Memorandum

Florida Department of
Environmental Protection

To: Khalid Al-Nahdy
Northeast District Office

From: Joseph Kahn, P.E.
New Source Review Section

Date: December 4, 2000

Re: PSD Applicability Determination for Millennium Specialty Chemicals
Proposed 5 MW Cogeneration Project

I have reviewed the information dated November 28th submitted by Stephen Alexander, P.E., on behalf of Millennium Specialty Chemicals in response to my comments sent to you by e-mail dated October 27th. In his letter, Mr. Alexander withdrew his request to use a bubble for SO_2 emissions and instead proposed a project SO_2 cap of 265 tons per year, and an annual limit on consumption of Glidfuel to limit emissions of other pollutants, so that the project will not be subject to PSD because of netting. He proposed to use a facility-wide material balance on sulfur including monitoring of total vent gas flow and vent gas flow to the HRSG for compliance with the SO_2 cap. Fuel consumption monitoring are proposed compliance with the Glidfuel consumption limit. It appears that Mr. Alexander satisfactorily addressed my comments with his response.

Assuming the district drafts appropriate permit conditions limiting SO_2 emissions by material balance and Glidfuel consumption, the project appears to net out of major source new source review, and may therefore be permitted as a synthetic minor (for PSD) project. Note that all annual limiting conditions should be expressed in terms of a rolling 12-month total or a rolling 365-day total, and not in terms of tons or thousand gallons "per year". Also, because of the overall level of accuracy of the measurements for the material balance, annual SO_2 emissions for the project should not be capped at the 265 tons requested, but rather at a level below this number that provides for the uncertainty in the measurements of the material balance. Mr. Alexander estimated an overall level of accuracy of ±1.4% each for total CST sulfur measurement and measurement of the VCS fumes burned and ±1% for sulfur from Glidfuel. It seems prudent to me to limit the project SO_2 cap to a level of no more than 2% below the level that would make the project significant for PSD, considering netting (266 tons/year). Therefore, the SO_2 cap should be set at no more than 260 tons per consecutive 12-months or consecutive 365-days, depending on the level of record keeping the district decides is appropriate. A fuel cap of 3,698,000 gallons per consecutive 12-month period (the fuel consumption proposed) seems adequate to limit emissions of other pollutants.

ALEXANDER WHITMER ENVIRONMENTAL ENGINEERS AND CONSULTANTS INC.

November 28, 2000

RECEIVED
NOV 30 2000
BUREAU OF AIR REGULATION

Christopher L. Kirts, P.E.
Florida Department of Environmental Protection
Air Program
7825 Baymeadows Way, Suite 200B
Jacksonville, Florida 32256-7577

Subject: **Response to Comments from the PSD Review Section - FDEP**
Letter Dated October 31 2000, C. Kirts (FDEP) to M. Tipping(Millennium)
Millennium Specialty Chemicals
Jacksonville, Florida

Dear Mr. Kirts:

This letter is in response to the subject request for additional information. The responses address the interoffice memorandum from Mr. Joseph Kahn of the Tallahassee office of FDEP.

In the second paragraph of the memo, Mr. Kahn accurately described the project as originally submitted. However, based upon a telephone conversation with Mr. Kahn, we have decided to withdraw all requests for "bubbling" emissions pursuant to Rule 62-212.710, FAC. Instead, we are requesting a project SO_2 cap of 265 TPY. As in the original submittal, we are also requesting an annual fuel limit of 3,698 Kgal/yr (3,698,000 gallons per year) which will limit the PTE for NOx, PM, PM10, and CO to below PSD/NSR significant net increase levels. Presently, the PTE is 2409 TPY SO_2. After implementation, the PTE will be 1255 TPY SO_2 which includes the new unit cap and the currently permitted PTE for the remaining Boilers Nos. 6 and 7.

In the fourth paragraph of the subject memo, references were made to permitting activities contemporaneous with this project that are listed in the ARMS database. While it is true that a number of projects have been permitted at the facility during the period, none involved combustion devices. All projects were minor sources of VOC, some of which are exempted from permitting under current rules. Following is a list of these projects and a brief description.. None of these projects impact emissions of criteria pollutants related to combustion or PM/PM10. Furthermore, boiler records for the time period indicate no significant net change in steam production or boiler firing rate. Again, this project is an energy recovery/cost reduction project and not a plant expansion.

11516-3 SAN JOSE BLVD JACKSONVILLE, FL. 32223 (904) 268-8393 FAX (904) 268-8560 ALEXWHIT.COM

Process	Date	Description
#8 Column	2/9/95	Minor VOC source, distillation column
UV Column	5/28/96	Minor VOC source, distillation column
V-33	5/28/96	Minor VOC source, chemical reactor
#9 Column	5/28/96	Minor VOC source, distillation column
Anethole & WS-3	8/6/99	Minor VOC sources, chemical reactors and storage tanks

In the fifth paragraph of the memo, references are made to collateral emissions increases. Because this project is an energy efficiency improvement, there are no collateral changes. Construction of this project will reduce energy costs (electricity and steam) and not affect production.

Regional electrical power plant emission reductions were listed in paragraph 6 to express the potential regional benefit of the project. It is agreed that it has no direct bearing on the PSD netting analysis. However, we consider it relevant to address the secondary benefits of the project even though there is no regulatory basis for doing so.

Paragraph 7 indicates some confusion about the nature of Glidfuel production. In a traditional power plant, if a fuel sulfur limit is implemented on #6 fuel oil (for example), it can be assumed that the plant could "potentially" burn fuel at the maximum firing rate at that fuel sulfur limit. Glidfuel, however, is limited by production at Millennium Chemicals, both in total production and in sulfur content. While a fuel limit of 3,698 Kgal/yr and 1.5% sulfur is requested, that much fuel at that sulfur level is not possible. Actual Glidfuel production varies from nearly zero percent sulfur to a maximum of 1.5% sulfur, historically averaging about 0.8% sulfur. The SO_2 PTE is limited by administrative controls as noted later in this letter. A material balance that accounts for all sulfur processed by the facility both from the sulfur contained in the liquid and natural gas fuel streams and from the VCS will serve to limit the total SO_2 emitted from this unit. Millennium seeks to operate with the maximum degree of flexibility within the confines of the cap. Thus the new unit CT/HRSG will be capable of burning Glidfuel with variable sulfur up to 1.5% S by weight and handling a variable amount of VCS fumes all the while giving the necessary assurance to FDEP that the PSD avoidance cap of 265 TPY will not be exceeded.

Regarding Paragraph 8, Section 3.1 of the permit application report should have clearly stated natural gas will be the only fuel source for the combustion turbine.

The remaining paragraphs are interrelated since they each deal with either PSD netting analysis or emissions calculations. To improve the logical flow of this document, emissions calculations will be addressed first and then these emissions will be used to provide additional detail on the netting analysis.

Emissions calculations are derived from three sources: material balance, vendor data, and AP-42. Sulfur dioxide calculations are based upon material balance data. Combustion turbine emissions are based upon vendor data, using the largest emissions factors obtained from one of three vendors. Emissions from existing boilers and the proposed HRSG (duct burner) are based upon the most recent version of EPA AP-42 emissions factors for industrial boilers. The attached emissions spreadsheets have been revised to show these calculations.

Millennium proposes to monitor unit SO_2 emissions using a material balance. Almost all facility SO_2 is derived from the sulfur content of incoming CST (crude sulfate turpentine) processed. CST is processed to remove sulfur by distillation and to some extent by other processes. Distillation generates VCS fumes which, when combusted, yield SO_2. Distillation bottoms can also contain sulfur which would show up as Glidfuel sulfur content. Most other desulfurization processes are aqueous and generate dissolved sulfur compounds that are treated in permitted wastewater facilities and so not wind up as air emissions. Thus a plant-wide sulfur material balance is conservative at least to the extent that some unknown quantity of sulfur coming into the plant does not leave as SO_2 in combustion and no credit is being taken at the present time for this amount of sulfur leaving the plant in wastewater.

The Re-Powering project will generate SO_2 emission from two sources: fuel sulfur and VCS sulfur compounds. Emissions of SO_2 from fuel will be readily monitored by fuel analysis and the total amount of fuel burned for each period. VCS generated SO_2 will be more difficult due to the complexity of real-time sulfur analysis of a variable composition stream. However, by knowing how much sulfur is in the CST processed (weight processed times average sulfur concentration) and subtracting how much sulfur is in the concurrently generated Glidfuel (weight processed times average sulfur concentration) and how much sulfur is in the DMS processed and sold, the amount of sulfur in VCS fumes can be determined (conservatively, by neglecting wastewater losses).

Mass flowmeters will then be used to determine what fraction of total VCS generated by the plant is burned in the HRSG. Two mass flowmeters will be needed: one on the total VCS flow and another on the VCS supply line to the HRSG, the ratio of these meter readings giving a fraction of total burned. Most of these calculations are spelled out in the original permit application. The new proposal here is actual metering of VCS flow at two points instead of relying upon estimates of relative distribution between the HRSG and the existing Boilers Nos. 6 and 7.

Mr. Kahn verbally requested an estimate of the available accuracy for the SO_2 material balance. The material balance is based upon an elemental sulfur analysis and a material weight. The accuracy for the sulfur analysis based on NIST traceable standards is ±0.12 % for the range 0.3 to 1.5 % sulfur content (the typical range for Glidfuel) and is believed to be no worse than ±1% in the typical range of CST. CST deliveries are measured by weight (truck deliveries) or by volume (calibrated rail cars), with an accuracy no worse than ±1%. Glidfuel flow to the new unit will be measured by an in-line meter, with an accuracy of at least ±1%. The total flow of VCS fumes to

all boilers as well as the flow to the HRSG only will be metered with an estimated accuracy of ±1%. Using traditional error analysis techniques, it can be shown that the following "deltas" are expected: total CST sulfur- ±1.4%, fraction of VCS fumes burned in the HRSG-±1.4%, and total sulfur from Glidfuel-±1%.

Beginning with Title V, the need for accuracy of emissions estimates used in annual operating reports (AORs) has increased. Consequently, the calculation used in preparing AORs represent the best available information for emissions estimates for Boilers Nos. 4 and 5. We have reviewed the last five years of emissions data and have chosen to use the last two years in the netting analysis.

With the elimination of all references to the bubble rule, the application is to be revised to include an emissions cap for sulfur dioxide of 265 tons per year. Emissions of other criteria pollutants are limited to below significant net increase level by limiting annual fuel firing rates.

Millennium proposes to limit liquid fuel (Glidfuel) to less than 3,698 Kgal/yr in order to limit NOx, PM/PM10 and CO emissions to less than a PSD/NSR significant increase. For SO_2, an emissions cap of 265 TPY is requested. To achieve this cap, Millennium requests the flexibility to burn VCS fumes and Glidfuel up to 1.5% sulfur. A continuous material balance of both reported monthly will assure compliance. If the annual cap is approached, Millennium will adjust any one or all of the following factors in the calculation: Glidfuel burn rate, Glidfuel sulfur content, and/or VCS burn rate within the HRSG (duct burner) to assure compliance with the SO_2 cap for the unit. Based on the monthly SO_2 totals, the annual SO_2 total will never exceed the 265 TPY cap.

We understand that this facility is much more complex than a typical cogeneration project. However, compliance with the SO_2 emissions caps can be demonstrated by using the material balance method. By limiting the annual liquid fuel to 3,698,000 gallons of Glidfuel, emissions of NOx, PM/PM10 and CO will be limited to below PSD/NSR significant net increase levels.

Chris, we trust that the information provided in this response is sufficient for you to make a determination of applicability. Please call me if you have any questions or need additional information.

Sincerely,

ALEXANDER WHITMER, INC.

Stephen L. Alexander, P.E.

Attachments

cc: J. Kahn, FDEP Tallahassee
M. Tipping, Millennium

OWNER'S AND ENGINEER'S CERTIFICATIONS
AND
REVISED PAGES FROM ELSA

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official :

Name : Michael J. Tipping, P.E.
Title : Mgr., Env. & Regulatory Affairs

2. Owner or Authorized Representative or Responsible Official Mailing Address :

Organization/Firm : Millennium Specialty Chemicals
Street Address : 601 Crestwood Street
City : Jacksonville
State : FL Zip Code : 32208-____

3. Owner/Authorized Representative or Responsible Official Telephone Numbers :

Telephone : (904)924-2773 Fax : (904)924-2891

4. Owner/Authorized Representative or Responsible Official Statement :

I, the undersigned, am the owner or authorized representative of the non-Title V source addressed in this Application for Air Permit or the responsible official, as defined in Rule 62-210.200, F.A.C., of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions units.*

Signature

11-28-00
Date

* Attach letter of authorization if not currently on file.

Application Processing Fee

Check one :

[ ] Attached - Amount : $0.00 [X] Not Applicable.

Construction/Modification Information

1. Description of Proposed Project or Alterations : INSTALL A COGENERATION UNIT WITH A NATURAL GAS-FIRED COMBUSTION TURBINE FOLLOWED BY A DUCT BURNER FIRING PROCESS-DERIVED FUEL AND PROCESS VENT GASES.
2. Projected or Actual Date of Commencement of Construction : 01-Feb-2001
3. Projected Date of Completion of Construction : 31-Mar-2002

Professional Engineer Certification

1. Professional Engineer Name : Stephen L. Alexander, P.E. Registration Number : 38519
2. Professional Engineer Mailing Address : Organization/Firm : Alexander Whitmer, Inc. Street Address : 11516-3 San Jose Blvd. City : Jacksonville State : FL Zip Code : 32223
3. Professional Engineer Telephone Numbers : Telephone : (904)268-8393 Fax : (904)268-8650

4. Professional Engineer Statement :

I, the undersigned, hereby certify, except as particularly noted herein, that :*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollutant control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ] if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X] if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ] if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature
(seal)

Date 11/29/00

* Attach any exception to certification statement.

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 1

Combustion Turbine

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	Emission Point No. 2	
2. Emission Point Type Code :	2	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking : (limit to 100 characters per point)		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : HRSG		
5. Discharge Type Code :	V	
6. Stack Height :	125	feet
7. Exit Diameter :	3.7	feet
8. Exit Temperature :	257	°F
9. Actual Volumetric Flow Rate :	45342	acfm
10. Percent Water Vapor :	0.00	%
11. Maximum Dry Standard Flow Rate :	0	dscfm
12. Nonstack Emission Point Height :	0	feet
13. Emission Point UTM Coordinates : Zone : 0 East (km) : 0.000 North (km) : 0.000		
14. Emission Point Comment : WATER VAPOR % AND DSCFM NOT REQUIRED SINCE DRY GRAINS STANDARD NOT APPLICABLE		

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Emissions Unit Information Section 1
Combustion Turbine

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : **NOX**
2. Total Percent Efficiency of Control : %
3. Potential Emissions : 6.0000000 lb/hour 26.2800000 tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor 0 Units LB/MMBTU Reference GE
7. Emissions Method Code : 1
8. Calculations of Emissions : 0.1 LB/MMBTU X 58.3 MMBTU/HR X 8760 HR/YR X/2000 LB/TON = 26.28 TPY
9. Pollutant Potential/Estimated Emissions Comment : BASED ON GE QUARANTEE FOR THIS SIZE UNIT

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 2

HRSG-Heat Recovery Steam Generator, with Duct Burner

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) :

   NATURAL GAS COMBUSTION

2. Source Classification Code (SCC) :

3. SCC Units : Million Cubic Feet Burned (all gaseous fuels)

4. Maximum Hourly Rate : 238.36

5. Maximum Annual Rate : 1,044.00

6. Estimated Annual Activity Factor :

7. Maximum Percent Sulfur :

8. Maximum Percent Ash :

9. Million Btu per SCC Unit : 1,040

10. Segment Comment :

G. EMISSIONS UNIT POLLUTANTS
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 2
HRSG-Heat Recovery Steam Generator, with Duct Burner

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 - SO2			EL
2 - NOX			EL
3 - CO			NS
4 - PM			NS
5 - PM10			NS

Emissions Unit Information Section 2
HRSG-Heat Recovery Steam Generator, with Duct Burner

Pollutant Information Section 1

Allowable Emissions 1

1. Basis for Allowable Emissions Code :	ESCPSD		
2. Future Effective Date of Allowable Emissions :			
3. Requested Allowable Emissions and Units :	264.80	Tons/year	
4. Equivalent Allowable Emissions :	lb/hour	264.80	tons/year
5. Method of Compliance : Material Balance			
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) : Emissions limited by material balance on fuels and vent gasses.			

SPREADSHEET CALCULATIONS

EMISSION INVENTORY WORKSHEET

NATURAL GAS COMBUSTION - CRITERIA POLLUTANTS

PROJECT INFORMATION

Project & Task #:	5MW COMBUSTION TURBINE EMISSIONS	11/28/2000

FACILITY AND SOURCE DESCRIPTION

Facility Name:	Millennium Specialty Chemicals
Emission Source Description:	CT
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	To be assigned by FDEP

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMBtul/hr) x Pollutant Emission Factor (lb/MMBtu) x [(100 - Control Factor)/100]

Emission (ton/yr) = Heat Input (MMBtul/hr) x Operating Period (hrs/yr) x Pollutant Emission Factor (lb/MMBtu) x (1 ton/2,000 lb) x [(100 - Control Factor)/100]

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours: 24 Hrs/Day 7 Days/Wk 8,760 Hrs/Yr

Criteria Pollutant	Maximum Heat Input (MMBtu/hr)	Uncontrolled Pollutant Emission Factor (lb/MMBtu)	Control Factor (pct.)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
SO_2	58.3	0.0034	0.0	0.20	0.87
NO_x	58.3	0.1029	0.0	6.00	26.28
*PM	58.3	0.0066	0.0	0.38	1.69
CO	58.3	0.0998	0.0	5.82	25.49
VOC	58.3	0.0021	0.0	0.12	0.54

SOURCES OF INPUT DATA

Variable	Data Source
Operating Hours	Millennium
Maximum Heat Input	Trigen, 2000.
SO_2, CO & PM Emission Factors	Rolls Royce, 2000.
NO_x Emission Factor	GE, 2000
VOC Emission Factor	Section 3.1-2a, AP-42, Fifth Edition, April 2000.

NOTES AND OBSERVATIONS

*PM emission factor includes both condensible and filterable PM.

EMISSION INVENTORY WORKSHEET
GLIDFUEL COMBUSTION - CRITERIA POLLUTANTS

PROJECT INFORMATION

Project & Task #:	HRSG DUCT BURNER EMISSIONS-GLIDFUEL	11/28/2000

FACILITY AND SOURCE DESCRIPTION

Facility Name:	Millennium Specialty Chemicals
Emission Source Description:	Duct Burner
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	To be assigned by FDEP

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (KGal/hr) x Pollutant Emission Factor (lb/MMBtu) x [(100 - Control Factor)/100]

Emission (ton/yr) = Heat Input (KGal/yr) x Pollutant Emission Factor (lb/MMBtu) x (1 ton/2,000 lb) x [(100 - Control Factor)/100]

Emission (lb/hr) of SO_2 = Firing rate(KGal) x 1000 x density (lb/gal) x ppmw x 64 SO_2/ 32 lb S.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours: 24 Hrs/Day 7 Days/Wk 8,760.0 Hrs/Yr

Annual Fuel Consumption: 3,698 Kgal

Criteria Pollutant	Maximum Heat Input (Kgal/hr)	Uncontrolled Pollutant Emission Factor (lb/Kgal)	Control Factor (pct.)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
*SO_2	1.0	119.14	0.0	123.2	220.28
**NO_x	1.0	21.60	0.0	22.3	39.94
***PM	1.0	8.500	0.0	8.8	15.72
**CO	1.0	26.400	0.0	27.3	48.81
VOC	1.0	0.7600	0.0	0.8	1.41

SOURCES OF INPUT DATA

Variable	Data Source
Operating Hours	Millennium
Maximum Heat Input	Trigen, 2000.
Emission Factor SO_2.	See note below.
Emission Factor, NO_X & CO.	Energy Recovery International, 2000.
Emission Factors, PM & VOC.	Section 3.1-2a, AP- 42, Fifth Edition, April 2000.

NOTES AND OBSERVATIONS

*SO_2 emission rate based on an average Sulfur content of 8,000 ppmw and a Heating value of 120,000 Btu/gal.

**NO_x & CO Emission Factors are based on HHV.

***PM emission factor includes both condensible and filterable PM.

EMISSION INVENTORY WORKSHEET
NATURAL GAS COMBUSTION - CRITERIA POLLUTANTS

PROJECT INFORMATION

Project & Task #:	HRSG DUCT BURNER EMISSIONS-NAT. GAS	11/28/2000

FACILITY AND SOURCE DESCRIPTION

Facility Name:	Millennium Specialty Chemicals
Emission Source Description:	Duct Burner
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	To be assigned by FDEP

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMscf/hr) x Pollutant Emission Factor (lb/MMscf) x [(100 - Control Factor)/100]

Emission (ton/yr) = Heat Input (MMscf/hr) x Fuel Use (MMscf/yr) x Pollutant Emission Factor (lb/MMscf) x (1 ton/2,000 lb) x [(100 - Control Factor)/100]

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours: 24 Hrs/Day 7 Days/Wk 8,760 Hrs/Yr

Annual Fuel Consumption: 1,044 *MMscf*

Criteria Pollutant	Maximum Heat Input (MMscf/hr)	Uncontrolled Pollutant Emission Factor (lb/MMscf)	Control Factor (pct.)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
SO_2	0.1192	0.6000	0.0	0.07	0.31
NO_x	0.1192	50.00	0.0	5.96	26.11
*PM	0.1192	7.6000	0.0	0.91	3.97
CO	0.1192	84.000	0.0	10.02	43.87
VOC	0.1192	5.5000	0.0	0.66	2.87

SOURCES OF INPUT DATA

Variable	Data Source
Operating Hours	Millennium
Maximum Heat Input	Millennium
SO_2, CO & PM Emission Factors	Section 1.4 AP- 42, Fifth Edition, April 2000.
NO_x Emission Factor	Section 1.4 AP- 42, Fifth Edition, April 2000.
VOC Emission Factor	Section 1.4 AP- 42, Fifth Edition, April 2000.

NOTES AND OBSERVATIONS

*PM emission factor includes both condensible and filterable PM.

NETTING ANALYSIS - Millennium Specialty Chemicals
MAXIMUM PTE

BEFORE (Calculated)

Pollutant		1998 VOC	CO	PM_{10}	PM	NO_x	SO_2	1999 VOC	CO	PM_{10}	PM	NO_x	SO_2
Boiler #4	NG	0.07	0.93	0.00	0.13	3.74	0.02	0.16	2.06	0.29	0.45	8.23	0.04
	No. 6 Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
	Glidfuel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Boiler #5	NG	0.22	2.79	0.40	0.40	11.15	0.05	0.22	2.74	0.39	0.39	10.95	0.05
	No. 6 Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Glidfuel	0.43	2.13	4.26	4.26	23.42	47.89	0.45	2.24	4.49	4.49	24.70	52.50
	Vent Gases	N/A	N/A	N/A	N/A	N/A	182.80☆	N/A	N/A	N/A	N/A	N/A	169.00☆
Totals =		0.72	5.85	4.66	4.79	38.31	230.76	0.83	7.04	5.17	5.33	43.88	221.58
otal SO_2 from Vent Gases =		N/A	N/A	N/A	N/A	N/A	182.80	N/A	N/A	N/A	N/A	N/A	169.00
Totals from fuel firing =		0.72	5.85	4.66	4.79	38.31	47.96	0.83	7.04	5.17	5.33	43.88	52.58

BEFORE (Average Actual from AORs)

Pollutant		AVERAGE VOC	CO	PM_{10}	PM	NO_x	SO_2
Boiler #4	NG	0.12	1.50	0.15	0.29	5.99	0.03
	No. 6 Oil	0.00	0.00	0.00	0.00	0.00	0.00
	Glidfuel	0.00	0.00	0.00	0.00	0.00	0.00
Boiler #5	NG	0.22	2.77	0.40	0.40	11.05	0.05
	No. 6 Oil	0.00	0.00	0.00	0.00	0.00	0.00
	Glidfuel	0.44	2.19	4.38	4.38	24.06	50.20
	Vent Gases	N/A	N/A	N/A	N/A	N/A	175.90
Totals =		0.8	6.4	4.9	5.1	41.1	226.2
Total SO_2 from CST Vapor =		N/A	N/A	N/A	N/A	N/A	175.9
Totals from fuel firing =		0.8	6.4	4.9	5.1	41.1	50.3

AFTER (Maximum Allowable)

Pollutant		SO_2	NO_x	VOC	CO	PM	PM_{10}
CT	NG	0.87	26.28	0.54	25.49	1.69	1.69
DB	Fuel	94.1	39.94	2.87◆	48.81	15.72	15.72
	Vent Gases	170.7	N/A	N/A	N/A	N/A	N/A
Totals =		265.7	66.2	3.4	74.3	17.4	17.4
Total SO_2 from VCS =		170.7	N/A	N/A	N/A	N/A	N/A
Totals from fuel firing =		95.0	66.2	3.4	74.3	17.4	17.4

Netting Analysis

Pollutant	SO_2	NO_x	VOC	CO	PM	PM_{10}
Average Actual	226.2	41.1	0.8	6.4	5.1	4.9
Potential	265.7	66.2	3.4	74.3	17.4	17.4
Change	39.5	25.1	2.6	67.9	12.4	12.5
PSD Threshold Limit	40	40	40	100	25	15

Notes:
Potential emissions based on an annual throughput of 3,698,000 gallons of Glidfuel, and a heat content of 120,000 Btu/gallon for Glidfuel.
Based on a Glidfuel Sulfur content of 0.8%
Vent Gases SO2 limited to 170.7TPY
☆Data Source: MSC, 2000.
◆The VOC Duct burner value from AP-42 for natural gas combustion, all others from Glidfuel combustion

INTEROFFICE MEMORANDUM

Date: 27-Oct-2000 05:36pm
From: Joseph Kahn TAL
KAHN_J
Dept: Air Resources Management
Tel No: 850/921-9519

To: Khalid Al-Nahdy JAX (ALNAHDY_K @ A1 @ DEPJAX)

Subject: Millennium Specialty Chemicals PSD Review

Khalid,

I've looked over the Millennium Specialty Chemicals application report and have some comments. Note that my review was for the purpose of evaluating PSD applicability, and I'm assuming you and Rita will perform a detailed review of the entire project. Without the additional information noted below, we do not have sufficient information to address the applicability of PSD.

The project consists of the addition of a 5 MW combustion turbine (CT) with a fired HRSG to an existing PSD major facility. The applicant has proposed that the project nets out of PSD, because of the retirement of two of the existing four boilers at the facility. The applicant has requested a bubble for SO2 emissions "plant wide", although it appears to be limited to emissions from the remaining two boilers and the proposed CT and duct burners. In this case, it seems that the applicant has requested that emissions of SO2 from the CT and duct burners be added to the existing baseline emissions for boilers 6 and 7 to establish the bubble baseline emissions. The applicant suggested that the PTE for SO2 will decrease from 2409 TPY to 1255 TPY, as a result of this project.

The applicant has requested a bubble pursuant to Rule 62-212.710, F.A.C., but does not appear to have fulfilled all of the requirements for such a request pursuant to that rule. In general, the applicant has not provided in sufficient detailed information related to current actual emission limits and production limits for the emissions units to be included, has not proposed a plan for quantifying emissions and demonstrating continuous compliance, has not met the requirements for exemption from an ambient impact analysis because it has not addressed the issues of plume height and downwash, and has not proposed a plan to track emissions from each affected emissions unit on the same basis. Also, it is not clear that the bubble rule provides for an applicant to request a bubble that includes an addition of a new emissions unit to the facility. The requirements for a bubble are detailed and extensive. I only noted the broad issues above, and the applicant must address all of the applicable requirements of this rule to qualify for a bubble.

The applicant did not evaluate contemporaneous changes at the facility in its netting analysis as required by Rule 62-212.400(2)(e), F.A.C. A review of ARMS shows that the facility has undergone a number of permitting actions within the contemporaneous period, and these and any unreported changes should be included in the netting analysis.

The applicant did not address collateral changes that may result from the project such as an increase in emissions from the remaining two boilers or from other process equipment. Although the applicant focused on SO2 emissions, other pollutants such as NOx and PM10 are close to the PSD applicability

criteria.

The applicant's consideration of a reduction in regional electrical power plant emissions because of this project is interesting, but not pertinent to the review of this project's netting analysis.

Section 2.3 of the report states that the Glidfuel has a sulfur content between 0% and 1.5%, averaging 0.8%. The value of 0.8% was used to determine potential emissions, but potential emissions should be calculated using the maximum allowable sulfur content, not the average, unless the applicant proposes a limit of 0.8% sulfur in the future. Although the applicant may have assumed that use of the average sulfur content is acceptable because it has requested a bubble, Rule 62-212.710(4)(b), F.A.C., requires that the applicant quantify emissions for each emissions unit included in the bubble. It is not clear from the application how the applicant would guarantee that future potential emissions will be limited to its estimate if the Glidfuel sulfur content exceeded 0.8% over time.

Section 3.1 includes a statement that the CT will fire primarily natural gas, but the report and application suggest that natural gas is the only fuel. What, if any, other fuels will be used with the CT?

The emission factors used to estimate future potential emissions should be supported with vendor data or stack test data. The emission factors for the turbine's NOx, PM10, and CO factors should be supported by the turbine manufacturer. Supporting information for the SO2 factor should include the assumed sulfur content of the natural gas, and this should be compared to the sulfur content of the natural gas available at the site. The calculations of potential emissions from the duct burners are shown for Glidfuel and natural gas fuels, but are not shown for vent gases (vapor control gases). It is not clear that the emissions are the same as or included in the Glidfuel estimates. The SO2 estimate for Glidfuel is based on a sulfur content of 0.8%, and this may present a problem as previously noted.

The applicant has relied on AOR reported emissions to estimate past actual emissions for boilers 4 and 5, but has not discussed the accuracy of such data or provided supporting information to confirm the estimates. The applicant should address this issue. Past actual emissions should be based on the most reliable data possible, particularly since the project is purported to be just below the PSD significance criteria for several pollutants.

On the netting analysis table, the applicant has noted that "after" emissions are "reasonable potential" emissions. The applicant should explain what that means. Potential emissions are always the maximum future allowable emissions taking into consideration physical limitations on capacity and federally enforceable limitations on capacity utilization and potential emissions. The emission estimates should be revised if required to comport with this requirement.

The total "after" SO2 emissions shown in the netting analysis table for duct burners' "fuel" does not match the calculation shown for Glidfuel, although the other "fuel" values shown are for Glidfuel, except as noted. The value shown of 94.1 TPY is less than half of the calculated value of 220.28 TPY shown two pages previously. This discrepancy appears to result from the applicant's estimating potential SO2 emissions for the duct burners based on an annual throughput of 1.59 million gallons of Glidfuel, although the requested throughput is 3.69 million gallons per year. This issue should be addressed further by the applicant. Although an estimate of 170.7 TPY is shown for SO2 emissions from "vent gases", there are no supporting calculations for this value. The note that vent gases SO2 emissions will be limited to 170.7 TPY is

not supported by calculations and supporting data. These issues should be addressed in detail since the project is so close to the PSD significance criteria for SO2 emissions.

Please let me know if you have any questions about the above.

-Joe