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July 1, 2010

103-89520

Mr. Jeff Koerner
New Source Review Section
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: UNIVERSITY OF FLORIDA COGEN—BACKUP BOILER MAINTENANCE AND REPAIR PROJECT

Dear Mr. Koerner:

Progress Energy Florida, Inc. (PEF) is planning to conduct routine maintenance, repair, and replacement activities (RMRR) on backup Boiler Nos. 4 and 5 at the University of Florida Cogen facility. The University actually owns the boilers, but PEF operates them and they are included in the facility's Title V air permit. The RMRR activities consist of replacement of boiler tubes, superheater tubes, refractory, insulation, steam drum internals, miscellaneous boiler trim, and the boiler external casing. In addition, a temporary boiler may be brought on site if it is needed during these activities to support the steam load requirements of the university. Construction is scheduled to start in late August 2010. No other changes are being sought to other current permitted operating conditions unrelated to the boiler RMRR. The exception may be the requested addition of the temporary boiler to the list of insignificant activities in the Title V air permit, which can be addressed when the Title V permit is re-opened at some future date.

PEF has evaluated information related to the proposed RMRR project planned for Boiler Nos. 4 and 5. This correspondence is a Professional Engineer's Certification that provides a reason for the maintenance and repairs, a description of the maintenance project, the historical information for similar activities, and a regulatory evaluation of the RMRR project.

Reason for Repairs: Replacement of furnace, convection, and superheater tubes is a common maintenance item throughout the life of a boiler. Common problems that require repair and replacement of tubes are internal corrosion due to mineral deposits from the steam generating process and stress crack corrosion due to the thermal cycling of the boiler at high stress. This is particularly important at welded connections, such as areas where plate steel is welded to the tubes that are necessary to maintain an airtight structure at the windbox and at the convection pass outlet. The screen tubes and other tubes that need to be replaced typically fail due to cyclic thermal stress and external corrosion. The external corrosion also occurs due to flue gas deposits of ash and sulfur compounds that form acids when the boiler is shut down and air comes in contact with the surfaces.

Description of Maintenance Project: All the repairs and replacements will be from available materials similar if not identical to the existing boiler tube materials. The number and design of the tubes will be identical to the existing design. Individual repairs and replacements to be performed are described below for each component part.

- Sidewall Tubes—Replacing the sidewall tubes in panels in this area is more efficient and cost-effective than repairing individual tubes. It is much more efficient and cost-effective for all replacement tubes to be fabricated in a shop environment. The individual tubes are laid out in precise rows. All are cut to the same length, and then the membrane is welded between each tube using automated welding equipment. When the panels are installed in the field, a straight cut across the section of water wall being replaced is made at the top and bottom of the section and then the membrane on the two sides of the panel is cut.

Golder Associates Inc.
5100 W. Lemon Street, Suite 208
Tampa, FL 33609 USA
Tel: (813) 287-1717 Fax: (813) 287-1716 www.golder.com

Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

This creates a rectangular opening in the wall into which to insert the new panel from the material supplier. This makes the welding process much more efficient and effective as a repair. The water wall panels must be air-tight in order to contain the combustion gases inside the boiler and to allow efficient heat transfer to generate steam.

- Screen Wall Tubes—The screen wall tubes that need to be replaced typically fail due to cyclic thermal stress and external corrosion.
- Superheater Header—The superheater header will be replaced. This header sees some of the highest thermal stress in the boiler, with the weak point being the tube connections ("nipples"). It is more efficient and cost-effective to fabricate a new header with nipples than it is to replace all of the nipples in the field. The time needed to grind out the welds that hold the nipples in place and then weld in new nipples in the field is considerable. Due to physical accessibility in a shop environment, all of the areas requiring welding can be easily accessed to perform a proper connection. Finally, the nipple welds on the header require post-weld heat treatment to the header. Typically, in a fabrication shop, the entire header is put in an oven to heat treat. In the field, it is necessary to wrap the header and nipples with electric heating blankets and insulation in order to perform heat treatment.
- Refractory and Insulation—All of the existing refractory and insulation internal to both boilers will be replaced. The refractory and insulation has deteriorated since it was originally constructed and has lost some of its ability to contain the heat of combustion. This causes increased surface temperature on the boiler, which has the potential to cause personal injuries. In addition, it is necessary to remove and replace some of the refractory and insulation in order to replace the boiler tubes. It is practical and cost-effective to replace all insulation and refractory at this time.
- Casing—The majority of the casing, with the exception of the front wall on Boiler No. 4 and the casing surrounding the burner on Boiler No. 5, will be replaced. The casing is the last barrier between the boiler and any personnel outside the boiler. Throughout the life of a boiler, certain hot spots can develop where excess flue gas can cause excessive thermal stress in a specific area of the casing. In addition, it is necessary to remove and replace some of the casing in order to replace the boiler tubes. It is practical and cost-effective to replace the majority of the casing at this time.
- Steam Drum Internals—Various steam drum components, including continuous blowdown pipe, chemical feed pipe, feedwater dispersion pipe, steam separator, and the sludge collector plate, will all be replaced. These components have deteriorated since the original construction due to various reasons such as mineral deposits in the feedwater.
- Boiler Accessories and Trim Replacement—Various boiler accessories will be replaced due to wear and tear on several valves, manways, and viewports.

Previous Repairs and Replacement Activities: The university has conducted a complete re-tubing on Boiler No. 4 in 1988. Sections were replaced that included as much as 5,000 square feet. The current replacement is calculated to be approximately 5,620 square feet for Boiler No. 4 and 8,092 square feet for Boiler No. 5. The total surface heat transfer area for Boiler Nos. 4 and 5 is 5,620 square feet and 10,630 square feet, respectively. Therefore, this proposed activity represents about 100 percent and 76 percent of the total surface heat transfer area for Boiler Nos. 4 and 5, respectively. Replacement of the economizer tubes for Boiler No. 5 is not included in this repair.

Regulation Evaluation: The Florida Department of Environmental Protection (FDEP) definition of "modification" in Rule 62-210.200 (205), Florida Administrative Code, excludes RMRR as a physical change or a change in the method of operation. Although RMRR is not defined in the FDEP rules, there is U.S. Environmental Protection Agency (USEPA) guidance from the Wisconsin Electric Power

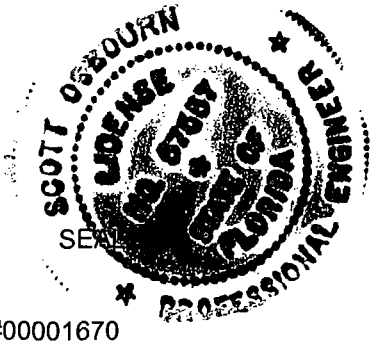
(WEPCO) ruling (7th Circuit, 1990), which was reaffirmed in subsequent rulings, that set forth four general categories for evaluating RMRR for a project. While the USEPA has attempted to establish rules for RMRR (68 Federal Register 61248–61280, October 27, 2003), there are no current rules due to subsequent legal cases. RMRR is currently evaluated on a case-by-case basis.

Attached is a four-factor evaluation for the repairs and replacements planned for backup Boiler Nos. 4 and 5, based on the nature and extent, purpose, frequency, and cost of the project. The information on the project and the evaluation clearly indicates that the planned project is "routine maintenance, repair, and replacement" and would not be a modification under the above-referenced EPA guidance or the FDEP rules. The entire boilers are not being replaced, and the planned project can be accomplished in a small period of time (4 to 6 weeks for each boiler or about 12 weeks total for both boilers). The purpose of the project is to make like-kind repairs and replacements so that these units can continue to operate as they have in the recent past (i.e., in a backup mode). The units have historically operated only when the cogeneration plant is unable to operate, typically no more than about 7 weeks per year. The proposed RMRR activities will result in no increase in steam generating capacity, operating rate, or utilization. The same fuels will be utilized and there will be no change in air emissions as a result of the repairs. Most importantly, the cost of the project is less than 15 percent of the cost of an entirely new unit, which is much less than thresholds that the USEPA has considered in the past as the exclusion criteria for new source review. Taking together the information and evaluation, it is concluded that the Boiler Nos. 4 and 5 maintenance project meets the requirements of RMRR.

Please do not hesitate to contact the undersigned at (813) 287-1717 if you have any questions.

Sincerely,

GOLDER ASSOCIATES INC.



Scott H. Osbourn, PE
Associate and Senior Consultant
Registration Number: 57557
Golder Associates Inc. Board of Professional Engineers Certificate of Authorization #00001670

cc: Dave Meyer, PEF

Attachment: RMRR Summary Table

SHO/lcr

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PROGRESS ENERGY FLORIDA
ROUTINE MAINTENANCE, REPAIR, AND REPLACEMENT ACTIVITIES FIVE-FACTOR TEST
UNIVERSITY OF FLORIDA COGEN BOILER NOS. 4 AND 5
BOILER MAINTENANCE PROJECT

Criteria Based on USEPA May 23, 2000 Guidance		University of Florida Cogen Boiler Nos. 4 and 5—Boiler Maintenance
Nature		
1. Whether major components of the facility are being *modified or replaced.*		1. Sidewall tubes, furnace tubes, and convective tubes will be replaced. This proposed activity represents about 100 percent and 76 percent of the total surface heat transfer area for Boiler Nos. 4 and 5, respectively.
2. Whether the unit is of considerable size, function, or importance to the operation of the facility.		2. The boilers themselves serve a back-up function. The replacement will be for most of the tubes in each boiler, including sidewall, furnace, and convective tubes. Various other components will be replaced, including the boiler casing, refractory, insulation, steam drum internals, and miscellaneous other items.
3. Whether the source itself has characterized the change as non-routine.		3. Replacement of the tubes and header is performed when it is more cost-effective than performing maintenance on the existing tubes and header.
4. Whether the change could be performed during full functioning of the facility or while it was in full working order.		4. As these are back-up boilers, the project can be accomplished while the cogen facility is in full working order. Original or like-kind materials will be used for the repairs and replacements, and these components will function the same as the existing component parts.
5. Whether the materials, equipment, and resources necessary to carry out the planned activity are already on site.		5. The replacement parts will be manufactured off site and be purchased for on-site installation.

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ROUTINE MAINTENANCE, REPAIR, AND REPLACEMENT ACTIVITIES FIVE-FACTOR TEST
UNIVERSITY OF FLORIDA COGEN BOILER NOS. 4 AND 5
BOILER MAINTENANCE PROJECT

Criteria Based on USEPA May 23, 2000 Guidance		University of Florida Cogen Boiler Nos. 4 and 5—Boiler Maintenance
Extent		
1. Whether an entire emissions unit will be replaced.		1. Boiler Nos. 4 and 5 are not being replaced; the tubes, refractory, casing, insulation, steam drum internals, and various other miscellaneous items will be replaced. These are all existing components of the boiler.
2. Whether the change will take significant time to perform.		2. The repairs and replacement will take approximately six to eight weeks for each boiler, or about 12 weeks total for both boilers.
3. Whether the collection of activities, taken as a whole, constitutes a non-routine effort, notwithstanding that individual elements could be routine.		3. The amount of repairs as a whole is similar or consistent in extent (surface area) to previous repairs and replacements conducted on these units in the past.
4. Whether the change requires the addition of parts to existing equipment.		4. The replacement parts will be like-kind parts and will be connected to the existing equipment in the same manner as they are connected now. No additional parts will be added.
Purpose		
1. Whether the purpose of the effort is to extend the useful life of the units; similarly, whether the source proposes to replace a unit at the end of its useful life.		1. The repairs and replacement are routine in nature and are not undertaken for the purpose of extending the useful life of the units. The replacement parts will allow for safe and more efficient operation of each unit. Boiler Nos. 4 and 5 began operation in 1976 and are not yet even 40 years old. There are many utility boilers in Florida and in the U.S. that are much older and still operating.
2. Whether the modification will keep the unit operating in its present condition, or whether it will allow enhanced operation (e.g., will it permit increased capacity, operating rate, utilization, or fuel adaptability).		2. These units will operate in a similar manner as in the past (i.e., in a backup mode); no increase in steam generating capacity, operating rate, or utilization; utilization of the same fuels; no change in air emissions as a result of the repairs.

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ROUTINE MAINTENANCE, REPAIR, AND REPLACEMENT ACTIVITIES FIVE-FACTOR TEST
UNIVERSITY OF FLORIDA COGEN BOILER NOS. 4 AND 5
BOILER MAINTENANCE PROJECT

Criteria Based on USEPA May 23, 2000 Guidance		University of Florida Cogen Boiler Nos. 4 and 5—Boiler Maintenance
Frequency 1. Whether the change is performed frequently in a typical unit's life.		1. The repairs and replacements are similar to those that have occurred in the past. Repairs and replacements to boiler tubes are a frequent and common maintenance requirement for boilers. The repairs and replacements being performed are the most efficient and cost-effective.
Cost 1. Whether the change will be costly, both in absolute terms and relative to the cost of replacing the unit. 2. Whether a significant amount of the cost of the change is included in the source's capital expenses, or whether the change can be paid for out of the operating budget (i.e., whether the costs are reasonably reflective of the costs originally projected during the source's or unit's design phase as necessary to maintain the day-to-day operation of the source).		1 & 2. Cost is approximately $1.5 million for the entire project (i.e., $500,000 for Boiler No. 4 and $1 million for Boiler No. 5). The cost of similar new boilers for Unit Nos. 4 and 5 are estimated at about $9 million (i.e., $3 million for Boiler No. 4 and $6 million for Boiler No. 5), making the entire project about 15 percent of the total replacement cost of new boilers. The costs of the repairs and replacements are part of the planned budget for these units and common for the repairs being implemented.

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