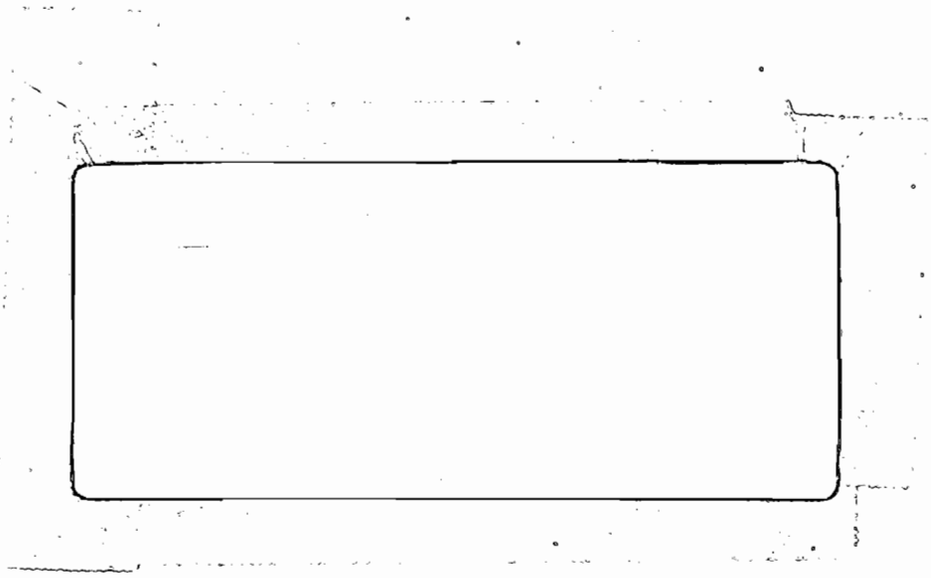


Golder Associates

RECEIVED
JUL 03 2006
BUREAU OF AIR REGULATION

APPLICATION TO REVISE WHITE SUGAR DRYER NO. 2 PM EMISSION RATE

U.S. SUGAR CORPORATION
CLEWISTON, FLORIDA

Prepared For:
United States Sugar Corporation
111 Ponce de Leon Ave.
Clewiston, Florida 33440

Prepared By:
Golder Associates Inc.
6241 NW 23rd Street, Suite 500
Gainesville, Florida 32653-1500

June 2006
0437583

DISTRIBUTION:
6 Copies – FDEP, Tallahassee
1 Copy – FDEP, Ft. Myers
2 Copies – U.S. Sugar
1 Copy – Golder Associates Inc.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

July 12, 2006

Mr. Gregg M. Worley, Chief
Air Permits Section
U.S. EPA, Region 4
61 Forsyth Street
Atlanta, Georgia 30303-8960

RE: U.S. Sugar Corporation
Clewiston Mill
0510003-038-AC, PSD-FL-346A

Dear Mr. Worley:

Enclosed for your review and comment is a request to modify a PSD permit to revise the White Sugar Dryer No. 2 PM emission rate at the U.S. Sugar Clewiston Mill in Hendry County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact me at 850/921-9536.

Sincerely,

Patty Adams

for Jeffry F. Koerner, P.E., Administrator
North Permitting Section

JFK/pa

Enclosure

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

July 12, 2006

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS – Air Quality Division
P. O. Box 25287
Denver, Colorado 80225

RE: U.S. Sugar Corporation
Clewiston Mill
0510003-038-AC, PSD-FL-346A

Dear Mr. Bunyak:

Enclosed for your review and comment is a request to modify a PSD permit to revise the White Sugar Dryer No. 2 PM emission rate at the U.S. Sugar Clewiston Mill in Hendry County, Florida.

Your comments may be forwarded to my attention at the letterhead address or faxed to the Bureau of Air Regulation at 850/921-9533. If you have any questions, please contact me at 850/921-9536.

Sincerely,

Patty Adams

for Jeffry F. Koerner, P.E., Administrator
North Permitting Section

JFK/pa

Enclosure

APPLICATION FOR AIR PERMIT – LONG FORM

Department of Environmental Protection

Division of Air Resource Management

RECEIVED
JUL 03 2006
BUREAU OF AIR REGULATION

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air permit. Also use this form to apply for an air construction permit:

- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment area (NAA) new source review, or maximum achievable control technology (MACT) review; or
- Where the applicant proposes to assume a restriction on the potential emissions of one or more pollutants to escape a federal program requirement such as PSD review, NAA new source review, Title V, or MACT; or
- Where the applicant proposes to establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- an initial federally enforceable state air operation permit (FESOP); or
- an initial/revised/renewal Title V air operation permit.

Air Construction Permit & Title V Air Operation Permit (Concurrent Processing Option) – Use this form to apply for both an air construction permit and a revised or renewal Title V air operation permit incorporating the proposed project.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **United States Sugar Corporation**
2. Site Name: **U.S. Sugar Clewiston Mill**
3. Facility Identification Number: **0510003**
4. Facility Location...:
   Street Address or Other Locator: **W.C. Owens Ave. and S.R. 832**
   City: **Clewiston** County: **Hendry** Zip Code: **33440**
5. Relocatable Facility? ☐ Yes ☒ No
6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Neil Smith, Vice President and General Manager, Sugar Processing Operations**
2. Application Contact Mailing Address...
   Organization/Firm: **United States Sugar Corporation**
   Street Address: **111 Ponce de Leon Ave.**
   City: **Clewiston** State: **Florida** Zip Code: **33440**
3. Application Contact Telephone Numbers...
   Telephone: **(863) 902-2703** ext. Fax: **(863) 902-2729**
4. Application Contact Email Address: **nsmith@ussugar.com**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is submitted to obtain: (Check one)

Air Construction Permit

☒ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☐ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☐ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Air Construction Permit application to revise the allowable PM emissions limit for the White Sugar Dryer No. 2 in the refinery building.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
015	VHP sugar dryer (S-11)	AC1A	$7,500 (already paid)
016	White sugar dryer (S-10)	AC1A	
017	Granular carbon furnace (S-12)	AC1A	
018	Vacuum Systems (S-1, S-2, S-3)	AC1A	
019	Six conditioning silos (S-7, S-8, S-9)	AC1A	
020	Screening/distribution (S-5, S-6)	AC1A	
022	Packaging baghouse (S-4)	AC1A	
029	New white sugar dryer (S-13)	AC1A	

Application Processing Fee

Check one: ☐ Attached - Amount: $____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
   Neil Smith, Vice President and General Manager, Sugar Processing Operations
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **United States Sugar Corporation**
   Street Address: **111 Ponce de Leon Ave.**
   City: **Clewiston** State: **FL** Zip Code: **33440**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(863) 902-2703** ext. Fax: **(863) 902-2729**
4. Owner/Authorized Representative Email Address: **nsmith@ussugar.com**
5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the facility addressed in this air permit application. 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 and all other requirements identified in this application to which the facility is subject. 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 the facility or any permitted emissions unit.

   Signature 6/28/06 Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial/revised/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):
   - ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
   - ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
   - ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
   - ☐ The designated representative at an Acid Rain source.

3. Application Responsible Official Mailing Address...
   Organization/Firm:
   Street Address:
   City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
   Telephone: ( ) - ext. Fax: ( ) -

5. Application Responsible Official Email Address:

6. Application Responsible Official Certification:

   I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. 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 and all other applicable requirements identified in this application to which the Title V source is subject. 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 the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

   Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **David A. Buff**
   Registration Number: **19011**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6241 NW 23rd Street, Suite 500**
   City: **Gainesville** State: **FL** Zip Code: **32653-1500**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext.**545** Fax: **(352) 336-6603**
4. Professional Engineer Email Address: **dbuff@golder.com**
5. 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 pollution 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.

(3) If the purpose of this application is to obtain a Title V 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 plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, 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.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal 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 unit 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 6/26/06
Date

(seal)

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization #00001670

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **506.1** North (km) **2956.9**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **26/44/06** Longitude (DD/MM/SS) **80/56/19**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **20**	6. Facility SIC(s): **2061, 2062**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Neil Smith, Vice President and General Manager, Sugar Processing Operations**
2. Facility Contact Mailing Address... Organization/Firm: **United States Sugar Corporation** Street Address: **111 Ponce de Leon Ave.** City: **Clewiston** State: **FL** Zip Code: **33440**
3. Facility Contact Telephone Numbers: Telephone: **(863) 902-2703** ext. Fax: **(863) 902-2729**
4. Facility Contact Email Address: **nsmith@ussugar.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I. that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official Email Address:

APPLICATION INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

APPLICATION INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
Particulate Matter Total - PM	**A**	**No**
Sulfur Dioxide - SO_2	**A**	**No**
Nitrogen Oxides - NO_x	**A**	**No**
Carbon Monoxide - CO	**A**	**No**
Particulate Matter - PM_{10}	**A**	**No**
Sulfuric Acid Mist - SAM	**A**	**No**
Total Hazardous Air Pollutants - HAPs	**A**	**No**
Volatile Organic Compounds - VOC	**A**	**No**
Acetaldehyde - H001	**A**	**No**
Benzene - H017	**A**	**No**
Formaldehyde - H095	**A**	**No**
Phenol - H144	**A**	**No**
Polycyclic Organic Matter - H151	**A**	**No**
Styrene - H163	**A**	**No**
Toluene - H169	**A**	**No**
Naphthalene - H132	**A**	**No**
Dibenzofuran - H058	**A**	**No**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility Wide Cap [Y or N]? (all units)	3. Emissions Unit ID Nos. Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ☒ Previously Submitted, Date: **May 2005**
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ☒ Previously Submitted, Date: **May 2005**
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: **May 2005**

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: ☐ Attached, Document ID:_____ ☒ Not Applicable (existing permitted facility)
2. Description of Proposed Construction or Modification, or Plantwide Applicability Limit (PAL): ☒ Attached, Document ID: **PSD Report**
3. Rule Applicability Analysis: ☒ Attached, Document ID: **PSD Report**
4. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable (no exempt units at facility)
5. Fugitive Emissions Identification (Rule 62-212.400(2), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): ☒ Attached, Document ID: **To be submitted.** ☐ Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): ☒ Attached, Document ID: **To be submitted.** ☐ Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8). and 62-212.500(4)(e), F.A.C.): ☒ Attached, Document ID: **To be submitted.** ☐ Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:____ ☒ Not Applicable

APPLICATION INFORMATION

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units (Rule 62-210.300(3)(a) or (b)1., F.A.C.):
   ☐ Attached, Document ID:____ ☒ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities (Required for initial/renewal applications only):
   ☐ Attached, Document ID:____ ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought):
   ☐ Attached, Document ID:____
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan (Required for all initial/revision/renewal applications):
   ☐ Attached, Document ID:____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI (If applicable, required for initial/renewal applications only):
   ☐ Attached, Document ID:____
   ☐ Equipment/Activities On site but Not Required to be Individually Listed
   ☐ Not Applicable

5. Verification of Risk Management Plan Submission to EPA (If applicable, required for initial/renewal applications only) :
   ☐ Attached, Document ID:____ ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:____ ☐ Not Applicable

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application for air permit. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised/renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. **The air construction permitting classification must be used to complete the Emissions Unit Information Section of this application for air permit.** A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air construction permitting and insignificant emissions units are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
   - ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
   - ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
   - ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Sugar Processing Operations**

3. Emissions Unit Identification Number: **015, 016, 017, 018, 019, 020, 021, 022, 029**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
A			**20**	☐ Yes ☒ No

9. Package Unit:
   Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment:
    This emission unit represents the sugar processing operation (refinery), which produces bulk and bagged sugar. For a list of sources, see Attachment UC-EU1-A11.

Emissions Unit Control Equipment

1. Control Equipment/Method(s) Description:
The emissions from the VHP sugar dryer, white sugar dryer, vacuum systems, conditioning silos, bins and packaging operations are controlled with baghouses. There are a total of 11 baghouses.

The emissions from the granular carbon regeneration furnace are controlled with a direct flame afterburner and a wet venturi/impingement plate scrubber system.

The emissions from the White Sugar Dryer No. 2 are controlled with 4 high efficiency cyclones followed by a wet scrubber.

2. Control Device or Method Code(s): **018, 053, 054, 055, 099**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **730,000 TPY of refined sugar packaged**	
2. Maximum Production Rate: **803,000 TPY of refined sugar loaded out**	
3. Maximum Heat Input Rate: million Btu/hr	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:
Maximum process rate refers to refined sugar packaged in refinery. Maximum daily rate is 2,000 tons per day. Maximum production rate refers to bulk and bagged refined sugar loaded out from this facility. Maximum daily rate is 2,250 tons per day. Permit No. 0510003-026-AC/PSD-FL-346.

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 3

1. Segment Description (Process/Fuel Type): **Food and Agriculture; Sugar Cane Processing; General**		
2. Source Classification Code (SCC): **3-02-015-01**	3. SCC Units: **Tons Produced**	
4. Maximum Hourly Rate: **100**	5. Maximum Annual Rate: **803,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Maximum hourly and annual rates refer to the amount of refined sugar produced by the fluidized bed drying system and packaged or loaded via the bulk shipment facility. Maximum daily production limited to 2,250 tons per day. Permit No. 0510003-026-AC/PSD-FL-346.**		

Segment Description and Rate: Segment 2 of 3

1. Segment Description (Process/Fuel Type): **Food and Agriculture; Sugar Cane Processing; Other Not Classified**		
2. Source Classification Code (SCC): **3-02-015-99**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **85**	5. Maximum Annual Rate: **730,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Maximum hourly rate based on 2,000 TPD. Rates refer to the amount of refined sugar that could be processed through packaging operations. Permit No. 0510003-026-AC/PSD-FL-346.**		

C. EMISSION POINT (STACK/VENT) INFORMATION
(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Sugar Refinery**	2. Emission Point Type Code: **3**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **See Attachment UC-EU1-A11.**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **80** feet	7. Exit Diameter: **7.0 × 6.0** feet
8. Exit Temperature: **90**°F	9. Actual Volumetric Flow Rate: **98,000** acfm	10. Water Vapor: **4** %
11. Maximum Dry Standard Flow Rate: **86,000** dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Stack parameters represent White Sugar Dryer No. 2 discharge vent. See Attachment UC-EU1-A11 for a list of all stacks and their parameters in this emissions unit.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 3 of 3

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use; Distillate Oil; General**		
2. Source Classification Code (SCC): **3-90-005-89**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **0.09**	5. Maximum Annual Rate: **788.4**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.05**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **135**
10. Segment Comment: **Maximum rates refer to the amount of No. 2 fuel oil burned in the granular carbon regeneration furnace (GCRF) and afterburner.**		

Segment Description and Rate: Segment _____ of _____

1. Segment Description (Process/Fuel Type):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment:		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
Particulate Matter - PM	**018**	**054**	**EL**
Particulate Matter - PM_{10}	**018**	**054**	**NS**
Volatile Organic Compounds - VOC	**099**	**053**	**EL**
SO_2	**053**	**055**	**EL**
NO_x			**NS**
CO			**NS**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **25.0** lb/hour **109.5** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **25 lb/hr** Reference: **Proposed permit limit**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☒ 10 years
10. Calculation of Emissions: **25 lb/hr x 8,760 hr/yr ÷ 2000 lb/ton = 109.5 TPY**	
11. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **PM_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **8.70** lb/hour **38.10** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☒ 10 years
10. Calculation of Emissions: **See Attachment UC-FU1-F1.10.**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.63 lb/hr**	4. Equivalent Allowable Emissions: **1.63** lb/hour **7.12** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to VHP Sugar Dryer (EU 015) (Point ID S-11). As a surrogate parameter for PM, VE Must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions 2 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.43 lb/hr**	4. Equivalent Allowable Emissions: **1.43** lb/hour **6.28** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to existing White Sugar Dryer No. 1 (EU 016) (Point ID S-10). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions 3 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.7 lb/hr**	4. Equivalent Allowable Emissions: **0.7** lb/hour **3.07** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Granular Carbon Regeneration Furnace (EU 017) (Point ID S-12).**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **4** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **25 lb/hr**	4. Equivalent Allowable Emissions: **25** lb/hour **109.5** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Proposed permit limit. Applies to new White Sugar Dryer No. 2 (EU 029) (Point ID S-13).**	

Allowable Emissions Allowable Emissions **5** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **0.84** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Vacuum Systems (EU 018). As a surrogate parameter for PM, VE must be less that 5% opacity (Point IDs S-1, S-2, S-3).**	

Allowable Emissions Allowable Emissions **6** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.17 lb/hr**	4. Equivalent Allowable Emissions: **0.17** lb/hour **0.74** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Conditioning Silos (EU 019) (Point IDs S-7, S-8, S-9).**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **7** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.25 lb/hr**	4. Equivalent Allowable Emissions: **0.25** lb/hour **1.07** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Screening and Distribution (EU 020) (Point IDs S-5, S-6). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions **8** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.21 lb/hr**	4. Equivalent Allowable Emissions: **0.21** lb/hour **0.90** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Packing Baghouse (EU 022) (Point ID S-4). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.63 lb/hr**	4. Equivalent Allowable Emissions: **1.63** lb/hour **7.12** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to VHP Sugar Dryer (EU 015) (Point ID S-11). As a surrogate parameter for PM, VE Must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions 2 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.43 lb/hr**	4. Equivalent Allowable Emissions: **1.43** lb/hour **6.28** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to existing White Sugar Dryer No. 1 (EU 016) (Point ID S-10). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions 3 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.63 lb/hr**	4. Equivalent Allowable Emissions: **0.63** lb/hour **2.76** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Granular Carbon Regeneration Furnace (EU 017) (Point ID S-12).**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **4** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **4.20 lb/hr**	4. Equivalent Allowable Emissions: **4.20** lb/hour **18.38** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit limit. Applies to White Sugar Dryer No. 2 (EU 029) (Point ID S-13). Permit No. 0510003-026-AC/PSD-FL-346.**	

Allowable Emissions Allowable Emissions **5** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **0.84** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Vacuum Systems (EU 018) (Point IDs S-1, S-2, S-3). As a surrogate parameter for PM, VE must be less that 5% opacity.**	

Allowable Emissions Allowable Emissions **6** of **8**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.17 lb/hr**	4. Equivalent Allowable Emissions: **0.17** lb/hour **0.74** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Conditioning Silos (EU 019) (Point IDs S-7, S-8, S-9).**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 7 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.25 lb/hr**	4. Equivalent Allowable Emissions: **0.25** lb/hour **1.07** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Screening and Distribution (EU 020) (Point IDs S-5, S-6). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions 8 of 8

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.21 lb/hr**	4. Equivalent Allowable Emissions: **0.21** lb/hour **0.90** tons/year
5. Method of Compliance: **EPA Method 5 or DEP Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Packing Baghouse (EU 022) (Point ID S-4). As a surrogate parameter for PM, VE must be less than 5% opacity.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.42** lb/hour **19.38** tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference: **Vendor Data**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☒ 10 years
10. Calculation of Emissions: **See Attachment UC-EUI-F1.10.**	
9. Pollutant Potential/Estimated Fugitive Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.0 lb/hr**	4. Equivalent Allowable Emissions: **1.0** lb/hour **4.38** tons/year
5. Method of Compliance: **EPA Method 25A and 18.**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Granular Carbon Regeneration Furnace only.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **15.0 tons/yr**	4. Equivalent Allowable Emissions: **3.42** lb/hour **15.0** tons/year
5. Method of Compliance: **Track alcohol usage.**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Alcohol Usage.**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Potential/Estimated Fugitive Emissions

Complete for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

1. Pollutant Emitted: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.64** lb/hour **2.80** tons/year	4. Synthetically Limited? ☒ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: **0.05% S fuel** Reference: **Permit Limits**	7. Emissions Method Code: **0**
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☒ 10 years

10. Calculation of Emissions:
Fuel burning:
90 gal/hr x 7.1 lb/gal x 0.05 percent S x 2 lb SO_2/lb S = 0.64 lb/hr

9. Pollutant Potential/Estimated Fugitive Emissions Comment:

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **0.05% S fuel**	4. Equivalent Allowable Emissions: **0.64** lb/hour **2.80** tons/year
5. Method of Compliance: **Fuel analysis**	
6. Allowable Emissions Comment (Description of Operating Method): **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to Granular Carbon Regeneration Furnace only (EU 017).**	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE05**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **5** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **DEP Method 9**	
5. Visible Emissions Comment: **Permit No. 0510003-010-AC; PSD-FL-272A. Applies to refinery and dryer baghouses.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **DEP Method 9**	
5. Visible Emissions Comment: **Applies to Granular Carbon Regeneration Furnace and White Sugar Dryer No. 2. Permit No. 0510003-010-AC; PSD-FL-272A, and 0510003-026-AC/PSD-FL-346.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor 1 of 3

1. Parameter Code: **TEMP**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Temperature of afterburner on Granular Carbon Regeneration Furnace.**	

Continuous Monitoring System: Continuous Monitor 2 of 3

1. Parameter Code: **FLOW**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Monitoring of wet scrubber water recirculation rate (gpm). Permit No. 0510003-026-AC/PSD-FL-346.**	

H. CONTINUOUS MONITOR INFORMATION

Complete if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **3** of **3**

1. Parameter Code: **PRS**	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☒ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Monitoring of pressure differential across the wet scrubber (inches of water column). Permit No. 0510003-026-AC/PSD-FL-346.**	

Continuous Monitoring System: Continuous Monitor _ of _

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	☐ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
8. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION
Section [1] of [1]
Sugar Processing Operations

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **UC-EU1-I1** ☐ Previously Submitted, Date _____

2. Fuel Analysis or Specification (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **UC-EU1-I2** ☐ Previously Submitted, Date _____

3. Detailed Description of Control Equipment (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☒ Attached, Document ID: **UC-EU1-I3** ☐ Previously Submitted, Date _____

4. Procedures for Startup and Shutdown (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable (construction application)

5. Operation and Maintenance Plan (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

6. Compliance Demonstration Reports/Records
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ Previously Submitted, Date: **PM/PM10**
   Test Date(s)/Pollutant(s) Tested: **December 2005; May 2006**
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Not Applicable
   Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute
   ☐ Attached, Document ID: _____ ☒ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
Sugar Processing Operations

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(6) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e))
   ☒ Attached, Document ID: **PSD Report** ☐ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rule 62-212.400(5)(h)6., F.A.C., and Rule 62-212.500(4)(f), F.A.C.)
   ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities (Required for proposed new stack sampling facilities only)
   ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements
   ☐ Attached, Document ID: _____ ☐ Not Applicable
2. Compliance Assurance Monitoring
   ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation
   ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading)
   ☐ Attached, Document ID: _____ ☐ Not Applicable
5. Acid Rain Part Application
   - ☐ Certificate of Representation (EPA Form No. 7610-1)
     - ☐ Copy Attached, Document ID: _____
   - ☐ Acid Rain Part (Form No. 62-210.900(1)(a))
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ New Unit Exemption (Form No. 62-210.900(1)(a)2.)
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ Phase II NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
     - ☐ Attached, Document ID: _____
     - ☐ Previously Submitted, Date: _____
   - ☐ Not Applicable

EMISSIONS UNIT INFORMATION
Section [1] of [1]
Sugar Processing Operations

Additional Requirements Comment

ATTACHMENT UC-EU1-A11

SOURCES AND RESPECTIVE STACK PARAMETERS INCLUDED IN THE SUGAR PROCESSING OPERATION

ATTACHMENT UC-EU1-A11

SOURCES AND RESPECTIVE STACK PARAMETERS INCLUDED IN THE SUGAR PROCESSING OPERATION

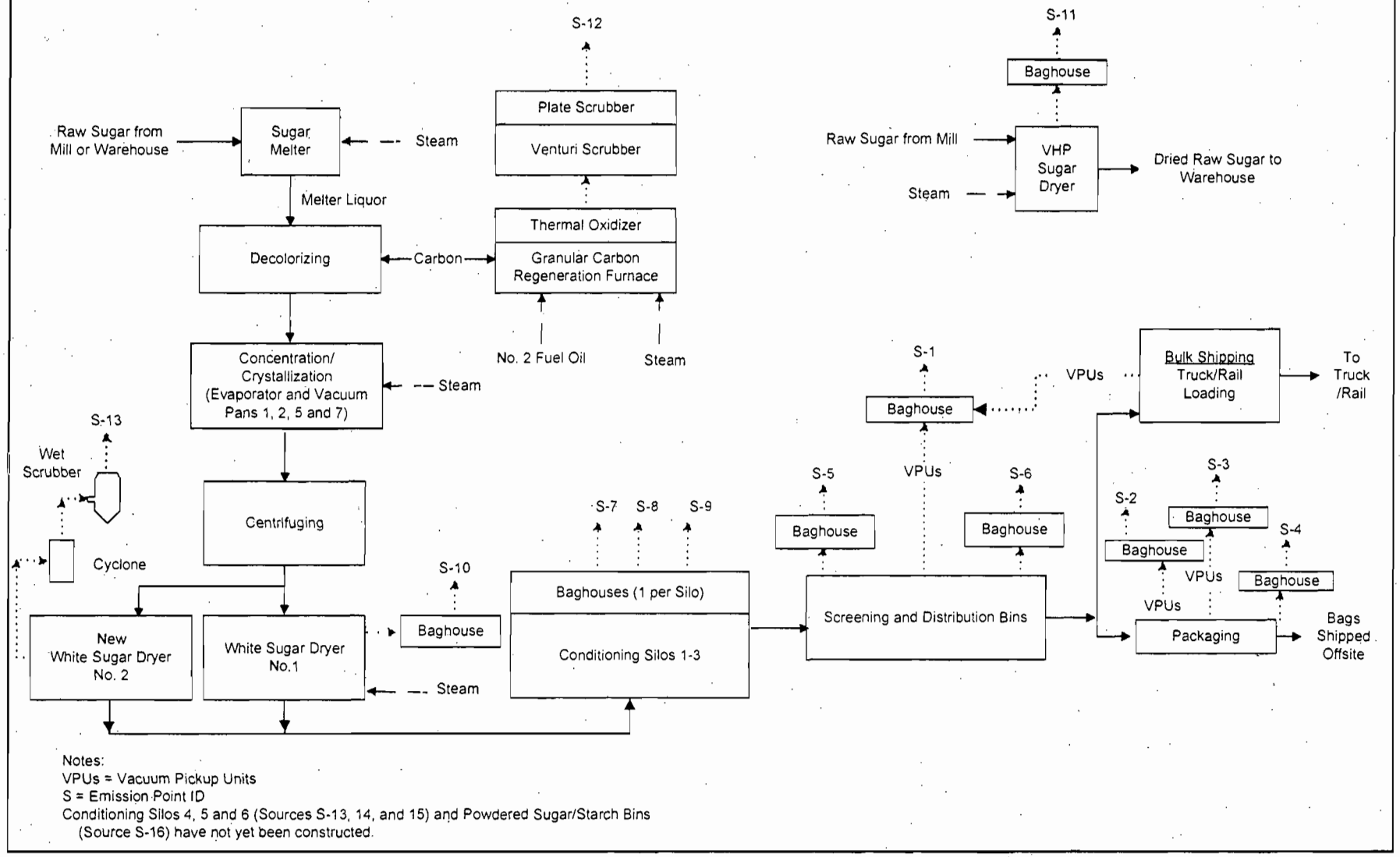
Source/Vent Name	EU ID	Stack No.	Stack/Vent Release Height (ft)	Stack/Vent Diameter (ft)	Exhaust Flow (acfm)	Exit Velocity[a] (ft/sec)	Gas Exit Temp. (°F)
Existing White Sugar Dryer	015	S-11	75	7.31	113,000	0.29	115
New White Sugar Dryer	029	S-13	80	7 × 6	98,000	38.9	90
VHP Sugar Dryer	016	S-10	10	4.79	127,000	0.29	115
Granular Carbon Furnace	017	S-12	30	2.00	4,300	22.8	160
Vacuum Systems							
Screening & Distribution Vacuum	018	S-1	65	0.50	1,705	0.29	68
100-lb Bagging Vacuum System	018	S-2	65	0.50	1,564	0.29	90
5-lb Bagging Vacuum System	018	S-3	65	0.50	1,585	0.29	90
Conditioning Silos							
Conditioning Silo No. 2	019	S-7	130	1.37	3,000	0.29	110
Conditioning Silo No. 4	019	S-8	130	1.37	3,000	0.29	110
Conditioning Silo No. 6	019	S-9	130	1.37	3,000	0.29	110
Screening, Distributing, Packaging, Powdered Sugar/Starch							
Screening and Distribution #1	020	S-5	72	0.95	3,200	0.29	125
Screening and Distribution #2	020	S-6	72	1.94	10,500	0.29	125
Sugar Packaging Baghouse							
Packaging Baghouse	022	S-4	60	1.94	11,500	0.29	125

[a] All sources but the Granular Carbon Furnace have horizontal discharge.

ATTACHMENT UC-EU1-I1

PROCESS FLOW DIAGRAM

PRIVILEGED AND CONFIDENTIAL - PREPARED FOR COUNSEL



Notes:
VPUs = Vacuum Pickup Units
S = Emission Point ID
Conditioning Silos 4, 5 and 6 (Sources S-13, 14, and 15) and Powdered Sugar/Starch Bins (Source S-16) have not yet been constructed.

Attachment UC-EU1-I1 Process Flow Diagram U.S. Sugar Corporation - Clewiston, FL	**Process Flow Legend** Solid/Liquid ——→ Air ·····→ Steam — — →	Mill Expansion Project Number: 0437583/4/4.4 Filename: UC-EU1-I1.VSD Date: 6/23/06 Golder Associates

ATTACHMENT UC-EU1-I2

FUEL ANALYSIS SPECIFICATION

ATTACHMENT UC-EU1-I2

FUEL ANALYSIS SPECIFICATION FOR U.S. SUGAR CORPORATION

Granular Carbon Regeneration Furnace

Parameter	Low Sulfur No. 2 Fuel Oil [a] (0.05% max S)
Density (lb/gal)	7.2 [a]
Approximate Heating Value (Btu/lb)	18,750
Approximate Heating Value (Btu/gal)	135,000-139,000
Ultimate Analysis (dry basis):	
Carbon	87.3% [b]
Hydrogen	12.6% [b]
Nitrogen	0.22% [b]
Oxygen	0.04% [b]
Sulfur	0.05%
Ash/Inorganic	<0.001% [a]
Moisture	0.05%

Note: All values represent average fuel characteristics.

[a] Source: Marathon Ashland Pretoleum LLC; Coastal Fuels.

[b] Source: Perry's Chemical Engineers' Handbook. Sixth Edition.

ATTACHMENT UC-EU1-I3

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

ATTACHMENT UC-EU1-I3a

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

Control Equipment Parameters for

White Sugar Dryer No. 2

Cyclone Collectors

Manufacturer and Model No.	Entoleter, LLC – Model 6600
No. of Cyclones	4
Inlet Gas Temp (°F)	110
Inlet Gas Flow Rate (ACFM)	105,000
Pressure Drop Across Cyclones (inches of H_2O)	6
Inlet Dust Loading	11,760 lb/hr; 14 gr/dscf
Outlet Dust Loading	118 lb/hr
Cyclone System Particulate Removal Efficiency	99%

Note: All values are based on manufacturer's design information and are subject to revision. All values represent typical operating conditions.

ATTACHMENT UC-EU1-I3b

DETAILED DESCRIPTION OF CONTROL EQUIPMENT

Control Equipment Parameters for

White Sugar Dryer No. 2

Wet Scrubber

Manufacturer and Model No.	Entoleter, LLC – Centrifield Vortex Model 1500
Inlet Gas Temp (°F)	113
Inlet Gas Flow Rate	105,000 acfm; 96,000 dscfm
Pressure Drop Across Scrubber (inches of H_2O)	8-10
Scrubber Recirculation Flow Rate (gal/min)	500
Scrubber Make-up Flow Rate (gal/min)	12
Inlet Dust Loading	118 lb/hr
Outlet Dust Loading: PM 10	4.2 lb/hr
PM	25 lb/hr
Wet Scrubbing System Particulate Removal Efficiency (PM_{10})	96%

PSD REPORT

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1.0 INTRODUCTION

United States Sugar Corporation (U.S. Sugar) owns and operates a sugar mill and sugar refinery located in Clewiston, Florida, Hendry County. U.S. Sugar received air construction permit No. 0510003-026-AC/PSD-FL-346 on February 11, 2005, for the construction of White Sugar Dryer (WSD) No. 2. The new WSD, located within the sugar refinery, was constructed to provide backup to the existing WSD and to also allow the existing dryer to operate at a lower, more efficient operating rate. The dryer is equipped with four cyclone collectors followed by a wet scrubber (both Entoleter design) for control of particulate matter (PM) emissions.

The maximum operating rate for the dryer is 85 tons per hour (TPH) of refined sugar. The maximum permitted PM emission rate for WSD No. 2 is 4.2 pounds per hour (lb/hr) and 0.005 grain per dry standard cubic feet (gr/dscf). The PM test method is U.S. EPA Method 5, contained in the Code of Federal Regulations (CFR), Title 40, Part 60 (40 CFR 60), Appendix A. The emission limit for PM with an aerodynamic particle size diameter of 10 microns or less (PM_{10}) is the same as the PM emission limit. Compliance with the PM_{10} emission limit is assumed by demonstrating compliance with the PM emission limit.

WSD No. 2 was constructed per the specifications contained in the air permit application submitted in September 2004. The new dryer began operation in September 2005. Initial PM compliance testing was conducted in December 2005. The results of this testing resulted in PM emissions averaging 9.9 lb/hr, which is higher than the permit limit of 4.2 lb/hr. Subsequent testing and investigation have shown that while PM emissions as measured by EPA Method 5 remained high, PM_{10} emissions as measured by EPA Method 201A were below the permit limit of 4.2 lb/hr.

The purpose of this application is to request a revision of the prevention of significant deterioration (PSD) permit, to increase the allowable PM emission rate to 25 lb/hr, which is less than that allowed by the process weight table in Chapter 62-296.320 of the Florida Administrative Code (F.A.C.). The current allowable of 4.2 lb/hr will be retained as a PM_{10} emissions limit.

This application contains the technical information to support the changes to the PM emission limit. The higher allowable PM emission limit is justified based on the following:

- The PM emissions result from the carryover of water droplets out of the wet scrubber. The water droplets contain dissolved sugar.
- The PM emissions consist primarily of large particles (water droplets) of greater than 200 microns in size, which will fall out on U.S. Sugar plant property.
- The PM emissions consist entirely of refined sugar, which does not represent any health hazard.
- The PM emissions do not result in any adverse environmental or visibility impacts.

Through this application, U.S. Sugar requests that the Florida Department of Environmental Protection (FDEP) revise the PSD air construction permit issued for the WSD No. 2.

2.0 PROJECT DESCRIPTION

2.1 Request to Revise PM Emission Limit

U.S. Sugar received air construction permit No. 0510003-026-AC/PSD-FL-346 on February 11, 2005, for the construction of WSD No. 2. The new dryer, the purpose of which was to support the sugar refinery operations, was constructed per the specifications contained in the air permit application submitted in September 2004. The new dryer began operations in September 2005, and initial PM compliance testing was conducted in December 2005. However, the results of this testing resulted in PM emissions averaging 9.9 lb/hr, which is higher than the permit limit of 4.2 lb/hr.

Subsequent testing and investigation have indicated that the high PM emissions are a result of the carryover of refined sugar dissolved in water droplets. The Entoleter design wet scrubber is experiencing a significant amount of water droplet carryover. U.S. Sugar believes the droplet carryover problem is a design issue with Entoleter. Based on Entoleter's failure to fully cooperate on resolving the issue, U.S. Sugar has initiated legal action against Entoleter.

The PM testing has also shown that while PM emissions as measured by EPA Method 5 remained high, PM_{10} emissions as measured by EPA Method 201A were well below the permit limit.

The purpose of this application is to request a revision of the PSD permit by increasing the allowable PM emission rate to 25 lb/hr. This emission rate is less than that allowed by the process weight table in Chapter 62-296.320, F.A.C. This will provide an adequate margin of safety based on the variability in measured PM emissions. The current allowable of 4.2 lb/hr will be retained as the PM_{10} emission limit.

Further information providing justification for this request is provided in the following sections.

2.2 WSD No. 2 Control Equipment

The air pollution control equipment serving the WSD No. 2 consists of four high-efficiency cyclones followed by a wet scrubber, all of Entoleter design. The basic design information for this equipment was presented in the original permit application in 2004 and subsequent correspondence. This information has not changed (see Appendix A for a copy of this information).

The four cyclones are designed to remove the large particulate particles prior to the dryer exhaust gas stream entering the wet scrubber. The cyclones are designed for a pressure drop of 6 inches of water column and a removal efficiency of 99 percent. The wet scrubber is designed for an inlet volume of 105,000 actual cubic feet per minute (acfm), a pressure drop of 8 inches of water column, and a removal efficiency of 95 percent. The design scrubber liquid flow rate is 500 gallons per minute (gpm).

The exhaust gases from WSD No. 2, after passing through the control devices, exhaust to atmosphere at a point on the refinery building approximately 80 feet above ground level. The exhaust vent size is 7 feet (84 inches) by 6 feet (72 inches).

Since startup of WSD No. 2, the PM control equipment has not worked as designed, as demonstrated by the PM compliance testing (refer also to Section 2.3). U.S. Sugar believes this is due to flaws in the original design of the equipment by Entoleter.

Subsequent to the initial stack testing in December 2005, U.S. Sugar investigated the potential causes of the higher than expected emissions. This included the following activities and engineering issues that were discovered:

- Discussions with the scrubber manufacturer, which ultimately proved to be unsatisfactory.
- October 2005- The original scrubber was designed for 104,500 acfm at the inlet, but the air flow through the dryer was actually about 95,000 acfm at the inlet, which also resulted in a lower than normal pressure drop. To correct this, Entoleter added a blanking plate to the vane cage within the scrubber to increase velocity and raise the pressure drop. The vane cage is located on the inlet of the scrubber and is basically a cage with vanes that distribute the air flow and creates the proper air flow in the scrubber (see Appendix A for illustration). About 25 percent of the area of the vane cage was blocked to increase the air velocity. The scrubber now operates at 8- to 10-inch pressure drop, and the scrubber is not discharging the large amounts of sugar seen at startup.
- October 2005- The outlet of the cyclones was identified as being designed too small. As a result, the cyclones could not handle all of the air flow from the dryer. Therefore, at Entoleter's suggestion, a bypass duct around the cyclones was installed to route about 25 percent of the air flow directly to the wet scrubber.
- January 2006- Additional diagnostic testing was performed on the dryer in January 2006. However, PM emissions were not improved over the initial compliance testing.

- February 2006- Blanking plates were also needed at the radial liquid separator (de-entrainer or mist eliminator) to increase the velocity at this point. The liquid separator acts to remove the PM-laden droplets from the gas stream. The ideal velocity through the de-entrainer is 7,200 to 7,500 feet per minute (fpm). But at 97,000 acfm at the outlet (flow at initial test), the velocity was only about 6,700 fpm through the de-entrainer. U.S. Sugar installed these blanking plates.
- May 2006- Entoleter believed the scrubber water flow rate was too low. Without adequate water flow, the maximum PM removal efficiency of the scrubber cannot be obtained. Therefore, the scrubber water flow rate was increased to about 750 gpm. The May 2006 tests were conducted with the higher scrubber water flow rate, but the PM results did not improve.
- May 2006- The low scrubber recirculation water temperature was investigated, but this was not believed to be an issue. No changes were made to that system.
- May 2006- U.S. Sugar hires two scrubber experts (Winkler APC, LLC and David Taub, a former vice-president of Entoleter) to help identify the causes and potential solutions to the high PM emissions.
- June 2006- U.S. Sugar files lawsuit against Entoleter over design flaws.
- June 2006- U.S. Sugar has investigated the feasibility of installing a mist eliminator at the outlet of the wet scrubber. U.S. Sugar also contacted Mr. Taub, a former vice-president of Entoleter to obtain his professional opinion. It was his opinion that because the outlet of the wet scrubber is configured vertically (instead of a horizontal outlet), a mist eliminator would not be effective due to the cyclonic flow exiting the scrubber. Also, due to the existing scrubber system geometry and space limitations, it is not practical to reconfigure the outlet of the scrubber.

In summary, the high PM emissions from WSD No. 2 are due to water droplet carryover from the wet scrubber. These water droplets contain dissolved sugar. It is expected that the water droplets would contain a high level of dissolved sugar, since the design of the scrubber is to remove sugar dust through wet scrubbing. The problem lies in the carryover of the large droplets from the scrubber, which would not be occurring if the scrubber were designed properly. The dissolved sugar is being captured in the Method 5 sampling probe and being counted as PM emissions. Conversely, some of the smaller sugar dust particles are not captured by the water droplets and exit the scrubber as PM_{10} emissions. These are the emissions caught in the Method 201A sampling train and are low in magnitude.

U.S. Sugar has made every effort to resolve the issues of the higher PM emissions from the wet scrubber. U.S. Sugar has implemented at least four recommendations by Entoleter, as described above, but these have failed to resolve the issue. Entoleter is no longer cooperating in resolving the issues, and U.S. Sugar has filed a lawsuit to obtain relief.

2.3 PM/PM_{10} Test Data

2.3.1 PM Test Data

Initial PM compliance testing on the dryer was performed in December 2005 using EPA Method 5. A summary of the test data is presented in Table 2-1. As shown, 3 test runs were performed, and the resulting average PM emissions were 0.014 gr/dscf and 9.90 lb/hr. This exceeds the allowable PM limit of 4.2 lb/hr. One individual run was 19 lb/hr.

The dryer was operating at its normal operating rate of approximately 85 TPH during the testing. The wet scrubber was also operating normally, with pressure drop of 9 to 10 inches of water, and the scrubber water flow rate of about 527 gpm.

Also shown in Table 2-1 are the results of the filter catch and the probe wash from the EPA Method 5 sampling train. The filter catch represents that portion of the PM that was caught on the filter in the sampling train. The probe wash is that portion of the total PM that was caught in the sampling nozzle and probe. As shown, the probe wash accounts for almost 99 percent of the total PM on a consistent basis. This is very unusual and is indicative of a "sticky" substance which is adhering to the walls of the probe and nozzle. As discussed previously, this is believed to be due to a significant amount of water droplet carryover from the wet scrubber, which contains dissolved sugar solids.

After modifications to the scrubber were performed, as described in Section 2.2, additional PM testing was performed in May 2006 using EPA Method 5. A total of nine sampling runs were performed, with six runs at 100-percent operating load, and three runs at 50-percent operating load. As shown, the air flow through the dryer and wet scrubber does not vary with operating load. The wet scrubber was also operating normally, with pressure drop of 9 to 11 inches of water, and the scrubber water flow rate increased to about 750 gpm.

As shown, the resulting average PM emissions were 0.031 gr/dscf and 23 lb/hr. This exceeds the allowable PM limit of 4.2 lb/hr. Individual runs ranged from 19 to 33 lb/hr.

Also shown in Table 2-1 are the results of the filter catch and the probe wash from the EPA Method 5 sampling train. As shown in the December 2005 tests, the probe wash accounts for over 98 percent of the total PM on a consistent basis. Again, this is very unusual and is indicative of a

"sticky" substance which is adhering to the walls of the probe and nozzle, and is believed to be due to a significant amount of water droplet carryover from the wet scrubber, which contains dissolved sugar solids.

2.3.2 PM_{10} Test Data

PM_{10} compliance testing on the dryer was not performed in December 2005 along with the PM compliance testing since it was not required by permit condition. However, PM_{10} testing was performed during the May 2006 PM testing. Testing was performed using EPA Method 201A, which utilizes a cyclone to remove PM_{10} from the sample gas stream, allowing PM_{10} to be collected on a filter.

A total of nine sampling runs were performed, with six runs at 100-percent operating load, and three runs at 50-percent operating load. A summary of the test data is presented in Table 2-2. As shown, the resulting average PM_{10} emissions were 0.0019 gr/dscf and 1.3 lb/hr. This is well below the allowable PM limit of 4.2 lb/hr. The highest individual run was 2.4 lb/hr.

As shown during the May 2006 PM testing, the air flow through the dryer and wet scrubber does not vary with operating load. The wet scrubber was also operating normally, with pressure drop ranging from about 10 to 11 inches of water, and the scrubber water flow rate at about 750 gpm.

2.3.3 Opacity Test Data

U.S. Sugar has conducted a number of visible emission tests on the WSD No. 2. One test was conducted during the December 2005 compliance testing. Additional tests were conducted periodically after this time to document operation of the dryer (see Appendix B). All visible emissions tests have shown opacity of 0 percent.

2.3.4 Analysis of Test Data

The particulate testing showed that the PM_{10} emissions from the WSD No. 2 are low and well below the allowable limits of 0.005 gr/dscf and 4.2 lb/hr. The PM_{10} emissions are the result of the smaller sugar dust particles that are not captured by the water droplets. They exit the scrubber as PM_{10} emissions. These are the emissions caught in the Method 201A sampling train, and are low in magnitude.

The analysis of the PM test data demonstrate that almost all of the PM emissions are being caught in the probe and nozzle of the Method 5 sampling train. Visual observations of the stack test personnel confirm this. The mechanism causing this begins with the carryover of water droplets out of the wet scrubber. The droplets contain dissolved sugar. These droplets are then "sticky" due to the nature of sugar, and the sugar adheres to the walls of the probe and nozzle. The stack test team confirms the difficulty in removing all of the material in the probe, having to repeatedly wash the probe.

To further analyze the data, U.S. Sugar obtained the services of Winkler APC, LLC, to provide its opinion on the issue. Winkler's report is provided in Appendix C. The report indicates that the vast amount of water droplets exiting the scrubber are 200 microns or greater in size on a weight basis. Further, these droplets will quickly reach the ground (in about 36 seconds or less) due to their substantial settling velocity [2.2 feet per second (ft/sec) or greater], if released from a height of about 80 feet. Due to the distance from the WSD No. 2 exhaust point and the nearest property boundary (1,440 feet), all of these particles would settle on U.S. Sugar property unless the wind speed is greater than 27 miles per hour.

Even with the PM test data, it is not known the exact amount of PM that is being emitted to the atmosphere from the WSD No. 2. This is because the PM sampling location is between the wet scrubber and the ID fan, inside the sugar refinery building. After the ID fan, there is a straight, horizontal length of duct of about 40 feet, still inside the building. This provides the exhaust gas exit to the atmosphere, which is out the side of the building. Since this location is about 80 feet up the side of the building, there is no practical way to test the exhaust location.

Silencer vanes are located inside the 40-foot-length of ductwork making it impossible to conduct a PM test in this area. However, it is believed that a significant amount of water droplets/dissolved sugar is impacting and sticking on the silencer vanes and the walls of the ducting, as witnessed by a significant amount of liquid running out the duct and down the side of the building. As a result, the actual PM emissions to the atmosphere are believed to be substantially less than indicated by the Method 5 testing, again due to the sticky nature of the PM.

2.4 Proposed WSD No. 2 Emissions

Based on the PM test data described in Section 2.3, the proposed allowable PM emission limit for the WSD No. 2 is 25 lb/hr. This limit is less than the limit based on the process weight table in Rule 62-296.320(4)(a), which is calculated below:

$$E = 17.31\ P^{0.16}$$

where: E = emission rate in lb/hr; and

P = process weight rate in tons per hour.

Based on the maximum dryer process rate of 85 TPH, the allowable emission rate is:

$$E = 17.31\ (85)^{0.16} = 35 \text{ lb/hr}$$

Based on the PM_{10} test data described in Section 2.3, no change in the allowable PM_{10} emission rate is proposed. The current allowable is 0.005 gr/dscf and 4.2 lb/hr.

A summary of total future potential emissions from the sugar refinery, including the higher PM emissions from WSD No. 2, is presented in Attachment UC-EU1-F10 of the application form.

TABLE 2-1
WHITE SUGAR DRYER NO. 2 PM EMISSION TESTS

Run Number	Test Date	Start/End Time	% Load	Stack Gas Flow Rate (dscfm)	Stack Gas Flow Rate (acfm)	Allowable PM Emissions (EPA Method 5) lb/hr	Allowable PM Emissions (EPA Method 5) gr/dscf	Actual PM Emissions (EPA Method 5) lb/hr	Actual PM Emissions (EPA Method 5) gr/dscf	Avg. Water Flow (gpm)	Avg. Pressure Drop Cyclone (in. H_2O)	Avg. Pressure Drop Scrubber (in. H_2O)	Particulate Data Filter (mg)	Particulate Data Wash (mg)	Particulate Data % Wash of Total
1	12/07/05	1056-1206	100	82,909	96,941	4.2	0.005	6.82	0.0096	529.4	3.8	9.6	0.3	23.5	98.7
2	12/07/05	1235-1345	100	82,993	97,239	4.2	0.005	3.65	0.0051	527.8	4.0	9.0	0.2	12.4	98.4
3	12/07/05	1453-1605	100	82,541	97,104	4.2	0.005	19.23	0.0272	524.8	4.0	9.0	0.4	65.2	99.4
Average=				**82,814**	**97,095**	**4.2**	**0.005**	**9.9**	**0.0140**	**527**	**3.9**	**9.2**			**98.8**
1	05/24/06	0852-0927	100	83,682	96,546	4.2	0.005	26.10	0.0364	747.7	5.0	9.0	1.0	46.5	97.9
2	05/24/06	1002-1037	100	82,769	95,849	4.2	0.005	18.61	0.0262	747.7	4.3	9.0	0.7	33.8	98.0
3	05/24/06	1100-1134	100	83,743	96,872	4.2	0.005	20.89	0.0291	750.0	4.3	9.0	0.6	36.6	98.4
4	05/24/06	1208-1243	50	85,704	98,102	4.2	0.005	19.65	0.0267	750.0	4.8	9.5	0.5	35.1	98.6
5	05/24/06	1303-1337	50	86,321	98,919	4.2	0.005	32.55	0.0440	747.3	3.7	10.7	0.5	57.1	99.1
6	05/24/06	1350-1425	50	85,981	98,614	4.2	0.005	20.89	0.0283	749.0	4.0	10.0	0.8	36	97.8
7	05/25/06	0802-0836	100	82,866	96,457	4.2	0.005	24.30	0.0342	747.7	4.7	10.0	0.5	42.7	98.8
8	05/25/06	0850-0925	100	82,501	96,272	4.2	0.005	20.21	0.0286	749.7	4.0	10.3	0.7	34.1	98.0
9	05/25/06	0934-1008	100	83,246	97,078	4.2	0.005	20.99	0.0294	745.7	3.0	11.0	0.6	35.4	98.3
Average=				**84,090**	**97,190**	**4.2**	**0.005**	**22.7**	**0.0314**	**748**	**4.2**	**9.8**			**98.3**

Notes:
lb/hr = pounds per hour
gr/dscf = grains per dry standard cubic foot
mg = milligrams

TABLE 2-2
WHITE SUGAR DRYER NO. 2 PM_{10} EMISSION TESTS

Run Number	Test Date	Start/End Time	% Load	Stack Gas Flow Rate (dscfm)	Stack Gas Flow Rate (acfm)	Allowable PM_{10} Emissions		Actual PM_{10} Emissions (EPA Method 210A)		Avg. Water Flow (gpm)	Avg. Pressure Drop		Particulate Data		
						lb/hr	gr/dscf	lb/hr	gr/dscf		Cyclone (in. H_2O)	Scrubber (in. H_2O)	Filter (mg)	Wash (mg)	% Wash of Total
1	05/23/06	1015-1040	50	85,299	93,003	4.2	0.005	2.37	0.00324	749.7	4.7	9.7	1.1	1.5	57.7
2	05/23/06	1127-1200	50	85,082	92,570	4.2	0.005	1.59	0.00218	753.0	4.3	9.7	0.7	1	58.8
3	05/23/06	1220-1254	50	85,713	92,883	4.2	0.005	1.13	0.00154	750.0	4.0	9.8	0.7	0.5	41.7
4	05/23/06	1400-1433	100	83,395	91,246	4.2	0.005	1.02	0.00143	750.0	4.0	9.7	0.4	0.8	66.7
5	05/23/06	1450-1554	100	84,141	91,790	4.2	0.005	1.75	0.00242	750.6	4.0	10.0	1	1	50.0
6	05/23/06	1545-1619	100	83,009	90,815	4.2	0.005	1.06	0.00149	750.3	4.0	10.0	0.5	0.7	58.3
7	05/25/06	1024-1058	100	83,263	91,101	4.2	0.005	1.02	0.00143	749.7	4.0	10.3	0.5	0.7	58.3
8	05/25/06	1110-1144	100	83,058	90,876	4.2	0.005	0.94	0.00131	745.7	4.0	10.0	0.4	0.7	63.6
9	05/25/06	1153-1228	100	82,799	90,877	4.2	0.005	1.26	0.00177	751.0	3.7	11.0	0.7	0.8	53.3
Average=				**83,973**	**91,684**	**4.2**	**0.005**	**1.3**	**0.00187**	**750**	**4.1**	**10.0**			**56.5**

Notes:
lb/hr = pounds per hour
gr/dscf = grains per dry standard cubic foot
mg = milligrams

3.0 PSD REVIEW

PSD regulations require that the past actual emissions of all affected sources be compared to future potential emissions to determine PSD applicability. Past actual (baseline) emissions for the Clewiston sugar refinery were shown in the original PSD permit application for WSD No. 2 submitted in 2004. The past actual annual emissions were based on the last 2 years (2002-2003) of actual operation of the sugar refinery. Future potential emissions from the modified sugar refinery, including the proposed PM limit for the WSD No. 2, are presented in Attachment UC-EU1-F.10 of the application form.

Presented in Table 3-1 is a comparison of past actual emissions to future maximum emissions from the sugar mill refinery, with the increased PM emission from the WSD No. 2. As shown on Table 3-1, the potential increase in emissions due to the proposed project exceeds the PSD significant emission rates for PM and PM_{10}. As a result, PSD review applies for these pollutants.

As described in the original application, the PSD rules provide an exemption form certain PSD review requirements. WSD No. 2 was subject to a limited PSD review [Rule 62-212.400(3)(d)] since the Clewiston Mill was in existence on March 1, 1978, and the proposed modification results in a net emissions increase of all pollutants listed in Table 212.440-2, Regulated Air Pollutants – Significant Emission Rates, F.A.C., of less than 50 TPY after the application of BACT. Therefore, the project was exempted from the requirements of Rule 62-212.400(5)(d), (e), (f), and (g), F.A.C. This exempted the original project from all requirements of PSD review except for the BACT review.

Based on the revised PM emissions shown in Table 3-1, the above exemption is no longer available for the project. The reviews required by FDEP, other than the BACT review, will be presented in a separate report. A revised BACT analysis for the WSD No. 2 is presented in Section 4.0.

TABLE 3-1

WHITE SUGAR DRYER NO. 2 PSD SOURCE APPLICABILITY ANALYSIS, U.S. SUGAR CORPORATION, CLEWISTON (Revised 6-22-2006)

	Baseline Emissions [a]				Future Potential Emissions				Net Change In	PSD	
Regulated Pollutant	Sugar Refinery Baghouses (TPY)	Granular Carbon Furnace (TPY)	Alcohol Usage (TPY)	Total (TPY)	Sugar Refinery Baghouses (TPY)	Granular Carbon Furnace (TPY)	Alcohol Usage (TPY)	Total (TPY)	Emissions Due to Proposed Project (TPY)	Significant Emission Rate (TPY)	PSD Review Triggered?
Particulate Matter (Total)	11.45	1.82	0	13.26	170.26	3.07	0	173.32	160.06	25	Yes
Particulate Matter (PM_{10})	11.45	1.63	0	13.08	35.34	2.76	0	38.10	25.01	15	Yes
Sulfur Dioxide	0	1.05	0	1.05	0	2.80	0	2.80	1.75	40	No
Nitrogen Oxides	0	10.13	0	10.13	0	13.14	0	13.14	3.01	40	No
Carbon Monoxide	0	10.13	0	10.13	0	13.14	0	13.14	3.01	100	No
VOC	0	1.24	3.13	4.37	0	4.38	15.0	19.38	15.01	40	No
Sulfuric Acid Mist	0	0.064	0	0.064	0	0.172	0	0.172	0.107	7	No

[a] Actual emissions based on the average emissions for 2002 and 2003.

Note: PM_{10} = Particulate Matter with aerodynamic diameter less than or equal to 10 microns.
TPY = Tons per year.

4.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

4.1 Requirements

The 1977 Clean Air Act (CAA) Amendments established requirements for the approval of pre-construction permit applications under the PSD program. One of these requirements is that BACT be installed for applicable pollutants. BACT determinations must be made on a case-by-case basis considering technical, economic, energy, and environmental impacts for various BACT alternatives. To bring consistency to the BACT process, the EPA developed the "top-down" approach to BACT determinations.

The first step in a top-down BACT analysis is to determine, for each applicable pollutant, the most stringent control alternative available for a similar source or source category. If it can be shown that this level of control is not feasible on the basis of technical, economic, energy, or environmental impacts for the source in question, then the next most stringent level of control is identified and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any technical, economic, energy, or environmental consideration.

In the case of the proposed project, only PM emissions from the WSD No. 2 require a BACT analysis, since this is the only pollutant for which a revised emission limit is being requested. A BACT analysis for both PM and PM_{10} emissions was performed for the original PSD permit application in 2004. The revised BACT analysis for PM is presented in the following section.

4.2 Particulate Matter

4.2.1 Proposed Control Technology

Emissions of PM from WSDr No. 2 occur primarily due to carryover of water droplets from the wet scrubber, which contains dissolved sugar. These water droplets are largely greater than 200 microns in size and, therefore, will settle out quickly, primarily on U.S. Sugar property. The proposed BACT for PM is based on the following control techniques:

- High efficiency cyclone dust collectors (4); and
- Wet scrubber.

The proposed maximum PM emissions for the WSD No. 2 are 25 lb/hr and 109.5 TPY. The higher allowable PM emission limit is justified based on the following:

- The PM emissions result from the carryover of water droplets out of the wet scrubber. The water droplets contain dissolved sugar;
- The PM emissions consist primarily of large particles (water droplets) of greater than 200 microns in size, which will fallout on U.S. Sugar plant property;
- The PM emissions consist entirely of refined sugar, which does not represent any health hazard; and
- The PM emissions do not result in any adverse environmental or visibility impacts.

4.2.2 BACT Analysis

4.2.2.1 *Previous BACT Determinations*

As part of the BACT analysis, a review was performed of previous PM/PM_{10} BACT determinations for dryers and coolers in the agricultural products category, as listed in the RACT/BACT/LAER Clearinghouse on EPA's web page. A summary of BACT determinations for these sources from this review is presented in Table 4-1. Determinations issued during the last 10 years are shown in the table.

From the review of Table 4-1, previous BACT determinations for agricultural products, dryers, and coolers have typically been based on rotoclones, baghouses, or wet scrubbers. Control efficiencies have generally been in the range of 98 percent for rotoclones to 99.8 percent for baghouses. Most of these determinations were not based on emissions in terms of exhaust grain loading. The two that were, both wet scrubber controls, specified an exhaust grain loading of 0.02 gr/dscf.

4.2.2.2 *Control Technology Feasibility*

The technically feasible PM controls for the WSD No. 2 are listed in Table 4-2. As shown, there are five types of PM abatement methods with various techniques of each method. Each available technique is listed in Table 4-2, with its associated efficiency estimate, identified as feasible or infeasible, and rank based on control efficiency.

4.2.2.3 *Potential Control Method Descriptions*

Fuel Techniques

Fuel substitution, or fuel switching, is a common means of reducing emissions from combustion sources, such as electric utilities and industrial boilers. It involves replacing the current fuel with a fuel that emits less of a given pollutant when burned.

For fuel substitution to be practical, there must be a suitable replacement fuel available at an acceptable cost. In the case of the proposed WSD No. 2, no fuel is used in the process. Steam is used to supply heat for drying. Therefore, fuel substitution is not a feasible alternative.

Pretreatment Devices

The performance of particulate control devices can often be improved through pretreatment of the gas stream. For PM control devices, pretreatment consists of the following techniques:

- Settling Chambers;
- Elutriators;
- Momentum Separators;
- Mechanically Aided Separators; and
- Cyclones.

Of these five techniques, cyclones offer the most control efficiency, typically in the range of 60 to 90 percent. All of the other techniques have control efficiencies less than 30 percent.

Cyclones use inertia to remove particles from a spinning gas stream. Within a cyclone, the gas stream is forced to spin within a usually conical-shaped chamber. The gas spirals down the cyclone near the inner surface of the cyclone tube. At the bottom of the cyclone, the gas turns and spirals up through the center of the tube and out the top of the cyclone.

Particles in the gas stream are forced toward the cyclone walls by centrifugal forces. For particles that are large, typically greater than 10 microns, inertial momentum overcomes the fluid drag forces so that the particles reach the cyclone walls and are collected. For smaller particles, the fluid drag forces are greater than the momentum forces and the particles follow the gas out of the cyclone. Inside the cyclone, gravity forces the large particles down the sidewalls of the cyclone to a hopper where they are collected.

Pretreatment devices are technically feasible for application to the WSD No. 2. The WSD No. 2 utilizes four high-efficiency cyclones manufactured by Entoleter, with an estimated removal efficiency of 99 percent, based on the manufacturer's design data. The cyclones provide pretreatment before the gas stream enters the wet scrubber.

Electrostatic Precipitators (ESPs)

Collection of PM by ESPs involves the ionization of the gas stream passing through the ESP; the charging, migration, and collection of particles on oppositely charged surfaces; and the removal of particles form the collection surfaces. There are two basic types of ESPs, dry and wet. In dry ESPs, the particulate is removed by rappers, which vibrate the collection surface, dislodging the material and allowing it to fall into the collection hoppers. Wet ESPs use water to rinse the particulates off of the collection surfaces.

ESPs have several advantages when compared with other control devices. They are very efficient collectors, even for small particles, with greater than 97-percent control efficiency. ESPs can also treat large volumes of gas with a low-pressure drop. ESPs can operate over a wide range of temperatures and generally have low operating cost. The disadvantages of ESPs are large capital cost, large space requirements, and difficulty in controlling particles with high resistivity.

There is no known application of an ESP to such a process. Such a device would also be very costly in terms of capital and annual costs. As a result, ESPs were not considered further in the BACT analysis.

Fabric Filters

Baghouses, or fabric filters, utilize porous fabric to clean an airstream. They include types such as reverse-air, shaker, and pulse-jet baghouses. The dust that accumulates on the surface of the filter aids in the filtering of fine dust particles. PM/PM_{10} control efficiencies for fabric filters are typically greater than 99 percent.

During fabric filtration, dusty gas is sent through the fabric by forced-draft fans. The fabric is responsible for some filtration, but more significantly it acts as support for the dust layer that accumulates. The layer of dust, also known as the filter cake, is a highly efficient filter, even for

submicron particles. Woven fabrics rely on the filtration of the dust cake much more than felted fabrics.

Fabric filters offer high efficiencies, are flexible to treat many types of dusts, and can accommodate a wide range of volumetric gas flow rates. In addition, fabric filters can be operated with low pressure drops. Some potential disadvantages are:

- High-moisture gas streams and sticky particles can plug the fabric and blind the filter, requiring bag replacement;
- High temperatures can damage fabric bags; and
- Fabric filters have a potential for fire or explosion.

Fabric filters are considered technically feasible for application to the WSD No. 2. The existing WSD No. 1 at the Clewiston refinery uses a baghouse for control. However, U.S. Sugar's experience with the baghouse control device on this application is that maintenance is high due to downtime caused by broken bags and other problems. The downtime results in lost production, lost revenue, increased maintenance activities, and increased maintenance costs. Serious concerns exist over the ability of a baghouse to operate as reliably as a wet scrubber, which would not suffer from these same problems.

Wet Scrubbers

Wet scrubbers are systems that involve particle collection by contacting the particles to a liquid, usually water. The aerosol particles are transferred from the gaseous airstream to the surface of the liquid by several different mechanisms. Wet scrubbers create a liquid waste that must be treated prior to disposal. PM/PM_{10} control efficiencies for wet scrubbing systems range from about 50 to 95 percent, depending on the type of scrubbing system used. Typical wet scrubbers are as follows:

- Spray Chamber,
- Packed-Bed,
- Impingement Plate,
- Mechanically Aided,
- Venturi,
- Orifice, and
- Condensation.

The advantages of wet scrubbers compared to other PM collection devices are that they can collect flammable and explosive dusts safely, absorb gaseous pollutants, and collect mists. Scrubbers can also cool hot gas streams. The disadvantages are the potential for corrosion and freezing, the potential of water and solid waste pollution problems, and high energy costs.

Wet scrubbers are technically feasible for the proposed WSD No. 2. This device is well suited for this application due to minimal maintenance requirements and the ability to recycle the scrubber effluent directly back to the process to recover sugar product. The WSD No. 2 uses an Entoleter Centrifield Vortex wet scrubber. The design of the scrubber is 96-percent removal of PM/PM_{10}, with an outlet dust loading of 0.005 gr/dscf (proposed limit for permitting purposes is 0.00729 gr/dscf). Although the wet scrubber would not provide a greater degree of PM emission reduction compared to a baghouse (the existing WSD No. 1 is permitted for a PM/PM_{10} limit of 0.0018 gr/dscf), the baghouse technology has resulted in increased downtime due to baghouse maintenance requirements.

Mist Eliminators

Because of the higher than expected PM emissions from WSD No. 2 due to water droplet carryover from the wet scrubber, a mist eliminator must be considered as BACT for PM removal. There are two basic types of mist eliminators that could be applied to WSD No. 2. The first is a "chevron" type mist eliminator, and the second is a "mesh pad" mist eliminator. The chevron type use a series of baffles, which cause the air stream to change direction, causing the large water droplets to impacted on the baffles and be captured. The second type uses a mesh pad and captures water droplets down to a smaller size compared to the chevron type. The mesh pad relies on diffusion and brownian motion of the water droplets for capture.

The chevron-type mist eliminator, although theoretically the best technology for this application, would be ineffective due to the cyclonic nature of the gas flow exiting the wet scrubber. Therefore, this technology was not considered further.

Due to the belief that the water droplets being carried out of the WSD No. 2 are primarily greater than 200 microns in size, the mesh pad-type mist eliminator would also not be effective for this application. It would also be highly susceptible to plugging by the sticky sugar particles dissolved in the droplets. The mesh pad would present the ideal conditions for bacterial growth, i.e., moist

atmosphere existing at temperature of about 100 degrees Fahrenheit (°F), which is a recognized problem in handling sugar.

As a result, the mist eliminator is not considered further as BACT for the WSD No. 2.

4.2.2.4 *Economic Analysis*

U.S. Sugar presented a detailed economic evaluation of the baghouse and the cyclone/wet scrubber technology in the original PSD application submitted in 2004. The BACT analysis demonstrated that the incremental cost of using the baghouse technology was over $12,000 per ton of PM/PM_{10} removed. For this reason, the baghouse technology was eliminated. Technical issues with using a baghouse were also discussed.

Adding a baghouse now to the existing scrubber system would not be feasible due to the moisture in the gas stream exiting the wet scrubber. Also, there exists no commensurate environmental benefit associated with installing a baghouse or replacing the existing wet scrubber system with a baghouse.

U.S. Sugar will experience a severe economic impact if WSD No. 2 is shut down for any length of time. Up to 50 percent of the refinery's production capacity would be curtailed if the dryer is shut down. In such a case, U.S. Sugar would be forced to send its sugar outside for refining, at a much higher cost to U.S. Sugar.

4.2.2.5 *Environmental Impacts*

No significant environmental impacts should result from the increased PM emissions from the cyclone/wet scrubber technology. The majority of PM emissions are comprised of dissolved sugar in water droplets greater than 200 microns in size. The vast majority of these droplets will fallout on U.S. Sugar plant property.

There are no ambient air quality standards for PM. As a result, there are no health-related concerns associated with the higher PM emission limit.

Visible emissions from the WSD No. 2 have been demonstrated to be zero opacity. PM emissions are also not important in impacts upon regional haze.

4.2.3 BACT Selection

U.S. Sugar's proposed PM technology and the emission limit are reasonable based on consideration of all the facts, as described above. The proposed PM BACT limit is 25 lb/hr and 109.5 tons per year (TPY) based on the cyclone/wet scrubber combination.

The higher allowable PM emission limit is justified based on the following:

- The PM emissions result from the carryover of water droplets out of the wet scrubber. The water droplets contain dissolved sugar.
- The PM emissions consist primarily of large particles (water droplets) of greater than 200 microns in size, which will fallout on U.S. Sugar plant property.
- The PM emissions consist entirely of refined sugar, which does not represent any health hazard.
- The PM emissions do not result in any adverse environmental or visibility impacts.

TABLE 4-1
BACT DETERMINATIONS FOR PM/PM_{10} FOR OTHER FOOD AND AGRICULTURAL PRODUCTS SOURCES--DRYERS AND COOLERS

Company	State	RBLC ID	Permit Date	Source	Throughput	Emission Limits As Provided in LAER/BACT Clearinghouse	Control Equipment Description	Removal Efficiency %
Golden Grain Energy	IA	IA-0082	4/19/2006	Distillers Dried Grain with Solubles (DDGS) Dryer	209 MMBtu/hr	4.5 lb/hr	Thermal Oxidizer	98
Cargill, Inc., Cargill - Blair Plant	NE	NE-0024	6/22/2004	Germ Meal Dryer	--	0.67 lb/hr	Scrubber	--
Cargill, Inc., Cargill Oilseeds Division	OH	OH-0282	11/28/2003	Isolate Plant Soy Protein Spray Dryer	5,600 lb Soy/hr	4.68 lb/hr	Baghouse and Separation Cyclone	--
Advanced Organics, Inc., Advanced Organics	OH	OH-0283	2/4/2003	Animal Feed Dryers	129,604 ton feed/yr	0.15 lb/hr	--	--
Midwest Grain Products of Illinois Inc.	IL	IL-0077	1/22/2002	Feed Dryer	1,073,100 TPY	0.01 gr/dscf	Eco-Dry (Afterburner)	--
Cargill, Inc.	IN	IN-0097	12/3/2001	Grain Drying	225 ton/hr	49.5 lb/hr	None	--
Central Soya Company Inc.	OH	OH-0251	11/29/2001	Soy Protein Concentrate Dryer	37 MMBtu/hr	1.78 lb/hr	Baghouse, 100% Capture	99.9
Minnesota Corn Processors	MN	MN-0039	8/8/2000	Corn Gluten Dryer	39 MMBtu/hr	17.5 lb/hr	Wet Sentrifugal Venturi Scrubber	--
Agrimark / Cabot Inc. - Middlebury	VT	VT-0012	1/3/2000	Whey Dryer	12 MMBtu/hr	0.02 gr/dscf	Venturi Followed by Wet Cyclonic Scrubber	--
Agrimark / Cabot Inc. - AMC	VT	VT-0018	1/3/2000	Whey Dryers	12 MMBtu/hr	--	Wet Scrubber and Baghouse	--
Givaudan Flavors Corp.	OH	OH-0240	10/15/1998	Spray Dryer	500 lb/hr	0.41 lb/hr	Wet Cyclone Scrubber	--
Proctor and Gamble Manufacturing Co.	TN	TN-0111	3/19/1998	Dryer		0.06 lb/hr	Exclusive Use of Natural Gas	--
Minnesota Corn Processors	MN	MN-0038	12/12/1997	Corn Gluten Dryer	39 MMBtu/hr	11.8 lb/hr	Wet Sentrifugal Venturi Scrubber	--
American Crystal Sugar Company	ND	ND-0016	6/11/1997	Pulp Dryer	230 MMBtu/hr	52 lb/hr	Wet Scrubber	0
Grain Processing Corp.	IN	IN-0075	6/10/1997	Germ Dryer	17 MMBtu/hr	0.685 lb/hr	50% Caustic Scrubber	95
Bunge Corporation	IA	IA-0054	5/20/1997	Grain Dryers	--	1.02 lb/hr	Settling Chamber	--
Westvaco Corporation, Chemical Division	KY	KY-0071	9/2/1996	Extrusion Plant Vibrating Fluidized Bed Dryer	2 MMBtu/hr	1.27 lb/hr	Rotoclone Scrubber	98
Fresno Cogeneration Partners, L.P.	CA	CA-0750	6/28/1996	Feed Rotary Drum Dryers	30 MMBtu/hr	--	--	--
Cargill, Inc.	NE	NE-0016	4/25/1996	Gluten Flash Dryer	45 MMBtu/hr	2.01 lb/hr	Cyclone / Wet Scrubber	--
Brown & Williamson Tobacco Corp.	GA	GA-0072	1/12/1996	Redryer #2		0.34 lb/hr	Rotoclone	98
				Dryer/Cooler		0.51 lb/hr	Baghouse	99.8
				Stem Dryer		0.1 lb/hr	Rotoclone	98
				Redryer #1		1.23 lb/hr	Rotoclone	98
				Redryer #1		0.4 lb/hr	Rotoclone	98
				Redryer #1		0.5 lb/hr	Rotoelone	98
				Redryer #1		4.83 lb/hr	Rotoclone	98
				Stem Dryer		0.1 lb/hr	Rotoclone	98
				Stem Dryer		0.78 lb/hr	Rotoclone	98
				Redryer #2		0.93 lb/hr	Rotoclone	--
				Redryer #2		0.29 lb/hr	Rotoclone	98
				Redryer #2		0.93 lb/hr	Rotoclone	98
				Redryer #2		0.29 lb/hr	Rotoclone	98
				Redryer #2		2.75 lb/hr	Rotoclone	98
				Redryer #2		0.24 lb/hr	Rotoclone	98
				Tobacco Dryer		0.8 lb/hr	None	
				Dryer/Cooler		0.51 lb/hr	Baghouse	99.8

Reference: RACT/BACT/LAER Clearinghouse on EPA's Webpage, June 2006.

TABLE 4-2
PM/PM_{10} CONTROL TECHNOLOGY FEASIBILITY ANALYSIS FOR THE WHITE SUGAR DRYER NO. 2

PM Abatement Method	Technique Now Available	Estimated Efficiency	Feasible and Demonstrated? (Y/N)	Rank Based on Control Efficiency	Employed on WSD No. 2? (Y/N)
Fuel Techniques	Fuel Substitution	NA	N	NTF	N
Pretreatment	Settling Chambers	< 10%	Y	6	N
	Elutriators	< 10%	Y	6	N
	Momentum Separators	10 - 20%	Y	5	N
	Mechanically-Aided Separators	20 - 30%	Y	4	N
	Cyclones	60 - 99%	Y	3	Y
Electrostatic Precipitators (ESP)	Dry ESP	>99%	N	1	N
	Wet ESP	>99%	N	1	N
	Wire-Plate ESP	>99%	N	1	N
	Wire-Pipe ESP	>99%	N	1	N
Fabric Filters	Shaker-Cleaned	>99%	Y	1	N
	Reverse-Air	>99%	Y	1	N
	Pulse-Jet	>99%	Y	1	N
Wet Scrubbers	Spray Chambers	50 - 95 %	Y	2	N
	Packed-Bed	50 - 95 %	Y	2	N
	Impingement Plate	50 - 95 %	Y	2	N
	Mechanically-Aided	50 - 95 %	NTF	NTF	N
	Venturi	50 - 95 %	Y	2	Y
	Orifice	50 - 95 %	Y	2	N
	Condensation	50 - 95 %	Y	2	N
Mist Eliminators	Chevron Type	50%	N	2	N
	Mes Pad Type	70%	N	2	N

Note: NTF = Not Technically Feasible.

5.0 REFERENCES

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U. S .Environmental Protection Agency. 1980. *Prevention of Significant Deterioration Workshop Manual.*

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U.S. Environmental Protection Agency. 1990. *"Top-Down" Best Available Control Technology Guidance Document* (Draft). Research Triangle Park, North Carolina.

U.S. Environmental Protection Agency. 1999. Letter from P. Douglas Neeley, Chief Air and Radiation Technology Branch, EPA Region IV, Atlanta, GA (November 10, 1999).

U.S. Environmental Protection Agency. 2003. *Guidelines on Air Quality Models.* 40 CFR 51, Subpart W.

APPENDIX A

CONTROL EQUIPMENT INFORMATION FOR WHITE SUGAR DRYER NO. 2

ENTOLETER LLC
251 Welton Street
Hamden, CT 06517 USA
Tel: 203-787-3575 Fax: 203-787-1492
www.entoleter.com

August 4, 2004

Mr. Donald H. Griffin
Manager Specialty Sugar
United States Sugar Corporation
1731 South W.C. Owen Avenue
Clewiston, FL 33440

RE: Scrubber Addition

Dear Mr. Griffin:

Based upon the following design conditions, we are recommending four (4) Model 6600 High Efficiency Cyclones, followed by the Centrifield Vortex Model 1500, per the attached schematics.

Inlet Gas Volume = 104,950 ACFM
Inlet Gas Temperature = 113 F
Inlet Dust Loading = 14 grains/cuft

Cyclone Inlet Volume = 96,000 SCFM

Cyclone Inlet Temperature = 113 F

Cyclone Inlet Dust Loading = 11,760lb

Pressure Drop across Cyclones = 6 inches WC

Scrubber Inlet Volume = 96,000 SCFM
Scrubber Inlet Temperature = 113 F

Scrubber Inlet Loading = 118 lb/hr

Scrubber Liquid Recirculation Rate = 500 GPM
Scrubber Blow Down Rate = 12 GPM

Scrubber Outlet Volume = 96,000 SCFM

Scrubber Outlet Dust Loading = 4.2lb/hr

We guarantee that the outlet dust loading will not exceed 0.005 grains/cubic foot for particular greater than 1 micron.

The cyclones will be located at an elevation 43 feet above grade on the second floor of the Refinery Process Building. The scrubber will be located on the second floor, at an elevation of 43 feet above grade, and extend through the third floor, at an elevation of 72 feet above grade, in the Refinery Process Building. The discharge ducting from the scrubber will be connected to the inlet of the ID fan, and discharged to the atmosphere through the west wall of the Refinery Process Building at an elevation of 78 feet 4 inches above grade. The exhaust duct dimensions are 84 inches X 72 inches.

The scheduled start up for this equipment is July 2005. Should you require any additional information, please let us know.

Sincerely,

Dick Steinsvaag
Product Manager

ENTOLETER
251 Welton Street
Hamden, Connecticut 06517 U.S.A.
(800) 729-3575
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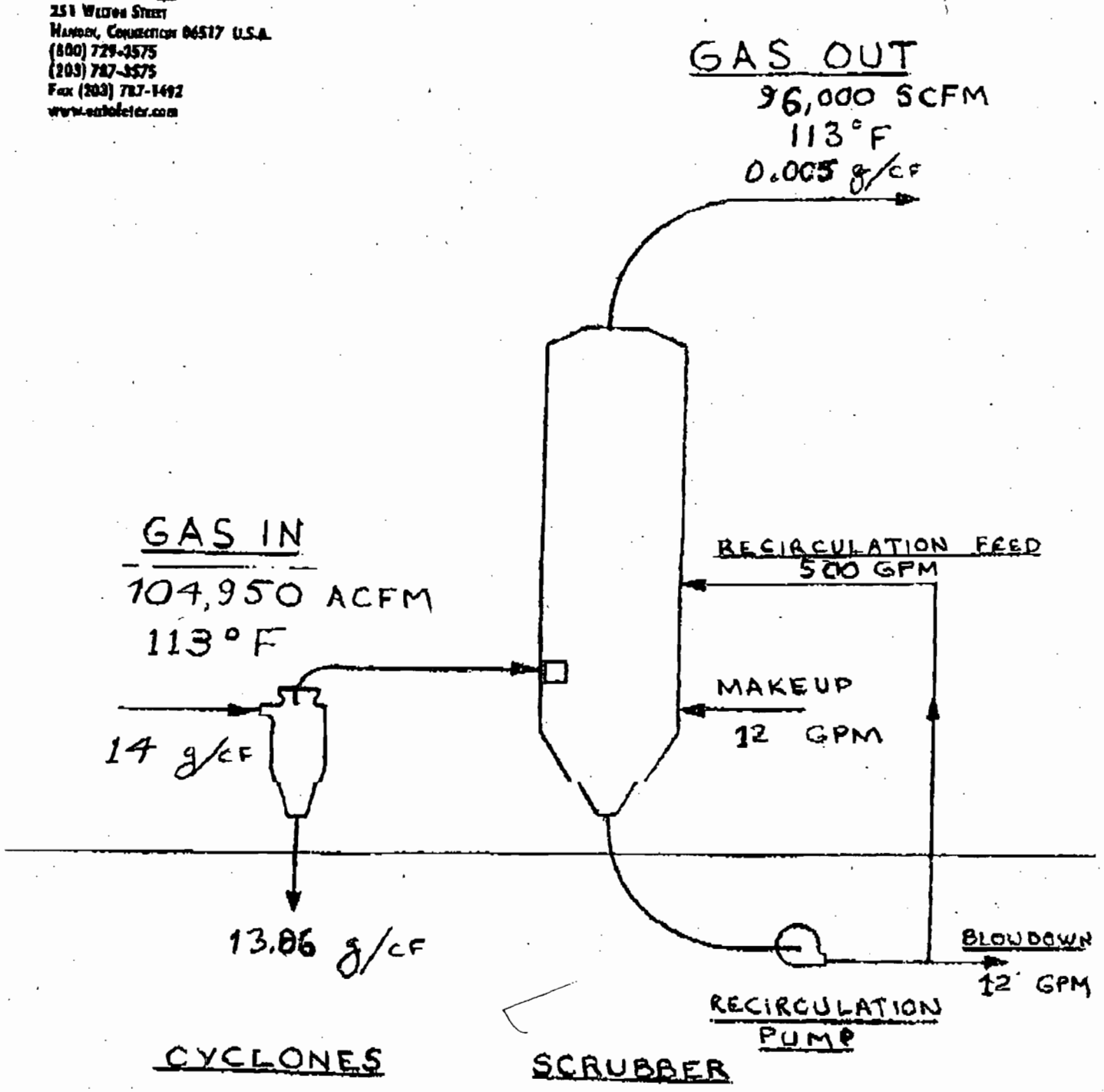
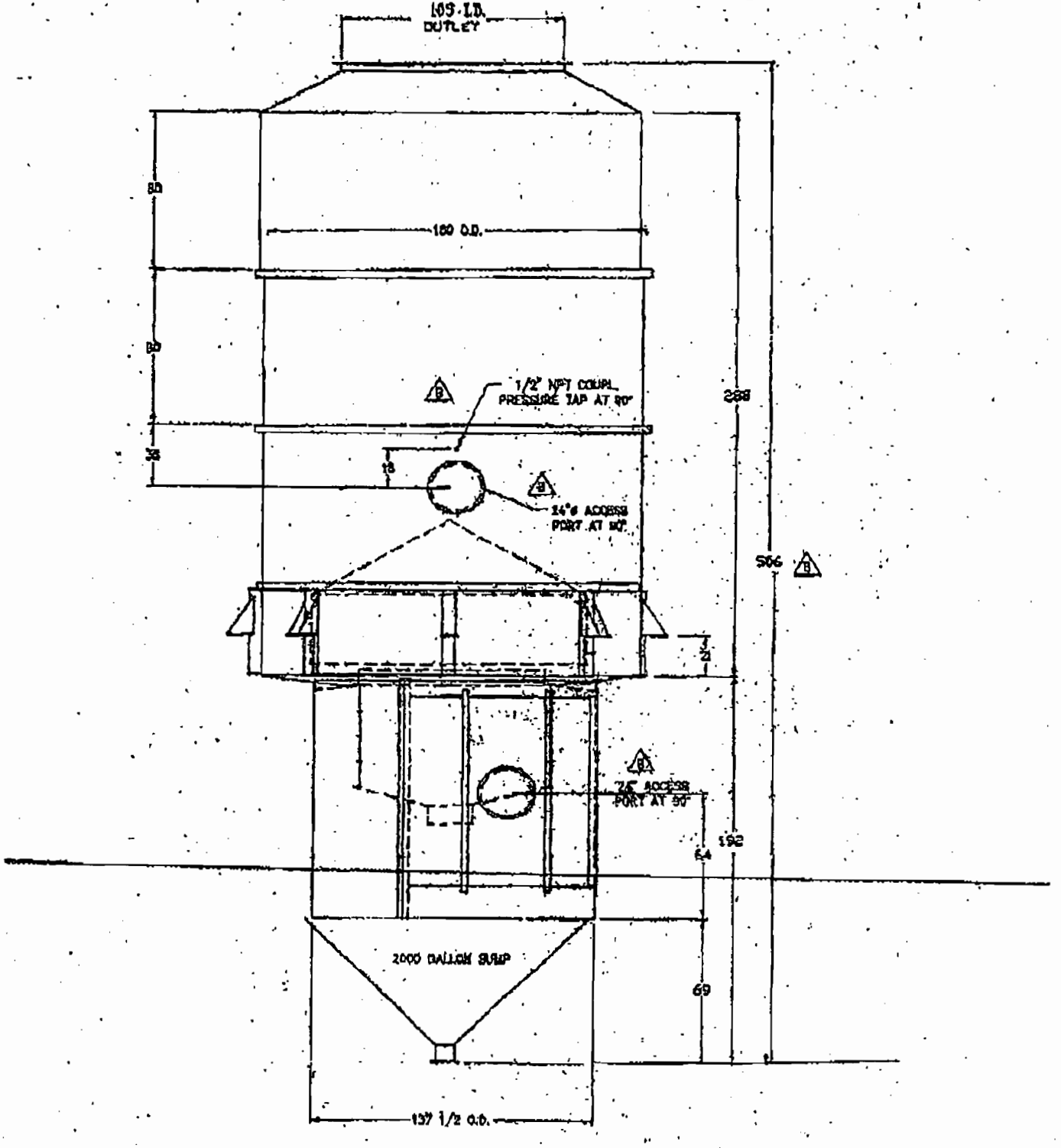


US SUGAR EXPANSION

#4-1002B



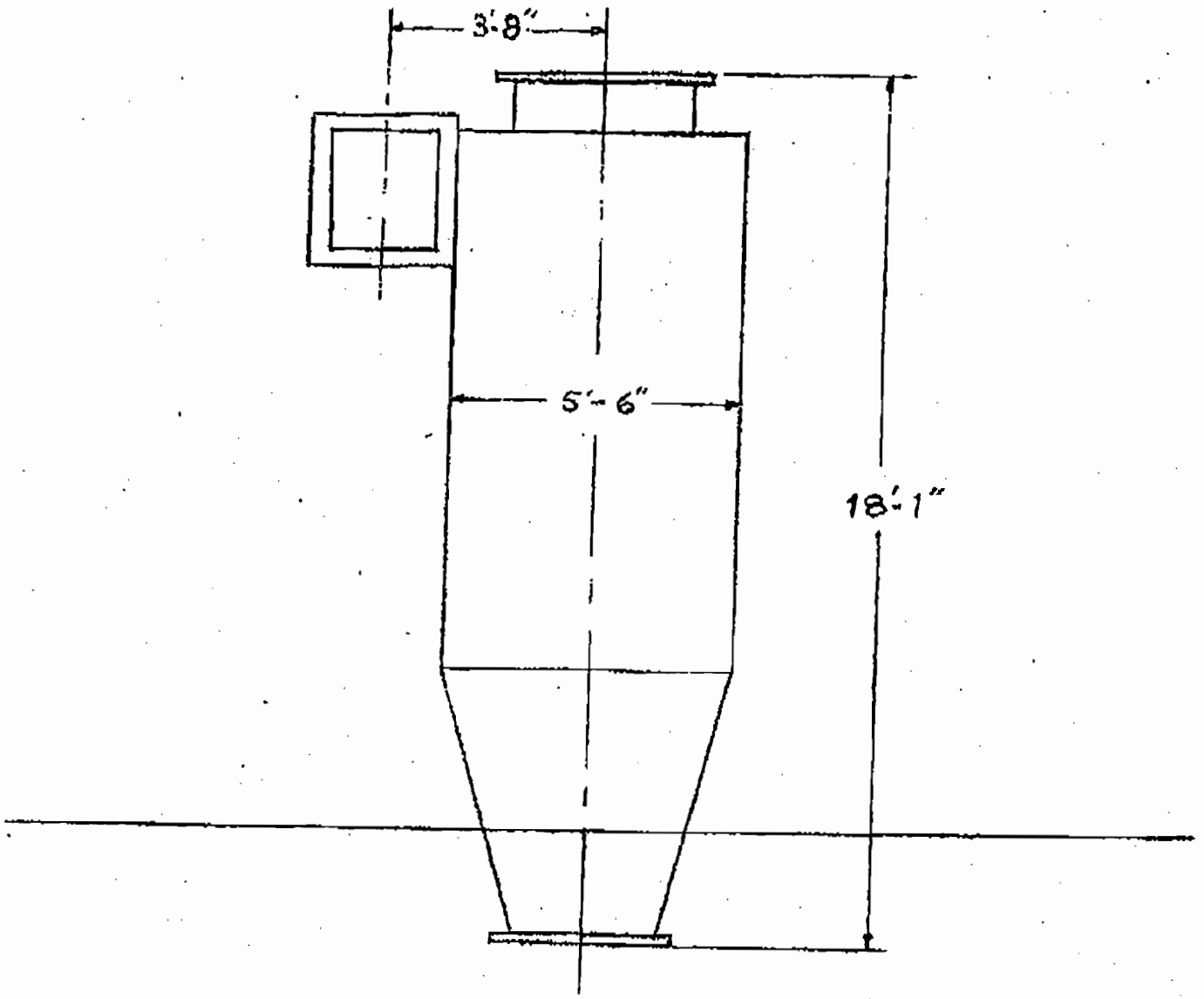
MODEL 1500

1

ENTOLETER LLC
251 Welton Street
Hamden CT 06517
USA

FROM :ENTOLETER FAX NO. :3034849422 Aug. 02 2004 09:45AM P6

ENTOLETER



CYCLONE

MODEL 6600

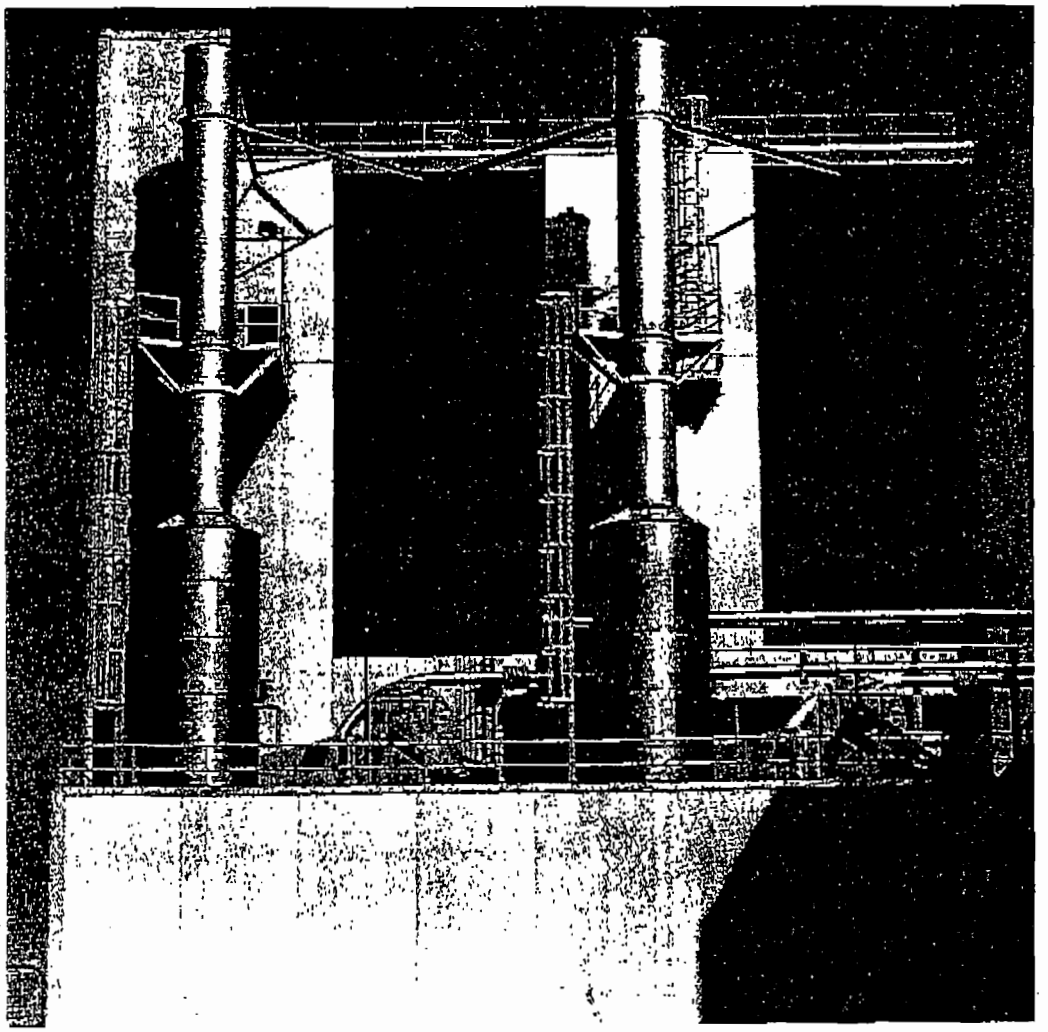
QUANITY-1

US SUGAR EXPANSION #4-10028

entoleter

TO DAVE BUFF
FROM DON GRIFFIN
USSC
11-15-04

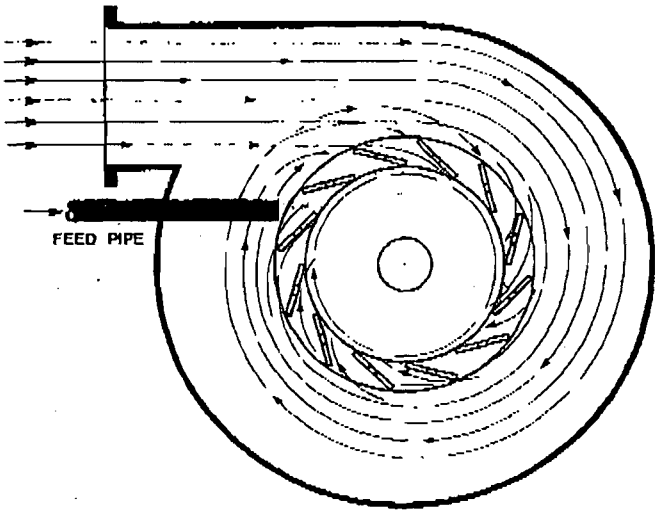
air pollution control systems for industry

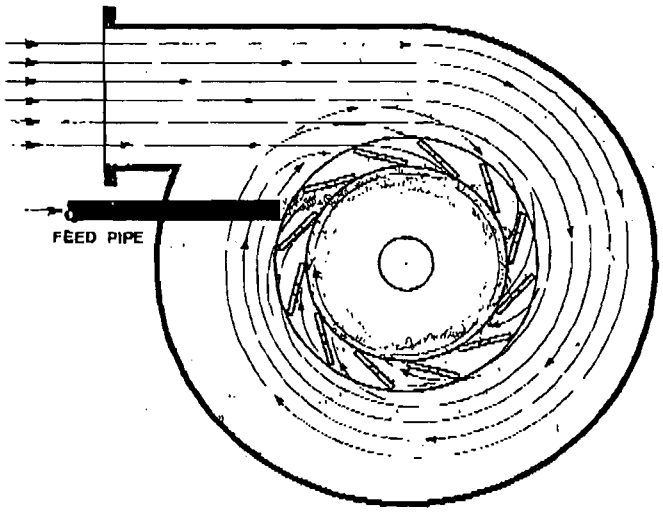


These Illustrations Show the Three Unique Stages of Scrubbing that Occur in the CENTRIFIELD:

1. WET CYCLONE PRE-CLEANING

The gas enters the CentriField tangentially and establishes a tornado like cyclonic pattern around a centrally located vane cage. Scrubbing liquid is fed to the cage through an open pipe. Large liquid droplets are thrown outward from the cage due to centrifugal force. These drops exit the cage through slots in the vanes and contact the incoming gas counter-currently. Large particles impact on these droplets and are removed from the gas stream by cyclonic action. In addition, they saturate the gas stream and clean the cage and scrubber walls.



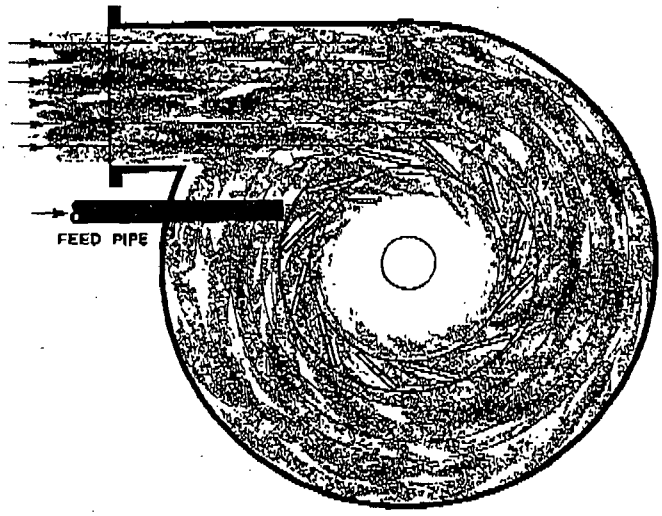


2. MULTI-THROAT VENTURI SCRUBBING

A second cyclonic flow pattern is formed after the gas has passed through the vanes. The cyclonic action inside the cage coats the vanes with a sheet of scrubbing liquid. This liquid is ripped from the vanes and atomized by the velocity of the gas passing the vanes. This action provides scrubbing that is comparable to the best multi-throat venturi scrubber.

3. THE CENTRIFIELD CLOUD

The cyclonic flow pattern inside the cage forms a vortex cloud of fine water droplets. The final stage of scrubbing occurs when any uncollected particulate is forced to pass through this cloud of fine water droplets inside the vane cage. The cloud is maintained by a balance between the force of the incoming gas and the centrifugal force on the droplets. This cloud is the heart of the CentriField and provides the extended contact time required for removal of any particles remaining in the gas stream. These particles must follow a tortuous path through the cloud that ensures contact with and capture by the spinning droplets. Finally, the cleaned gas exits the vortex eye and travels vertically into a radial liquid separator which removes the particle laden droplets from the gas stream.



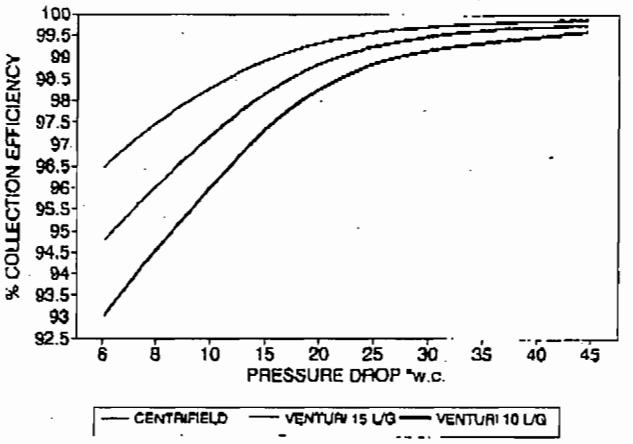
CENTRIFIELD Saves Energy and Maintenance Dollars

REDUCED PRESSURE DROP

The counter-current action and fine droplets produced in the CentriField provide substantially improved contact between the liquid scrubbing media and the gas when compared to other wet scrubbers. In actual side-by-side comparison tests with venturi's, the CentriField has consistently demonstrated greater particulate removal efficiency at the same pressure drops. Typically, the CentriField will require 25 to 35 percent less pressure drop to accomplish the same degree of particulate removal.

COMPARATIVE PERFORMANCE CURVE

CENTRIFIELD vs. VENTURI

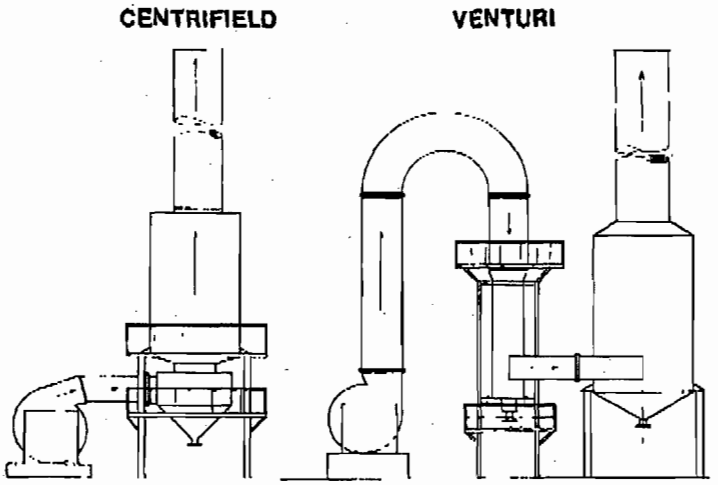


LOWER WATER POWER

The vortex in the CentriField provides extended residence time between the gas and the scrubbing liquid. This important feature allows the CentriField to operate with lower amounts of liquid per unit volume of gas passing through the scrubber. The CentriField will normally operate at liquid to gas (L/G) ratios of 5-6 gallons per 1000 CFM. Venturi scrubbers typically operate at double this rate. The CentriField scrubbing liquid is fed to the unit through open pipes. Venturi's normally require nozzles for the introduction of scrubbing liquid. The nozzles require liquid to be fed at increased pressure when compared to the open pipe of the CentriField. The combination of lower pressure and less liquid allow the CentriField to operate with less pumping horsepower than other wet scrubbers.

MINIMUM SPACE REQUIREMENTS

The CentriField provides a compact installation when compared to a venturi. Floor space requirements are often 25 percent less than conventional venturi's and horizontal scrubber designs.



LOWER INSTALLATION COSTS

The minimal floor space requirements of the CentriField insure that the grading and foundation work will be less than that required by other wet scrubbers. In addition, the compact CentriField arrangement will typically require less duct and structural steel than a conventional venturi's.

LOW MAINTENANCE

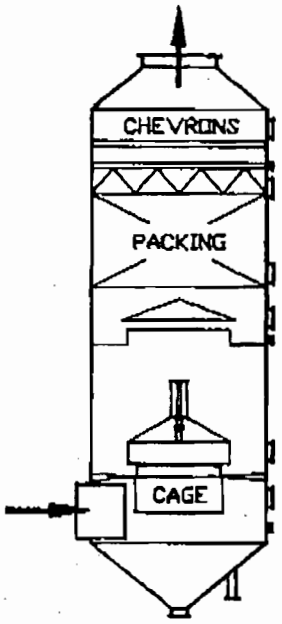
The cyclonic action of the gas and liquid in the CentriField generates superior flushing that keeps the internals and walls clean by preventing the build-up of solids. This self cleaning feature has meant success where other wet scrubbers have plugged and failed. With no moving parts, nozzles, packing, chevrons, mesh pads or close clearances, the CentriField is virtually maintenance free.

In addition, the quick opening access doors provided on the CentriField decrease the time required for entrance into the scrubber during normal maintenance inspections.

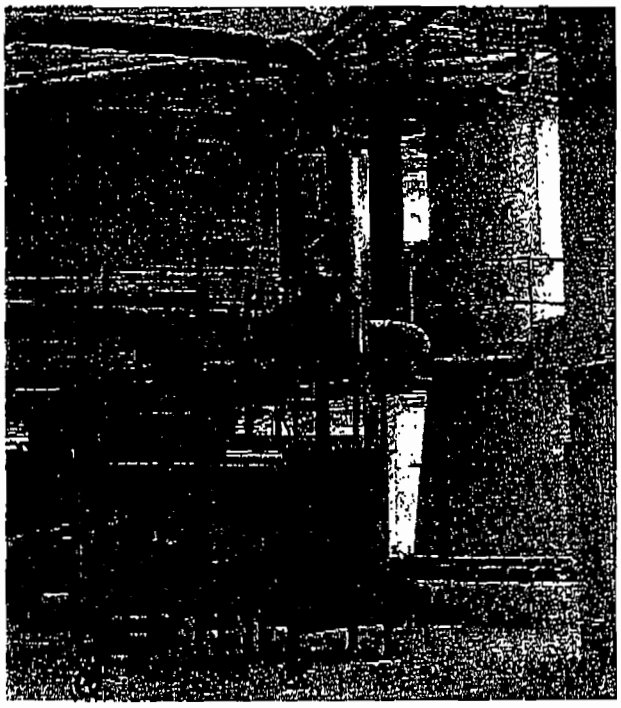
SUPERIOR GAS ABSORPTION

In co-current wet scrubbers, such as a venturi, gas absorption efficiency is limited to one theoretical plate. The CentriField cloud, with its large droplet surface area and long retention time, is capable of providing up to 2 1/2 theoretical plates of scrubbing in a single scrubbing stage. This is especially important in applications where insoluble particulate is present, or where the product of the absorption tends to plug packing or sieve trays. CentriField has large, non-restrictive internal openings, no nozzles and cyclone-like flushing action. As a result CentriField does not exhibit the operational problems experienced by packed bed and tray units in the presence of particulate or precipitant.

The scrubbing of gaseous contaminants and flyash from boiler and incinerator exhausts are examples where a high degree of particulate and gaseous contaminant removal can be achieved in a single stage of CentriField. In applications where extremely high levels of gaseous contaminant removal are required, a packed bed can be provided as a separate stage in the shell of the CentriField. All the scrubbing required is provided in a single unit, thus saving valuable floor space.



2-Stage CENTRIFIELD



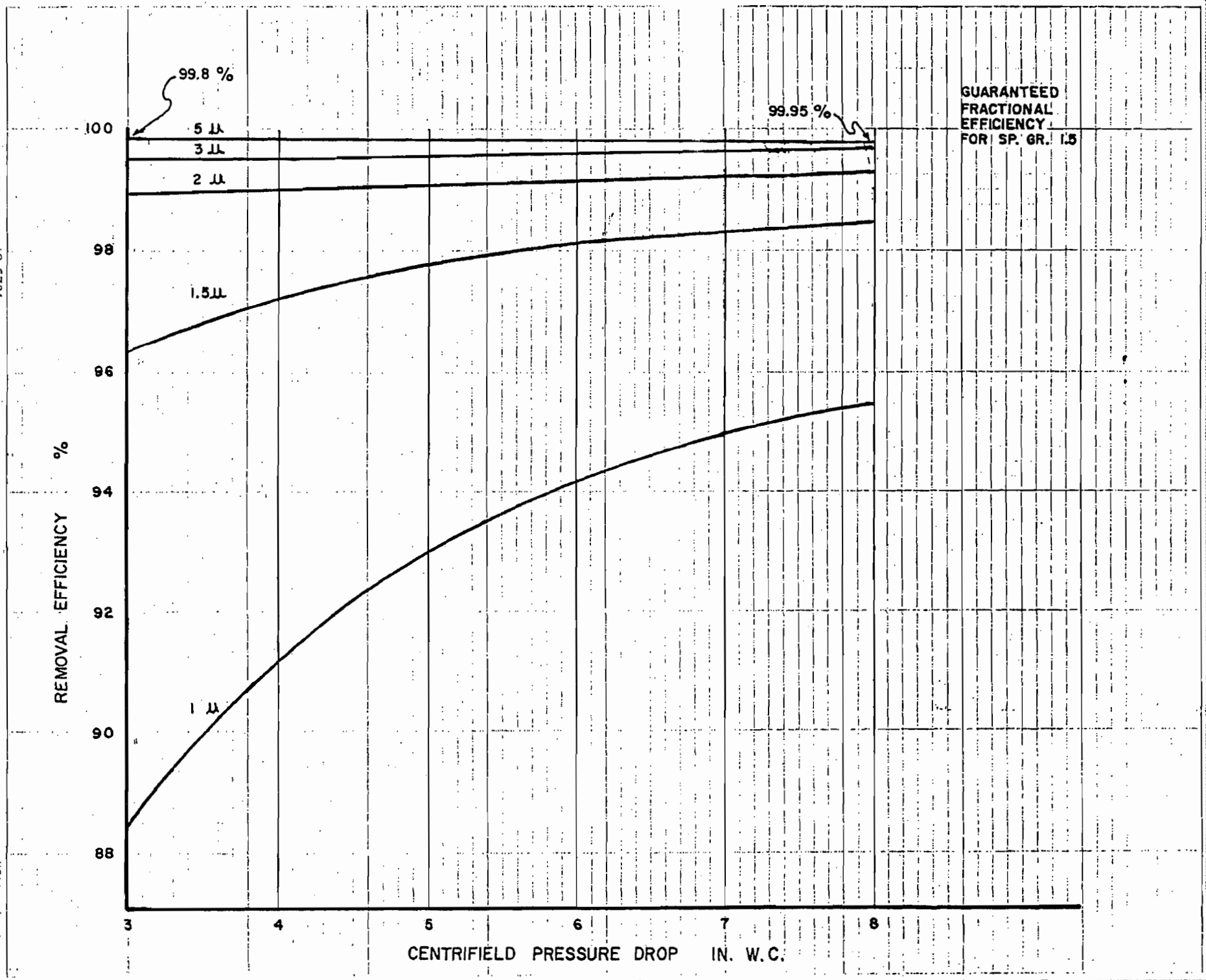
PILOT PROGRAMS

Self contained CentriField Pilot Scrubbers are available on a rental basis for in plant, on-line performance testing under actual process conditions. The use of the pilot system enables the customer to predict operating parameters that will enable the full size unit to meet their emission control requirements. By piloting the CentriField on site, pressure drop and water requirements may be optimized. The performance of the CentriField is confirmed to management and/or pollution control agencies by providing pilot data.

CentriField Pilot Scrubbers are furnished as completely assembled systems and include: a CentriField variable vane cage scrubber, integral fan with a 30 HP motor, recycle pump with fractional HP motor, recycle tank and all required recycle piping. The unit requires that the customer provide duct, water and power to the scrubber. Shipping time is not included in a rental period, so that the customer only pays for the time the pilot unit is at the plant gathering useful information. A field engineer is available to supervise the start-up of the pilot unit and provide training in its operation to plant personnel.

ENTOLETER

ENTOLETER LLC
251 Welton Street
Hamden CT 06517
Tel: 203-787-3575 Fax: 203-787-1492
www.entoleter.com
info@entoleter.com



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APPENDIX B

EPA VISIBLE EMISSION OBSERVATION FORMS

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page	Of
Continued on VEO Form Number			

Method Used (Circle One) Method 9 203A 203B Other:

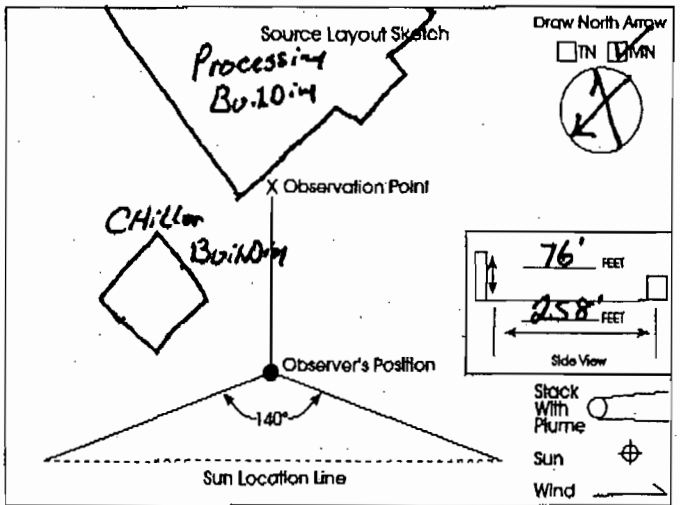
Company Name: UNITED STATES Sugar Corp.
Facility Name: Clewiston Sugar House
Street Address: S. W. C. OWENS AVE
City: Clewiston | State: FL | Zip: 33440

Process: Sugar Dryer | Unit#: 1 | Operating Mode: 1090
Control Equipment: WET Scrubber | Operating Mode: AUTO

Describe Emission Point: 6' WIDE X 7' TALL OUTLET ON THE NW Corner of Process Building
Height of Emiss. Pt. Start: 76' End: SAME
Height of Emiss. Pt. Rel. to Observer Start: 76' End: SAME
Distance to Emiss. Pt. Start: 258' End: SAME
Direction to Emiss. Pt. (Degrees) Start: 124° End: SAME
Vertical Angle to Obs. Pt. Start: 16° End: SAME
Direction to Obs. Pt. (Degrees) Start: 124° End: SAME
Distance and Direction to Observation Point from Emission Point Start: 2' OUT FROM VENT End: SAME

Describe Emissions Start: Coming End: SAME
Emission Color Start: WHITE End: SAME
Water Droplet Plume: Attached ☐ Detached ☑ None ☐

Describe Plume Background Start: Building End: SAME
Background Color Start: yellow End: SAME
Sky Conditions Start: SCATTERED End: SAME
Wind Speed Start: 5-7 End: SAME
Wind Direction Start: NW End: SAME
Ambient Temp. Start: 91 End: SAME
Wet Bulb Temp.:
RH Percent: 32



Longitude	Latitude	Declination

Additional Information:

Observation Date: 4-3-06	Time Zone: EDST	Start Time: 3:32 P.m	End Time: 3:44 P.M.

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Observer's Name (Print): STEVE MAMMEN
Observer's Signature:
Date: 4-3-06
Organization: USSC
Certified By: ETA
Date: 11-30-05

USSC-ES-0001

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number						Page	Of
Continued on VEO Form Number							

Method Used (Circle One) Method 9 203A 203B Other: _____

Company Name: United States Sugar Corp.
Facility Name: Clewiston Sugar House
Street Address: S. W.C. Owens Ave
City: Clewiston State: FL Zip: 33440

Process	Unit #	Operating Mode
Sugar Dryer	1	100%
Control Equipment: Wet Scrubber		Operating Mode: AUTO

Describe Emission Point: 6' wide & 7' tall outlet on the NW Corner of Process Building

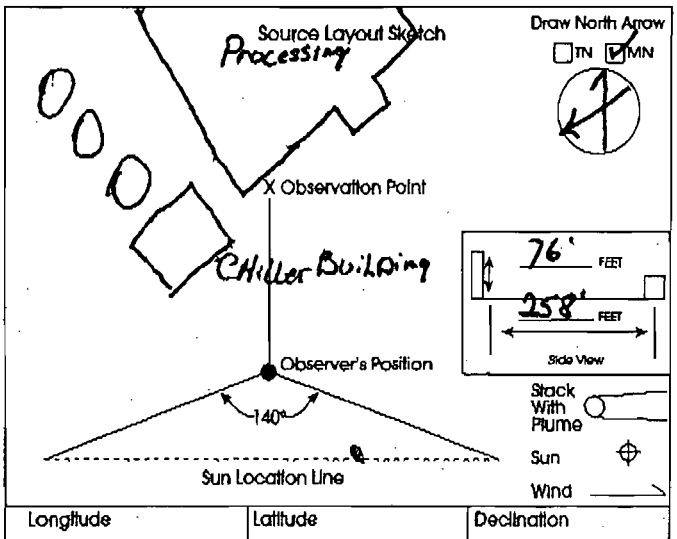
Height of Emiss. Pt.	Height of Emiss. Pt. Rel. to Observer
Start 76' End SAME	Start 76' End SAME
Distance to Emiss. Pt.	Direction to Emiss. Pt. (Degrees)
Start 258' End SAME	Start 124° End SAME

Vertical Angle to Obs. Pt.	Direction to Obs. Pt. (Degrees)
Start 76° End SAME	Start 124° End SAME

Distance and Direction to Observation Point from Emission Point: Start 2 out from vent End SAME

Describe Emissions	
Start None End SAME	
Emission Color: Start Clear End	Water Droplet Plume: Attached ☐ Detached ☐ None ☑

Describe Plume Background	
Start Building End SAME	
Background Color: Start Yellow End SAME	Sky Conditions: Start Scattered End SAME
Wind Speed: Start 7-10 End SAME	Wind Direction: Start NW End
Ambient Temp.: Start 86 End SAME	Wet Bulb Temp.: 86 RH Percent: 38%



Longitude	Latitude	Declination

Additional Information:

Observation Date: 4-4-06 Time Zone: EDST Start Time: 3:29 P.M. End Time: 3:41 P.M.

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Observer's Name (Print): Steve Mammen
Observer's Signature: [signature] Date: 4-4-06
Organization: USSC
Certified By: ETA Date: 11-30-05

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number		Page	Of
Continued on VEO Form Number			

Method Used (Circle One) Method 9 203A 203B Other:

Company Name	UNITED STATES SUGAR CORP.
Facility Name	CLEWISTON SUGAR HOUSE
Street Address	S. W.C. OWENS AVE
City	CLEWISTON
State	FL
Zip	33440

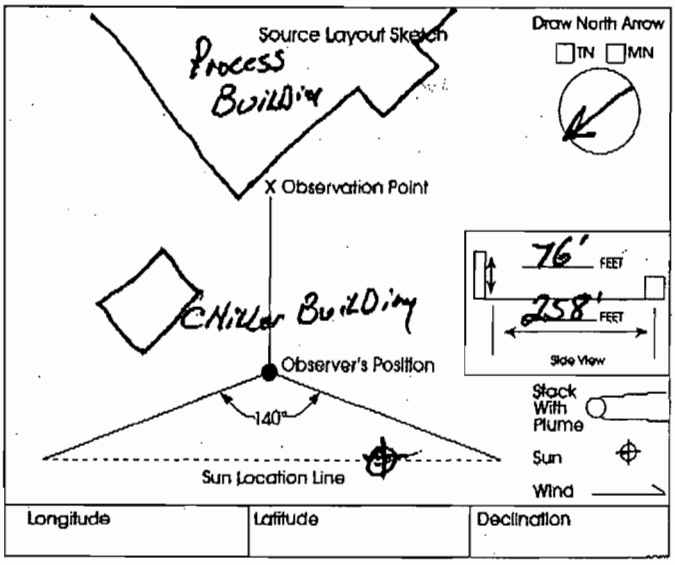
Process	Sugar Dryer	Unit# 1	Operating Mode 20%
Control Equipment	WET SCRUBBER		Operating Mode AUTO

Describe Emission Point: 6' WIDE X 7' TALL OUTLET ON THE NW CORNER OF PROCESS BUILDING

Height of Emiss. Pt. Start	76'	End SAME	
Height of Emiss. Pt. Rel. to Observer Start	76'	End SAME	
Distance to Emiss. Pt. Start	258'	End SAME	
Direction to Emiss. Pt. (Degrees) Start	144°	End SAME	
Vertical Angle to Obs. Pt. Start	16°	End SAME	
Direction to Obs. Pt. (Degrees) Start	124°	End SAME	
Distance and Direction to Observation Point from Emission Point Start	2' OUT FROM VENT	End SAME	

Describe Emissions Start	NONE	End SAME	
Emission Color Start	CLEAR	End SAME	Water Droplet Plume Attached ☐ Detached ☐ None ☑

Describe Plume Background Start	BUILDING	End SAME	
Background Color Start	YELLOW	End SAME	Sky Conditions Start SCATTERD End
Wind Speed Start	5-10	End SAME	Wind Direction Start SW End SAME
Ambient Temp. Start	94°	End SAME	Wet Bulb Temp. 68° RH Percent 30%



Longitude	Latitude	Declination

Additional Information

Observation Date	Time Zone	Start Time	End Time
4-17-06	EDST	3:28 P.M.	3:40 P.M.

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Observer's Name (Print)	STEVE MAMMEN
Observer's Signature	Date 4-17-06
Organization	USSC
Certified By ETA	Date 11-30-05

USSC-EE-0001

EPA

VISIBLE EMISSION OBSERVATION FORM 1

Form Number							Page	Of
Continued on VEO Form Number								

Method Used (Circle One) Method 9 203A 203B Other: _____

Observation Date	Time Zone	Start Time	End Time
4-26-06	EDST	4:07 P.M.	4:19 P.M.

Company Name	
UNITED STATES Sugar Corp.	
Facility Name	
Clewiston Sugar House	
Street Address	
S. W.C. OWENS AVE	
City	State / Zip
Clewiston	FL 33440

Process	Unit	Operating Mode
Sugar Dryer	1	40%
Control Equipment		Operating Mode
WET Scrubber		AUTO

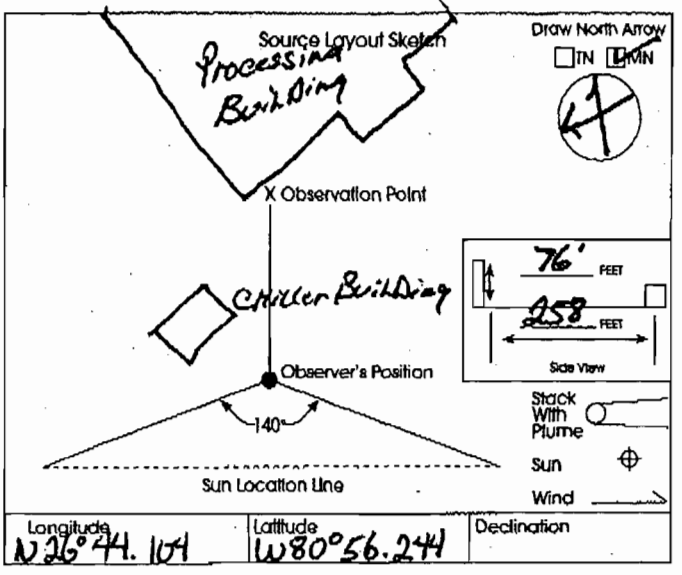
Describe Emission Point
6' wide X 7' TALL OUTLET ON THE NW Corner OF Processing Building

Height of Emiss. Pt.		Height of Emiss. Pt. Rel. to Observer	
Start 76	End SAME	Start 76	End SAME
Distance to Emiss. Pt.		Direction to Emiss. Pt. (Degrees)	
Start 258'	End SAME	Start 124°	End SAME
Vertical Angle to Obs. Pt.		Direction to Obs. Pt. (Degrees)	
Start 76°	End SAME	Start 124°	End SAME

Distance and Direction to Observation Point from Emission Point
Start 2' OUT From Vent End SAME

Describe Emissions			
Start NONE		End SAME	
Emission Color		Water Droplet Plume	
Start Clear	End SAME	Attached ☐ Detached ☐ None ☑	

Describe Plume Background			
Start Building		End SAME	
Background Color		Sky Conditions	
Start yellow	End SAME	Start Overcast	End SAME
Wind Speed		Wind Direction	
Start 3-5	End SAME	Start NW	End
Ambient Temp.		Wet Bulb Temp.	RH Percent
Start 88°	End SAME	74	50%



Longitude	Latitude	Declination
N 26° 44. 104	W 80° 56. 244	

Additional Information

Sec / Min	0	15	30	45	Comments
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Observer's Name (Print)	
STEVE MAMMEN	
Observer's Signature	Date 4-26-06
Organization	
USSC	
Certified By	Date
ETA	11-30-05

APPENDIX C

WINKLER APC, LLC REPORT

June 9, 2006

Winkler APC, LLC
14911 Lake Olive Drive
Ft. Myers, FL 33919
Ph: 239-466-6367
Fax: 309-276-1399
Email: w1nkler@comcast.net

US Sugar Corporation
1731 South W.C. Owen Ave.
Clewiston, FL 33440-1207

ATT: Don Griffin

REF: USSC P.O. # C222147
White Sugar Dryer Dust Collector Study
June 2, 2006 ACE Test Report

Dear Mr. Griffin,

Summary:

The low emissions shown in PM10 test results indicate that the scrubber is doing a very good job of removing dry sugar dust particles. In general particles less than 10 microns are of greater concern than larger particles. The high grain loading in the Method 5 test results (compared to the low PM10 results) show that the scrubber is not properly removing the large (over 10 microns) recycle water droplets that are generated within the scrubber. The scrubber is emitting these large droplets containing 15% dissolved sugar solids-and these account for the higher grain loading in the Method 5 test than the PM10 test. These large droplets drop out on site and are a housekeeping problem.

Details:

Scrubber emissions are a combination of uncaptured dry solids and dissolved solids in droplets that escape from the mist eliminator. A properly operating 10" w.g. pressure drop venturi scrubber should have very little dry PM emissions above 1 micron and no dry PM emissions above 10 microns. Please Refer to "FIG. 1". There is an average of 0.0314 gr/dscf Total PM and an average of 0.00168 gr/dscf of PM under 10 microns. In a properly operating 10" w.g. scrubber there are virtually no emissions over 10 microns in size and the Method 5 results are virtually equal to the PM10 results. Since the Method 5 emissions is approximately 18 times the PM10 emissions- excessive droplet carryover from the scrubber must be occurring.

All wet scrubbers pass the air stream through a water droplet cloud. The fine solid particulate is captured on the droplets by inertial impaction. This dryer scrubber is a "gas atomized venturi" design. There are no spray nozzles and the droplet cloud is generated in the venturi throats. In the throats the droplet cloud is formed by the shear forces generated by very high velocity air flowing over water films.

The size of the water droplets formed is primarily a function of the air speed in the throats. The higher the air speed, the higher the pressure drop and the finer the droplet size generated. A properly operating 10" w.g. pressure drop scrubber generates a droplet distribution where the vast amount by weight is above 200 microns.

The significance of droplet size is that large 200 micron droplets will be caught in the Method 5 sampling train; but not in the PM10 sampling train. Therefore the carryover is masking the Method 5 results that we would achieve without the carryover. Please refer to "FIG.2". The sampling probe is not meant to remove dust -just to convey it to the final filter where it is captured and weighed. Only very large particles and droplets are captured in the probe and measured in the probe wash. One would normally expect 0.1-2.0 mg solids in the wash if the filter had 1.0 mg solids. There is an exceedingly high proportion of solids in the probe wash (46.5 mg) versus the filter (1.0 mg) and this is another indication that dissolved solids in droplets accounts for the majority of the weight in the Method 5 test. The PM10 test has equipment in the sample train to keep out large liquid drops over 10 microns and gives a more accurate measurement of the true sugar dust emission rate.

As I mentioned in the summary- these 200+ micron droplets cause a housekeeping problem. The dryer scrubber air stream exits the building through a horizontal duct whose roof is approximately 82' above grade. Since a 200 micron water droplet has a terminal settling velocity of 2.2 feet per second therefore it takes approximately 37 seconds for the droplet to reach the ground-regardless of wind speed. From visual inspections-most dropout is in the immediate area. If there is a steady wind the droplets can travel horizontally. For example-with a steady 30 mph (44 ft/sec) wind the 200 micron droplets would travel horizontally approximately (44x37=) 1628 feet before reaching the ground.

If horizontal dispersion is of concern a downward turning elbow could be put on the current horizontal outlet duct. If –for example-the elbow discharge velocity were 3000 fpm (50 ft/sec) then the droplet settling rate would be 52.2 ft/sec. This is 23 times the gravitational settling rate therefore the droplets would travel approximately 1/23rd of 1628 feet, or about 71 feet.

Regards,

Gene Winkler
Winkler APC LLC