



# ENGINEERING CALCULATION SHEET

## AIR RESOURCES DIVISION

29 Hazen Drive Concord, NH 03302-0095  
Phone: 603-271-0905 Fax: 603-271-7053

<b>PROJECT NAME:</b>	Atlantic Paper Mills of NH, LLC, Winchester, NH Title V Operating Permit (Renewal) SIC Code: 2621	<b>ENGINEER:</b> Padmaja Baru
		<b>DATE:</b> 02/09/2005 <span style="float: right;">Page 1 of 5</span>

**DATE APPLICATION RECEIVED:** September 30, 2003 (Application # FY04-0136)

### FACILITY DESCRIPTION

Atlantic Paper Mills of New Hampshire produces rolls of napkin grade paper products derived from recycled paper (double lined kraft and cut book paper). Recycled paper products are repulped in one of two pulpers and processed through various stock preparation equipment (refiners, screens, and cleaners) prior to delivery to the two paper machines for final formation and drying of napkin grade paper products. Steam for the pulping, papermaking, and building heat is provided by one boiler. The facility is a major source for sulfur dioxide when burning #6 fuel oil at 2% sulfur by weight and is therefore required to obtain a Title V Operating Permit.

### PROJECT DESCRIPTION

The purpose of this action is to renew the facility's Title V operating permit. The facility was originally issued a Title V permit (TV-OP-013) which expired on March 31, 2004. Atlantic Paper Mills filed a complete Title V renewal application on September 30, 2003 and was granted application shield on November 17, 2003 in accordance with Env-A 609.07. This permit covers the following significant devices:

ID	Description	Significant Activity because....
EU01	25.1 MMBTU/hr Cleaver Brooks Boiler; #6 fuel oil - equivalent to 167.33 gal/hr #2 fuel oil - equivalent to 179.3 gal/hr	Device is above the permitting threshold of Env-A 607.01
EU02	#1 Paper Machine	Actual VOC emissions are above 1000 lbs/yr
EU03	#2 Paper Machine	Actual VOC emissions are above 1000 lbs/yr
EU04	Propane-fired Gas Dryer (7 MMBTU/hr)	Actual NOx emissions are above 1000 lbs/yr

Until December 1998, the boiler operated on #6 fuel oil. In January 1999, facility switched to #2 fuel oil. Based on the #2 fuel oil usage, potential to emit does not exceed the Title V applicability threshold. However, the facility wants to retain the Title V permit. Potential to emit of SO<sub>2</sub> is greater than 100 TPY based on #6 fuel oil usage. This Title V permit allows for the usage of both #2 and #6 fuel oil. A site visit was conducted on July 29, 2004.

### PERMITTING HISTORY

- Title V permit TV-OP-013 was issued on March 15, 1999.
- State operating permit PO-B-1664 (for the Cleaver Brooks boiler) was issued on July 19, 1994. This permit allowed for the use of #6 fuel oil in the boiler.



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### EMISSION CALCULATIONS

#### Cleaver Brooks Boiler (EU01)

Pollutant	No. 6 fuel oil (max fuel flow rate = 167.3 gal/hr)			No. 2 fuel oil (max fuel flow rate = 179.3 gal/hr)		
	AP-42 Emission factor lb/1000 gal	Emission rate lb/hr	PTE TPY	AP-42 Emission factor lb/1000 gal	Emission rate lb/hr	PTE TPY
TSP	21.77	3.64	15.95	2	0.36	1.57
PM <sub>10</sub>	18.71	3.13	13.71	1	0.18	0.79
SO <sub>2</sub>	314	52.53	230.09	56.8	10.18	44.61
NO <sub>x</sub>	55	9.20	40.30	20	3.59	15.71
CO	5	0.84	3.66	5	0.90	3.93
VOCs	0.28	0.05	0.21	0.2	0.04	0.16

Heating value of #6 fuel oil = 150,000 BTU/gal

Max. sulfur % by weight in #6 fuel oil = 2%

Heating value of #2 fuel oil = 140,000 BTU/hr

Maximum allowable sulfur content of #2 fuel oil = 0.4% by weight

#### POTENTIAL EMISSIONS FROM THE PAPER MACHINES

- ◆ VOC and RTAP emissions from the paper machines are based on the projected chemical usage in 2004. The facility operates 24 hours/day and 7 days/week. According to the plant manager Brian Caisse, the chemical usage rates listed in columns 4 & 5 of the following table, are also maximum usage rates.
- ◆ EPA has concluded in 40 CFR 63 Subpart S, Pulp & Paper Cluster Rule MACT III, (Preamble-page 18526) that based on emission test reports and a survey conducted on additive use, additives in paper making process do not contribute significantly to HAP emissions. Furthermore, less than 20% of HAPs contained in the additives are emitted to the air. About 80% of the HAPs remain on the paper or in the wastewater effluent.
- ◆ The facility is a true minor for HAPs (even by assuming that 100% of HAPs contained in the additives are emitted to the air).
- ◆ Potential to emit VOCs is less than 50 TPY (even for worst case scenario). Hence the facility is not subject to VOC RACT.



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Chemical	RTAP	% by weight	Monthly usage in paper machine #1	Monthly usage in paper machine #2	RTAP emissions from paper machine #1	RTAP emissions from paper machine #2	Total	VOC % by weight	VOC emissions from paper machine #1	VOC emissions from paper machine #2	Total Annual VOC emissions
			lbs/month	lbs/month	lbs/month	lbs/month	lbs/month		lbs/month	lbs/month	lbs/yr
Busan 1210	DGME	5%	220	220	11	11	22	15%	33	33	792
Busan 881	N/A							0			
Busperse 39	Proprietary							0%			
Bufloc 594	N/A		800	700				15%	120	105	2700
Busperse 2036	NaOH	20%	400	400	80	80	160	0			
Busperse 61			150	100				6%	9	6	180
	Phosphoric acid	3.75%			5.625	3.75	9.375				
	Sulfuric acid	28%			42	28	70				
Busperse 2058			425	400				14%	59.5	56	1386
	Triethanolamine	19%			80.75	76	156.75				
	Diethanolamine	4%			17	16	33				
	DGME	10%			42.5	40	82.5				
Busperse 2155	N/A		630	500				95%	598.5	475	12882
Busperse 2019			600	600				0			
	NaOH	40%			240	240	480				
	KOH	20%			120	120	240				
Bubond 162	N/A		17640	15750				1.6	282.24	252	6410.88
Optimize 540	Proprietary		60	50				17%	10.2	8.5	224.4
Bubreak 4452	Proprietary							0%			
Buckman 2623	Sulfuric acid	1%		1200		12	12	0%			
Busperse 2088	N/A			600				90%		540	6480
Bubreak 4453	Proprietary							0%			
									1112.44	1475.5	31055.28
									Potential VOCs (TPY) =		15.52764



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### Env-A 1400 Compliance review

RTAP	CAS #	Total monthly emissions	Daily emissions	Annual emissions	Emitted (20%)		Deminimus		Exceeds deminimus ?
					lbs/day	lbs/yr	lbs/day	lbs/yr	
		lbs/month	lbs/day	lbs/yr	lbs/day	lbs/yr	lbs/day	lbs/yr	
DGME	34590-94-8	104.5	3.48	1254	0.70	250.8	24	8750	N
Sodium hydroxide	1310-73-2	640	21.33	7680	4.27	1536	0.26	96	Y
Phosphoric acid	7664-38-2	9.375	0.31	112.5	0.06	22.5	0.12	43	N
Sulfuric acid	7664-93-9	82	2.73	984	0.55	196.8	0.028	10	Y
Triethanolamine	102-71-6	156.75	5.23	1881	1.05	376.2	0.2	72	Y
Diethanolamine	111-42-2	33	1.10	396	0.22	79.2	0.079	29	Y
Potassium hydroxide	1310-58-3	240	8.00	2880	1.60	576	0.089	32	Y

- ♦ For those RTAPs that exceeded the deminimus levels, dispersion modeling was performed to verify the compliance with AALs set forth in Env-A 1400.

### SUMMARY OF CHANGES

1. Permit the use of #6 fuel oil in the boiler (justification for Title V permit).
2. Maximum heat input to the propane dryer changed from 4 to 7 MMBTU/hr (based on information received during my site visit).
3. Deleted item #2 of Table 5 (Monitoring/Testing Requirements); This permit condition required the facility to perform annual efficiency testing for the boiler. However, the boiler is not subject to NO<sub>x</sub> RACT.
4. Env-A 2500 was readopted in November 2004. Particulate matter emission standards for non-fuel burning devices at paper manufacturing facilities are deleted from the new rule. Paper machines are not a significant source of particulate matter.

### REVIEW OF REGULATIONS

NSPS N/A

NESHAP N/A

Title V Yes; Major for SO<sub>2</sub> (based on #6 fuel oil usage)

40 CFR 64 CAM rule is not applicable;

CAM rule applies to Title V sources that operate emission units with pre-controlled potential emissions at or above the major source thresholds that rely on control devices to comply with applicable requirements. This facility does not operate any control device.

Env-A 300 AAQS; Source in compliance - yes (see modeling memo dated 2/7/2005)

The boiler was previously modeled in 1990. Since then a new stack was installed with a height of 85 feet and 3.16 ft diameter (larger than the previous modeled stack). Hence the boiler was remodeled with the new stack parameters.

Env-A 400 Acid Deposition Control Program

Env-A 609 Title V Permits

Env-A 700 Permit Fee System

Env-A 800 Testing & Monitoring Procedures

Env-A 900 Owner/Operator Obligations

Env-A 1204 Not subject to VOC RACT; Potential to emit VOCs is less than 50 TPY.

Env-A 1211 Not subject to NO<sub>x</sub> RACT; Env-A 1211.05 is not applicable because maximum heat input is less than 50 MMBTU/hr; Also, potential to emit NO<sub>x</sub> is less than 50 TPY.



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Env-A 1400 RTAPs; Facility is in compliance.  
T:\AQModeling\Projects\AtlanticPaper\_Hinsdale\AtlanticPaper\_Winchester12-2004.DOC  
Env-A 1600 Fuel specifications  
Env-A 2000 Fuel burning devices  
Env-A 2500 Pulp and Paper Industry: Particulate Matter and Visible Emission Standards

### SUMMARY AND CONCLUSIONS

In summary, the operations as applied for will be capable of meeting all regulations and standards for air quality. Title V Operating Permit shall therefore be issued.