Georgia-Pacific

5-1406

Palatka Pulp and Paper Operations
Consumer Products Division

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May 25, 2007

Mr. Jeffery F. Koerner, Air Permitting North Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Project No. 1070005-038-AC PSD-FL-380
Modification of the No. 4 Recovery Boiler, No. 4 Lime Kiln and No. 4 Combination Boiler
Response to Request for Additional Information No. 3

Dear Mr. Koerner:

We are in receipt of your request for additional information, dated December 15, 2006, regarding our PSD permit application project to make modifications to the No. 4 Recovery Boiler, No. 4 Lime Kiln, and No. 4 Combination Boiler.

This response addresses question number 5 of the Department's December 15, 2006 request for additional information. A response to questions 2, 6 (second response) and 7 was submitted to FDEP on January 31, 2007. A response to questions 1, 3, 4 and 6 (second response) was submitted to FDEP on March 9, 2007.

Additionally, this response seeks relief from the short-term Recovery Boiler SO_2 limits while burning fuel oil, a concern voiced by GP in a conference call with FDEP on May 4, 2007.

For ease of following GP's responses, we have repeated the FDEP's questions prior to the answers.

No. 4 Combination Boiler

5. **Based on your submittals, the Department believes several of the identified NO_x control options are likely cost effective including selective non-catalytic reduction (SNCR), the Ecotube system with urea injection, and flue gas recirculation (FGR). These controls have been successfully installed on similar units. The Department's review focused on the SNCR system, which has been successfully installed and operated on several units in Florida including RDF boilers, wood-fired boilers, and bagasse-fired boilers. However, both the Ecotube with urea injection and flue gas recirculation (FGR) may also be able to provide similar reductions with comparable**

costs.

SNCR: The preliminary SNCR design was based on the co-firing of residual oil with a maximum fuel sulfur content of 2.5% by weight. When the fuel sulfur content is above approximately 1.5% by weight, the vendor indicates that a critical design constraint is to substantially limit the ammonia slip to prevent the formation of ammonium bisulfates, which can foul boiler heat transfer surfaces. With regard to the SNCR design, this will likely result in more injectors, additional injector levels, restricted urea injection rates, and reduced control efficiencies. Although the vendor indicated a reduction of 35% in the bid for the primary fuel scenario (bark/oil), the cost effectiveness estimate was based upon only 30% reduction. Existing biomass-fired boilers are achieving control efficiencies of up to 50% reduction. Will the No. 4 Combination Boiler fire bark/wood alone without other fuels? Please provide a vendor quote on equipment and installation costs for an SNCR system firing bark/wood alone and firing bark/wood with oil having a maximum fuel sulfur content of less than 1.0%. Please include the input criteria for the hid, the expected control efficiencies, and the urea injection rate.

Ecotube Plus Urea Injection: **The estimated cost effectiveness for this system is actually lower than that estimated for SNCR. In addition, the vendor indicates co-benefits for reducing CO emissions, which is also subject to a BACT determination for this project. Please provide the vendor quote used for the Ecotube system with/without urea injection including the input criteria, estimated installation costs, control efficiencies, and urea injection rate.**

FGR: **When combined with air staging, flue gas recirculation (FGR) has achieved control efficiencies approaching 50% reduction for similar units depending on initial uncontrolled NO_x emissions rates. Please provide the vendor quote for the FGR system including the input criteria, estimated installation costs, and control efficiency.**

Provide a revised cost effectiveness analysis ($/ton NO_x removed) for each of these controls options and identify the most cost effective option.

The project identifies the following physical modifications to the No. 4 Combination Boiler: modified conveyors; new air swept bark distributors; a new overfire air (OFA) system: new low-NO_x burners (LNB): and possibly new baffles to more evenly distribute the underfire air. The primary purpose for these modifications is to improve combustion of the bark/wood fuel and the overall burning rate of this fuel to reduce oil firing. Such changes will affect pollutant emissions, which could affect the design of the control systems. For the selected NO_x control option, provide a schedule and comments regarding the following: commencement through completion of the boiler modifications, boiler shakedown; performance and emissions testing after completing the boiler modifications; development and final design of the NO_x control system; commencement through completion of installing the NO_x control system; initial startup and shakedown alter completing the NO_x control system; equipment shakedown and tuning; initial compliance testing: and monitor certification.

Answer: On Friday, May 4, 2007, a telephone conference call was held between Bruce Mitchell and Jeff Koerner of FDEP and Mike Curtis, Ron Reynolds, Wayne Galler, and Mark Aguilar of GP to discuss NO_x control options for the No. 4 Combination Boiler. As discussed during the

telephone conversation, since the time that the PSD permit application for the No. 4 Combination Boiler was submitted by Golder & Associates (for GP) to FDEP in July 2006, GP has obtained new and more accurate cost data to install an SNCR system for the reduction of NO_x emissions from the No. 4 Combination Boiler. The new cost data was prepared by Jacobs Engineering of Greenville, South Carolina in November 2006, and was prepared as part of their contract work for GP to estimate control system costs for the BART requirements. Jacob's cost estimate for installation of an SNCR system for the No. 4 Combination Boiler was based on a +/- 30% accuracy, but Jacob's cost estimate contains much more detail than the one prepared by Golder & Associates for the July 2006 PSD permit application. A copy of Jacob's cost estimate is attached to this submittal as Attachment 1. The basis for Jacob's cost estimate is attached to this submittal as Attachment 2.

Utilizing Jacob's cost data for installation of an SNCR system and Golder's cost effectiveness calculation spreadsheet (Table 5-10) contained in the July 2006 PSD permit application, the cost effectiveness for use of an SNCR system supplied by Fuel-Tech, Inc. would be $7,848/ton NO_x removed. This is much higher than the cost effectiveness value of $5,419/ton NO_x removed reported in Table 5-10 of Golder's July 2006 PSD permit application. The baseline emissions used in Table 5-10 was 356.1 tons of NO_x, which is based on a "post-BART" NO_x emission rate of 0.22 lbs NO_x/MM Btu heat input. Previous conversations between Mark Aguilar of GP and FDEP resulted in an agreement that the baseline period for this analysis may consider the expected controls that would be in place for the No. 4 Combination Boiler. FDEP reaffirmed this agreement during the May 4th telephone discussion with GP. The basis for the 0.22 lb NO_x/MM Btu heat input value comes from a performance guarantee provided to GP by Jansen Combustion and Boiler Technologies, Inc. for the No. 4 Combination Boiler (dated January 26, 2007, Revision 2-see Section 9.3.2 of Attachment 3). The emissions guarantee is based on the No. 4 Combination Boiler firing a combination of bark and natural gas over an eight-hour test period. The 0.22 lb/MM Btu value assumes the use of low-NO_x gas-fired burners and an overfire air system.

GP does not believe a value of almost $8,000 per ton of NO_x removed for an SNCR system is a cost effective approach for reducing NO_x emissions from the No. 4 Combination Boiler.

GP has not provided a cost effectiveness analysis for the use of an SNCR system for the No. 4 Combination Boiler burning a combination of bark and No. 6 Fuel Oil since it is not the Mill's intent to burn No. 6 fuel oil in the boiler under the future operating scenario. It is the Mill's intent to burn a combination of bark and natural gas in the No. 4 Combination Boiler under the future operating scenario.

Regarding the FDEP's question about whether or not the No. 4 Combination Boiler can burn 100% bark, the answer is rarely. Fuel oil is expensive and we certainly want to burn as much wood fuel as we can in the Combination Boiler. However, we generally must also burn fuel oil to meet the steam/energy needs of the mill. Even when fuel oil is not necessarily needed to supplement the BTUs from bark/wood fuel, some minimal amount of fuel oil is burned as a safety measure to protect against tripping the boiler, and perhaps shutting down the mill, in case of a malfunction in the wood fuel feed system.

Regarding the Ecotube technology offered by Synterprise LLC, GP does not believe the NO_x emission reductions obtained with biomass boilers operated by certain Utilities in the northeast

United States are attainable for the No. 4 Combination Boiler. The Ecotube system has primarily been installed on waste to energy boilers and on larger biomass fired boilers which typically had operated in an excess oxygen range of 6% to 10%. NO_x formation is highly dependant on proper fuel-air mixing as well as time and temperature of the reaction. The amount of excess oxygen in the furnace affects flame temperatures and amount of elemental nitrogen (N_2) present for NO_x formation as the higher the percent excess oxygen, the higher the NO_x will be in general, due to higher flame temperatures and additional N_2 present in the air for conversion to NO_x. Inversely, as excess oxygen is reduced to levels closer to sub-stoichiometric rates, flame temperatures are reduced, therefore, the amount of N_2 available is reduced, and a slight reducing atmosphere is created, thereby lowering NO_x emissions.

In reviewing the operations of the No. 4 Combination Boiler, which normally has an excess oxygen content of 4% on a dry basis, the estimated reduction efficiency for NO_x would be in the 15% range; a review of Ecotube's proposal to GP (E-mail from Bill Buckley of Synterprise to Rob Orender of GP, dated December 22, 2005-see Attachment 4, page 2, second to last paragraph), Synterprise stated that they would expect a 20% reduction in NO_x emissions. This unit also has 6 burners which utilize air to keep the burners cool while they are out-of-service. This excess air is not effectively utilized in the combustion process and thereby can contribute to higher than expected NO_x emissions.

Synterprise's available references for NO_x emissions before and after Ecotube technology installations consist of two sites in Europe with NO_x reductions and oxygen levels which are listed below:

	% Oxygen Before	% Oxygen After	NO_x (ppm) Before	NO_x (ppm) After	% Reduction
Karlskoga	6.0	4.0	130	60	53.8
Kristineheds	6.0	3.0	430	130	69.8

The Karlskoga site used the Ecotube system and limestone for NO_x emissions controls and the Kristineheds site utilized Ecotube as well as a urea-based de-NO_x system.

In order to obtain a guaranteed NO_x reduction value for the No. 4 Combination Boiler from Synterprise, GP would need to pay an estimated $35,000 fee for a modeling study to be performed by Synterprise. Based on what we know about the Ecotube technology and the operation of the No. 4 Combination Boiler, GP does not think it would be wise to spend the $35,000 modeling fee with an expectation of only a 15-20% NO_x reduction. We believe that the performance guarantee from Jansen Combustion and Boiler Technologies, Inc. of 0.22 lb/MM Btu is approximately equivalent to a 15-20% overall NO_x reduction. The baseline NO_x emissions from the No. 4 Combination Boiler prepared by Golder & Associates in Table 5-10 of the PSD permit application was 0.27 lb/MM Btu for fuel oil and 0.24 lb/MM Btu for bark. The 0.27 lb/MM Btu value for fuel oil combustion incorporated a 15% reduction with the use of low-NO_x burners, so the uncontrolled NO_x emission rate was equal to 0.31 lb/MM Btu. The actual NO_x reduction achieved by incorporating the modifications required by Jansen to meet their performance guarantee for the No. 4 Combination Boiler will depend upon the fuel mix of bark and natural gas. However, just by switching fuel from No. 6 fuel oil to natural gas, the overall average emission factor changes by a minimum of 12% (by dropping from an average of 0.25 lbs NO_x/MM Btu to 0.22 lbs/MM Btu). GP expects the actual NO_x emission rate to be lower than

0.22 lbs/MM Btu when burning gas and bark, therefore, the actual NO_x reduction achieved by the No. 4 Combination Boiler should be greater than 12%.

Regarding the final selection of the NO_x control system for the No. 4 Combination Boiler and the control system installation schedule, GP offers the following information:

> GP proposes to install to install a new overfire air system as the selected NO_x control option for the initial phase of the modification to begin in November 2006. A second phase will proceed with the installation of low-NO_x burners when the additional natural gas supply is made available by the local utility, which we are told could take up to two years. Shakedown of the boiler is anticipated to require up to 60 days after which initial compliance stack testing will be completed within the usual 60 days of achieving permitted capacity, but not later than 180 days after startup.

No. 4 Recovery Boiler

GP seeks relief from the short-term SO_2 limits while burning fuel oil, a concern that was also discussed in the conference call with FDEP on May 4, 2007.

Comment: GP has no objection to the Recovery Boiler SO_2 limitation of 153.9 tons per year (12-month rolling total) based on CEMS data. However, GP requests the following language be added in order to provide relief during periods of fuel oil firing from the current short term SO_2 limits of 75 ppm and 109.9 lb/hr:

> *"During periods when fuel oil is burned, such as start ups, shutdowns, malfunctions, and other temporary upset or maintenance situations, SO_2 emissions shall be limited only by the sulfur content (2.35%) of the fuel oil and a maximum fuel oil firing rate of 84 GPM."*

Discussion: The current SO_2 limit, as represented in the Title V permit 1070005-031-AV, condition E.7., states that "Sulfur Dioxide Emissions shall not exceed 75 ppmvd at 8% O_2; 109.9 lb/hr, and 481.4 TPY based on an average of three test runs"...etc. The proposed draft permit PSD-FL-380 lowers the annual SO_2 limit to 153.9 TPY based on a 12-month rolling CEMS total. GP has concerns regarding the short term limits of 75 ppm and 109.9 lbs/hr during startup, shutdown, malfunction, and other temporary situations when fuel oil must be burned at much higher than normal rates. The Title V permit language clearly states that the limits apply during stack testing conditions, which would typically involve near-maximum black liquor firing rates and very low or no fuel oil. However, if the old short-term limits are to be incorporated into the Title V with the proposed CEMS monitoring scheme then compliance will be impossible during the identified situations requiring high fuel oil use.

During periods of startup, shutdown, malfunction, maintenance on the black liquor system, and process upsets, fuel oil must be burned for periods lasting from several hours to as much as 24 hours at much higher rates than during normal operation. During startup, the boiler must be fired on fuel oil until the furnace is hot enough to sustain combustion of black liquor. Then, the fuel oil guns gradually reduce the amount of fuel oil that is fired while the black liquor guns are added one-by-one until the boiler is stabilized on 100% black liquor. During shutdown periods, fuel oil is burned to burn the smelt bed out of the bottom of the Recovery. Maintenance work on the black liquor feed system may also necessitate burning only fuel oil in order to maintain steam.

Fuel oil may also be burned at higher than normal rates during process upsets or malfunction situations to maintain steam and stabilize the boiler until normal operation can be achieved. The suggested startup/shutdown/malfunction fuel oil firing rate of 84 gpm, and the resulting SO_2 emissions, was accounted for in short-term air modeling that was performed and submitted to the FL DEP in 2006, indicating compliance with the short-term SO_2 NAAQS standards. Therefore, GP proposes that incorporation of the suggested permit language will be sufficiently protective of air quality and allow needed operational flexibility while maintaining compliance.

If there are any questions regarding this response, please do not hesitate to contact Mike Curtis at 386-329-0918.

I, the undersigned, am the responsible official of the source for which this document is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements made and the data contained in this document are true, accurate, and complete.

Sincerely,

Keith Wahoske

Keith W. Wahoske, Vice-President
Palatka Operations

cc: W. Galler, T. Champion, T. Wyles, S. Matchett, R. Reynolds, M. Curtis - GP

TABLE 5-10
COST EFFECTIVENESS OF SNCR SYSTEM
FOR NO. 4 COMBINATION BOILER, GP PALATKA MILL

Cost Items		Cost Factors[a]	Cost ($)
DIRECT CAPITAL COSTS (DCC)			
Purchased Equipment Cost (PEC)			
	SNCR Basic Process	Vendor quote[b]	$875,000
	NOxOUT Storage Tank	10,000 gallon; included in vendor quote	--
	Emissions Monitoring	15% of equipment cost	$131,250
	Foundation and Structure Support	8% of equipment cost	$70,000
	Freight	Vendor quote[b]	$12,000
	Taxes	Florida sales tax, 6%	$52,500
Total PEC:			$1,140,750
	Direct SNCR Installation	GP vendor quotes for similar boiler; 70% of basic	$753,375
Total DCC:			$1,894,125
INDIRECT CAPITAL COSTS (ICC)			
	Air and Water Piping	Based on GP Engineering Estimate	$50,000
	Electrical and Controls	Based on GP Engineering Estimate	$50,000
	Performance testing	Based on GP Engineering Estimate	$100,000
	Engineering and Supervision	Portion performed by GP (5% of Total DCC)	$94,706
	Modeling	Included in vendor quote	--
	Start-up and Optimization Service	Included in vendor quote	--
	Temperature monitoring	Based on Engineering Estimate	$45,000
	Operation and Maintenance Manuals (5)	Included in vendor quote	--
	General Facilities	5% of DCC	$94,706
	Engineering and home office fees	10% of DCC	$189,413
	Process Contingency	5% of DCC	$94,706
Total ICC:			$718,531
PROJECT CONTINGENCY (RETROFIT)		30% of (DCC + ICC)	$783,797
TOTAL CAPITAL INVESTMENT (TCI)		DCC + ICC + PROJECT CONTINGENCY	$4,267,000
DIRECT OPERATING COSTS (DOC)			
(1)	Operating Labor		
	Operator	2 hours/week, $16/hr, 52 weeks/yr	$1,664
	Supervisor	15% of operator cost	$250
(2)	Maintenance	1.5% of TCI	$64,005
(3)	NOx-OUT solution cost	18 gal/hr, $1.45/gal [c], 80% C.F.	$182,909
(4)	Electricity	66 kW, $0.08/kW-hr, 80% C.F.	$37,002
(5)	Water	520 gph; $0.00064/ga, 80% C.F.	$2,332
(6)	Fuel- bark/wood (loss in efficiency)	1 MM Btu/yr, $3/MM Btu, 80% C.F.	$21,024
Total DOC:			$309,186
INDIRECT OPERATING COSTS (IOC)			
	Overhead	30% of oper. labor & maintenance	$19,776
	Property Taxes	0.5% of total capital investment	$21,335
	Insurance	1% of total capital investment	$42,670
	Administration	1% of total capital investment	$42,670
Total IOC:			$126,451
CAPITAL RECOVERY COSTS (CRC)		CRF of 0.09439 times TCI (20 yrs @ 7%)	$402,762
ANNUALIZED COSTS (AC)		DOC + IOC + CRC	$838,399
BASELINE NO_x EMISSIONS (TPY):		Bark-avg of 2004/2005 = 2,563,380 MM Btu	356.1 [d]
		Oil-avg of 2004/2005 = 673,878 MM Btu	
		0.22 lb/MMBtu for natural gas and for bark	
MAXIMUM NO_x EMISSIONS w/SNCR (TPY):		0.22 lb/MM for bark (4,042,127 MM Btu/yr)	444.6
		0.22 lb/MM Btu for natural gas (750,000 MM Btu)	82.5
		Total NO_x future	527.1
REDUCTION IN NO_x EMISSONS (TPY)		30% reduction from baseline [e]	106.8
COST EFFECTIVENESS:		$ per ton of NO_x Removed	$7,848

Footnotes:

[a] Unless otherwise specified, factors and cost estimates reflect EPA Air Pollution Cost Control Manual, Sixth Edition (EPA/452/B-02-001, Jan 2002)

[b] NO_x OUT SNCR NO_x Reduction System Proposal, Fuel Tech, Inc., January 5, 2006

[c] NO_x OUT solution cost based on actual cost incurred by U.S. Sugar Corporation for their SNCR system, as of January 2006

[d] Based on bark average usage of 284,820 tons/yr @ 4,500 Btu/lb, fuel oil average usage of 4,492,520 gal/yr @ 150,000 Btu/gal
Bark = 2,563,380 MM Btu/yr and oil = 673,878 MM Btu/yr for a total of 3,237,258 MM Btu/yr
NO_x = baseline of 0.22 lb/MM Btu (after BART controls in place) or 356.1 tons/yr

[e] 30% NO_x reduction was used as this was an average of the different fuel firing scenarios
35% NO_x reduction for bark/wood and 25% on fuel oil-bottom of Page 5-14 in July 2006 PSD application

Note: Natural gas will replace the Btu content of oil burned in the No. 4 Combination Boiler in the future

ATTACHMENT I

TOTAL COST SUMMARY - JE PRIME CODE

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
G:\ESTIMATING\GEORPAC\FLORIDA\PALATKA\16DC9000 - BART BOILER PROGRAM\PALATKA COMBINATION BOILER NO. 4 - SNCR\[16DC9000 - TCS - PALATKA COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR_R1.xls]PRIME

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WBJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

PRIME CODE	DESCRIPTION	W-H	QTY	UNIT	LABOR	EQUIPMENT	MATERIAL	SUBCONTRACT	TOTAL COST
	DIRECT COSTS								
50	MAJOR EQUIPMENT	1,599	0	0	$92,082	$1,022,900	$15,344	$0	$1,130,305
51	DEMOLITION	469	0	0	$25,432	$0	$0	$0	$25,432
52	SITE EARTHMOVING	0	0	0	$0	$0	$0	$0	$0
53	SITE IMPROVEMENTS	0	0	0	$0	$0	$0	$56,515	$56,515
54	PILING, CAISSONS	0	791	LF	$0	$0	$0	$79,121	$79,121
55	BUILDINGS	0	1	LOT	$0	$0	$0	$80,000	$80,000
56	CONCRETE	369	31	CY	$16,955	$0	$16,955	$0	$33,909
57	MASONRY, REFRACTORY	0	0	0	$0	$0	$0	$0	$0
58	STRUCTURAL STEEL	1,353	39	TN	$67,818	$0	$135,637	$0	$203,455
59	ROOFING AND SIDING	0	0	0	$0	$0	$0	$0	$0
60	FIRE PROOFING	0	0	0	$0	$0	$0	$0	$0
61	PROCESS DUCTWORK (NON-BUILDING)	0	0	0	$0	$0	$0	$0	$0
62	PIPING	1,589	556	LF	$90,424	$0	$101,727	$0	$192,152
63	INSULATION - PIPE, EQUIPMENT & DUCTWORK	1,108	1	LOT	$50,864	$0	$0	$50,864	$101,727
64	INSTRUMENTATION	111	6	EA	$5,652	$11,303	$11,303	$0	$28,258
65	ELECTRICAL	550	2,200	LF	$27,941	$93,615	$45,212	$0	$166,768
66	PAINTING, PROTECTIVE COATINGS	123	0	0	$5,652	$0	$5,652	$0	$11,303
67	FURNITURE, LAB & SHOP EQUIPMENT	0	0	0	$0	$0	$0	$0	$0
	TOTAL DIRECT COSTS	7,452			$382,799	$1,127,818	$331,829	$266,500	$2,108,946
	$ / WH	$51.37							
	CONSTRUCTION INDIRECT COSTS								
75	CONSTRUCTION SUPPORT LABOR	1,490			$60,409	$0	$0	$0	$60,409
76	TEMPORARY CONSTRUCTION FACILITIES (IN WAGE RATES)				$0	$0	$0	$0	$0
78	PREMIUM TIME				$23,354	$0	$0	$0	$23,354
79	CRAFT FRINGE BENEFITS (IN WAGE RATES)				$0	$0	$0	$0	$0
	CRAFT PER DIEM ($7 PER HOUR ON 100 % OF THE HOURS)				$0	$0	$0	$62,601	$62,601
80	PAYROLL TAXES & INSURANCE (IN WAGE RATES)				$0	$0	$0	$0	$0
83	SMALL TOOLS (IN WAGE RATES)				$0	$0	$0	$0	$0
84	CONSUMABLE SUPPLIES (IN WAGE RATES)				$0	$0	$0	$0	$0
85	CONSTRUCTION EQUIPMENT (IN WAGE RATES)				$0	$0	$0	$0	$0
87	FIELD STAFF (IN WAGE RATES)				$0	$0	$0	$0	$0
81	NON-PAYROLL TAX, INSURANCE & PERMITS				$0	$73,308	$21,569	$8,661	$103,538
93	CONSTRUCTION HOME OFFICE COST (INC. WITH CONTRACTOR'S CONSTRUCTION FEE)				$0	$0	$0	$0	$0
71	CRAFT START-UP ASSISTANCE	450			$33,300	$0	$0	$0	$33,300
99	CONTRACTOR'S CONSTRUCTION HOME OFFICE & FEE		10.0%	TCC LESS EQ.	$45,597	$0	$53,010	$33,776	$132,382
	TOTAL CONSTRUCTION INDIRECT COSTS	1,940			$152,659	$73,308	$74,579	$105,039	$415,584
	TOTAL CONSTRUCTION COSTS (TCC)	9,393			$545,458	$1,201,126	$406,407	$371,539	$2,524,531
	$ / WH	$73.97							
	PROJECT INDIRECT COSTS								
88	CONSTRUCTION MANAGEMENT		4.5%	TIC	$0	$0	$0	$192,796	$192,796
90	ENGINEERING PROFESSIONAL SERVICES		10.0%	TIC	$0	$0	$0	$424,953	$424,953
90	STUDY COST				$0	$0	$0	$50,000	$50,000
96	OUTSIDE CONSULTANT SERVICES				$0	$0	$0	$100,000	$100,000
91	OWNER'S COST		3.0%	TIC	$0	$0	$0	$128,928	$128,928
70	SPARE PARTS				$0	$58,391	$0	$0	$58,391
71	NON-CRAFT START-UP ASSISTANCE				$49,950	$0	$0	$69,200	$119,150
98	ALLOWANCE FOR UNFORESEEN		8.3%	TIC	$69,541	$125,752	$40,641	$128,742	$364,675
96	ESCALATION		5.0%	TIC	$0	$125,752	$56,102	$33,483	$215,418
	AIR INFILTRATION ALLOWANCE				$0	$0	$0	$100,000	$100,000
	ROUND OFF				$52	($21)	($231)	$357	$157
	TOTAL PROJECT COSTS	9,393			$655,000	$1,509,000	$503,000	$1,600,000	$4,267,000
	$ / WH	$73.97							

DETAIL DIRECT COST

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
G:\BSTIMATAGE\ORPACIFLORIDA\PALATKA\16DC9000 - BART BOILER PROGRAM\PALATKA COMBINATION BOILER NO. 4 - SNCR\[16DC9000 - TCS - PALATKA COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR_R1.xls]PRIME CODE TCS

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

LINE NO.	JE PRIME CODE	01 PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	UNIT COST	TOTAL ALL COSTS
		DIRECT COST - DETAILS														
1		MAJOR EQUIPMENT														
2																
3	50	FUELTECH SNCR SYSTEM	1	LOT	1,350.00	1,350	$54.17	$73,131	$675,000	$675,000	$0.00	$0	$0.00	$0	$748,131	$748,131
4	50	LEVEL 1 NOZZLES (WITH RETRACTABLE LANCES)	6	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
5	50	RETRACTABLE NOZZLES	6	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
6	50	LEVEL 2 NOZZLES (FIXED POSITION NOZZLES)	3	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
7	50	DISTRIBUTION SKIDS	2	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
8	50	METERING SKID	1	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
11	50	PUMPING SKID	1	EA	INCLUDED	0	$54.17	$0	INCL.	$0	$0.00	$0	$0.00	$0	$0	$0
15	50															
16	50	UREA STORAGE TANK - 10' DIAMETER X 12' HIGH	1	EA	100.00	100	$54.17	$5,417	$14,000	$14,000	$0.00	$0	$0.00	$0	$19,417	$19,417
17	50	DIKE	1	EA	IN CONCRETE	0	$54.17	$0	$0	$0	IN CONCRETE	$0	$0.00	$0	$0	$0
18	50	LADDER	1	EA	8.00	8	$54.17	$433	$1,000	$1,000	$0.00	$0	$0.00	$0	$1,433	$1,433
19	50															
20	50	PIPING FROM UREA STORAGE TANK TO METERING SKID	1	LOT	IN PIPING	0	$54.17	$0	$0	$0	IN PIPING	$0	$0.00	$0	$0	$0
21	50	PIPING FROM METERING SKID TO PUMPING SKID	1	LOT	IN PIPING	0	$54.17	$0	$0	$0	IN PIPING	$0	$0.00	$0	$0	$0
22	50	PIPING FROM PUMPING SKID TO DISTRIBUTION SKIDS	1	LOT	IN PIPING	0	$54.17	$0	$0	$0	IN PIPING	$0	$0.00	$0	$0	$0
23	50															
24	50	NEW AIR COMPRESSOR	1	EA	200.00	200	$54.17	$10,834	$75,000	$75,000	$0.00	$0	$0.00	$0	$85,834	$85,834
27	50															
28	50															
29	50	FREIGHT	1	LOT	N / A	0	$54.17	$0	$57,900	$57,900	$0.00	$0	$0.00	$0	$57,900	$57,900
30	50	SHIMS AND GROUT	1	LOT	41.45	41	$54.17	$2,245	$0	$0	$15.344	$15,344	$0.00	$0	$17,589	$17,589
35																
36	50	TOTAL - MAJOR EQUIPMENT				1,699	$54.17	$92,062		$1,022,900		$15,344		$0		$1,130,305
51																
52		DEMOLITION														
53																
66	51	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	469.47	469	$54.17	$25,432	$0	$0	$0	$0	$0	$0	$25,432	$25,432
67																
68	51	TOTAL - DEMOLITION				469	$54.17	$25,432		$0		$0		$0		$25,432
80																
81		SITE IMPROVEMENTS														
82																
88	53	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	0.00	0	$45.91	$0	$0	$0	$0	$0	$56,515	$56,515	$56,515	$56,515
89																
90	53	TOTAL - SITE IMPROVEMENTS				0	$0.00	$0		$0		$0		$56,515		$56,515
91																
92		PILING, CAISSONS														
93																
98	54	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	0.00	0	$45.91	$0	$0	$0	$0	$0	$79,121	$79,121	$79,121	$79,121
100																
101	54	TOTAL - PILING, CAISSONS	791	LF	0.00	0	$0.00	$0		$0		$0		$79,121	$100.00	$79,121
102																
103		SPECIAL CONSTR. (SEISMIC CONTROL, PRE-ENGR BUILDINGS, ETC.)														
139																
140	55.360	MCC ROOM, 20' X 20'	400	SF	S / C	0	$45.91	$0	$0.00	$0	$0.00	$0	$200.00	$80,000	$200.00	$80,000
141																
147	55.360	TOTAL - SPECIAL CONSTRUCTION				0	$0.00	$0		$0		$0		$80,000		$80,000
148																
149		CONCRETE														
167																
168	56	DIKE (INCLUDED IN FACTOR)				0	$45.91	$0	$0.00	$0	$0.00	$0	$0.00	$0	$0	$0
189	56															
190	56	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	369.31	369	$45.91	$16,955	$0	$0	$16,955	$16,955	$0	$0	$33,909	$33,909
193																
194	56	TOTAL - CONCRETE	31	CY	12.0	369	$45.91	$16,955		$0		$16,955		$0		$33,909
195																
207		STRUCTURAL STEEL														
208																
209																

DETAIL DIRECT COST

JOB: GARY BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9900
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

LINE NO.	JS PRIME CODE	01 PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	UNIT COST	TOTAL ALL COSTS
		DIRECT COST - DETAILS														
210																
231	58	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	1,352.88	1,353	$50.13	$67,818	$0	$0	$135,637	$135,637	$0	$0	$203,455	$203,455
232																
233	58	TOTAL - STRUCTURAL STEEL	50	TN	25.0	1,353	$50.13	$67,818		$0		$135,637		$0		$203,455
267																
268																
269		PIPING														
270																
287	62	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	1,669.23	1,669	$54.17	$90,424	$0	$0	$101,727	$101,727	$0	$0	$192,152	$192,152
308																
309	62	TOTAL - PIPING	556	LF	3.00	1,669	$54.17	$90,424		$0		$101,727		$0		$192,152
310																
311																
312		INSULATION - PIPE, EQUIPMENT & DUCTWORK														
313																
314	63	UREA TANK (INCLUDED IN FACTOR)				0	$45.91	$0	$0.00	$0	$0.00	$0	$0.00	$0	$0.00	$0
316	63															
318	63	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	1,107.92	1,108	$45.91	$50,864	$0	$0	$0	$0	$50,864	$50,864	$101,727	$101,727
320	63	TOTAL - INSULATION - PIPE, EQUIPMENT & DUCTWORK	1	LOT		1,108	$45.91	$50,864		$0		$0		$50,864		$101,727
321																
322																
323		INSTRUMENTATION														
324																
336	64	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	111.29	111	$50.81	$5,652	$11,303	$11,303	$11,303	$11,303	$0	$0	$22,956	$22,956
337																
338	64	TOTAL - INSTRUMENTATION	6	EA	20.00	111	$50.81	$5,652		$11,303		$11,303		$0		$22,956
339																
340																
341		ELECTRICAL														
342																
343	65	UREA TANK HEAT TRACING (INCLUDED IN FACTOR)				0	$50.81	$0	$0.00	$0	$0.00	$0	$0.00	$0	$0.00	$0
344	65															
345	65	TRANSFORMER - 13,800 V TO 480 V, RATED FOR 400 HP CONNECTED LOAD	1	EA	100.00	100	$50.81	$5,081	$35,000	$35,000	$0.00	$0	$0.00	$0	$40,081	$40,081
346	65															
355	65	TESTING AND STARTUP	1	LOT	5.00	5	$50.81	$254	$0.00	$0	$0.00	$0	$0.00	$0	$254.04	$254
356	65	FREIGHT	1	LOT	N / A	0	$50.81	$0	$2,100	$2,100	$0	$0	$0.00	$0	$2,100	$2,100
358	65															
360	65	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	444.93	445	$50.81	$22,606	$56,515	$56,515	$45,212	$45,212	$0	$0	$124,334	$124,334
361																
362	65	TOTAL - ELECTRICAL	2,200	LF	0.25	550	$50.81	$27,941		$93,618		$45,212		$0		$166,768
363																
364																
365		PAINTING, PROTECTIVE COATINGS														
366																
371	66	*FACTORED FROM INSTALLED PROCESS EQUIPMENT COST*	1	LOT	123.10	123	$45.91	$5,652	$0	$0	$5,652	$5,652	$0	$0	$11,303	$11,303
372																
373	66	TOTAL - PAINTING, PROTECTIVE COATINGS				123	$45.91	$5,652		$0		$5,652		$0		$11,303
386																
387																
388																
389																
390																
391		TOTAL - DIRECT COST				7,452	$51.37	$382,799		$1,127,818		$331,629		$266,500		$2,108,946

CONTRACTOR'S CONSTRUCTION INDIRECT COST - CONSTRUCTION SUPPORT LABOR

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
75	**CONSTRUCTION SUPPORT LABOR**											
	(LABOR COST ONLY)											
	CAPITAL - CONSTRUCTION SUPPORT LABOR - ALLOWANCE @ 20 % OF DIRECT LABOR HOURS FOR BELOW LISTED ITEMS	7,452	WH	0.20	1,490	$40.53	$60,409	$0	$0	$0	$0	$60,409
	CONS EQUIP OPERATION - CRANE				0	$40.53	$0	$0	$0	$0	$0	$0
	WELDER QUALIFICATIONS				0	$40.53	$0	$0	$0	$0	$0	$0
	RAINED OUT LABOR				0	$40.53	$0	$0	$0	$0	$0	$0
	SAFETY TRAINING				0	$40.53	$0	$0	$0	$0	$0	$0
	SCAFFOLDING (Rental Incl. W/ Constr. Eq. Rental)				0	$40.53	$0	$0	$0	$0	$0	$0
	UNLOAD AND STORE BULK MATERIAL				0	$40.53	$0	$0	$0	$0	$0	$0
	WAREHOUSEMAN				0	$40.53	$0	$0	$0	$0	$0	$0
	TOOL MAN				0	$40.53	$0	$0	$0	$0	$0	$0
	FIRE WATCH				0	$40.53	$0	$0	$0	$0	$0	$0
	YARD CREWS				0	$40.53	$0	$0	$0	$0	$0	$0
	SPECIAL HAULING / RIGGING				0	$40.53	$0	$0	$0	$0	$0	$0
	STARTUP - CRAFTSMEN				0	$40.53	$0	$0	$0	$0	$0	$0
	CLEAN UP				0	$40.53	$0	$0	$0	$0	$0	$0
	EMPLOYMENT & RANDOM DRUG TESTS				0	$40.53	$0	$0	$0	$0	$0	$0
	MOVE IN / MOVE OUT LABOR				0	$40.53	$0	$0	$0	$0	$0	$0
	WATER / ICE				0	$40.53	$0	$0	$0	$0	$0	$0
75	**TOTAL - CONSTRUCTION SUPPORT LABOR**				**1,490**		**$60,409**		**$0**		**$0**	**$60,409**

CONTRACTOR'S CONSTRUCTION INDIRECT COST - PREMIUM TIME

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION		TOTAL WEEKLY W.H.'S	TOTAL PREMIUM W.H.'S		PREMIUM COST ADDER	TOTAL COST
78	**PREMIUM & EFFICIENCY LOSS TIME CALCULATION WORKSHEET**						
	CAPITAL PREMIUM TIME COST:	BASED ON BARE WAGE RATE OF:				$22.72	
		TOTAL CRAFT HOURS:		8,943	HRS		
	CRAFT HOURS WORKED ON 40 HR WEEK **(0 HRS PT)**	0.0%	0	0	HRS		
	CRAFT HOURS WORKED ON 50 HR WEEK **(10 HRS PT)**	100.0%	8,943	1,789	HRS	$13.06	$23,354
	CRAFT HOURS WORKED ON 60 HR WEEK **(20 HRS PT)**	0.0%	0	0	HRS	$13.06	$0
	CRAFT HOURS WORKED ON 70 HR WEEK **(30 HRS PT)**	0.0%	0	0	HRS	$13.06	$0
	CRAFT HOURS WORKED ON 84 HR WEEK **(44 HRS PT)**	0.0%	0	0	HRS	$13.06	$0
		100.0%	8,943	1,789	HRS		
	TOTAL CAPITAL PREMIUM TIME COST						**$23,354**
78	**TOTAL**						**$23,354**

CONTRACTOR'S CONSTRUCTION INDIRECT COST - NON-PAYROLL TAX, INSURANCE AND PERMITS

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
81	**NON-PAYROLL TAX, INSURANCE AND PERMITS**									
	SALES & USE TAX									
	6.5% OF EQUIPMENT	$1,127,818	EQ $	6.50%	$73,308					$73,308
	6.5% OF MATERIAL	$331,829	MAT'L $			6.50%	$21,569			$21,569
	6.5% ON 50% OF SUBCONTRACTS	$133,250	SUB $					6.50%	$8,661	$8,661
81	**TOTAL NON-PAYROLL TAX, INSURANCE AND PERMITS**				**$73,308**		**$21,569**		**$8,661**	**$103,538**

CONTRACTOR'S CONSTRUCTION INDIRECT COST - CRAFT START-UP ASSISTANCE

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
71	CRAFT START-UP ASSISTANCE													
	CRAFT START-UP SERVICES (3 CRAFT PERSONNEL @ 50 HOURS EACH)	3	WK	150.00	450	$74.00	$33,300	$0	$0	$0	$0	$0	$0	$33,300
71	TOTAL CRAFT START-UP ASSISTANCE						$33,300		$0		$0		$0	$33,300

CONTRACTOR'S CONSTRUCTION INDIRECT COST - CONTRACTOR'S CONSTRUCTION FEE

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	LABOR UNIT COST	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
99	CONTRACTOR'S CONSTRUCTION FEE											
	LABOR (INCLUDED IN WAGE RATES)	499,861	LAB$	9.1%	$45,597							$45,597
	EQUIPMENT	1,201,126	EQ$			0.00%	$0					$0
	MATERIAL	353,398	MAT$					15.00%	$53,010			$53,010
	SUBCONTRACT	337,763	SUB$							10.00%	$33,776	$33,776
99	TOTAL CONTRACTOR'S CONSTRUCTION FEE				$45,597		$0		$53,010		$33,776	$132,382

TOTAL CONTRACTOR'S CONSTRUCTION FEE AS A % OF TOTAL CONSTRUCTION COST - EQUIP. =	10.0%

TOTAL CONSTRUCTION COST LESS PROCESS EQUIPMENT = $1,323,404

PROJECT INDIRECT COST - CONSTRUCTION MANAGEMENT

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	UNIT COST	TOTAL ALL COSTS
88	**TOTAL CONSTRUCTION MANAGEMENT**												
	TOTAL - CONSTRUCTION MANAGEMENT	1	LOT		0	$0.00	$0	$0.00	$0	$192,798	$192,798	$192,798	$192,798
88	**TOTAL - CONSTRUCTION MANAGEMENT**				0		$0		$0		$192,798		$192,798

PROJECT INDIRECT COST - ENGINEERING PROFESSIONAL SERVICES

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	LABOR UNIT COST	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	UNIT COST	TOTAL ALL COSTS
90	ENGINEERING PROFESSIONAL SERVICES															
	JACOBS	1	LOT		0	$0.00	$0.00	$0	$0	$0	$0	$0	$424,953	$424,953	$424,953	$424,953
90	TOTAL ENGINEERING PROFESSIONAL SERVICES							$0		$0		$0		$424,953		$424,953

PROJECT INDIRECT COST - STUDY COST

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
G:\ESTIMATI\GEORPAC\FLORIDA\PALATKA\16DC9000 - BART BOILER PROGRAM\PALATKA COMBINATION BOILER NO. 4 - SNCR\[16DC9000 - TCS - PALATKA COMBINATION BOILER NO. 4 - NOX REMO

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
90	**STUDY COST**										
	STUDY COST	1	LOT	$0	$0	$0	$0	$0	$50,000	$50,000	$50,000
90	**STUDY COST**			**$0**		**$0**		**$0**		**$50,000**	**$50,000**

PROJECT INDIRECT COST - OUTSIDE CONSULTANT SERVICES

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
G:\ESTIMATI\GEORPAC\FLORIDA\PALATKA\16DC9000 - BART BOILER PROGRAM\PALATKA COMBINATION BOILER NO. 4 - SNCR\[16DC9000 - TCS - PALATKA COMBINATION BOILER NO. 4 - NOX REMO

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
96	**OUTSIDE CONSULTANT SERVICES**										
	OUTSIDE CONSULTANT SERVICES	1	LOT	$0	$0	$0	$0	$0	$100,000	$100,000	$100,000
96	**TOTAL OUTSIDE CONSULTANT SERVICES**			$0		$0		$0		$100,000	$100,000

PROJECT INDIRECT COST - OWNER'S COST

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
91	OWNER'S COST										
	OWNER'S COST	1	LOT	$0	$0	$0	$0	$0	$128,928	$128,928	$128,928
91	TOTAL OWNER'S COST			$0		$0		$0		$128,928	$128,928

PROJECT INDIRECT COST - SPARE PARTS

JOB: BART BOILER PROGRAM - PALATKA -
COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

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JE PRIME CODE	DESCRIPTION	QTY.	UNIT	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
70	SPARE PARTS										
	SPARE PARTS - ALLOWANCE OF 5% OF EQUIPMENT COST	1	LOT	$0	$56,391	$56,391	$0	$0	$0	$0	$56,391
70	TOTAL SPARE PARTS			$0		$56,391		$0		$0	$56,391

PROJECT NDIRECT COST - NON-CRAFT START-UP ASSISTANCE

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)
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ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

JE PRIME CODE	DESCRIPTION	QTY.	UNIT	W.H./ UNIT	TOTAL W.H.'s	COST/ W.H.	TOTAL DIRECT LABOR	PROCESS EQUIPMENT UNIT COST	TOTAL PROCESS EQUIPMENT	MATERIAL UNIT COST	TOTAL MATERIAL	SUB CONTRACT UNIT COST	TOTAL SUB CONTRACTS	TOTAL ALL COSTS
71	NON-CRAFT START-UP ASSISTANCE													
	PROFESSIONAL SERVICES START-UP	4	WK	150.00	600	$83.25	$49,950	$0	$0	$0	$0	$0	$0	$49,950
	PROFESSIONAL SERVICES START-UP - EXPENSES	4	WK	0.00	0	$0.00	$0	$0	$0	$0	$0	$4,800	$19,200	$19,200
	VENDOR START-UP SERVICES	1	LOT		0	$0.00	$0	$0	$0	$0	$0	$50,000	$50,000	$50,000
71	TOTAL NON-CRAFT START-UP ASSISTANCE						$49,950		$0		$0		$69,200	$119,150

PROJECT INDIRECT COSTS - ALLOWANCE FOR UNFORESEEN

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

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PRIME CODE	PRIME CODE	DESCRIPTION	LABOR	EQUIPMENT	MATERIAL	SUBCONT.	TOTAL COST	PERCENTAGES LABOR	EQUIP.	MAT'L.	S/C	DOLLARS LABOR	EQUIPMENT	MATERIAL	SUBCONT.	TOTAL COST
		DIRECT COSTS														
09	50	MAJOR EQUIPMENT	$92,062	$1,022,600	$16,344	$0	$1,130,306	10.0%	10.0%	10.0%	10.0%	$9,206	$102,260	$1,634	$0	$113,091
09	51	DEMOLITION	$26,432	$0	$0	$0	$26,432	10.0%	10.0%	10.0%	10.0%	$2,643	$0	$0	$0	$2,643
09	52	SITE EARTHMOVING	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
09	53	SITE IMPROVEMENTS	$0	$0	$0	$56,515	$56,515	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$5,652	$5,652
09	54	PILING, CAISSONS	$0	$0	$0	$79,121	$79,121	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$7,912	$7,912
09	55	BUILDINGS	$0	$0	$0	$80,000	$80,000	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$8,000	$8,000
09	56	CONCRETE	$16,955	$0	$16,955	$0	$33,909	10.0%	10.0%	10.0%	10.0%	$1,695	$0	$1,695	$0	$3,391
09	57	MASONRY, REFRACTORY	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
09	58	STRUCTURAL STEEL	367,818	$0	$135,637	$0	$203,456	10.0%	10.0%	10.0%	10.0%	$6,782	$0	$13,564	$0	$20,345
09	59	ROOFING AND SIDING	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
09	60	FIRE PROOFING	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
09	61	PROCESS DUCTWORK (NON-BUILDING)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
09	62	PIPING	$90,436	$0	$101,727	$0	$192,162	10.0%	10.0%	10.0%	10.0%	$9,042	$0	$10,173	$0	$19,215
09	63	INSULATION - PIPE, EQUIPMENT & DUCTWORK	$50,864	$0	$0	$50,864	$101,727	10.0%	10.0%	10.0%	10.0%	$5,086	$0	$0	$5,060	$10,173
09	64	INSTRUMENTATION	$5,652	$11,303	$11,303	$0	$28,258	10.0%	10.0%	10.0%	10.0%	$565	$1,130	$1,130	$0	$2,826
09	65	ELECTRICAL	$27,841	$63,616	$45,212	$0	$169,768	10.0%	10.0%	10.0%	10.0%	$2,784	$6,362	$4,521	$0	$16,677
09	66	PAINTING, PROTECTIVE COATINGS	$5,652	$0	$5,652	$0	$11,303	10.0%	10.0%	10.0%	10.0%	$565	$0	$565	$0	$1,130
09	67	FURNITURE, LAB & SHOP EQUIPMENT	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
		TOTAL DIRECT COSTS	$382,799	$1,127,618	$331,829	$286,500	$2,108,946					$38,280	$112,752	$33,183	$26,650	$210,895
		CONSTRUCTION INDIRECT COSTS														
03	75	CONSTRUCTION SUPPORT LABOR	$50,409	$0	$0	$0	$50,409	10.0%	10.0%	10.0%	10.0%	$5,041	$0	$0	$0	$5,041
02	76	TEMPORARY CONSTRUCTION FACILITIES (IN WAGE RATE	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99	78	PREMIUM TIME	$23,354	$0	$0	$0	$23,354	10.0%	10.0%	10.0%	10.0%	$2,335	$0	$0	$0	$2,335
99	79	CRAFT FRINGE BENEFITS (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99		CRAFT PER DIEM ($7 PER HOUR ON 100 % OF THE HOURS	$0	$0	$0	$62,601	$62,601	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$6,260	$6,260
99	80	PAYROLL TAXES & INSURANCE (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99	83	SMALL TOOLS (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
03	84	CONSUMABLE SUPPLIES (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
03	85	CONSTRUCTION EQUIPMENT (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99	87	FIELD STAFF (IN WAGE RATES)	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
03	91	NON-PAYROLL TAX, INSURANCE & PERMITS	$0	$73,308	$21,589	$8,061	$103,538	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99	93	CONSTRUCTION HOME OFFICE COST (INC. WITH CONTRA	$0	$0	$0	$0	$0	10.0%	10.0%	10.0%	10.0%	$0	$7,331	$2,157	$806	$10,354
03	71	CRAFT START-UP ASSISTANCE	$33,300	$0	$0	$0	$33,300	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$0	$0
99	02	CONTRACTOR'S CONSTRUCTION HOME OFFICE & FEE	$46,597	$0	$53,010	$33,776	$132,382	10.0%	10.0%	10.0%	10.0%	$3,330	$0	$0	$0	$3,330
		TOTAL CONSTRUCTION INDIRECT COSTS										$4,660	$0	$5,301	$3,378	$13,238
												$16,268	$7,331	$7,458	$10,504	$41,559
		TOTAL CONSTRUCTION COSTS (TCC)	$549,458	$1,201,126	$406,407	$371,539	$2,524,531					$54,548	$120,113	$40,641	$37,154	$252,453
03	88	CONSTRUCTION MANAGEMENT	$0	$0	$0	$192,798	$192,798	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$19,280	$19,280
09	89	ENGINEERING PROFESSIONAL SERVICES	$0	$0	$0	$424,953	$424,953	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$42,495	$42,495
03	90	STUDY COST	$0	$0	$0	$50,000	$50,000	10.0%	10.0%	10.0%	0.0%	$0	$0	$0	$0	$0
99	90	OUTSIDE CONSULTANT SERVICES	$0	$0	$0	$100,000	$100,000	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$10,000	$10,000
99	91	OWNER'S COST	$0	$0	$0	$126,926	$126,926	10.0%	10.0%	10.0%	10.0%	$0	$0	$0	$12,693	$12,693
99	70	SPARE PARTS	$0	$56,391	$0	$0	$56,391	10.0%	10.0%	10.0%	10.0%	$0	$5,639	$0	$0	$5,639
99	71	NON-CRAFT START-UP ASSISTANCE	$49,950	$0	$0	$69,200	$119,150	10.0%	10.0%	10.0%	10.0%	$4,995	$0	$0	$6,920	$11,915
09	93	ALLOWANCE FOR UNFORESEEN N/A														
09	08	ESCALATION N/A														
09	99	EPC FEE N/A														
		CAPITAL INTEREST N/A														
		ROUND OFF N/A														
98		TOTAL PROJECT COSTS	$999,408	$1,257,517	$406,407	$1,337,418	$3,996,750					$59,541	$125,752	$40,641	$126,742	$354,675

PROJECT INDIRECT COSTS - ESCALATION

JOB: BART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 18DC9000
CONSTRUCTION DURATION: TBD
ESTIMATE TYPE: CLASS 5 (+/- 30%)

ESCALATION IS BASED ON THE ASSUMPTION THAT ALL WORK WILL BE COMPLETED BY DECEMBER 31, 2006

ESTIMATE DATE: 11/27/06
REVISION NO.: 1
ESTIMATOR: WSJ
PROJECT MGR: LELAND HENSON
EST. FILE #: 06212

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PRIME CODE	PRIME CODE	DESCRIPTION	LABOR	EQUIPMENT	MATERIAL	SUBCONT.	TOTAL COST	PERCENTAGES LABOR	EQUIP.	MAT'L	S/C	DOLLARS LABOR	EQUIPMENT	MATERIAL	SUBCONT.	TOTAL COST
		DIRECT COSTS														
03	50	MAJOR EQUIPMENT	$92,062	$1,022,900	$15,344	$0	$1,130,305	0.0%	10.0%	10.0%	5.0%	$0	$102,290	$1,534	$0	$103,824
03	51	DEMOLITION	$25,432	$0	$0	$0	$25,432	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	52	SITE EARTHMOVING	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	53	SITE IMPROVEMENTS	$0	$0	$0	$58,515	$58,515	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$2,926	$2,926
03	54	PILING, CAISSONS	$0	$0	$0	$79,121	$79,121	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$3,956	$3,956
03	55	BUILDINGS	$0	$0	$0	$80,000	$80,000	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$4,000	$4,000
03	56	CONCRETE	$16,966	$0	$16,055	$0	$33,009	0.0%	10.0%	15.0%	5.0%	$0	$0	$2,643	$0	$2,643
03	57	MASONRY, REFRACTORY	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	58	STRUCTURAL STEEL	$67,818	$0	$135,637	$0	$203,455	0.0%	10.0%	15.0%	5.0%	$0	$0	$20,345	$0	$20,345
03	59	ROOFING AND SIDING	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	60	FIRE PROOFING	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	61	PROCESS DUCTWORK (NON-BUILDING)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	62	PIPING	$90,424	$0	$101,727	$0	$192,152	0.0%	10.0%	15.0%	5.0%	$0	$0	$15,259	$0	$15,259
03	63	INSULATION - PIPE, EQUIPMENT & DUCTWORK	$50,864	$0	$0	$50,864	$101,727	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$2,543	$2,543
03	64	INSTRUMENTATION	$5,652	$11,303	$11,303	$0	$28,258	0.0%	10.0%	15.0%	5.0%	$0	$1,130	$1,695	$0	$2,826
03	65	ELECTRICAL	$27,941	$83,815	$45,212	$0	$156,768	0.0%	10.0%	15.0%	5.0%	$0	$8,382	$6,782	$0	$15,163
03	66	PAINTING, PROTECTIVE COATINGS	$5,652	$0	$5,652	$0	$11,303	0.0%	10.0%	10.0%	5.0%	$0	$0	$565	$0	$565
03	67	FURNITURE, LAB & SHOP EQUIPMENT	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
		TOTAL DIRECT COSTS	$382,769	$1,127,818	$331,829	$268,500	$2,103,948					$0	$112,782	$48,725	$13,325	$174,831
		CONSTRUCTION INDIRECT COSTS														
03	75	CONSTRUCTION SUPPORT LABOR	$60,409	$0	$0	$0	$60,409	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	70	TEMPORARY CONSTRUCTION FACILITIES (IN WAGE RATE	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	76	PREMIUM TIME	$23,354	$0	$0	$0	$23,354	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	77	CRAFT FRINGE BENEFITS (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03		CRAFT PER DIEM ($7 PER HOUR ON 100 % OF THE HOURS	$0	$0	$0	$62,601	$62,601	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	80	PAYROLL TAXES & INSURANCE (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$3,130	$3,130
03	83	SMALL TOOLS (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	84	CONSUMABLE SUPPLIES (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	85	CONSTRUCTION EQUIPMENT (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	87	FIELD STAFF (IN WAGE RATES)	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	01	NON-PAYROLL TAX, INSURANCE & PERMITS	$0	$73,308	$21,569	$8,661	$103,538	0.0%	10.0%	10.0%	5.0%	$0	$7,331	$2,157	$433	$9,921
03	03	CONSTRUCTION HOME OFFICE COST (INC. WITH CONTRA	$0	$0	$0	$0	$0	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	71	CRAFT START-UP ASSISTANCE	$33,300	$0	$0	$0	$33,300	0.0%	10.0%	10.0%	5.0%	$0	$0	$0	$0	$0
03	99	CONTRACTOR'S CONSTRUCTION HOME OFFICE & FEE	$45,567	$0	$53,010	$33,776	$132,352	0.0%	10.0%	10.0%	5.0%	$0	$0	$5,301	$1,689	$6,990
		TOTAL CONSTRUCTION INDIRECT COSTS										$0	$7,331	$7,458	$5,252	$20,041
		TOTAL CONSTRUCTION COSTS (TCC)	$545,458	$1,201,126	$406,407	$371,639	$2,524,531					$0	$120,113	$56,182	$18,577	$194,872
03	00	CONSTRUCTION MANAGEMENT	$0	$0	$0	$192,798	$192,798	0.0%	0.0%	0.0%	0.0%	$0	$0	$0	$0	$0
03	90	ENGINEERING PROFESSIONAL SERVICES	$0	$0	$0	$424,953	$424,953	0.0%	0.0%	0.0%	0.0%	$0	$0	$0	$0	$0
03	00	STUDY COST	$0	$0	$0	$50,000	$50,000	0.0%	0.0%	0.0%	0.0%	$0	$0	$0	$0	$0
00	98	OUTSIDE CONSULTANT SERVICES	$0	$0	$0	$100,000	$100,000	0.0%	0.0%	0.0%	0.0%	$0	$0	$0	$0	$0
03	91	OWNER'S COST	$0	$0	$0	$126,928	$126,928	0.0%	0.0%	0.0%	5.0%	$0	$0	$0	$5,000	$5,000
03	70	SPARE PARTS	$0	$58,391	$0	$0	$58,391	0.0%	10.0%	0.0%	0.0%	$0	$5,839	$0	$0	$5,839
00	71	NON-CRAFT START-UP ASSISTANCE	$49,950	$0	$0	$69,200	$119,150	0.0%	0.0%	0.0%	5.0%	$0	$0	$0	$3,460	$3,460
99	98	ALLOWANCE FOR UNFORESEEN	N/A													
00	98	ESCALATION	N/A													
99	00	EPC FEE	N/A													
		CAPITAL INTEREST	N/A													
		ROUND OFF	N/A													
98		TOTAL PROJECT COSTS	$595,408	$1,257,517	$406,407	$1,337,418	$3,596,750					$0	$125,752	$58,182	$33,483	$215,418

CONSTRUCTION "ALL-IN" WAGE RATE

JOB: SART BOILER PROGRAM - PALATKA - COMBINATION BOILER NO. 4 - NOX REMOVAL - SNCR
CLIENT: GEORGIA PACIFIC
LOCATION: PALATKA, FLORIDA
JOB NUMBER: 16DC0600

ITEM	NOTES	CRAFT CONCRETE / MASONRY %	CRAFT CONCRETE / MASONRY COST	NOTES	CRAFT STRUCTURAL STEEL %	CRAFT STRUCTURAL STEEL COST	NOTES	CRAFT PIPING & MECHANICAL %	CRAFT PIPING & MECHANICAL COST	NOTES	CRAFT INSTRUMENTATION %	CRAFT INSTRUMENTATION COST	NOTES	CRAFT ELECTRICAL %	CRAFT ELECTRICAL COST	NOTES	CRAFT SUPPORT (INC. OPERATORS) %	CRAFT SUPPORT (INC. OPERATORS) COST
BASE JOURNEYMAN			$22.50			$22.50			$22.50			$22.50			$22.50			$21.50
COMPOSITE RATE		97.35%	$19.65		98.41%	$21.69		99.86%	$22.47		98.78%	$22.23		98.78%	$22.23		97.37%	$20.93
PAYROLL TAXES & INSURANCES:	33.60%																	
WORKMEN'S COMPENSATION		14.70%	$2.89		14.70%	$3.19		14.70%	$3.30		14.70%	$3.27		14.70%	$3.27		14.70%	$3.08
GENERAL LIABILITY		3.95%	$0.78		3.95%	$0.86		3.95%	$0.89		3.95%	$0.88		3.95%	$0.88		3.95%	$0.83
EXCESS LIABILITY		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
FICA		7.65%	$1.50		7.65%	$1.66		7.65%	$1.72		7.65%	$1.70		7.65%	$1.70		7.65%	$1.60
FUI		0.80%	$0.16		0.80%	$0.17		0.80%	$0.18		0.80%	$0.18		0.80%	$0.18		0.80%	$0.17
SUI		6.50%	$1.28		6.50%	$1.41		6.50%	$1.46		6.50%	$1.44		6.50%	$1.44		6.50%	$1.36
OTHER		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
FRINGES		12.60%	$2.48		12.60%	$2.71		12.50%	$2.81		12.60%	$2.78		12.60%	$2.78		12.60%	$2.62
PREMIUM TIME		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
CONSTRUCTION SUPPORT LABOR		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
TEMPORARY FACILITIES		7.50%	$1.47		7.50%	$1.63		7.50%	$1.69		7.50%	$1.67		7.50%	$1.67		7.50%	$1.57
SMALL TOOLS		7.50%	$1.47		7.50%	$1.63		7.50%	$1.69		7.50%	$1.67		7.50%	$1.67		7.50%	$1.57
CONSUMABLES		7.50%	$1.47		10.00%	$2.17		10.00%	$2.25		7.50%	$1.67		7.50%	$1.67		7.50%	$1.57
FIELD STAFF		26.00%	$4.01		25.00%	$5.42		35.00%	$7.88		35.00%	$7.78		35.00%	$7.78		25.00%	$5.23
EQUIPMENT RENTAL		40.00%	$7.86		35.00%	$7.59		35.00%	$7.88		25.00%	$5.56		25.00%	$5.56		0.00%	$0.00
CONSTRUCTION HOME OFFICE (ON TCS SHEET)		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
PER DIEM		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
CONTRACTOR FEE (ON TCS SHEET)		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00		0.00%	$0.00
TOTAL WAGE RATE WITH FEE		233.60%	$45.81		231.10%	$50.13		241.10%	$54.17		228.60%	$50.81		228.60%	$50.81		193.60%	$40.53

ATTACHMENT II

Appendix A:
Basis of Estimated Costs

BASIS OF ESTIMATED COSTS

GEORGIA PACIFIC
PALATKA, FLORIDA
REGIONAL HAZE / BOILER BART PROGRAM
JACOBS PROJECT NO. 16DC9000

GENERAL

The purpose of these cost estimates is to provide Georgia Pacific with a Feasibility Study Level Report in 2006 dollars with an accuracy range of ± 30 % for the Regional Haze/ Boiler BART Program at the Wauna, Oregon Mill.

Estimates were prepared by Jacobs for various SO_2 and NO_x control technologies for the boilers which where put in place or under construction between August 7, 1962 and August 7, 1977. These cost estimates were prepared in such a manner to ensure that each boiler proposed control technology and related cost estimate would stand alone on its own merit. This approach was selected to better address the uncertainty that will exist between which project or combination of projects might ultimately be implemented to meet the emissions targets established for the EPA Regional Haze / Boiler BART 2013 compliance date. Certain site specific conditions and / or the presence of alternate control technologies in the future may ultimately impact the overall project costs and feasibility of these projects if several of these projects are implemented concurrently on any given site.

In addition, the numbers used in this estimate for equipment cost do not always reflect the exact dollar amount that was provided by a vendor and reported in Appendix D. In many cases, Jacobs has used their sound engineering judgment and previous experience to change these prices. These changes may be for many reasons including but not limited to: adding or removing installation costs, adjusting for construction with a more expensive material, adding or removing options, increasing the controls included, etc.

In order to allow for air in-leakage in the existing Boilers, $100,000 has been added to each estimate to locate and repair any areas where excessive air infiltration may be occurring. This is required to ensure that any control technologies installed operate as they were designed.

GP plans to utilize the results from this feasibility study report and cost estimate(s) to support the Regional Haze / Boiler BART documentation submittal requirements to the individual States. This will establish the viability for installing the Boiler BART Control Technologies on these respective site boilers or whether to de-rate or decommission them to a capacity level below BART-eligibility.

At the time of issue, this estimate reflects the fair market value for construction costs, based upon 2006 dollars, in the Wauna, Oregon area.

BASIS OF ESTIMATED COSTS

ESTIMATE APPROACH

The estimate is based on Jacobs providing Engineering, Construction Management and Procurement Services.

For the basis of the cost estimate, detailed engineering, procurement and construction activities are assumed be completed by December 31, 2006.

WAGE RATES

This estimate is based on Union Wage Rates. The wage rates used in this estimate are composite all-in rates. The base journeyman rates range from $28.34 to $33.84. Jacobs established a crew mix for each craft, ranging from 89.98 % to 97.67 % of the base journeyman rate - see the All-In Wage Rate Sheet in the Estimate Detail Printout. Included in the wage rates are the following:

- **81 - PAYROLL TAXES AND INSURANCE**

  Payroll Taxes and Insurance are included at 28.1 % of bare craft labor.

- **79 - CRAFT FRINGE BENEFITS**

  Union Craft Fringe Benefits are included ranging from 35.11 % to 47.70 % of bare craft labor.

- **76 - TEMPORARY CONSTRUCTION FACILITIES**

  Temporary Construction Facilities include Contractor's office supplies, PC's, copiers, postage, phones, Fed Ex, temporary sanitary facilities, mobilization, trash removal and temporary lights. These items are calculated at 7.5% of bare craft labor.

- **83 & 84 - SMALL TOOLS AND CONSUMABLES**

  Small tools are included in the estimate at 7.5 % of bare craft labor. Construction consumables are included in the estimate at 7.5 % to 10 % of bare craft labor.

- **87 - CONTRACTORS FIELD STAFF**

  Field staff includes all contractors' field support staff except for craft foremen which are included in the crew mix calculations. Contractors Field Staff is calculated at 25 % to 35 % of bare craft labor based on the type of work being performed.

- **85 - CONSTRUCTION EQUIPMENT RENTAL**

  Construction equipment rental includes the contractors' automotive equipment, general equipment and small cranes. This construction equipment cost is calculated at 25 % to 40 % of bare craft labor based on the discipline - concrete, steel, pipe,

electrical, etc. - being supported - see the All-In Wage Rate Sheet in the Estimate Detail Printout for the percent used for each discipline. If required, a line item is listed in the estimate for situations that require large cranes not covered by the allowance carried in the rate.

- **93 – CONTRACTOR'S HOME OFFICE**

  Contractor's Home Office cost includes time for Project Manager, accounting, safety, quality control, etc. is included in the Contractor's Fee.

- **99 - CONTRACTOR'S FEE**

  Contractor's fee is included in the estimate at 10 % of contractor's construction cost.

- **75 - CONTRUCTION SUPPORT LABOR**

  Construction Support Labor includes drug testing, safety training, fire watch, final cleanup, yard crews, etc. This cost is calculated as 20 % of bare craft labor.

DIRECT COSTS

50 - MAJOR EQUIPMENT

Vendor budget quotes were received for the Major Equipment.

Pump and motor installation hours are from Jacobs Standards. Other equipment installation cost items are based on historical experience.

Freight cost is included at 6 % of equipment cost.

51 – DEMOLITION AND RELOCATION

Demolition cost is factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

53 - SITE IMPROVEMENTS

Site Improvement costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

56 – CONCRETE

Concrete costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

58 – STRUCTURAL STEEL

Structural Steel costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

BASIS OF ESTIMATED COSTS

62 – PIPING

Piping costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

63 – INSULATION

Insulation costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

64 – INSTRUMENTATION

Instrumentation costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

65 – ELECTRICAL

Electrical Costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

66 – PAINTING

Painting costs are factored from installed process equipment cost but have been adjusted, as required, to reflect specific site requirements.

INDIRECT COSTS

70 – SPARE PARTS

An allowance for Spare Parts of 5 % of the process equipment cost is included.

78 - PREMIUM TIME

Premium Time is included based on the assumption that 100 % of the craft labor hours will be worked on a 50-hour week.

XX - CRAFT PER DIEM

Craft Per Diem is included at $7.00 per craft hour for all workers.

81 - NON-PAYROLL TAXES, INSURANCE AND PERMITS

Sales Tax is included at 5 % on equipment, materials and 5 % on 50 % of subcontract costs.

88 - CONSTRUCTION MANAGEMENT

Construction Management is estimated at 4.5 % of Total Installed Cost.

BASIS OF ESTIMATED COSTS

90 – ENGINEERING PROFESSIONAL SERVICES

Detail Design Engineering is estimated at 10 % of Total Installed Cost.

91 – OWNER'S COST

Owner's Cost is included at approximately 3 % of Total Installed Cost.

96 – OUTSIDE CONSULTANT SERVICES

An allowance of $100,000 is carried in the estimates for Outside Consultant Services.

98 – CONTINGENCY

Contingency is included in the estimate at 10 % of labor, equipment, material and subcontract costs.

This Contingency is part of the estimated project cost and is to cover unusual weather conditions, productivity issues, increases in costs not covered by contractual provisions, delays in delivery of equipment or materials, etc. It does not cover cost of additional work or scope changes after the definition of the project has been frozen for the estimate.

98 – ESCALATION

Escalation is based on the assumption that all work will be completed by December 31, 2006. No escalation is included for labor. Escalation is included at 10 % on equipment, 10 % on all material except for concrete, steel, pipe, instrumentation and electrical material which is included at 15 % and 5 % on subcontract cost.

BASIS OF ESTIMATED COSTS

ITEMS NOT INCLUDED

The following is a list of items not included in this estimate:

Cost of Land
Cost of borrowing money
Cost of operating supplies
Property taxes
Hazardous materials handling or disposal
All Risk Insurance
Payment and Performance Bond
Permits, Fees and Licenses

ITEMS AFFECTING THE COST ESTIMATE

Items, which may change the estimated construction cost, include, but are not limited to:

Modifications to the scope of work included in this estimate
Above normal escalation in material costs due to market availability and demands
Special phasing requirements
Restrictive technical specifications
Volume discounts on National agreements
Sole source specifications of materials or products
Bids delayed beyond the projected schedule
Sales and Use Tax exemptions
Labor disputes or difficulties

ATTACHMENT III

9. Performance and Guarantees

It is recognized that the performance of the equipment covered in this proposal cannot be exactly predicted for every possible operating condition. In consequence, any predicted performance data submitted is intended to show probable operating results.

JANSEN will work with G-P to better define the performance guarantees once the boiler evaluation phase of the work has been completed.

All performance data listed here are based on the conditions stated below and are to be substantiated or revised based on the Phase 1 performance testing and evaluation done by JANSEN at the initiation of the project.

9.1 Predicted Performance

Predicted performance data is submitted for G-P's convenience only. Such data is not offered by JANSEN, or to be construed by G-P as a proposal, offer, contract obligation, representation, warranty, or guarantee.

Table 9-1 provides predicted future operating conditions for waste wood firing only and combination of waste wood and natural gas.

Table 9.1 Predicted Performance			
	Units	**Waste Wood Only**	**MCR on Wood and Natural Gas**
Total Steam Production	lb/hr	262,500	360,000
Steam Production from Waste Wood	lb/hr	262,500	293,000
Wood Fuel Burned (as-fired wet)	ton/hr	50.0	56.1
Wood Fuel Burned (as-fired wet)	ton/day	1,200	1,346
Natural gas	scfh	0.0	92,243
No. 6 Fuel Oil	lb/hr	0.0	0.0
Waste Wood Fuel Moisture Content	%	50	50
Feedwater Temperature	°F	445	445
Flue Gas O_2 at Boiler Bank Outlet	vol. %, wet	4.1	4.1
Total Combustion Air Flow	lb/hr	407,800	539,200
Air Temperature from TAH	°F	523	559
Flue Gas Temperature from TAH	°F	420	477
Boiler Thermal Efficiency	%	65.7	66.4
Total Heat Input	10^6 Btu/hr-ft^2	412.9	558.3
Grate Heat Release	10^6 Btu/hr-ft^2	1.07	1.2
Particulate Matter at Generating Bank Outlet	grains/dscf @8% O_2	1.15	1.50

9.2 Fuel Quality

The performance information and performance guarantees provided in this section pertain to operation of the unit while burning waste wood fuel and natural gas that are similar in elemental composition (ultimate analysis), moisture content, and heating value as listed in Table 9-2.

9.3 Performance Guarantees

The guarantees presented below are subject to the conditions specified in this section at the waste wood and natural gas quantities specified in Table 9-1.

The fuel used during the performance testing shall have a moisture content, nitrogen content, and heating value not less favorable than the values in Table 9-2. The remaining fuel components specified in Table 9-2 may vary by ±10% during the testing. The waste wood size distribution is to be as described below:

100% shall be smaller than 4 inches in any direction, a maximum of 50% shall pass through a 1/4 inch screen, and no more than 25% shall pass through a 1/8 inch screen.

Table 9-2. Fuel Composition

	Unit	Waste Wood	Natural Gas
Carbon	%, dry	49.8	69.3
Hydrogen	%, dry	6.1	22.7
Nitrogen *	%, dry	<0.2	8.0
Sulfur	%, dry	0.0	0.0
Oxygen	%, dry	42.5	0.0
Ash	%, dry	1.5	0.0
Moisture Content	%, as-received	50	0.0
HHV (Dry)	Btu/lb	8,200	23,000
HHV (Wet)	Btu/lb	4,100	23,000
*Nitrogen content to be determined by Kjeldahl method			

9.3.1 Steam Generation Rate

9.3.1.1 JANSEN guarantees that the No. 4 Combination Boiler will be able to sustain an average steam generation rate of 360,000 lb/hr on waste wood and natural gas with the quantity of steam from waste wood of 293,000lb/hr, provided that the fuel qualities are as specified in Table 9-2 over an eight (8) hour test period.

9.3.1.2 JANSEN guarantees that the No. 4 Combination Boiler will be able to sustain an average steam generation rate of 262,500 lb/hr on waste wood only, with the fuel qualities specified in Table 9-2 over an eight (8) hour test period.

9.3.2 Emissions

Under the conditions specified in paragraph 9.3.1.1 above, JANSEN guarantees the following emission levels at the stack:

The average of three (3) one-hour tests within an eight (8) hour test period for nitrogen oxides (NO_x) will not exceed 0.22 lb/MMBtu.

This NO_x guarantee is based on the premise that if the initial Phase 1 evaluation determines that an OFA system is not sufficient by itself to meet the guarantee, the use of flue gas recirculation, auxiliary fuel burner modifications, and/or changes in non-condensable gas incineration practices are acceptable options to enhance the NO_x emissions reduction. The commercial terms for the additional work would be mutually agreed upon by GP and JANSEN.

9.4 Performance Tests

JANSEN has guaranteed a certain performance level as per section 9.3. In order to determine the attainment of these guarantees, a performance test shall be performed. All performance tests shall be carried out on the boiler at the sole expense of G-P. These tests will be conducted within 60 days following start-up of the boiler, with the boiler in a clean state. G-P shall give JANSEN at least 15 days notice of the date or dates on which tests will be made. Test conditions will also require:

1. The general arrangement of equipment furnished by JANSEN, and the general design and arrangement of related equipment furnished by others shall not be less favorable than described in this Proposal. The equipment shall have been erected in accordance with JANSEN's plans and specifications, properly maintained and operated by G-P, and shall be in operating conditions satisfactory to both G-P and JANSEN.

2. The system for blending and feeding the fuel, and combustion control strategy shall be acceptable to both G-P and JANSEN. Further, G-P shall provide JANSEN with sufficient time to optimize the unit's operation over the load and fuel range prior to performance testing.

conformance to the equipment. Such corrective action may include, but shall not be limited to:

Repair, replacement, modification of the equipment, or additional design, equipment and construction services.

Upon completion of the corrective action, JANSEN shall notify G-P and additional tests shall be scheduled by G-P and conducted by G-P.

Any out-of-pocket expense to G-P for additional testing, except the expenses for G-P's mill operators and the raw materials required for the re-testing, shall be reimbursed by JANSEN.

JANSEN's total liability under this Section 9.5 is limited to the lesser of $77,000 or 10% of the final contract price, including any change orders.

ATTACHMENT IV

From: Bill Buckley [mailto:bbuckley@synterprise.com]
Sent: Thursday, December 22, 2005 11:18 PM
To: Orender, Robert H.
Subject: GP - PAL - Palatka Ecotube System Cost & Performance Estimates 12-22-05
Importance: High

Robert: Thank you so much again for your continuing interest in the Ecotube technology and its potential application in your Palatka, Florida operation. As you are probably aware, we have just commissioned our fifth project in the US with very positive results and have several other Ecotube projects on the drawing boards for calendar year 2006.

Following review of your information, it appears that a system consisting of two Ecotube assemblies would be appropriate for the Palatka boiler with a furnace dimension that's approximately 20 feet square. With that basis in mind, I have attached a "draft budgetary" purchase order for an "air only" system that will provide you with an estimated "turnkey" cost, a view of project division of responsibilities, Synterprise and GP obligations and possible milestone and payment schedules for a project with a target completion date of mid September 2006. We have just experienced a price increase in November from Ecomb but I feel confident that we can still meet or possibly beat this cost structure based on the results of an on-site engineering study.

The on-site engineering study is necessary to get an accurate sense of furnace temperature profiles which will help us determine the optimum elevation(s) for the actual Ecotube penetrations, obtain a more accurate estimate of project cost and performance benefits. Obviously, that location will determine the extent of structural steel support that might be required, obstacle clearance issues that must be addressed and things of that nature. In addition, the engineering study will generally consist of the following scope:

Synterprise Associate(s) will work closely with client personnel to:

- Schedule, coordinate and perform the required Engineering testing and site assessment activities
- Collect all plant operating, general equipment and electrical/mechanical design information necessary for Ecotube system installation
- Analyze all collected operating and design information
- Prepare Ecotube System Engineering Study Report

Some of the more specific value points of the Engineering Study process include:

A. Boiler performance measurements and variance analysis will provide the client, and Synterprise, with a better understanding of current boiler operational modes
   - Boiler flame pattern analysis of combustion conditions (Video analysis)
   - Furnace gas temperatures (Multiple tests with optical pyrometer)
   - Boiler operational data review and analysis –
     Air heater exit gas temp.
     Air heater air inlet temp.
     Relative humidity
     Excess air
     Cost of fuel $/ton
     Capacity factor
     Gross heat rate BTU/kwh
     O2 % at boiler exit
     Reheat spray flow lb/hr [if applicable]
   - Review of original boiler design acceptance test information and any additional performance analysis data that may be available
   - Boiler fuel analysis
     Fuel heating value btu/lb

Ultimate fuel analysis
% by Weight
Ash
Sulfur
Hydrogen
Carbon
Nitrogen
Oxygen
Moisture

- Boiler ash analysis - unburned carbon

B. Provide projected operational performance improvement based on implementation of the Ecotube system will provide the client with boiler performance improvement potential
   - Boiler performance assessment and projected improvement opportunity identification
   - Predicted performance projection based on Synterprise proprietary spreadsheet model built using ASME boiler performance criteria (if applicable)

C. Provide an equipment configuration arrangement and a project plan
   - Ecotube system project equipment configuration plan developed to obtain projected performance objectives
   - Project plan developed to install the required Ecotube system lance assemblies and wall boxes as required
   - Location of equipment, platforms (if required), and control equipment
   - Air and source of cooling water requirements will be defined

Our clients (even those that have not elected to go forward with Ecotube projects) have found significant value in the Engineering Studies. Typical pricing for a study is $35,000 but I expect to have a team in the southeast region in mid January so, if you're interested, Synterprise will offer to perform the study at Palatka for $27,400 during that period which will keep the project on a fast track toward a possible completion date in the September 2006 timeframe.

From an emissions reduction performance perspective, it is realistic to assume that a minimum NOx reduction of 20% and a CO reduction of 80% can be achieved with an "air only" installation. Our actual results have ranged close to 40% for NOx reduction and 90% for CO reduction in certain applications.

If reagent is added to the Ecotube system for purposes of NOx reduction, a minimum NOx reduction of 60% should be attainable. Actual results have indicated that NOx reduction with reagent may approach 70-75% in certain cases. The "ballpark" added cost for a reagent storage and delivery system with controls integrated into the Ecotube system would be around $800 for a budgetary view.

As you know, the Ecotube technology also differentiates itself from many of the other "parasitic" emission reduction systems because Ecotube offers substantial combustion optimization value as well. Synterprise would be pleased to schedule a webcast or a direct visit to further discuss the Ecotube technology with GP personnel. In addition, we would be pleased to coordinate an actual site tour at either the Stratton or Ashland sites in Maine where Ecotube systems are in service on boilers with steam flows in the same region as your Palatka boiler.

Since you mentioned the potential replacement of your overfire air system at Palatka, let me advise you of another possible product that might be of interest. Synterprise now offers the Ecojet technology, which is a new proprietary "high energy", separated and "tunable" overfire air concept that has been developed by Synterprise during the last year (patent pending) to address issues that have been raised by a variety of clients. Basically, many clients are constrained by limited Capex, have serious combustion problems and have found that existing overfire air systems (both OEM and aftermarket offerings) are inadequate from a performance perspective. To address this need, we have successfully developed, completed production and conducted initial testing of the Ecojet system which now positions Synterprise to offer an integrated and phased strategy designed to give our clients the most appropriate system, yielding maximum benefits with lowest costs that best matches their particular business plans and objectives.

Again Robert, thank you very much for your continued interest in Synterprise's products and professional services and we'll look forward to your feedback. Please advise if you wish to proceed directly with an Engineering Study at Palatka and I'll get a proposal to you right away to initiate that effort.

Have a Joyous and Prosperous Holiday Season!

Very Best Regards,
Bill

William J. Buckley

Vice President Engineering and Construction

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Innovative Solutions for
Operational Excellence

Georgia-Pacific

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January 31, 2007

Mr. Jeffery F. Koerner
Air Permitting North Section
Bureau of Air Regulation
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32299-2400

Re: Modification of the No. 4 Recovery Boiler, No. 4 Lime Kiln and No. 4 Combination Boiler
Project No. 1070005-038-AC/PSD-FL-380
Response to Request for Additional Information

Dear Mr. Koerner:

We are in receipt of your request for additional information, dated December 15, 2006, regarding our permit application to modify the No. 4 Recovery Boiler, No. 4 Lime Kiln and No. 4 Combination Boiler.

As noted in your question #7; Georgia-Pacific is requesting that the Department separate the projects into two separate PSD applications for the purposes of review and permit issuance due to the critical timing associated with the projects for the Recovery Boiler and Lime Kiln. Separate permits would be issued as suggested for the No. 4 Recovery Boiler and No. 4 Lime Kiln as one project, and for the No. 4 Combination Boiler as the second project. Our responses to the questions in your letter are intended to only address issues associated with the No. 4 Recovery Boiler and No. 4 Lime Kiln. A separate response will be forthcoming address the issues associated with the No. 4 Combination Boiler. For ease of following GP's responses, we have repeated the FDEP's questions prior to the answers.

1. **The project is significant for sulfuric acid mist emissions and requires a BACT determination. SAM emissions from the No. 4 Lime Kiln result from firing residual oil; however, overall emissions are very low (estimated < 2 tons/year) due to the natural scrubbing action of the lime kiln and possible additional reductions in the venturi scrubber. For the No. 4 Combination Boiler, the control technology review indicates the following technologies are available for the control for SAM emissions: dry ESPs, wet**

ESPs, and wet scrubbers. Your control technology review for the No. 4 Recovery Boiler also indicates mist eliminators in addition to this equipment. Dry ESPs, wet ESPs, wet scrubbers were eliminated from consideration due to expected high capital costs. Mist eliminators were eliminated from consideration because no actual installations were identified that reduced SAM emissions with mist eliminators on a recovery boiler. However, this technology appears transferable. Please provide a cost effectiveness analysis for adding mist eliminators to the No. 4 Recovery Boiler and the No. 4 Combination Boiler.

As stated in the application for the No. 4 Recovery Boiler, reducing SO_2 emissions will also result in lower SAM emissions. For this reason, the Department will consider reducing the fuel sulfur content of the residual oil in making its BACT determination. Please provide a control technology review for lowering the fuel sulfur content of the residual oil currently being fired to include a cost effectiveness analysis.

Alternatively, provide a combination of fuel consumption/fuel sulfur limits that maintain the net emissions increases below the PSD significant emissions rate for SAM emissions (7 tons/year). Depending on future use, this may be readily achievable because the primary fuels are BLS for the No. 4 Recovery Boiler and bark/wood for the No. 4 Combination Boiler. In fact, the stated purpose of the modifications to the No. 4 Combination Boiler is to more efficiently combust bark/wood and to displace oil firing.

Answer: GP will address the sulfuric acid emissions (SAM) associated with this project by reducing those emissions below the PSD threshold. The specifics of the reduction strategy are being formulated. A specific plan and updated netting table will be provided to the Department with the response for the #4 Combination Boiler, which we expect to submit within the next few weeks.

2. **On November 30th, we received a graph by facsimile labeled "Recovery Boiler 12 Hr. Startup Curve". The graph plots steam pressure (psi) versus time (hours). A statement following the graph indicates that "..., it is also a normal startup curve that has been doubled to accommodate an extended boiler outage." Please provide the original graph for a normal startup and identify the conditions for a normal startup. Also, please identify the conditions of a startup after an extended outage and explain the rationale for "doubling" the original graph.**

   Answer

   Georgia-Pacific's permit currently recognizes an 8-hour startup period for the Recovery Furnace. We are specifically requesting a longer startup period to better reflect normal startup procedures for recovery furnaces. We believe the Department has the inherent authority to provide for such necessary startup processes under the Florida rules, including the excess emission rule.[1]

[1] Florida Rule 62-210.700(1) expressly allows excess emissions resulting from SSM conditions provided the source uses best operational practices to minimize emissions and the excess emissions do not exceed two hours, "unless specifically authorized by the Department for longer duration."

As will be demonstrated by this information being provided in this response, a startup period can routinely be more than 24 hours from first fire to the point of removing the oil guns from the furnace. **Georgia-Pacific is requesting a 24-hour startup period for the Recovery Furnace**. The attached charts demonstrate the need for this startup period.

Georgia-Pacific is specifically concerned with startup due to the extended amount of time the recovery furnace is typically on residual fuel (either as the exclusive fuel or as a stabilizing fuel when black liquor is being introduced) during this period. This can result in an extended period during which we are potentially unable to comply with the sulfur dioxide and nitrogen oxide standards that apply during normal (non-SSM) recovery furnace operations. The SO_2 and NO_x emissions of the unit during these times are closer to those of an oil fired boiler than a recovery furnace. This issue is not unique to Palatka – all recovery furnaces use auxiliary fuels during periods of startup/shutdown and/or to stabilize the combustion process during periods of low black liquor burning rates and periods of low solids in the liquor or poor quality liquor.

The sulfur dioxide emissions from the recovery furnace when starting up and shutting down the unit are directly related to the sulfur content of the auxiliary fuels used. Georgia-Pacific requests that compliance with the sulfur dioxide standard during these periods be demonstrated by using fuels that comply with the permitted sulfur content.

Reliance on a start up curve to demonstrate the length of a reasonably-necessary startup period for the recovery furnace is not adequate. The startup curve only demonstrates the time necessary to build pressure / temperature in the steam system and to bring the unit online, thus making steam. The full startup ends when black liquor burning is self-sustaining and oil is removed from the furnace.

Figure 1 contains three startup curves for the recovery furnace. The first is the rapid startup curve typically used for the unit. The second is the startup curve in the DCS which is used during a cold startup. The third is the textbook curve which is based on increasing temperature of the steam by 100 degrees Fahrenheit (°F) per hour to control the tube expansion rate. Controlling the startup temperature of the furnace maximizes the cyclic life of the superheater section of the unit. As you are aware, this furnace currently has issues with steam tube cracking that will be addressed by the implementation of this project.

As you consider the information being presented, please keep in mind that the recovery furnace is not a boiler, but a chemical recovery unit. Its primary function in this capacity is to recover the chemicals from the Kraft pulping process first and then produce steam as a secondary function. Rapidly pushing a recovery furnace through a startup can result in very unsafe conditions.

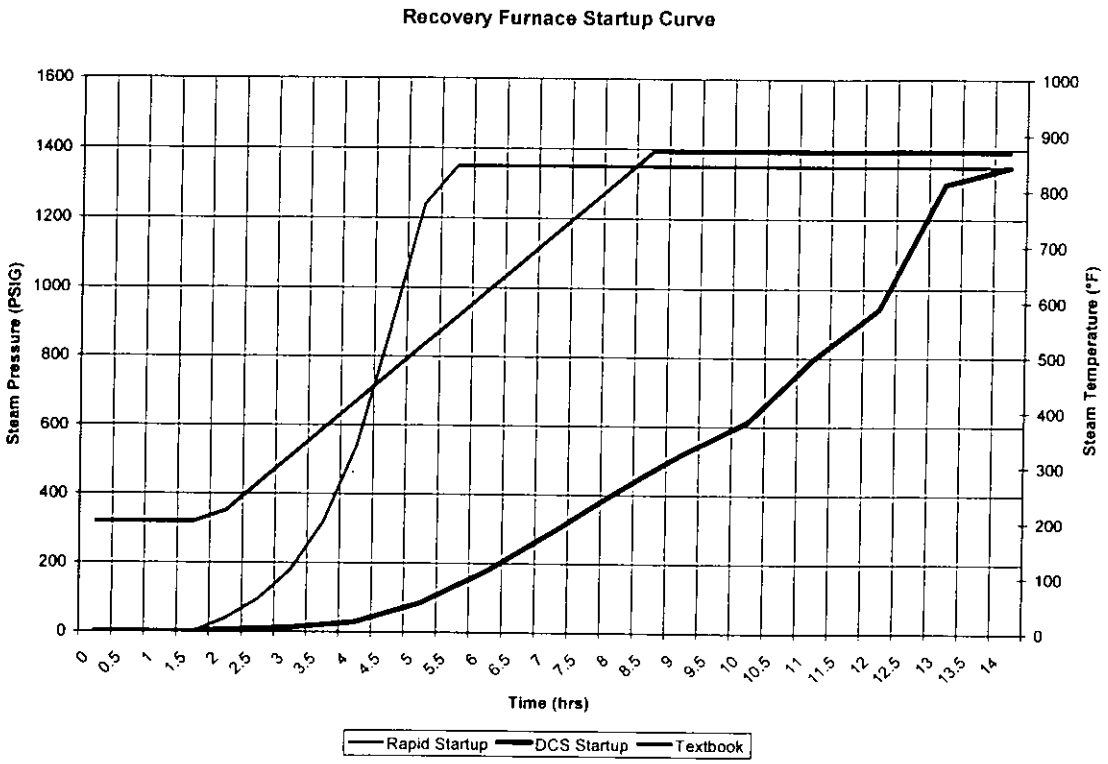

Figure 1. Startup curves for the Kraft Recovery Furnace at Georgia-Pacific, Palatka Operations

As previously noted, the startup curve in Figure 1 does not represent the end of the startup process for the recovery furnace. After the unit is brought on line with oil, we must continue to burn oil along with the black liquor until a minimum sustainable load is reached on black liquor. At that point, the heat available from the black liquor is sufficient to dry and combust the organics. At that time, the oil burners are gradually removed from service. When all the oil is removed, the unit is considered to be fully out of the startup period.

Figures 2 through 5 show graphs that are screen prints of the actual operations data from the Plant Information system during four startup/shutdown periods of the recovery furnace within the past year. These graphs demonstrate the actual startup periods of the recovery furnace which can last much longer than the standard 8-hour period allowed in current Title V permit. The information hand written on the graphs comes from the operator logs during those periods or interpretation of the graphics. It should be noted that black liquor flow is not adequately represented on the graphics because it includes materials recycled through the black liquor feed system.

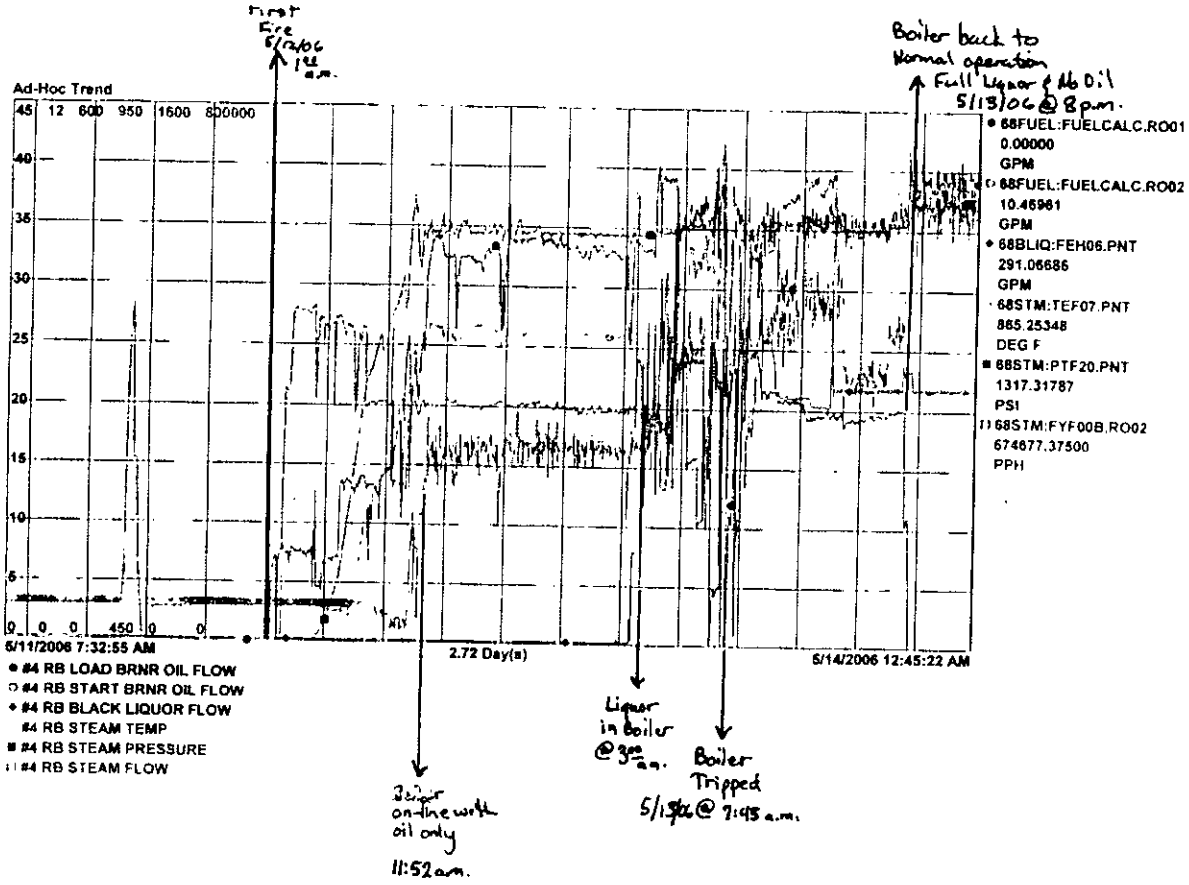

Figure 2. Printout from the May 12, 2006 cold startup of the recovery furnace. The first fire of the furnace on oil occurred at 1:00 a.m. on May 12. The unit went through its startup curve and was online with only oil at 11:52 a.m. The furnace was operated on only oil until 3:00 a.m. on May 13. At that point, black liquor was initially fired in the unit. At 7:45 a.m. on May 13, the furnace tripped and was immediately restarted. The furnace operated with oil as a supplementary fuel until 8:00 p.m. on May 13. As such, for this scenario, the total startup curve was 43 hours.

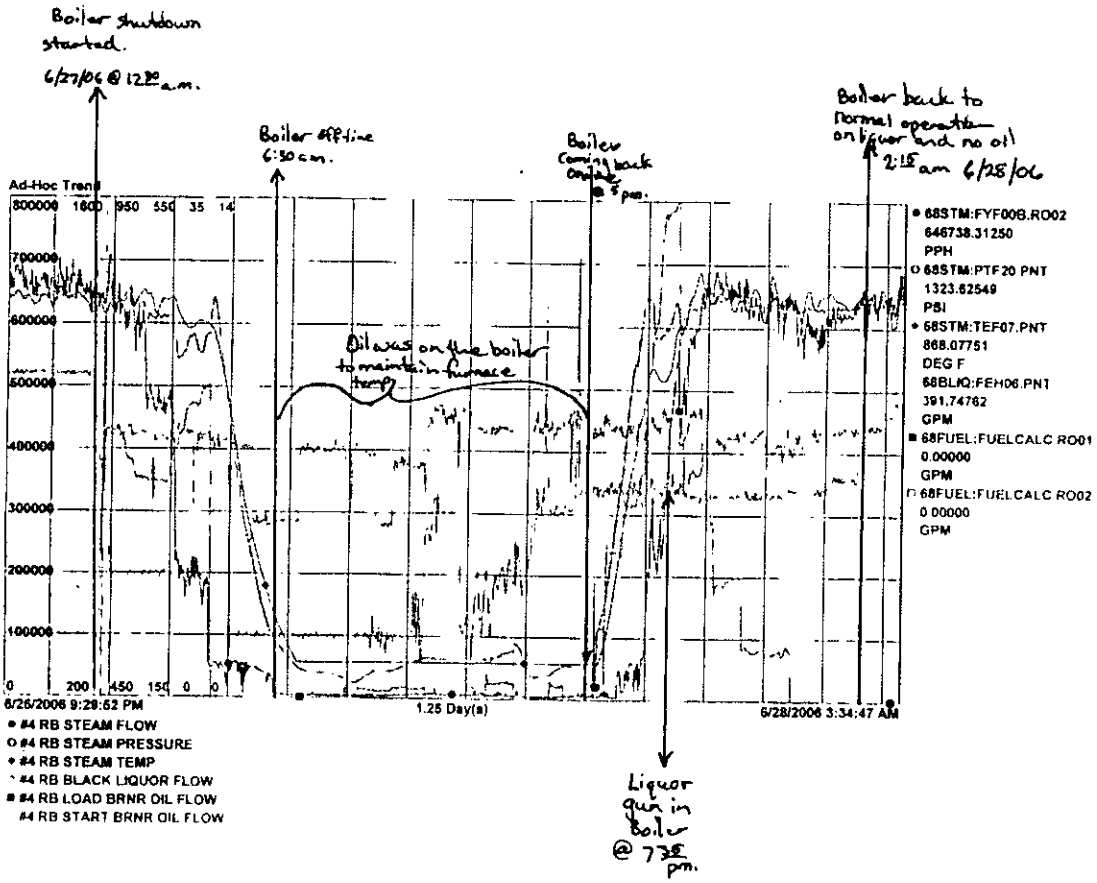

Figure 3. This figure documents the shutdown and startup of the Recovery Furnace on June 27 & 28, 2006. The shutdown process began at 12:30 a.m. on 6/27/06; at that point, oil was put in the Recovery and black liquor was taken out. The smelt bed was burned out and the boiler was offline at 6:30 a.m. on 6/27/06. During the downtime on the unit, a small amount of oil was burned in the furnace to maintain a minimum header pressure and temperature. At 5:00 p.m. on 6/27/06; the oil flow was increased and the process of bringing the furnace back online was started. Black liquor burning was reestablished at 7:55 p.m. and oil was removed from the unit at 2:15 a.m. on 6/28/06.

This review demonstrates a typical practice of burning only oil in the furnace during maintenance outages to allow the furnace to come back online quickly and eliminate a cool down / heat up cycle on the furnace.

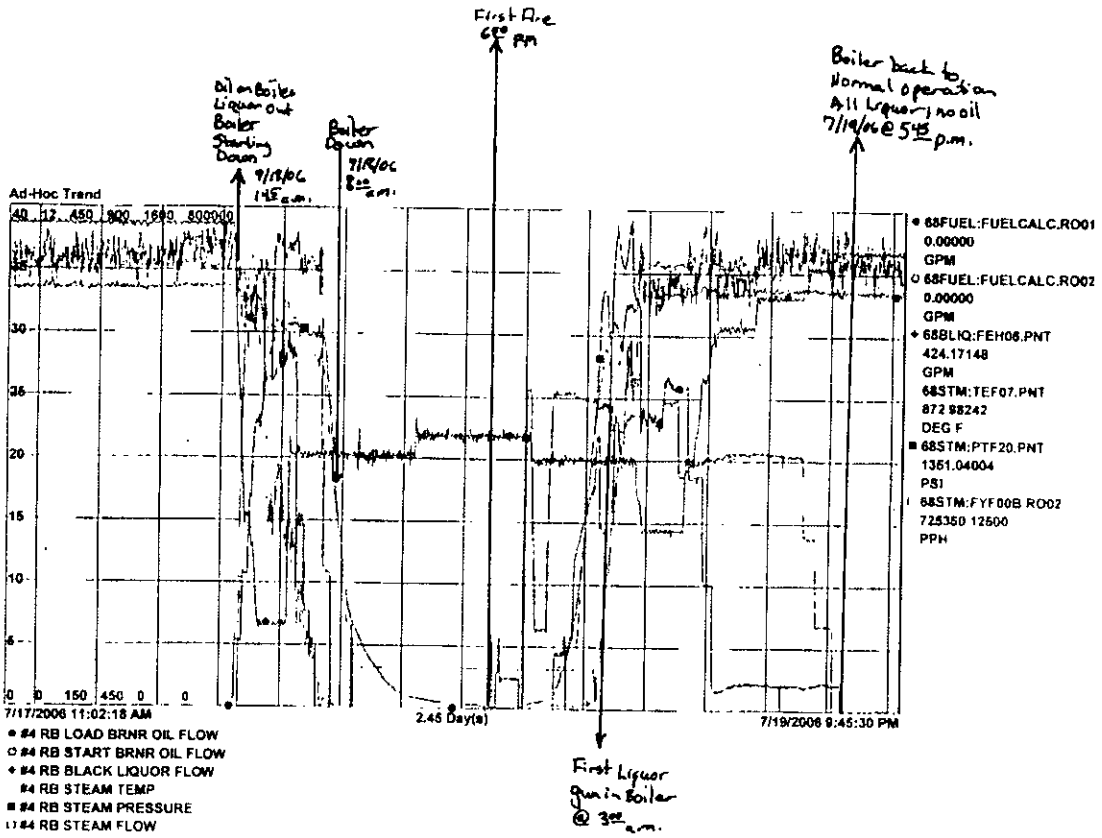

Figure 4. Printout for shutdown/startup of the recovery furnace on July 18-19, 2006. The shutdown process began at 1:45 a.m. on July 18 when oil was placed in the furnace and liquor was pulled. Over the next 6 hours, the smelt bed was burned down and then the unit was taken offline by 8:00 a.m. on July 18. The startup process began at 6:50 p.m. when oil was first fired in the furnace. The unit was brought online and stabilized, with black liquor first introduced to the unit at 3:00 a.m. on July 19. After stabilizing the liquor burning, oil was continuously worked out of the unit and the last oil gun was removed at 5:45 p.m. on July 19. The start-up period lasted approximately 23 hours.

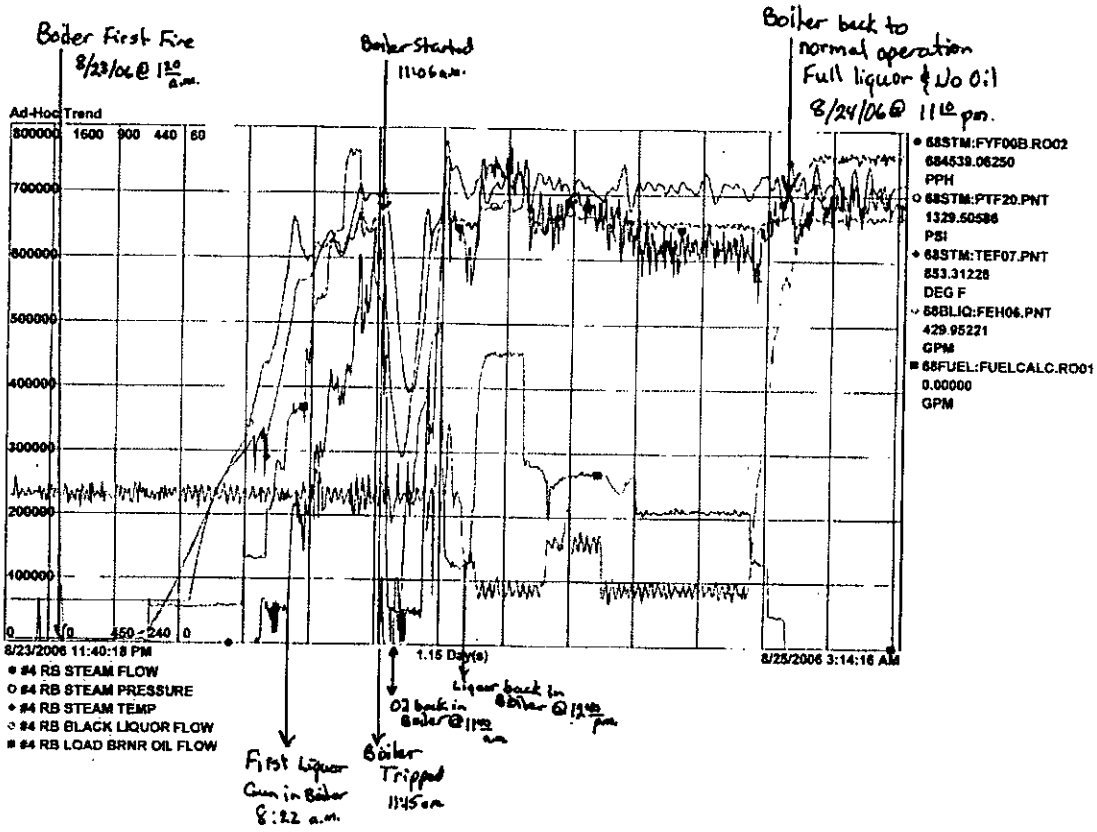

Figure 5. Printout for recovery furnace startup on August 24, 2006. The startup of the unit began with the first fire of oil at 1:30 a.m. on August 24. The first liquor gun was put in the unit at 8:22 a.m. as the furnace was being brought online. As is not unusual, the unit tripped offline at 11:15 a.m. and was brought back online in a rapid fashion on oil, with liquor reintroduced at 12:40 p.m. on August 24. As the unit was stabilized, residual fuel was progressively removed from the furnace and the last oil gun was removed from service at 11:10 p.m. on August 24. The start-up period lasted between 21 and 22 hours.

As is demonstrated by Figures 3 & 4, the shutdown period is generally less than 8 hours. A recovery furnace typically has a shutdown period that is much longer than a typical oil-fired boiler. The shutdown period for the recovery furnace is initiated when oil is put in the unit and black liquor is reduced / removed. The auxiliary fuel, in this case fuel oil, is continually burned in the unit until the smelt bed in the bottom of the furnace is below the smelt spouts. If the smelt bed is not taken below the spouts, the spouts will plug as the furnace cools, causing extensive delays during the startup process.

As previously stated; Georgia-Pacific believes a startup period of 24 hours is justified and should be granted by the Department.

Questions 3 through 5 will be responded to under separate cover as previously discussed in this response

6. **Based on your last submittal, a new ESP will be installed on the No. 5 Power Boiler. No vendor has yet been selected. As you are aware, the No. 5 Power Boiler has been identified as a "BART-eligible" unit. Please ensure that this new control equipment will be designed and selected in accordance with this upcoming regulatory requirement.**

   Answer: Georgia-Pacific is aware that the No. 5 Boiler is a "BART-eligible" unit and we will ensure that the emission controls are consistent with the upcoming regulatory requirements under that program. A tentative BART control submittal will be provided to the Department in the next couple weeks.

7. **The Department is aware of your upcoming spring outage and a stated critical need to implement the modifications for the No. 4 Recovery Boiler and the No. 4 Lime Kiln during this period. The Department believes that this portion of the application is nearly complete. In addition, the Department also believes that the combined netting analysis properly identifies the PSD-significant pollutants for the projects and that the requirements for the air quality analysis have been satisfied. If requested, the Department is now willing to separate the project into two related PSD applications: (1) the No. 4 Recovery Boiler and No. 4 Lime Kiln, and (2) the No. 4 Combination Boiler. Please keep in mind that each related project remains subject to the same PSD-significant pollutants, air quality modeling requirements, etc.**

   Answer: Georgia-Pacific appreciates the Department's understanding of the critical timing issues associated with the upcoming spring outage and vital work that must be completed on these two units. As stated in the opening of this response, Georgia-Pacific is officially requesting that the applications be split as suggested in Question 7.

If you have any questions regarding this response, please contact Michael Curtis at 386-329-0918.

I, the undersigned, am the responsible official of the source for which this document is being submitted. I hereby certify, based on the information and belief formed after reasonable inquiry, that the statements made and the data contained in this document are true, accurate, and complete.

Sincerely,

Keith W. Wahoske, Vice-President
Palatka Operations

cc: W. Galler – GP
T. Champion - GP
T. Wyles - GP
S. Matchett - GP
M. Curtis - GP