Title V
CRIST ELECTRIC GENERATING
PLANT PERMIT APPLICATION
Volume III

Unit-8

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 8

Crist Plant Fly Ash Silos

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[X] 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.

2. Single Process, Group of Processes, or Fugitive Only? Check one :

[X] 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.

Emissions Unit Information Section 8

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : Crist Plant Fly Ash Silos		
2. Emissions Unit Identification Number : 008 [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code : A	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : Two fly ash temporay storage silos. Three blowers convey dry fly ash to two silos at a maximum soilds rate of 150 tons per hour to either silo. A majority of the soilds (99.4%) settle by gravity upon entering the silo. The residual particulate emissions are controlled by a baghouse on each silo. Each baghouse is a Pulse Jet Fabric Filter, model # 100-wmwc-420 (IIG) manufactured by Flex-Kleen.		

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Emissions Unit Control Equipment 1

1. Description : Flex-Kleen Pulse Jet Fabric Filter Baghouse
2. Control Device or Method Code : 16

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Emissions Unit Details

1. Initial Startup Date :	
2. Long-term Reserve Shutdown Date :	
3. Package Unit : Manufacturer : Fly Ash silos w/ Flex-Kleen Baghouse	Model Number : 100-wmwc-420 (IIG
4. Generator Nameplate Rating : MW	
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :	 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :	150	tons per hour
4. Maximum Production Rate :		
5. Operating Capacity Comment : Fly ash from Units 4,5,6 and 7 is pneumatically conveyed to two silos at a maximum solids rate of 150 tons per hour. A majority of the solids (99.4%) settle by gravity upon entering the silos. The residual particulate emissions are controlled by a baghouse on each silo. Dry fly ash is sold and transported in closed tanker trucks off the plant site or conditioned (12-15 % water added) fly ash is transported to approved landfill areas on company property. Plant Crist sells approximately 20% of the fly ash produced annually.		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :

	24 hours/day	7 days/week
	52 weeks/year	8,760 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Rule Applicability Analysis

Not applicable

List of Applicable Regulations

Title V Core List

Crist Unit 8 Federal-Regulation List (Cr8rule.EPA)

Crist Unit 8 State-Regulation List (Cr8rule.DEP)

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

April 1, 1996

Owners
Title V Sources

Dear Permittee:

Department records indicate that you operate a facility that is subject to Title V of the Clean Air Act. As you probably know, applications for Title V permits are due by June 15, 1996.

The Department has made numerous changes in its rules in recent months. Therefore, the Title V Core List, a list of rules that presumptively applies to each Title V source, has been updated and is provided for your convenience in completing the Title V application.

Enclosed you will also find a cross-reference of the old rule numbers and their new numbers.

Applicants are encouraged to use the new listing, however, to the extent that the applications have been completed by using the outdated rule references, it is not essential that the applications be changed.

If your facility is not subject to Title V, please disregard. If you do not know whether your facility is a Title V source or if you need additional information, please contact the Title V coordinator in Tallahassee for your geographical location as shown on the enclosure.

Sincerely,

John C. Brown, Jr., P.E.
Administrator, Title V Section
Bureau of Air Regulation

JCB/sk

Enclosures

Title V Core List

Effective: 03/25/96

[**Note:** The Title V Core List is meant to simplify the completion of the "List of Applicable Regulations" for DEP Form No. 62-210.900(1), Application for Air Permit - Long Form. The Title V Core List is a list of rules to which all Title V Sources are presumptively subject. The Title V Core List may be referenced in its entirety, or with specific exceptions. The Department may periodically update the Title V Core List.]

Federal: ***(description)***

40 CFR 61: National Emission Standards for Hazardous Air Pollutants (NESHAP)
40 CFR 61, Subpart M: National Emission Standard for Asbestos.

40 CFR 82: Protection of Stratospheric Ozone.
40 CFR 82, Subpart B: Servicing of Motor Vehicle Air Conditioners (MVAC).
40 CFR 82, Subpart F: Recycling and Emissions Reduction.

State: ***(description)***

CHAPTER 62-4, F.A.C.: PERMITS, effective 10-16-95

62-4.030, F.A.C.: General Prohibition.
62-4.040, F.A.C.: Exemptions.
62-4.050, F.A.C.: Procedure to Obtain Permits; Application.
62-4.060, F.A.C.: Consultation.
62-4.070, F.A.C.: Standards for Issuing or Denying Permits; Issuance; Denial.
62-4.080, F.A.C.: Modification of Permit Conditions.
62-4.090, F.A.C.: Renewals.
62-4.100, F.A.C.: Suspension and Revocation.
62-4.110, F.A.C.: Financial Responsibility.
62-4.120, F.A.C.: Transfer of Permits.
62-4.130, F.A.C.: Plant Operation - Problems.
62-4.150, F.A.C.: Review.
62-4.160, F.A.C.: Permit Conditions.
62-4.210, F.A.C.: Construction Permits.
62-4.220, F.A.C.: Operation Permit for New Sources.

CHAPTER 62-103, F.A.C.: RULES OF ADMINISTRATIVE PROCEDURE, effective 12-31-95

62-103.150, F.A.C.: Public Notice of Application and Proposed Agency Action.
62-103.155, F.A.C.: Petition for Administrative Hearing; Waiver of Right to Administrative Proceeding.

CHAPTER 62-210, F.A.C.: STATIONARY SOURCES - GENERAL REQUIREMENTS, effective 03-21-96

62-210.300, F.A.C.: Permits Required.
62-210.300(1), F.A.C.: Air Construction Permits.
62-210.300(2), F.A.C.: Air Operation Permits.
62-210.300(3), F.A.C.: Exemptions.
62-210.300(3)(a), F.A.C.: Full Exemptions.
62-210.300(3)(b), F.A.C.: Temporary Exemption.

62-210.300(5), F.A.C.: Notification of Startup.
62-210.300(6), F.A.C.: Emissions Unit Reclassification.

62-210.350, F.A.C.: Public Notice and Comment.
62-210.350(3), F.A.C.: Additional Public Notice Requirements for Facilities Subject to Operation Permits for Title V Sources.

62-210.360, F.A.C.: Administrative Permit Corrections.

62-210.370(3), F.A.C.: Annual Operating Report for Air Pollutant Emitting Facility.

62-210.650, F.A.C.: Circumvention.

62-210.900, F.A.C.: Forms and Instructions.
62-210.900(1) Application for Air Permit - Long Form, Form and Instructions.
62-210.900(5) Annual Operating Report for Air Pollutant Emitting Facility, Form and Instructions.

CHAPTER 62-213, F.A.C.: OPERATION PERMITS FOR MAJOR SOURCES OF AIR POLLUTION, effective 03-20-96

62-213.205, F.A.C.: Annual Emissions Fee.
62-213.400, F.A.C.: Permits and Permit Revisions Required.
62-213.410, F.A.C.: Changes Without Permit Revision.
62-213.412, F.A.C.: Immediate Implementation Pending Revision Process.
62-213.420, F.A.C.: Permit Applications.
62-213.430, F.A.C.: Permit Issuance, Renewal, and Revision.
62-213.440, F.A.C.: Permit Content.
62-213.460, F.A.C.: Permit Shield.

62-213.900, F.A.C.: Forms and Instructions.
62-213.900(1) Major Air Pollution Source Annual Emissions Fee Form, Form and Instructions.

CHAPTER 62-256, F.A.C.: OPEN BURNING AND FROST PROTECTION FIRES, effective 11-30-94

CHAPTER 62-257, F.A.C.: ASBESTOS NOTIFICATION AND FEE, effective 03/24/96

CHAPTER 62-281, F.A.C.: MOTOR VEHICLE AIR CONDITIONING REFRIGERANT RECOVERY AND RECYCLING, effective 03-07-96

CHAPTER 62-296, F.A.C.: STATIONARY SOURCES - EMISSION STANDARDS, effective 03-13-96

62-296.320(2), F.A.C.: Objectionable Odor Prohibited.
62-296.320(3), F.A.C.: Industrial, Commercial, and Municipal Open Burning Prohibited.
62-296.320(4)(c), F.A.C.: Unconfined Emissions of Particulate Matter.

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Division of Air Resources Management
Rule Repeals and Conforming Amendments
Cross-Reference of Rule Number Changes

March 24, 1996

Based on FAW Notices: 10/27/95 (effective 1/1/96 & 1/2/96)
12/15/96, 2/2/96, & 2/9/96 (effective 3/13/96)
1/26/96 (effective 3/24/96)

Rules Moved or Renumbered

From:	To:
62-204:	
204.500	204.500(1)
204.500(1)-(4)	204.500(1)(a)-(d)
204.600	204.500(2)
62-210:	
210.400(4)	212.600(3)
Fig. 210.400-1	212.600(3)(c)4. - figure replaced by equation
210.500 - except last sentence	204.220(4)
62-212:	
212.200 - all definitions	210.200 - definitions merged in as needed
212.400(6)-(8) and below	212.400(7)-(9) and below
212.410(1)(a)-(d)	212.400(6)(a)1.-4.
212.410(2)	212.400(6)(b)
212.410(3)(a) and below	212.400(6)(c) - amended to cite CFR
212.410(3)(b) and below	212.400(6)(c)1. - amended to cite CFR
212.410(3)(c)	212.400(6)(c)2.
212.410(4)(a)-(b)	212.400(6)(d)1.-2.
212.500(7) and below	212.500(8) and below
212.510(1)(a)-(c)	212.500(7)(a)1.-3.
212.510(2)-(3)	212.500(7)(b)-(c)
212.700(1)-(2)	210.300(6)(a)-(b)

From:	To:
62-213:	
213.200 - all definitions	210.200 - definitions merged in as needed
213.210	213.205(5)
62-214:	
214.200 - all definitions	210.200 - definitions merged in as needed
62-215:	
215.220(1)	213.300(2)(a)
215.220(1)(a)-(c)	213.300(2)(a)1.-3.
215.220(2)	213.300(2)(b)
215.220(3)(a)-(b)	213.300(2)(c)1.-2.
215.220(4)	213.300(2)(d)
215.220(5)(a)-(d)	213.300(2)(e)1.-4.
215.230	213.300(3)
215.230(1)-(10)	213.300(3)(a)-(j)
215.230(11)(a)-(d)	213.300(3)(k)1.-4.
215.230(12)	213.300(3)(l)1.
215.230(12)(a)-(d)	213.300(3)(l)2.-5.
215.230(13)(a)-(b)	213.300(3)(m)1.-2.
215.230(14)	213.300(3)(n)1.
215.230(14)(a)-(b)	213.300(3)(n)2.-3.
215.230(15)	213.300(3)(o)
215.230(16)	213.300(3)(p)1.
215.230(16)(a)	213.300(3)(p)1. - last sentence
215.230(16)(b)	213.300(3)(p)2.
215.230(17)-(19)	213.300(3)(q)-(s)
215.300(1)	213.300(1)(a)
215.900(1)	213.900(2)
62-257:	
257.300	257.301(1)
257.301(1)-(5) and below	257.301(2)-(6) and below
257.350	204.800(8)(b)8.

From:	To:
62-272:	
272.100	204.100(1)
272.200 - all definitions	204.200 - definitions merged in as needed
272.300(2) - except last sentence	204.220(1)
272.300(2) - last sentence	204.220(3)
272.300(3)(a)1.-3.	204.240(1)(a)-(c)
272.300(3)(b)1.-2.	204.240(2)(a)-(b)
272.300(3)(c)1.-2.	204.240(3)(a)-(b)
272.300(3)(d)1.	204.240(4)
272.300(3)(d)1.a.-c.	204.240(4)(a)-(c)
272.300(3)(e)1.	204.240(5)
272.300(3)(f)1.	204.240(6)
272.500	204.260
272.500(1)(a)-(b) and below	204.260(1)(a)-(b) and below
272.500(1)(c)1.	204.260(1)(c)
272.500(2)(a)-(b) and below	204.260(2)(a)-(b) and below
272.500(2)(c)1.	204.260(2)(c)
272.500(3)(a)-(b) and below	204.260(3)(a)-(b) and below
272.500(3)(c)1.	204.260(3)(c)
62-275:	
275.100	204.100(2)
275.200 - all definitions	204.200 - definitions merged in as needed
275.300 and below	204.320 and below
275.400(1)-(5)	204.340(1)(a)-(e)
275.410(1)	204.340(2)(a) - amended to delete ozone areas
275.410(2)-(7)	204.340(2)(b)-(g)
275.420(1)	204.340(3)(a)
275.420(2)(a)-(d)	204.340(3)(b)1.-4.
275.420(3)	204.340(3)(c)
275.600(1)(a)	204.340(4)(a)1.
275.600(1)(b)	204.340(4)(a)2.-4. - amended to add ozone areas
275.600(3)(a)-(b)	204.340(4)(b)1.-2.
275.600(4)-(5)	204.340(4)(c)-(d)
275.700(1)-(3) and below	204.360(1)-(3) and below
275.800(1) and below	204.360(4) and below
275.800(2) and below	204.360(5) and below

From:	To:
62-296:	
296.200 - all definitions	210.200 - definitions merged in as needed
296.310	296.320(4)
296.310(1)	296.320(4)(a)
296.310(1)(a)1.-3.	296.320(4)(a)1.a.-c.
296.310(1)(b)	296.320(4)(a)2.
296.310(1)(c)	296.320(4)(a)3.
296.310(1)(c)1.a.-b.	296.320(4)(a)3.a.(i)-(ii)
296.310(1)(c)2.a.-b.	296.320(4)(a)3.b.(i)-(ii)
296.310(1)(c)3.	296.320(4)(a)3.c.
Table 296.310-1	Table 296.320-1
296.310(2)(a) - first sentence	296.320(4)(b)1.
296.310(2)(a) - remaining sentences	296.320(4)(b)2. - amended to clarify intent
296.310(2)(a)1.-3.	296.320(4)(b)2.a.-c.
296.310(2)(b)	296.320(4)(b)3.
296.310(2)(c)1.-2.	296.320(4)(b)4.a.-b.
296.310(3)(a)-(b)	296.320(4)(c)1.-2.
296.310(3)(c)1.-8.	296.320(4)(c)3.a.-h.
296.310(3)(d)	296.320(4)(c)4.
296.800(1)	204.800(7)(a)
296.800(2)(a)	204.800(7)(b)
296.800(2)(a)1.-68.	204.800(7)(b)1.-68.
296.800(2)(b)	204.800(7)(c)
296.800(3)	204.800(7)(d)
296.800(4)	204.800(7)(e)
296.800(4)(a)-(e)	204.800(7)(e)1.-5.
296.810(1)	204.800(8)(a)
296.810(2)(a)	204.800(8)(b)
296.810(2)(a)1.-7.	204.800(8)(b)1.-7.
296.810(2)(a)8.-14.	204.800(8)(b)9.-15.
296.810(2)(b)	204.800(8)(c)
296.810(3)	204.800(8)(d)
296.810(4)	204.800(8)(e)
296.810(4)(a)-(c)	204.800(8)(e)1.-3.
296.820(1)	204.800(9)(a)
296.820(2)(a)	204.800(9)(b)
296.820(2)(a)1.-5.	204.800(9)(b)1.-5.
296.820(2)(b)	204.800(9)(c)
296.820(3)	204.800(9)(d)
296.820(3)(a)-(d)	204.800(9)(d)1.-4.
296.820(4)	204.800(9)(e)
296.820(4)(a)-(b)	204.800(9)(e)1.-2.

From:	To:
62-297:	
297.200 - all definitions	210.200 - definitions merged in as needed
297.310(4)	297.310(9)
297.330(1)	297.310(4)(a)
297.330(1)(a)-(b)	297.310(4)(a)1.-2.
297.330(1)(b)1.-3.	297.310(4)(a)2.a.-c.
297.330(2)-(5)	297.310(4)(b)-(e)
Table 297.330-1	Table 297.310-1
297.340(1)	297.310(7)(a)
297.340(1)(a)-(b)	297.310(7)(a)1.-2.
297.340(1)(c)	297.310(7)(a)3.
297.340(1)(c)1.-2.	297.310(7)(a)3.a.-b.
297.340(1)(d)	297.310(7)(a)4.
297.340(1)(d)1.	297.310(7)(a)4.a.
297.340(1)(d)2.a.-c.	297.310(7)(a)4.b. - lang. combined in one paragraph
297.340(1)(d)3.	297.310(7)(a)4.c.
297.340(1)(e)-(j)	297.310(7)(a)5.-10.
297.340(2)-(3)	297.310(7)(b)-(c)
297.345	297.310(6)
297.345(1)-(2)	297.310(6)(a)-(b)
297.345(3)(a)1.-5.	297.310(6)(c)1.-5.
297.345(3)(b)1.-4.	297.310(6)(d)1.-4.
297.345(3)(c)1.-2.	297.310(6)(e)1.-2.
297.345(3)(d)1.-2.	297.310(6)(f)1.-2.
297.345(3)(e)1.	297.310(6)(g)1.
297.345(3)(e)1.a.-c.	297.310(6)(g)1.a.-c.
297.345(3)(e)2.-3.	297.310(6)(g)2.-3.
297.350(1)-(2)	297.310(5)(a)-(b)
297.400(1)	297.401 - last two sentences
297.420(1)	297.401(9)(c)1.
297.420(2)(a)-(b)	297.401(9)(c)2.a.-b.
297.570(1)-(3)	297.310(8)(a)-(c)
297.570(3)(a)-(u)	297.310(8)(c)1.-21.

Rules Fully Repealed, Not Moved

Rule Repealed:	Comment:
204.300	Definition of "SIP" expanded in 204.200
209.100-.800	Entire chapter 62-209 repealed; to be implemented by guidance
210.400(1)-(3) 210.500 last sentence 210.600 210.980	
213.220	Restates statute
215.100 215.200 215.240 215.300(2)-(6) 215.900(2)	 Reproposed at 213.300(4) (FAW notice 3/8/96) Reproposed as part of Form 62-213.900(2) (FAW notice 3/8/96)
242.300	Definition of "Program Area" expanded in 242.200
243.700	Restates statute
244.100-.600	Entire chapter 62-244 repealed; to be implemented by guidance
252.800	Restates statute
257.401	Restates statute
272.300(1) 272.750(1) 272.750(2) Figure 272.750-1	 Moved to document adopted by reference at 212.600(2)(c) Included in document adopted by reference at 212.600(2)(c)
273.200-.600	Entire chapter 62-273 repealed; considered obsolete
275.410(1)(a)-(c) 275.600(2)	Repealed in response to EPA approval of redesignations

Rule Repealed:	**Comment:**
296.330	Definition of "BACT" in 210.200 to be used in lieu of rule
296.400	Language of "Purpose and Scope" at 296.100 expanded
Figure 297.345-1	Replaced by text at 297.345(3)(e)1.a.-c., effective 1/1/96; then moved to 297.310(6)(g)1.a.-c., effective 3/13/96)
297.400(2)	
297.411	
297.412	
297.413	
297.414	
297.415	
Figure 297.415-1	
Figure 297.415-2	
Figure 297.415-3	
297.416	
297.417	
297.418	
297.419	
297.421	
297.422	
297.423	
297.424	

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EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
Part 60 - EPA Regulations on Standards of Performance for New Stationary Sources						
Subpart A — General Provisions						
60.7	Notification and record keeping.	0330045		×		Unit 008
60.8	Performance tests.	0330045		×		Unit 008
60.11	Compliance with standards and maintenance requirements.	0330045		×		Unit 008
60.12	Circumvention.	0330045		×		Unit 008
60.13	Monitoring requirements	0330045		×		Unit 008
60.19	General notifications and reporting requirements	0330045		×		Unit 008
Subpart D — Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971						
60.42	Standard for particulate matter.	0330045		×		Unit 008
60.43	Standard for sulfur dioxide.	0330045		×		Unit 008
60.44	Standard for nitrogen oxides.	0330045		×		Unit 008
60.45	Emission and fuel monitoring.	0330045		×		Unit 008
60.46	Test methods and procedures.	0330045		×		Unit 008
Subpart Da — Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978						
60.42a	Standard for particulate matter.	0330045		×		Unit 008
60.43a	Standard for sulfur dioxide.	0330045		×		Unit 008
60.44a	Standard for nitrogen oxides.	0330045		×		Unit 008
60.45a	Commercial demonstration permit.	0330045		×		Unit 008
60.46a	Compliance provisions.	0330045		×		Unit 008
60.47a	Emission monitoring.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
60.48a	Compliance determination procedures and methods.	0330045		×		Unit 008
60.49a	Reporting requirements.	0330045		×		Unit 008
Subpart Db — Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units						
60.42b	Standard for sulfur dioxide.	0330045		×		Unit 008
60.43b	Standard for particulate matter.	0330045		×		Unit 008
60.44b	Standard for nitrogen oxides.	0330045		×		Unit 008
60.45b	Compliance and performance test methods and procedures for sulfur dioxide.	0330045		×		Unit 008
60.46b	Compliance and performance test methods and procedures for particulate matter and nitrogen oxides.	0330045		×		Unit 008
60.47b	Emission monitoring for sulfur dioxide.	0330045		×		Unit 008
60.48b	Emission monitoring for particulate matter and nitrogen oxides.	0330045		×		Unit 008
60.49b	Reporting and recordkeeping.	0330045		×		Unit 008
Subpart Dc — Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units						
60.42c	Standard for sulfur dioxide.	0330045		×		Unit 008
60.43c	Standard for particulate matter.	0330045		×		Unit 008
60.44c	Compliance and performance test methods and procedures for sulfur dioxide.	0330045		×		Unit 008
60.45c	Compliance and performance test methods and procedures for particulate matter.	0330045		×		Unit 008
60.46c	Emission monitoring for sulfur dioxide.	0330045		×		Unit 008
60.47c	Emission monitoring for particulate matter.	0330045		×		Unit 008
60.48c	Reporting and recordkeeping.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
Subpart K — Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978						
60.112	Standard for volatile organic compounds (VOC).	0330045		×		Unit 008
60.113	Monitoring of operations.	0330045		×		Unit 008
Subpart Ka — Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984						
60.112a	Standard for volatile organic compounds (VOC).	0330045		×		Unit 008
60.113a	Testing and procedures.	0330045		×		Unit 008
60.114a	Alternative means of emission limitations.	0330045		×		Unit 008
60.115a	Monitoring of operations.	0330045		×		Unit 008
Subpart Kb — Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984						
60.112b	Standard for volatile organic compounds (VOC).	0330045		×		Unit 008
60.113b	Testing and procedures.	0330045		×		Unit 008
60.114b	Alternative means of emission limitations.	0330045		×		Unit 008
60.115b	Recordkeeping and reporting requirements.	0330045		×		Unit 008
60.116b	Monitoring of operations.	0330045		×		Unit 008
Subpart Y — Standards of Performance for Coal Preparation Plants						
60.252	Standard for particulate matter.	0330045		×		Unit 008
60.253	Monitoring of operations.	0330045		×		Unit 008
60.254	Test methods and procedures.	0330045		×		Unit 008
Subpart GG — Standards of Performance for Stationary Gas Turbines						
60.332	Standard for nitrogen oxides.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
60.333	Standard for sulfur dioxide.	0330045		×		Unit 008
60.334	Monitoring of operations.	0330045		×		Unit 008
60.335	Test methods and procedures.	0330045		×		Unit 008
Subpart OOO — Standards of Performance for Nonmetallic Mineral Processing Plants						
60.672	Standard for Particulate Matter.	0330045		×		Unit 008
60.674	Monitoring of Operations.	0330045		×		Unit 008
60.676	Reporting and Recordkeeping.	0330045		×		Unit 008
Part 61 - EPA Regulations on National Emission Standards for Hazardous Air Pollutants						
Subpart A — General Provisions						
61.05	Prohibited Activities.	0330045	✓			Facility
61.09	Notification of Startup.	0330045		×		Facility
61.10	Source Reporting and Request for Waiver of Compliance.	0330045		×		Facility
61.11	Waiver of Compliance.	0330045		×		Facility
61.12(b)	Compliance with Standards and Maintenance Requirements.	0330045	✓			Facility
61.13	Emission Tests and Waiver of Emission Tests.	0330045		×		Facility
61.14	Monitoring Requirements.	0330045		×		Facility
61.19	Circumvention.	0330045		×		Facility
Subpart M — National Emission Standards for Asbestos		0330045	✓			Facility
Appendix C to Part 61 — Quality Assurance Procedures		0330045	✓			Facility
Part 63 - EPA Regulations on National Emission Standards for Hazardous Air Pollutants for Source Categories						
Subpart A — General Provisions						
63.4	Prohibited Activities and Circumvention.	0330045		X		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
63.6	Compliance with Standards and Maintenance Requirements.	0330045		×		Unit 008
63.7	Performance Testing Requirements.	0330045		×		Unit 008
63.8	Monitoring Requirements.	0330045		×		Unit 008
63.9	Notification Requirements.	0330045		×		Unit 008
63.10	Reporting and Recordkeeping Requirements.	0330045		×		Unit 008
63.11	Control Device Requirements.	0330045		×		Unit 008
Subpart Q — National Emission Standards for Industrial Process Cooling Towers						
63.402	Standard.	0330045		×		Unit 008
63.403	Compliance Dates.	0330045		×		Unit 008
63.404	Compliance Demonstrations.	0330045		×		Unit 008
63.405	Notification Requirements.	0330045		×		Unit 008
63.406	Recordkeeping and Reporting Requirements.	0330045		×		Unit 008
Subpart T — National Emission Standards for Halogenated Solvent Cleaning						
63.462	Batch Cold Cleaning Machine Standards.	0330045		×		Unit 008
63.463	Batch Vapor and In-Line Cleaning Machine Standards.	0330045		×		Unit 008
63.464	Alternative Standards.	0330045		×		Unit 008
63.465	Test Methods.	0330045		×		Unit 008
63.466	Monitoring Procedures.	0330045		×		Unit 008
63.467	Recordkeeping Requirements.	0330045		×		Unit 008
63.468	Reporting Requirements.	0330045		×		Unit 008
Part 72 - EPA Acid Rain Program Permits						
Subpart A — General Provisions						

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
72.7	New Units Exemption.	0330045		×		Unit 008
72.8	Retired Units Exemption.	0330045		×		Unit 008
72.9	Standard Requirements.	0330045		×		Unit 008
Subpart B — Designated Representative						
72.20	Authorization and Responsibilities of the Designated Representative	0330045		×		Unit 008
72.21	Submissions.	0330045		×		Unit 008
72.22	Alternate Designated Representative.	0330045		×		Unit 008
72.23	Changing the Designated Representative, Alternate Designated Representative; Changes in the Owners and Operators.	0330045		×		Unit 008
Subpart C — Acid Rain Applications						
72.30	Requirements to Apply.	0330045		×		Unit 008
72.32	Permit Applications Shield and Binding Effect of Permit Application.	0330045		×		Unit 008
72.33	Identification of Dispatch System.	0330045		×		Unit 008
Subpart D — Acid Rain Compliance Plan and Compliance Options						
72.40	General.	0330045		×		Unit 008
72.41	Phase I Substitution Plans.	0330045		×		Unit 008
72.42	Phase I Extension Plans.	0330045		×		Unit 008
72.43	Phase I Reduced Utilization Plans.	0330045		×		Unit 008
72.44	Phase II Repowering Extensions.	0330045		×		Unit 008
Subpart E — Acid Rain Permit Contents						
72.51	Permit Shield.	0330045		×		Unit 008
Subpart I - Compliance Certification						

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
72.90	Annual Compliance Certification Report.	0330045		×		Unit 008
72.91	Phase I Unit Adjusted Utilization.	0330045		×		Unit 008
72.92	Phase I Unit Allowance Surrender.	0330045		×		Unit 008
72.93	Units with Phase I Extension Plans.	0330045		×		Unit 008
72.94	Units with Repowering Extension Plans.	0330045		×		Unit 008
Part 73 - EPA Acid Rain Program Sulfur Dioxide Allowance System						
Subpart C — Allowance Tracking System						
73.33	Authorized Account Representative	0330045		×		Unit 008
73.35	Compliance.	0330045		×		Unit 008
Part 75 - EPA Acid Rain Program For Continuous Emission Monitoring						
Subpart A — General						
75.4	Compliance Dates.	0330045		×		Unit 008
75.5	Prohibitions.	0330045		×		Unit 008
Subpart B — Monitoring Provisions						
75.10	General Operating Requirements.	0330045		×		Unit 008
75.11	Specific Provisions for Monitoring SO_2 Emissions (SO_2 and Flow Monitors).	0330045		×		Unit 008
75.12	Specific Provisions for Monitoring NO_x Emissions (NO_x and Diluent Gas Monitors).	0330045		×		Unit 008
75.13	Specific Provisions for Monitoring CO_2 Emissions.	0330045		×		Unit 008
75.14	Specific Provisions for Monitoring Opacity.	0330045		×		Unit 008
75.15	Specific Provisions for Monitoring SO_2 Emissions Removal by Qualifying Phase I Technology.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
75.16	Specific Provisions for Monitoring Emissions from Common, By-Pass, and Multiple Stacks for SO_2 Emissions and Heat Input Determinations.	0330045		×		Unit 008
75.17	Specific Provisions for Monitoring Emissions from Common, By-Pass, and Multiple Stacks for NO_x Emission Rate.	0330045		×		Unit 008
75.18	Specific Provisions for Monitoring Emissions from Common, By-Pass, and Multiple Stacks for Opacity.	0330045		×		Unit 008
Subpart C — Operation and Maintenance Requirements						
75.20	Certification and Recertification Procedures.	0330045		×		Unit 008
75.21	Quality Assurance and Quality Control Requirements.	0330045		×		Unit 008
75.22	Reference Test Methods.	0330045		×		Unit 008
75.24	Out-of-Control Periods.	0330045		×		Unit 008
Subpart D — Missing Data Substitution Procedures						
75.30	General Provisions.	0330045		×		Unit 008
75.31	Initial Missing Data Procedures.	0330045		×		Unit 008
75.32	Determination of Monitor Data Availability for Standard Missing Data Procedures.	0330045		×		Unit 008
75.33	Standard Missing Data Procedures.	0330045		×		Unit 008
75.34	Units with Add-On Emission Controls.	0330045		×		Unit 008
75.35	Missing Data Procedures for CO2	0330045		×		Unit 008
75.36	Missing Data Procedures for Heat Input	0330045		×		Unit 008
Subpart E — Alternative Monitoring Systems						
75.40	General Demonstration Requirements.	0330045		×		Unit 008
75.41	Precision Criteria.	0330045		×		Unit 008
75.42	Reliability Criteria.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
75.43	Accessibility Criteria.	0330045		×		Unit 008
75.44	Timeliness Criteria.	0330045		×		Unit 008
75.45	Daily Quality Assurance Criteria.	0330045		×		Unit 008
75.46	Missing Data Substitution Criteria.	0330045		×		Unit 008
75.47	Criteria for a Class of Affected Units.	0330045		×		Unit 008
75.48	Petition for an Alternative Monitoring System.	0330045		×		Unit 008
Subpart F — Recordkeeping Requirements						
75.50	General Recordkeeping Provisions.	0330045		×		Unit 008
75.51	General Recordkeeping Provisions for Specific Situations.	0330045		×		Unit 008
75.52	Certification, Quality Assurance, and Quality Control Record Provisions.	0330045		×		Unit 008
75.53	Monitoring Plan.	0330045		×		Unit 008
75.54	General Recordkeeping Provisions	0330045		×		Unit 008
75.55	General Recordkeeping Provisions for Special Situations	0330045		×		Unit 008
75.56	Certification, Quality Assurance and Quality Control Record Provision	0330045		×		Unit 008
Subpart G — Reporting Requirements						
75.60	General Provisions.	0330045		×		Unit 008
75.61	Notification of Certification and Recertification Test Dates.	0330045		×		Unit 008
75.62	Monitoring Plan.	0330045		×		Unit 008
75.63	Certification or Recertification Applications.	0330045		×		Unit 008
75.64	Quarterly Reports.	0330045		×		Unit 008
75.65	Opacity Reports.	0330045		×		Unit 008

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
Appendix A to Part 75 — Specifications and Test Procedures		0330045		×		Unit 008
Appendix B to Part 75 — Quality Assurance and Quality Control Procedures		0330045		×		Unit 008
Appendix C to Part 75 — Missing Data Statistical Estimation Procedures		0330045		×		Unit 008
Appendix D to Part 75 — Optional SO_2 Emissions Data Protocol for Gas-Fired Units and Oil-Fired Units		0330045		×		Unit 008
Appendix E to Part 75 — Optional NO_x Emissions Estimation Protocol for Gas-Fired Peaking Units and Oil-Fired Peaking Units		0330045		×		Unit 008
EPA Part 76 - Acid Rain Nitrogen Oxides Emission Reduction Program						
76.5	NO_x Emission Limitations for Group 1 Boilers.	0330045		×		Unit 008
76.8	Early Election for Group 1, Phase II Boilers.	0330045		×		Unit 008
76.9	Permit Applications and Compliance Plans.	0330045		×		Unit 008
76.10	Alternative Emission Limitations.	0330045		×		Unit 008
76.11	Emissions Averaging.	0330045		×		Unit 008
76.12	Phase I NO_x Compliance Extensions.	0330045		×		Unit 008
76.13	Compliance and Excess Emissions	0330045		×		Unit 008
76.14	Monitoring, Recordkeeping, and Reporting.	0330045		×		Unit 008
76.15	Test Methods and Procedures.	0330045		×		Unit 008
EPA Part 77 - Excess Emissions						
77.3	Offset Plans	0330045		×		Unit 008
77.5(b)	Deduction of Allowances	0330045		×		Unit 008
77.6	Excess Emission Penalties for SO2 and Nox; and	0330045		×		Unit 008
EPA Part 82 - Protection Of Stratospheric Ozone						

EPA Rule	GULF POWER - CRIST UNIT 8 - SILO EPA APPLICABLE REQUIREMENTS LIST EPA Title	(AIRS) Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
Subpart B - Servicing of Motor Vehicle Air Conditioners						
82.34	Prohibitions.	0330045	✓			Facility
82.36	Approved refrigerant recycling equipment.	0330045	✓			Facility
82.38	Approved independent standards testing organizations.	0330045	✓			Facility
82.40	Technician training and certification.	0330045	✓			Facility
82.42	Certification, recordkeeping and public notification requirements.	0330045	✓			Facility
Subpart F - Recycling and Emissions Reduction						
82.154	Prohibitions.	0330045	✓			Facility
82.156	Required practice.	0330045	✓			Facility
82.158	Standards for recycling and recovery equipment.	0330045	✓			Facility
82.160	Approved equipment testing organizations.	0330045	✓			Facility
82.161	Technician certification.	0330045	✓			Facility
82.162	Certification by owners of recovery and recycling equipment.	0330045	✓			Facility
82.164	Reclaimer certification.	0330045	✓			Facility
82.166(k)(m)	Reporting and recordkeeping requirements for owners/operators.	0330045	✓			Facility
40 CFR 279.72	Used Oil Regulations.	0330045	✓			Facility

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
Chapter 62-4 Permits						
62-4.030	General Prohibition.	0330045	✓		State Only	Facility
62.040(1)	Exemptions.	0330045	✓		State Only	Facility
62-4.100	Suspension and Revocation.	0330045	✓		State Only	Facility
62-4.130	Plant Operation - Problems.	0330045	✓		State Only	Facility
Chapter 62-204 State Implementation Plan						
62-204.800	Standards of Performance for New Stationary Sources (NSPS) (see 40 CFR 60 list for subsections).					
	(7) Standards Adopted.	0330045		×	State only.	Unit 008
	(b) The following Standards of Performance for New Stationary Sources contained in 40 CFR 60, revised as of July 1, 1994, or later as specifically indicated.	0330045		×	State only.	Unit 008
	1. 40 CFR 60.40 Subpart D, Fossil-fuel-fired Steam Generators for which Construction is Commenced after August 17, 1971.	0330045		×	State only.	Unit 008
	2. 40 CFR 60.40a Subpart Da, Electric Utility Steam Generators for which Construction is Commenced after September 18, 1978.	0330045		×	State only.	Unit 008
	3. 40 CFR 60.40b Subpart Db, Industrial-Commercial-Institutional Steam Generating Units.	0330045		×	State only.	Unit 008
	4. 40 CFR 60.40c Subpart Dc, Small Industrial-Commercial-Institutional Steam Generating Units.	0330045		×	State only.	Unit 008
	12. 40 CFR 60.110 Subpart K, Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after June 11, 1973, and prior to May 19, 1978.	0330045		×	State only.	Unit 008
	13. 40 CFR 60.110a Subpart Ka, Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced after May 18, 1978, and prior to July 23, 1984.	0330045		×	State only.	Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
62-204.800	14. 40 CFR 60.110b Subpart Kb, Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.	0330045		×	State only.	Unit 008
	29. 40 CFR 60.250 Subpart Y, Coal Preparation Plants.	0330045		×	State only.	Unit 008
	37. 40 CFR 60.330 Subpart GG, Stationary Gas Turbines.	0330045		×	State only.	Unit 008
	62. 40 CFR 60.670 Subpart OOO, Non-Metallic Mineral Processing Plants.	0330045		×	State only.	Unit 008
62-204.800(7)	(c) The Standards of Performance for New Stationary Sources adopted by reference in this section shall be controlling over other standards in this chapter except that any emissions limiting standard contained in or determined pursuant to this chapter which is more stringent than one contained in a Standard of Performance, or which regulates emissions of pollutants or emissions units not regulated by an applicable Standard of Performance, shall apply.	0330045		×	State only.	Unit 008
	(7)(d) General Provisions Adopted.	0330045		×	State only.	Unit 008
	(7)(e) Appendices Adopted. The following appendices of 40 CFR Part 60, revised as of July 1, 1994 or later as specifically indicated, are adopted and incorporated by reference.	0330045		×	State only.	Unit 008
	1. 40 CFR 60 Appendix A, Test Methods, are adopted by reference.	0330045		×	State only.	Unit 008
	2. 40 CFR 60 Appendix B, Performance Specifications.	0330045		×	State only.	Unit 008
	3. 40 CFR 60 Appendix C, Determination of Emission Rate Change.	0330045		×	State only.	Unit 008
	5. 40 CFR 60 Appendix F, Quality Assurance Procedures.	0330045		×	State only.	Unit 008
62-204.800(8)	National Emission Standards for Hazardous Air Pollutants (NESHAPS).					
	(8) Standards Adopted.	0330045		×	State only.	Unit 008
	(b)8. 40 CFR Part 61 Subpart M Asbestos.	0330045	✓		State only.	Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
62-204.800(8)	(d) General Provisions Adopted. The general provisions of 40 CFR Part 61 Subpart A, revised July 1, 1994, are adopted and incorporated by reference except 40 CFR 61.04, 40 CFR 61.08, 40 CFR 61.11, and 40 CFR 61.18.	0330045	✓		State only.	Unit 008
62-204.800(9)	National Emission Standards for Hazardous Air Pollutants (NESHAPS) - Part 63.					
	(9) Standards Adopted.	0330045		×	State only.	Unit 008
	(b) 40 CFR 63 Subpart Q Chromium Emissions from Industrial Process Cooling Towers*	0330045		×	State only. *This regulation was proposed for incorporation in the FAW on March 8, 1996; not yet "effective" on state level.	Unit 008
	(a) 40 CFR 63 Subpart T Halogenated Solvent Cleaning*	0330045		×	State only. *This regulation was proposed for incorporation in the FAW on March 8, 1996; not yet "effective" on state level.	Unit 008
	(d) General Subparts Adopted.	0330045		×	State only.	Unit 008
	1. 40 CFR 63 Subpart A, General Provisions	0330045		×	State only.	Unit 008
	2. 40 CFR 63 Subpart B, Equivalent Emission Limitation by Permit (112(j))	0330045		×	State only.	Unit 008
	4. 40 CFR 63 Subpart D, Compliance Extensions for Early Reductions	0330045		×	State only.	Unit 008
62-204.800 (11)	Adoption of 40 CFR 70, Federal Title V Rule	0330045		×	State only.	Facility
62-204.800 (12)	Adoption of 40 CFR 72, Federal Acid Rain Program	0330045		×	State only.	Unit 008
62-204.800 (13)	Adoption of 40 CFR 73, S02 Allowance System	0330045		×	State only.	Unit 008
62-204.800 (14)	Adoption of 40 CFR 75, CEMS	0330045		×	State only.	Unit 008
62-204.800 (15)	Adoption of 40 CFR 76, Acid Rain Nox Requirement	0330045		×	State only.	Unit 008
62-204.800 (16)	Adoption of 40 CFR 77, Acid Rain Excess Emissions	0330045		×	State only.	Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
62-204.800 (19)	Adoption of 40 CFR 82, Stratospheric Ozone	0330045	✓		State only.	Unit 008
Chapter 62-210 Stationary Sources - General Requirements						
62-210.300	Permits Required.					
	(2) Air Operation Permits.Except (b)	0330045	✓			Facility
	(3)(a) Exemptions - #1-29.	0330045	✓			Facility
	(3)(b) Temporary Exemptions.	0330045	✓			Facility
62-210.300	(5) Notification of Startup. The owners or operator of any emissions unit or facility which has a valid air operation permit which has been shut down more than one year, shall notify the Department in writing of the intent to start up such emissions unit or facility, a minimum of 60 days prior to the intended startup date.	0330045	✓		May apply in the future.	Facility
	(a) The notification shall include information as to the startup date, anticipated emission rates or pollutants released, changes to processes or control devices which will result in changes to emission rates, and any other conditions which may differ from the valid outstanding operation permit.	0330045	✓		May apply in the future.	Facility
	(b) If, due to an emergency, a startup date is not known 60 days prior thereto, the owner shall notify the Department as soon as possible after the date of such startup is ascertained.	0330045	✓		May apply in the future.	Facility
62-210.370	Reports.					
	(1) Notification of Intent to Relocate Air Pollutant Emitting Facility.	0330045		×		Unit 008
	(3) Annual Operating Report for Air Pollutant Emitting Facility.	0330045	✓			Facility
62-210.650	Circumvention.	0330045		×		Unit 008
62-210.700	Excess Emissions.	0330045	✓			Unit 008
62-210.900	Forms and Instructions.	0330045	✓			Facility
	(5) Annual Operating Reports	0330045	✓			Facility
Chapter 62-213 Operation Permits for Major Sources of Air Pollution						

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
62-213.205	Annual Emissions Fee.	0330045	✓			Facility
62-213.400	Permits and Permit Revisions Required.	0330045	✓			Facility
62-213.410	Changes Without Permit Revision.	0330045	✓			Facility
62-213.415	Trading of Emissions Within a Source.	0330045	✓		May apply in the future.	Unit 008 /Facility
62-213.460	Permit Shield.	0330045	✓			Facility
Chapter 62-214 Requirements for Sources Subject to the Federal Acid Rain Program						
62-214.300	Applicability.	0330045		×		Unit 008
62-214.340	Exemptions.					
	(5) The owners and operators of each unit . . .	0330045		×		Unit 008
	(6) A new unit shall no longer be exempted . . .	0330045		×		Unit 008
	(7) A retired unit shall no longer be exempted . . .	0330045		×		Unit 008
62-214.350	Certification.	0330045		×		Unit 008
62-214.430	Implementation and Termination of Compliance Options. Procedures for activation and termination of compliance options.					
	(1) Activation.	0330045		×		Unit 008
	(2) Termination.	0330045		×		Unit 008
Chapter 62-252 Gasoline Vapor Control						
62-252.300	Gasoline Dispensing Facilities - Stage I Vapor Recovery.					
	(2) Prohibition.	0330045		×		Facility
	(3) Control Technology Requirements.	0330045		×		Facility
	(4) Compliance Schedule.	0330045		×	State Only	Facility
62-252.400	Gasoline Dispensing Facilities - Stage II Vapor Recovery.					
	(2) Prohibition.	0330045		×	State Only	Facility

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	(3) Control Technology Requirements.	0330045		×	State Only	Facility
	(4) Compliance Schedules.	0330045		×	State Only	Facility
	(5) Testing.	0330045		×	State Only	Facility
	(6) Recordkeeping.	0330045		×	State Only	Facility
	(7) System Maintenance.	0330045		×	State Only	Facility
62-252.400	(8) Training.	0330045		×	State Only	Facility
62-252.500	Gasoline Tanker Trucks.					
	(2) Prohibitions.	0330045		×	State Only	Facility
	(3) Leak Testing.	0330045		×	State Only	Facility
Chapter 62-256 Open Burning and Frost Protection Fires						
62-256.300	Prohibitions.	0330045	✓		State Only	Facility
62-256.450	Burning for Cold or Frost Protection.	0330045		×	State Only	Facility
62-256.500	Land Clearing.	0330045	✓		State Only	Facility
62-256.600	Industrial, Commercial, Municipal, and Research Open Burning.	0330045	✓		State Only	Facility
62-256.700	Open Burning Allowed.	0330045	✓		State Only	Facility
Chapter 62-257 Asbestos Removal						
62-257.301	Notification Procedure and Fee.	0330045	✓		State Only	Facility
62-257.400	Fee Schedule.	0330045	✓		State Only	Facility
62-257.900	Form.	0330045	✓		State Only	Facility
Chapter 62-281 Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling.						
62-281.300	Applicability.	0330045		×	State Only	Facility
62-281.400	Compliance Requirements.	0330045		×	State Only	Facility
62-281.500	Establishment Certification.					

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
62-281.500	(1) Initial Certification.	0330045		×	State Only	Facility
	(2) Renewal Certification.	0330045		×	State Only	Facility
	(3) Fees.	0330045		×	State Only	Facility
	(4) Certificate of Compliance.	0330045		×	State Only	Facility
62-281.600	Training Requirements.	0330045		×	State Only	Facility
62-281.700	Equipment Certification.	0330045		×	State Only	Facility
62-281.900	Forms.	0330045		×	State Only	Facility
Chapter 62-296 Stationary Sources -- Emission Standards						
62-296.320	General Pollutant Emission Limiting Standards.					
	(1) Volatile organic compounds emissions or organic solvents emissions.	0330045		×		Facility
	(2) Objectionable Odor Prohibited.	0330045	✓			Facility
	(3) Open Burning.	0330045	✓		State Only	Facility
	(4)(a) Process Weight Table.	0330045		×		Unit 008
	(4)(b) General Visible Emissions Standard.	0330045	✓			Facility
	(4)(c) Unconfined Emissions of Particulate Matter.	0330045	✓			Facility
62-296.405	Fossil Fuel Steam Generators with More than 250 Million Btu per Hour Heat Input.					
	(1) Existing Emissions Units.					
	(a) Visible emissions.	0330045		×		Unit 008
	(b) Particulate Matter - 0.1 pound per million Btu heat input, as measured by applicable compliance methods.	0330045		×		Unit 008
	(c) Sulfur Dioxide, as measured by applicable compliance methods.	0330045		×		Unit 008
	1. Sources burning liquid fuel.	0330045		×		Unit 008
	2. Sources burning solid fuel.	0330045		×		Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	3. Owners of fossil fuel steam generators shall monitor their emissions and the effects of the emissions on ambient concentrations of sulfur dioxide, in a manner, frequency, and locations approved, and deemed reasonably necessary and ordered by the Department.	0330045		X		Unit 008
	(d) Nitrogen Oxides (expressed as NO_x).	0330045		X		Unit 008
62-296.405	(e) Test Methods and Procedures.	0330045		X		Unit 008
	(f) Continuous Emissions Monitoring Requirements.	0330045		X		Unit 008
	(g) Quarterly Reporting Requirements.	0330045		X		Unit 008
	(2) New Emissions Units.					
	(a) Visible Emissions - See Rule 62-204.800(7) and 40 CFR 60.42 and 60.42a	0330045		X		Unit 008
	(b) Particulate Matter - See Rule 62-204.800(7) and 40 CFR 60.42 and 60.42a	0330045		X		Unit 008
	(c) Sulfur Dioxide - See Rule 62-204.800(7) and 40 CFR 60.43 and 60.43a	0330045		X		Unit 008
	(d) Nitrogen Oxides - See Rule 62-204.800(7) and 40 CFR 60.44 and 60.44a	0330045		X		Unit 008
62-296.406	Fossil Fuel Steam Generators with Less than 250 Million Btu per Hour Heat Input, New and Existing Emissions Units.					
	(1) Visible Emissions	0330045		X		Unit 008
	(2) Particulate Matter - Best available control technology in accordance with Rule 62-210.200(40)	0330045		X		Unit 008
	(3) Sulfur Dioxide - Best available control technology in accordance with Rule 62-210.200(40)	0330045		X		Unit 008
62-296.411	Sulfur Storage and Handling Facilities	0330045		X		Unit 008
62-296.500	Reasonably Available Control Technology (RACT) - Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO_x) Emitting Facilities.					
	(1) Applicability.	0330045		X		Unit 008
	(2) Permit, Recordkeeping, and Compliance Reporting Requirements.	0330045		X		Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	(a) Permits - Special Considerations.	0330045		×		Unit 008
	(b) Recordkeeping.	0330045		×		Unit 008
62-296.500	(c) Reporting.	0330045		×		Unit 008
	(3) Exceptions.	0330045		×		Unit 008
	(4) Consideration of Exempt Solvents	0330045		×		Unit 008
	(5) Compliance may be demonstrated for surface coating and graphic arts facilities on a 24-hour weighted average basis for a single source point with a single emission limit.	0330045		×		Unit 008
62-296.508	Petroleum Liquid Storage					
	(1) Applicability.	0330045		×		Unit 008
	(2) Control Technology.	0330045		×		Unit 008
	(3) Test Methods and Procedures.	0330045		×		Unit 008
62-296.511	Solvent Metal Cleaning.					
	(1) Applicability.	0330045		×		Unit 008
	(2) Cold Cleaning Control Technology.	0330045		×		Unit 008
	(3) Open Top Vapor Degreaser Control Technology.	0330045		×		Unit 008
	(4) Conveyorized Degreaser Control Technology.	0330045		×		Unit 008
	(5) Test Methods and Procedures.	0330045		×	* 8-hr test requirement not in SIP.	Unit 008
62-296.516	Petroleum Liquid Storage Tanks with External Floating Roofs					
	(1) Applicability.	0330045		×		Unit 008
	(2) Control Technology.	0330045		×		Unit 008
	(3) Test Methods and Procedures.	0330045		×		Unit 008
62-296.570	Reasonably Available Control Technology (RACT) - Requirements for Major VOC- 0330045 and NO_x- Emitting Facilities.					

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	(1) Applicability.	0330045		×	State Only	Unit 008
	(2) Compliance Requirements.	0330045		×	State Only	Unit 008
62-296.570	(3) Operation Permit Requirements.	0330045		×	State Only	Unit 008
	(4) RACT Emission Limiting Standards.	0330045		×	State Only	Unit 008
	(a) Compliance Dates and Monitoring.	0330045		×	State Only	Unit 008
	(b) Emission Limiting Standards.	0330045		×	State Only	Unit 008
	(c) Exception for Startup, Shutdown or Malfunction.	0330045		×	State Only	Unit 008
62-296.700	Reasonably Available Control Technology (RACT) Particulate Matter.					
	(1) Applicability.	0330045		×		Unit 008
	(2) Exemptions.	0330045		×		Unit 008
	(3) Specific RACT Emission Limiting Standards for Stationary Emissions Units.	0330045		×		Unit 008
	(4) Maximum Allowable Emission Rates.	0330045		×		Unit 008
	(a) Emissions Unit Data.	0330045		×		Unit 008
	(b) Maximum Emission Rates.	0330045		×		Unit 008
	(5) Circumvention.	0330045		×		Unit 008
	(6) Operation and Maintenance Plan.	0330045		×		Unit 008
	(a) Air Pollution Control Devices and Collection Systems.	0330045		×		Unit 008
	(b) Control Equipment Data.	0330045		×		Unit 008
	(c) Processing or Materials Handling Systems.	0330045		×		Unit 008
	(d) Fossil Fuel Steam Generators.	0330045		×		Unit 008
62-296.702	Fossil Fuel Steam Generators.					
	(1) Applicability.	0330045		×		Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	(2) Emission Limitations.	0330045		×		Unit 008
	(a) Particulate Matter - 0.10 lb/mmBtu	0330045		×		Unit 008
62-296.711	(b) Visible Emissions - 20% opacity.	0330045		×		Unit 008
	(3) Test Methods and Procedures.	0330045		×		Unit 008
	Materials Handling, Sizing, Screening, Crushing and Grinding Operations.					
	(1) Applicability	0330045		×		Unit 008
	(2) Emission Limitations.	0330045		×		Unit 008
	(3) Test Methods and Procedures.	0330045		×		Unit 008
Chapter 62-297 Stationary Sources -- Emission Monitoring						
62-297.310	General Test Requirements.	0330045	✓			Unit 008
	(1) Required Number of Test Runs	0330045		×		Unit 008
	(2) Operating Rate During Testing	0330045	✓			Unit 008
	(3) Calculation of Emission Rate	0330045		×		Unit 008
	(4) Applicable Test Procedures.	0330045		×		Unit 008
	(a) Required Sampling Time.	0330045		×		Unit 008
	1. Unless otherwise specified in the applicable rule, the required sampling time for each test run shall be no less than one hour and no greater than four hours, and the sampling time at each sampling point shall be of equal intervals of at least two minutes.	0330045		×		Unit 008
	2. Opacity Compliance Tests.	0330045	✓			Unit 008
	(b) Minimum Sample Volume.	0330045		×		Unit 008
	(c) Required Flow Rate Range.	0330045		×		Unit 008
	(d) Calibration.	0330045		×		Unit 008
	(e) EPA Method 5.	0330045		×		Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	(5) Determination of Process Variables.	0330045		×		Unit 008
	(6) Required Stack Sampling Facilities					
	(a) Permanent Test Facilities.	0330045		×		Unit 008
	(b) Temporary Test Facilities.	0330045		×		Unit 008
	(c) Test Facilities.	0330045		×		Unit 008
62-297.310	1. Sampling Ports.	0330045		×		Unit 008
	(d) Work Platforms.	0330045		×		Unit 008
	(e) Access.	0330045		×		Unit 008
	(f) Electrical Power.	0330045		×		Unit 008
	(g) Sampling Equipment Support.	0330045		×		Unit 008
	(7) Frequency of Compliance Tests.					
	(a) General Compliance Testing.	0330045				Unit 008
	1. Compliance test requirement prior to obtaining operating permit.	0330045		×		Unit 008
	2. Annual test requirement for excess PM emissions.	0330045		×		Unit 008
	3. Annual test requirement prior to obtaining renewal permit.	0330045	✓			Unit 008
	4.(a) Annual VE tests	0330045	✓			Unit 008
	(b) Annual test for lead, acrylonitide and other regulated pollutants,	0330045		×		Unit 008
	(c) Annual test for each NESHAP pollutant	0330045		×		Unit 008
	5. No annual PM test required if burn no liquid and/or solid fuel for greater than 400 hrs/year.	0330045		×		Unit 008
	6. Exemption from semi-annual PM test for steam generators.	0330045		×		Unit 008
	7. Exemption from quarterly PM test for units not utilizing liquid and/or solid fuel for more than 100 hrs.	0330045		×		Unit 008

FDEP Rule	GULF POWER - CRIST UNIT 8 -S ILO FDEP APPLICABLE REQUIREMENTS LIST FDEP Title	Facility Emission Unit Identification Number(s)	Applicable Requirement		Comments/Discussion	Unit/Facility Potential Applicability
			Yes	No/NA		
	8. Five year VE test requirement for units that operate no more than 400 hrs/year.	0330045		×		Unit 008
	9. Fifteen day advance notification requirement prior to test.	0330045	✓			Unit 008
	10. Compliance test exemption for exempt units and units utilizing a general permit.	0330045		×		Unit 008
62-297.310	(b) Special Compliance Tests.	0330045	✓		Applicable upon any complaint.	Unit 008
	(c) Waiver of Compliance Test Requirement.	0330045		×		Unit 008
	(8) Test Reports.	0330045	✓		.	Unit 008

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 8

Crist Plant Fly Ash Silos

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	Silo Baghouse
2. Emission Point Type Code :	1
3. Descriptions of Emission Points Comprising this Emissions Unit : Flex-Kleen pulse jet fabric filter baghouse	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common : 008	
5. Discharge Type Code :	F
6. Stack Height :	feet
7. Exit Diameter :	feet
8. Exit Temperature :	°F
9. Actual Volumetric Flow Rate :	acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate :	dscfm
12. Nonstack Emission Point Height :	feet
13. Emission Point UTM Coordinates : Zone : 16 East (km) : 427.127 North (km) : 3381.250	
14. Emission Point Comment : The latitude is : 30-33-54.5 The longitude is : 87-13-41.5	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 8

Crist Plant Fly Ash Silos

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Fly Ash temporary storage silos. The silos have a maximum ash flow of 150 tons per hour. Compliance shall be demonstrated at an operating rate which typifies normal operation of the fly ash system. This operating rate may be lower than the maximum allowable operating rate. Visible emissions shall not exceed 5% opacity.	
2. Source Classification Code (SCC) : 3-05-102-99	
3. SCC Units : Tons Processed	
4. Maximum Hourly Rate : 150.00	5. Maximum Annual Rate : 325,463.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

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

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	018		WP
PM10	018		WP

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

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : PM
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor : Reference :
7. Emissions Method Code :
8. Calculations of Emissions :
9. Pollutant Potential/Estimated Emissions Comment : The maximum allowable operating rate is 150 tons per hour. Compliance shall be demonstrated at an operating rate which typifies the normal operation of the fly ash system. Visible emissions shall not exceed 5% opacity. Visible emissions test are required to show continuing compliance with the Department.

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

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : PM10
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [X] No
5. Range of Estimated Fugitive/Other Emissions: to tons/year
6. Emissions Factor : Reference :
7. Emissions Method Code :
8. Calculations of Emissions :
9. Pollutant Potential/Estimated Emissions Comment : Visible emissions shall not exceed 5% opacity. The maximum allowable operating rate is 150 tons of fly ash transported per hour. Compliance shall be demonstrated at an operating rate which typifies normal operation of the fly ash system. Visible emissions tests are required to show continuing compliance with the Department.

Emissions Unit Information Section _____

Pollutant Information Section _____

Allowable Emissions _____

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

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Visible Emissions Limitation : Visible Emissions Limitation 1

1. Visible Emissions Subtype :	VE
2. Basis for Allowable Opacity :	RULE
3. Requested Allowable Opacity :	
Normal Conditions :	5 %
Exceptional Conditions :	5 %
Maximum Period of Excess Opacity Allowed :	min/hour
4. Method of Compliance :	
Annual Method #9 Test; Rule: 62-296.405(1)(e)1.	
5. Visible Emissions Comment :	

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 8
Crist Plant Fly Ash Silos

Continuous Monitoring System : Continuous Monitor 1

1. Parameter Code :	2. Pollutant :
3. CMS Requirement :	
4. Monitor Information : Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment : NOT APPLICABLE	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 8

Crist Plant Fly Ash Silos

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[ ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :		
PM : U	SO2 : U	NO2 : U
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 8

Crist Plant Fly Ash Silos

Supplemental Requirements for All Applications

1. Process Flow Diagram :	EUS8-1
2. Fuel Analysis or Specification :	NA
3. Detailed Description of Control Equipment :	EUS8-3
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :	NA
11. Alterntive Modes of Operation (Emissions Trading) :	NA

12. Enhanced Monitoring Plan :	NA
13. Identification of Additional Applicable Requirements :	NA

14. Acid Rain Application (Hard-copy Required) :

NA	Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
NA	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
NA	New Unit Exemption (Form No. 62-210.900(1)(a)2.)
NA	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

Unit-9

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 9

Coal and Ash Materials Handling

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[ ] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[X] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? 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.

[X] 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.

Emissions Unit Information Section 9

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : Coal and Ash Materials Handling		
2. Emissions Unit Identification Number : 009 [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code : A	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : Fugitive particulate emissions from unloading and transference of coal into the facility by conveyors and management of ash disposal sites. The emission unit includes fugitive emissions from the coal pile, ash pile, unpaved roads and associated disposal activities.		

Emissions Unit Information Section _____

Emissions Unit Control Equipment _____

1. Description :
2. Control Device or Method Code :

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 9
Coal and Ash Materials Handling

Emissions Unit Details

1. Initial Startup Date :		
2. Long-term Reserve Shutdown Date :		
3. Package Unit : Manufacturer :		Model Number :
4. Generator Nameplate Rating :	MW	
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :		 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :		
4. Maximum Production Rate :		
5. Operating Capacity Comment :		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
24 hours/day	7 days/week
52 weeks/year	8,760 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 9
Coal and Ash Materials Handling

Rule Applicability Analysis

NA

List of Applicable Regulations

Non-regulated emissions unit; no applicable requirements.

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 9

Coal and Ash Materials Handling

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	
2. Emission Point Type Code :	4
3. Descriptions of Emission Points Comprising this Emissions Unit : 1. H&P Unloader	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :	
5. Discharge Type Code :	F
6. Stack Height :	feet
7. Exit Diameter :	feet
8. Exit Temperature :	°F
9. Actual Volumetric Flow Rate :	acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate :	dscfm
12. Nonstack Emission Point Height :	feet
13. Emission Point UTM Coordinates : Zone : 16 East (km) : 478.500 North (km) : 3381.300	
14. Emission Point Comment : Fugitive emissions from management of coal and ash at the facility.	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 9

Coal and Ash Materials Handling

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Material handling of coal and ash. Wind erosion related to acres of exposed area.	
2. Source Classification Code (SCC) : 3-05-101-03	
3. SCC Units : Tons Transferred Or Handled	
4. Maximum Hourly Rate : 464.40	5. Maximum Annual Rate : 4,065.00
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 9

Coal and Ash Materials Handling

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Vehicle miles traveled by haul trucks and other vehicles on plant site.	
2. Source Classification Code (SCC) : 3-05-310-90	
3. SCC Units : Vehicle miles traveled.	
4. Maximum Hourly Rate :	5. Maximum Annual Rate :
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

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

Emissions Unit Information Section 9
Coal and Ash Materials Handling

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM			NS
PM10			NS

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

Emissions Unit Information Section 9
Coal and Ash Materials Handling

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted :	PM
2. Total Percent Efficiency of Control :	%
3. Potential Emissions :	lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No	
5. Range of Estimated Fugitive/Other Emissions:	3 25.00 to 100.00 tons/year
6. Emissions Factor : Reference :	
7. Emissions Method Code :	
8. Calculations of Emissions :	See attached inventory of fugitive emissions from coal handling operations.
9. Pollutant Potential/Estimated Emissions Comment :	

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

Emissions Unit Information Section 9
Coal and Ash Materials Handling

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted :	PM10
2. Total Percent Efficiency of Control :	%
3. Potential Emissions :	lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No	
5. Range of Estimated Fugitive/Other Emissions:	3 25.00 to 100.00 tons/year
6. Emissions Factor : Reference :	
7. Emissions Method Code :	
8. Calculations of Emissions :	See attached inventory of fugitive emissions for coal handling operations.
9. Pollutant Potential/Estimated Emissions Comment :	

Emissions Unit Information Section _____

Pollutant Information Section _____

Allowable Emissions _____

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

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section _____

Visible Emissions Limitation : Visible Emissions Limitation _____

1. Visible Emissions Subtype :
2. Basis for Allowable Opacity :
3. Requested Allowable Opacity : Normal Conditions : % Exceptional Conditions : % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance :
5. Visible Emissions Comment :

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section _____

Continuous Monitoring System : Continuous Monitor _____

1. Parameter Code :	2. Pollutant :
3. CMS Requirement :	
4. Monitor Information : Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment :	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 9

Coal and Ash Materials Handling

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[ ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :		
PM : U	SO2 : U	NO2 : U
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 9

Coal and Ash Materials Handling

Supplemental Requirements for All Applications

1. Process Flow Diagram :	EUS9-1
2. Fuel Analysis or Specification :	NA
3. Detailed Description of Control Equipment :	NA
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

10. Alternative Methods of Operations :	NA
11. Alterntive Modes of Operation (Emissions Trading) :	NA

12. Enhanced Monitoring Plan :	NA
13. Identification of Additional Applicable Requirements :	NA

14. Acid Rain Application (Hard-copy Required) :

NA	Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
NA	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
NA	New Unit Exemption (Form No. 62-210.900(1)(a)2.)
NA	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

CRIST EMISSION UNIT 9
MISCELLANEOUS COAL/ASH EMISSIONS

Crist Plant Coal Handling			
Equipment/System	Source	Frequency of Operation	Justification
6 & 7 Tripper Galley	Roof Vents (20)	Continuous	Non-Regulated Substances
	Tripper Cars (2)	Normal Two Fills Each Day	
	Side Exhaust Fan office annex side (2)	Continuous	
	Max. Drop To Bottom of Hopper (Bunker) 10 hoppers	Normal Two Fills Each Day	
#10 Belt	Open Belt with Scrappers Tripper Floor	Twice a Day	Non-Regulated Substances
#9 Belt	Ridge Vent	Continuous	Non-Regulated Substances
	Wash Out Chutes (5)	Continuous	
	Magnetic Separation	Continuous when Belt is running	
	Louvers and Doors at Magnetic Separation House	Continuous	
	Power Ventilator		
	Salt Tank For Additive to Coal	Maintenance	
	One Vent Outside Natural Draft	Continuous	
Crusher House	Enclosed Crusher	Maintenance	Non-Regulated Substances
	Louver Vents	Continuous	
	Ridge Vent	Continuous	
	Automatic Sampler (not used)	Maintenance	
	Air compressor For Sampler (not used)	Maintenance	
	Transfer Point Ridge Vent	Continuous	
#7 Belt	Ridge Vent	Continuous	Non-Regulated Substances
	Wash Out Chutes (3)	Continuous	
	Bottom of Side Walls Open	Continuous	
#8 Radial Arm Stacker Belt	Open Belt	When Unloading Coal	Non-Regulated Substances
#1 Belt	Vent (1)	Continuous	Non-Regulated Substances
	Transfer Point 6 foot drop	Continuous	
#2 Belt	Windows on sides of Belt	Continuous	Non-Regulated Substances
	Wash out chutes (5)	Continuous	
	Closed Drop Through old crusher house to #3 Belt	Continuous	

#3 Belt	Windows	Continuous	Non-Regulated
	Wash Out Chutes (4)	Continuous	Substances
4 & 5 Tripper Galley	Tripper Car (1)	Normal Fill Two Times a Day	Non-Regulated Substances
	Powered Exhaust Fans on Side Walls	Continuous	
	May Drop to Bottom of Hopper	8 Hoppers	
	Transfer Hopper to 6 & 7 Tripper Floor 6 foot Drop	Continuous	
#4 Belt	Open Belt with Scrapers	Continuous	Non-Regulated Substances
Transfer Belt	Open Belt Windows	Continuous	Non-Regulated Substances
Unloaders	H & P Unloader 12 1/2 ton Bucket	Continuous	Non-Regulated Substances
Tractors	D-10 Tractor (1)	Continuous	Non-Regulated Substances
	D-9 Tractors (2)		
Unloaders	Small Battery Bank at H & P	Continuous	Non-Regulated Substances
	Max. Barge Capacity is 20 barges	Continuous	
Diesel Fuel Station	Diesel Fuel Tank	Continuous	Non-Regulated Substances
	Diesel Fuel Dispenser	Continuous	
Dust Suppressant System	Dust Suppressant Tanks (2)	Continuous	Non-Regulated Substances
Old Tractor Shed	Lube Oil Dispenser	Continuous	Non-Regulated Substances
	Oily Rag Drum	Continuous	
	Used Oil Tank	Continuous	
	Welding and Service Truck	Continuous	
New Tractor Shed	Lube Oil	Continuous	Non-Regulated Substances
	Engine Oil	Continuous	
	Air Compressor	Continuous	
	Welding Machine	Continuous	
	Sewer Vents (2)	Continuous	
Coal Pile		Continuous	Non-Regulated Substances
Coal Barges	Maximum Storage on Site 20 barges	Continuous	Non-Regulated Substances
Coal Sampling	Crushing at H & P	Continuous	Non-Regulated Substances
	Riffling at H & P	Continuous	

Crist Plant Unit 4			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Oil Burners (32)	Continuous	Non-Regulated Substances
	Gas Burners (24)	Continuous	

Fly Ash System	Hot Precipitator Fly Ash Hopper Dust Valve (12)	Maintenance	Non-Regulated Substances
	Fugitive Dust in Fan Yard	Continuous	
	Fugitive Dust on Hot Precipitator Slab	Continuous	
Crist Plant Unit 5			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Oil Burners (28)	Continuous	Non-Regulated Substances
	Gas Burners (24)	Continuous	
Fly Ash System	Economizer Hopper Dust Valves (2)	Maintenance	Non-Regulated Substances
	Cold precipitator Fly Ash hoppers Dust Valves and Inspection Parts (9)	Maintenance	
	Hot precipitator Fly Ash Hopper Dust Valves Inspection Ports (12)	Maintenance	
	Pressure Relief on Transfer Tank	Safety	
	Vacuum Pump Relief Valve (2)	Safety	
	Transport Blower Relief Valve	Safety	
	Air Lock Valves (12)	Maintenance	
	Fugitive Dust in Fan Yard	Continuous	
	Fugitive Dust on Hot precipitator Slab	Continuous	
Crist Plant Unit 6			
Equipment/System	Source	Frequency of Operation	Justification
Fly Ash System	Economizer Hopper Dust Valves (4)	Maintenance	Non-Regulated Substances
	Precipitator Fly Ash Hopper Dust Valves and Inspection Ports (40)	Maintenance	
	Hydrovactor Air Separator Tank Vent	Continuous While Economizer Ash System is in Service	
	Pressure Relief Lid In Transfer Tank	Safety	
	Vacuum Pump Relief Valve	Safety	
	Transport Blower Relief Value	Safety	
	Air Lock Valves (12)	Maintenance	

Fly Ash System (cont'd)	Fugitive Dust in Fan Yard	Continuous	Non-Regulated Substances
	Fugitive Dust On Precipitator Slab	Continuous	
Coal System	Coal Pulverizers (4)	Maintenance	Non-Regulated Substances

Crist Plant Unit 7			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Coal Pulverizers	Maintenance	Non-Regulated Substances
	Pulverizer Seal Air Fan	Continuous While Pulverizers Air In Service	
Fly Ash System	Primary Air Heater Hopper Dust Valves (4)	Maintenance	Non-Regulated Substances
	Economizer Hopper Dusts Valves (5)	Maintenance	
	Precipitator Fly Ash Hopper Dust Valves and Inspection Ports	Maintenance	
	Hydrovactor Air Separator Tank Vent	Continuous While Economize ash system is in service	
	Pressure Relief on Transfer Tank	Safety	
	Vacuum Pump Relief Valve	Safety	
	Transport Blower Relief Valve	Safety	
	Air Lock Valves (12)	Maintenance	
	Fugitive Dust in Fan Yard	Continuous	

CRIST EMISSION UNIT 9
MISCELLANEOUS COAL/ASH EMISSIONS

Crist Plant Coal Handling			
Equipment/System	Source	Frequency of Operation	Justification
6 & 7 Tripper Galley	Roof Vents (20)	Continuous	Non-Regulated Substances
	Tripper Cars (2)	Normal Two Fills Each Day	
	Side Exhaust Fan office annex side (2)	Continuous	
	Max. Drop To Bottom of Hopper (Bunker) 10 hoppers	Normal Two Fills Each Day	
#10 Belt	Open Belt with Scrappers Tripper Floor	Twice a Day	Non-Regulated Substances
#9 Belt	Ridge Vent	Continuous	Non-Regulated Substances
	Wash Out Chutes (5)	Continuous	
	Magnetic Separation	Continuous when Belt is running	
	Louvers and Doors at Magnetic Separation House	Continuous	
	Power Ventilator		
	Salt Tank For Additive to Coal	Maintenance	
	One Vent Outside Natural Draft	Continuous	
Crusher House	Enclosed Crusher	Maintenance	Non-Regulated Substances
	Louver Vents	Continuous	
	Ridge Vent	Continuous	
	Automatic Sampler (not used)	Maintenance	
	Air compressor For Sampler (not used)	Maintenance	
	Transfer Point Ridge Vent	Continuous	
#7 Belt	Ridge Vent	Continuous	Non-Regulated Substances
	Wash Out Chutes (3)	Continuous	
	Bottom of Side Walls Open	Continuous	
#8 Radial Arm Stacker Belt	Open Belt	When Unloading Coal	Non-Regulated Substances
#1 Belt	Vent (1)	Continuous	Non-Regulated Substances
	Transfer Point 6 foot drop	Continuous	
#2 Belt	Windows on sides of Belt	Continuous	Non-Regulated Substances
	Wash out chutes (5)	Continuous	
	Closed Drop Through old crusher house to #3 Belt	Continuous	

#3 Belt	Windows	Continuous	Non-Regulated
	Wash Out Chutes (4)	Continuous	Substances
4 & 5 Tripper Galley	Tripper Car (1)	Normal Fill Two Times a Day	Non-Regulated Substances
	Powered Exhaust Fans on Side Walls	Continuous	
	May Drop to Bottom of Hopper	8 Hoppers	
	Transfer Hopper to 6 & 7 Tripper Floor 6 foot Drop	Continuous	
#4 Belt	Open Belt with Scrapers	Continuous	Non-Regulated Substances
Transfer Belt	Open Belt Windows	Continuous	Non-Regulated Substances
Unloaders	H & P Unloader 12 1/2 ton Bucket	Continuous	Non-Regulated Substances
Tractors	D-10 Tractor (1)	Continuous	Non-Regulated Substances
	D-9 Tractors (2)		
Unloaders	Small Battery Bank at H & P	Continuous	Non-Regulated Substances
	Max. Barge Capacity is 20 barges	Continuous	
Diesel Fuel Station	Diesel Fuel Tank	Continuous	Non-Regulated Substances
	Diesel Fuel Dispenser	Continuous	
Dust Suppressant System	Dust Suppressant Tanks (2)	Continuous	Non-Regulated Substances
Old Tractor Shed	Lube Oil Dispenser	Continuous	Non-Regulated Substances
	Oily Rag Drum	Continuous	
	Used Oil Tank	Continuous	
	Welding and Service Truck	Continuous	
New Tractor Shed	Lube Oil	Continuous	Non-Regulated Substances
	Engine Oil	Continuous	
	Air Compressor	Continuous	
	Welding Machine	Continuous	
	Sewer Vents (2)	Continuous	
Coal Pile		Continuous	Non-Regulated Substances
Coal Barges	Maximum Storage on Site 20 barges	Continuous	Non-Regulated Substances
Coal Sampling	Crushing at H & P	Continuous	Non-Regulated Substances
	Riffling at H & P	Continuous	

Crist Plant Unit 4			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Oil Burners (32)	Continuous	Non-Regulated Substances
	Gas Burners (24)	Continuous	

Fly Ash System	Hot Precipitator Fly Ash Hopper Dust Valve (12)	Maintenance	Non-Regulated Substances
	Fugitive Dust in Fan Yard	Continuous	
	Fugitive Dust on Hot Precipitator Slab	Continuous	
Crist Plant Unit 5			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Oil Burners (28)	Continuous	Non-Regulated Substances
	Gas Burners (24)	Continuous	
Fly Ash System	Economizer Hopper Dust Valves (2)	Maintenance	Non-Regulated Substances
	Cold precipitator Fly Ash hoppers Dust Valves and Inspection Parts (9)	Maintenance	
	Hot precipitator Fly Ash Hopper Dust Valves Inspection Ports (12)	Maintenance	
	Pressure Relief on Transfer Tank	Safety	
	Vacuum Pump Relief Valve (2)	Safety	
	Transport Blower Relief Valve	Safety	
	Air Lock Valves (12)	Maintenance	
	Fugitive Dust in Fan Yard	Continuous	
	Fugitive Dust on Hot precipitator Slab	Continuous	
Crist Plant Unit 6			
Equipment/System	Source	Frequency of Operation	Justification
Fly Ash System	Economizer Hopper Dust Valves (4)	Maintenance	Non-Regulated Substances
	Precipitator Fly Ash Hopper Dust Valves and Inspection Ports (40)	Maintenance	
	Hydrovactor Air Separator Tank Vent	Continuous While Economizer Ash System is in Service	
	Pressure Relief Lid In Transfer Tank	Safety	
	Vacuum Pump Relief Valve	Safety	
	Transport Blower Relief Value	Safety	
	Air Lock Valves (12)	Maintenance	

Fly Ash System (cont'd)	Fugitive Dust in Fan Yard	Continuous	Non-Regulated Substances
	Fugitive Dust On Precipitator Slab	Continuous	
Coal System	Coal Pulverizers (4)	Maintenance	Non-Regulated Substances

Crist Plant Unit 7			
Equipment/System	Source	Frequency of Operation	Justification
Coal System	Coal Pulverizers	Maintenance	Non-Regulated Substances
	Pulverizer Seal Air Fan	Continuous While Pulverizers Air In Service	
Fly Ash System	Primary Air Heater Hopper Dust Valves (4)	Maintenance	Non-Regulated Substances
	Economizer Hopper Dusts Valves (5)	Maintenance	
	Precipitator Fly Ash Hopper Dust Valves and Inspection Ports	Maintenance	
	Hydrovactor Air Separator Tank Vent	Continuous While Economize ash system is in service	
	Pressure Relief on Transfer Tank	Safety	
	Vacuum Pump Relief Valve	Safety	
	Transport Blower Relief Valve	Safety	
	Air Lock Valves (12)	Maintenance	
	Fugitive Dust in Fan Yard	Continuous	

CRIST ELECTRIC GENERATING PLANT FUGITIVE EMISSIONS
Roads and Material Handling

Emission Source Description	Total Emissions (tons/yr)	PM-10 Emissions (tons/yr)	Notes
Paved Roads	49.42	17.79	1836 vehicle miles / day
Unpaved-to-Paved Roads	11.21	4.04	59.5 vehicle miles / day
Unpaved Roads - Ash Ponds & Landfill	43.76	15.75	50% Control, 50 dump truck miles / day
Unpaved Roads - Coal Pile Tractors	1.03	0.37	10 tractor miles / day (wheeled tractor used)
Coal Barge Unloading - H&P Bucket Drop to Hopper	0.19	0.07	5 foot drop; 12.5 cu yd bucket; 75% of 4,065,000 tons coal
Coal Barge Unloading - Clyde Bucket Drop to Hopper	0.06	0.02	5 foot drop; 8.5 cu yd bucket; 25% of 4,065,000 tons coal
Coal Conveyor - Drop from #2 Conveyor inside Crusher House	0.09	0.03	41 foot drop; 1 mph
Coal Conveyor - Drop from #7 Conveyor inside Crusher House	0.14	0.05	59 foot drop; 1mph
Coal Conveyor - Drop from #8 Radial Stacker Conveyor to Coal Pile	1.05	0.39	52 foot drop
Coal Pile Wind Erosion	6.26	2.25	11 Acre coal pile
Ash Pond - Dewatered Ash Area	1.98	0.71	1 Acres of exposed fly ash (90% control due to high moisture from sluicing)
Ash Landfill - Construction Activity	198.21	71.36	10 Acres of exposed fly ash
TOTAL	313.40	112.84	

PAVED ROADS

Paved Road Fugitive Emissions Calculation

E = 0.077* (i)*(4/n)*(s/10)*(L/1000)*(W/3)^0.7 = lb/vmt

where:
i = 1.0 for travel on paved roads
= 7.0 for areas when vehicles enter from unpaved roads
W = Vehicle weight in tons
s = silt content of road; assume 5.3 based on Table 11.2.6-1
(Asphalt batching - Concrete batching - Sand and Gravel average)
n = number of traffic lanes; assume 2
L = surface dust loading (lb/mile); assume 2400 based on Table 11.2.6-1
(Asphalt batching - Concrete batching - Sand and Gravel average)
Assume PM-10 is 36% of TSP based on Unpaved Road Calculation

vmt = (250 employees + 50 other) * 3.06 miles * 2 trips
vmt= 1836

Fill in the following variables to calculate emissions;

i	W	n	L	s	vmt/day
1	2	2	2400	5.3	1836

TSP = 0.147484 lb/vmt (vmt = vehicle mile traveled)

Total Fugitive Emissions = 98834.71 lbs per year
49.42 tons per year

Total PM-10 Emissions = 35580.50 lbs per year
17.79 tons per year

UNPAVED-TO-PAVED

Paved Road Fugitive Emissions Calculation

E = 0.077* (i)*(4/n)*(s/10)*(L/1000)*(W/3)^0.7 = lb/vmt

where:
i = 1.0 for travel on paved roads
= 7.0 for areas when vehicles enter from unpaved roads
W = Vehicle weight in tons
s = silt content of road; assume 5.3 based on Table 11.2.6-1
(Asphalt batching - Concrete batching - Sand and Gravel average)
n = number of traffic lanes; assume 2
L = surface dust loading (lb/mile); assume 2400 based on Table 11.2.6-1
(Asphalt batching - Concrete batching - Sand and Gravel average)
Assume PM-10 is 36% of TSP based on Unpaved Road Calculation

vmt = (70 employees + 15 other) * .35 miles * 2 trips
vmt= 59.5

Fill in the following variables to calculate emissions;

i	W	n	L	s	vmt/day
7	2	2	2400	5.3	59.5

TSP = 1.032386 lb/vmt (vmt = vehicle mile traveled)

Total Fugitive Emissions = 22420.84 lbs per year
11.21 tons per year

Total PM-10 Emissions = 8071.50 lbs per year
4.04 tons per year

UNPAVED ROAD - COAL PILE

Unpaved Road Fugitive Emissions Calculation

E = k (5.9) * (s/12) * (S/30) * (W/3)^0.7 * (w/4)^0.5 * (365-p/365) lb/vmt

where:

k = 1.0 for TSP; 0.36 for PM-10
W = Vehicle weight in tons
w = mean # of wheels
S = speed of vehicle
s = silt content of road;
= assume 2.2 for coal
= assume 5.0 for bottom ash; 76.6 for fly as
= assume 1.6 for limestone
p = # of days > 0.01 in. of precipitation per year;
= assume 120 days per Figure 11.2.1-1, AP-

Coal Pile Tractor: 10 Tons, 4 wheels, 10 mph, 10 miles/day

k	W	w	S	s	p	m
1	10	4	10	2.2	120	10

TSP = 0.562161 lb/vmt

Total Fugitive Emissions = 2051.89 lbs per year
1.03 tons per year

Total PM-10 Emissions = 738.68 lbs per year
0.37 tons per year

UNPAVED ROAD - ASH POND & LANDFILL

Unpaved Road Fugitive Emissions Calculation

E = k (5.9) * (s/12) * (S/30) * (W/3)^0.7 * (w/4)^0.5 * (365-p/365) lb/vmt

where:

k = 1.0 for TSP; 0.36 for PM-10

W = Vehicle weight in tons

w = mean # of wheels

S = speed of vehicle

2

s = silt content of road;
= assume 2.2 for coal
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone

p = # of days > 0.01 in. of precipitation per year;
= assume 120 days per Figure 11.2.1-1, AP-42

Dump Truck: 25 Tons, 10 wheels, 25 mph, 50 miles/day

k	W	w	S	s	p	m
1	25	10	25	5	120	50

TSP = 9.591265 lb/vmt

Total Fugitive Emissions = 175040.58 lbs per year
87.52 tons per year

Total PM-10 Emissions = 63014.61 lbs per year
31.51 tons per year

Controlled Fugitive Emissions by Watering (Enter % Control C) C

Total TSP = 87520.3 lbs per year 50 %
43.76 tons per year

Total PM-10 = 31507.3 lbs per year
15.75 tons per year

Coal Barge Unloading - H&P Bucket Drop to Hopper

Batch Drop Emissions Calculation

$$E = k(0.0018) * \frac{(s/5)*(u/5)*(h/5)}{(m/2)^2 *(y/6)^{.33}} \quad lb/ton$$

where:
k = 1.0 for TSP; 0.36 for PM-10
s = silt content of material;
= assume 2.2 for coal ; AP-42 Table 11.2.3-1 9/88
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone; AP-42 Table 11.2.3-1 9/88

h = Height of drop in feet
m = moisture ;
= assume 7.5 % per KBN*
u = mean wind speed;
= assume 8.8 mph per KBN*
y = dumping device capacity in cubic yards

k	s	h	m	u	y	t
1	2.2	5	7.5	8.8	12.5	4,065,000

TSP = 0.000126 lb/ton of coal

Enter % of Material Unloaded -> 75 %

Total Batch Drop Emissions = 385.02 lbs per year
0.19 tons per year

Total PM-10 Batch Drop = 138.61 lbs per year
0.07 tons per year

Coal Barge Unloading - Clyde Bucket Drop to Hopper

Batch Drop Emissions Calculation

$$E = k(0.0018) * (s/5)*(u/5)*(h/5) \quad \text{lb/ton}$$
$$(m/2)^2 * (y/6)^{.33}$$

where:
k = 1.0 for TSP; 0.36 for PM-10
s = silt content of material;
= assume 2.2 for coal ; AP-42 Table 11.2.3-1 9/88
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone; AP-42 Table 11.2.3-1 9/88

h = Height of drop in feet
m = moisture ;
= assume 7.5 % per KBN*
u = mean wind speed;
= assume 8.8 mph per KBN*
y = dumping device capacity in cubic yards

k	s	h	m	u	y	t
1	2.2	5	7.5	8.8	8.5	4,065,000

TSP = 0.000111 lb/ton of coal

Enter % of Material Unloaded -> 25 %

Total Batch Drop Emissions = 113.00 lbs per year
0.06 tons per year

Total PM-10 Batch Drop = 40.68 lbs per year
0.02 tons per year

Coal Conveyor - Drop from #2 Conveyor to Bottom Belts

Continuous Drop Emissions Calculation

$$E = k*(0.0018) * \frac{(s/5)*(u/5)*(h/10)}{(m/2)^2}$$

where:

k = 1.0 for TSP; 0.37 for PM-10
s = silt content of material;
= assume 2.2 for coal ; AP-42 Table 11.2.3-1 9/88
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone; AP-42 Table 11.2.3-1 9/88
h = Height of drop in feet
m = moisture ;
= assume 7.5 % per KBN*
u = mean wind speed;
= assume 8.8 mph per KBN*

k	s	h	m	u	t
1	2.2	41	7.5	1	4,065,139

TSP = 0.000046 lb/ton of coal

Total Drop Point Emissions = 187.74 lbs per year
0.09 tons per year

Total PM-10 Drop Emissions = 69.46 lbs per year
0.03 tons per year

Coal Conveyor - Drop from #7 Conveyor to Bottom Belts

Continuous Drop Emissions Calculation

$$E = k*(0.0018) * \frac{(s/5)*(u/5)*(h/10)}{(m/2)^2}$$

where:

k = 1.0 for TSP; 0.37 for PM-10

s = silt content of material;
= assume 2.2 for coal ; AP-42 Table 11.2.3-1 9/88
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone; AP-42 Table 11.2.3-1 9/88

h = Height of drop in feet

m = moisture ;
= assume 7.5 % per KBN*

u = mean wind speed;
= assume 8.8 mph per KBN*

k	s	h	m	u	t
1	2.2	59	7.5	1	4,065,139

TSP = 0.000066 lb/ton of coal

Total Drop Point Emissions = 270.16 lbs per year
0.14 tons per year

Total PM-10 Drop Emissions = 99.96 lbs per year
0.05 tons per year

Coal Conveyor - Drop from #8 Radial Stacker Conveyor to Coal Pile

Continuous Drop Emissions Calculation

$$E = k*(0.0018) * \frac{(s/5)*(u/5)*(h/10)}{(m/2)^2}$$

where:

k = 1.0 for TSP; 0.37 for PM-10
s = silt content of material;
= assume 2.2 for coal ; AP-42 Table 11.2.3-1 9/88
= assume 5.0 for bottom ash; 76.6 for fly ash
= assume 1.6 for limestone; AP-42 Table 11.2.3-1 9/88
h = Height of drop in feet
m = moisture ;
= assume 7.5 % per KBN*
u = mean wind speed;
= assume 8.8 mph per KBN*

k	s	h	m	u	t
1	2.2	52	7.5	8.8	4,065,139

TSP = 0.000515 lb/ton of coal

Total Drop Point Emissions = 2095.34 lbs per year
1.05 tons per year

Total PM-10 Drop Emissions = 775.28 lbs per year
0.39 tons per year

CRIST COAL PILE

Wind Erosion of Active Storage Piles

E = 1.7*(s/1.5) * (365-p/235) * (f/15) lb/day/acre

where:
s = 2.2 for coal * * AP-42 Table 11.2.3-1 9/88
  = 5.0 for bottom ash; 76.6 for fly ash
  = 1.6 for limestone *

p = # of days > 0.01 in. of precipitation per year;
  = assume 120 per Figure 11.2.1-1, AP-42
f = % of time that unobstructed wind exceeds 12 mph at mean height of pile;
  = assume 18 % per KBN*

Fill in the following variables to calculate emissions;

s	p	f	a
2.2	120	18	11

TSP = 3.12 lb/day/acre

Total Wind Erosion Emission = 12524.07 lbs per year
6.26 tons per year

Total PM-10 Emissions = 4508.66 lbs per year - (PM-10 is 36% of TSP)
2.25 tons per year

Ash Pond - Dewatered Ash Area

Wind Erosion of Active Storage Piles

E = 1.7*(s/1.5) * (365-p/235) * (f/15) lb/day/acre

where:
s = 2.2 for coal * * AP-42 Table 11.2.3-1 9/88
  = 5.0 for bottom ash; 76.6 for fly ash
  = 1.6 for limestone *

p = # of days > 0.01 in. of precipitation per year;
  = assume 120 per Figure 11.2.1-1, AP-42
f = % of time that unobstructed wind exceeds 12 mph at mean height of pile;
  = assume 18 % per KBN*

Pond Area 165 Acres * 60% ash not covered by water or cattails
  = 99 Acres

Fill in the following variables to calculate emissions;

s	p	f	a
76.6	120	18	1

TSP = 108.61 lb/day/acre

Total Wind Erosion Emission =	39642.29	lbs per year
	19.82	tons per year
90 % control due to high moisture	1.98	tons per year
Total PM-10 Emissions =	14271.23	lbs per year - (PM-10 is 36% of TSP)
	7.14	tons per year
90 % control due to high moisture	0.71	tons per year

Ash Landfill - Construction Activity

Wind Erosion of Active Storage Piles

E = 1.7*(s/1.5) * (365-p/235) * (f/15) lb/day/acre

where:
s = 2.2 for coal * * AP-42 Table 11.2.3-1 9/88
  = 5.0 for bottom ash; 76.6 for fly ash
  = 1.6 for limestone *

p = # of days > 0.01 in. of precipitation per year;
  = assume 120 per Figure 11.2.1-1, AP-42
f = % of time that unobstructed wind exceeds 12 mph at mean height of pile;
  = assume 18 % per KBN*

Fill in the following variables to calculate emissions;

s	p	f	a
76.6	120	18	10

TSP = 108.61 lb/day/acre

Total Wind Erosion Emission = 396422.93 lbs per year
  198.21 tons per year

Total PM-10 Emissions = 142712.25 lbs per year - (PM-10 is 36% of TSP)
  71.36 tons per year

Unit-10

III. EMISSIONS UNIT INFORMATION

A. TYPE OF EMISSIONS UNIT
(Regulated and Unregulated Emissions Units)

Emissions Unit Information Section 10

Miscellaneous Activities

Type of Emissions Unit Addressed in This Section

1. Regulated or Unregulated Emissions Unit? Check one :

[ ] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[X] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Single Process, Group of Processes, or Fugitive Only? 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.

[X] 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.

Emissions Unit Information Section 10

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section : Miscellaneous Activities		
2. Emissions Unit Identification Number : 010 [ ] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code :	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code : 49
6. Emissions Unit Comment : Emissions unit contains various unregulated emissions points including tanks, cooling towers, sandblastling and other miscellaneous emissions.		

Emissions Unit Information Section _____

Emissions Unit Control Equipment _____

1. Description :
2. Control Device or Method Code :

C. EMISSIONS UNIT DETAIL INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section 10
Miscellaneous Activities

Emissions Unit Details

1. Initial Startup Date :		
2. Long-term Reserve Shutdown Date :		
3. Package Unit : Manufacturer :		Model Number :
4. Generator Nameplate Rating :	MW	
5. Incinerator Information : Dwell Temperature : Dwell Time : Incinerator Afterburner Temperature :		 Degrees Fahrenheit Seconds Degrees Fahrenheit

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate :	mmBtu/hr	
2. Maximum Incinerator Rate :	lb/hr	tons/day
3. Maximum Process or Throughput Rate :		
4. Maximum Production Rate :		
5. Operating Capacity Comment :		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule :	
24 hours/day	7 days/week
52 weeks/year	8,760 hours/year

D. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

Emissions Unit Information Section 10
Miscellaneous Activities

Rule Applicability Analysis

NA

Emissions Unit Information Section 10
Miscellaneous Activities

List of Applicable Regulations

Non-regulated emissions unit; no applicable requirements.

E. EMISSION POINT (STACK/VENT) INFORMATION

Emissions Unit Information Section 10

Miscellaneous Activities

Emission Point Description and Type :

1. Identification of Point on Plot Plan or Flow Diagram :	
2. Emission Point Type Code :	4
3. Descriptions of Emission Points Comprising this Emissions Unit : 1. #2 Oil Storage Tanks	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common :	
5. Discharge Type Code :	
6. Stack Height :	feet
7. Exit Diameter :	feet
8. Exit Temperature :	°F
9. Actual Volumetric Flow Rate :	acfm
10. Percent Water Vapor :	%
11. Maximum Dry Standard Flow Rate :	dscfm
12. Nonstack Emission Point Height :	feet
13. Emission Point UTM Coordinates : Zone : 16 East (km) : 478.500 North (km) : 3381.300	
14. Emission Point Comment : Miscellaneous unregulated fugitive emissions from tanks and sandblasting activities.	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 10

Miscellaneous Activities

Segment Description and Rate : Segment 1

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Material handling and storage of materials associated with tanks, water treatment, and cooling towers.	
2. Source Classification Code (SCC) : 3-90-900-04	
3. SCC Units : Gallons Throughput	
4. Maximum Hourly Rate :	5. Maximum Annual Rate :
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

F. SEGMENT (PROCESS/FUEL) INFORMATION

Emissions Unit Information Section 10

Miscellaneous Activities

Segment Description and Rate : Segment 2

1. Segment Description (Process/Fuel Type and Associated Operating Method/Mode) : Fugitive emissions from sandblasting and miscellaneous activities not included as trivial or exempt.	
2. Source Classification Code (SCC) : 3-05-101-99	
3. SCC Units : Tons Transferred Or Handled	
4. Maximum Hourly Rate :	5. Maximum Annual Rate :
6. Estimated Annual Activity Factor :	
7. Maximum Percent Sulfur :	8. Maximum Percent Ash :
9. Million Btu per SCC Unit :	
10. Segment Comment :	

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

Emissions Unit Information Section 10
Miscellaneous Activities

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM			NS
PM10			NS
VOC			NS

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

Emissions Unit Information Section 10
Miscellaneous Activities

Pollutant Potential/Estimated Emissions : Pollutant 1

1. Pollutant Emitted : PM
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: 1 1.00 to 5.00 tons/year
6. Emissions Factor : Reference :
7. Emissions Method Code :
8. Calculations of Emissions : Estimated emissions from sandblasting and miscellaneous emissions listed not included in trivial or exempt list.
9. Pollutant Potential/Estimated Emissions Comment : Miscellaneous emissions from tanks and sandblasting operations.

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

Emissions Unit Information Section 10
Miscellaneous Activities

Pollutant Potential/Estimated Emissions : Pollutant 2

1. Pollutant Emitted : PM10
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: 1 1.00 to 5.00 tons/year
6. Emissions Factor : Reference :
7. Emissions Method Code :
8. Calculations of Emissions : Estimated emissions from sandblasting and miscellaneous emissions not listed as trivial or exempt.
9. Pollutant Potential/Estimated Emissions Comment : Miscellaneous emissions from tanks and sandblasting operations.

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

Emissions Unit Information Section 10
Miscellaneous Activities

Pollutant Potential/Estimated Emissions : Pollutant 3

1. Pollutant Emitted : VOC
2. Total Percent Efficiency of Control : %
3. Potential Emissions : lb/hour tons/year
4. Synthetically Limited? [ ] Yes [ ] No
5. Range of Estimated Fugitive/Other Emissions: 1 1.00 to 5.00 tons/year
6. Emissions Factor : Reference :
7. Emissions Method Code :
8. Calculations of Emissions : Total VOCs from tanks is 1593 lbs. See attached inventory.
9. Pollutant Potential/Estimated Emissions Comment : Miscellaneous emissions from tanks.

CRIST EMISSION UNIT 10
MISCELLANEOUS EMISSIONS

Crist Plant			
Equipment/System	Source	Frequency of Operation	Justification
Transformers switches and switchgear processing (including cleaning and changing and venting)	Processing Venting	Maintenance	Non-Regulated Substances
Fire Fighting Training Facilities		Continuous	Non-Regulated Substances
Fire Tanks	Tanks (6)	Continuous	Non-Regulated Substances
Sewage Treatment Facility/equipment ranging in size from Port-a-John to Sewage Treatment Plant	Sewage Gases plus Treatment Emissions	Continuous	Non-Regulated Substances
Ponds	Neutralization Basins / Ponds	Continuous	Non-Regulated Substances
	Ash Pits / Ponds		
	Oil Skimmer Pond	Continuous	Non-Regulated Substances
Storage and use of chemicals solely for water, waste water treatment and other uses.	Chlorine	Continuous	Non-Regulated Substances
	H2S04	Continuous	
	Anhydrous Ammonia	Continuous	
	Sulfuric Acid	Continuous	
	Caustic	Continuous	
	Sulfur Dioxide	Continuous	
	Sodium Hypochlorite	Continuous	
	Disodium Phosphate	Continuous	
Bottom Ash Hydro Bin	Large Open Tank of Water and Bottom Ash	Continuous	Non-Regulated Substances
Chemical Storage Room at Warehouse	Open Paint Cans	Continuous	Non-Regulated Substances
	Solvent Closed Drum	Maintenance	
	Used Anti-Freeze Closed Drum	Maintenance	
	Lead Paint Waste Closed Drum	Maintenance	
	Used Batteries	Maintenance	
Temporary Storage Area at Warehouse	Sand Blasted Waste Closed Drum	Maintenance	Non-Regulated Substances
	Oily Rags in Closed Drum	Maintenance	
Non-halogenated Solvent Cleaning Operations	Cleaning Solvents	Maintenance	Non-Regulated Substances

Indoor Fugitives	Vacuum cleaning Office supplies Equipment	Maintenance	Non-Regulated Substances
Coal pile Runoff Ponds		Continuous	Non-Regulated Substances
Indoor Sand Blasting and Abrasive grit blasting when temporary total enclosures are used to contain particulates	Shop Sand Blasting Equipment with filters other totally enclosed areas	Maintenance	Non-Regulated Substances
Open Stock piling of Material	Sand, Grit Limestone, etc.	Continuous	Non-Regulated Substances
Vents and stacks for sewer lines or enclosed areas required for safety or by code	Sewage gases & Office ventilation	Continuous	Non-Regulated Substances
Handling and Removal of Clinkers, slag and bottom ash	Off-line Maintenance to Remove material from Boiler	Maintenance	Non-Regulated Substances
Recovered materials recycling systems including: bulb crushers, solvent stills, aerosol can puncturing		Maintenance	Non-Regulated Substances
Contraband drug disposal for Law Enforcement Agencies	In Boilers	Maintenance	Non-Regulated Substances
Waste Accumulation Consolidation	Accumulation and Consolidation in 55 gallon drums that are otherwise closed	Continuous	Non-Regulated Substances
Storage Tanks less than 550 gallons	300 gallon used oil tanks	Continuous	Non-Regulated Substances
Storage of products in sealed containers			Non-Regulated Substances
Nuclear Gauges used for the purpose of process monitoring		Continuous	Non-Regulated Substances
Flue Gas desulfurization system absorber feed tank must eliminate spray/header vent		Continuous	Non-Regulated Substances
Renovation / demolition of asbestos		Maintenance	Non-Regulated Substances
Non-Halogenated Solvents	Regular Mineral Spirits Unocal chemicals Division	Maintenance	Non-Regulated Substances

Non-Halogenated Solvents (cont'd)	Grease Strip GC 1003330 gold coast chemical	Maintenance	Non-Regulated Substances
	Use 375pl Dispersive Cleaners Newton Supply Co	Maintenance	
	Electron Aerosol #0632 #0296 Sentry Chemical Co.	Maintenance	
	Sodium Silicate B&B REB-2 B&B Tritcal, Inc.	Maintenance	
	Low Odor Paraffin Solvent Exxon	Maintenance	
	Blue Gold Industrial Cleaners Carroll Company	Maintenance	
	Citrikleen Panatone Corporation	Maintenance	
	Orange Tough 90 Spartan Chemical Co.	Maintenance	
Chlorinated Solvents	Miscellaneous	De minus amounts during maintenance outages.	Non-Regulated (De minus use)
Oil House	Empty oil Drums	Continuous	Non-Regulated Substances
	Oily Rag Drum	Continuous	Non-Regulated Substances
	5 gal buckets with oil and grease	Continuous	Non-Regulated Substances
Gas Metering Area	Miscellaneous Vents to atmosphere and valves (40) and flanges (23) Approx. quantity.	Maintenance	Non-Regulated Substances
	Gas Relieve Value (2)	Safety	
	Mercapton Tank	Continuous	
Fuel Gas System	Miscellaneous Vents (12)	Maintenance	Non-Regulated Substances
	Gas Relief Valves (2)	Safety	
	Valves (10)	Maintenance	
Lighter Oil Pumping Facility	Pump Packing Vents	Maintenance	Non-Regulated Substances
Tanks	Anhydrous Ammonia Tank Gulf Gas Injection	Unit 7 flue gas injection	Non-Regulated Substances
	Turbine Oil Tanks in 4 & 5 Pump Room	Continuous	
	Turbine oil Tanks in Unit 1 Pump Room	Continuous	

Silo	Air Compressors (2)	Continuous	Non-Regulated Substances
	Air Filter Washing	Every two weeks	
	Silo Vents	Continuous	
	Silo Pressure Relief Lids	Safety	
	Vent/Vacuum Pan	Used During unloading	
	Truck Wash area	Continuous while unloading	Non-Regulated Substances
	Unloading of Ash into Dump Trucks	Ash Mixed with water when not sold as dry	
Sand Blasting Abrasive Blasting	Facility Wide	Maintenance	Non-Regulated Substances
Ash Landfill	Facility Landfill	Continuous	Non-Regulated Substances
Crist Plant Unit 1			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Oil Tank Vapor Extractor	Continuous	Non-Regulated Substances
	Oil Bowser Vapor Extractor	Continuous	
	Turbine Oil Tank	Continuous	
	Turbine Oil Bowser	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting H2 then C02 then Air	Maintenance	
	Liquid Level Detectors	Maintenance	
	Hydrogen Dryer	Continuous	
	Seal Oil System Loop Vent (1)	Continuous	
Water Treatment	Chemical Fuel Pump	Maintenance	Non-Regulated Substances
Turbine Oil Storage Tank	Tank Vent	Continuous	Non-Regulated Substances
Gas or Oil Burners	Gas Burners Oil Burners	Continuous While In Service	Non-Regulated Substances
Crist Plant Unit 2			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Turbine Oil Tank Vapor Extractor	Continuous	Non-Regulated Substances
	Oil Bowser Vapor Extractor	Continuous	
	Turbine Oil Tank	Continuous	
	Turbine Oil Bowser	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances

Generator (cont'd)	Generator Venting H2 then C02 then Air	Maintenance	Non-Regulated Substances
	Liquid Level Detectors	Maintenance	
	Hydrogen Dryer	Continuous	
Control Oil System	Oil Storage Tank	Continuous	Non-Regulated Substances
Air Compressors and System	Old Air Compressors No Longer Used (2)	Not Operational	Non-Regulated Substances
	Air Compressor Room Vent	Continuous	
Building Sump	Structure Used to Retain Industrial Waste water	Continuous	Non-Regulated Substances
Gas or Oil Burners	Gas Burners Oil Burners	Continuous While In Service	Non-Regulated Substances
Crist Plant Unit 3			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Oil Tank Vapor Extractor	Continuous	Non-Regulated Substances
	Oil Bowser Vapor Extractor	Continuous	
	Turbine Oil Tank Bowser	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting H2 then C02 then Air	Maintenance	
	Liquid Level Detectors	Maintenance	
	Hydrogen Dryer	Continuous	
Control Oil System	Oil Storage Tank	Continuous	Non-Regulated Substances
Air Compressors and System	Atlas Copco Oilless Air Compressor	Continuous	Non-Regulated Substances
	Air Receiver Tank with Relief Valves	Continuous	
Building Sump	Structure used to Retain Industrial Wastewater	Continuous	Non-Regulated Substances
Gas or Oil Burners	Gas Burners Oil Burners	Continuous While In Operation	Non-Regulated Substances
Crist Plant Unit 4			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Turbine Oil Bowser Vapor Extractor	Continuous	Non-Regulated Substances
	Turbine Oil Tank	Continuous	
	Turbine Oil Bowser	Continuous	
	Turbine Oil Room Vent	Continuous	

Steam Turbine Lube Oil System (cont'd)	Induced Draft Fan Hydraulic Coupling Vent (1)	Continuous	Non-Regulated Substances
	Forced Draft Fan Hydraulic Coupling Vent (1)	Continuous	
	Boiler Feed Pump Hydraulic Coupling Vent (2)	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting H2 then CO2 then Air	Maintenance	
	Liquid Level Detectors	Maintenance	
	Oil Drop Out Drum For The Generator Vapor Extractor	Continuous	
Air Compressors and System Testing Equipment	Atlas Copco Oilless Air Compressor (2)	Continuous	Non-Regulated Substances
	Chicago Pneumatic Air Compressors (2)	Continuous	
	Air Receiver Tanks with Relief Valves (4)	Continuous	
Water Treatment	Burlock Drum	Continuous	Non-Regulated Substances
	BL419 Alkalinity Control	Continuous	
	Pre Tech 2000 Drum	Continuous	
	Chemical Feed Pump (2)	Continuous	
Air Heater Drains	Drains	Maintenance	Non-Regulated Substances
Pilot Oil Torch Fan	Cooling Fan	Continuous	Non-Regulated Substances
Crist Plant Unit 5			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Turbine Oil Tank Vapor Extractor	Continuous	Non-Regulated Substances
	Oil Bowser Vapor Extractor	Continuous	
	Turbine Oil Tank	Continuous	
	Turbine Oil Bowser	Continuous	
	Induced Draft Fan Hydraulic Coupling Vent (1)	Continuous	
	Boiler Feed Pump Hydraulic Coupling Vent (2)	Continuous	

Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting H2 then C02 then Air	Maintenance	
	Liquid Level Detectors	Maintenance	
	Oil Drop Out Drum For The Generator Vapor Extractor	Continuous	
Building Sump	Structure Used to Retain Industrial Wastewater	Continuous	Non-Regulated Substances
Water Treatment	Burlock Drum	Continuous	Non-Regulated Substances
	BL409 Alkalinity Control Drum	Continuous	
	Pre Tect 2000 Drum	Continuous	
Air Heater Drains	Drains	Maintenance	Non-Regulated Substances
Pilot Oil Tank Fan	Cooling Fan	Continuous	Non-Regulated Substances
Crist Plant Unit 6			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Main Oil Tank Vapor Extractor	Continuous	Non-Regulated Substances
	Main Oil Bowser Vapor Extractor	Continuous	
	Main Oil Tank	Continuous	
	Main Oil Bowser	Continuous	
Boiler Feed Pump Steam Turbine Lube Oil System	Turbine Oil Tank Vapor Extractors (2)	Continuous	Non-Regulated Substances
	Turbine oil Bowser Vapor Extractors (2)	Continuous	
	Turbine Oil Tanks (2)	Continuous	
	Turbine Oil Tanks (2)	Continuous	
	Turbine Oil Bowsers (2)	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting Hydrogen then CO2 then Air	Maintenance	
	Liquid Level Detectors (3)	Maintenance	
	Hydrogen Dryer	Continuous	
E. H. Control Oil System	E. H. Oil Storage Tanks (2)	Continuous	Non-Regulated Substances
	E. H. Oil Radiator Cooler	Continuous	
	ISO Bus Cooling Fan	Continuous	
Air Compressors and System	Atlas Copco oilless air compressor	Continuous	Non-Regulated Substances

Air Compressors and System	Gardner Denver Air Compressor	Continuous	Non-Regulated Substances
	Air Receiver Tanks with Relief Valves	Safety	
Building Sump	Structure used to Retain Industrial Wastewater	Continuous	Non-Regulated Substances
Ignitor Cooling Air Fan	Cooling Air	Continuous	Non-Regulated Substances
Air Heater Drains	Drains	Maintenance	Non-Regulated Substances
Pyrite Holding Tank Water Filled	Open Top Holding Tank	Continuous	Non-Regulated Substances
Chemical Feed Pumps	Pump Packing	Maintenance	Non-Regulated Substances
Caustic Tank inside	Tank Vent	Continuous	Non-Regulated Substances
pH Control Tank	Tank Vent	Continuous	Non-Regulated Substances
Crist Plant Unit 7			
Equipment/System	Source	Frequency of Operation	Justification
Steam Turbine Lube Oil System	Oil Tank Vapor Extractor Vent	Continuous	Non-Regulated Substances
	Oil Bowser Vapor Extractor	Continuous	
	Turbine Oil Tank	Continuous	
	Turbine Oil Bowser	Continuous	
Boiler Feed Pump Steam Turbine Lube Oil System	Turbine Oil Tank Vapor Extractors (2)	Continuous	Non-Regulated Substances
	Turbine oil Bowser Vapor Extractors (2)	Continuous	
	Turbine oil Tanks (2)	Continuous	
	Turbine Oil Bowsers (2)	Continuous	
Generator	Vapor Extractor	Continuous	Non-Regulated Substances
	Generator Venting Hydrogen then CO2 through Air	Maintenance	
	Liquid Level Detectors	Maintenance	
	Hydrogen Dryer	Continuous	
E. H. Control Oil System	E. H. Oil Storage Tanks (2)	Continuous	Non-Regulated Substances
	E. H. Oil Radiator Cooler	Continuous	
Turbine Building	Ventilation Fans (blow in)	Continuous in summer - off in winter	Non-Regulated Substances
	ISO Bus Cooling Fan	Continuous	

Air Compressors and System	Atlas Cope oilless air compressor	Continuous	Non-Regulated Substances
	Gardner Denver Air Compressor	Continuous	
	Air Receiver Tanks with Relief Valves	Continuous	
Building Sump	Structure used to Retain Industrial Wastewater	Continuous	Non-Regulated Substances
Anhydrous Ammonia Tank	Flue Gas Injection	Maintenance	Non-Regulated Substances
Ignitor Cooling Air Fan	Cooling Fan	Continuous	Non-Regulated Substances
Sulfur Burner System	Sulfur Bulk Tank Flue Gas Injection Pollutant Control	Continuous	Non-Regulated Substances
Primary Air Heater	Cooling Vents Gas Side	Maintenance	Non-Regulated Substances
Air Heater Drains	Drains	Maintenance	Non-Regulated Substances

Cooling Tower Information

	Cr 1-5	Crist 6	Crist 7	Total
GPM Design		150960	165000	
Evaporation Loss Design		2.20%	3.10%	
Dift Loss Design		0.20%	0.20%	
Max Cu Ft/sec Flow (EIA 767)	426	310	344	
GPM	191444.4	139314	154593.6	
Cu Ft/sec Consumption (Eia 767)	0	7.3	9.9	
GPM	0	3280.62	4449.06	
Note: Consumption is Makeup less Blowdown				

Emission Calculations:

Based on Circulating Flow & Apparent Factor				
Flow (GPM)	191444.4	150960	165000	
Flow (Annual Gallons)	1.0E+11	7.93E+10	8.7E+10	
PM10 Tons (=.019 lb/1000 gal/2000 lb/lb))	955.9	753.8	823.9	2,533.6
Based on Design Drift & Drift Factor				
Drift & Evaporation % of Flow	2.4%	2.4%	3.3%	
Drift (GPM)	4594.7	3623.0	5445.0	
Drift (Annual Gallons)	2.4E+09	1.90E+09	2.9E+09	
PM 10 Tons (=1.7 lb/1000 gal/(2000 lb/ton))	**2052.7**	**1618.6**	**2432.6**	**6,104.0**
Based on Estimated Drift & Drift Factor				
Drift & Evaporation % of Flow	2.0%	2.0%	2.0%	
Drift (GPM)	3828.9	3019.2	3300.0	
Drift (Annual Gallons)	2.0E+09	1.59E+09	1.7E+09	
PM 10 Tons (=1.7 lb/1000 gal/(2000 lb/ton))	1710.6	1348.9	1474.3	4,533.8
Based on Consumption & Drift Factor				
Drift (GPM)	unknown	3280.62	4449.06	
Drift (Annual Gallons)		1.72E+09	2.3E+09	
PM 10 Tons (=1.7 lb/1000 gal/(2000 lb/ton))		1465.6	1987.7	3,453.3
Maximum Annual PM10 Tons	**2052.7**	**1618.6**	**2432.6**	**6,104.0**

Based on Design Drift & Drift Factor				
Drift (Annual Gallons)	2.4E+09	1.90E+09	2.9E+09	
VOC's Tons (=6.0 lb/10^6 gallons/(2000 lb/ton))	**7.24**	**5.71**	**8.59**	**21.54**
Based on Estimated Drift & Drift Factor				
Drift (Annual Gallons)	2.0E+09	1.59E+09	1.7E+09	
VOC's Tons (=6.0 lb/10^6 gallons/(2000 lb/ton))	6.04	4.76	5.20	16.00
Based on Consumption & Drift Factor	0	1.72E+09	2.3E+09	
Drift (Annual Gallons)	0.00	5.17	7.02	12.19
VOC's Tons (=6.0 lb/10^6 gallons/(2000 lb/ton))				
Maximum Annual VOC Tons	**7.24**	**5.71**	**8.59**	**21.54**

[redacted]UTANT NAME	:	Particulate matter < 10 microns (PM10), not specified
CAS NUMBER	:	
SCC	:	38500120
SCC NAME	:	Industrial Processes
	:	Cooling Tower
	:	Process Cooling
	:	Mechanical Draft
CONTROL DEVICE 1	:	UNCONTROLLED
CONTROL DEVICE 2	:	
STANDARD FACTOR	:	1.90000E+01
UNITS	:	Lb/Million Gallons
UNITS EXTENSION	:	Throughput
MATERIAL	:	Throughput
ACTIVITY	:	
REPORTED FACTOR	:	1.90000E-02
UNITS	:	Lb/1000 Gal
UNITS EXTENSION	:	Circulating Water Flow
MATERIAL	:	Water
ACTIVITY	:	Circulated
FACTOR QUALITY	:	E
REFERENCE:	:	EPA. 1995. Section 13.4, Wet Cooling Towers. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.
[redacted]ONDARY REF:	:	Midwest Research Institute, Cary, North Carolina. July 1994. Section 13.4. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition, AP-42. Background Report.
NOTES	:	in ppm by total liquid drift (1.7 lb/thousand gal for induced draft or 0.073 lb/thousand gal for natural draft tower). If circulating water TDS is unknown, multiply TDS of makeup water by cycles of concentration by total liquid drift.
PRC_PARMS	:	
SIC CODE	:	
SIC NAME	:	
RANGE	:	
TESTS	:	Based on circulating water total
LOCATION	:	
METHODS	:	
CORRECTION	:	dissolved solids (TDS) of 12,000 ppm. To estimate conservatively high PM-10 emission factor for a specific tower, multiply TDS
RESEARCHER	:	RJM
DATE	:	05/17/1995
DATA SOURCE	:	MRI_UF
REC_ID	:	5THED_000769

[redacted]

[redacted]UTANT NAME	:	Volatile organic compounds (VOC)
[redacted] NUMBER	:	
SCC	:	30600701
SCC NAME	:	Industrial Processes
	:	Petroleum Industry
	:	Cooling Towers
	:	Cooling Towers
CONTROL DEVICE 1	:	UNCONTROLLED
CONTROL DEVICE 2	:	
STANDARD FACTOR	:	6.00000E+00
UNITS	:	Lb/Million Gallons
UNITS EXTENSION	:	Cooling Water
MATERIAL	:	Cooling Water
ACTIVITY	:	
REPORTED FACTOR	:	6.00000E+00
UNITS	:	Lb/Million Gal
UNITS EXTENSION	:	Cooling Water Used
MATERIAL	:	Cooling Water
ACTIVITY	:	Used
FACTOR QUALITY	:	D
REFERENCE:	:	EPA. September 1985. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fourth Edition with Supplements A, B, and C, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.
[redacted]CONDARY REF:	:	
[redacted]ES	:	
[redacted]_PARMS	:	
SIC CODE	:	
SIC NAME	:	
RANGE	:	
TESTS	:	
LOCATION	:	
METHODS	:	
CORRECTION	:	
RESEARCHER	:	
DATE	:	/ /
DATA SOURCE	:	AFSEF
REC_ID	:	AFSEF_014941

Table 11.4-1. PARTICULATE EMISSIONS FACTORS FOR WET COOLING TOWERS[a]

Tower Type[d]	Total Liquid Drift Factor[b]				Apparent Factor[c]		
	Circulating Water Flow[b]	g/dkL	lb/10³ gal	Emission Factor Rating	g/dkL[e]	lb/10³ gal	Emission Factor Rating
Induced draft	0.020	2.0	1.7	D	0.023	0.019	E
Natural draft	0.00088	0.088	0.073	E	NA	NA	

[a]References 1-17. Numbers are given to two significant figures. NA = not available.

[b]Total liquid drift is water droplets entrained in the cooling tower exit air stream. Factors expressed as % of circulating water flow (10^{-2} L drift/L [10^{-2} gal drift/gal] water flow) and g drift/dkL (lb drift/10^3 gal) circulating water flow. 0.12 g/dkL = 0.1 lb/10^3 gal; 1 dkL = 10^1 L. References 2, 5-7, 9-10, 12-13, 15-16.

[c]Insufficient data to develop a true emission factor for wet cooling towers. Apparent emission factor calculated for each source using total drift emission factor and total dissolved solids (TDS) in circulating water, assuming TDS in circulating water = TDS in drift; and 100% conversion of TDS to PM-10 in the atmosphere. Based on available test data. Near-source deposition of large droplets is unaccounted. Includes only solid PM-10 particles. References 2, 4, 8, 11-14.

[d]See Figures 11.4-1 and 11.4-2.

[e]Expressed as g PM-10/dkL (lb PM-10/10^3 gal) circulating water flow.

	VOC's lb/unit
Million Gallons Cooling Water	6.0
1000 Barrels Refinery Feed	10.0

Gulf Power Plant Crist Tank Emission Summary

State Registration #	Contents	Size (gallons)	Turnovers	Emissions (pounds)	Comments
1	#2 Diesel - Tractor Fuel	20,000	50	26	
2	Removed Tank				
3	#2 Diesel - Lighter Oil	100,000	30	104	Crist Tank #2
4	#2 Diesel - Lighter Oil	100,000	30	104	Crist Tank #3
5	#6 Bunker "C"	1,387,000	10	7	
6	#6 Bunker "C"	1,387,000	10	7	
7	#6 Bunker "C"	1,387,000	10	7	
8	Used Oil	15,000	50	19	Crist Tank #1
9	Lube Oil	7,000	40	9	Turbine Lubrication Oil
10	Lube Oil	7,000	40	9	Turbine Lubrication Oil
11	Waste Oil	12,000	50	17	Turbine Lubrication Oil - stored for disposal
12	Lube Oil	7,000	40	9	
13	Lube Oil	4,000	40	5	
14	Lube Oil	4,000	40	5	
15	Lube Oil	3,000	40	4	
16	Sulfuric Acid	4,000		0	
17	Sulfuric Acid	6,000		0	
---	Gasoline	2,000	50	1,239	
	TOTAL	4,452,000		1,571	

notes:
Only State-registered tanks listed (contents > 550 gallons and outdoor location)
Oil and Acid tanks listed, no Caustic tanks
TANKS3.0 used for calculations
A 1/2 max level used for average liquid height
#2 diesel fuel utilized in TANKS3.0 program to estimate lube, used and waste oil emissions

05/20/96

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification

Identification No.:	CR-01
City:	Pensacola
State:	FL
Company:	A-30598
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	18.0
Diameter (ft):	14.0
Liquid Height (ft):	18.0
Avg. Liquid Height (ft):	9.0
Volume (gallons):	20000
Turnovers:	50.0
Net Throughput (gal/yr):	1000000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	2.00
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.2857

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	4.05	21.78	25.83
Total:	4.05	21.78	25.83

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification

Identification No.:	CR-03
City:	Pensacola
State:	FL
Company:	GM-18357 & GM-13802
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	31.0
Diameter (ft):	24.0
Liquid Height (ft):	31.0
Avg. Liquid Height (ft):	15.5
Volume (gallons):	100000
Turnovers:	30.0
Net Throughput (gal/yr):	3000000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Dome
Height (ft):	0.00
Radius (ft) (Dome Roof):	24.00
Slope (ft/ft) (Cone Roof):	0.0000

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	21.03	82.85	103.88
Total:	21.03	82.85	103.88

Identification

Identification No.:	CR-05-6-7
City:	Pensacola
State:	FL
Company:	D-25022
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	46.9
Diameter (ft):	71.0
Liquid Height (ft):	46.9
Avg. Liquid Height (ft):	23.5
Volume (gallons):	1387000
Turnovers:	10.0
Net Throughput (gal/yr):	13870000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.1000

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Residual oil no. 6	All	69.87	65.04	74.70	68.02	0.0001	0.0001	0.0001	190.000			190.00	Option 3: A=10.1040, B=10475.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Residual oil no. 6	2.72	3.93	6.65
Total:	2.72	3.93	6.65

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification

Identification No.:	CR-08
City:	Pensacola
State:	FL
Company:	U-10569
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	26.0
Diameter (ft):	10.0
Liquid Height (ft):	26.0
Avg. Liquid Height (ft):	13.0
Volume (gallons):	15000
Turnovers:	50.0
Net Throughput (gal/yr):	750000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.0000

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	2.77	16.11	18.88
Total:	2.77	16.11	18.88

Identification

Identification No.:	CR-09-10
City:	Pensacola
State:	FL
Company:	GM-15694
Type of Tank:	Horizontal Fixed Roof

Tank Dimensions

Shell Length (ft):	19.0
Diameter (ft):	8.0
Volume(gallons):	7000
Is tank underground? (Y/N):	N
Turnovers:	40.0
Net Throughput (gal/yr):	280000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	1.66	7.09	8.74
Total:	1.66	7.09	8.74

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification
- Identification No.: CR-11
- City: Pensacola
- State: FL
- Company: D-19156
- Type of Tank: Horizontal Fixed Roof

Tank Dimensions
- Shell Length (ft): 20.6
- Diameter (ft): 12.0
- Volume(gallons): 12000
- Is tank underground? (Y/N): N
- Turnovers: 50.0
- Net Throughput (gal/yr): 600000

Paint Characteristics
- Shell Color/Shade: White/White
- Shell Condition: Good

Breather Vent Settings
- Vacuum Setting (psig): 0.00
- Pressure Setting (psig): 0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	4.03	12.70	16.74
Total:	4.03	12.70	16.74

Identification

Identification No.:	CR-12
City:	Pensacola
State:	FL
Company:	GM-37039 & GM-35989
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	14.0
Diameter (ft):	9.3
Liquid Height (ft):	14.0
Avg. Liquid Height (ft):	7.0
Volume (gallons):	7000
Turnovers:	40.0
Net Throughput (gal/yr):	280000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.1000

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	1.32	7.18	8.51
Total:	1.32	7.18	8.51

Identification

Identification No.:	CR-13-14
City:	Pensacola
State:	FL
Company:	GM-37039
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	14.0
Diameter (ft):	7.0
Liquid Height (ft):	14.0
Avg. Liquid Height (ft):	7.0
Volume (gallons):	4000
Turnovers:	40.0
Net Throughput (gal/yr):	160000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.33
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.0951

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	0.75	4.08	4.82
Total:	0.75	4.08	4.82

Identification

Identification No.:	CR-15
City:	Pensacola
State:	FL
Company:	GM-35972 & GM-37039
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	14.0
Diameter (ft):	6.0
Liquid Height (ft):	14.0
Avg. Liquid Height (ft):	7.0
Volume (gallons):	3000
Turnovers:	40.0
Net Throughput (gal/yr):	120000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.00
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.2500

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	69.87	65.04	74.70	68.02	0.0089	0.0076	0.0104	130.000			130.00	Option 3: A=12.1010, B=8907.0

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	0.56	3.01	3.56
Total:	0.56	3.01	3.56

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

Identification

Identification No.:	CR-gas
City:	Pensacola
State:	FL
Company:	GM-35732
Type of Tank:	Vertical Fixed Roof

Tank Dimensions

Shell Height (ft):	12.0
Diameter (ft):	5.3
Liquid Height (ft):	12.0
Avg. Liquid Height (ft):	6.0
Volume (gallons):	2000
Turnovers:	50.0
Net Throughput (gal/yr):	100000

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition:	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft):	0.67
Radius (ft) (Dome Roof):	0.00
Slope (ft/ft) (Cone Roof):	0.2513

Breather Vent Settings

Vacuum Setting (psig):	0.00
Pressure Setting (psig):	0.00

Meteorological Data Used in Emission Calculations: Pensacola, Florida (Avg Atmospheric Pressure = 14.7 psia)

Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 13)	All	69.87	65.04	74.70	68.02	8.2173	7.5160	8.9695	62.000			62.00	Option 4: RVP=13.00, ASTM Slope=2.5

Annual Emissions Report

Liquid Contents	Losses (lbs.): Standing	Working	Total
Gasoline (RVP 13)	315.68	922.93	1238.61
Total:	315.68	922.93	1238.61

Emissions Unit Information Section _____

Pollutant Information Section _____

Allowable Emissions _____

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

I. VISIBLE EMISSIONS INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section _____

Visible Emissions Limitation : Visible Emissions Limitation _____

1. Visible Emissions Subtype :
2. Basis for Allowable Opacity :
3. Requested Allowable Opacity : Normal Conditions : % Exceptional Conditions : % Maximum Period of Excess Opacity Allowed : min/hour
4. Method of Compliance :
5. Visible Emissions Comment :

J. CONTINUOUS MONITOR INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Information Section _____

Continuous Monitoring System : Continuous Monitor _____

1. Parameter Code :	2. Pollutant :
3. CMS Requirement :	
4. Monitor Information : Manufacturer : Model Number : Serial Number :	
5. Installation Date :	
6. Performance Specification Test Date :	
7. Continuous Monitor Comment :	

K. PREVENTION OF SIGNIFICANT DETERIORATION (PSD) INCREMENT TRACKING INFORMATION

Emissions Unit Information Section 10

Miscellaneous Activities

PSD Increment Consumption Determination

1. Increment Consuming for Particulate Matter or Sulfur Dioxide?

[ ] The emissions unit is undergoing PSD review as part of this application, or has undergone PSD review previously, for particulate matter or sulfur dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after January 6, 1975. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after January 6, 1975, but before December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after December 27, 1977. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, the baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

2. Increment Consuming for Nitrogen Dioxide?

[ ] The emissions unit addressed in this section is undergoing PSD review as part of this application, or has undergone PSD review previously, for nitrogen dioxide. If so, emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source pursuant to paragraph (c) of the definition of "major source of air pollution" in Chapter 62-213, F.A.C., and the emissions unit addressed in this section commenced (or will commence) construction after February 8, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] The facility addressed in this application is classified as an EPA major source, and the emissions unit began initial operation after February 8, 1988, but before March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[ ] For any facility, the emissions unit began (or will begin) initial operation after March 28, 1988. If so, baseline emissions are zero, and emissions unit consumes increment.

[X] None of the above apply. If so, baseline emissions of the emissions unit are nonzero. In such case, additional analysis, beyond the scope of this application, is needed to determine whether changes in emissions have occurred (or will occur) after the baseline date that may consume or expand increment.

3. Increment Consuming/Expanding Code :		
PM : U	SO2 : U	NO2 : U
4. Baseline Emissions :		
PM :	lb/hour	tons/year
SO2 :	lb/hour	tons/year
NO2 :		tons/year
5. PSD Comment :		

L. EMISSIONS UNIT SUPPLEMENTAL INFORMATION

Emissions Unit Information Section 10

Miscellaneous Activities

Supplemental Requirements for All Applications

1. Process Flow Diagram :	EUS10-1
2. Fuel Analysis or Specification :	NA
3. Detailed Description of Control Equipment :	NA
4. Description of Stack Sampling Facilities :	NA
5. Compliance Test Report :	NA
6. Procedures for Startup and Shutdown :	NA
7. Operation and Maintenance Plan :	NA
8. Supplemental Information for Construction Permit Application :	NA
9. Other Information Required by Rule or Statue :	NA

Additional Supplemental Requirements for Category I Applications Only

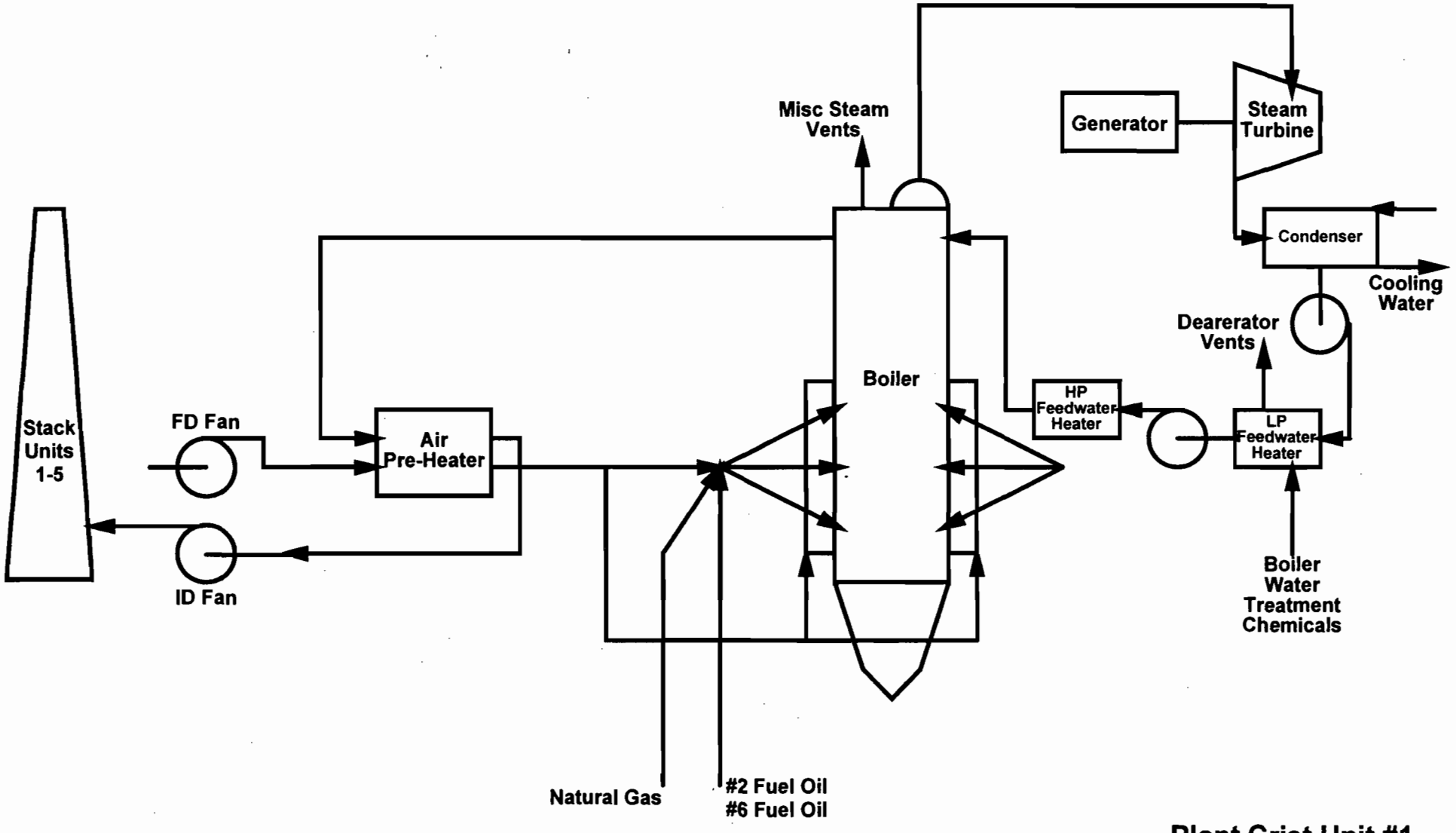
10. Alternative Methods of Operations :	NA
11. Alterntive Modes of Operation (Emissions Trading) :	NA

12. Enhanced Monitoring Plan :	NA
13. Identification of Additional Applicable Requirements :	NA

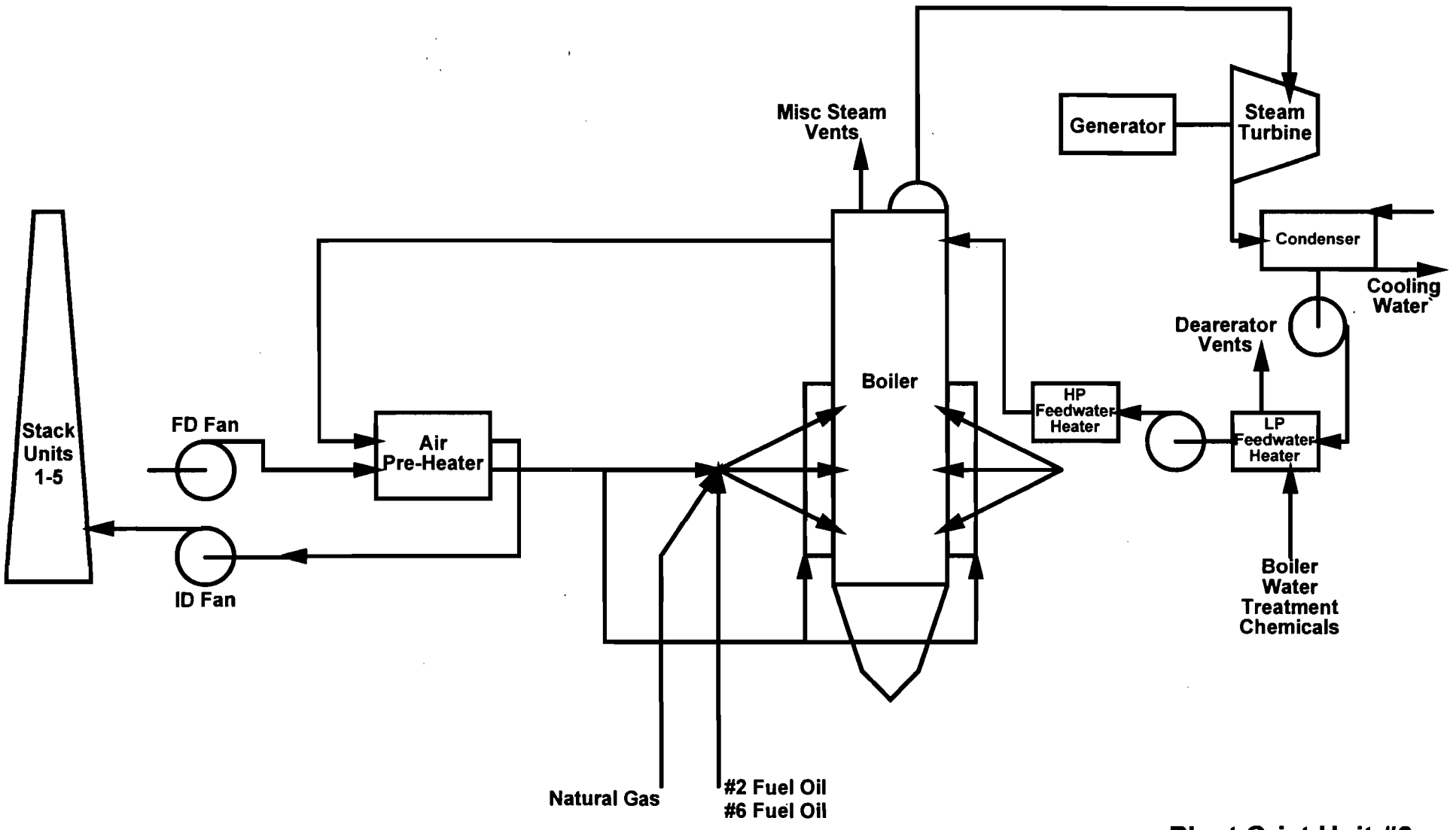
14. Acid Rain Application (Hard-copy Required) :

NA	Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
NA	Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
NA	New Unit Exemption (Form No. 62-210.900(1)(a)2.)
NA	Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)

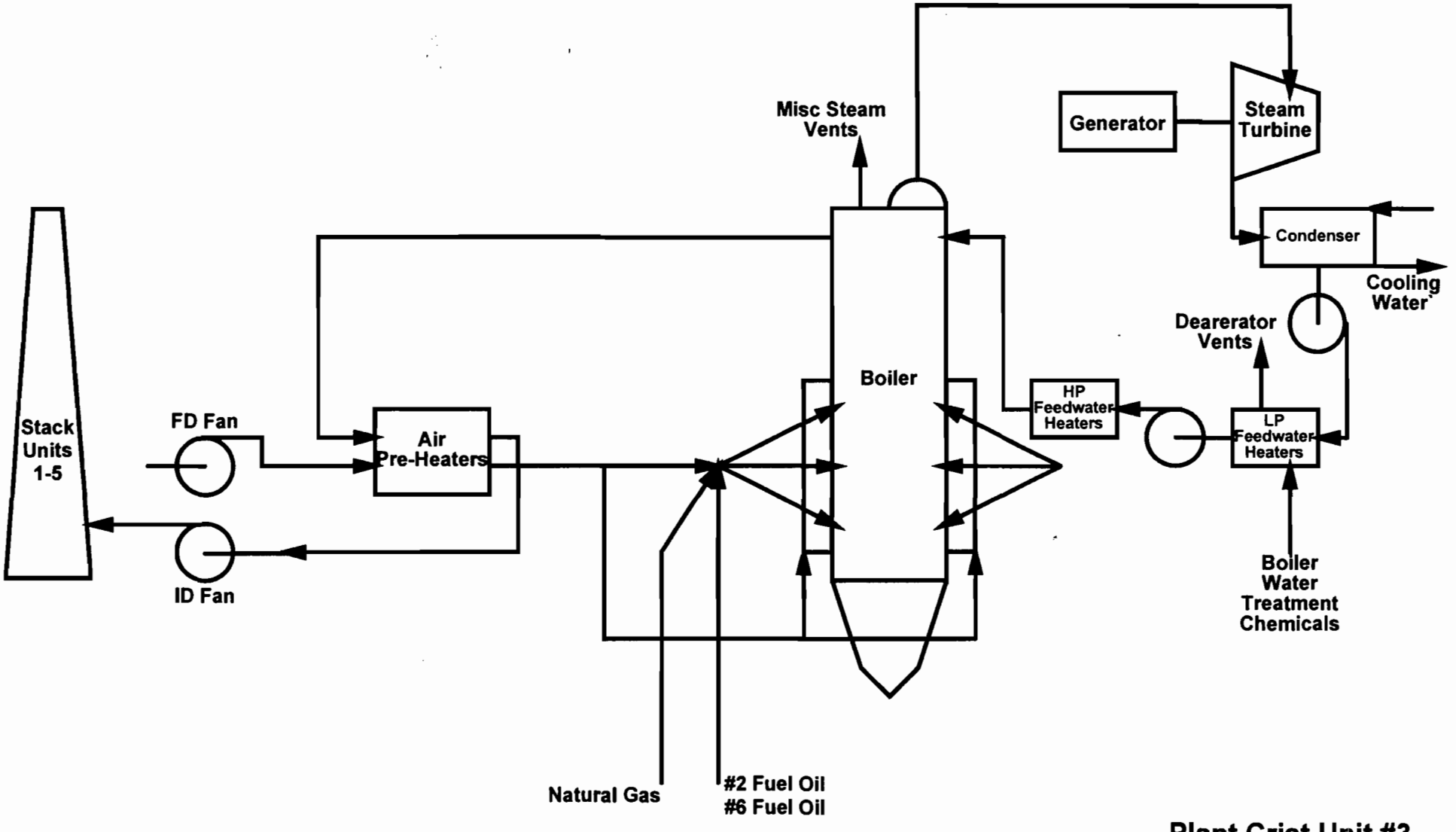
EUS-1



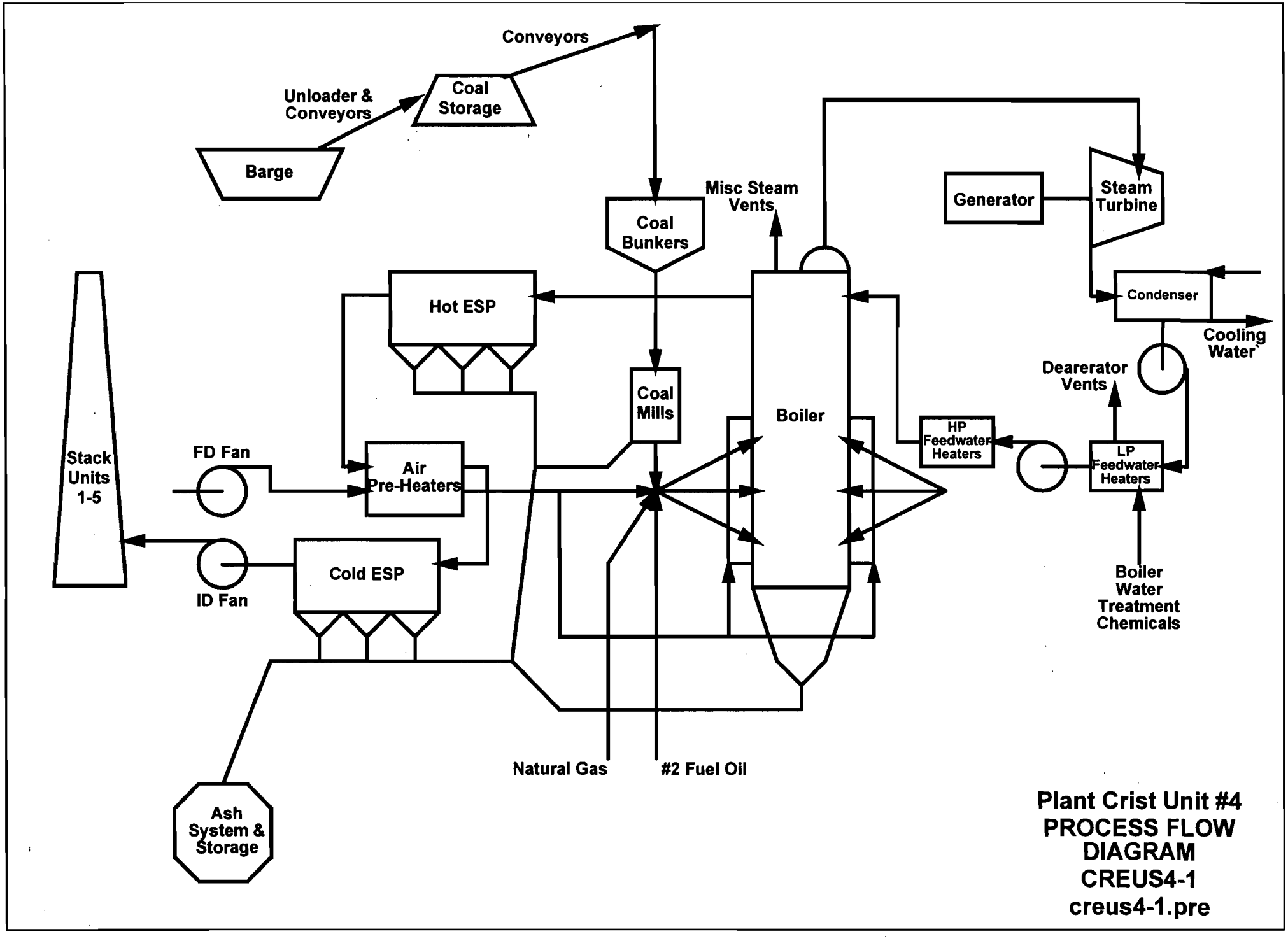
Plant Crist Unit #1
PROCESS FLOW DIAGRAM
CREUS1-1
creus1-1.pre

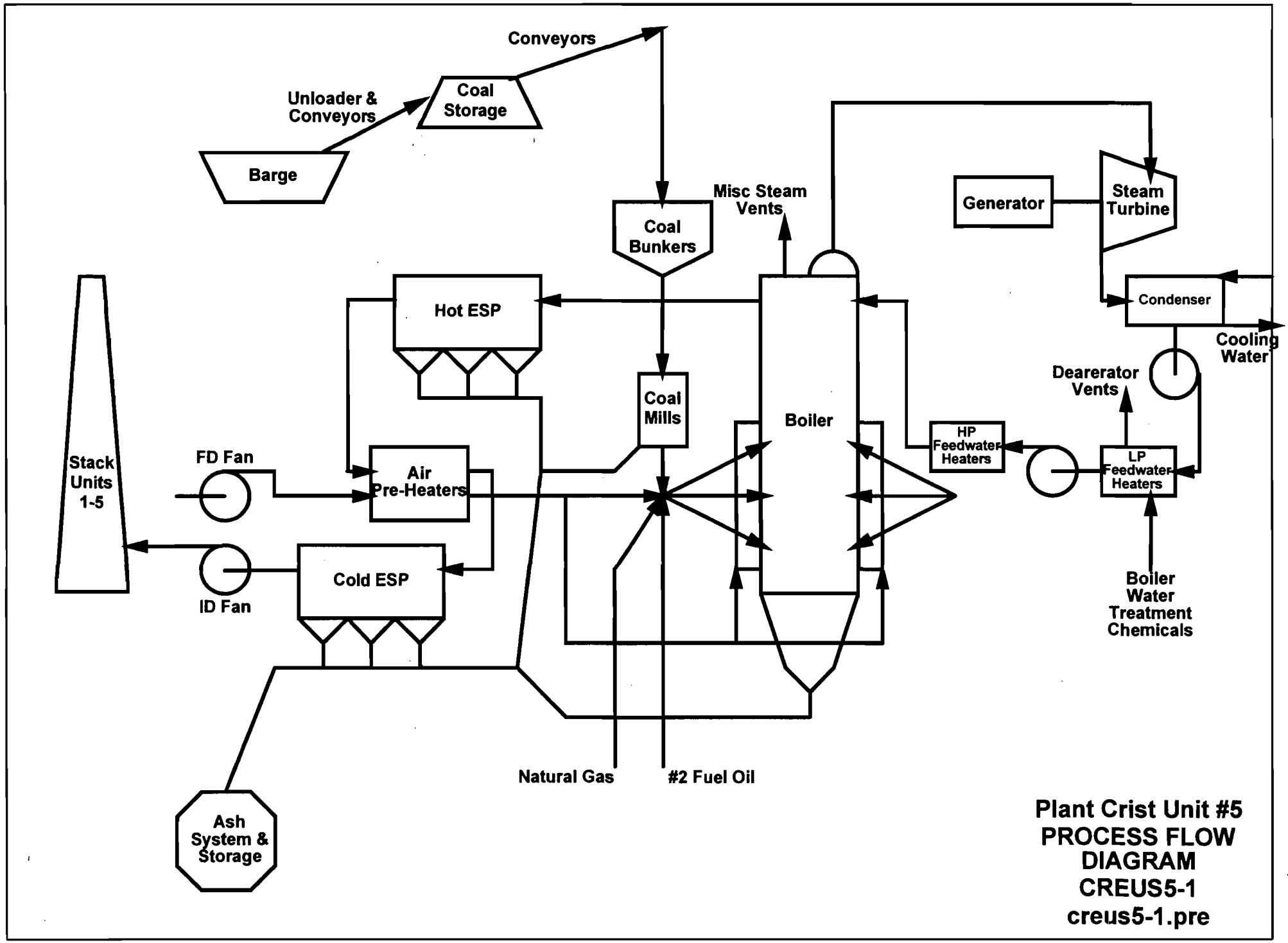


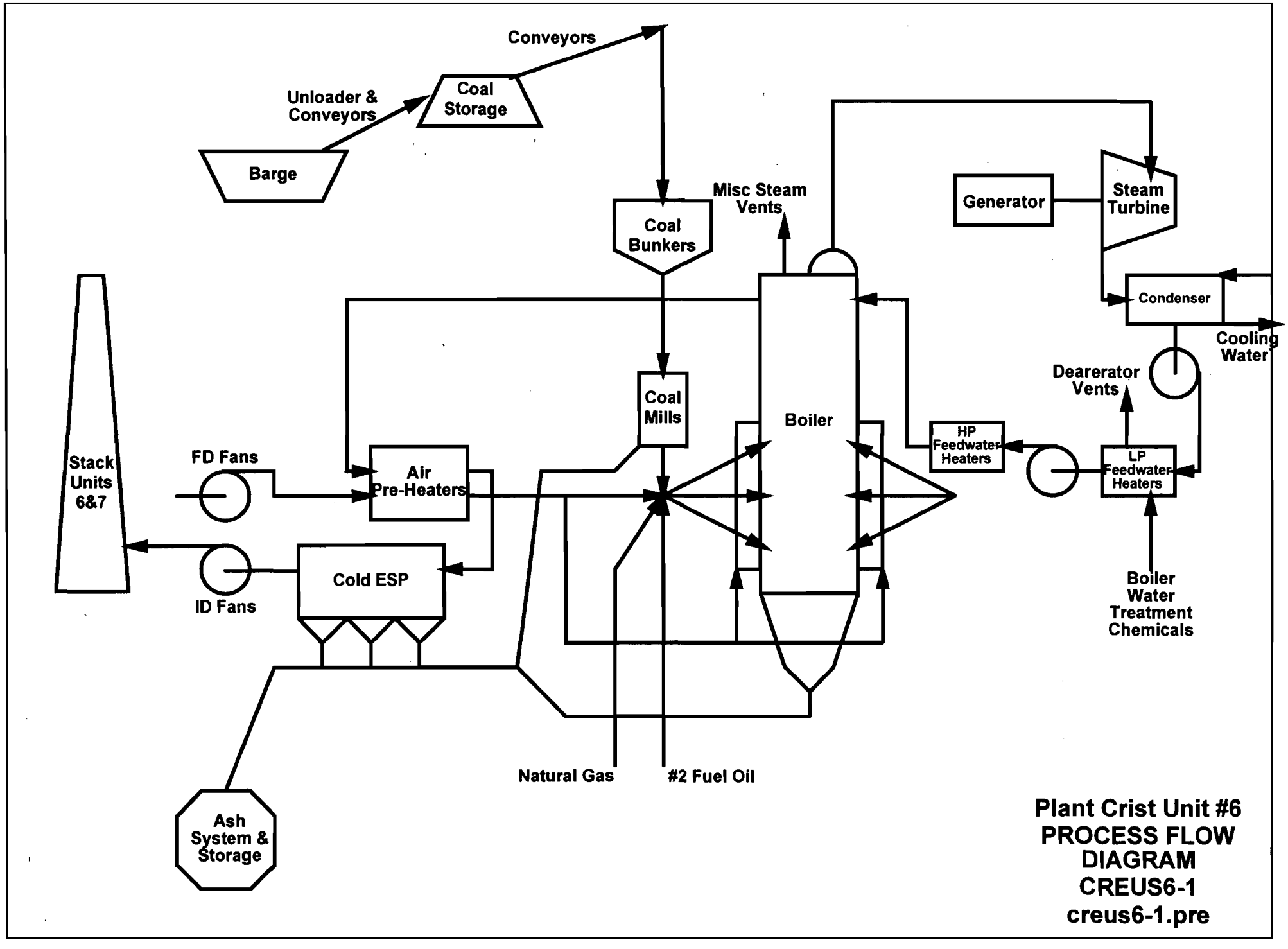
Plant Crist Unit #2
PROCESS FLOW DIAGRAM
CREUS2-1
creus2-1.pre

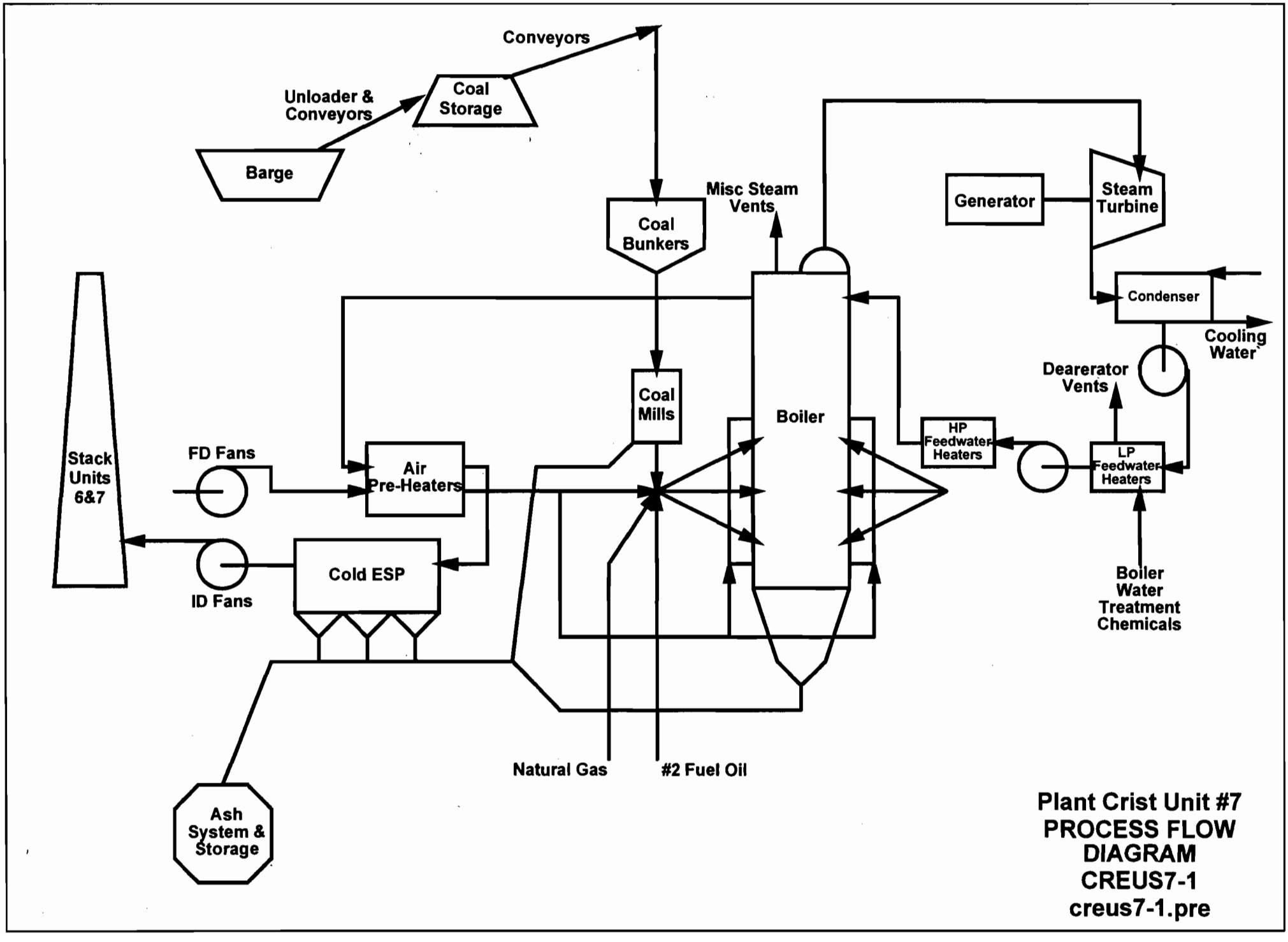


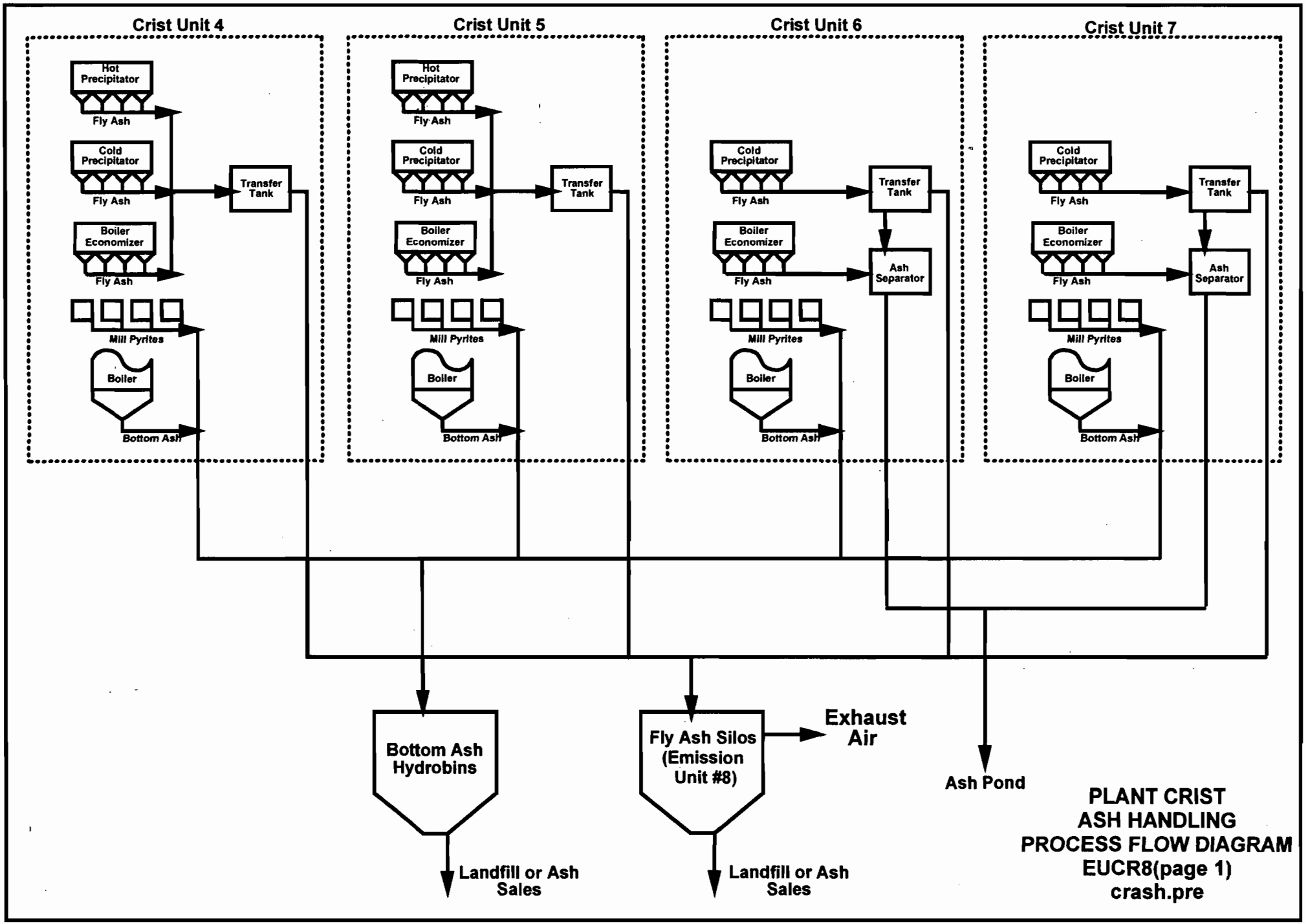
Plant Crist Unit #3
PROCESS FLOW DIAGRAM
CREUS3-1
creus3-1.pre


Conveyors
Unloader & Conveyors
Coal Storage
Barge
Coal Bunkers
Misc Steam Vents
Generator
Steam Turbine
Condenser
Cooling Water
Hot ESP
Coal Mills
Boiler
Dearerator Vents
HP Feedwater Heaters
LP Feedwater Heaters
Stack Units 1-5
FD Fan
Air Pre-Heaters
Cold ESP
ID Fan
Boiler Water Treatment Chemicals
Natural Gas
#2 Fuel Oil
Ash System & Storage
Plant Crist Unit #4
PROCESS FLOW DIAGRAM
CREUS4-1
creus4-1.pre

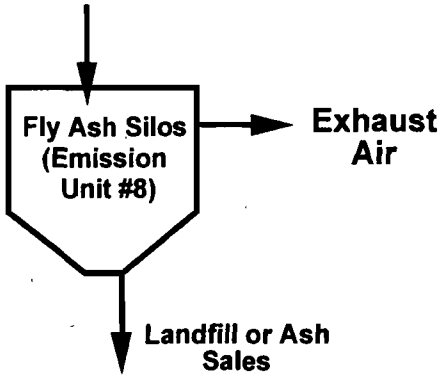

Conveyors
Unloader & Conveyors
Coal Storage
Barge
Misc Steam Vents
Coal Bunkers
Generator
Steam Turbine
Condenser
Cooling Water
Hot ESP
Coal Mills
Boiler
Dearerator Vents
HP Feedwater Heaters
LP Feedwater Heaters
Stack Units 1-5
FD Fan
Air Pre-Heaters
Cold ESP
ID Fan
Boiler Water Treatment Chemicals
Natural Gas
#2 Fuel Oil
Ash System & Storage
Plant Crist Unit #5
PROCESS FLOW
DIAGRAM
CREUS5-1
creus5-1.pre

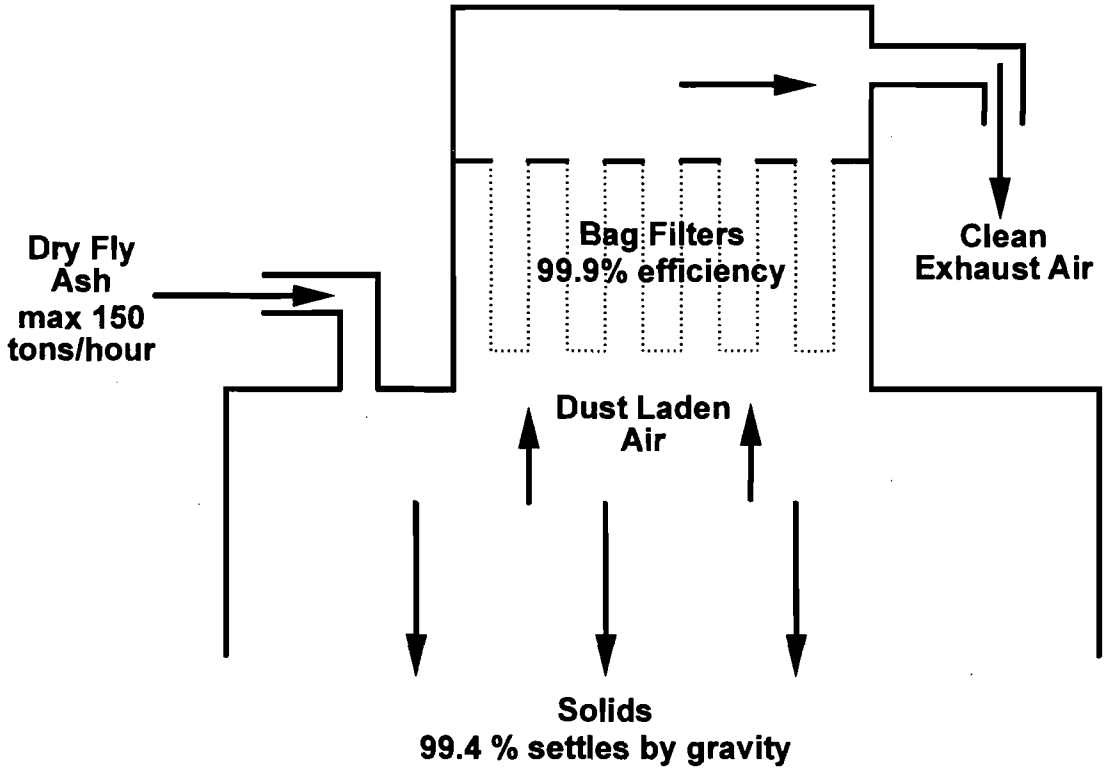

Conveyors
Unloader & Conveyors
Coal Storage
Barge
Misc Steam Vents
Coal Bunkers
Generator
Steam Turbine
Condenser
Cooling Water
Deaerator Vents
Coal Mills
Boiler
HP Feedwater Heaters
LP Feedwater Heaters
Stack Units 6&7
FD Fans
Air Pre-Heaters
Cold ESP
ID Fans
Boiler Water Treatment Chemicals
Natural Gas
#2 Fuel Oil
Ash System & Storage
Plant Crist Unit #6
PROCESS FLOW
DIAGRAM
CREUS6-1
creus6-1.pre


Conveyors
Unloader & Conveyors
Coal Storage
Barge
Misc Steam Vents
Coal Bunkers
Generator
Steam Turbine
Condenser
Cooling Water
Deaerator Vents
Coal Mills
Boiler
HP Feedwater Heaters
LP Feedwater Heaters
Stack Units 6&7
FD Fans
Air Pre-Heaters
Cold ESP
ID Fans
Boiler Water Treatment Chemicals
Natural Gas
#2 Fuel Oil
Ash System & Storage
Plant Crist Unit #7
PROCESS FLOW DIAGRAM
CREUS7-1
creus7-1.pre

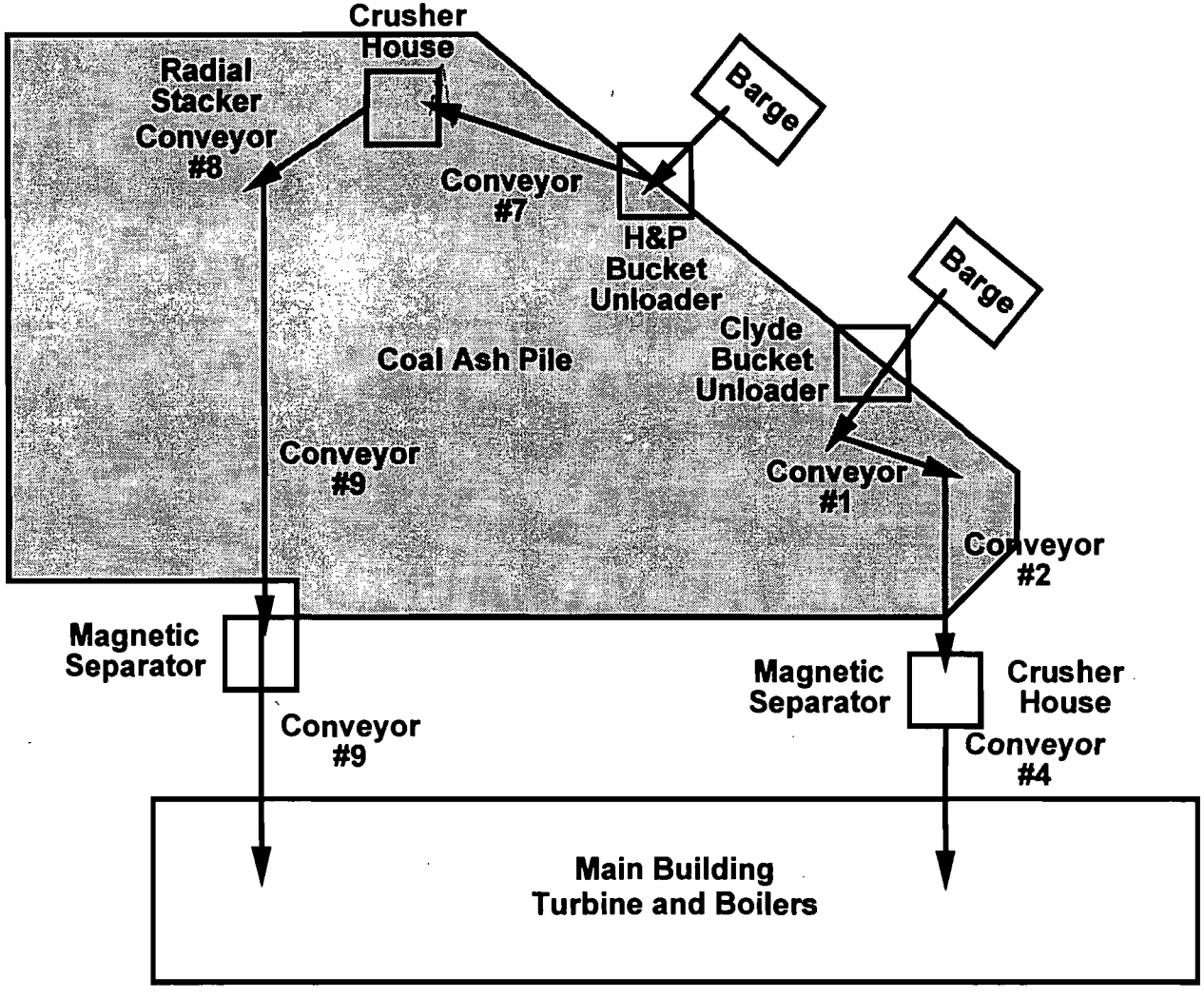

Crist Unit 4
Crist Unit 5
Crist Unit 6
Crist Unit 7
Hot Precipitator
Fly Ash
Cold Precipitator
Fly Ash
Boiler Economizer
Fly Ash
Transfer Tank
Ash Separator
Mill Pyrites
Boiler
Bottom Ash
Bottom Ash Hydrobins
Landfill or Ash Sales
Fly Ash Silos (Emission Unit #8)
Exhaust Air
Ash Pond
PLANT CRIST
ASH HANDLING
PROCESS FLOW DIAGRAM
EUCR8(page 1)
crash.pre

Dry Fly Ash Silo
Bag Filter Vent Detail





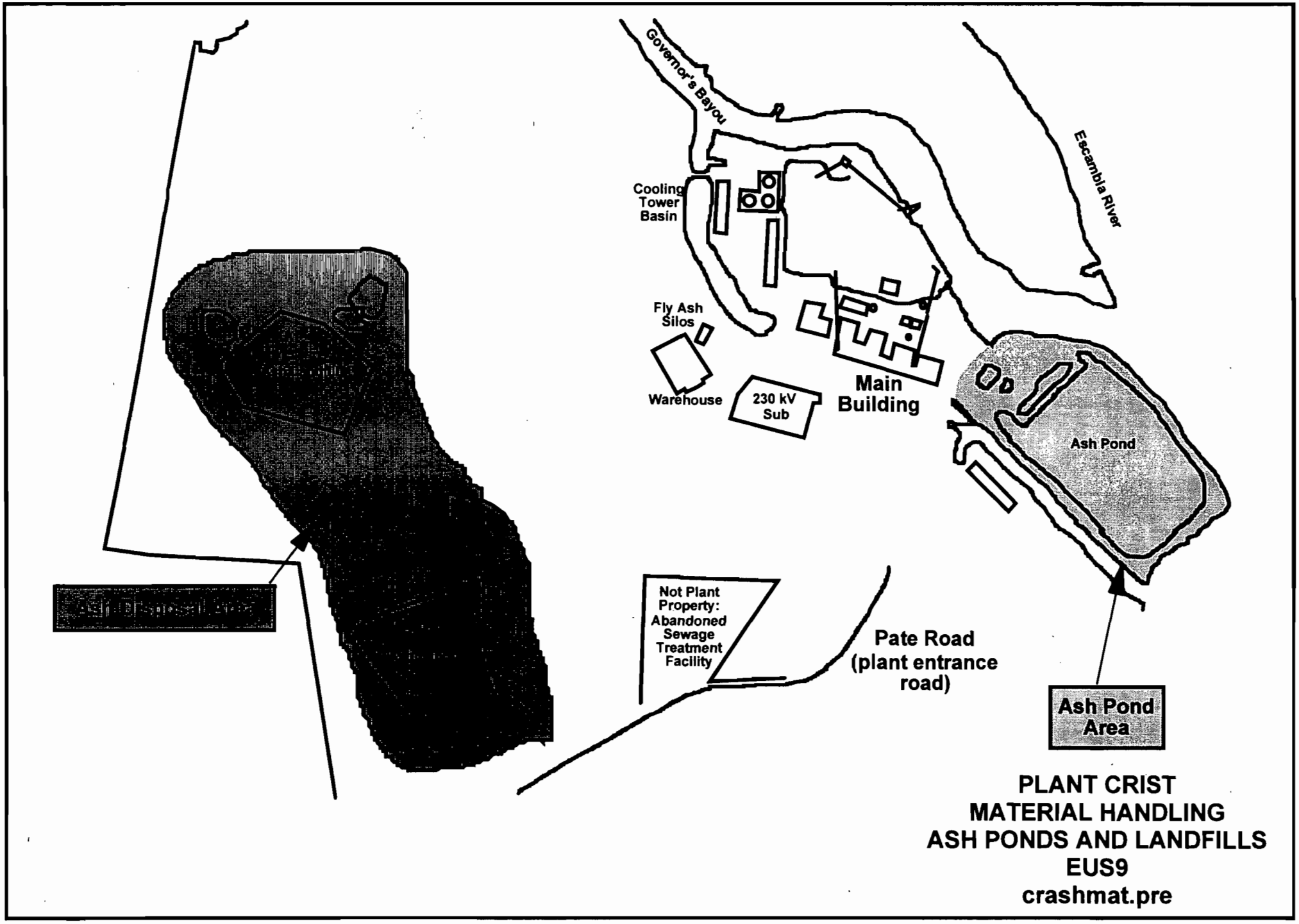
PLANT CRIST
ASH HANDLING
PROCESS FLOW DIAGRAM
EUCR8(page 2)
crash.pre

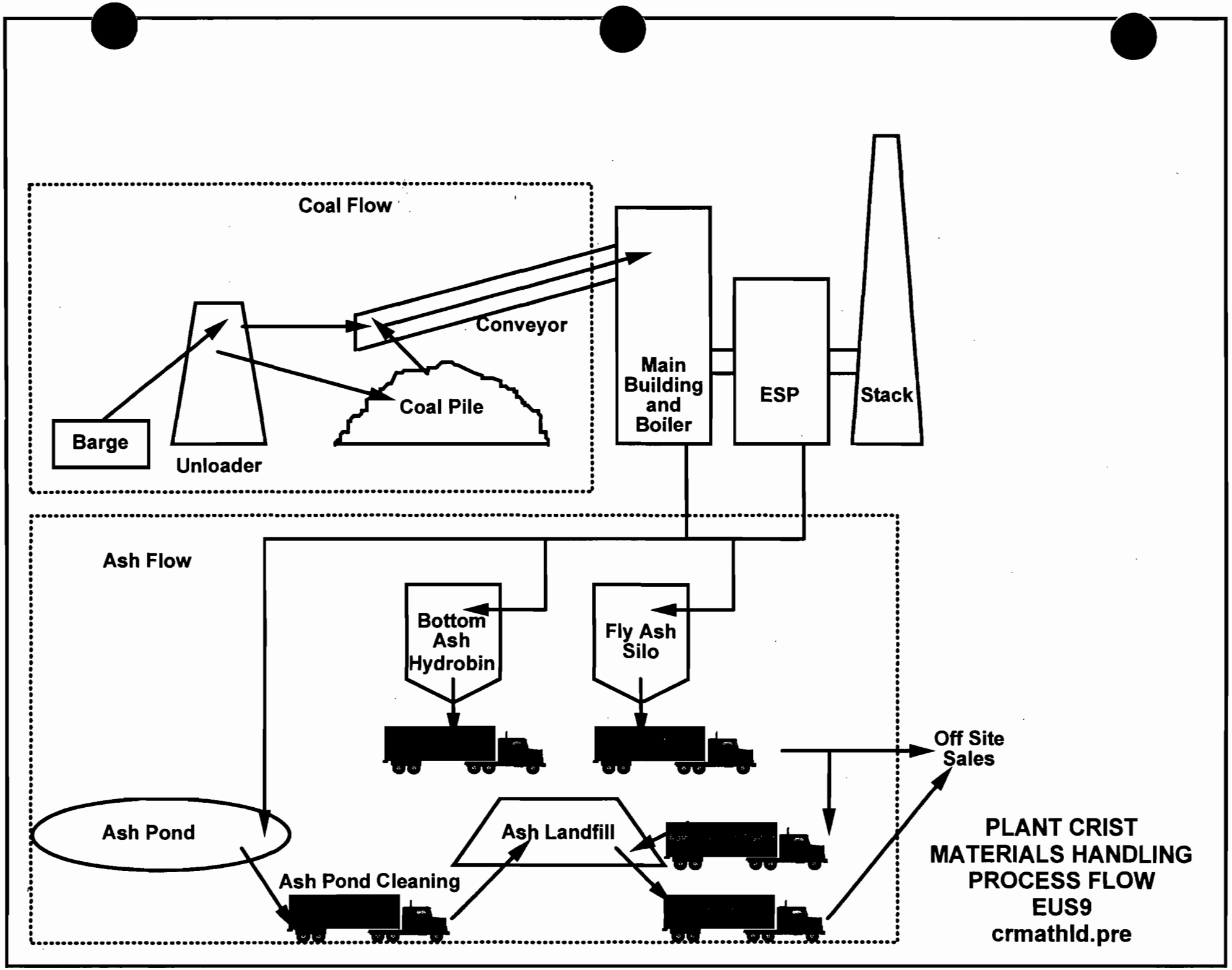


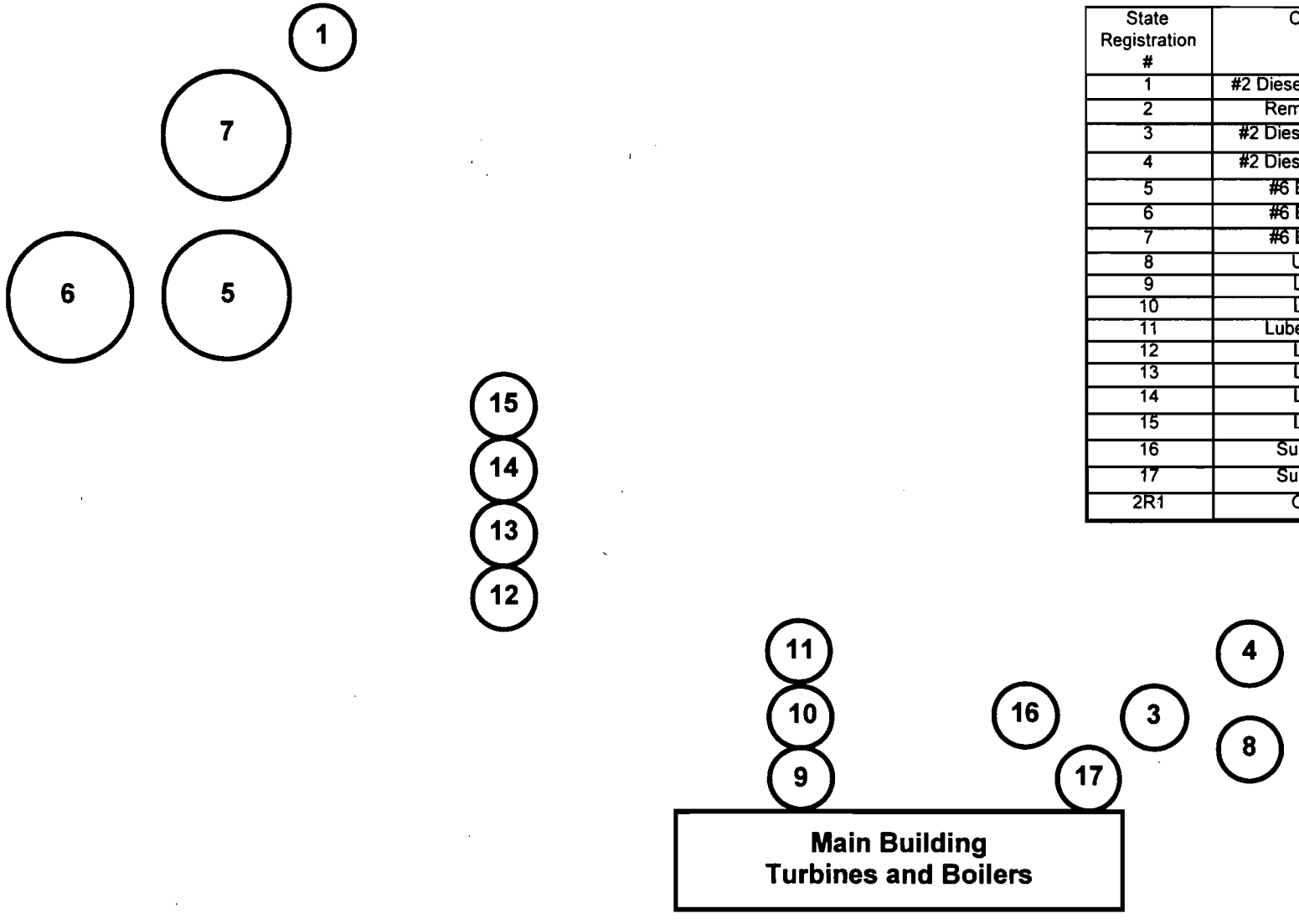
PLANT CRIST
MATERIAL HANDLING
COAL PILE AND CONVEYORS
EUS9
(not to scale)
crcoal.pre

Notes:
Conveyors 5, 6 and 10 are located inside the Main Building. Conveyor #3 does not exist.

BEST AVAILABLE COPY

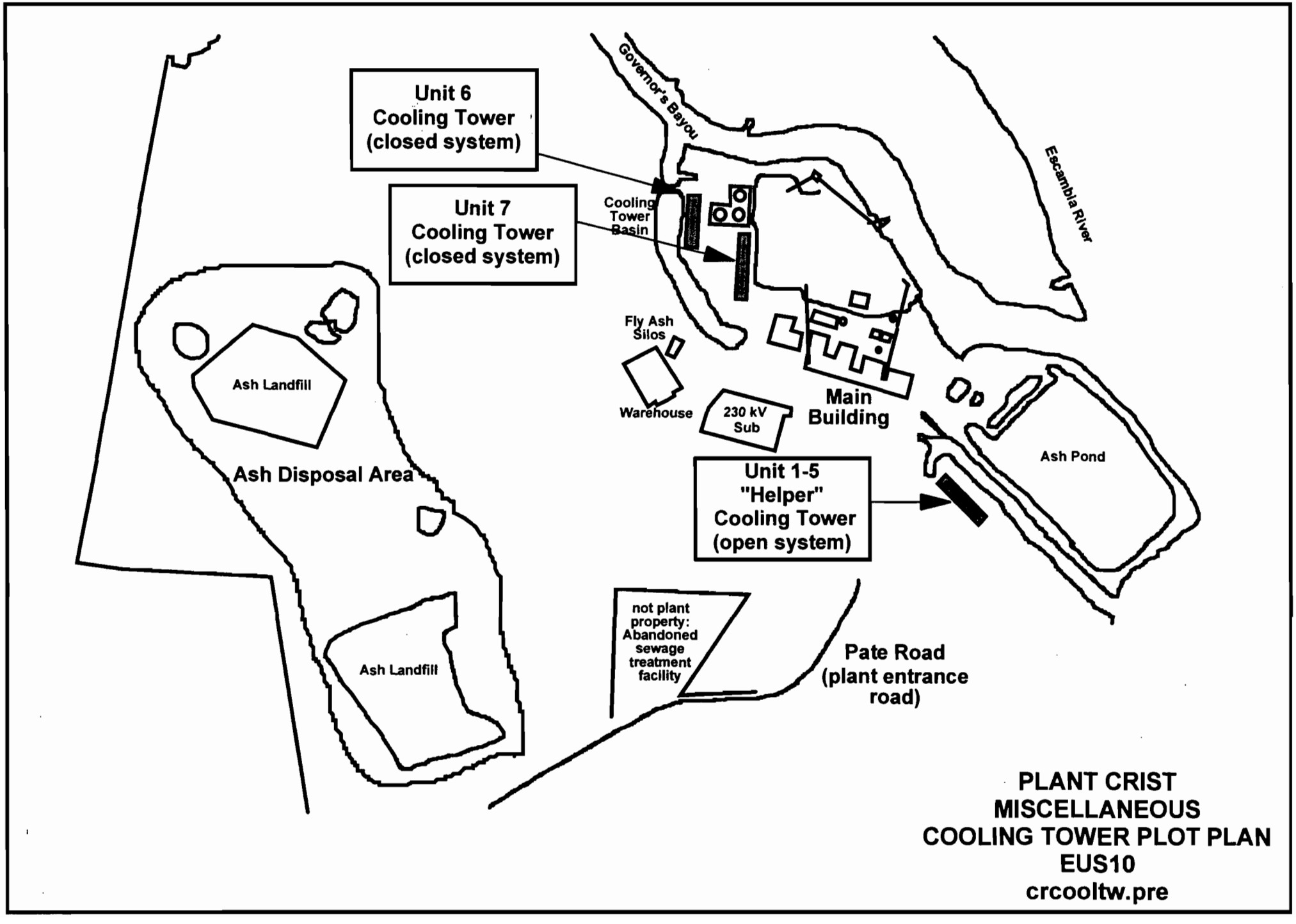


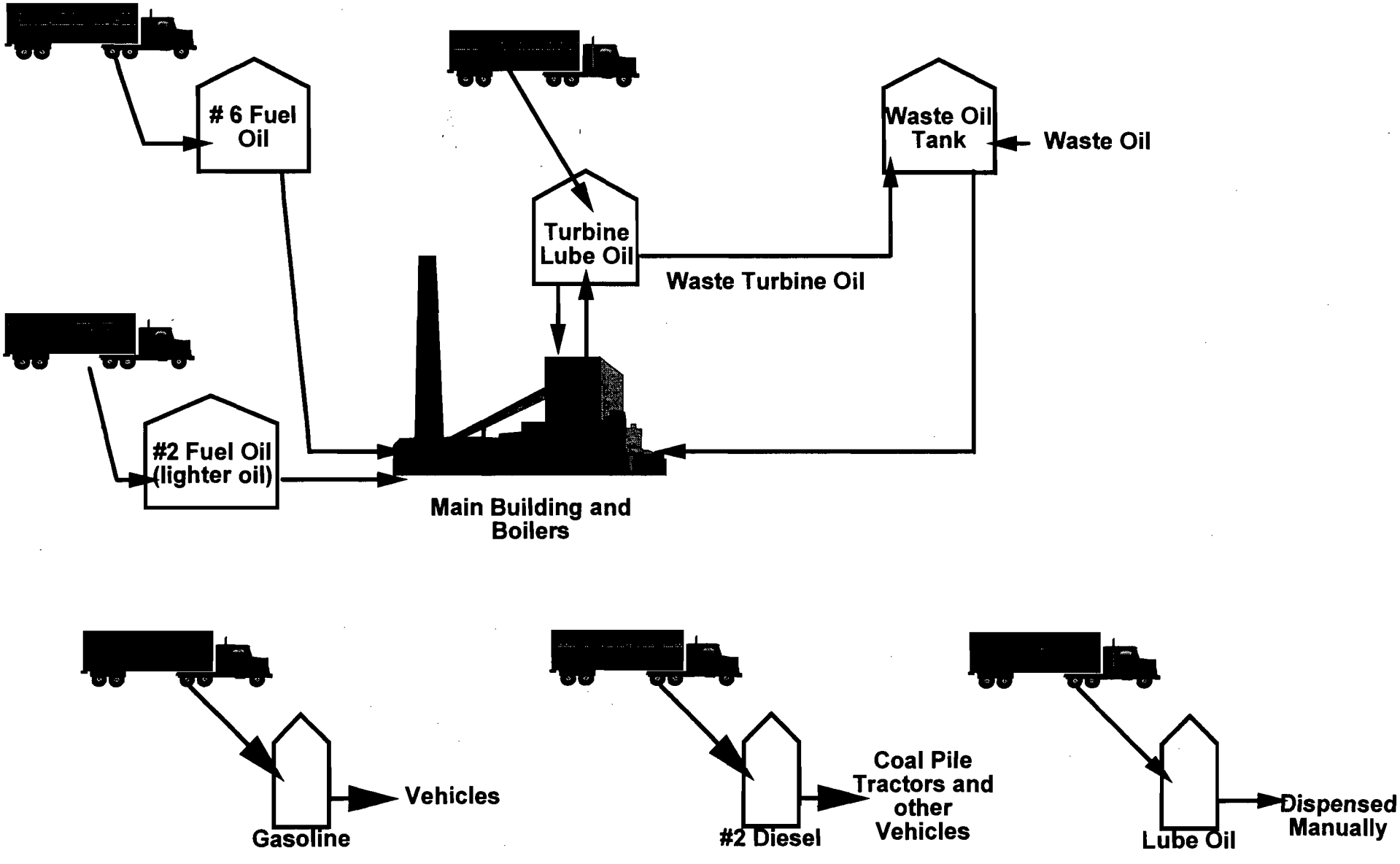

Coal Flow
Conveyor
Barge
Unloader
Coal Pile
Main Building and Boiler
ESP
Stack
Ash Flow
Bottom Ash Hydrobin
Fly Ash Silo
Off Site Sales
Ash Pond
Ash Landfill
Ash Pond Cleaning
PLANT CRIST
MATERIALS HANDLING
PROCESS FLOW
EUS9
crmathld.pre



State Registration #	Contents	Size (gallons)
1	#2 Diesel - Tractor Fuel	20,000
2	Removed Tank	
3	#2 Diesel - Lighter Oil	100,000
4	#2 Diesel - Lighter Oil	100,000
5	#6 Bunker "C"	1,387,000
6	#6 Bunker "C"	1,387,000
7	#6 Bunker "C"	1,387,000
8	Used Oil	15,000
9	Lube Oil	7,000
10	Lube Oil	7,000
11	Lube Waste Oil	12,000
12	Lube Oil	7,000
13	Lube Oil	4,000
14	Lube Oil	4,000
15	Lube Oil	3,000
16	Sulfuric Acid	4,000
17	Sulfuric Acid	6,000
2R1	Gasoline	2,000

PLANT CRIST
TANKS PLOT PLAN
(not to scale)
CR-EUS10-TANKS
crtanks.pre


Unit 6
Cooling Tower
(closed system)
Unit 7
Cooling Tower
(closed system)
Governor's Bayou
Escambia River
Cooling Tower Basin
Fly Ash Silos
Warehouse
230 kV Sub
Main Building
Ash Pond
Ash Landfill
Ash Disposal Area
Unit 1-5
"Helper"
Cooling Tower
(open system)
not plant property: Abandoned sewage treatment facility
Ash Landfill
Pate Road
(plant entrance road)
PLANT CRIST
MISCELLANEOUS
COOLING TOWER PLOT PLAN
EUS10
crcooltw.pre



PLANT CRIST
TANKS PROCESS FLOW
CR-EUS10-TANKPF
crtankpf.pre

EUS-2

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 2&3, BUNKER C, #6 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/05/96 09:20
SAMPLE NUMBER : 960223-0018
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18728.	BTU/lb
Heat of Combustion	ASTM D 240	149026.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.9557	SU @60F
API Gravity	ASTM D4052/D287	16.6	Degrees
Sulfur	ASTM D 1552	1.44	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 8/85
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 2&3. BUNKER C, #6 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/06/96 10:30
SAMPLE NUMBER : 960223-0019
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18775.	BTU/lb
Heat of Combustion	ASTM D 240	147853.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.9458	SU @60F
API Gravity	ASTM D4052/D287	18.1	Degrees
Sulfur	ASTM D 1552	1.34	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

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MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
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5-2790 Rev. 8/85

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Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 1,2,&3. LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/01/96 20:00
SAMPLE NUMBER : 960223-0020
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19422.	BTU/lb
Heat of Combustion	ASTM D 240	139224.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8609	SU @60F
API Gravity	ASTM D4052/D287	32.9	Degrees
Sulfur	ASTM D 1552	0.45	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

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MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNIT 3 LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/03/96 11:53
SAMPLE NUMBER : 960223-0021
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19375.	BTU/lb
Heat of Combustion	ASTM D 240	138638.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8594	SU @60F
API Gravity	ASTM D4052/D287	33.1	Degrees
Sulfur	ASTM D 1552	0.46	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

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MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

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TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 2&3 LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/05/96 09:15
SAMPLE NUMBER : 960223-0022
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19457.	BTU/lb
Heat of Combustion	ASTM D 240	138741.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8564	SU @60F
API Gravity	ASTM D4052/D287	33.7	Degrees
Sulfur	ASTM D 1552	0.42	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

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MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	-1 of 1

5-2790 Rev. 8/85
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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 2&3 LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/06/96 10:30
SAMPLE NUMBER : 960223-0023
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19457.	BTU/lb
Heat of Combustion	ASTM D 240	138663.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8559	SU @60F
API Gravity	ASTM D4052/D287	33.8	Degrees
Sulfur	ASTM D 1552	0.41	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

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General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - BUNKER C, #6 FUEL OIL UNITS 1,2, & 3

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/08/96 18:30
SAMPLE NUMBER : 960329-0020
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18504.	BTU/lb
Sulfur	ASTM D 1552	1.25	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

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MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

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Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - BUNKER C, #6 FUEL OIL UNIT 2

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/09/96 06:30
SAMPLE NUMBER : 960329-0021
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18617.	BTU/lb
Sulfur	ASTM D 1552	1.28	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - BUNKER C, #6 FUEL OIL UNITS 1,2, & 3

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/11/96 12:00
SAMPLE NUMBER : 960329-0022
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18721.	BTU/lb
Sulfur	ASTM D 1552	1.24	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FD

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - BUNKER C. #6 FUEL OIL UNITS 1,2, & 3

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/12/96 09:00
SAMPLE NUMBER : 960329-0023
LOCATION NUMBER : CRIST6FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	18747.	BTU/lb
Sulfur	ASTM D 1552	1.28	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - #2 DIESEL FUEL OIL

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/09/96 14:10
SAMPLE NUMBER : 960329-0024
LOCATION NUMBER : CRISTDFO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19447.	BTU/lb
Sulfur	ASTM D 1552	0.43	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - LIGHTER OIL UNITS 1,2, & 3

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/11/96 12:00
SAMPLE NUMBER : 960329-0025
LOCATION NUMBER : CRIST

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19357.	BTU/lb
Sulfur	ASTM D 1552	0.44	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FD

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST - LIGHTER OIL UNITS 1,2, & 3

REPORT DATE : 04/03/96
SAMPLE DATE/TIME: 03/12/96 09:00
SAMPLE NUMBER : 960329-0026
LOCATION NUMBER : CRIST

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19385.	BTU/lb
Sulfur	ASTM D 1552	0.42	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 9/94
FILE: FO

Peabody Contract Lab

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-8300 FAX: 708-953-8306

Member of the SGS Group (Societe Generale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-014

Kind of sample Coal
reported to us

Sample taken at Galatia Mine

Sample taken by Kerr-McGee

Date sampled ------

Date received December 30, 1993

Analysis Report No. 63-45254

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	13.14	xxxxx
% Ash	6.33	7.29
% Volatile	30.11	34.67
% Fixed Carbon	50.42	58.04
	100.00	100.00
Btu/lb	11829	13618
% Sulfur	0.96	1.10
MAF Btu		14689
SO_2 lb/mill Btu @ 100%	1.62	
Alk. as Sodium Oxide	0.21	0.25

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	13.14	xxxxx
% Carbon	66.88	77.00
% Hydrogen	4.40	5.07
% Nitrogen	1.32	1.52
% Sulfur	0.96	1.10
% Ash	6.33	7.29
% Oxygen(diff)	6.97	8.02
	100.00	100.00
% Chlorine	0.38	0.44

FORMS OF SULFUR

% Pyritic	0.31	0.36
% Sulfate	0.01	0.01
% Organic(diff)	0.64	0.73

WATER SOLUBLE ALK.

% Sodium oxide	0.050	0.057
% Potassium oxide	0.004	0.005

GRINDABILITY INDEX = 58 at 2.95 % Moisture
% EQUILIBRIUM MOISTURE = 8.3
FREE SWELLING INDEX = 5.5

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2350	2580
Softening (ST)	2480	2670
Hemispherical (HT)	2570	2700+
Fluid (FT)	2640	2700+

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-0300 FAX: 708-953-0306
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PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 782, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 830-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-013

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30, 1993

Analysis Report No. 63-45253

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	12.15	xxxxx
% Ash	6.06	6.90
% Volatile	31.23	35.55
% Fixed Carbon	50.56	57.55
	100.00	100.00
Btu/lb	12010	13671
% Sulfur	1.13	1.29
MAF Btu		14684
SO_2 lb/mill Btu @ 100%	1.88	
Alk. as Sodium Oxide	0.20	0.23

FORMS OF SULFUR

% Pyritic	0.40	0.45
% Sulfate	0.01	0.01
% Organic(diff)	0.72	0.83

WATER SOLUBLE ALK.

% Sodium oxide	0.045	0.051
% Potassium oxide	0.004	0.005

GRINDABILITY INDEX =	57 at 3.34 % Moisture
% EQUILIBRIUM MOISTURE =	7.7
FREE SWELLING INDEX =	5.5

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	12.15	xxxxx
% Carbon	67.50	76.84
% Hydrogen	4.30	4.90
% Nitrogen	1.47	1.67
% Sulfur	1.13	1.29
% Ash	6.06	6.90
% Oxygen(diff)	7.39	8.40
	100.00	100.00
% Chlorine	0.38	0.43

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2230	2550
Softening (ST)	2410	2590
Hemispherical (HT)	2500	2610
Fluid (FT)	2600	2700+

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-889-9300 FAX: 708-889-9306

SINCE 1909

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PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 758, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0718

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-013

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30, 1993

Analysis Report No. 63-46253

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	50.78
Aluminum oxide	24.98
Titanium dioxide	1.32
Iron oxide	11.89
Calcium oxide	2.46
Magnesium oxide	0.89
Potassium oxide	3.07
Sodium oxide	1.33
Sulfur trioxide	1.53
Phosphorus pentoxide	0.54
Strontium oxide	0.08
Barium oxide	0.09
Manganese oxide	0.08
Undetermined	0.96
	100.00

Silica Value = 76.92
Base:Acid Ratio = 0.28
Type Temperature = 2618 °F

Type of Ash = BITUMINOUS
Fouling Index = 0.33
Slagging Index = 0.32

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 310-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-0300 FAX: 708-953-0305

SINCE 1909

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PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 758, HENDERSON, KY 42420
TEL: (502) 827-1181
FAX: (502) 826-0710

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-012

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30. 1993

Analysis Report No. 63-45252

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	11.86	xxxxx
% Ash	6.39	7.25
% Volatile	31.78	36.06
% Fixed Carbon	49.97	56.69
	100.00	100.00
Btu/lb	11998	13613
% Sulfur	1.30	1.48
MAF Btu		14677
SO2 lb/mill Btu @ 100%	2.17	
Alk. as Sodium Oxide	0.20	0.23

ULTIMATE ANALYSIS	As Received	Dry Basis
% Moisture	11.86	xxxxx
% Carbon	66.60	75.56
% Hydrogen	4.36	4.95
% Nitrogen	1.45	1.65
% Sulfur	1.30	1.48
% Ash	6.39	7.25
% Oxygen(diff)	8.04	9.11
	100.00	100.00
% Chlorine	0.35	0.40

FORMS OF SULFUR		
% Pyritic	0.55	0.62
% Sulfate	0.01	0.01
% Organic(diff)	0.74	0.85
WATER SOLUBLE ALK.		
% Sodium oxide	0.044	0.050
% Potassium oxide	0.004	0.005

FUSION TEMPERATURE OF ASH, (°F)	Reducing	Oxidizing
Initial Deformation (IT)	2130	2530
Softening (ST)	2170	2580
Hemispherical (HT)	2220	2610
Fluid (FT)	2520	2650

GRINDABILITY INDEX = 60 at 2.61 % Moisture
% EQUILIBRIUM MOISTURE = 7.4
FREE SWELLING INDEX = 5.5

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Ralph D. Hancock

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-8300 FAX: 708-953-8305

SINCE 1908

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KN5-012

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30, 1993

Analysis Report No. 63-45252

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	49.24
Aluminum oxide	24.27
Titanium dioxide	1.21
Iron oxide	14.51
Calcium oxide	2.18
Magnesium oxide	0.95
Potassium oxide	3.00
Sodium oxide	1.15
Sulfur trioxide	1.28
Phosphorus pentoxide	0.53
Strontium oxide	0.08
Barium oxide	0.11
Manganese oxide	0.08
Undetermined	1.41
	100.00

Silica Value = 73.62
Base:Acid Ratio = 0.29
Type of Ash = BITUMINOUS
Fouling Index = 0.33
Slagging Index = 0.43
Base Temperature = 2560 °F

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

Peabody Coal

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 1962, McDUFFIE TERMINAL, MOBILE, AL 36603
TELEPHONE: (205) 432-2781
FAX: (205) 432-1461

December 22, 1993

PEABODY COALSALES COMPANY
701 MARKET STREET
SUITE 830
ST. LOUIS MISSOURI 63101

Sample identification by
PEABODY COALSALES COMPANY

AREA 3 SOUTH WEST END VENEZUELAN COAL.

Kind of sample reported to us VENEZUELAN COAL STOCKPILE

Sample taken at MCDUFFIE TERMINAL

Sample taken by C.T. & E. CO.

Date sampled December 16, 1993

Date received December 16, 1993

Analysis Report No. 83-16303

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	52.48
Aluminum oxide	19.83
Titanium dioxide	0.88
Iron oxide	12.96
Calcium oxide	3.31
Magnesium oxide	2.10
Potassium oxide	1.26
Sodium oxide	1.53
Sulfur trioxide	4.52
Phosphorus pentoxide	0.49
Strontium oxide	0.09
Barium oxide	0.14
Manganese oxide	0.14
Undetermined	0.27
	100.00

Silica Value = 74.07
Base:Acid Ratio = 0.29
T_{250} Temperature = 2570 °F

Type of Ash = BITUMINOUS
Fouling Index = 0.44
Slagging Index = 0.35

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Mobile Laboratory

E 96-009132
E 96-009131
E96-009130

CONSOL Inc.

Projected Typical Quality
1996 for Gulf Power

MINE	Rend Lake Met/Stm	Ohio #11
MOISTURE	12.00	12.00
VM	31.59	37.03
FC	47.94	45.29
ASH	8.46	5.68
SULFUR	0.97	2.82
BTU GROSS	11634	11873
VM (DRY)	35.89	42.08
FC (DRY)	54.47	51.47
ASH (DRY)	9.63	6.45
SUL (DRY)	1.10	3.20
BTU (DRY)	13221	13492
BTU (MAF)	14630	14422
ULTIMATE ANALYSIS (DRY)		
CARBON	75.40	75.53
HYDROGEN	4.95	5.05
NITROGEN	1.72	1.53
OXYGEN (DIF)	8.80	8.15
CHLORINE	0.40	0.09
MINERAL ANALYSIS (ASH BASIS)		
Al2O3	24.40	19.50
SiO2	56.46	43.01
TiO2	1.22	1.09
Fe2O3	9.59	24.96
CaO	1.50	3.60
Na2O	1.50	1.02
MgO	1.10	0.79
K2O	2.65	2.25
P2O5	0.18	0.13
SO3	1.04	2.13
UNDETERMINED (DIF)	0.36	1.52
B/A RATIO	0.20	0.51
FOULING FACTOR, RF (B&W)	0.30	0.52
SLAGGING FACTOR, RS (B&W)	0.22	1.64
LB ASH/MM BTU	1.67	4.78
LB SO2/MM BTU	7.32	4.74
% 1/4" x 0	45.0	50.1
% 28M x 0	7.5	9.4
HGI	56	53
ASH FUSION TEMPERATURES °F		
IDT (RED)	2450	1996
ST H=W (RED)	2547	2024
HT H=1/2 W (RED)	2594	2138
FT (RED)	2676	2257
IDT (OX)	2579	2407
ST H=W (OX)	2631	2471
HT H=1/2 W (OX)	2687	2523
FT (OX)	2721	2557

From: Chet Krcil Fax: 412-831-4594 Voice: 412-831-4916

CONSOL Inc.

Typical Quality

Mine	Rend Lake	Ohio #11
TRACE ELEMENTS (ppm in coal)		
Arsenic (As)	11.04	2.67
Barium (Ba)	30.35	77.23
Beryllium (Be)	1.24	1.68
Cadmium (Cd)	7.08	0.09
Cobalt (Co)	5.01	4.01
Chromium (Cr)	13.01	13.23
Copper (Cu)	7.47	6.46
Fluorine (F)	59.27	150.53
Mercury (Hg)	0.08	0.07
Lithium (Li)	13.66	4.04
Manganese (Mn)	14.27	16.45
Molybdenum (Mo)	1.73	14.33
Nickel (Ni)	15.62	13.25
Lead (Pb)	15.62	4.76
Antimony (Sb)	1.02	0.17
Selenium (Se)	1.67	1.44
Tin (Sn)	0.60	0.46
Thorium (Th)	1.79	1.33
Thallium (Tl)	0.27	0.83
Uranium (U)	0.69	3.13
Vanadium (V)	19.32	25.10
Zinc (Zn)	29.99	13.25

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To LARRY WEBB	From P. LAVALLET
Co. GULF POWER	Co. SCS
Dept. FUEL	Phone # 205 870-6604
Fax # 8420-6217	Fax # (205) 802-0410

07-May-96

Technical Marketing Services

E 96-009132
E 96-009131
E 96-009130

CONSOL Inc.

Projected Typical Quality
1996 for Gulf Power

MINE	Rend Lake Met/Stm	Ohio #11
MOISTURE	12.00	12.00
VM	31.59	37.03
FC	47.94	45.29
ASH	8.48	5.68
SULFUR	0.97	2.82
BTU GROSS	11634	11873
VM (DRY)	35.89	42.08
FC (DRY)	54.47	51.47
ASH (DRY)	9.63	6.45
SUL (DRY)	1.10	3.20
BTU (DRY)	13221	13492
BTU (MAF)	14630	14422
ULTIMATE ANALYSIS (DRY)		
CARBON	75.40	75.53
HYDROGEN	4.95	5.05
NITROGEN	1.72	1.53
OXYGEN (DIF)	8.80	8.15
CHLORINE	0.40	0.09
MINERAL ANALYSIS (ASH BASIS)		
Al2O3	24.40	19.50
SiO2	56.46	43.01
TiO2	1.22	1.09
Fe2O3	9.59	24.96
CaO	1.50	3.60
Na2O	1.50	1.02
MgO	1.10	0.79
K2O	2.65	2.25
P2O5	0.18	0.13
SO3	1.04	2.13
UNDETERMINED (DIF)	0.36	1.52
B/A RATIO	0.20	0.51
FOULING FACTOR, RF (B&W)	0.30	0.52
SLAGGING FACTOR, RS (B&W)	0.22	1.64
LB ASH/MM BTU	1.67	4.78
LB SO2/MM BTU	7.32	4.74
% 1/4" x 0	45.0	50.1
% 28M x 0	7.5	9.4
HGI	56	53
ASH FUSION TEMPERATURES °F		
IDT (RED)	2450	1986
ST H=W (RED)	2547	2024
HT H=1/2 W (RED)	2594	2138
FT (RED)	2676	2257
IDT (OX)	2579	2407
ST H=W (OX)	2631	2471
HT H=1/2 W (OX)	2687	2523
FT (OX)	2721	2557

From: Chet Krcil Fax: 412-831-4594 Voice: 412-831-4916

CONSOL Inc.
Typical Quality

Mine	Rend Lake	Ohio #11
TRACE ELEMENTS (ppm in coal)		
Arsenic (As)	11.04	2.67
Barium (Ba)	30.35	77.23
Beryllium (Be)	1.24	1.68
Cadmium (Cd)	7.08	0.09
Cobalt (Co)	5.01	4.01
Chromium (Cr)	13.01	13.23
Copper (Cu)	7.47	6.46
Fluorine (F)	59.27	150.53
Mercury (Hg)	0.08	0.07
Lithium (Li)	13.66	4.04
Manganese (Mn)	14.27	16.45
Molybdenum (Mo)	1.73	14.33
Nickel (Ni)	15.62	13.25
Lead (Pb)	15.62	4.76
Antimony (Sb)	1.02	0.17
Selenium (Se)	1.67	1.44
Tin (Sn)	0.60	0.46
Thorium (Th)	1.79	1.33
Thallium (Tl)	0.27	0.83
Uranium (U)	0.69	3.13
Vanadium (V)	19.32	25.10
Zinc (Zn)	29.99	13.25

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To LARRY WEBB	From P. LAVALLET
Co. GULF POWER	Co. SCS
Dept. FUEL	Phone # 205 870-6604
Fax # 8420-6217	Fax # (205) 802-0410

Technical Marketing Services

07-May-96

Peabody, Eastern Elk

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-9300 FAX: 708-953-9306

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 828-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-014

Kind of sample Coal
reported to us

Sample taken at Galatia Mine

Sample taken by Kerr-McGee

Date sampled ------

Date received December 30, 1993

Analysis Report No. 63-45254

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	13.14	xxxxx
% Ash	6.33	7.29
% Volatile	30.11	34.67
% Fixed Carbon	50.42	58.04
	100.00	100.00
Btu/lb	11829	13618
% Sulfur	0.96	1.10
MAF Btu		14689
SO_2 lb/mill Btu @ 100%	1.62	
Alk. as Sodium Oxide	0.21	0.25

ULTIMATE ANALYSIS	As Received	Dry Basis
% Moisture	13.14	xxxxx
% Carbon	66.88	77.00
% Hydrogen	4.40	5.07
% Nitrogen	1.32	1.52
% Sulfur	0.96	1.10
% Ash	6.33	7.29
% Oxygen(diff)	6.97	8.02
	100.00	100.00
% Chlorine	0.38	0.44

FORMS OF SULFUR		
% Pyritic	0.31	0.36
% Sulfate	0.01	0.01
% Organic(diff)	0.64	0.73

WATER SOLUBLE ALK.		
% Sodium oxide	0.050	0.057
% Potassium oxide	0.006	0.005

FUSION TEMPERATURE OF ASH, (°F)	Reducing	Oxidizing
Initial Deformation (IT)	2350	2580
Softening (ST)	2480	2670
Hemispherical (HT)	2570	2700+
Fluid (FT)	2640	2700+

GRINDABILITY INDEX = 58 at 2.95 % Moisture
% EQUILIBRIUM MOISTURE = 8.3
FREE SWELLING INDEX = 5.5

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-9300 FAX: 708-953-9308

SINCE 1900

Member of the SGS Group (Société Générale de Surveillance)

January 5, 1994

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0719

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Calculated Composite of 3 Trains
Train No. K-12-KM5-012, 013, & 014
Tons: 31773

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 20, 1993

Analysis Report No. 63-45525

PROXIMATE ANALYSIS

	As Received	Dry Basis		
% Moisture	12.38	xxxxx		
% Ash	6.26	7.15		
% Volatile	31.04	35.43		
% Fixed Carbon	50.32	57.42		
	100.00	100.00		
Btu/lb	11946	13634	MAF	14684
% Sulfur	1.13	1.29		
SO_2 lb/million Btu @ 100%	1.89			
% chlorine	.37	.42 (weighted average)		

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-9300 FAX: 708-953-9306

Since 1936 Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 768, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-013

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30, 1993

Analysis Report No. 63-45253

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	12.15	XXXXX
% Ash	6.06	6.90
% Volatile	31.23	35.55
% Fixed Carbon	50.56	57.55
	100.00	100.00
Btu/lb	12010	13671
% Sulfur	1.13	1.29
MAF Btu		14684
SO_2 lb/mill Btu @ 100%	1.88	
Alk. as Sodium Oxide	0.20	0.23

ULTIMATE ANALYSIS	As Received	Dry Basis
% Moisture	12.15	XXXXX
% Carbon	67.50	76.84
% Hydrogen	4.30	4.90
% Nitrogen	1.47	1.67
% Sulfur	1.13	1.29
% Ash	6.06	6.90
% Oxygen(diff)	7.39	8.40
	100.00	100.00
% Chlorine	0.38	0.43

FORMS OF SULFUR		
% Pyritic	0.40	0.45
% Sulfate	0.01	0.01
% Organic(diff)	0.72	0.83

WATER SOLUBLE ALK.		
% Sodium oxide	0.045	0.051
% Potassium oxide	0.004	0.005

FUSION TEMPERATURE OF ASH, (°F)	Reducing	Oxidizing
Initial Deformation (IT)	2230	2550
Softening (ST)	2410	2590
Hemispherical (HT)	2500	2610
Fluid (FT)	2600	2700+

GRINDABILITY INDEX = 57 at 3.34 % Moisture
% EQUILIBRIUM MOISTURE = 7.7
FREE SWELLING INDEX = 5.5

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-9300 FAX: 708-953-9306

SINCE 1909

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0718

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-013

Kind of sample Coal
reported to us

Sample taken at Galatia Mine

Sample taken by Kerr-McGee

Date sampled ------

Date received December 30, 1993

Analysis Report No. 63-46253

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	50.78
Aluminum oxide	24.98
Titanium dioxide	1.32
Iron oxide	11.89
Calcium oxide	2.46
Magnesium oxide	0.89
Potassium oxide	3.07
Sodium oxide	1.33
Sulfur trioxide	1.53
Phosphorus pentoxide	0.54
Strontium oxide	0.08
Barium oxide	0.09
Manganese oxide	0.08
Undetermined	0.96
	100.00

Silica Value = 76.92
Base:Acid Ratio = 0.25
Type Temperature = 2618 °F

Type of Ash = BITUMINOUS
Fouling Index = 0.33
Slagging Index = 0.32

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-9300 FAX: 708-953-9305
SINCE 1909
Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0710

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KM5-012

Kind of sample Coal
reported to us

Sample taken at Galatia Mine

Sample taken by Kerr-McGee

Date sampled ------

Date received December 30, 1993

Analysis Report No. 63-45252

PROXIMATE ANALYSIS	As Received	Dry Basis
% Moisture	11.86	xxxxx
% Ash	6.39	7.25
% Volatile	31.78	36.06
% Fixed Carbon	49.97	56.69
	100.00	100.00
Btu/lb	11998	13613
% Sulfur	1.30	1.48
MAF Btu		14677
SO2 lb/mill Btu @ 100%	2.17	
Alk. as Sodium Oxide	0.20	0.23

ULTIMATE ANALYSIS	As Received	Dry Basis
% Moisture	11.86	xxxxx
% Carbon	66.60	75.56
% Hydrogen	4.36	4.95
% Nitrogen	1.45	1.65
% Sulfur	1.30	1.48
% Ash	6.39	7.25
% Oxygen(diff)	8.04	9.11
	100.00	100.00
% Chlorine	0.35	0.40

FORMS OF SULFUR		
% Pyritic	0.55	0.62
% Sulfate	0.01	0.01
% Organic(diff)	0.74	0.85
WATER SOLUBLE ALK.		
% Sodium oxide	0.044	0.050
% Potassium oxide	0.004	0.005

FUSION TEMPERATURE OF ASH, (°F)	Reducing	Oxidizing
Initial Deformation (IT)	2130	2530
Softening (ST)	2170	2580
Hemispherical (HT)	2220	2610
Fluid (FT)	2520	2650

GRINDABILITY INDEX = 60 at 2.61 % Moisture
% EQUILIBRIUM MOISTURE = 7.4
FREE SWELLING INDEX = 5.5

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • TEL: 708-953-8300 FAX: 708-953-8305

SINCE 1909

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 752, HENDERSON, KY 42420
TEL: (502) 827-1187
FAX: (502) 826-0719

January 5, 1994

KERR-MCGEE COAL CORPORATION
GALATIA MINE
P. O. BOX 227
HARRISBURG IL 62946

Sample identification by
Kerr-McGee

Train #K-12-KK5-012

Kind of sample reported to us: Coal

Sample taken at: Galatia Mine

Sample taken by: Kerr-McGee

Date sampled: ------

Date received: December 30, 1993

Analysis Report No. 63-45252

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	49.24
Aluminum oxide	24.27
Titanium dioxide	1.21
Iron oxide	14.51
Calcium oxide	2.18
Magnesium oxide	0.95
Potassium oxide	3.00
Sodium oxide	1.15
Sulfur trioxide	1.28
Phosphorus pentoxide	0.53
Strontium oxide	0.08
Barium oxide	0.11
Manganese oxide	0.08
Undetermined	1.41
	100.00

Silica Value = 73.62
Base:Acid Ratio = 0.29
Taxe Temperature = 2560 °F

Type of Ash = BITUMINOUS
Fouling Index = 0.33
Slagging Index = 0.43

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Henderson Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES: 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953-9300

Member of the SGS Group (Société Générale de Surveillance)

PLEASE ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1962, McDUFFIE TERMINAL, MOBILE, AL 36603
TELEPHONE: (205) 432-2781
FAX: (205) 432-1461

December 22, 1993

PEABODY COALSALES COMPANY
701 MARKET STREET
SUITE 830
ST. LOUIS MISSOURI 63101

Sample identification by
PEABODY COALSALES COMPANY

AREA 3 SOUTH WEST END VENEZUELAN COAL.

Kind of sample reported to us VENEZUELAN COAL STOCKPILE

Sample taken at MCDUFFIE TERMINAL

Sample taken by C.T. & E. CO.

Date sampled December 16, 1993

Date received December 16, 1993

Analysis Report No. 83-16303

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	52.48
Aluminum oxide	19.83
Titanium dioxide	0.88
Iron oxide	12.96
Calcium oxide	3.31
Magnesium oxide	2.10
Potassium oxide	1.26
Sodium oxide	1.53
Sulfur trioxide	4.52
Phosphorus pentoxide	0.49
Strontium oxide	0.09
Barium oxide	0.14
Manganese oxide	0.14
Undetermined	0.27
	100.00

Silica Value = 74.07
Base:Acid Ratio = 0.29
T_{250} Temperature = 2570 °F

Type of Ash = BITUMINOUS
Fouling Index = 0.44
Slagging Index = 0.35

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Mobile Laboratory

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNITS 1,2,&3, LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/01/96 20:00
SAMPLE NUMBER : 960223-0020
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19422.	BTU/lb
Heat of Combustion	ASTM D 240	139224.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8609	SU @60F
API Gravity	ASTM D4052/D287	32.9	Degrees
Sulfur	ASTM D 1552	0.45	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 8/85
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, AL 35291

Alabama Power

Certificate of Analysis

TO : MR. GREG TERRY
ADDRESS: GULF POWER COMPANY
ENV. AFFAIRS DEPT.
BIN 328
DESCRIPTION: PLANT CRIST UNIT 3 LIGHTER OIL, #2 FUEL OIL

REPORT DATE : 03/01/96
SAMPLE DATE/TIME: 02/03/96 11:53
SAMPLE NUMBER : 960223-0021
LOCATION NUMBER : CRIST2FO

TEST	REFERENCE	RESULT	UNITS
Heat of Combustion	ASTM D 240	19375.	BTU/lb
Heat of Combustion	ASTM D 240	138638.	BTU/gal
Specific Gravity @ 60F	ASTM D 4052	0.8594	SU @60F
API Gravity	ASTM D4052/D287	33.1	Degrees
Sulfur	ASTM D 1552	0.46	% by Wt.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. KEN RICHARDSON

Quality Assurance	Supervisor	Page
PATRICIA BERRY PWB	DONNA WILSON DW	1 of 1

5-2790 Rev. 8/85
FILE: FO

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. JOCELYN HENDERSON
ADDRESS: GULF POWER COMPANY
CORPORATE OFFICE
PENSACOLA, FL
DESCRIPTION: GULF POWER COMPANY - # 6 FUEL OIL, PLANT CRIST

REPORT DATE : 06/16/94
SAMPLE DATE : 05/27/94
SAMPLE NUMBER : 940601-0061
LOCATION NUMBER : GULF6FO

TEST NAME	ASTM SPECIFICATIONS REFERENCE	MINIMUM	MAXIMUM	RESULT	UNITS
Flash Point, Pensky-Martens Closed	ASTM D 93	140.		) 284.	Deg. F
Heat of Combustion	ASTM D 240			18772.	BTU/lb
Heat of Combustion	ASTM D 240			148687.	BTU/gal
Ash	ASTM D 482			0.0548	% by Wt.
Solids, Total Suspended	ASTM D 2276			1.040	gm/100ml
Specific Gravity @ 60F	ASTM D 4052			0.9513	SU
API Gravity	ASTM D4052/D287			17.2	Degrees
Water, Total	ASTM D 1744			0.2927	% by Wt.
Antimony, Total	EPA SW846/3051/6010			(1.	mg/kg
Arsenic, Total	EPA SW846/3051/6010			8.	mg/kg
Cadmium, Total	EPA SW846/3051/6010			(1.	mg/kg
Chlorine, Total	ASTM D 808			192.	mg/kg
Chromium, Total	EPA SW846/3051/6010			(1.	mg/kg
Cobalt, Total	EPA SW846/3051/6010			(1.	mg/kg
Fluorine, Total	ASTM D 808			18.	mg/kg
Lead, Total	EPA SW846/3051/6010			(1.	mg/kg
Manganese, Total	EPA SW846/3051/6010			3.	mg/kg
Mercury, Total	ASTM D 811			(0.02	mg/kg
Nickel, Total	EPA SW846/3051/6010			12.	mg/kg
Selenium, Total	EPA SW846/3051/6010			(1.	mg/kg
Sulfur	ASTM D 1552			1.28	% by Wt.
Vanadium, Total	EPA SW846/3051/6010			69.	mg/kg
Kinematic Viscosity, Centistoke, 100 C	ASTM D 445	15.0	50.0	28.1	Cst

INSOFAR AS TESTED, THIS SAMPLE MEETS ALL SPECIFICATION REQUIREMENTS AS STATED IN ASTM D396 FOR A NO. 6 FUEL OIL.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. DENNIS COWAN

Chemist	Quality Control	Supv. Chemist	Page
	ANNE RYALS	DONNA WILSON DW	1 of 1

5-2790 Rev. 8/85
FILE: FO

F-301

General Test Laboratory
Building Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. JOCELYN HENDERSON
ADDRESS: GULF POWER COMPANY
CORPORATE OFFICE
PENSACOLA, FL
DESCRIPTION: GULF POWER COMPANY - # 2 FUEL OIL, PLANT CRIST

REPORT DATE : 06/14/94
SAMPLE DATE : 05/27/94
SAMPLE NUMBER : 940601-0060
LOCATION NUMBER : GULF2FO

TEST NAME	ASTM SPECIFICATIONS REFERENCE	MINIMUM	MAXIMUM	RESULT	UNITS
Bacterial Activity, Total Count, Fuel P.	GPCO PSL-12450.403			< 1.	org/ml.
Yeast & Molds, Fuel Phase	GPCO PSL-12450.403			< 1.	org/ml.
Cloud Point	ASTM D 2500		30.	18.	Deg F
Corrosion Index @ 100C	ASTM D 130		3.	1B	SU
Flash Point, Pensky-Martens Closed	ASTM D 93	125.		158.	Deg. F
Heat of Combustion	ASTM D 240			19583.	BTU/lb
Heat of Combustion	ASTM D 240			136953.	BTU/gal
Pour Point, Deg F.	ASTM D 97			< -10.	Deg F
Ash	ASTM D 482		0.0100	0.0007	% by Wt.
Solids, Total Suspended	ASTM D 2276			0.002	gm/100ml
Ramsbottom Carbon Residue on 10% Distill	ASTM D 524		0.35	0.09	% by Wt.
Specific Gravity @ 60F	ASTM D 4052			0.8399	SU
API Gravity	ASTM D4052/D287			37.0	Degrees
Kinematic Viscosity, Centistoke, 40 C	ASTM D 445			2.977	Cst
Saybolt Viscosity @ 40 C	ASTM D 445/2161			35.9	SUS/40C
Water, Total	ASTM D 1744			0.0398	% by Wt.
Antimony, Total	EPA SW846/3051/6010			< 1.	mg/kg
Arsenic, Total	EPA SW846/3051/6010			< 1.	mg/kg
Cadmium, Total	EPA SW846/3051/6010			< 1.	mg/kg
Chlorine, Total	ASTM D 808			262.	mg/kg
Chromium, Total	EPA SW846/3051/6010			< 1.	mg/kg
Cobalt, Total	EPA SW846/3051/6010			< 1.	mg/kg
Fluorine, Total	ASTM D 808			18.	mg/kg
Lead, Total	EPA SW846/3051/6010			< 1.	mg/kg
Manganese, Total	EPA SW846/3051/6010			< 1.	mg/kg
Mercury, Total	ASTM D 811			< 0.02	mg/kg
Nickel, Total	EPA SW846/3051/6010			< 1.	mg/kg

Chemist	Quality Control	Supv. Chemist

5-2790 Rev. 8/85

,eral Test Laboratory
uilding Number 8
P.O. Box 2641
Birmingham, Al. 35291

Alabama Power

Certificate of Analysis

TO : MS. JOCELYN HENDERSON
ADDRESS: GULF POWER COMPANY
CORPORATE OFFICE
PENSACOLA, FL
DESCRIPTION: GULF POWER COMPANY - # 2 FUEL OIL, PLANT CRIST

REPORT DATE : 06/14/94
SAMPLE DATE : 05/27/94
SAMPLE NUMBER : 940601-0060
LOCATION NUMBER : GULF2FO

TEST NAME	ASTM SPECIFICATIONS REFERENCE	MINIMUM	MAXIMUM	RESULT	UNITS
Selenium, Total	EPA SW846/3051/6010			< 1.	mg/kg
Sulfur	ASTM D 1552		0.50	0.39	% by Wt.
Vanadium, Total	EPA SW846/3051/6010			< 1.	mg/kg

INSOFAR AS TESTED, THIS SAMPLE MEETS ASTM D975 SPECIFICATIONS FOR A NUMBER 2 DIESEL OIL.

This Certificate is for the physical and/or chemical characteristics of the sample as submitted.
The laboratory cannot attest to the origin and representation of the sample.

CC: MR. W. S. HILL
MR. DENNIS COWAN

Chemist	Quality Control	Supv. Chemist	Page
	ANNE RYALS	DONNA WILSON	2 of 2

5-2790 Rev. 8/85
FILE: FO

EUS-3

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 4**

2. Manufacturers Name and Model No.: **Buell**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Place in service in March 1976**

4. Precipitator Data:

a) Precipitator Type:

__X__ Single Stage _____ Low Voltage __X__ Hot Side
_____ Two Stage __X__ High Voltage _____ Cold Side
_____ Other: _____

b) Efficiency: **99.1**

c) Flow rate: **515,000 acfm**

d) Pressure drop: **.3 in H20**

e) Inlet temperture: **650 degrees**

f) Total collection plate area: **146,775 ft2**

g) No. of compartments: **1**

h) No. of electrically separate fields: **7**

i) Fan is: _____ Upstream ____X__Downstream

j) Cleaning Method:

__X__ Plate Rapping
__X__ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **4.68 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions from? **Pulverized coal fired steam generator (tangential fired)**

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 4**

2. Manufacturers Name and Model No.: **Buell**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Placed in service in 1968.**

4. Precipitator Data:

a) Precipitator Type:

__X__ Single Stage _____ Low Voltage _____ Hot Side
_____ Two Stage __X__ High Voltage __X__ Cold Side
_____ Other:_____

b) Efficiency: **98.2**

c) Flow rate: **290,000**

d) Pressure drop:

e) Inlet temperture: **300 degrees**

f) Total collection plate area: **51,910 ft2 per 1000 acfm**

g) No. of compartments: **1**

h) No. of electrically separate fields: **3**

i) Fan is: _____ Upstream ___**X**___Downstream

j) Cleaning Method:

__**X**___ Plate Rapping
__**X**_ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **4.48 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions

from? ___**Pulverized coal fired steam generator (tangential fired)**

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 5**

2. Manufacturers Name and Model No.: **Buell**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Placed in service in April 1976**

4. Precipitator Data:

a) Precipitator Type:

__X__ Single Stage _____ Low Voltage __X__ Hot Side
_____ Two Stage __X__ High Voltage _____ Cold Side
_____ Other: _____

b) Efficiency: **99.1**

c) Flow rate: **515,000 acfm**

d) Pressure drop: **.3**

e) Inlet temperture: **650 degrees**

f) Total collection plate area: **146,775**

g) No. of compartments: **1**

h) No. of electrically separate fields: **7**

i) Fan is: _____ Upstream ____X____Downstream

j) Cleaning Method:

__X__ Plate Rapping
__X__ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **4.68 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions

from? **Pulverized coal fired steam generator (Tangential fired)**

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 5**

2. Manufacturers Name and Model No.: **Buell**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Placed in service 1969**

4. Precipitator Data:

a) Precipitator Type:

__X___ Single Stage _____ Low Voltage _____ Hot Side
_____ Two Stage __X__ High Voltage __X___ Cold Side
_____ Other:_____

b) Efficiency: **98.2**

c) Flow rate: **290,000**

d) Pressure drop: _____

e) Inlet temperture: **300 degrees**

f) Total collection plate area: **290,000 acfm**

g) No. of compartments: **1**

h) No. of electrically separate fields: **3**

i) Fan is: _____ Upstream ____X___Downstream

j) Cleaning Method:

__X___ Plate Rapping
__X_ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **4.48 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions

from? **Pulverized coal fired steam generator (Tangential fired)**

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 6**

2. Manufacturers Name and Model No.: **Wheelabrator**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Placed in service in May 1994**

4. Precipitator Data:

a) Precipitator Type:

__X__ Single Stage _____ Low Voltage _____ Hot Side
_____ Two Stage __X__ High Voltage __X__ Cold Side
_____ Other:_____

b) Efficiency: **99.6**

c) Flow rate: **1,325,820 acfm**

d) Pressure drop: **.9 in H2O**

e) Inlet temperture: **340 degrees**

f) Total collection plate area: **501,160 ft2**

g) No. of compartments: **2**

h) No. of electrically separate fields: **10**

i) Fan is: _____ Upstream ___X___Downstream

j) Cleaning Method:

__X__ Plate Rapping
__X__ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **3.84 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions

from? **Pulverized coal fired steam generator (Wall fired)**

ELECTROSTATIC PRECIPITATORS

1. Emissions Point No. / Name: **Plant Crist Unit 7**

2. Manufacturers Name and Model No.: **GE ESI**

3. Date of construction for existing sources or date of anticipated start-up for new sources: **Place in service in May 1991**

4. Precipitator Data:

a) Precipitator Type:

__X__ Single Stage _____ Low Voltage _____ Hot Side
_____ Two Stage __X__ High Voltage __X__ Cold Side
_____ Other:_____

b) Efficiency: **99.0**

c) Flow rate: **1,800,000 acfm**

d) Pressure drop:

e) Inlet temperture: **320 degrees**

f) Total collection plate area: **405,000 ft2**

g) No. of compartments: **2**

h) No. of electrically separate fields: **9**

i) Fan is: _____ Upstream ____X___Downstream

j) Cleaning Method:

__X__ Plate Rapping
__X__ Plate Vibrating
_____ None
_____ Washing
_____ Other: _____

k) Gas velocity thru precipitator: **5.05 ft/sec**

5. Which process or processes does the electrostatic percipitator control emissions

from? **Pulverized coal fired steam generator (Wall fired)**

AIR POLLUTION CONTROL EQUIPMENT / DEVICES

If air pollution control equipment/device(s) are different from the previous sections descriptions or new technology, then explain below and attach manufacturers specifications including efficiency.

Plant Crist - Units 6 and 7

Low - NOx Burners

Plant Crist, Units 6 and 7 boilers were retrofitted with Foster Wheeler Energy Corporation's Internal Fuel Staged (IFS) low-NOx burners in 1993 for purposes of Title IV, 40 CFR 46, acid rain requirements In the IFS burner, secondary combustion air is divided between inner and outer flow cylinders. A sliding sleeve damper regulates the total secondary air flow entering the burner and is used to balance the burner air flow distribution. An adjustable outer register assembly divides the burner's secondary air into two concentric paths and also imparts some swirl to the air streams.

The secondary air traverses the inner path flows across an adjustable inner register assembly that by providing a variable pressure drop and apportions the flow between the inner and outer flow paths. The inner register also controls the degree of additional swirl imparted to the coal/air mixture in the near throat region. The outer air flow enters the furnace axially, providing the remaining air necessary to complete combustion.

An axially movable inner sleeve tip provides a means for varying the primary air velocity while maintaining a constant primary flow. The split flame nozzle segregates the coal/air mixture into six concentrated streams, each of which forms an individual flame when entering the furnace. This segregation minimizes mixing between the coal and the primary air, assisting in the staged combustion process.

INTRODUCTION

This Operating Instruction Manual addresses the Internal Fuel Staged (IFS) Low NO_x Burner System supplied by Foster Wheeler Energy Corporation (FWEC) under FWEC Contract No. 2-30-7021. This manual is to be used in conjunction with the Operating Instruction Manual (Contract 2-79-887, modified by maintenance Contract 7-26-5610) for the Steam Generators at Gulf Power Company's Crist Station Unit No. 7 (issued July 1971 and last revised in May 1989).

SECTION 1
DESCRIPTION

1.1 GENERAL DESCRIPTION

This section addresses the Internal Fuel Staged (IFS) Low NO_x Burner System supplied by Foster Wheeler Energy Corporation (FWEC). This paragraph is a general description of the twenty-four (24) coal/gas fired IFS burners used on the unit's front and rear walls. Each wall has three (3) rows of four (4) burners in each row.

The arrangement of the IFS burner is shown on Drawings 30-7021-5-650, 30-7021-5-651 and Figure 1-1 (located at the end of Section 11). This burner's fuel injector is the cylindrical component which extends from the scroll at the burner deck to the internal fuel staged nozzle at the burner's penetration of the furnace wall. The fuel injector delivers primary air/coal flow in the annular space between the inner and outer sleeves. The ignition source for the IFS Burner is a high energy spark ignitor (HESI) which emits three (3) 12 joule sparks per second to ignite the #2 fuel oil light-up burner (LUB) that in-turn provides light-off capability for this burner's coal/gas main fuels. Both the ignitor and the LUB have been combined with the main gas cane assembly (containing eight (8) canes) which has a 260 x 10^6 Btu/hr capacity. The ignitor, LUB and main gas cane assembly have been designed to provide extend/retract capability for each of these components. When the ignitor, LUB or main gas cane assembly is extended, it is in the in-service position. Retraction of any one of the components indicates an out of service position. These positions are remotely indicated to the operator through limit switch signals. The inner sleeve is equipped with an adjustable sleeve (tip) and encloses the ignitor and eight (8) gas canes. The inner sleeve provides a path for tertiary air. The controlled flow air register surrounds the fuel injector at the furnace end of the burner and meters and directs secondary air flow to the burner's flame zone. The register's design has two flow paths, each of which are controlled by annular register vanes. The furnace penetration for the burner is a throat which incorporates refractory tiles. Burner temperature is monitored by a set of strategically placed thermocouples.

A pulverized coal/primary air mixture, supplied from a coal pulverizer, is introduced tangentially in the annulus between the inner and outer sleeves of the fuel injector. As the mixture travels down the annulus, the spiral motion imparted to the stream by the scroll's tangential inlet is greatly reduced by the anti-roping bars on the outer sleeve's ceramic liner. The coal/air mixture is injected axially into the furnace in concentrated streams formed by the IFS nozzle. An optimized flame shape and position is partially achieved by axially moving the fuel injector's adjustable inner sleeve (tip).

CAUTION

WHEN THE ADJUSTABLE INNER SLEEVE (TIP) IS ADJUSTED, THE IGNITOR/LUB/MAIN GAS CANE ASSEMBLY WITHIN THE INNER SLEEVE MUST BE MOVED (RE-SET) EQUAL TO SLEEVE MOVEMENT.

A tertiary air connection introduces cold air into the fuel injector's inner sleeve from thetertiary air fan(s). When firing coal this air purges the inner sleeve's center section, keeping it free of coal accumulation and providing additional combustion air, while maintaining proper burner tip temperature. When the gas cane assembly is extended (which contains the HESI and LUB), the tertiary air restrictor is in its maximum flow position. This permits the additional combustion air necessary for firing the LUB. A set of stationary swirler (vanes) provides a swirl to the increased flow of tertiary air, thereby facilitating a mixing action during LUB oil firing.

The front plate on the fuel injector's scroll, located at the burner deck, is equipped with three (3) inspection/cleanout connections. Coal and gas main flame and gas ignitor flame detectors as well as a sight pipe and thermocouple connections (refer to following paragraph) are also provided in this same area. The front plate incorporates a port to accommodate the main gas cane/ignitor assembly.

Three (3) burner tip thermocouples and one (1) thermocouple each for the inner and outer sleeves have been provided for monitoring burner temperature. The thermocouple instrumentation is shown in Figure 1-2. The alarm temperatures for burner thermocouples are as follows:

Location	In Service(F)	Out of Service(F)
Tip	850	1200
Outer Sleeve	750	750
Inner Sleeve	450	450

A perforated plate is installed around the circumference of the controlled flow air register's secondary air inlet and acts as a distribution device for secondary air flow. An electrically adjustable cylindrical sleeve damper for shutoff and air flow control is positioned around the outside of the perforated plate. The sleeve damper is a prepositioned device with closed, light-off and operate positions which are set by limit switches. The desired light-off and "open" (operate) positions are found during initial burner optimization and are fixed thereafter.

The evenly distributed (by the perforated plate) secondary air enters the controlled flow (dual) air register which is equipped with manually adjustable vanes for use in varying and proportioning the secondary airflow. The vanes are designed to impart a rotational motion to the secondary air. The inner and outer register vanes are manually set for optimum flame front and flame shape and are not modulated thereafter. The settings are determined during initial burner optimization.

The controlled flow air register assembly incorporates air pressure monitoring instrumentation; see Figure 1-3 and drawing 30-7021-4-663 for additional information on the foregoing instrumentation.

Crist Unit 7
SO3 Gas Generator Flue Gas Conditioning System

Gulf Power switched to low sulfur fuels as the best means of lowering the sulfur dioxide emissions to allowable levels. This caused an increase in the opacity in the stack due to the lower sulfur input to the furnace. When the fuel sulfur drops below a certain level, the electrical and cohesive properties of the flyash are adversely affected. This causes a lower collection efficiency in the electrostatic precipitators. As a result, the effective removal of particulate from the flue gas stream is reduced.

Treating the flue gas with a SO3 Gas Generator can effectively reverse the degraded collection efficiency. Flue gas conditioning utilizes a catalytic process to produce SO3, which is injected into the flue gas upstream of the precipitator inlet. Only a small amount of SO3 (usually 4 to 20 ppm) is required to raise the precipitator performance to the desired level. The added SO3 is metered to provide the optimum collection efficiency, depending on the precipitator power consumption, boiler load, and stack opacity.

1.0 BACKGROUND

The Clean Air Act (CAA) of 1990 calls for drastic reductions in sulfur dioxide (SO_2) emissions from powerplants. The law requires SO_2 emission rates to be reduced below 1980 levels by 10 million tons. A two step program is prescribed to reach these goals by the year 2000. Phase I requires SO_2 emissions to reach levels of 2.5 lb/million Btu by the mid 1990's. Phase II will require virtually all powerplants above 75 MW to stay below 1.2 lb/million Btu by the year 2000.

Sources which were not affected by the original CAA will have to comply with the new CAA. In addition, continuous compliance will be expected. Pressure is being applied for powerplant executives to make decisions and develop compliance strategies. Having to operate at higher capacities than during the 1985 to 1987 baseline period aggravates their challenge to reduce emissions.

The law incorporates a system for banking and trading emissions allowances. However, it is important to retain flexibility in the Phase I compliance. A major obstacle in planning is the uncertainty over future values of allowances, regulatory agency attitudes, and methods of implementing regulations. In considering two alternatives, the option with the lower capital cost may provide greater future flexibility.

The most widely used methods for Phase I compliance with coal fired utility boilers are wet scrubbing and switching to lower sulfur coal. Wet scrubbing can be effective in removing SO_2 from the flue gases, but is characterized by high capital costs and long lead times. Space requirements can also be restrictive for scrubber installations. Switching from high sulfur coal to a low sulfur fuel represents a key option when developing a compliance plan, but changing fuels may impact boiler operations and collection equipment efficiency.

A frequent problem for units converted to low sulfur fuels is the appearance of a persistent stack plume. This is because the performance of electrostatic precipitators is sensitive to the physical properties of flue gases and flyash particles. Switching to fuels of different chemical makeup changes both flue gas and ash mineral compositions. Collection efficiency tends to suffer when low sulfur fuels are fired in units originally designed for medium or high sulfur fuels. These adverse effects can be reversed by "conditioning" the flue gas with small amounts of sulfur trioxide (SO_3). The Chemithon SO_3 gas generator provides a cost effective way to do this.

Installation costs for SO_3 gas generators are modest when compared with wet scrubbing systems. The Chemithon systems are pre-assembled and shipped to the site on skids. This approach minimizes field erection of equipment, which reduces the impact on operations and limits outage requirements.

2.0 INTRODUCTION

2.0 INTRODUCTION

Utility boilers that have been converted from high or medium sulfur coals to low sulfur fuels often experience increased stack plume opacity. The flue gas conditioning systems built by the Chemithon Corporation in Seattle, Washington are designed to reduce the persistent stack plume which often appears after converting boilers to low sulfur coal firing. Switching to low sulfur fuels is often implemented because it is determined to be the most economical means of lowering sulfur dioxide (SO_2) emissions to allowable levels.

The increased opacity in the stack is an artifact of the lower sulfur input to the furnace. When the fuel sulfur drops below a certain level, the electrical and cohesive properties of the flyash are adversely affected. This causes a lower collection efficiency in electrostatic precipitators. As a result, the effective removal of particulate from the flue gas stream is reduced.

Treating the flue gas with a Chemithon SO_3 Gas Generator can effectively reverse the degraded collection efficiency. Proper application requires individual sizing for each installation. The units are then built in a modular fashion on skids and shipped to the installation site and assembled as complete units.

After the SO_3 gas generating plant is installed, its fully automated control system requires minimal attention from operators. When on line, the control system automaticly adjusts SO_3 treat rates to keep stack opacity within acceptable limits.

The following section (Section 3) is an overview of the fundamental causes of stack plume opacity. Section 4 gives a physical description of the process equipment. Control systems are described in Section 5. Sections 6 and 7 review system operations. Safety precautions are discussed in Section 8, and Maintenance is briefly described in Section 9.

3.0 AIR POLLUTION EMISSIONS FROM POWER BOILERS

3.1 PARTICULATE MATTER AND STACK PLUME OPACITY

3.2 SULFUR DERIVED EMISSIONS

3.0 AIR POLLUTION EMISSIONS FROM POWER BOILERS

Air emissions from power boilers include gas phase pollutants and particulate matter. The formation of some gas phase pollutants depends on organically bound fuel contaminants, while others depend on combustion conditions. Particles may be emitted directly or formed in the atmosphere by transformation of gaseous emissions. These particles can appear in the forms of either solids or liquid mists.

Often, improved fuel selection and operating techniques can reduce emissions. Once these limits are reached, combustion and collection equipment modifications are generally required for further reductions in emissions. An example would be installing the Chemithon SO_3 Gas Generator to regain lost precipitator performance on units converted to firing low sulfur coal. This method of flue gas conditioning has proven to be an economical way to enhance the performance of electrostatic precipitators.

There are many emissions issues that must be addressed by operators of power boilers. This manual focuses on regaining lost electrostatic precipitator collection efficiency brought about by burning fuels with lower-than-design sulfur content. It is ironic, but lowering the amount of SO_2 in the stack gases can lead to higher stack opacity.

3.1 PARTICULATE MATTER AND STACK PLUME OPACITY

Several factors affect the size and composition of particulate matter. Examples include the type of source, the compositions of the fuels, and the types of emissions control equipment.

Particles larger than about five microns (μm) do not generally present a problem for most collection equipment systems. As particles get smaller, they become more difficult to capture.

Determining the amount of fine particulate discharged into the atmosphere requires test measurements. For continuous monitoring of stack conditions, a more qualitative method is used. It is a relative scale of opacity, which is often used to track emissions rates during operations. Simply stated, opacity defines how visible (dirty) the plume is. It is the optical density of the dust

cloud in the stack plume, where 0% would be completely transparent and 100% would be completely opaque.

Plume opacity is due to the presence of fine particulate matter in the stack exhaust gases. The size range of most concern is generally one to two microns (μm). Dispersed particles in this size range tend to reflect more light than particles which are smaller than about one micron or larger than about two microns.

Potentially, several different types of materials in the stack gases can form these particulate. These include:

- ***Condensed Hydrocarbons*** resulting from incomplete combustion,
- ***Carbonaceous Material*** from the carryover of unburned carbon from the furnace,
- ***Ash*** released into the gas stream during combustion,
- ***Dirt and Contaminates*** brought into the furnace with the fuels.

The first two items are the result of poor combustion performance in the furnace. This can be due to inadequate fuel and air delivery into the furnace, insufficient excess air, combustion air temperatures which are too low, poor pulverizer performance, and/or excessive fuel input to the furnace. The application of appropriate operational and hardware changes can diminish these problems and improve stack appearance.

Control of the fine ash materials (ash, dirt, and contaminates) can be accomplished by a combination of fuel selection, improved furnace combustion conditions, and enhanced particulate controls operations. Generally, little flexibility is available in the fuel supply. Changes to the furnace combustion conditions, while very effective in controlling the release of combustibles, are relatively ineffective at controlling ash discharge.

The control of ash generally requires improvements to the performance of the particulate control devices. Factors that affect performance include: equipment arrangement, actual versus design throughput, and maintenance history. In the case of electrostatic precipitators, the electrical properties of the ash also play an important role in collection efficiency. It must be recognized that the matter which contributes most to the opacity problem is composed of the smallest

particles present in the gas stream. Unfortunately, these particles are also the most difficult to capture.

An understanding of the composition of the materials present in the stack gases is needed to properly address the needed improvements to unit operations and design. A selection can then be made as to the cost-effective means of controlling the plume opacity. This information requires field tests on the unit and engineering analyses.

3.2 SULFUR DERIVED EMISSIONS

FORMATION

Sulfur-containing fuels are responsible for both gas phase and particulate emissions from power boilers. When sulfur is burned, it combines with oxygen to form gaseous oxides of sulfur (SO_x). The principal product of combustion is sulfur dioxide (SO_2). SO_2 is one of the most troublesome gas phase emissions from industrial boilers. The fuel bound sulfur in coal and oil can produce huge quantities of SO_2, which can be difficult and costly to control. The amount of SO_2 that power plants discharge into the atmosphere is limited by State agencies and the Clean Air Act.

Some of the SO_2 (generally < 3%) combines with excess oxygen to form sulfur trioxide (SO_3). When the gas cools to about 520°F, the SO_3 combines with water vapor in the flue gas to form sulfuric acid (H_2SO_4) vapor. If the temperature reduces to the acid dew point (about 320°F, depending on SO_3 and H_2O concentrations), the acid vapors condense on exposed surfaces, including dust particles. Submicron droplets form around fine ash particles in the same manner that rain droplets "seed" around fine dust particles in the atmosphere.

A small percentage of the fuel sulfur will combine with oxygen and ash minerals in the furnace to form primary sulfates (SO_4). These sulfates are among the smallest particulate matter in the flue gas stream.

EFFECTS ON COLLECTION EQUIPMENT

Levels of SO_2 emissions can be reduced by either retrofitting the collection system with wet scrubbing devices or fuel switching to reduce the sulfur input to the furnace.

Wet scrubbers can be effective in this application because SO_2 is hygroscopic. The problems with this method are generally economic. Capital costs and lead times can be extensive. Limited space availability for large scrubbers can also eliminate these devices as viable options. Where low sulfur fuels are available, fuel switching generally is a more cost effective method for reducing SO_2.

For electrostatic precipitators (ESP's), conversion to firing of low sulfur fuels is often the only feasible means of sufficiently reducing sulfur related emissions. This is because these devices are incapable of capturing gas phase pollutants (including SO_2).

ESP's are known to be effective in removing fine particulate from flue gas streams. However, reducing the amount of sulfur burned in the furnace, frequently results in particles with higher resistivities. Highly resistive particles are difficult to charge. Furthermore, once they become charged, they do not readily release from the collecting plates in the ESP. This results in a substantial degradation of precipitator performance. A cost effective means for regaining lost ESP collection efficiency due to fuel switching is flue gas conditioning.

FLUE GAS CONDITIONING FOR IMPROVED PRECIPITATOR PERFORMANCE

ESP's are designed for each installation according to:

- Volumetric flow rates, properties, and composition of flue gases,
- Anticipated particulate loading and size distribution,
- Environmental limits,
- Particulate composition.

Unfavorable changes in any of these conditions can lead to unacceptable ESP performance. Flue gas conditioning is normally put into place to address changes in particulate composition brought

about by more stringent environmental limits for SO_2 emissions. Required reductions in SO_2 emissions has meant converting to low sulfur fuels for many plants. The resulting higher-than-design resistivities of the particulate have generally degraded collection efficiencies of existing electrostatic precipitators at these installations. Higher resistivities occur because of lower SO_3 concentrations in the flue gas. Potential increases in resistivity can also occur due to differences in ash mineral content between design and low-sulfur fuels.

Only a small percentage of SO_2 in the flue gas converts to SO_3. Even when burning fuels with moderate to high sulfur content, the SO_3 concentration in the flue gas will generally be less than 100 part per million (ppm). Though dilute, SO_3 in these amounts has a profound effect on reducing the resistivity of flyash. The lower the resistivity (or the higher the conductivity) of a particle, the more easily it will accept a charge in an electric field. Such a particle is more likely to be captured due to its greater attraction to the collection plates in the precipitator.

The mechanisms that determine the extent of SO_2 to SO_3 conversion within the boiler unit are complicated. Conversion depends, in part, on the trace metals in the boiler tubes (particularly vanadium), the ash mineral composition, and the temperature profiles in the furnace and boiler. In some cases, the availability of SO_3 to condition the flyash can be near zero due to conversion rates that are too low. When this happens, SO_3 concentrations in the flue gas need to be boosted to appropriate levels by other means, such as flue gas conditioning.

Flue gas conditioning utilizes a catalytic process to produce SO_3, which is injected into the flue gas upstream of the precipitator inlet. Only a small amount of SO_3 (usually 4 to 20 ppm) is required to raise the precipitator performance to the desired level. The optimum level depends on the particulate loading, the ash mineral composition, and the amount of SO_3 in the flue gas due to fuel sulfur. The added SO_3 is metered to provide the optimum collection efficiency, depending on the precipitator power consumption, boiler load, and stack opacity.

4.0 DESCRIPTION OF EQUIPMENT

4.1 SULFUR STORAGE AND SUPPLY SYSTEM

4.1.1 HEATING SYSTEM

4.1.2 STEAM SUPPLY SYSTEM

4.1.3 METERING SYSTEM

4.2 PROCESS AIR SUPPLY SYSTEM

4.3 SULFUR BURNER

4.4 SO_2 COOLER

4.5 SO_3 CONVERTER

4.6 SO_3 INJECTION SYSTEM

4.0 DESCRIPTION OF EQUIPMENT

The process equipment for flue gas conditioning can be separated into six major groups. These are:

- Sulfur storage and supply system,
- Process air supply system,
- Sulfur burner,
- SO_2 cooler,
- SO_3 converter,
- SO_3 injection system.

Each equipment group is described separately in the sections that follow. The design parameters for the equipment are listed in Table 4-1.

4.1 SULFUR STORAGE AND SUPPLY SYSTEM

Sulfur is brought to the storage site by tankers, where it is transferred by pump to the sulfur storage tank (Figure 4-1). The transfer pump is mounted on the steam and condensate skid, and is provided with a local start/stop station. One sulfur storage tank can be used to supply several units. The number of units serviced by one storage tank depends on available space and the complexity of piping arrangements.

Sulfur storage tanks are vented, and under normal operating conditions are unpressurized. A conservation valve installed in the vent limits the discharge of sulfur vapors to the atmosphere. A manual fire suppression system is supplied which utilizes direct steam injection.

The following indicators and alarms are provided to monitor conditions in the storage tank:

- Sulfur level (bubbling indicator)
- Low level alarm (25%)
- High level alarm (90%)
- Low temperature alarm (<250°F)

TABLE 4-1 Equipment Design Parameters

BOILER UNIT

Description	Units	No. 7
Design Rating	MW	500
Flue Gas Temperature	°F	267
Flue Gas Volumetric Flow Rate	acfm	1,660,000
Fuel	-	PC
Manufacturer	-	B&W
Steam Production Rate	lb/hr	3,626,000
Steam Temperature	°F	1000
Steam Pressure	psig	1000

PRECIPITATOR

Description	Units	No. 7
Number of Units	ea	2
Number of Chambers	Box X Cham	2
Fields/Chamber	Elec/Mech	24-Mar
Manufacturer	-	Buell
Design Gas Temperature	°F	267
Design Gas Flow Rate	acfm	1,660,000
Inlet Duct Pressure	in. wg	-10
Design Efficiency	%	99
Specific Collection Area	ft^2/Macfm	177
Power Density	W/Macfm	683

FGC SYSTEM

Description	Units	No. 7
SO3 Conditioning Capacity	lb/hr	330
Sulfur Feed Capacity	lb/hr	140
Design Treat Rate	ppm	25
Conversion Efficiency (SO2 to SO3)	%	95
Process Air Blower Capacity	acfm	625
Air Heater Heating Capacity	kW	120
Sulfur Tank Capacity [1]	Ton	80
Converter Diameter	in	42
Sulfur Burner Diameter	in	48
Hot Gas Pipe Diameter	in	6
Sulfur Burner Type	-	Vertical Trickle
Injection Location	-	Air Heater Cold Side

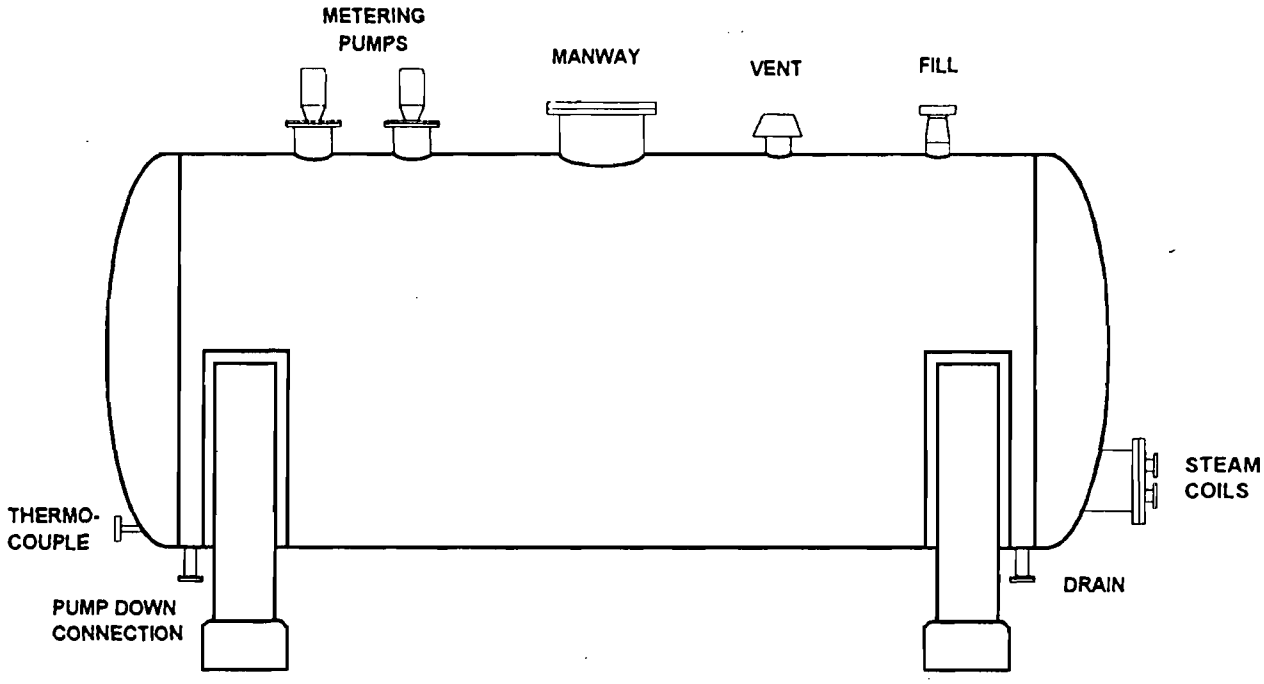


FIGURE 4-1	Sulfur Storage Tank	THE CHEMITHON CORPORATION

The sulfur storage and supply system also includes a heating system, a steam supply and distribution system, and a metering system. Access to equipment mounted on top of each tank is provided by a ladder, platform grating, and an equipment boom.

4.1.1 HEATING SYSTEM

The normal range for system operating temperatures is 270°F to 290°F. Sulfur solidifies at 238°F and becomes very viscous at temperatures above 320°F. Successful handling depends on maintaining the sulfur in a molten state within this temperature range.

To maintain the operating temperature, the tank is well insulated and is provided with a heating system. The tank cavity is heated with steam coils, all piping is heat traced with steam, and all external pumps and valves have steam jackets.

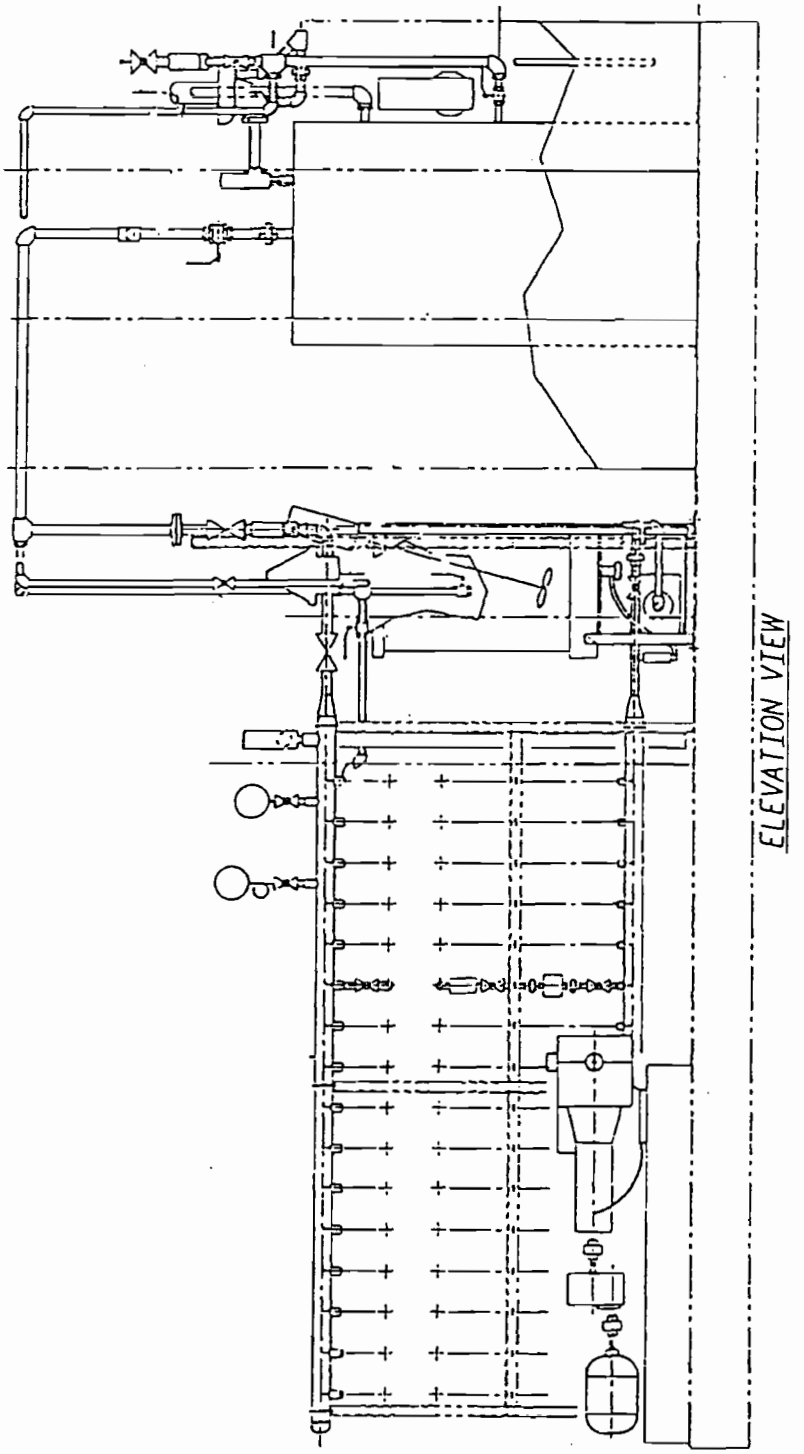
4.1.2 STEAM SUPPLY SYSTEM

The steam header is designed to be supplied with saturated steam at 80 to 125 psig. Line pressure to the steam manifold is reduced to between 50 and 60 psig by a single pressure control valve, after which it is used to heat the sulfur storage and supply system. Process steam may be used for either primary or backup heating. Process steam temperatures must be reduced to about 300°F before the steam enters the manifold.

On units where process steam is not used for primary heating, a small electric package boiler is included which supplies 80 to 100 psig saturated steam (Figure 4-2). The package boiler, including a water treatment unit, will normally be mounted on the skid with the steam and condensate valve rack.

The skid mounted valve rack is connected to steam and condensate manifolds (Figure 4-2). The following indicators and alarms are provided on the steam supply system:

- Temperature,
- Low temperature alarm (250°F),



THE CHEMITHON CORPORATION

Steam and Condensate Skid

FIGURE 4-2

- High temperature alarm (310°F),
- Pressure,
- Low pressure alarm (45 psig).

Each tank steam coil and each steam jacketed component of the system has a dedicated set of valves for:

- Steam supply,
- Steam trap,
- Strainer with drain,
- Condensate return.

With these valves, each line can be individually isolated from the system for maintenance.

4.1.3 METERING SYSTEM

Each unit has a pair of submerged pumps to supply molten sulfur to its sulfur burner (Figure 4-3). Either pump can be in service; the other remains on standby. The sulfur flow rate is modulated by varying the speed of the feed pump. The control mechanism for each pump is a variable speed electric motor mounted on top of the storage tank. A drive shaft connects each motor to its respective pump.

The sulfur flow rate is measured by a mass flow meter. The meter is mounted on top of the storage tank near the pump motors. A pneumatic block valve and spring loaded check valve are included downstream of the flow meter to prevent a backflow of sulfur when the unit is off line.

4.2 PROCESS AIR SUPPLY SYSTEM

Process air is supplied by a single, lobe-type, positive displacement blower. A variable speed electric motor is used for the drive mechanism and to control the airflow rate. The blower compresses filtered air to about 5 psig for process needs.

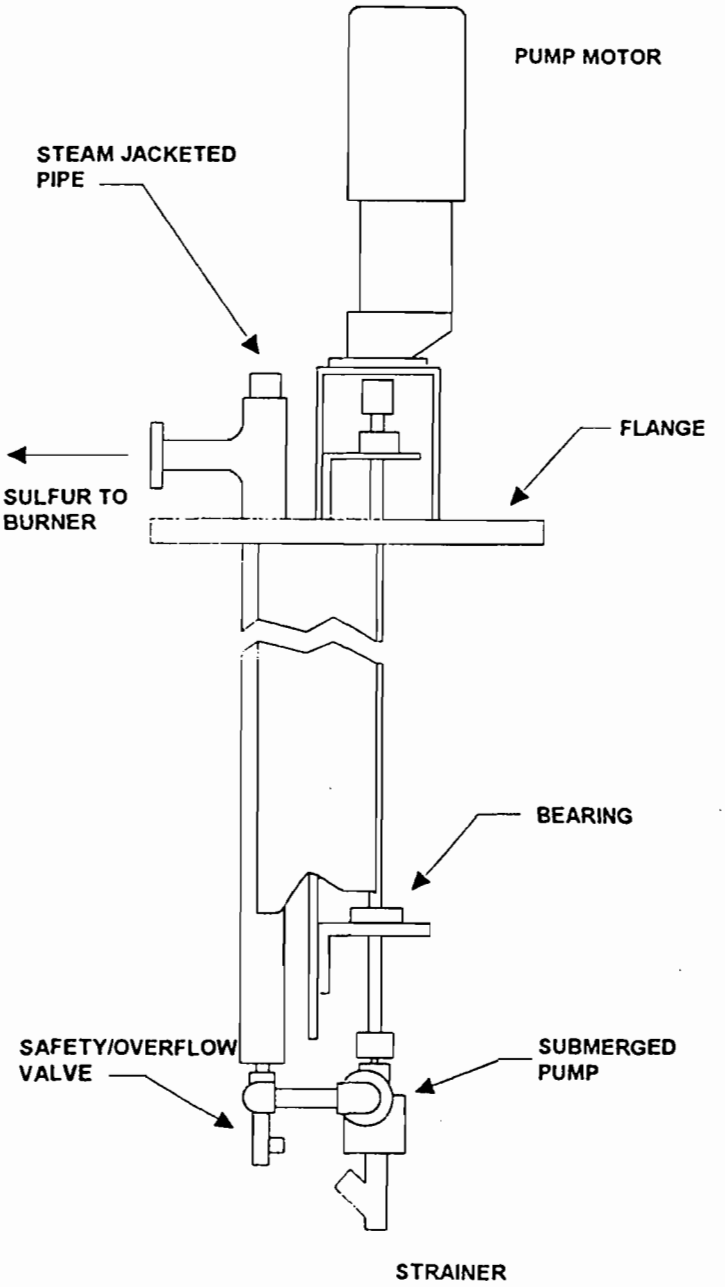


FIGURE 4-3	Sulfur Pump	THE CHEMITHON CORPORATION

The unit is equipped with an air heater to raise the temperature of the combustion air used in the sulfur burner (Figure 4-4). Hot air is also used to heat the system during startup and standby operations. The outlet temperature is controlled by varying the power input to electric heating elements. The needs for air heating vary, depending on conditions in the sulfur burner.

During startup, air is heated to about 900°F to preheat the sulfur burner and converter. At partial loads, some air heating may be required to bring additional energy into the burner for complete combustion. When heat release rates from the combustion process are sufficient, the air heater is turned off.

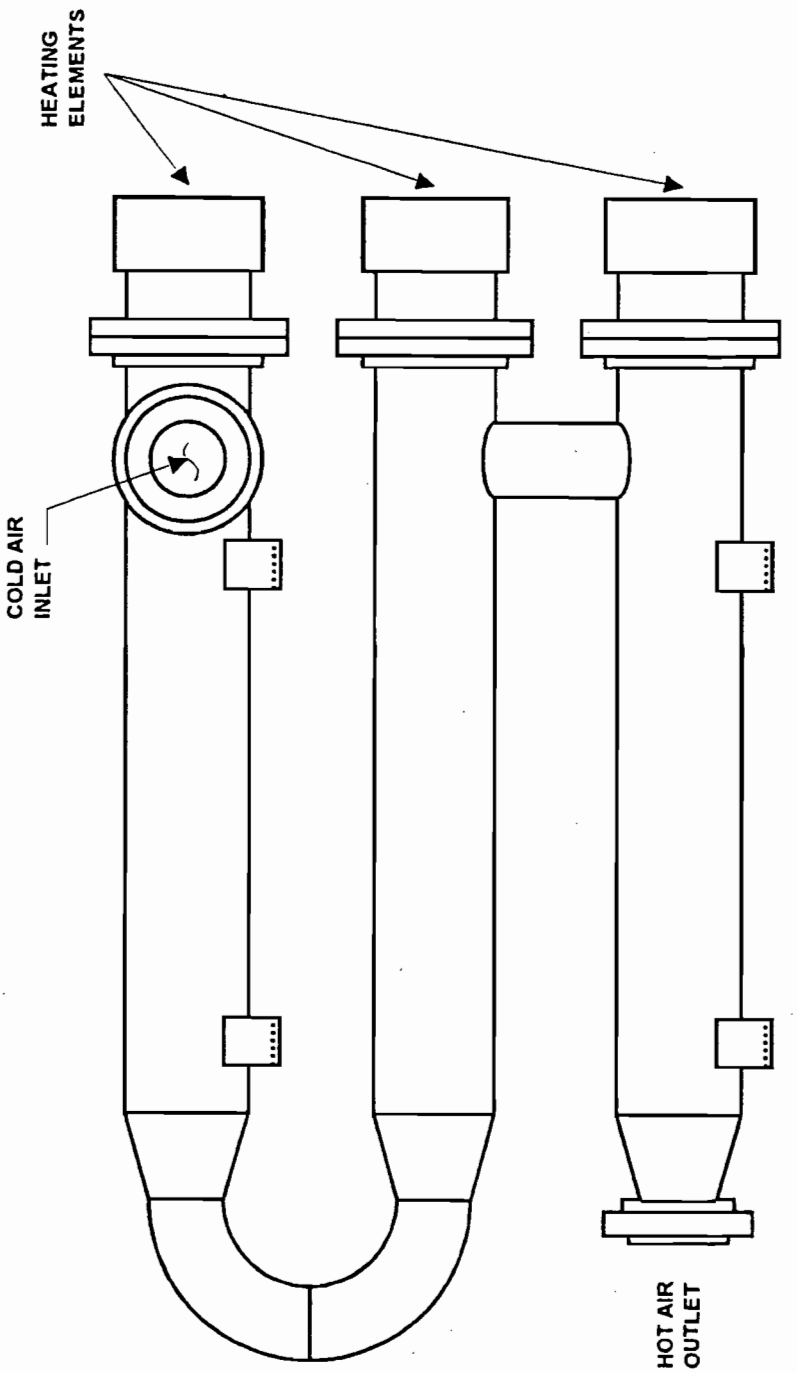
Process air is also used for interstage cooling in the SO_3 converter (Figure 4-5). The gas temperature is tempered by dilution with cold process air. This is necessary to maintain optimum temperatures for catalytic conversion of SO_2 to SO_3.

The following indicators and alarms are provided on the process air supply system:

- Blower inlet low pressure alarm (-20 in. wg),
- Blower outlet pressure,
- Blower outlet high pressure alarm (6 psig),
- Airflow rates,
- Air heater outlet temperature,
- Heater element temperatures,
- Heater element high temperature alarm.

4.3 SULFUR BURNER

A typical sulfur burner is illustrated in Figure 4-6. Metered sulfur and combustion air are injected into the combustion chamber through a trickle burner. The molten sulfur falls onto a matrix of fire bricks. The brick geometry is designed to "stretch" the contact surface area between the fuel and combustion air (oxygen). The sulfur burns in a cascade of pools and falling films over the array of fire bricks.



THE CHEMITHON CORPORATION

Process Air Heater

FIGURE 4-4

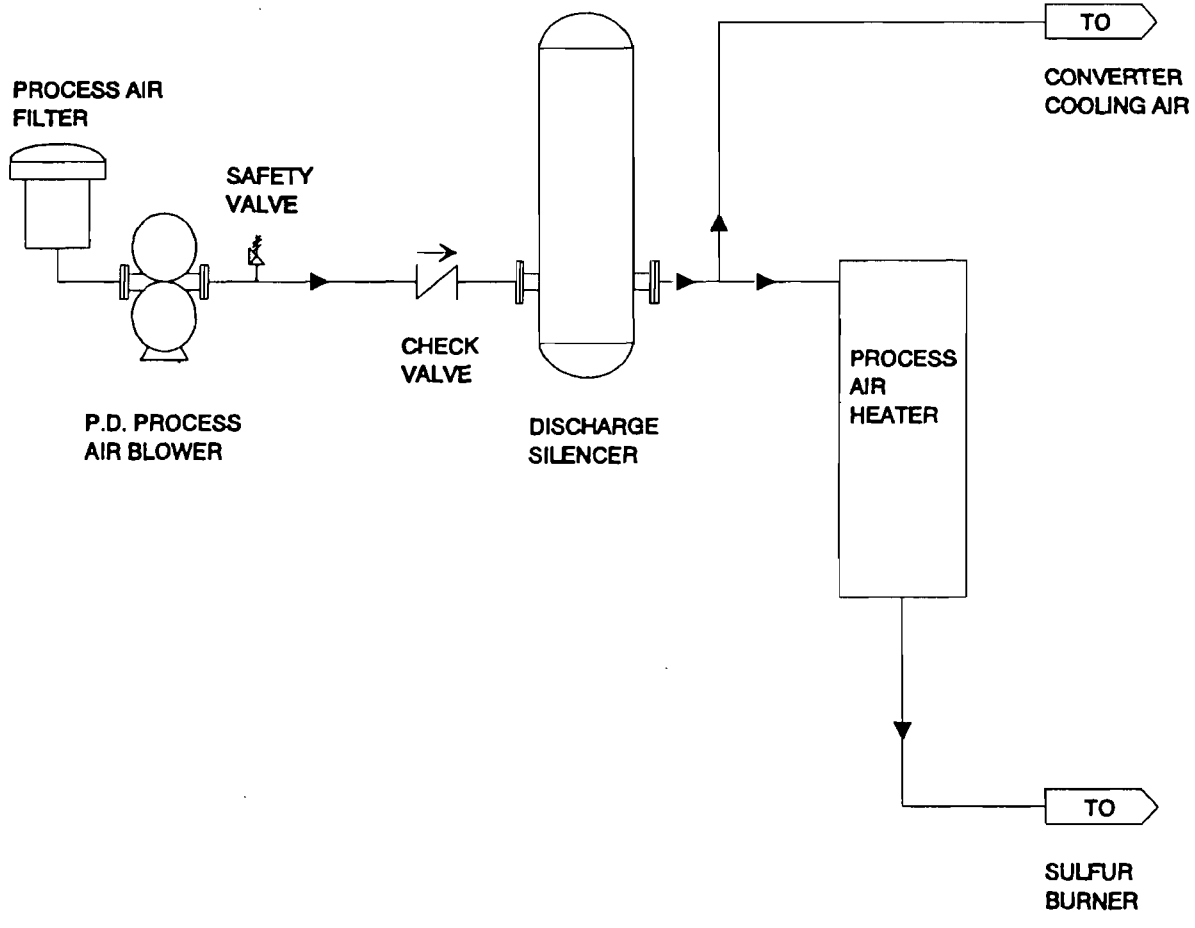


FIGURE 4-5	Process Air System	THE CHEMITHON CORPORATION

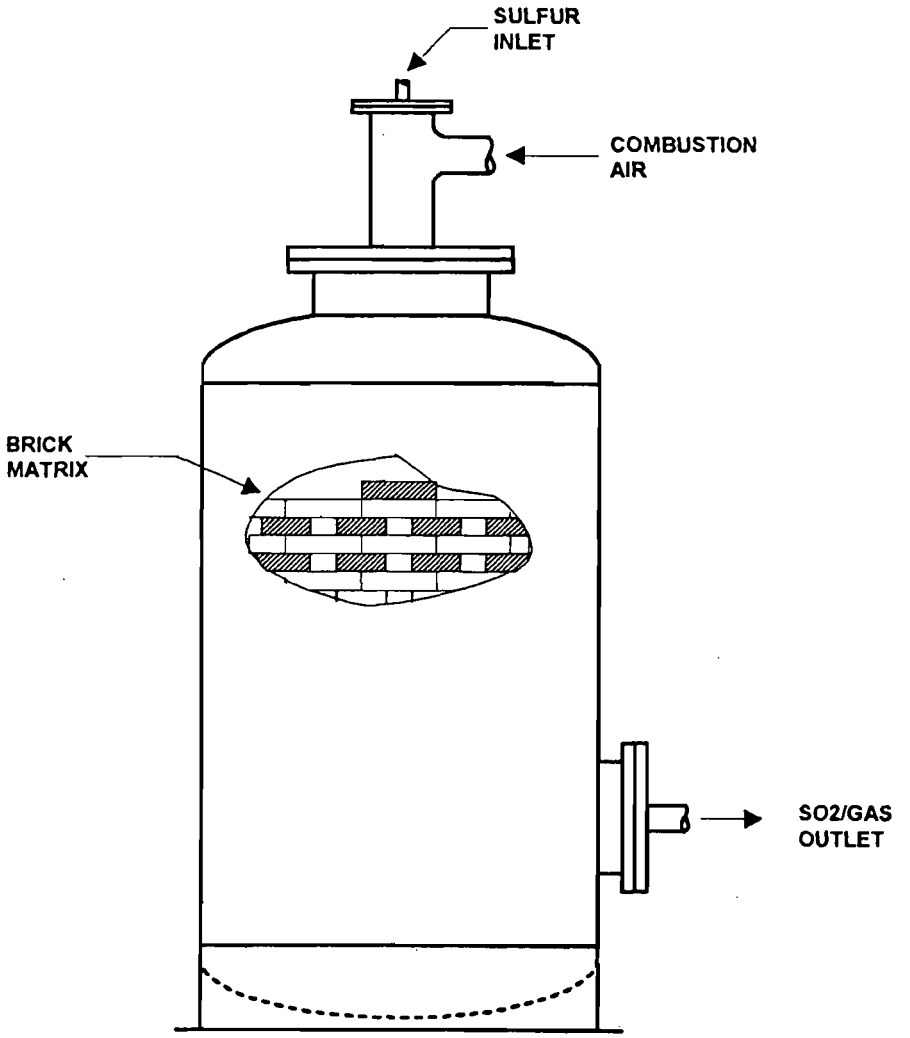


FIGURE 4-6	Sulfur Burner	THE CHEMITHON CORPORATION

The interleaved brick arrangement allows high rates of sulfur vaporization and rapid mixing with combustion air. The cavity near the exit of the burner ensures combustion of any unburned sulfur.

The sulfur is burned with high excess air to limit the exit gas temperatures to about 1250°F and to ensure complete combustion within a relatively small combustion zone. This limits the SO_2 concentration to about 7% on a volumetric basis at full load.

The following indicators and alarms are provided on the sulfur burner:

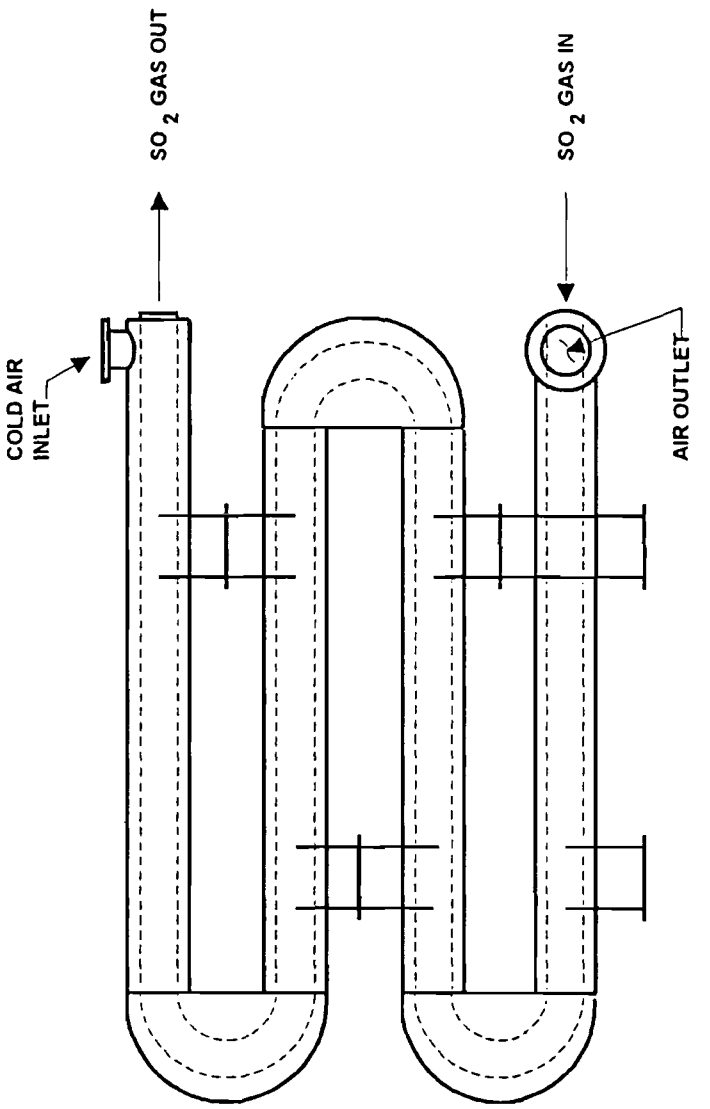
- Combustion air temperature,
- Outlet gas temperature,
- Outlet high temperature alarm (1350°F),
- Outlet high temperature trip (1400°F).

4.4 SO_2 COOLER

The temperature of the hot gas mixture entering the catalytic converter must be maintained between 750°F and 825°F for optimum conversion of SO_2 to SO_3. The combustion gases at the burner outlet will be hotter than this over a wide range of operating conditions. To bring the gas temperature down to acceptable levels, a gas cooler is provided.

The SO_2 cooler is a concentric tube heat exchanger (Figure 4-7). The SO_2 combustion gases flow through the inner tube and cold air flows through the annulus between the inner and outer tubes. A counterflow arrangement is used, where the cold air enters at the same end which the cooled gas mixture exits. This is more efficient than a parallel flow arrangement in which the cold air and hot gases enter at the same end.

The flow of air is driven by a constant speed centrifugal fan. The airflow rate is controlled by varying the position of an in-line damper. The damper setting is determined according to the temperature of the SO_2/gas mixture entering the SO_3 converter. An alarm activates if the outlet temperature exceeds 1000°F, indicating a failure in the SO_2 cooler. Excessive temperatures could damage the converter and interconnecting piping.



THE CHEMITHON CORPORATION

SO2 Cooler

FIGURE 4-7

4.5 SO_3 CONVERTER

Due to nature or chemical equilibrium, only a small percentage of the SO_2 produced in the sulfur burner will combine with excess oxygen to form SO_3. Further oxidation of SO_2 must be accomplished by other means. The methods used in the Chemithon system involve elevated combustion and converter pressures in combination with catalytic processes to drive the reaction shown below to the right.

$$2SO_2 + O_2 \leftrightarrow 2SO_3$$

A typical converter is illustrated in Figure 4-8. The catalytic conversion takes place in two stages. Depending on which catalyst is used, the minimum temperature required to initiate the reaction ranges from 700°F to 800°F. The heat released during the reaction limits the amount of SO_2 converted in the first stage to about 70%. The hot gases leaving this stage reach maximum temperatures of about 1100°F before they equilibrate.

The gases are cooled between the first and second stages by dilution with unheated process air. The amount of dilution air is adjusted to attain a gas temperature at the second stage inlet similar to that in the first stage inlet. This reduced temperature, along with high oxygen availability, yields a conversion rate for the remaining SO_2 in the second stage in excess of 80%.

The combined first and second stage conversion rate is on the order of 95%. The gas temperature at the second stage outlet is about 850°F. This is less than the outlet temperature of the first stage because less SO_2 is converted in the second stage and the total mass flow rate is higher due to the addition of air.

The following indicators and alarms are provided on the SO_3 converter:

- Gas inlet temperature,
- 1st stage inlet temperature,
- 1st stage outlet temperature,
- 2nd stage inlet temperature,
- 2nd stage outlet temperature,

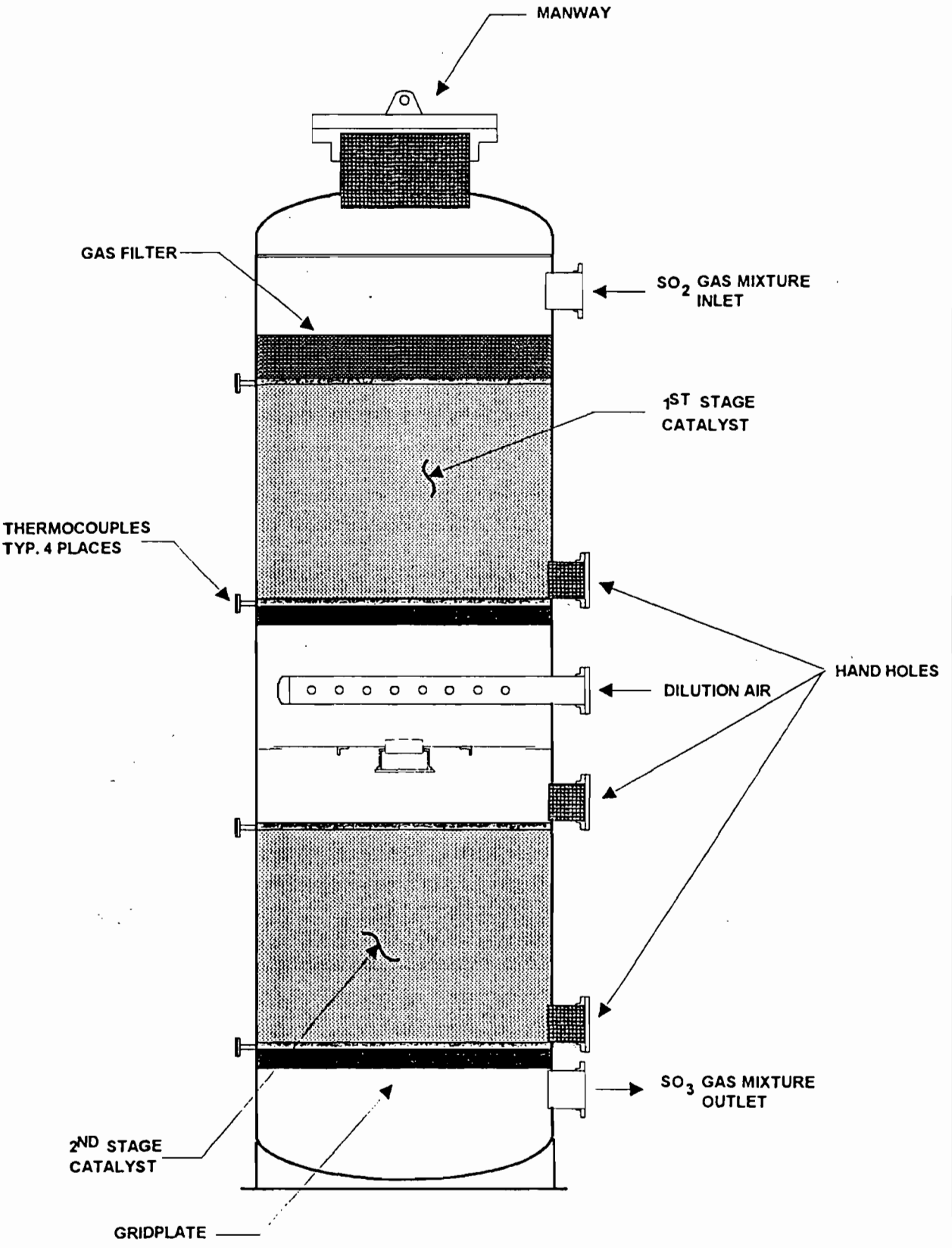


FIGURE 4-8	SO3 Converter	THE CHEMITHON CORPORATION

- High temperature alarm.

4.6 SO_3 INJECTION SYSTEM

The SO_3 gas mixture leaving the converter is transported directly to the flue gas breeching upstream of the electrostatic precipitator. It is important to keep the piping length as short as practical to minimize heat losses. The intent of the system design is to delay acid condensation until the gas mixture is dispersed throughout the flue gas stream. Acids will then form and condense where they will be most effective: on suspended particles as the SO_3 mixes with the colder flue gases.

The SO_3 gas mixture is injected into the flue gas stream through an array of nozzles. A typical arrangement is shown in Figure 4-9. A typical injector is illustrated in Figure 4-10. A relatively large injector header combined with a high pressure loss across the injector orifices assures a uniform distribution of SO_3 between injector jets. High velocity jets provide good penetration and mixing into the crossflow of flue gases.

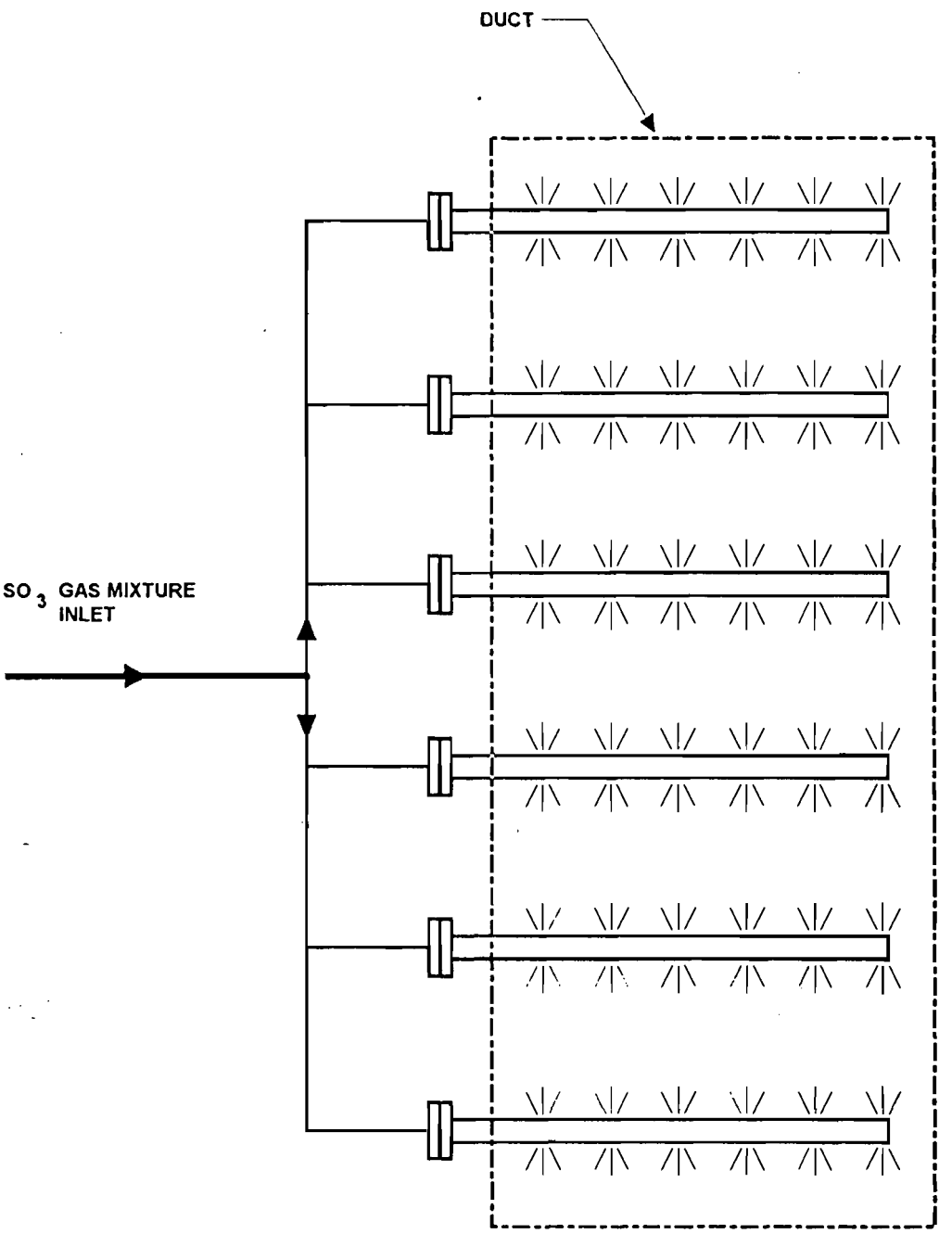


FIGURE 4-9	SO3 Injector Nozzle Array	THE CHEMITHON CORPORATION

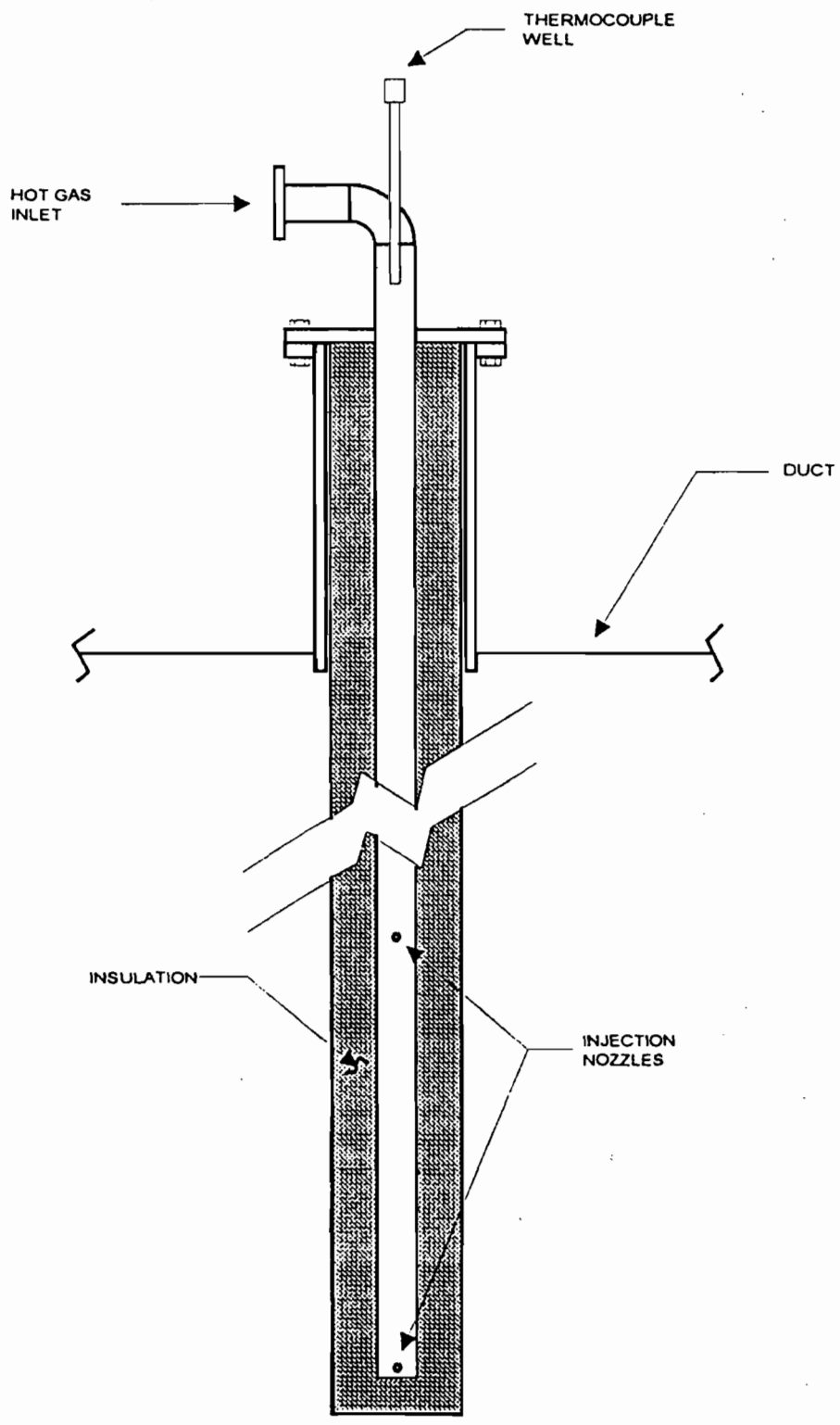


FIGURE 4-10	Injector Assembly	THE CHEMITHON CORPORATION

Crist Unit 7 Ammonia Injection System

The ammonia injection system at Plant Crist is a supplemental apparatus installed Unit 7 in order to optimize the performance of the electrostatic precitator by affecting a change in particulate resistivity. The effects of the system are especially effective when the lower sulfur content coals are utilized.

The results of this technology have proven successful in decreasing the amount of particulate emissions and reducing smokestack opacity. Based on these results, considerations are being made to enhance and enlarge this system.

The eventual final version would consist of the following: An ammonia storage tank, an air blower assembly, a piping network from the tank to the blower and a piping network from the blower to 10 injection ports which would be located in the inlet duct of the precipitator. Control of the various operational valves would be maintained from the power plant control room. The estimated usage rate of ammonia will be between 25 and 40 lb./hr. This injection rate can be fine tuned and it is predicted that carryover will be less than 1 ppm.

EUS-4

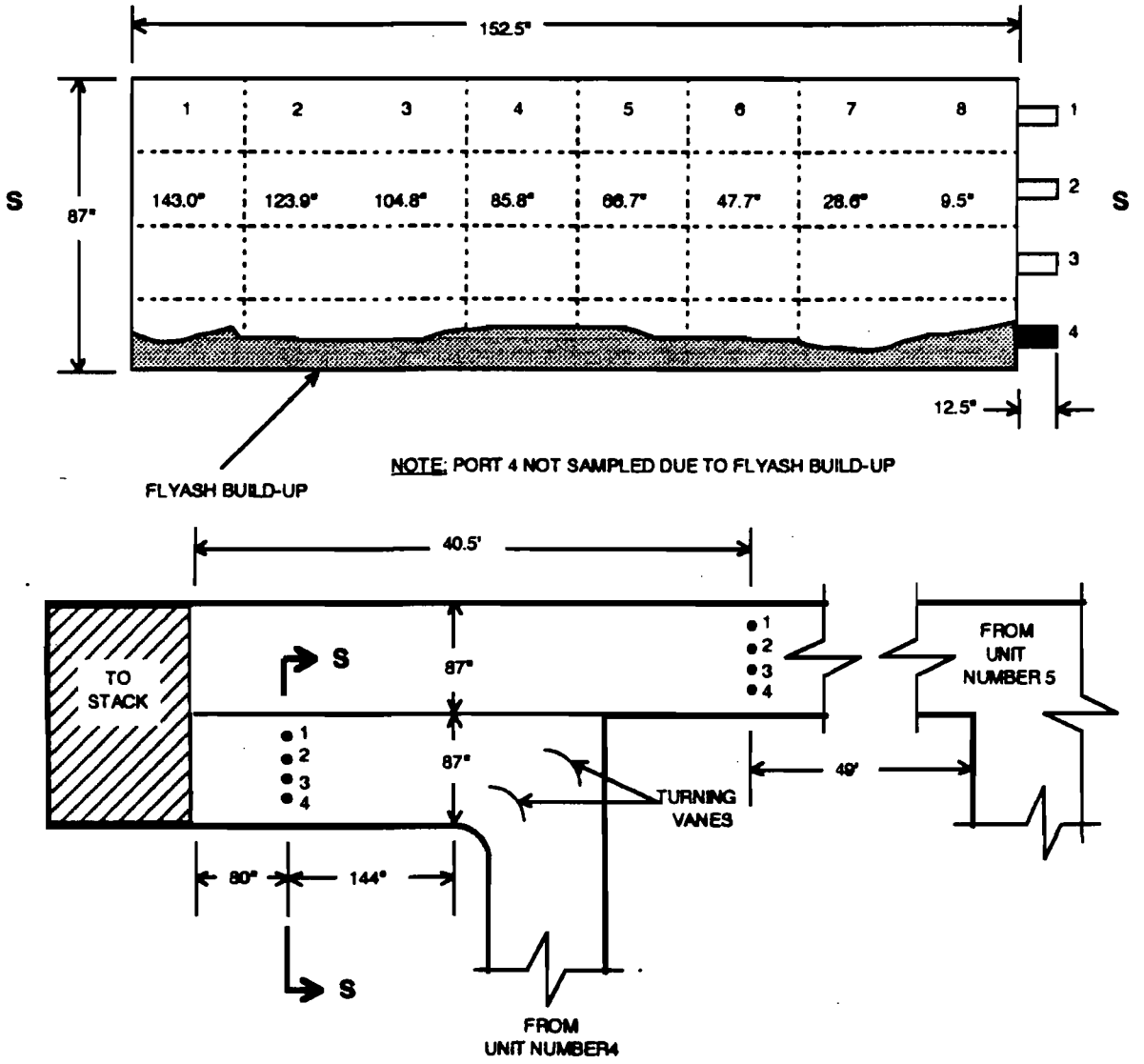
Plant Crist

Unit 4

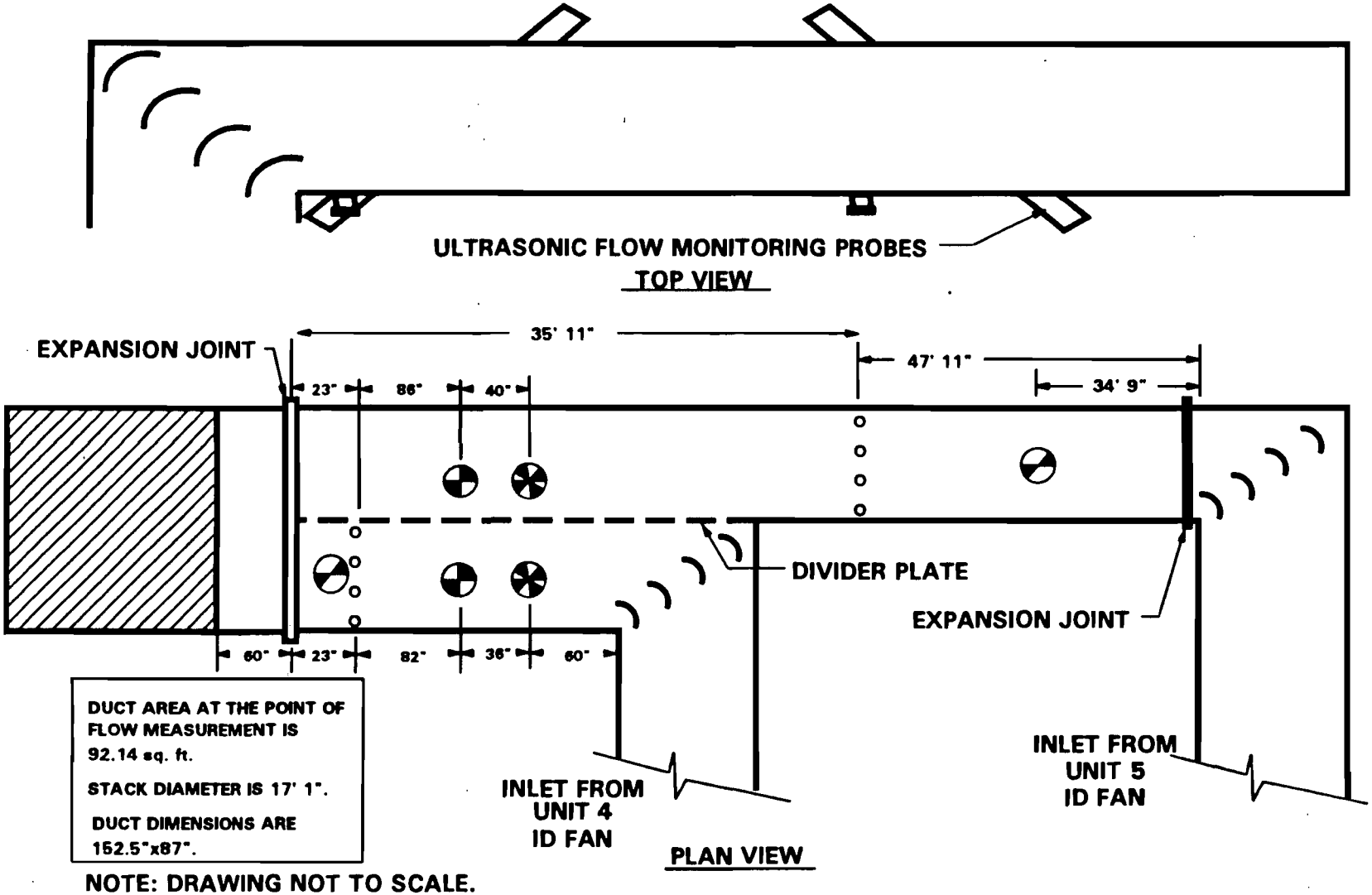
4. SAMPLE POINT LOCATION

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 32 points.

Figure 2. Sample Point Locations



PLANT CRIST S CODE 641
MONITORING PLAN PART 2: MONITORING LOCATION INFORMATION
STEP 2 - SCHEMATIC DIAGRAM - UNITS 4 AND 5
(SIMPLIFIED DUCTWORK DRAWING)



NOTE: DRAWING NOT TO SCALE.

MONITOR LOCATION LEGEND

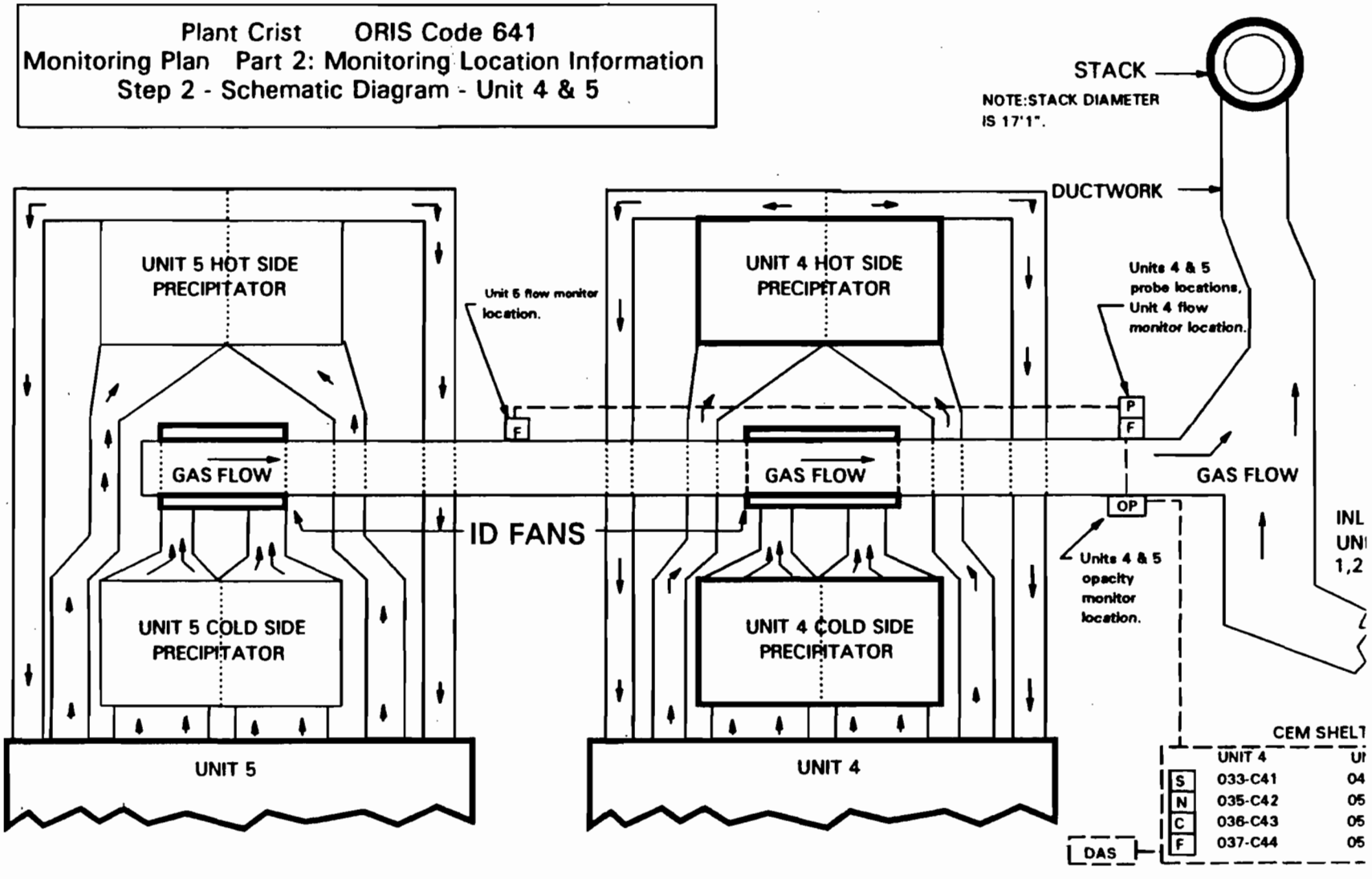
- SO2/NOx/CO2 DILUTION PROBE LOCATIONS.
- OPACITY MONITOR LOCATIONS.
- FLOW MONITOR LOCATIONS.

EQUIVALENT DIAMETERS FOR UNIT 5 TESTING LOCATIONS

	UPSTREAM	DOWNST
FLOW MONITOR LOCATION	5.32	3.76
PARTICULATE/RATA LOCATION	3.89	4.97

Revised Aug.

Plant Crist ORIS Code 641
Monitoring Plan Part 2: Monitoring Location Information
Step 2 - Schematic Diagram - Unit 4 & 5



Revised Aug.

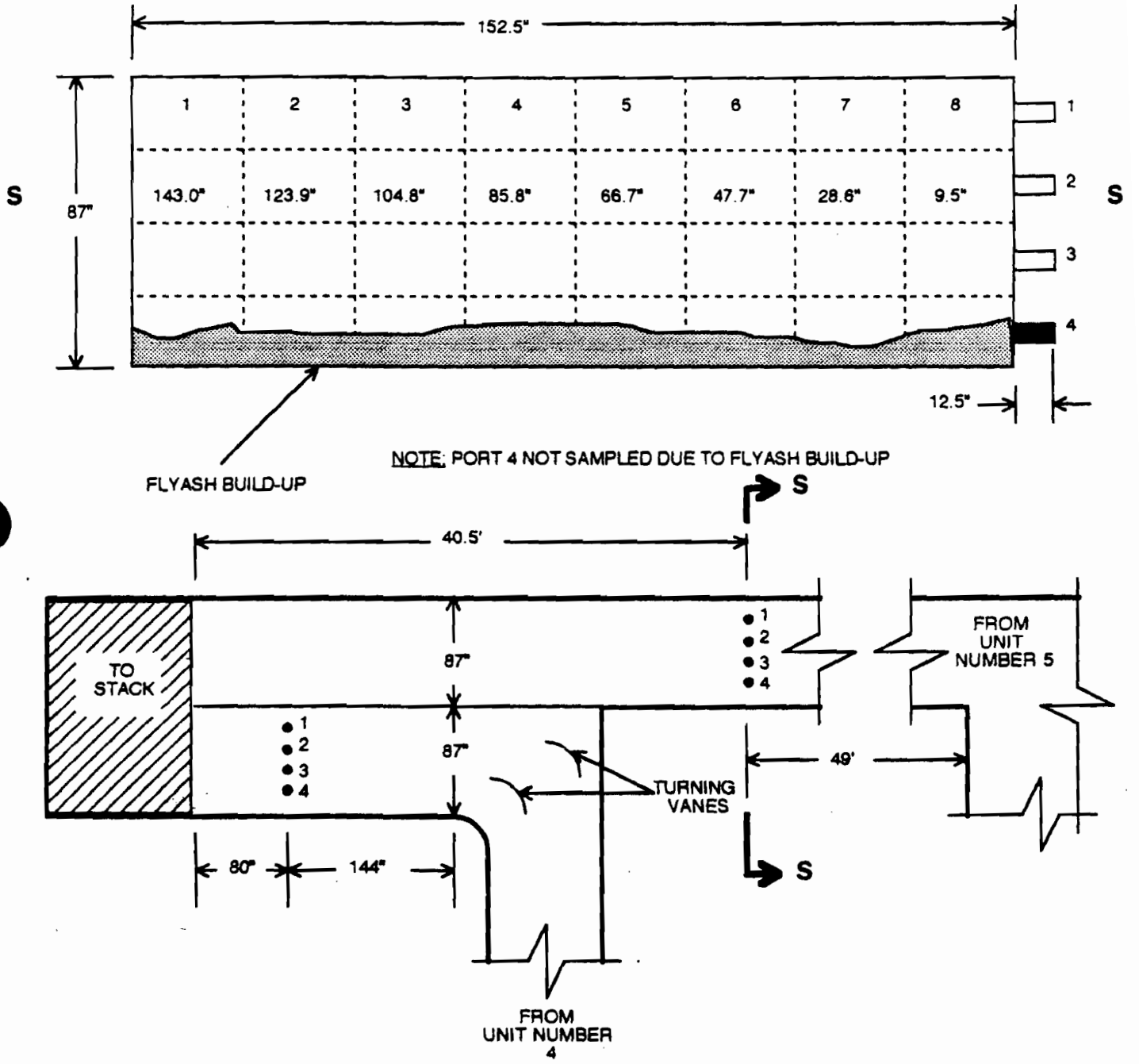
Plant Crist

Unit 5

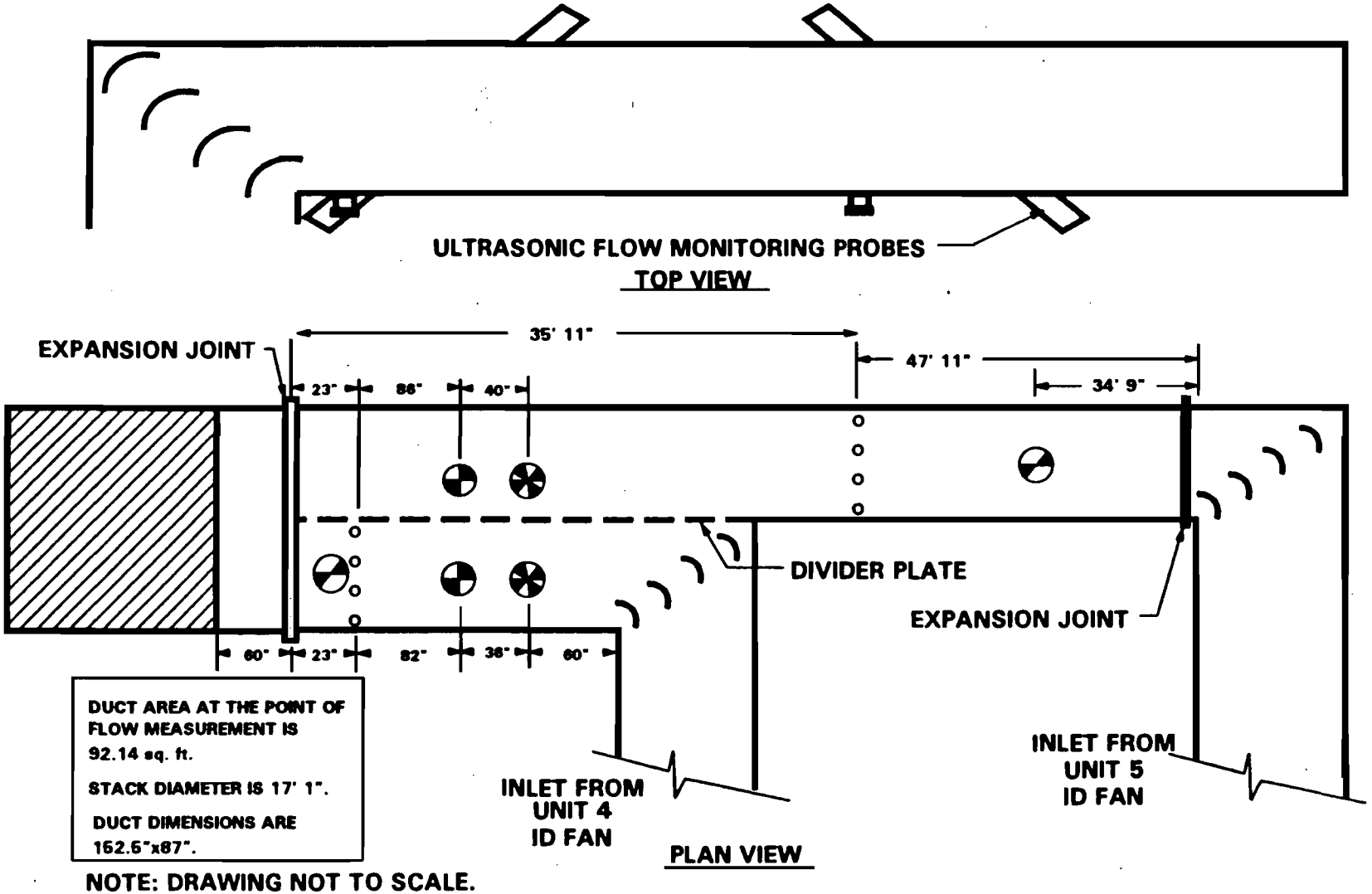
4. SAMPLE POINT LOCATION

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 32 points. Additionally, the duct was checked for absence of cyclonic flow as specified in paragraph 2.4 of Method 1. The sample location meets the cyclonic flow test requirements with a mean rotation angle of 3.083°. The results of the cyclonic flow testing, including the field data sheets, are presented in Appendix A.

FIGURE 2
SAMPLE POINT LOCATIONS
GULF POWER COMPANY
PLANT CRIST, UNIT 5



PLANT CRIST IIS CODE 641
MONITORING PLAN PART 2: MONI ORING LOCATION INFORMATION
STEP 2 - SCHEMATIC DIAGRAM - UNITS 4 AND 5
(SIMPLIFIED DUCTWORK DRAWING)



NOTE: DRAWING NOT TO SCALE.

MONITOR LOCATION LEGEND

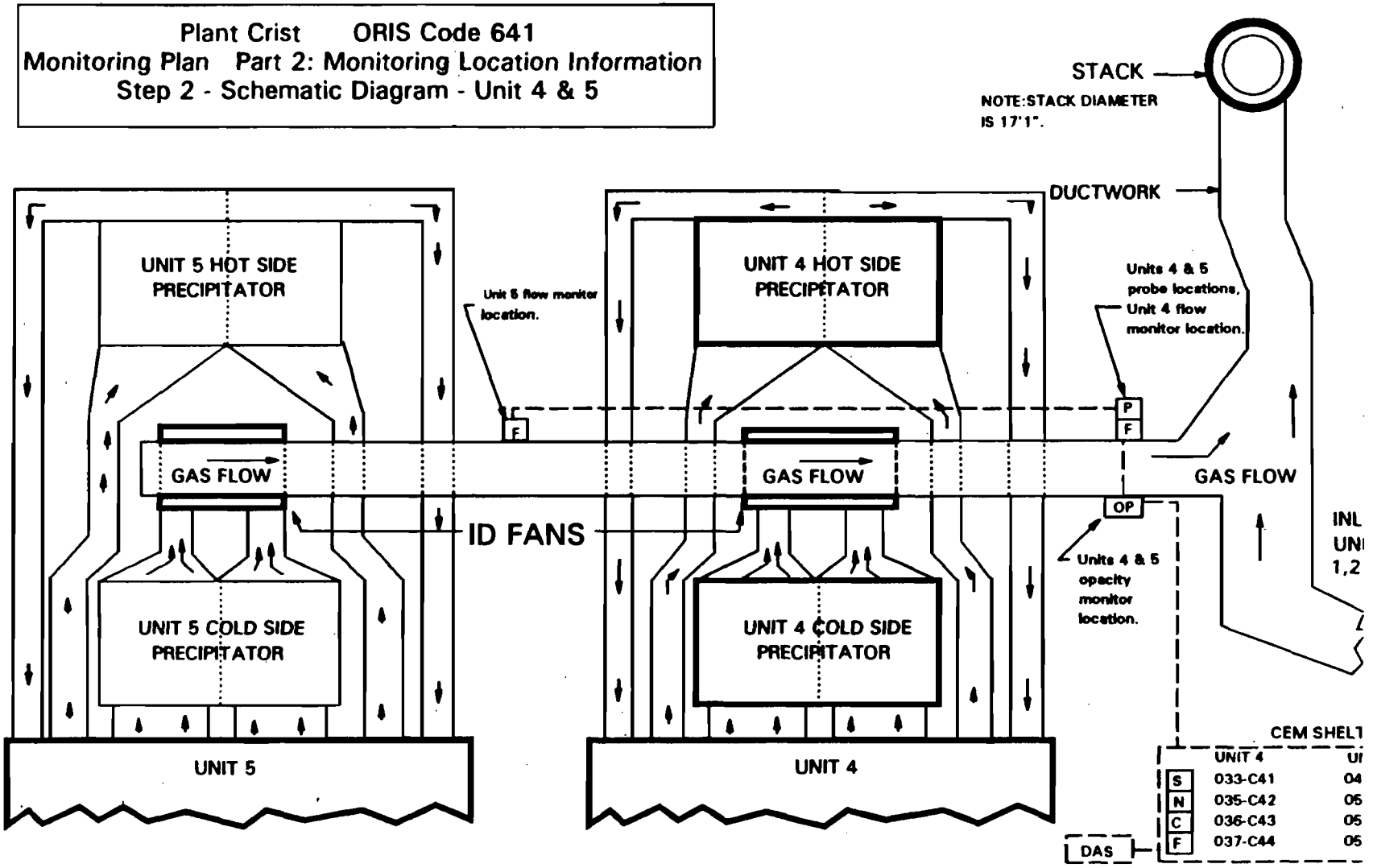
- SO2/NOx/CO2 DILUTION PROBE LOCATIONS.
- OPACITY MONITOR LOCATIONS.
- FLOW MONITOR LOCATIONS.

EQUIVALENT DIAMETERS FOR UNIT 5 TESTING LOCATIONS

	UPSTREAM	DOWNST
FLOW MONITOR LOCATION	5.32	3.76
PARTICULATE/RATA LOCATION	3.89	4.97

Revised Aug.

Plant Crist ORIS Code 641
Monitoring Plan Part 2: Monitoring Location Information
Step 2 - Schematic Diagram - Unit 4 & 5



Revised Aug.

Plant Crist

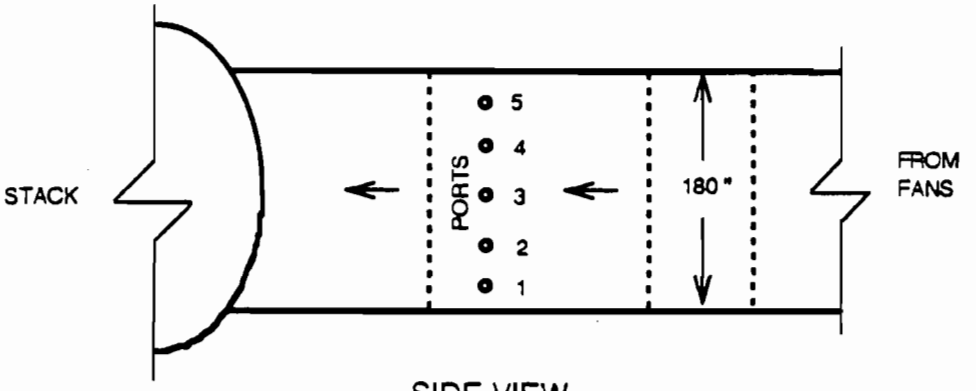
Unit 6

4. SAMPLE POINT LOCATION

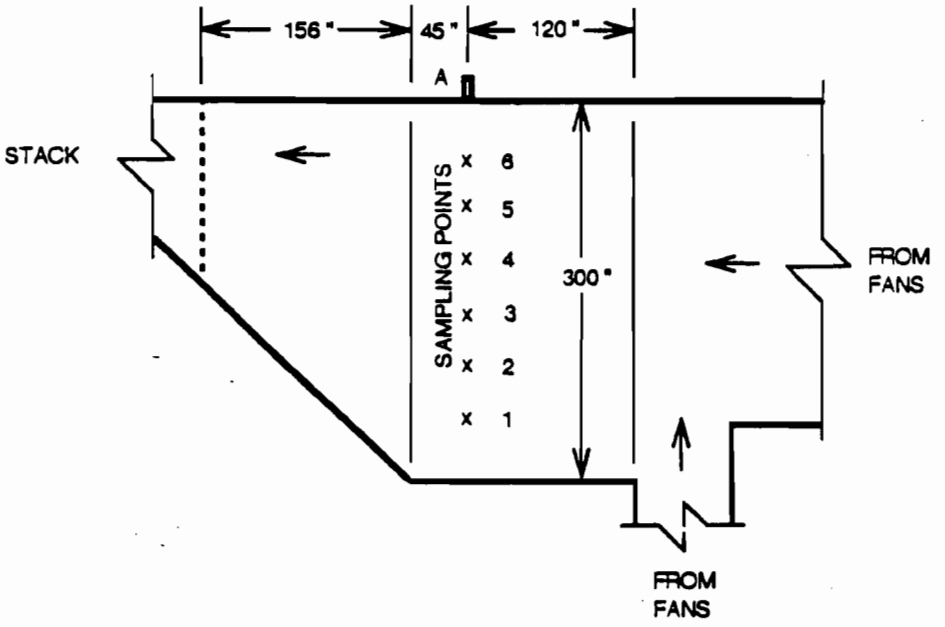
The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points. Additionally, the duct was checked for absence of cyclonic flow as specified in paragraph 2.4 of Method 1.

FIGURE 2
SAMPLE POINT LOCATIONS
GULF POWER COMPANY
CRIST PLANT, UNIT # 6

TOP VIEW

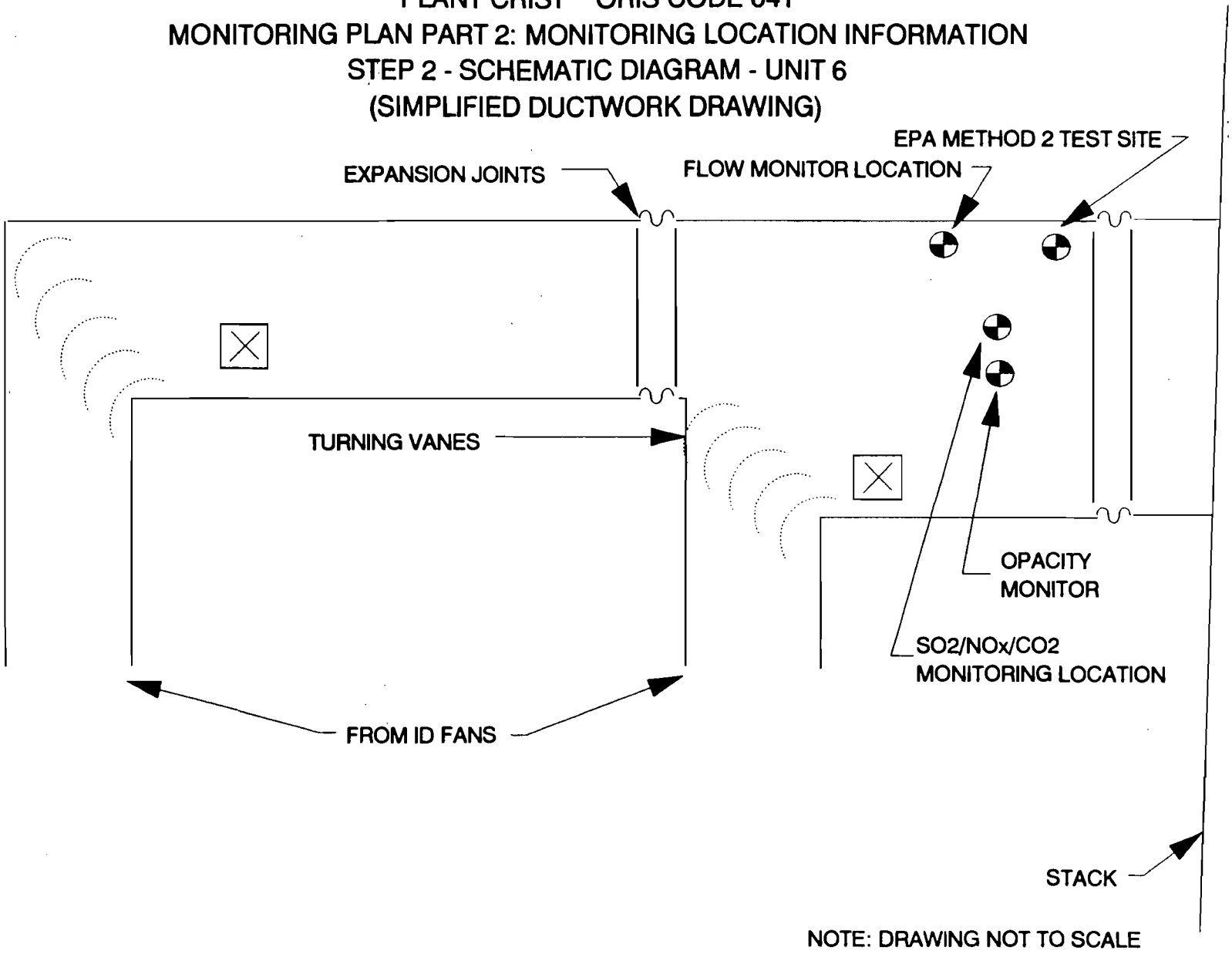


SIDE VIEW



SAMPLING POINT NUMBER	DISTANCE IN INCHES
1	25
2	75
3	125
4	175
5	225
6	275

PLANT CRIST ORIS CODE 641
MONITORING PLAN PART 2: MONITORING LOCATION INFORMATION
STEP 2 - SCHEMATIC DIAGRAM - UNIT 6
(SIMPLIFIED DUCTWORK DRAWING)

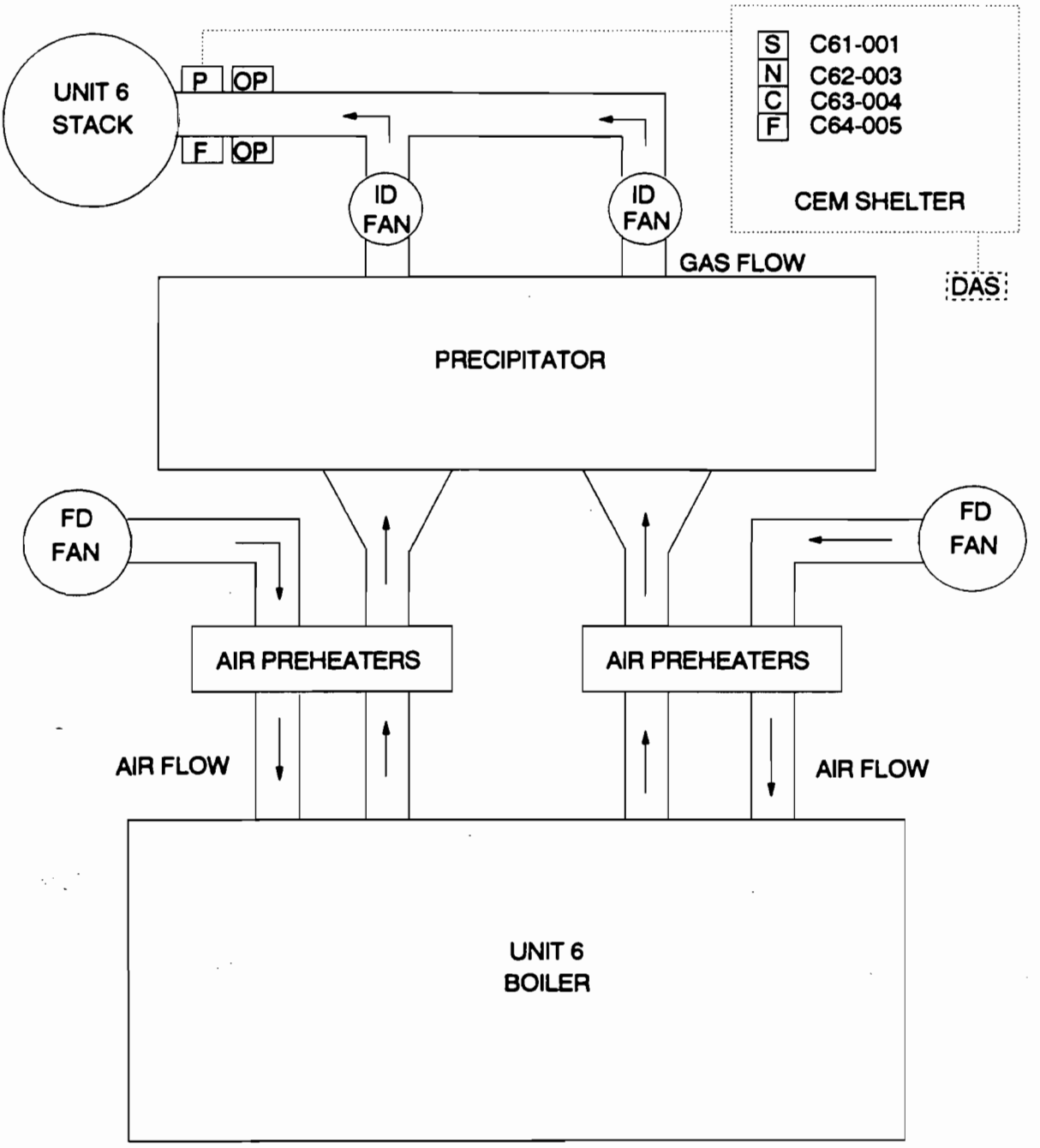


NOTE: DRAWING NOT TO SCALE

Plant Crist ORIS Code 641

Monitoring Plan Part 2: Monitoring Location Information

Step 2 - Schematic Diagram - Unit 6



Note: Unit 6 Opacity controller is located in the CEM shelter located at the base of Unit 6 and 7 stack.

Plant Crist

Unit 7

4. SAMPLE POINT LOCATIONS

The sample point locations and outlet duct schematic are presented in Figure 2. Method 1 was used for determination of the number and location of sampling points. The minimum number of points (25) required for rectangular stacks was met by sampling a total of 30 points.

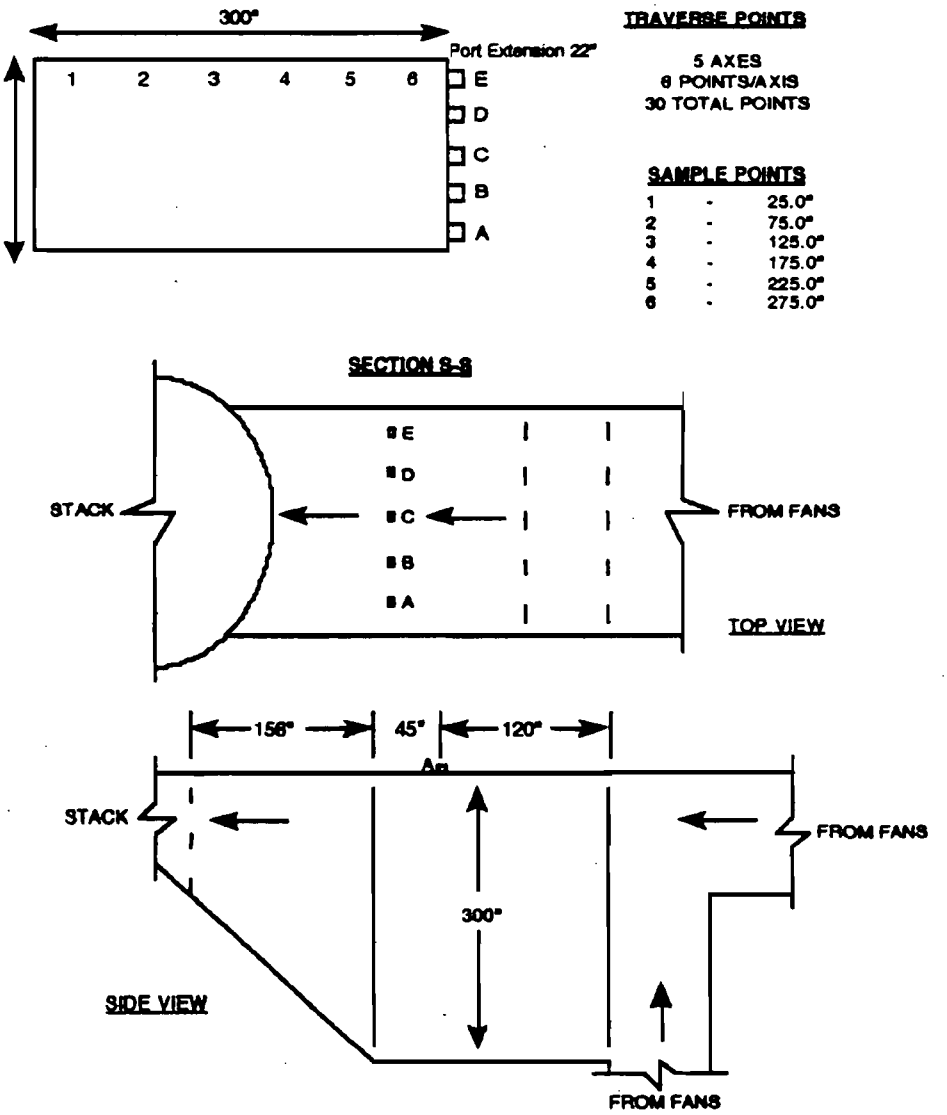


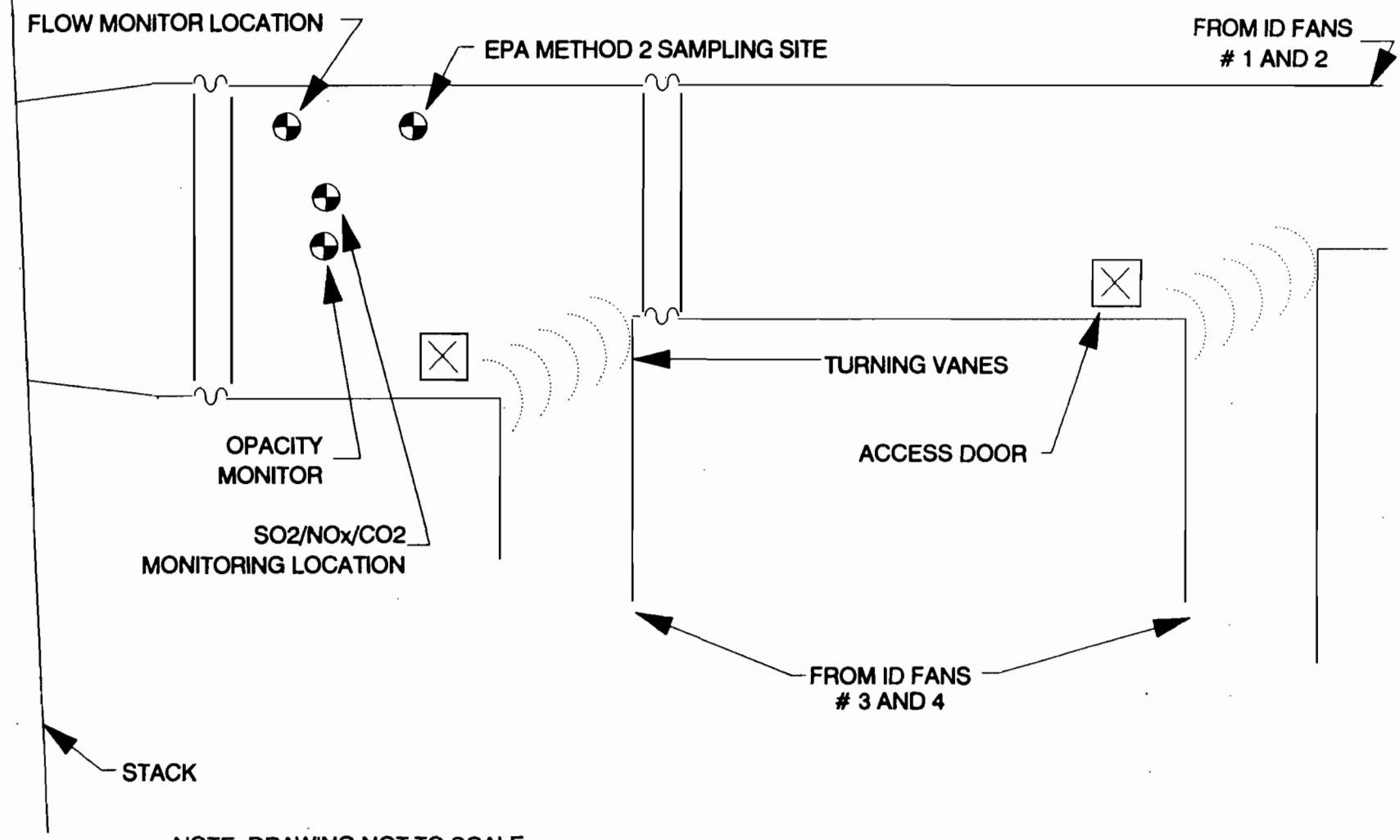
Figure 2. Sample Point Locations

PLANT CRIST ORIS CODE 641

MONITORING PLAN PART 2: MONITORING LOCATION INFORMATION

STEP 2 - SCHEMATIC DIAGRAM - UNIT 7

(SIMPLIFIED DUCTWORK DRAWING #2)

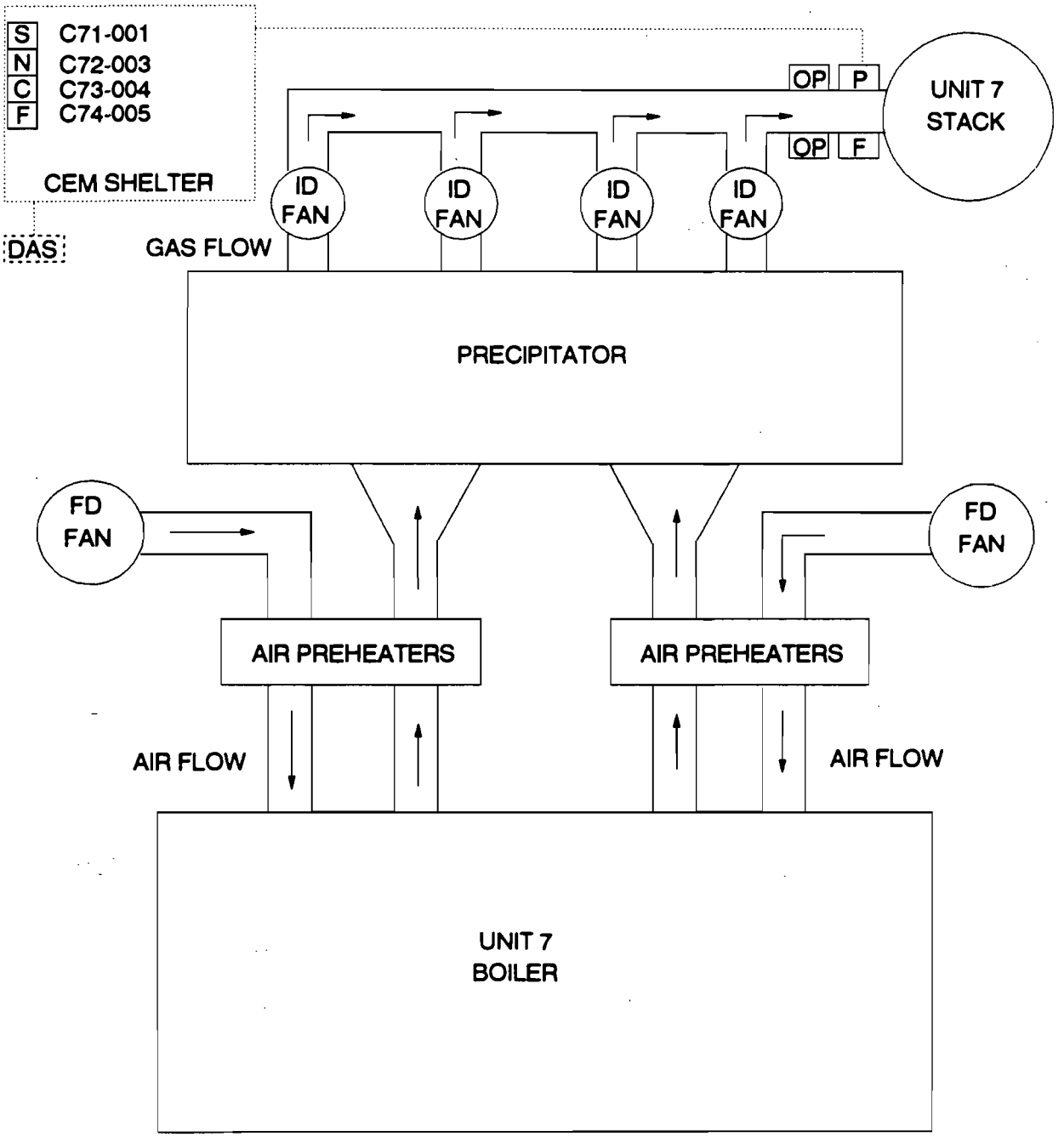


NOTE: DRAWING NOT TO SCALE

Plant Crist ORIS Code 641

Monitoring Plan Part 2: Monitoring Location Information

Step 2 - Schematic Diagram - Unit 7



Note: Unit 7 Opacity controller is located in the CEM shelter located at the base of Unit 6 and 7 stack.