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BUREAU OF AIR REGULATION

August 30, 2007

063-7613

Florida Department of Environmental Protection  
Bureau of Air Regulation  
2600 Blair Stone Road, MS #5505  
Tallahassee, Florida 32399-2400

Attention: Mr. Jeffery Koerner, P.E., Administrator, Permitting North Section

**RE: RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
PROJECT NO. 0890003-018-AC  
BART APPLICATION FOR THE NO. 4 RECOVERY BOILER,  
NO. 4 SMELT DISSOLVING TANK AND NO. 5 POWER BOILER  
SMURFIT-STONE CONTAINER ENTERPRISES, INC.  
FERNANDINA BEACH, FLORIDA**

Dear Mr. Koerner:

This correspondence is to respond to the request for additional information (RAI), dated July 30, 2007, in support of the Best Available Retrofit Technology (BART) application for Smurfit-Stone Container Enterprises, Inc. (SSCE), Fernandina Beach, Florida. The responses provided herein supplement the first set of responses provided to the Florida Department of Environmental Protection (FDEP) in the letter dated July 6, 2007.

**FDEP Comment 1. For Table 1 in the response, please complete the calculations and provide the cost effectiveness of the "\$ per ton of SO<sub>2</sub> removed" when firing 0.5-percent sulfur content, by weight, residual fuel oil in the No. 5 Power Boiler. In addition, list the components that would have to be changed/retrofitted to accommodate these different fuels and include the costs of these components.**

**In a recent response from a similar facility regarding the switching to a 0.50-percent, by weight, sulfur content No. 5 fuel oil from No. 6 fuel oil, it appears that it handles similar to No. 6 fuel oil and that the only additional cost would be the net incremental cost between the two fuels. This conclusion is in contradiction of your statement made in the first sentence at the beginning of Section 5.1.6 of the original application.**

**Response:** Table 1 has been revised to include the cost effectiveness calculation for the scenario of burning 0.5-percent sulfur content residual fuel.

As per the attached Colonial Oil letter dated August 2, 2007, we have used an incremental fuel cost of \$27.44 per barrel to switch from the current fuel to the 0.5-percent sulfur residual oil, which includes a \$5.71 per barrel cost for the BTU penalty as a result of the blend between a 1.5-percent sulfur residual oil and 0.05-percent sulfur diesel fuel. According to Colonial Oil, a true 0.5-percent sulfur residual fuel is not currently available due to insufficient market demand and the only way they can make a similar product is by blending 1.5-percent sulfur residual oil with 0.05-percent sulfur diesel fuel.

The only additional cost to implement the 0.5-percent sulfur residual oil, apart from the incremental fuel cost included in the cost effectiveness analysis, is the estimate for a new 500,000 gallon fuel oil tank. The tank cost estimates were presented in Appendix A of the RAI response letter dated July 6, 2007. New oil guns are not considered for the switch to 0.5-percent sulfur residual oil blend. Also because of the light viscosity of the 0.5-percent sulfur residual oil blend, the cost for steam tracing equipment has been subtracted from the total cost of the pump and piping.

As can be seen in the revised Table 1, using 0.5-percent sulfur residual oil is a costly \$5,300 per ton of SO<sub>2</sub> removed, which is very high. With respect to the overall cost effectiveness, review of the information contained in Table 1 shows that the majority of the cost is associated with the price differential of the lower sulfur oil. In fact, if all costs except for the incremental fuel cost were removed from the calculations in Table 1, the cost effectiveness would decrease from \$5,300 to only \$4,660. This supports our conclusion that switching to No. 2 fuel oil or to 0.5-percent sulfur residual oil will be associated with a prohibitively high cost.

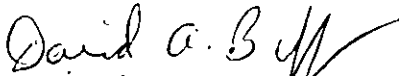
The estimated reduction in visibility impacts due to the reduction in SO<sub>2</sub> emissions for the option to use 0.5-percent sulfur residual oil is also shown in the revised Table 1. Based on the cost analysis, the cost effectiveness of visibility improvement of \$5.4 million per deciview is extremely high.

Based on the requested cost analysis and deciview improvement, SSCE again proposes the current operation of the No. 5 Power Boiler as BART, i.e., use of carbonaceous fuels to the extent practicable, with use of 2.5-percent sulfur No. 6 fuel oil as necessary to meet steam demands.

Thank you for your consideration of this information. Please call me at (352) 336-5600 if you have any further questions.

Sincerely,

GOLDER ASSOCIATES INC.



David A. Buff, P.E., Q.E.P.  
Principal Engineer

DB/tz

Enclosures

Cc: R. Davis, SSCE  
B. Crews, SSCE  
S. Mohammad, Golder

Y:\Projects\2006\0637613 SSCE Fernandina Beach BART\4.1 Correspondence\RAI0807\RAI082807.doc

B. Mitchell  
C. Rinko  
C. Rinko, NED

Cost Items	Cost Factors	No. 2 Oil	No. 2 Oil	No. 4 Oil	No. 6 Oil
		(0.0015% S) Cost (\$)	(0.05% S) Cost (\$)	(0.5% S) Cost (\$)	(1.0% S) Cost (\$)
<b>DIRECT CAPITAL COSTS (DCC)</b>					
(1) Equipment Cost					
(a) New Fuel Oil Storage tank	See Footnote "a"	807,000	807,000	807,000	807,000
(b) Pumps, piping, etc	See Footnote "a"	800,000	800,000	800,000	1,200,000
(c) New oil guns/atomizer sprayer plates	Babcock & Wilcox -- excludes installation <sup>b</sup>	175,000	175,000	0	0
(2) Sales Tax	Florida Sales Tax: 6.25% of Equipment Cost	111,375	111,375	100,438	125,438
Subtotal: Total Equipment Cost (TEC)		1,893,375	1,893,375	1,707,438	2,132,438
(3) Direct Installation Costs	85% of TEC (for new oil guns)	148,750	148,750	0	0
Total DCC:		2,042,125	2,042,125	1,707,438	2,132,438
<b>INDIRECT CAPITAL COSTS (ICC)<sup>c</sup></b>					
(1) Indirect Installation Costs	SSCE estimate	430,000	430,000	640,000	640,000
(a) Engineering	10% of TEC (for new oil guns)	17,500	17,500	Included Above	Included Above
(b) Construction & Field Expenses	10% of TEC (for new oil guns)	17,500	17,500	Included Above	Included Above
(c) Construction Contractor Fee	10% of TEC (for new oil guns)	17,500	17,500	Included Above	Included Above
(d) Contingencies	35% of TEC (for new oil guns)	5,250	5,250	Included Above	Included Above
(2) Other Indirect Costs					
(a) Startup	1% of TEC (for new oil guns)	1,750	1,750	Included Above	Included Above
(b) Performance Test	3% of TEC (for new oil guns)	5,250	5,250	Included Above	Included Above
Total ICC:		494,750	494,750	640,000	640,000
TOTAL CAPITAL INVESTMENT (TCI)	DCC + ICC	2,536,875	2,536,875	2,347,438	2,772,438
<b>DIRECT OPERATING COSTS (DOC)<sup>d</sup></b>					
(1) Operating Labor					
Operator	1.0 hr shift, \$30/hr, 3760 hrs/yr	32,850	32,850	32,850	32,850
Supervisor	15% of operator cost	4,928	4,928	4,928	4,928
(2) Maintenance					
Labor	Equivalent to One-Half Operating Labor	16,425	16,425	16,425	16,425
Materials	100% of maintenance labor	16,425	16,425	16,425	16,425
(3) Utilities					
(4) Fuels					
Existing Fuel Cost (2.5% S)	\$0.94/gal, 3.4 MMgal/yr	--	--	--	--
Proposed Fuel Cost (Lower S Content)	See Footnote "e"	--	--	--	--
Differential Fuel Cost (Proposed - Existing)	See Footnote "e"	3,302,250	3,219,000	2,221,333	235,571
Total DOC:		3,372,878	3,289,625	2,291,961	306,199
<b>INDIRECT OPERATING COSTS (IOC)<sup>e</sup></b>					
(1) Overhead	60% of oper. labor & maintenance	42,377	42,377	42,377	42,377
(2) Property Taxes	1% of total capital investment	25,369	25,369	23,474	27,724
(3) Insurance	1% of total capital investment	25,369	25,369	23,474	27,724
(4) Administration	2% of total capital investment	50,738	50,738	46,949	55,449
Total IOC:		143,852	143,852	136,274	153,274
CAPITAL RECOVERY COSTS (CRC)	CRF of 0.0944 times TCI (20 yrs @ 7%)	239,481	239,481	221,598	261,718
ANNUALIZED COSTS (AC):	DOC + IOC + CRC	3,756,210	3,672,966	2,649,833	721,191
BASELINE SO <sub>2</sub> EMISSIONS (TPY):	Highest emissions in last 5 years	623.0	623.0	623.0	623.0
MAX SO <sub>2</sub> EMISSIONS WITH PROPOSED FUEL (TPY):	3.7 Mlb/yr No. 2 Oil or 3.4 Mlb/yr 1% S or 0.5% S No. 6 Fuel Oil	0.4	13.3	122.4	248.0
REDUCTION IN SO <sub>2</sub> EMISSIONS (TPY):		622.6	609.7	500.6	375.0
COST EFFECTIVENESS:	\$ per ton of SO <sub>2</sub> removed	6,033	6,024	5,293	1,923
BASELINE VISIBILITY IMPACT (dv):	Table 3-5 of 1/2007 BART Control Analysis	0.637	0.637	0.637	0.637
CONTROLLED VISIBILITY IMPACT (dv):		0.123	0.134	0.150	0.298
REDUCTION IN VISIBILITY IMPACT (dv):	Baseline - Controlled	0.514	0.503	0.487	0.339
COST EFFECTIVENESS OF VISIBILITY REDUCTION (\$/dv):	AC/Reduction in visibility	7,307,802	7,302,107	5,441,335	2,127,407

## Footnotes

<sup>a</sup> Based on SSCE data for 500,000 gal storage tank, and estimated cost of piping, pumps, etc.<sup>b</sup> Based on quote of \$175,000 additional equipment cost for new atomizers for use of low sulfur No. 2 fuel oil.<sup>c</sup> All indirect capital costs are included in basic price.<sup>d</sup> Factors and cost estimates reflect OAQPS Cost Manual, Section 5.<sup>e</sup> Increase in fuel cost associated with buying different type of oil - 3.4 Mlb/yr No. 6 oil with 1% S and 0.5% S or 3.7 Mlb/yr No. 2 oil with 0.05% S or 0.0015% S. Per Colonial Oil Industries, Inc., increases in cost compared to the current price paid for 2.5% S oil are -\$36.54 barrel for 0.05% S oil, \$37.49 barrel for 0.0015% S oil, \$2.91 barrel for 1% S residual oil, and \$27.44 barrel for 0.5% S residual oil.

## **Colonial Oil Industries, Inc.**

1301 Riverplace Boulevard  
Suite 2646  
Jacksonville, Florida 32207  
(904) 396-1388 (800) 842-3624  
Fax (904) 858-6699

August 2, 2007

Ms. Rachel Davis, PMP  
Smurfit-Stone, Container Mill Division  
N. 8<sup>th</sup> Street, P. O. Box 2000  
Fernandina Beach, Florida 32035

Dear Ms. Davis,

This letter is in response to your request for additional information regarding .5% maximum Sulfur Residual Fuel cost and availability.

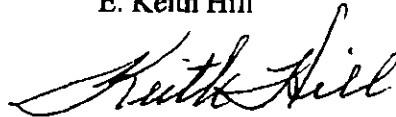
To the best of our knowledge, a true .5% Residual Fuel is not currently available in our marketing area. This type of product is available in other regions, but is not marketed here due to insufficient demand to justify economically feasible cargo quantities and the logistical problems associated with isolating and storing smaller quantities. We do not anticipate adequate demand for a true .5% Residual Fuel in this market area in the near future.

In addition, the only product that we are aware of in this market which would meet a .5% specification is a recycled oil type of product. From our understanding, this product is included in the loose regulatory definition of "Residual Fuel" once the initial determination has been made that it is non-hazardous, but it is not a true Residual Fuel from our viewpoint. There are numerous serious operational, environmental, and availability issues with relying on a recycled product as the primary petroleum supply for your type of operation. These issues include poor boiler operation due to very light viscosity, low BTU yield, potential high water content, strainer plugging, possible emissions violations due to poor boiler operation and very high ash content and adequate supply of this product to assure uninterrupted operation of your plant. We have observed all of these issues occurring in a very similar facility within our marketing area within the last few years. Quality control is also a very significant issue, particularly since recycled oil may have a very low flash point with the possibility of unexpected ignition resulting in a fire or explosion. Most, if not all, of these issues are well documented in various industry publications. In short, we simply don't view this as a viable alternative for an operation such as Smurfit's.

At this time the only option we have to blend a .5% residual product would be to use 1.5% Residual Fuel with .05% Diesel Fuel. Based on market prices from the close of business on 7/31/07, the additional cost to Smurfit would be at least \$21.73 per barrel. There would also be a BTU loss of over 7% (over \$5.71 per barrel at the current price level) and potential problems with an unacceptable light viscosity. We believe that all of our calculations included here are on the conservative side and can be documented if necessary.

We hope that this additional information adequately addresses the issues that have been raised, but if we can provide you with any other assistance please don't hesitate to ask.

Sincerely,  
E. Keith Hill

A handwritten signature in cursive script that reads "Keith Hill". The signature is fluid and matches the typed name above it.

Vice-President, Industrial & Marine Sales