



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Korman
Lt. Governor

Michael W. Soto
Secretary

March 2, 2007

Electronically Sent - Received Receipt Requested

Mr. George Q. Langstaff, V.P. of Regional Mill Operations
Smurfit-Stone Container Enterprises, Inc.
Fernandina Beach Mill
North 8th Street
Fernandina Beach, Florida 32034

Re: Project No. 0890003-018-AC
BART Application for the No. 4 Recovery Boiler, No. 4 Smelt Dissolving Tank and No. 5 Power Boiler

Dear Mr. Langstaff:

On February 2, 2007, the Department received your application for the Best Available Retrofit Technology (BART) for the following BART-eligible sources: the No. 6 Power Boiler, the No. 4 Recovery Boiler, and the No. 4 Smelt Dissolving Tank. We have determined that the application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the items below require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

No. 5 Power Boiler

1. Low Sulfur Fuel Switch: The following questions relate to switching to a lower sulfur fuel.
 - a. As stated on Page 5-4, cost estimates for new burners were still being developed to complete the cost analysis. Please submit the bid specifications with the vendor estimates for new burners and the complete cost analysis for the equipment retrofit.
 - b. Please evaluate the following fuel oil switch options with the corresponding maximum sulfur contents: 0.05% by weight; 0.10% by weight; and 0.50% by weight. For these additional fuel oil options, identify any new components necessary for the fuel switch and the related costs. Provide supporting documentation from the boiler manufacturer or burner vendor indicating the technical reasons that the current system is not capable of firing lower sulfur fuels. For Table 5-4, please complete the calculations and provide the cost effectiveness (\$ per ton of SO₂ removed) for each fuel switch option.
 - c. For a recent industrial boiler project, a switch from residual oil to fuel with a maximum sulfur content of 0.50% by weight resulted in a cost effectiveness of less than \$400 per ton of SO₂ removed, which was basically the incremental cost difference between the two fuels. For this case, the residual oil burners could accommodate a fuel oil with 0.5% sulfur by weight without replacing burners. This contradicts the BART application in Section 5.1.6. Please provide technical information to support the claim that the burners must be replaced to fire fuel oils with sulfur contents below this level.
 - d. Table 5-3 identifies the capital cost for a new fuel storage tank as \$1,200,000. Please provide the bid specifications and vendor estimate for the new tank as well as the installation and component costs. How was this tank sized? The primary fuel for the No. 5 Power Boiler is bark/wood supplemented with fuel oil. The application indicates that fuel oil contributes approximately 14% of the annual average heat input to this unit. However, the Annual Operating Reports show the following: 7.97% in 2005, 9.49% in 2004, 6.18% in 2003, 3.84% in 2002, and 7.99% in 2001, with an actual average of approximately 7% for these years. Based on the past actual and proposed usage, identify a tank size based on reasonable estimates of periodic fuel deliveries. Please revise the cost analysis as necessary.

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- e. For the above analyses, also consider these options: switching all BART-eligible units to the low sulfur fuels with a dedicated tank; and switching all units to the low sulfur fuels and using the existing tank. Evaluate the air quality impacts for these options.
- f. Appendix B shows a letter from Colonial Oil Industries, Inc. that identifies "increased fuel costs" over the current market-based rate for 2.5% sulfur residual oil. However, it appears that this company specializes in "industrial residual oil". Please provide cost quotes from other vendors in the area to verify that this is the most economical option.
2. **Distillate Oil:** The current Title V permit indicates that No. 2 fuel oil can be used for startup. Is the No. 5 Power Boiler currently capable of firing No. 2 fuel oil? Please explain. Has No. 2 fuel oil ever been fired in this boiler? If so, please identify the amounts and the sulfur content.
3. **Natural Gas Fuel Switch:** Is natural gas available to the facility? Is the No. 5 Power Boiler currently capable of using natural gas as a supplemental fuel? Please provide a cost analysis for switching from fuel oil to natural gas as a supplemental fuel.
4. **SO₂ Controls:** Page 5-2 of the application includes the following statement. "Since BART is not intended to be more stringent than BACT, SO₂ scrubbing systems for the No. 5 Power Boiler are not given further consideration." This conclusion is unsupported and does not avoid requirement to conduct a top-down BART analysis. In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review. As identified in Table 5-2, please provide a cost analysis for purchasing, installing and operating wet and dry scrubber systems to reduce SO₂ emissions. For this analysis, provide the calculations of the costs with the scrubber having varying degrees of removal efficiencies (i.e., 90%, 95%, etc.). Include the bid specifications with vendors' estimates.
5. **NO_x Controls:** In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review including a cost analysis (\$/ton NO_x removed) and modeled impacts for each of the available and applicable NO_x control options. The Department believes several NO_x post-combustion and combustion modification control options are likely cost effective such as: selective non-catalytic reduction (SNCR); a hybrid SNCR-SCR system; the Ecotube system with urea injection; flue gas recirculation (FGR); and third-party combustion modifications (for example, Mobotec's Rotating Opposed Fired Air (ROFA) and Rotomix, which is ROFA plus SNCR). These controls have been successfully installed on similar units. SNCR systems have been successfully installed and operated on several units in Florida including boilers fired with RDF, wood, and bagasse-fired boilers. However, both the Ecotube with urea injection, FGR and other NO_x control equipment may also be able to provide similar reductions with comparable costs.
6. **Swing-Load Unit:** In section 5.2, the application indicates that the No. 5 Power Boiler is used as a "swing load" boiler. What is the frequency, range and duration of the load swings? Please explain and provide actual plant information to support this claim. What drives the boilers "swings"?
7. **Current PM Emissions:** The current particulate matter (PM) emissions limit is 0.3 lb/MMBtu. The results of the last six performance tests for PM emissions are 0.0614 lb/MMBtu (6-14-06), 0.008 lb/MMBtu (6-1-05), 0.0102 lb/MMBtu (5-25-04), 0.0055 lb/MMBtu (5-19-03), 0.0066 lb/MMBtu (5-21-02), and 0.0409 lb/MMBtu (5-17-01). Discuss the variability of the emissions tests data. For each test, provide the secondary power input to the electrostatic precipitator (ESP) during the test runs? For the tests conducted in 2001 and 2006, were any of the ESP fields out of service or operated at reduced power inputs?
8. **ESP:** When was the ESP installed on the No. 5 Power Boiler? Please provide the original performance guarantees. Describe any subsequent modifications to improve the existing ESP. Please provide the subsequent performance guarantees for such modifications. Please identify any scheduled improvements for the existing ESP. Please provide any supporting information such as correspondence with the vendor.
9. **NESHAP Subpart DDDDD:** Page 5-6 of the application indicates that baseline visibility modeling was conducted with a PM emissions rate of 22.5 lb/hour, which is the value determined to comply with the Boiler MACT requirements in NESHAP Subpart DDDDD. Since the maximum heat input rate is 805 MMBtu/hour, the equivalent PM emissions rate would be:

$$\text{PM} = (22.5 \text{ lb/hr})(\text{hour}/805 \text{ MMBtu}) = 0.028 \text{ lb/MMBtu}$$

Is this the proposed BART emissions standard for the No. 5 Power Boiler? Please explain how will this unit comply with the applicable metal HAP emissions standards specified in 40 CFR 63, Subpart DDDDD?

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10. Combustion: Has computational fluid dynamics modeling been conducted on this unit to define the existing combustion characteristics and suggest modifications for improvements? Please provide the reports for any such modeling. Identify any recommendations for improvements that may result in reduced NO_x and/or PM emissions. Within the last 5 years, describe any work conducted to improve combustion performance.

No. 4 Recovery Boiler

11. NO_x Controls: Section 5.5 of the application lists six NO_x control options, but states that several technologies are technically feasible and that none of the technologies would provide "meaningful reductions in the change in light extinction due to the unit". In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review including a cost analysis (\$/ton NO_x removed) and modeled impacts for each of the available and applicable NO_x control options. Provide supporting documentations specific to this unit for any technologies you consider to be technically infeasible. Note that visibility impacts related to the available control options is only one consideration in making a BART determination. In Appendix B, the letter from Babcock and Wilcox Company indicates that they will be providing a cost estimate for a quaternary air system to reduce NO_x emissions. Please provide this proposal (including the separate proposal for installation) and include this technology in the required "top-down" control technology review including a cost analysis (\$/ton NO_x removed) and modeled impacts. As summarized in Section 4 of the application, please follow the regulatory requirements for selecting a BART NO_x emissions standard.
12. SO₂ Controls: In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review including a cost analysis (\$/ton SO₂ removed) and modeled impacts for each of the available and applicable SO₂ control options. As summarized in Section 4 of the application, please follow the regulatory requirements for selecting a BART SO₂ emissions standard.
13. Combustion: Has computational fluid dynamics modeling been conducted on this unit to define the existing combustion characteristics and suggest modifications for improvements? Please provide the reports for any such modeling. Identify any recommendations for improvements that may result in reduced NO_x and/or PM emissions. Within the last 5 years, describe any work conducted to improve combustion performance. Has staged air been added or modified to improve combustion and NO_x emissions?
14. FSP: When was the ESP installed on the No. 4 Recovery Boiler? Please provide the original performance guarantees. Describe any subsequent modifications to improve the existing ESP. Please provide the performance subsequent guarantees for such modifications. Please identify any scheduled improvements for the existing FSP. Please provide any supporting information such as correspondence with the vendor.

No. 4 Smelt Dissolving Tank

15. BART Review: In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review including a cost analysis (\$/ton pollutant removed) and modeled impacts for each of the available and applicable PM, NO_x, and SO₂ control options. As summarized in Section 4 of the application, please follow the regulatory requirements for selecting BART emissions standards.
16. Existing Venturi Scrubber:
- Table A-3 in the application identifies the following scrubber parameters: pressure drop of 11.5 inches of w.c.; 303 gpm scrubber water recirculation rate; and a make-up scrubber water rate of 45 gpm. Please provide the original performance specifications and guaranteed emissions rates.
 - Is the venturi throat on the existing scrubber adjustable so that it can be readjusted to enhance and increase PM control efficiency for varying conditions? Was it originally designed with an adjustable venturi throat? Describe any recent improvements to or rebuilds of the venturi scrubber. Provide any new performance specifications and guaranteed emissions rates. Please identify any physical upgrades or modifications for the existing venturi scrubber that could be performed to enhance PM collection efficiency. Please provide any supporting information such as correspondence with the vendor.
 - Identify the source of the scrubbing water used in the existing venturi scrubber as well as the make-up water. What is the normal pH of the scrubbing water? Since white liquor has been shown to effectively scrub out SO₂ as well as TRS emissions, identify advantages and disadvantages for using white liquor in the scrubber water (i.e., emissions, other contaminants, availability, handling, operations, and costs, etc.)

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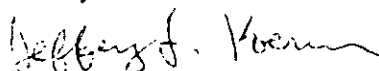
Miscellaneous

17. Application Form: Please have the Owner/Authorized Representative sign the application form and submit.
18. Other BART-Eligible Units: In addition to the No. 4 Recovery Boiler, No. 4 Smelt Dissolving Tank and No. 5 Power Boiler, the Department also identified the following BART-eligible units: Tall Oil Plant with Packed Tower Type Wet Scrubber (Emissions Unit 020), and Converting/Warehouse (Emissions Units 029 through 034). Describe these emissions units and related emissions. Please explain why these emissions units were not included in the BART application. If necessary, provide a proposed BART technology review for these units.
19. BART Review: Section 4 of the application summarizes the regulatory requirements for reviewing and selecting BART emissions standards. In accordance with Rule 62-296.430, F.A.C., please provide the required "top-down" control technology review including a cost analysis (\$/ton pollutant removed) and modeled impacts for each of the available and applicable PM, NO_x, and SO₂ control options.
20. BART Emissions Standards: Pursuant to 40 CFR 51.301, *Best Available Retrofit Technology (BART)* means, "... an **emission limitation** based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by ... [a BART-eligible source]. The **emission limitation** must be established, on a case-by case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." For each BART-eligible unit, identify the proposed BART emissions standard. Provide the appropriate pages of the application.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information.

If you have any questions regarding this matter, please call Bruce Mitchell at (850) 413-9198 or me at (850) 921-9536.

Sincerely,



Jeffery Koerner, Administrator
Permitting North Section
Bureau of Air Regulation

JFK/bm

cc: George Langstaff, Smurfit-Stone Container (glangsta@smurfit.com)
Bill Crews, Smurfit-Stone Container (bcrews@smurfit.com)
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Adams, Patty

From: Koerner, Jeff
Sent: Friday, March 02, 2007 1:18 PM
To: 'glangsta@smurfit.com'; 'bcrews@smurfit.com'; 'dbuff@golder.com';
'chris.kirts@dep.state.fl.us'; 'worley.gregg@epa.gov'; 'dee_morse@nps.gov'
Cc: Mitchell, Bruce; Adams, Patty
Subject: Project No. 0890003-018-AC, Smurfit-Stone Container Fernandina Beach Mill, BART Application

Attachments: Smurfit Fernandina BART - RFI.pdf; Smurfit BART 0890003-018-AC - RFI.doc



Smurfit Fernandina
BART - RFI....



Smurfit BART
0890003-018-AC - ..

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DEP, Bureau of Air Regulation