Appendix A: Technical Specification for B52 and B53 HRSG Cleaning – 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. Brandy Branch Generating Station consists of three GE 7FA gas turbines, two of which are combined with Nooter Eriksen Heat Recovery Steam Generators (HRSGs) to provide steam for a GE D-11 steam turbine/generator. The combined cycle has been in operation since 2004. 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 3, 2027, through April 11, 2027. The Company will have 11 days available to perform scope of work thus allowing for the completion of other activities prior to the HRSG cleaning beginning on April 1, 2027, thru April 11, 2027.

3.0 Scope of Work

3.1 Units B52 and B53 finned-tube bundles in the HRSG, downstream of the Selective Catalytic Reduction (SCR) shall be cleaned by an acceptable method, described below, that shall not damage the equipment. The contractor prior to starting shall inspect and note any damage to the HRSG and report it to the JEA project manager. The finned-tube bundles shall then be cleaned; the debris removed from the HRSG and properly disposed of.

3.2 Sections of the HRSG to be cleaned downstream of the SCR are highlighted in the attached drawings and are described below.

3.2.1 Module 3:

a. HP Economizer #2: SA-178D Carbon Steel 1 ¾" Welded Tube
b. IP Superheater #1: SA-178A Carbon Steel 2 ¼" Welded Tube
c. LP Superheater #1: SA-178A Carbon Steel 2 ¼" Welded Tube
d. IP Evaporator: SA-178A Carbon Steel 2 ¼" Welded Tube

3.2.2 Module 4:

a. HP Economizer #1: SA-178D Carbon Steel 2" Welded Tube
b. IP Economizer: SA-178A Carbon Steel 2" Welded Tube
c. LP Evaporator: SA-213 T11 Carbon Steel 2" Welded Tube

3.2.3 Module 5:

a. Feedwater Heater: SA-178A Carbon Steel 1 ¾" Welded Tube

3.3 Acceptable Cleaning Methods

3.3.1 One of the methods below shall be used for cleaning of the HRSG's at JEA. JEA has reviewed the available technologies and determined that these two technologies are suitable.

a. Dry Ice Blasting

i. Contractor shall provide JEA with engineering calculations to demonstrate the cleaning stress are below ¼ of maximum allowable stresses
ii. Contractor shall provide a detailed cleaning procedure to include tooling insertion points and inspection hold points
iii. For deposits that the contractor determines are difficult to remove, a biodegradable solution may be used to help break down the deposits.
iv. Contractor shall include a HRSG blowdown prior to debris removal
v. Contractor shall include removal of debris created by cleaning from HRSG and site

b. Impulse Cleaning

i. Contractor shall provide JEA a directionally targeted, rapidly repeated, pressure wave cleaning process (omni-directional pressure waves are prohibited) that strategically and incrementally cleans across the face horizontally, from top to bottom
ii. The impulse produced shall be a product of ethylene gas and compressed air
iii. The impulse cleaning shall be conducted from each side of the tube bank to be cleaned

iv. The process shall be remotely monitored and checked by borescope inspections
v. Contractor shall include removal of debris created by cleaning from HRSG and site

3.4 Waste Removal

3.4.1 The contractor shall remove waste generated from cleaning the HRSG by vacuuming

a. The contractor shall remove all waste debris from headers, tube sheets, baffle plates, and floors of the HRSG.

3.4.2 JEA will provide testing to determine if the waste removed from the HRSG is hazardous waste or general waste

3.4.3 Removal from site and Disposal of Waste

a. The contractor shall be responsible for the removal of waste from site and disposing of all waste removed from the HRSG. Disposal of all waste shall be in accordance with all applicable Federal, State and Local laws based off the results from testing

3.5 Additional Constraints

3.5.1 Given the scope of work to be performed during this outage, coordination with the project manager will be paramount to allow for the greatest number of parallel activities.

3.5.2 The cleaning of the HRSG finned tube bundles shall not impact scheduled activities or require additional safety measures for any of the work scopes upstream from the sections being cleaned (for example, double hearing protection or respirators, or evacuation of work area).

3.5.3 If the JEA project manager determines it is necessary, the contractor shall be responsible for installing a barrier to protect the existing or new equipment (SCR, or sampling grid) upstream of the sections being cleaned.

4.0 Codes and Standards

4.1 All work performed at BBGS shall be in accordance with the latest edition of all applicable codes, standards, specifications, regulations, procedures, and tests. These include, but are not limited to:

4.1.1 ASME

4.1.2 ASTM

4.1.3 EPA
4.1.4 NFPA
4.1.5 OSHA
4.1.6 RCRA

5.0 Safety

5.1 For complete contractor safety requirements please see the JEA Contractor Safety web page: https://www.jea.com/About/Procurement/Contractor_Safety/

5.2 Contractors are required to abide by OSHA, and all applicable Federal, State and Local laws.

5.3 To the extent possible contractors, their employees and subcontractors should complete all safety training possible prior to arriving onsite.

6.0 Hazardous Material Removal

6.1 Potential Asbestos Removal

6.1.1 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.**

6.2 Painted Surfaces

6.2.1 It is not expected that the Company will encounter any existing equipment that is 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.

6.3 Hazardous Waste Produced from Cleaning

6.3.1 JEA shall arrange for and be responsible for determining if the waste produced from cleaning is hazardous. The company shall then be responsible for disposing of the waste according to the test results.

7.0 Performance

7.1 JEA will conduct performance testing pre and post outage. Given the scopes of work to be completed during the outage, any performance increase will not be able to be credited to any one source, however a combined performance impact will be calculated.

7.2 If the contractor has any specific information that they require, then they shall notify the JEA Project Manager in writing by email at least 30 days prior to the start of the outage.

8.0 Documentation

8.1 The contractor shall provide withing 30 days of completion of project a report in PDF format to include but not limited to:

8.1.1 Description of work performed

8.1.2 Photos documenting work performed to include as found condition and as left condition

a. Photos shall be pre-and-post cleaning of the same locations for comparison purposes.

b. Photos shall be taken on each face of each tube bundle that is cleaned.

8.1.3 Record the amount of waste in pounds removed from each HRSG

8.1.4 Recommendations for future work, if any

9.0 Reference Drawings and Photos

9.1 JEA shall provide a tube layout drawing, and several photos of the HRSG. Any additional drawings needed will be provided at the contractor's request.

Provided Documentation List	
Drawing Title	File Name
Bundle Layout and Flow Schematic	Tube Layout.pdf
HP ECON 2, IP SHTR 1, LP SHTR 1, IP EVAP General Arrangement	201A021.pdf
HP ECONOMIZER #2 ELEVATION DETAILS	201A022.pdf
LP SHTR #1, IP SHTR #1 ELEVATION DETAILS	201A023.pdf
IP EVAPORATOR ELEVATION DETAILS	201A024.pdf
FIELD ROOF ASSEMBLY HP ECON #2, IP/LP SPHTR #1, IP EVAP	201A031.pdf
General Erection Diagram	201A054.pdf
HP Econ #1 / LP Evap Bundle 'A' Arrangement	201A091.pdf
HP Econ #1 / LP Evap Bundle 'B' Arrangement	201A092.pdf
HP Econ #1 / IP Econ / LP Evap Bundle 'C' Arrangement	201A093.pdf
Piping General Arrangement Right Side Elevation	201A157.pdf
Piping General Arrangement Left Side Isometric	201A158.pdf
Piping General Arrangement Right Side Isometric	201A159.pdf
JEA BBGS Units 1&2 Feedwater Replacement Sectional Side Elevation	_GA1_0 SECTIONAL SIDE ELEVATION-GA1.pdf
JEA BBGS Units 1&2 Feedwater Replacement Roof Plan & Coil Drains	_GA2_0 ROOF PLAN & COIL DRAINS-GA2.pdf
JEA BBGS Units 1&2 Feedwater Replacement Lower Gas Baffles	_GA3_0 LOWER GAS BAFFLE-GA3.pdf
LP Evaporator Harp LPEV1 A, B, C JEA BBGS HRSG	V26985-MSXD-5000-6-1 - LPEV1.pdf
LP Evaporator Harp LPEV2 A, B, C JEA BBGS HRSG	V26985-MSXD-5001-6-1 - LPEV2.pdf
JEA BBGS HRSG Harp – Module Tube & Finning Details	V26985-MTXD-5000-0-1.pdf

10.0 Construction

10.1 Temporary Utilities

10.1.1 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.

10.1.2 Service air for construction activities is not available.

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

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

10.1.5 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

10.1.6 Contractor parking area is located on West side of plant ~1600' from work area. Only company placarded vehicles will be allowed @ work area.

10.2 Laydown & Assembly Area

10.2.1 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.

10.3 Project Schedule

10.3.1 The planned outage dates for Brandy Branch combined cycle are tentatively March 3, 2027, through April 11, 2027. The Company will have 11 days available to perform scope of work thus allowing for the completion of other activities prior to the HRSG cleaning beginning on April 1, 2027, thru April 11, 2027.

10.3.2 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. It should be in MPP format with copy in PDF format.

10.3.3 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.

10.4 Project Meetings

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

a. Status of the job progress
b. Look-Ahead Schedule
c. Current and projected manpower
d. Changes in the Work
e. Safety and Quality Control Issues
f. Problem areas or concerns

10.4.2 The Look-Ahead Schedule shall:

a. Report on 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 on 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

11.0 Division of Responsibilities

11.1.1

Division of Responsibilities		
	Contractor	JEA
Access to workspace in HRSG		X
Hole Watch as needed (24-hour notice is required when hole watch is needed)		X
Access to sky climber ports on top of HRSG		X
Use of elevator to access top of HRSG		X
Use of sky climber provided by the scaffolding company		X
Confined Space Permits and Confined Space Monitoring		X
Issuing of Hot Work Permits		X
LOTO of equipment being worked on		X
Lock Out and Tag Out Locks and Satellite Lock boxes for employees and sub-contractors	X	
Opening and closing of sky climber ports as required	X	
Fire extinguishers required for Hot Work	X	
Fire watches as required for Hot Work	X	
SDS for any chemicals to be brought onto sight; and removal from site of any chemicals not used	X	

Division of Responsibilities - Continued		
	Contractor	JEA
Required equipment for scope of work being preformed	X	
Required safety equipment for scope of work being preformed	X	