. Sanitary facilities (portable toilets / hand washing stations) – to be cleaned 3 times per week
- b. Break area suitable for employees
- c. Water for personnel to stay hydrated
- d. Administrative facilities

15.2 Laydown & Assembly Area

15.2.1 The Contractor shall notify the JEA Project manager of the size of their required laydown and assembly area. The laydown and assembly location will be determined jointly by the JEA Project Manager and Contractor.

15.2.2 As stated in section 2.0, this will be a large, planned outage with projects being done sitewide. Coordination and communication with the JEA Project Manager will be paramount.

15.3 Project Schedule

15.3.1 The tentative outage schedule for Brandy Branch combined cycle is tentatively March 11, 2027, through April 18, 2027. The Company will have 38 days available to perform scope of work thus allowing operational shutdown, startup, and testing activities.

15.3.2 Contractor shall provide the JEA Project Manager with a detailed resource loaded project schedule within 2 weeks of award. Schedule shall outline all project details including but not limited to: Mobilization, Assembly, demobilization.

15.3.3 The project schedule for this Contract shall be prepared and maintained by Contractor to provide coordination between subcontractors and suppliers, to establish the basis for measuring and monitoring Contractor progress and overall Project progress, to detect problems for the purpose of taking corrective action.

15.4 Project Meetings

15.4.1 Once Contractor has been mobilized to Jobsite, JEA and Contractor representatives shall meet daily to update the following:

- a. Current status of the job progress
- b. Look-Ahead Schedule (requirements listed in Item 15.4.2 below)
- c. Current and projected manpower
- d. Changes in the Work
- e. Safety and Quality Control Issues
- f. Problem areas or concerns

15.4.2 The Look-Ahead Schedule shall:

- a. Report all planned work that is to be accomplished during the current week and the next two weeks in support of, and in accordance with, Contractor's detailed Construction Schedule
- b. Be personnel and resource loaded
- c. Report the planned and actual progress of the previous week

- d. Report critical activities that are identified to be completed by others, the delay of which would prevent Contractor from starting and completing its planned work activities in accordance with the detailed Construction Schedule