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JAN 20 1995
Bureau of
Air Regulation

January 11, 1995

Mr. Willard Hanks
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: United States Sugar Corporation -
Clewiston Boiler No. 4 AO26-223258

Dear Mr. Hanks:

In response to the Florida Department of Environmental Protection (FDEP) letter dated December 6, 1994, I am providing additional information regarding United States Sugar Corporation (U.S. Sugar) Clewiston Boiler No. 4. The Department's letter requested four items of new information not previously requested. This information does not relate solely to emissions from Clewiston Boiler 4, but also relates to differences and/or similarities between Clewiston Boiler No. 4 and the other three PSD boilers in the sugar industry for which the CO emission factors have been corrected to reflect Method 10 testing. The attached table presents the pertinent information on each of these boilers at the time the CO emission limits were revised.

Once the CO emission level has been established for Clewiston Boiler No. 4, only one PSD boiler permit will need to be revised to complete the Department's process for correcting the CO emission levels reflected in these permits when first issued. This process was initiated by the Department in 1989 following discussions among the Department, sugar industry representatives, and U.S. Environmental Protection Agency (EPA) Region IV about the need to correct CO emission limits to overcome discrepancies between CO emission levels measured using Method 10 and the emission factors that were thought to reflect accurately the CO emissions from implementation of best available control technology (BACT) as approved in these PSD permits. That process was not designed, nor was there any discussion of a need, to substitute new control technology requirements for the Department's contemporaneous BACT determination. Rather, the program was designed to collect data during actual operation using Method 10 to provide a basis on which the Department could establish a reasonable emission factor for each boiler. That is what was done previously with Osceola Boilers Nos. 3 and 6 and essentially what was done with Atlantic Boiler No. 5.

Although U.S. Sugar is willing to provide the requested information, there appears to be no reason to depart in mid-stream from the process initiated by the Department before all of the permits have been corrected as planned using Method 10 data collected. [Any other general concerns about the operation of these boilers should be addressed in a separate generic proceeding rather than in conjunction with the issuance of this specific permit modification for one boiler.] Moreover, the information provided in this letter shows no need to take any different approach. The information confirms that Clewiston Boiler No. 4 is similar in all important respects to Osceola Boiler No. 6 and Atlantic Boiler No. 5 and should be granted a similar 6.5 lb/MMBtu CO emission limit.

KBN ENGINEERING AND APPLIED SCIENCES, INC.

6241 Northwest 23rd Street, Suite 500, Gainesville, Florida 32653-1500, 904-336-5600 FAX 904-336-6603
5405 West Cypress Street, Suite 215, Tampa, Florida 33607, 813-287-1717 FAX 813-287-1716
1801 Clint Moore Road, Suite 105, Boca Raton, Florida 33487, 407-994-9910, FAX 407-994-9393
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The Method 10 permit levels established for each of these other boilers were set above the results of all of the tests conducted under the Department's correction process. U.S. Sugar conducted similar testing and proposed to set the permit level at 9.0 lbs/MMBtu, a level that would be achieved only 90 percent of the time based on the test results submitted to the Department on April 7, 1994 (copy enclosed). Setting the permit level at 6.5 lbs/MMBtu, (the approximate mean of the data from Boiler No. 4) would represent a more stringent approach than was taken with any of the other boilers for which the Method 10 correction has been made. Yet U.S. Sugar is prepared to accept this permit level.

Responses to the Department's latest request for new information are as follows:

1. Design information for each boiler is presented in Table 1. (The information on the Atlantic and Osceola boilers were received from personnel at those facilities, but this information has not been independently verified.) As indicated in Table 1, the basic design of Clewiston Boiler No. 4 is very similar to the design of both Atlantic Boiler No. 5 and Osceola Boiler No. 6. All three of these boilers are of the traveling grate design, and have heat release rates of approximately 30,000 Btu/hr-ft^3.

   In the case of Osceola Boiler 3, the heat release rate is very similar to the other boilers. However, this boiler was a cell type boiler. The cell type boiler has internal walls in the furnace, forming several "cells." The fuel is combusted in piles formed in the cells. Ash is manually removed from this type of boiler. The cell type design is much different from the traveling grate design of the other three boilers. This is the only distinguishing feature of Osceola Boiler No. 3 that would result in different CO emissions. There is no difference in the heat release rate that would result in different CO emissions.

2. A compilation of the test data used as the basis for the Department's revision of the CO emission rate for Osceola Boilers Nos. 3 and 6 is available and is attached. The test results are in terms of lb/MMBtu. The steam rates and heat input rates during testing are not readily available; however, it is assumed that the tests were conducted at or near the maximum permitted rates since the tests were conducted for compliance purposes.

   No CO testing was performed on Atlantic Boiler No. 5 prior to its CO emission limit being revised. Atlantic Sugar relied solely on the testing performed at Osceola as the basis for proposing a revised CO emission limit. Since the Osceola Boiler No. 6 and Atlantic Boiler No. 5 are similar in design, Atlantic proposed and the Department granted Atlantic the same 6.5 lb/MMBtu permit limit that Osceola had obtained for its Boiler No. 6.

3. A compilation of all Method 10 CO test data for Clewiston Boiler No. 4, covering the period February 2, 1990 through March 4, 1994, was provided to the Department in U.S. Sugar's June

27, 1994, submittal[1]. This information, which is again attached for your convenience, reveals a CO emissions range for Clewiston Boiler No. 4 of 1.53 lb/MMBtu to 17.49 lb/MMBtu, with an average of 6.48 lb/MMBtu[2]. The attached Table 1 also shows a comparison of the CO emission levels from Clewiston Boiler No. 4, Osceola Boiler No. 3, and Osceola Boiler No. 6. The CO data for the Osceola boilers represent data submitted to the Department in response to its 1988 request for data to use in establishing new emission levels for these boilers based on Method 10 testing.

4. Nearly all boilers constructed to date in the sugar industry have been designed and operated based on a high heat release rate (i.e., approximately 30,000 Btu/hr-ft^3). All of these boilers were built prior to 1983, and reflected standard designs from that time. These designs do not include the improved residence time characteristics which are being incorporated into recently permitted or proposed sugar industry boilers. This is merely a reflection of improving technologies. It is this improved residence time of the flue gases in the boiler which results in lower CO emissions.

   However, this does not mean that poor combustion is taking place in the older boilers. If poor combustion were taking place in the boilers, the boilers would not be able to achieve the high steam rates that they have demonstrated through years of operation, as reflected in past compliance tests. If too much fuel were being fed to the boilers, the combustion zone temperature would drop dramatically, resulting in a marked decrease in steam production. The very fact that high steam production rates are being achieved in these boilers indicates that very good combustion is taking place in the furnace. However, due to the older furnace design, the flue gas residence time in the furnace is limited; the flue gases are cooled quickly downstream of the boiler, and the unburned carbon in the gas stream cannot combust further. The new design boilers allow for greater residence time and, therefore, allow the unburned carbon formed during combustion to more completely combust.

   The CO stack test data for Clewiston Boiler No. 4 reflect heat inputs ranging from 580 to 699 MMBtu/hr. This range represents 82 to 99 percent of the maximum permitted heat input of 707 MMBtu/hr (6-hour average). There are no stack tests available for this boiler at lower heat input rates. This is primarily because compliance tests are required to be performed at 90 to 100 percent of the maximum permitted rate.

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[1] The initial results of this testing were first submitted to the Department on October 8, 1990, along with additional test results from Bryant Boiler No. 5, as a basis for revising the CO limit in the Clewiston Boiler No. 4 permit. But the Department did not take action to revise the permit at that time.

[2] The range and average for Clewiston Boiler No. 4 CO emissions presented in U.S. Sugar's June 27, 1994 submittal differs from the numbers presented in U.S. Sugar's April 7, 1994 submittal because the data in the June 27 letter include a larger database. The April 7, 1994 letter covers 20 CO emission tests conducted between February 20, 1990 and January 9, 1992, whereas the June 27 letter covers 65 CO emission tests conducted between February 20, 1990, and March 4, 1994.

I trust that this information will be sufficient to allow the Department to conclude that a CO limit of 6.5 lb/MMBtu for Clewiston Boiler No. 4 is acceptable. Please call if you have any questions.

Sincerely,

David A. Buff

David A. Buff, P.E.
Florida Registration 19011

DAB
SEAL

DABuff/mlb

cc: Murray Brinson
Don Griffin
Peter Briggs
Bob Van Voorhees
File (2)

Table 1. Design Parameters and EPA Method 10 CO Emissions for Sugar Industry Boilers with CO Limits

Boiler	Manufacturer	Year Installed	Boiler Type	Maximum Steam Rate (lb/hr)	Maximum Heat Input (MMBtu/hr)	Furnace Volume (ft^3)	Heat Release Rate (Btu/hr-ft^3)	CO Emissions Range (lb/ MMBtu)	CO Emissions Average (lb/ MMBtu)	CO Emissions Limit (lb/ MMBtu)
Atlantic Boiler 5	Erie City	1982	Traveling Grate	130,000	253	9,540	26,520	N/A	N/A	6.5
Osceola Boiler 3	Not Available	1961	Cell	150,000	292	9,000	32,444	0.75-4.24[a]	3.09[a]	3.5
Osceola Boiler 6	Distral S.A.	1981	Traveling Grate	195,000	379	11,604	32,661	3.87-7.31[a]	5.61[a]	6.5
USS Clewiston Blr 4	Foster Wheeler	1985	Traveling Grate	314,757[c]	707[c]	21,245	33,278	1.53-17.49[b]	6.48[b]	6.5 (requested)

[a] Letter to Phillip Edwards, DEP, dated January 2, 1991, from Osceola Farms, Inc.
[b] Letter to John C. Brown, Jr., DEP, dated July 27, 1994, from U.S. Sugar Corporation.
[c] Six-hour average.

Notes:

N\A = not applicable; no test data obtained.

Atlantic Boiler No. 5 was an existing boiler which was transferred from Florida Crystals Refinery in 1982. The original construction date is not known. The boiler was significantly modified by Atlantic Sugar at the time of installation to increase steam production.

U.S. Sugar Clewiston Boiler No. 4 was an existing coal-fired boiler when purchased. U.S. Sugar modified the boiler upon installation to accommodate bagasse fuel.

Table B1. Summary of CO Emission Tests Performed on Clewiston Boiler No. 4 Using EPA Method 10

Unit	Boiler Type	Date	Steam Rate (lb/hr)	Heat Input (MMBtu/hr)	Bagasse Firing Rate^a (TPH wet)	CO Emissions lb/hr	CO Emissions lb/MMBtu	CO Emissions lb/ton,wet	CO Emissions Compliance Average lb/MMBTU
U.S. Sugar - Clewiston									
Boiler 4	Traveling Gate	02/20/90	308,636	691.7	96.07	1,940	2.79	20.19	2.75
Boiler 4	Traveling Gate	02/20/90	306,666	690.3	95.87	1,520	2.24	15.85	
Boiler 4	Traveling Gate	02/20/90	310,298	698.8	97.06	2,240	3.23	23.08	
Boiler 4	Traveling Gate	02/15/91	289,091	624.9	86.79	4,760	7.62	54.84	5.27
Boiler 4	Traveling Gate	02/15/91	291,200	629.5	87.43	2,710	4.30	31.00	
Boiler 4	Traveling Gate	02/15/91					3.90		
Boiler 4	Traveling Gate	02/18/91	288,358	622.8	86.50	2,430	3.90	28.09	3.78
Boiler 4	Traveling Gate	02/18/91	285,224	616.4	85.61	2,640	4.28	30.84	
Boiler 4	Traveling Gate	02/18/91	302,647	653.3	90.74	2,060	3.16	22.70	
Boiler 4	Traveling Gate	02/19/91	290,769	627.9	87.21	4,430	7.05	50.80	5.43
Boiler 4	Traveling Gate	02/19/91	294,583	637.1	88.49	3,400	5.33	38.42	
Boiler 4	Traveling Gate	02/19/91	293,382	633.5	87.99	2,480	3.92	28.19	
Boiler 4	Traveling Gate	02/22/91	300,000	647.9	89.99	4,900	7.56	54.45	11.23
Boiler 4	Traveling Gate	02/22/91	293,382	634.2	88.08	9,450	14.90	107.28	
Boiler 4	Traveling Gate	01/07/92	293,425	613.6	85.22	3,200	5.22	37.55	7.91
Boiler 4	Traveling Gate	01/07/92	282,800	591.3	82.12	6,270	10.60	76.35	
Boiler 4	Traveling Gate	01/08/92	299,178	623.2	86.56	2,030	3.26	23.45	4.66
Boiler 4	Traveling Gate	01/08/92	297,973	621.5	86.32	3,160	5.09	36.61	
Boiler 4	Traveling Gate	01/08/92	300,811	627.4	87.14	3,540	5.64	40.62	
Boiler 4	Traveling Gate	01/09/91	302,055	630.0	87.50	2,770	4.40	31.66	4.40
Boiler 4	Traveling Gate	01/09/91	295,135	615.8	85.53	2,710	4.40	31.69	
Boiler 4	Traveling Gate	01/13/93					7.50		8.03
Boiler 4	Traveling Gate	01/13/93					8.59		
Boiler 4	Traveling Gate	01/13/93					7.99		
Boiler 4	Traveling Gate	01/14/93					15.00		11.48
Boiler 4	Traveling Gate	01/14/93					7.95		
Boiler 4	Traveling Gate	02/02/93					7.19		7.94
Boiler 4	Traveling Gate	02/02/93					6.71		
Boiler 4	Traveling Gate	02/02/93					9.92		
Boiler 4	Traveling Gate	02/04/93					6.78		7.64
Boiler 4	Traveling Gate	02/04/93					9.13		
Boiler 4	Traveling Gate	02/04/93					7.01		
Boiler 4	Traveling Gate	01/13/94		628.52			5.55		7.37
Boiler 4	Traveling Gate	01/13/94		614.06			5.26		
Boiler 4	Traveling Gate	01/13/94		615.24			11.31		
Boiler 4	Traveling Gate	01/14/94		639.11			5.18		9.59
Boiler 4	Traveling Gate	01/14/94		629.38			6.11		
Boiler 4	Traveling Gate	01/14/94		635.50			17.49		
Boiler 4	Traveling Gate	02/01/94		592.17			1.84		5.22
Boiler 4	Traveling Gate	02/01/94		595.17			8.59		
Boiler 4	Traveling Gate	02/07/94		587.52			4.69		7.53
Boiler 4	Traveling Gate	02/07/94		599.46			5.47		
Boiler 4	Traveling Gate	02/07/94		582.08			13.03		
Boiler 4	Traveling Gate	02/07/94		586.88			6.97		
Boiler 4	Traveling Gate	02/09/94		620.29			6.99		6.99
Boiler 4	Traveling Gate	02/11/94		622.97			5.78		4.43
Boiler 4	Traveling Gate	02/11/94		580.67			1.53		
Boiler 4	Traveling Gate	02/11/94		625.28			7.89		
Boiler 4	Traveling Gate	02/11/94		644.24			2.51		
Boiler 4	Traveling Gate	02/17/94		608.74			9.47		6.95
Boiler 4	Traveling Gate	02/17/94		584.52			4.86		

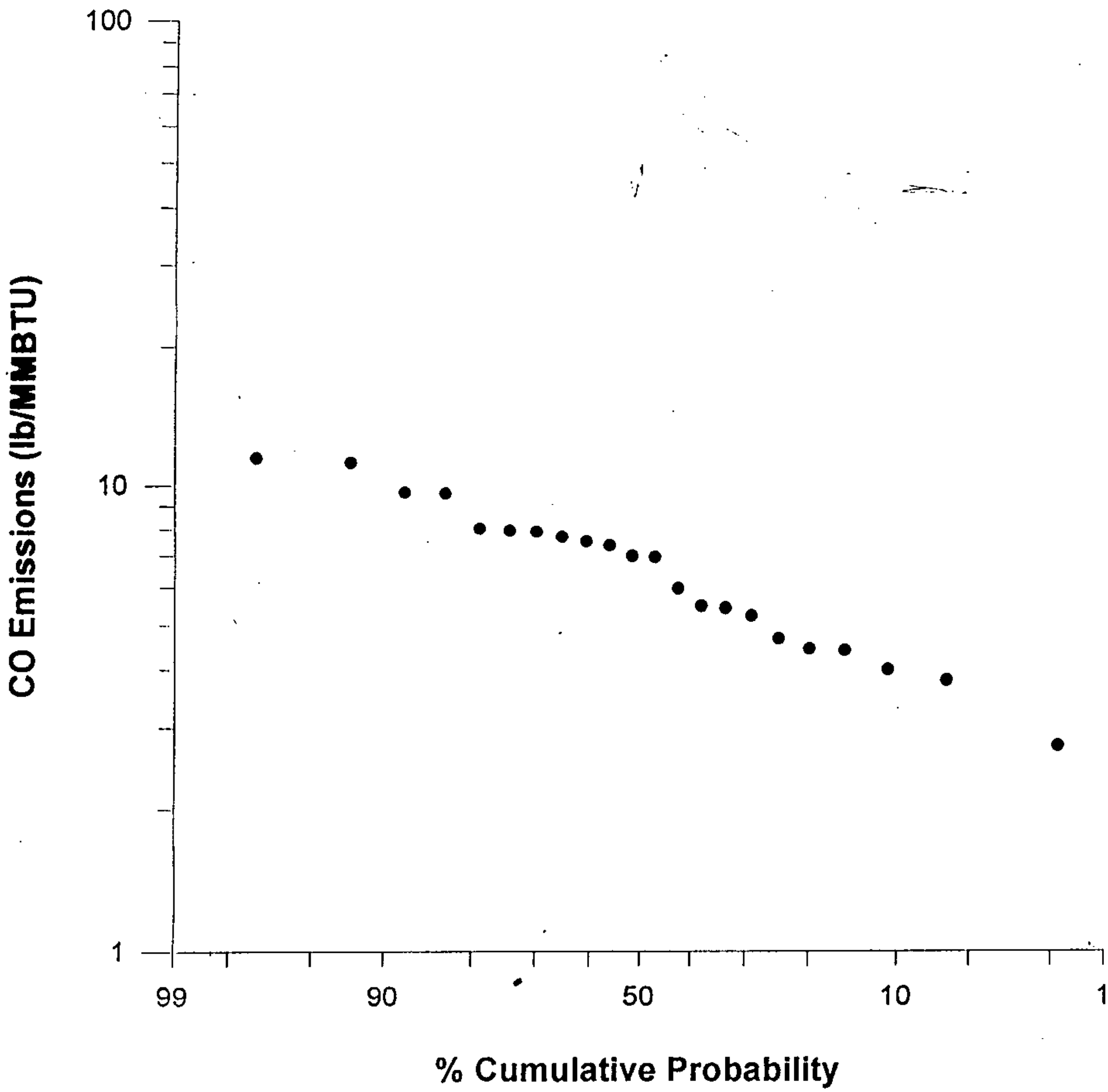
Boiler 4	Traveling Gate	02/17/94	623.65		6.68		
Boiler 4	Traveling Gate	02/17/94	631.71		6.78		
Boiler 4	Traveling Gate	02/22/94	625.33		7.48		7.70
Boiler 4	Traveling Gate	02/22/94	633.82		7.38		
Boiler 4	Traveling Gate	02/22/94	616.86		7.58		
Boiler 4	Traveling Gate	02/22/94	585.45		7.99		
Boiler 4	Traveling Gate	02/22/94	580.29		8.06		
Boiler 4	Traveling Gate	02/23/94	616.93		3.99		5.48
Boiler 4	Traveling Gate	02/23/94	633.14		6.07		
Boiler 4	Traveling Gate	02/23/94	617.98		6.39		
Boiler 4	Traveling Gate	03/04/94	636.45		3.02		3.99
Boiler 4	Traveling Gate	03/04/94	614.71		2.34		
Boiler 4	Traveling Gate	03/04/94	598.50		4.21		
Boiler 4	Traveling Gate	03/04/94	625.69		6.38		
				Max. =	17.49	107.28	11.48
				Avg. =	6.48	39.18	6.63

Note: lb/hr = pounds per hour.
lb/MMBtu = pounds per million British thermal units.
lb/ton = pounds per ton.
MMBtu/hr = million British thermal units per hour.
NA = not available.
TPH = tons per hour.

USSCO#4.wk3
05/17/94

^a Calculated from reported heat input rate, assumed 3,600 Btu/lb average heat content for wet bagasse.

U.S. Sugar - Clewiston
Boiler No. 4



OSCEOLA FARMS CO.
RAW SUGAR FACTORY
INTERSECTION U.S. 98 & HATTON HWY.

TELEPHONE:
(407) 924-7156

CABLE: SUGAR

POST OFFICE BOX 679
PAHOKEE, FLORIDA 33476

January 2, 1991

Mr. Phillip Edwards
Deputy Assistant Secretary
Florida Department of
Environmental Regulation
South District
2269 Bay Street
Ft. Myers, Fl 33901-2896

Re: CO Limits in our Boiler #3 Permit #AO-50-165813
and Boiler #6 Permit #'s PSD-FL-80 and AO-50-165814

Dear Mr. Edwards:

In 1988, the E.P.A. and the F.D.E.R. revised the CO emission limits to 4.8 lbs/mm BTU's in the permits for Boiler #'s 3 and 6. This was through an agreement with Osceola Farms to conduct a series of five individual test runs using the E.P.A. Method 10 test instead of the old Orsat Method 3 test. The testing was to reflect the actual emissions which could be measured more accurately with Method 10. This did not reflect any increase in the actual emissions.

During the summer of 1989 Osceola met with Bruce Miller, Paul Reinerman and other E.P.A. employees to discuss these results. It was agreed that Osceola would conduct 2 complete Method 10 tests (6 individual runs) on Boiler #3 and Boiler #6 during the 1989/90 crop. Paul Reinerman has reviewed all of the CO tests conducted by Osceola during the past two years. He came to Osceola to observe some of the testing.

The results are quite different for the two boilers. Boiler #3 is a cell type boiler. These test results were lower. They ranged from .75 to 4.24 lbs/mm BTU's. The two test averages (8 runs in total) that appear to be most representative are 3.14 and 3.04. We feel that a permit limit of 3.5 lbs/mm BTU's for Boiler #3 would be appropriate. This would be a 1.3 lb/mm BTU reduction from the current permitted amount.

Boiler #6 is a traveling grate type boiler and the results were higher. The individual runs varied from 3.87 to 7.31 lbs/mm BTU's. The three average test results (a total of 11 runs) were: 5.42, 5.48 and 5.93 lbs/mm BTU's. Osceola feels that a permit limit of 6.5 lbs/mm BTU's would be appropriate.

Please consider this letter a request for modification to our Boiler #'s 3 and 6 permits (#AO-50-165813 & #AO-50-165814). As the attached letter shows, we are requesting the same modification from the E.P.A. to our construction permit for Boiler #6 (PSD-FL-80). Again, we feel this change does not result in any increase in actual emissions. It only more accurately reflects what the emissions have been now that they can be measured with Method 10.

Thank you for your help in this matter.

Sincerely yours,

OSCEOLA FARMS CO.

Bob Jackson

Robert E. Jackson, Jr.
Vice President &
Assistant General Manager

REJ,Jr/gr

Att.

cc: Winston Smith
[redacted]
David Knowles
Ajaya Satyal
Peter Cunningham
Alex Fanjul

O S C E O L A   F A R M S   C O M P A N Y

C.O. SUMMARY / PARTICULATE MATTER

B O I L E R 3

	STACK %0.2	CO LB/MMBTU		PARTICULATE MATTER LB/MMBTU
01/17/89			01/05/89	
RUN 1	8.10	3.50	RUN 1	.163
2	8.00	2.08	RUN 2	.185
3	6.30	4.24	RUN 3	.205
4	11.00	2.16		
5	12.60	3.36		
AVERAGE	9.20	3.07	AVERAGE	.184
12/05/89			12/05/89	
RUN 1	7.20	.78	RUN 1	.106
2	8.20	.75	RUN 2	.103
3	7.80	.89	RUN 3	.12
AVERAGE	7.73	.81	AVERAGE	.110
01/24/90				
RUN 1	5.10	2.52		
2		3.35		
3		3.55		
AVERAGE	5.10	3.14		

B O I L E R 6

	STACK %0.2	CO LB/MMBTU		PARTICULATE MATTER LB/MMBTU
01/16/89			01/25/89	
RUN 1	8.10	5.99	RUN 1	.14
2	7.50	7.31	RUN 2	.139
3	7.30	5.59	RUN 3	.15
4	8.10	3.87		
5	7.90	4.35		
AVERAGE	7.78	5.42	AVERAGE	.143
11/15/89			11/15/89	
RUN 1	8.10	5.63	RUN 1	.14
2	7.40	6.34	RUN 2	.157
3	8.40	4.48	RUN 3	.133
AVERAGE	7.97	5.48	AVERAGE	.143
02/02/90			02/15/90	
RUN 1	7.10	5.79	RUN 1	.117
2	7.00	6.29	RUN 2	.108
3	7.00	5.70	RUN 3	.135
AVERAGE	7.03	5.93	AVERAGE	[illegible]0

10/ 5/90
BJ/gr
MILL\BOILERS\COSUMMRY

UNITED STATES SUGAR CORPORATION

Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121 Telex: 510-952-7753

January 9, 1995

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JAN 10 1995
Bureau of Air Regulation

Via Facsimile to (904) 922-6979

Mr. Willard Hanks
Florida Department of Environmental Protection
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Fl. 32399-2400

Re: Clewiston Boiler No. 4 - Waiver
Permit Application AC26-126965 & AO-223258

Dear Mr. Hanks:

Enclosed please find a duly-signed waiver of the 90 day time limit in which DEP is normally required to approve or deny an application to modify a construction permit.

We understand that the Department expects to complete its review of all outstanding permit modification issues as soon as practicable and issue its determination by February 15, 1995.

Sincerely,

UNITED STATES SUGAR CORPORATION

Murray T. Brinson
Vice President
Sugar Processing

MTB:jt
Attachment

cc: Clair Fancy, DEP, Tallahassee
John Brown, DEP, Ft. Myers
David Knowles, DEP, Ft. Myers
Robert F. Van Voorhees, Bryan Cave

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTIONS 120.60(2) AND 403.0876, FLORIDA STATUTES

Permit Application No: AC26-126965 & AO26-223258

Applicant's Name: UNITED STATES SUGAR CORPORATION - CLEWISTON BOILER NO. 4

The undersigned has read Sections 120.60(2) and 403.0876, Florida Statutes (F.S.), and fully understands the applicant's rights under that section.

With regard to the above referenced permit application, the applicant hereby with full knowledge and understanding of its rights under Sections 120.60(2) and 403.0876, F.S., waives the right under Sections 120.60(2) and 403.0876, F.S., to have the application approved or denied by the State of Florida Department of Environmental Protection within the 90 day period prescribed in Sections 120.60(2) and 403.0876, F.S. Said waiver is made freely and voluntarily by the applicant, in its self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This waiver shall expire on the 15th day of February 1995.

The undersigned is authorized to make this waiver on behalf of the applicant.

January 9, 1995
Date

Murray T. Brinson
Vice President, Sugar Processing
United States Sugar Corporation

KBN

December 8, 1994

Mr. John Brown, P.E.
Florida Department of Environmental Protection
111 South Magnolia, Suite 4
Tallahassee, FL 32301

Re: United States Sugar Corporation- Clewiston Boiler No. 4
AO26-223258

Dear Mr. Brown:

At the request of Willard Hanks, I am providing the following information regarding United States Sugar Corporation (U.S. Sugar) Boiler No. 4. This information relates to the differences and/or similarities between Clewiston Boiler 4 and the other three boilers in the sugar industry which have received higher CO emission limits. The attached table presents pertinent information on each of these boilers.

As shown in the table, the design of Clewiston Boiler No. 4 is very similar to the design of both Atlantic Boiler 5 and Osceola Boiler 6. All three of these boilers are of the traveling grate design, were installed in the 1980's, and have heat release rates of around 30,000 Btu/hr-ft^3. However, Clewiston Boiler 4 is a much large boiler than Atlantic Boiler 5 and Osceola Boiler 6, and there may exist some design differences.

In the case of Osceola Boiler 3, the furnace volume is not available at this time, and the engineering drawings of the boiler are not readily accessible. However, it is known that this boiler was formerly a cell type boiler (i.e., the bagasse is combusted in piles formed in the "cells" of the boiler). Ash is manually removed from this type boiler. The cell type design is much different than the traveling grate design of the other three boilers.

Based on these differences in boiler design, as well as CO test data from each boiler, the CO emission limits for Atlantic 5 and Osceola 6 were set at 6.5 lb/MMBtu, and at 3.5 lb/MMBtu for Osceola 3. U.S. Sugar is requesting that the CO emission limit for Boiler 4 be set at 6.5 lb/MMBtu based on the specific design of this boiler, which is similar to but larger than Atlantic 5 and Osceola 6, as well as the source-specific test data for Boiler 4.

14015A1/8

KBN ENGINEERING AND APPLIED SCIENCES, INC.

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1616 'P' Street N.W., Suite 450, Washington, D.C. 20036, 202-462-1100, FAX 202-462-2270

I believe this information is sufficient to allow the Department to reach a conclusion on this matter. Please call if you have any questions.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer

SEAL

P.E. #19011

DAB

cc: Don Griffin
Murray Brinson
Peter Briggs
Bob Van Vorhees
File (2)

DB/mlb

Table 1. Design Parameters for Sugar Industry Boilers With CO Limits

Boiler	Year Installed	Boiler Type	Maximum Heat Input (MMBtu/hr)	Furnace Volume (ft^3)	Heat Release Rate ($Btu/hr\text{-}ft^3$)	CO Emission Limit (lb/MMBtu)
Atlantic Boiler 5	1982	Traveling Grate	253	9,540	26,520	6.5
Osceola Boiler 3	1961	Inclined Grate[1]	292	NA	NA	3.5
Osceola Boiler 6	1981	Traveling Grate	379	11,604	32,661	6.5
USS Clewiston Blr 4	1985	Traveling Grate	707	21,245	33,278	6.5

NA= Not available
[1] Converted cell boiler

ATTACHMENT 6

CO Emission Limit Correspondence

ATTACHMENT A

KBN

August 15, 1994

Mr. Murray T. Brinson
Vice President, Sugar Processing
U.S. Sugar Corporation
P.O. Drawer 1207
Clewiston, FL 33440

Re: Revision of Reasonably Available Control Technology (RACT) Limits
U.S. Sugar Corporation, Bryant Mill

Boiler No. 1	AO50-191891
Boiler No. 2	AO50-191899
Boiler No. 3	AO50-182890

Dear Mr. Brinson:

United States Sugar Corporation (U.S. Sugar) owns a sugar cane processing mill in Palm Beach County which includes four primarily bagasse-fired boilers and associated facilities (Bryant Mill). On March 8, 1994, the Florida Department of Environmental Protection (FDEP) issued air operation permit amendments for U.S. Sugar's Bryant Boilers 1, 2, and 3 to specify compliance test requirements and methods, as well as to incorporate reasonably available control technology (RACT) emission limits. The limits in the amendments were set at the maximum emission rates allowed under the Department's revised RACT rule, 17-296.570, Florida Administrative Code (F.A.C.): 5.0 pounds per million British thermal units (lb/MMBtu) for volatile organic compound (VOC) emissions and 0.9 lb/MMBtu for nitrogen oxide (NO_x) emissions.

Based on KBN's evaluation of test data obtained from U.S. Sugar boilers and other boilers operated throughout the sugar industry during the past two crop seasons, U.S. Sugar is requesting that the permit amendments for Bryant Boilers 1, 2, and 3 be revised to incorporate emission limits lower than those contained in the RACT rule for carbonaceous fuel-fired boilers. These lower limits have been determined after careful consideration of the test data obtained using EPA Method 7E to determine NO_x emissions and EPA Method 25A to determine VOC emissions, with EPA Method 18 used to identify and subtract out the methane emissions. Methane generally constitutes more than half of the VOC levels in the emissions from these and other industry bagasse-fired boilers.

The following discussion presents the VOC and NO_x test data obtained for the Bryant mill, the proposed RACT limits, and proposed test methods to demonstrate compliance.

14015A1/2

KBN ENGINEERING AND APPLIED SCIENCES, INC.

1034 Northwest 57th Street, Gainesville, Florida 32605, 904-331-9000, FAX 904-332-4189
5405 West Cypress Street, Suite 215, Tampa, Florida 33607, 813-287-1717 FAX 813-287-1716
1801 Clint Moore Road, Suite 105, Boca Raton, Florida 33487, 407-994-9910, FAX 407-994-9393
6821 Southpoint Drive North, Suite 216, Jacksonville, Florida 32216, 904-296-9663 FAX 904-296-0146
1616 'P' Street N.W., Suite 450, Washington, D.C. 20036, 202-462-1100, FAX 202-462-2270

<u>Test Data From Bryant Mill</u>
A summary of the test data from the three U.S. Sugar boilers (Boilers 1, 2, and 3) at the Bryant Mill that are subject to regulation under the RACT rule is presented in Table 1. Tests were conducted when firing bagasse in the boilers. Test data from all three boilers were grouped together in Table 1 since these boilers are of similar design and capacity.

NO_x Test Data
All NO_x emission tests were conducted using EPA Method 7E. This is a continuous emission monitoring method. As shown in Table 1, a total of 13 individual test runs were performed. Test runs were generally 2 hours in duration. NO_x emission levels were low and averaged 0.15 lb/MMBtu for the three Bryant boilers. The NO_x emissions test data reflect a variability ranging from 0.093 to 0.251 lb/MMBtu for individual test runs. Test results from the sugar industry as a whole showed a broader range of NO_x emissions up to 0.33 lb/MMBtu.

VOC Test Data
All VOC emission tests were conducted using a combination of EPA Methods 25A and 18. Method 25A is a continuous emission monitoring method which measures total hydrocarbons. Method 18 is a gas chromatograph method which provides the relative concentration of methane in the gas stream. Based on the results from Methods 25A and 18, the total non-methane VOC emissions are obtained.

The Department recently issued a guidance memorandum discussing the appropriate use of VOC analytical Methods 18, 25 and 25A (DARM-EM-02, dated March 17, 1994). The enclosed letter from Steve Neck of Air Consulting and Engineering, Inc. (Attachment A), examines the use of these methods for analysis of sugar industry VOC emissions and concludes that Methods 18 and 25A provide the proper analytical approach under the guidelines established by the Department.

As shown in Table 1, a total of 13 individual test runs were performed. Test runs were generally 2 hours in duration. VOC emission levels are shown to be generally more variable than NO_x emissions. The VOC emissions averaged 0.10 lb/MMBtu for the three boilers. The VOC emissions ranged from 0.022 to 0.285 lb/MMBtu for individual test runs. For the sugar industry as a whole, VOC emissions ranged from 0.0 to 2.29 lb/MMBtu.

<u>Proposed RACT Limits</u>
Based on evaluation of these test data, U.S. Sugar proposes the following revised RACT limits for Boiler Nos. 1, 2, and 3 at Bryant:

NO_x (carbonaceous): 0.45 lb/MMBtu
VOC (carbonaceous): 1.5 lb/MMBtu

It is emphasized that the NO_x and VOC limits being proposed are based upon the use of Method 7E to determine NO_x emissions and Methods 25A/18 to determine VOC emissions.

In order to demonstrate compliance with the RACT limits, U.S. Sugar proposes to perform an annual compliance test.

Proposed Test Methods
For the purpose of conducting annual stack tests on the U.S. Sugar Bryant boilers, Reference Methods 25A and 18 are proposed for VOC emissions, and Reference Method 7E is proposed for NO_x emissions. These methods were used to obtain all of the test data described and analyzed for the sugar industry.

Method 25A is a flame ionization technique which measures total hydrocarbons. Method 18 is a gas chromatograph technique which measures the methane content of the gas stream. By taking the difference between the Method 25A and Method 18 results, the non-methane hydrocarbon emission rates are obtained. In regard to ozone nonattainment areas, the definition of VOC excludes methane because this compound is not sufficiently reactive to serve as an ozone precursor.

Method 7E is a continuous instrumental method. It is the method of choice for NO_x emissions monitoring because of its ability to provide on-site NO_x data while testing is being performed.

U.S. Sugar appreciates the Department's cooperation during the RACT determination and would be glad to answer any questions you may have concerning this submittal.

Sincerely,

David A. Buff

David A. Buff, P.E.
Principal Engineer

DAB/abb

cc: File (2)

Table 1. Summary of NOx and VOC Emission Tests Performed on Bagasse Boilers at U.S. Sugar Corporation - Bryant, 92/93 and 93/94 Crop Seasons.

Mill/Boiler	Boiler Type	NOx Emissions (lb/MMBtu)				VOC Emissions (lb/MMBtu)			
		Number of Test Runs	Minimum	Average	Maximum	Number of Test Runs	Minimum	Average	Maximum
U.S. Sugar Corporation - Bryant									
Boiler 1, 2, 3	Vibrating Grate	13	0.093	0.145	0.251	13	0.022	0.103	0.285

ATTACHMENT A

ACE
AIR CONSULTING
& ENGINEERING, INC.

2106 N.W. 67th Place • Suite 4 • Gainesville, Florida • 32606
(904) 335-1889 FAX (904) 335-1891

August 4, 1994

Mr. David Buff
KBN Engineering and Applied Sciences
1034 NW 57th Street
Gainesville, FL 32605

REF: Use of Method-25A and Method-18 for measurement of VOC emissions from bagasse-fired boilers.

Dear Mr. Buff:

We have reviewed the Florida Department of Environmental Protection (FDEP) guidance memorandum DARM-EM-02 (Attachment-1) in light of the extensive work we have done over the years with bagasse-fired boilers in the sugar industry. While this memo states that EPA "Method-25 is the recommended method for measuring non-methane organic emissions from stationary sources . . . -especially combustion sources", it also recognizes the significant positive interference experienced when testing sources with (percent moisture) x (percent carbon-dioxide) products greater than 100. The extent of this interference was noted in a U.S. EPA Memorandum dated October 25, 1993 from Mr. John B. Rasnic, Director of the Stationary Source Compliance Division, Office of Air Quality Planning and Standards (Attachment-2). Rasnic's memorandum indicates that the magnitude of the positive interference caused by high carbon dioxide (>10%) in the presence of high moisture (>10%) can be as high as 150 ppm.

Extensive testing conducted during the 1993-1994 crop season on sugar industry boilers showed that boiler exhausts routinely have carbon dioxide levels of 8-14% with moisture levels of 20-30%, and total non-methane organic concentrations of 50-1000 ppm. The resultant (percent moisture) x (percent carbon-dioxide) products range from 160-420. Thus, there is ample potential for very significant positive interference when using Method-25 on these sources.

The only other commonly applied approved test method for evaluating total gaseous non-methane organic (TGNMO, also called volatile organic compounds or VOC) emissions is EPA Method-25A. However, to accurately determine the non-methane hydrocarbon emissions, the Method-25A results must be corrected for the methane contribution to the flame ionization detector (FID) response by using Method-18 to measure methane. This is done because methane is not considered a reactive hydrocarbon ozone precursor and is not regulated under VOC emission standards.

Our experience with bagasse fired boilers has consistently shown that approximately 50% of the total carbon present as hydrocarbons is in the form of methane. Attachment-3 shows a plot of results from 251 tests of sugar industry boiler emissions during the 1993-1994 crop season using Method-25A and Method-18 for total hydrocarbons and methane, respectively.

Currently no test method is specified to determine VOC emissions from bagasse-fired boilers under F.A.C. 17-296 or 17-297. Both Method-25A and Method-18 have been approved by FDEP and incorporated by reference in the Florida Administrative Code (17-297.401). It has generally been the practice of the FDEP to allow any promulgated test method under such circumstances.

Because of Method-25's potential for significant positive bias when applied to bagasse fuel emissions, we recommend that Method-25A, corrected for methane using Method-18, be used to determine VOC emissions from bagasse-fired boilers.

We make this recommendation although we are fully aware that Method-25A measures the response of a FID to the total hydrocarbon content of the sample gas stream, and that the FID response is not universal or linear with respect to hydrocarbons and carbon content when compared to a chosen calibration gas such as propane in air. We feel that these limitations are less severe than the potential problems associated with the use of Method-25 for these sources.

In this context, one should consider that no emission test method is exact. Frequently, the measurement method is used to define the "pollutant" and set emission standards. For example, particulate matter (PM) is defined as any material that is retained on a 0.1 µm glass fiber filter heated to 250±25°F. This definition is based on the standard measurement method (Method-5) for PM. Following this approach, we feel that it is consistent to accept a VOC RACT standard that is defined by a specific test method, i.e. EPA Method-25A corrected for methane using EPA Method-18. This is also consistent with the F.A.C. 17-297.310(147) definition of "VOC" which states "Volatile Organic Compounds may be measured by an EPA reference, equivalent or alternative method or by procedures specified under 40 CFR Part 60." This is almost identical to the definition of PM listed in F.A.C. 17-297.310(105).

Method-25A corrected for methane using Method-18 has been used extensively to monitor VOC emissions from bagasse-fired boilers for many years. Results from these measurements constitute the bulk of VOC emission data from this source category. We also note that various air permits issued to date, including RACT permits issued to U.S. Sugar Bryant and Talisman Sugar Corporation, specifically authorize EPA Method-25A as a compliance test method.

Respectfully,

AIR CONSULTING AND ENGINEERING, INC.

Stephen L Neck

Stephen Neck, P.E.

attachments

ACE File 236-gen

ATTACHMENT 1

Memorandum

Florida Department of
Environmental Protection

DARM-EM-02

TO: District Air Program Administrators
County Air Program Administrators
Bureau of Air Regulation Engineers

FROM: Howard L. Rhodes, Director
Division of Air Resources Management

DATE: March 17, 1994

SUBJECT: Guidance on The Use of EPA Methods 18, 25 and 25A for Measuring Gas Stream Volatile Organic Compounds (VOC) Concentration

This memo is to provide guidance concerning the appropriate EPA methods for use in the measurement of VOC concentrations. The commonly used methods are EPA Methods 25 and 25A, and occasionally EPA Method 18. This memo does not preclude the requirement for obtaining an Alternate Standard or Procedure (ASP) per 17-297.620, F.A.C.

Method 25 is the recommended method for the measurement of total gaseous nonmethane organic emissions from most air pollution sources - especially combustion sources. The lower limit of detection for EPA Method 25 is 50 ppmv as carbon. The presence of water vapor and carbon dioxide may positively bias (observed emissions higher than true emissions) the results of the method. Pursuant to 40 CFR 60 Appendix A, the bias is not considered to be significant if the product of the volumetric concentrations of water vapor and carbon dioxide is not greater than 100. For example, the bias is not significant for a source having 10 percent CO_2 and 10 percent water vapor, but it would be significant for a source near the detection limit having 10 percent CO_2 and 20 percent water vapor. EPA Method 25 shall be the required VOC measurement technique whenever it is required by Chapter 17-296, F.A.C., or 17-297, F.A.C., or an applicable federal NSPS or NESHAP. It shall also be the required VOC measurement technique for combustion sources, sources controlled by VOC incinerators (afterburners), and sources that emit an unknown mix of organic compounds. Any owner who wants to use another measurement technique (i.e., EPA Method 25A) in lieu of EPA Method 25 must apply for and obtain approval of an ASP.

Method 25A is the recommended method for measurement of compounds consisting of only carbon and hydrogen, or a single organic solvent if the analyzer used during the testing is calibrated for this solvent. EPA EMTIC Guideline Document EMTIC GD-011 and the attached EPA memo dated October 25, 1993, recommends the use of EPA Method 25A if the VOC concentration at the outlet of an incinerator is less than 50 ppmv as carbon. However, the presence of partially oxidized organic compounds in a combustion source or VOC incinerator (afterburner) may cause the results obtained with Method 25A to be biased low. EPA Method 25A shall be the required VOC measurement technique whenever it is required by Chapter 17-296, F.A.C., or 17-297, F.A.C., or an applicable federal NSPS or NESHAP. Any owner who wants to use another measurement technique in lieu of EPA 25A must apply for and obtain approval of an ASP.

EPA Method 18 applies to the analysis of approximately 90 percent of the total gaseous organic compounds emitted from an industrial source. It is an extremely flexible procedure and is primarily used for the measurement of emissions from sources in the synthetic organic chemical manufacturing industry. EPA Method 18 shall be the required VOC measurement technique whenever it is required by Chapter 17-296, F.A.C., or 17-297, F.A.C., or an applicable federal NSPS or NESHAP. Any owner who wants to use another measurement technique in lieu of EPA Method 18 must apply for and obtain approval of an ASP.

If the estimated concentration of VOC emissions from the exhaust of a combustion source (incinerator/afterburner) are estimated to be less than 50 ppmv as carbon, the owner may request approval to use EPA Method 25A in lieu of EPA Method 25. The request must be accompanied by the results of simultaneous EPA Method 25 and EPA Method 25A compliance tests which meet all applicable audit requirements. In order to be acceptable the tests must be conducted at 90 to 100% of the maximum permitted capacity, and the EPA Method 25 must pass the required audit, produce EPA Method 25A results that are less than 50 ppmv, and also produce EPA Method 25 results that are not greater than 75 ppmv as carbon. The use of EPA Method 25A for subsequent compliance tests may be approved through the process for alternate standards or procedures under those circumstances.

If it is deemed desirable to subtract methane from the total hydrocarbons measured by EPA Method 25A, EPA Method 18 should be required to identify and measure most (~90%) of the hydrocarbons. EPA Method 18 will determine the degree of negative bias due to partially oxidized/chlorinated organic compounds.

The approval of alternate test methods is handled by the Emissions Monitoring Section. Any questions on the ASP process should be referred to Mike Harley at SC 278-1344 or (904)488-1344.

HLR/sa/cjh

ATTACHMENT 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 25 1993

AIR PROGRAMS BRANCH
RECEIVED
OCT 27 1993
EPA-REGION IV
ATLANTA, GA.

OFFICE OF
AIR AND RADIATION

MEMORANDUM

SUBJECT: EPA's VOC Test Methods 25 ~~and~~ 25A

FROM: John B. Rasnic, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Air, Pesticides, and Toxics Management Division Directors
Regions I and IV

Air and Waste Management Division Director
Region II

Air, Radiation, and Toxics Division Director
Region III

Air and Radiation Division Director
Region V

Air, Pesticides, and Toxics Division Director
Region VI

Air and Toxics Division Directors
Regions VII, VIII, IX and X

As a result of requests from industry, Regional Offices and State programs, we have reviewed our guidance regarding the use of Methods 25 and 25A for measuring gas stream volatile organic compounds (VOC) concentration. Information obtained during this review has resulted in the following revised guidance, which is effective immediately and which supersedes all previous guidance on this matter. This revision has been coordinated with the other divisions within the Office of Air Quality Planning and Standards.

The EPA has decided to add an option 3 to permit further the use of Method 25A in lieu of Method 25 under certain conditions. Therefore, our new guidance is as follows. The EPA mandates the use of Method 25 for measuring gas stream VOC concentration when determining the destruction efficiency (DE) of afterburners. It also allows the use of Method 25A, in lieu of Method 25, under any of the following circumstances: 1) when the applicable regulation

METHOD 25

INTRODUCTION: Method 25 is the best method for gas streams where organic concentrations are greater than 100 ppm and moisture is either less than 5% with an associated high CO_2 concentration (>5%) or less than 10% with an associated low CO_2 (<5%). The interference which results from CO_2 dissolving in condensed moisture can bias the results high as much as 150 ppm in the presence of moisture concentrations exceeding 10%.

METHODOLOGY: In Method 25, volatile organic carbon (VOC) sample is collected by drawing gases from an emitting source through a heated stainless steel sample probe followed by a glass fiber filter maintained at 250 ± 5°F, which removes particulate carbon from the sampling stream. The VOC sample stream is then drawn through a dry ice cooled stainless steel U-tube condenser packed with quartz wool. In this portion of the train, "condensable" organics are collected. The lighter volatiles then travel through a valve rotameter to an evacuated four liter stainless steel tank. The tank sample represents the "non-condensable" portion of the collected sample. A sample is taken at a constant flow rate over usually a one-hour period. Following each test run, the sample train is disconnected, the trap and tank portions sealed, and the traps are stored on dry ice until analyses are performed.

APPLICABILITY: The minimum detectable for the method is 50 ppm as carbon. At the outlet of a thermal or catalytic incinerator, if functioning correctly, the VOC concentration should be quite low (<50 ppm as C). Hence, the method, even though appropriate for measuring inlet concentrations, would not give good results for outlet concentrations less than 50 ppm.

In an attempt to control the quality of EPA Method 25 stack test results, EPA initiated a program to develop audit material to assess the accuracy of Method 25 sampling and analysis procedures. The audit gas sampling/analysis program has some shortcomings, which are being looked into by an EPA contractor.

DEP, when evaluating a Method 25 stack test result, determines how the test results are possible biased upon the audit sample result.

limits the exhaust VOC concentration to less than 50 ppm; 2) when the VOC concentration at the inlet of the control system and the required level of control are such to result in exhaust VOC concentrations of 50 ppm or less; or 3) if, because of the high efficiency of the control device, the *anticipated* VOC concentration at the control system exhaust is 50 ppm or less, regardless of the inlet concentration.

Further, if a source elects to use Method 25A under option 3, above, the exhaust VOC concentration must be 50 ppm or less and the required DE must be met for the source to have demonstrated compliance. If the Method 25A test results show that the required DE apparently has been met, but the exhaust concentration is above 50 ppm, this is an indicator that Method 25A is not the appropriate test method and that Method 25 should be used.

BACKGROUND

The primary industry impacted by this policy is the printing industry, which has consistently claimed that the Method 25 test procedure is too expensive and cumbersome to be used as a compliance demonstration tool. They have stated that current state-of-the-art technology afterburners routinely achieve 98-99 percent destruction efficiency, generally significantly greater than is required by regulations. As a result, control system outlet VOC concentrations are commonly less than 50 ppm, regardless of the inlet concentration.

Regulations which specify performance requirements for the subject control systems have typically been based on older technology, which was less efficient than current technology. We agree with the printing industry's claim that VOC destruction technology currently available can perform at greater levels than as specified by the regulations. It is therefore appropriate to revise our guidance on the usage of these compliance demonstration methods.

This guidance specifies the circumstances under which Method 25 and Method 25A are to be used. It will reduce the administrative burden on a significant number of regulated industrial sources but will not reduce the stringency of any currently applicable regulatory requirements.

cc: OAQPS Division Directors

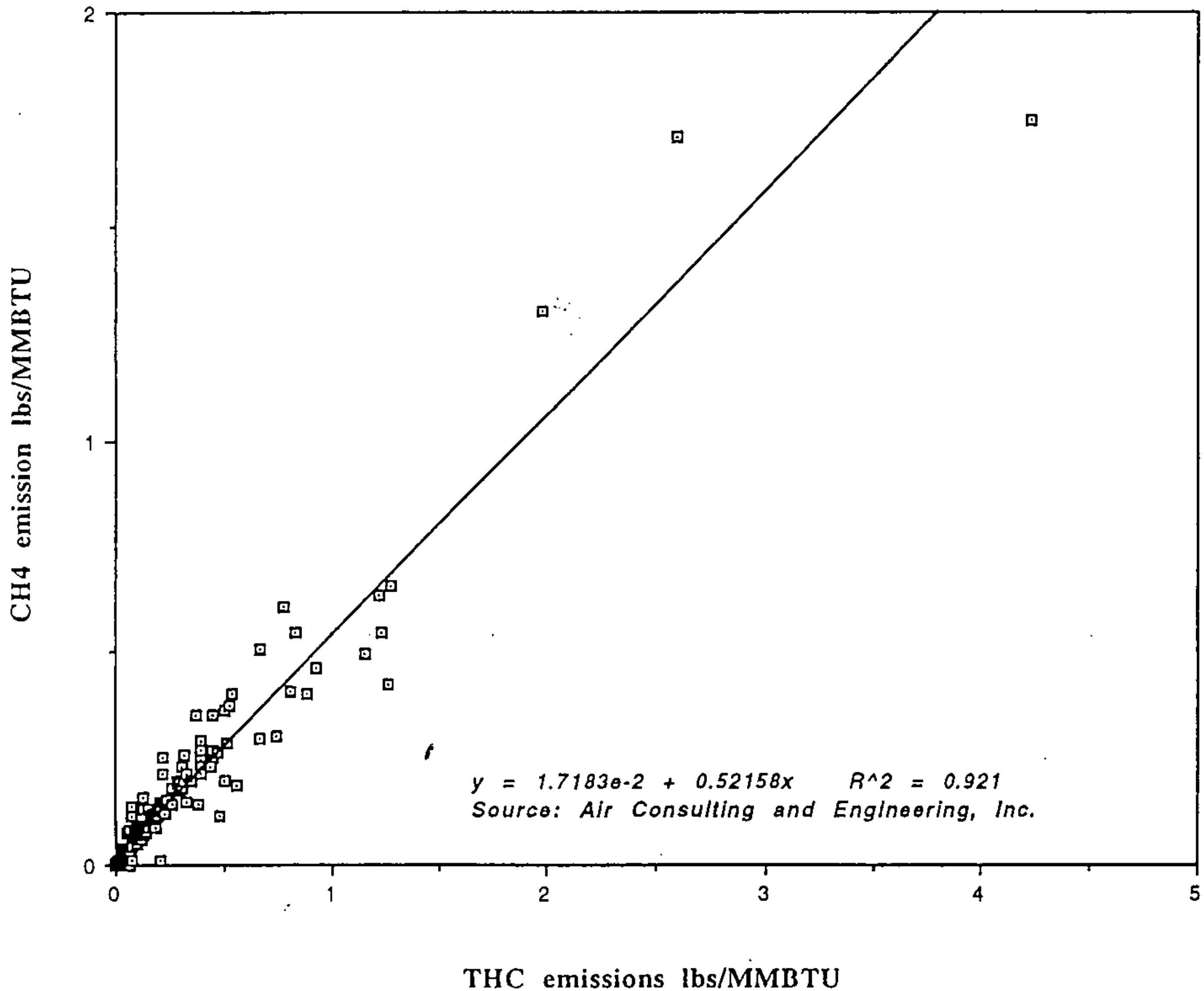
METHOD 25A

INTRODUCTION: Method 25A is a better method for measuring hydrocarbon concentrations greater than 2 ppm and less than 100 ppm. The method gives good results when the hydrocarbons are all hydrogen and carbon. When applied to measuring hydrocarbons containing oxygen, nitrogen, and chlorine, the efficiency of the method is reduced.

METHODOLOGY: A gas sample is drawn from the source through a heated sample line, if necessary, and glass fiber filter to a flame ionization analyzer (FIA). Results are reported as volume concentrations equivalents of the calibration gas or as carbon equivalents.

APPLICABILITY: The flame ionization analyzer (FIA) can be easily calibrated if dealing with a known mixture containing one or two compounds. The difficulty rises when confronted with an unknown mixture. Generally, in these cases, FIA cannot reasonably measure true mass. Also, in sources where incineration is used as a control measure, oxygenated hydrocarbons may be present in the exit mixture. The FIA response for the oxygenated compounds is biased low, thereby introducing an error.

Boiler Emission Data from 251 Emission Tests, 1993-1994 Sugar Industry Production Season



UNITED STATES SUGAR CORPORATION
Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121 Telex: 510-952-7753

August 16, 1994

Mr. Clair Fancy
Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

RE: Revision of RACT Limits and Test Methods
U. S. Sugar Corporation - Bryant Mill

Boiler No. 1 - AO50-191891
Boiler No. 2 - AO50-191899
Boiler No. 3 - AO50-182890

Dear Mr. Fancy::

The United States Sugar Corporation (U. S. Sugar) requests that the Department approve revised reasonably available control technology (RACT) emission levels for volatile organic compounds (VOCs) and nitrogen oxides (NOx) applicable to the above-referenced bagasse-fired boilers. These levels -- 1.5 lb/MMBtu for VOCs and 0.45 lbs/MMBtu for NOx -- are based on an industry-wide testing program conducted during the most recent sugar cane crop season. The results of the testing program and the proposed emission limits are described in the enclosed letters prepared in conjunction with U. S. Sugar's consultants and pursuant to earlier consultation with the Bureau of Air Regulation.

Based on the results of the testing program, and the Department's recently-issued guidelines for VOC testing, U.S. Sugar also proposes to use EPA Method 25A in conjunction with EPA Method 18 to determine nonmethane VOC emissions from bagasse boilers.

If the request is approved, we ask that the Bryant RACT amendments be revised to read as follows:

SPECIFIC CONDITIONS 11-13 (No changes to the other conditions)

11. Volatile Organic Compound (VOC) emissions shall not exceed 1.5 pounds per million Btu heat input. [Requested by permittee.]

12. Nitrogen Oxides (NOx) emissions shall not exceed 0.45 pounds per million Btu heat input. [Requested by permittee.]

13. U.S. Sugar shall test this boiler for VOCs and NOx on an annual basis within 60 days of the date of January 1. Each compliance test shall be conducted in

accordance with 40 CFR 60, appendix A, using the method indicated [Rule 17-297.340(1) (d), F.A.C.]:

(A) VOC - EPA Method 25A in conjunction with EPA Method 18 to determine nonmethane VOC.

(B) NOx - EPA Method 7 or 7E.

We appreciate your attention to this matter and the time devoted by the Department to resolving your concerns and those of the sugar industry, and U. S. Sugar Corporation in particular, with respect to these permits.

Very truly yours,

UNITED STATES SUGAR CORPORATION

Murray T. Brinson
Vice President
Sugar Processing

MTB:jt

Enclosures

cc: Ronald D. Blackburn - DEP, South District
Arthur Lyle - DEP, South District
A.J. Satyal - P.B. Co. Dept.of Health
Jeff Braswell, Esq. - DEP Tallahassee
Peter Briggs - USSC
David Buff - KBN
Steve Neck - ACE
Robert F. Van Voorhees - Bryan Cave

File: \WS\Fancy-DEP

Table 1. Summary of VOC Emission Tests Performed on Bagasse Boilers in Florida

Sugar Mill	Date	Steam Rate (lb/hr)	Heat Input Rate (10^6 Btu/hr)	Bagasse Burning Rate (ton/hr, wet)*	VOC Emissions lb/hr	VOC Emissions lb/10^6 Btu	VOC Emissions lb/ton, wet
Sugar Cane Growers Coop.							
Boiler 8	2/4/83	246,429	414	51.75	13.9	0.03	0.27
Boiler 8	2/4/83	243,250	406	50.75	26.8	0.07	0.53
Boiler 8	2/4/83	254,211	425	53.13	88.1	0.21	1.66
Osceola Farms							
Boiler 6	12/18/86	160,000	310	38.75	79	0.25	2.04
Boiler 6	12/18/86	160,000	310	38.75	49	0.16	1.26
U.S. Sugar Clewiston							
Boiler 4	12/23/85	262,500	561.4	70.18	104.4	0.19	1.49
Boiler 4	12/23/85	266,000	562.7	70.34	71.0	0.13	1.01
Boiler 4	12/23/85	251,407	532.3	66.54	120.2	0.23	1.81
Atlantic Sugar							
Boiler 5	3/21/83	108,000	201	25.13	14.3	0.07	0.57
Boiler 5	3/21/83	98,000	183	22.88	14.6	0.08	0.64
Boiler 5	3/21/83	108,000	201	25.13	14.5	0.07	0.58
Boiler 5	2/20/87	N/A	N/A	N/A	20.0 (Avg)	-	-

N/A = Not Available
* Assumes 4,000 Btu/lb average heat content for wet bagasse

Florida Department of Environmental Regulation

South District • 2269 Bay Street • Fort Myers, Florida 33901-2896 • 813-332-2667

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary
Philip Edwards, Deputy Assistant Secretary

October 26, 1989

Peter Barquin
U. S. Sugar Corporation
Post Office Drawer 1207
Clewiston, Florida 33440

Re: Hendry County - AP
U. S. Sugar Corporation
Boiler No. 4
AC26-126965 and AO26-144701

Dear Mr. Barquin:

As requested in your recent telephone conversation with David Knowles, we hereby clarify the intent of the specific conditions of the operating permit AO26-144701 for boiler No. 4.

The intent of specific condition No. 8 is that the flue gas pressure drop across the scrubber be measured and recorded once in each 8 hour shift. The pH of the scrubber water shall be measured and recorded once per day.

We request that you test the CO emissions from Boiler #4 using EPA Method 10 during the 1989-1990 crop season. The purpose of the this test is to help us determine a reasonable CO emission factor for boilers of this type. Please notify this office in advance of the date and time of each test.

If you have any questions please call David Knowles.

Sincerely,

Philip R. Edwards
Deputy Assistant Secretary

PRE/DMK/jsw

cc: Williard Hanks

ATTACHMENT 7

CO Emission Test Data

ATTACHMENT A

Application for Renewal of Permit to Operate
Boiler No. 4
U.S. Sugar Corporation - Clewiston Mill

In this application for renewal of the operating permit for Boiler No. 4, U.S. Sugar requests that Specific Conditions 5, 8, and 13 in the current operating permit be revised. The requested changes are summarized as follows:

Specific Condition 5 - A revision is requested to provide that the limit on burning more than 6,300 gallons of fuel oil in any 3 hour period, which is intended as a limit on emissions, may be exceeded during startup, shutdown or malfunction in accordance with DER Rule 17-2.250, F.A.C.

Specific Condition 8 - A revision is requested to incorporate the clarification provided by DER on October 26, 1989, with respect to the timing of measurements.

Specific Condition 13 - U.S. Sugar has completed testing carbon monoxide (CO) emissions from Boiler No. 4 using EPA Method 10 and requests the establishment of a reasonable CO limit, as previously intended by DER. The proposed emission limit and the basis for the limit is provided.

Each of these items are discussed in the following paragraphs.

Specific Condition 5

This condition in the current permit requires that during any 3-hour period, not more than 6,300 gallons of fuel oil shall be burned in all stationary fuel oil burning equipment at the plant. This condition is included in the permit to limit SO_2 emissions. It is requested that this condition be revised to permit excess emissions resulting from startup, shutdown or malfunction, such as when power is lost at the mill. Startup conditions occur during the "grind-in" period (which usually occurs on one day approximately one week prior to the sugar mill startup), during startup of the sugar mill at the beginning of the crop season, and at other times when the mill has been shut down for an extended period (such as during the Christmas holidays). The purpose of the grind-in period is to test major equipment for proper operation. Plant emergencies are very rare, but when they do occur, bagasse feed to the boilers may be interrupted, and it may become necessary to switch to fuel oil.

Excess emissions during these limited and unusual periods are expressly allowed under DER Rule 17-2.250, F.A.C. The rule allows excess emissions from fossil fuel steam generators during such periods "provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions" is minimized. It is readily apparent that this rule was intended to cover precisely the type of situation encountered by U.S. Sugar during startups and other emergencies. Indeed, the rule would apply by its own terms if Specific Condition 5 were expressed as an emission limit rather than a fuel burning limit. Accordingly, we request that Specific Condition 5 be revised to read as follows:

5. During any 3-hour period, not more than 6,300 gallons of fuel oil shall be burned in all stationary fuel oil burning equipment at the plant. Excess fuel oil burning resulting from startup, shutdown, or malfunction of any source shall be permitted provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions shall be minimized. All permits to operate other oil burning equipment at this plant are revised to include this limitation.

Specific Condition 8

DER has clarified the intent of Specific Condition 8 of the current operating permit to required that the flue gas pressure drop across the scrubber be measured and recorded once in each 8-hour shift. Reference letter from Phillip R. Edwards, Deputy Assistant Secretary of DER, to Peter Barquin of U.S. Sugar Corporation, October 26, 1989 (copy enclosed). The letter states further that the pH of the scrubber water shall be measured and recorded once per day. We request that Specific Condition 8 of the permit be revised to reflect these modified requirements.

Specific Condition 13

Specific Condition 13 of the current permit limits CO emissions to 0.25 lb/MMBtu as determined by EPA Method 10. U.S. Sugar has addressed the concern with this condition in a letter addressed to DER dated October 8, 1990.

The concern with the condition is that the 0.25 lb/MMBtu limit was not based on Method 10 testing, but was based instead on EPA emission factors which have proven to be inappropriate as estimates of actual CO emissions from sugar processing mills. Subsequent testing at U.S. Sugar and other sugar mills has demonstrated that the 0.25 lb/MMBtu limit is much too low based on Method 10 testing, as acknowledged by the USEPA Region IV and the DER through correspondence in 1989.

Presented in the attached Table 1 are CO test results for the three mills known to have conducted Method 10 tests. A total of 20 individual test runs have been conducted on Boiler No. 4 at the U.S. Sugar mill in Clewiston. These were all conducted by Air Consulting and Engineering, Inc. Boiler No. 4 is a traveling grate boiler. The average CO emission rate for this boiler, as reflected in the test data, is 5.44 lb/MMBtu. The individual measurements range from 2.2 to 14.9 lb/MMBtu.

In order to determine an acceptable upper CO limit for compliance purposes, a statistical analysis of the test data was performed, using the average test results from each test date, consistent with the manner in which compliance tests are performed. The average test results are shown in Table 2. A frequency distribution for the data is presented in Figure 1. This plot shows that a CO emission level of 9.0 lb/MMBtu would have the probability of being exceeded only about 10 percent of the time. This probability of exceedance is acceptable to U.S. Sugar. Therefore, U.S. Sugar requests an allowable CO emission rate of 9.0 lb/MMBtu for Boiler No. 4.

Revised 07/07/93

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07/08/93

Table 1. Summary of CO Emission Tests Performed on Bagasse Boilers in Florida Using EPA Method 10

Unit	Boiler Type	Date	Steam Rate (lb/hr)	Heat Input (MMBtu/hr)	Bagasse Firing Rate[a] (TPH wet)	CO Emissions lb/hr	CO Emissions lb/MMBtu	CO Emissions lb/ton,wet
U.S. Sugar Bryant								
Boiler 5	Vibrating Grate	02/16/89	256,928	577	80.14	2,586.9	4.48	32.28
Boiler 5	Vibrating Grate	02/17/89	249,228	561	77.92	2,658.0	4.74	34.11
Boiler 5	Vibrating Grate	02/17/89	249,480	562	78.06	1,693.3	3.01	21.69
						Max. =	4.74	34.11
						Avg. =	4.08	29.36
Osceola Farms								
Boiler 3	Fuel Cell	01/17/89	NA	NA	NA	NA	3.07	22.10
Boiler 3	Fuel Cell	12/05/89	NA	NA	NA	NA	0.81	5.83
Boiler 3	Fuel Cell	01/24/90	NA	NA	NA	NA	3.14	22.61
Boiler 6	Traveling Grate	01/16/89	NA	NA	NA	NA	5.42	39.02
Boiler 6	Traveling Grate	11/15/89	NA	NA	NA	NA	5.48	39.46
Boiler 6	Traveling Grate	02/02/90	NA	NA	NA	NA	5.93	42.70
						Max. =	5.93	42.70
						Avg. =	3.98	28.62
U.S. Sugar - Clewiston								
Boiler 4	Traveling Gate	02/20/90	308,636	691.7	96.07	1,940	2.80	20.19
Boiler 4	Traveling Gate	02/20/90	306,666	690.3	95.88	1,520	2.20	15.85
Boiler 4	Traveling Gate	02/20/90	310,298	698.8	97.06	2,240	3.20	23.08
Boiler 4	Traveling Gate	02/15/91	289,091	624.9	86.79	4,760	7.62	54.84
Boiler 4	Traveling Gate	02/15/91	291,200	629.5	87.43	2,710	4.30	31.00
Boiler 4	Traveling Gate	02/18/91	288,358	622.8	86.50	2,430	3.90	28.09
Boiler 4	Traveling Gate	02/18/91	285,224	616.4	85.61	2,640	4.28	30.84
Boiler 4	Traveling Gate	02/18/91	302,647	653.3	90.74	2,060	3.16	22.70
Boiler 4	Traveling Gate	02/19/91	290,769	627.9	87.21	4,430	7.06	50.80
Boiler 4	Traveling Gate	02/19/91	294,583	637.1	88.49	3,400	5.33	38.42
Boiler 4	Traveling Gate	02/19/91	293,382	633.5	87.99	2,480	3.92	28.19
Boiler 4	Traveling Gate	02/22/91	300,000	647.9	89.99	4,900	7.56	54.45
Boiler 4	Traveling Gate	02/22/91	293,382	634.2	88.08	9,450	14.90	107.28
Boiler 4	Traveling Gate	01/07/92	293,425	613.6	85.22	3,200	5.22	37.55
Boiler 4	Traveling Gate	01/07/92	282,800	591.3	82.13	6,270	10.60	76.35
Boiler 4	Traveling Gate	01/08/92	299,178	623.2	86.56	2,030	3.26	23.45
Boiler 4	Traveling Gate	01/08/92	297,973	621.5	86.32	3,160	5.09	36.61
Boiler 4	Traveling Gate	01/08/92	300,811	627.4	87.14	3,540	5.64	40.62
Boiler 4	Traveling Gate	01/09/92	302,055	630.0	87.50	2,770	4.40	31.66
Boiler 4	Traveling Gate	01/09/92	295,135	615.8	85.53	2,710	4.40	31.69
						Max. =	14.90	107.28
						Avg. =	5.44	39.18

Note: lb/hr = pounds per hour.
lb/MMBtu = pounds per million British thermal units.
lb/ton = pounds per ton.
MMBtu/hr = million British thermal units per hour.
NA = not available.
TPH = tons per hour.

[a] Calculated from reported heat input rate, assumed 3,600 Btu/lb average heat content for wet bagasse.

108.83 ÷ 20 = 5.44
108.83 − (14.90 + 10.60 + 2.20) ÷ 17
= 4.77

Table 2. Summary of CO Test Averages, U.S. Sugar Clewiston Boiler No. 4

Test Date	Number of Runs	Average CO Emissions (lb/MM Btu)
February 20, 1990	3	2.73
February 15, 1991	2	3.97
February 18, 1991	3	3.78
February 19, 1991	3	5.43
February 22, 1991	2	11.23
January 7, 1992	2	7.91
January 8, 1992	3	4.66
January 9, 1992	2	4.40

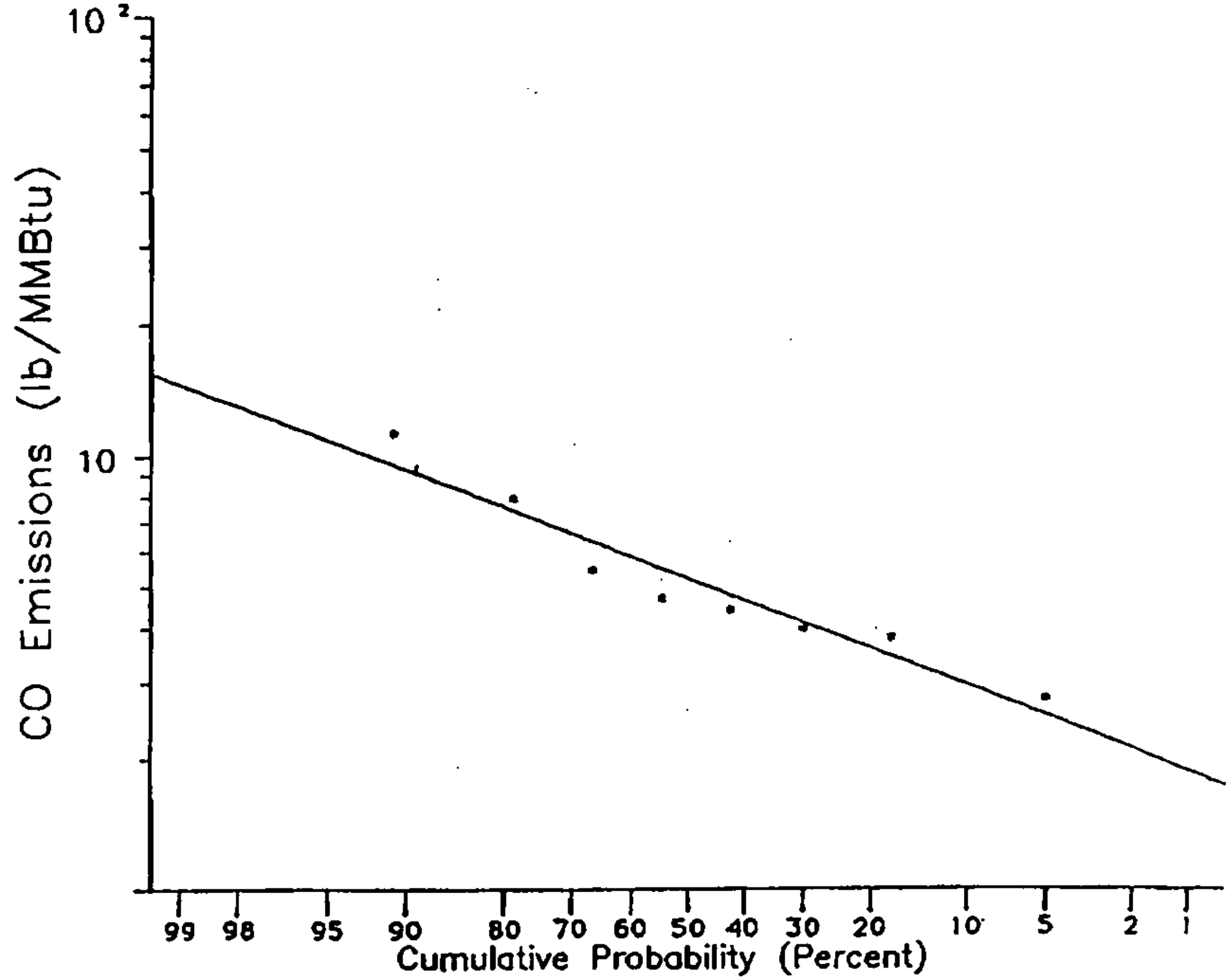


Figure 1 FREQUENCY DISTRIBUTION OF CO TEST DATA, CLEWISTON BOILER NO. 4

KBN

ATTACHMENT C

Application for Renewal of Permit to Operate

Boiler No. 4

U.S. Sugar Corporation - Clewiston Mill

Because the underlying assumptions about carbon monoxide emission rates have proven to be erroneous, we have not complied with Specific Condition 13 of the permit. The inappropriateness and inapplicability of this condition has been recognized and acknowledged by the Department in correspondence with U.S. Sugar. Reference the letter from Philip Edwards of DER to Peter Barquin of U.S. Sugar, dated October 26, 1989. Accordingly, U.S. Sugar has conducted testing pursuant to instructions from the Department to provide the basis for establishing reasonable CO emissions levels for this boiler. The results of that testing are included in Attachment A of this application, and U.S. Sugar is requesting a revision of Specific Condition 13.

In addition, it has not always been possible to complete testing in accordance with the dates specified in the specific conditions of this permit. On those occasions when testing would not be completed within the specified time period, U.S. Sugar has advised the Department of the specific date scheduled for testing and has obtained authorization to complete testing on the alternative date, allowing an opportunity for witnessing by the Department.

ATTACHMENT 8

VOC BACT Analysis

5.4 BACT EVALUATION FOR CO AND VOC EMISSIONS

In this section, the available control technologies capable of reducing CO and VOC emissions produced from firing bagasse and residual oil will be identified and evaluated. Potential application of these technologies as BACT for the proposed spreader-stoker boiler, rated on oil at 255 MM Btu/hr, is discussed. Table 5-8 is a summary of the potential CO and VOC control technologies presented in this section.

The EPA BACT/LAER clearinghouse has no BACT determinations for CO or VOC emission from bagasse combustors or residual oil combustion in boilers. Historically, BACT and LAER emission limits for CO and VOC on bagasse and oil-fired boilers have been based on the use of good combustion practices, rather than add-on control systems.

In bagasse-fired boilers, the fuel characteristics and the combustion practices result in CO and VOC emissions that are somewhat high, relative to fossil-fuel fired boilers. Improving combustion would likely require improving fuel quality (e.g., lowering bagasse moisture content through drying), which would make use of this waste fuel uneconomical and result in higher fossil fuel usage. The use of FGR could theoretically reduce CO and VOC emissions by reburning a portion of the VOCs in the recirculated exhaust. The overall effectiveness of fluegas recirculation would be limited because:

- The extremely high particulate loading of the combustion gas and the abrasive nature of the flyash would make this system very unreliable

- This has never been applied to a bagasse combustor

- This technology would not be economically feasible, per the analysis done for NO_x control

Post-combustion VOC controls have not been applied to bagasse-fired boilers. Such common techniques as direct-flame incineration, catalytic oxidation, and carbon absorption are also inappropriate technologies for bagasse boilers for the same reasons as above.

The only technically feasible CO and VOC control technology for bagasse-fired boilers is good combustion practices.

Because of their utility in reducing CO and VOC emissions, along with its success record in the sugar industry, **good combustion practices are proposed as BACT for emissions for the proposed boiler No. 7 when firing bagasse or oil.**

Table 5-8

Summary of Potential CO and VOC control Technologies[1]

Control Technology	Typical Effic. (% CO)	Typical Effic. (% VOC)	In Service On Bagasse Combustors?	In Service On Other Combustion Sources?	Technically Feasible For This Combustor?
Direct-flame Oxidation	90-99	90-99	No	Yes	No[2]
Catalytic Oxidation	90-95	90-95	No	Yes	No[3]
Fluegas Recirculation	30-50%	30-50%	No	No	Yes[4]
Good Combustion Practices	15-50	15-50	Yes	Yes	Yes

Notes:

[1] Source: Air Pollution Engineering Manual, AWMA, 1992.

[2] Abrasive Particulate loading to high in combustor.

[3] Same as above.

[4] See discussion under NO_x control.

For the proposed boiler No. 7, the most appropriate BACT precedent for VOC, CO and NO_x appears to be the permit for Clewiston boiler No. 4, which relies on the inherent design features of the bagasse boiler along with the appropriate operating procedures to ensure that emission will be maintained at the lowest possible level. That permit imposes no requirement for add-on control technology, and that is the approach recommended here for the U.S. Sugar Corporation Clewiston mill boiler No. 7.

5.5 BACT EVALUATION FOR SULFURIC ACID MIST EMISSIONS

Sulfuric acid mist is generated from the emissions of SO_3 when oil is combusted. Sulfur trioxide can further react with water present in the fluegas to form sulfuric acid mist. The control of acid gas emissions is primarily controlled by removing the precursor pollutants from the fluegas with either wet or semi-dry scrubbing processes. Sulfuric acid mist emissions will be therefore be controlled by reducing the amount of sulfur in the stack gases by the following methods discussed previously:

- Installation of a wet impingement scrubber for SO_2 emissions from bagasse combustion
- Use of low-sulfur fuel oil for SO_2 emissions from residual oil combustion

5.6 BACT EVALUATION FOR BERYLLIUM EMISSIONS

Beryllium emissions were estimated using EPA factors for fuel oil combustion and assuming no removal in the scrubbing system, as there are no published factors for beryllium removal efficiency in the scrubber. Beryllium emissions are primarily controlled by removing the gaseous or particulate metal from the fluegas with either wet or semi-dry scrubbing processes. Beryllium emissions will be therefore be controlled for this project by installation of a wet impingement scrubber for PM emissions from fuel oil combustion.

ATTACHMENT 9

Tables 2-3, 2-4, 2-5 and 2-6

Table 2-3
Clewiston Mill Potential Annual Emissions

FUEL OIL COMBUSTION

	Avg. MMBtu/hr	Day/yr	Mgal/yr	PM	SO2	NOx	CO	VOC
Boiler No.1	3.49	160	89.23	0.67	17.51	2.45	0.22	0.01
Boiler No.2	3.38	160	86.51	0.65	16.98	2.38	0.22	0.01
Boiler No.3	1.91	160	48.97	0.37	9.61	1.35	0.12	0.01
Boiler No.4	1.93	160	49.33	0.37	5.81	1.36	0.12	0.01
Boiler No.7 crop	2.01	160	51.54	0.39	2.02	1.42	0.13	0.01
Boiler No.7 off	255	69	2,810	21.08	110.29	77.28	7.03	0.39
Total TPY			3,136	23.5	162.2	86.2	7.8	0.4

BAGASSE COMBUSTION

	Avg. MMBtu/hr	Day/yr	Wet Feed TPY	PM	SO2	NOx	CO	VOC
Boiler No.1	415	160	199,054	199.1	49.8	119.4	7,166	199.1
Boiler No.2	402	160	192,982	193.0	48.2	115.8	6,947	193.0
Boiler No.3	220	160	105,569	126.7	26.4	63.3	3,800	105.6
Boiler No.4	603	160	289,384	173.6	192.2	346.9	10,418	246.0
Boiler No.7 crop	630	160	302,341	181.4	200.8	346.9	10,884	257.0
Boiler No.7 off	450	136	183,564	110.1	121.9	294.9	5,683	156.0
Total TPY			1,272,894	984	639	1,287	44,899	1,157

lb/MMBTU

TOTAL COMBUSTION EMISSIONS

	Avg. MMBtu/hr	PM	SO2	NOx	CO	VOC
Boiler No.1	418	200	67	122	7,166	199
Boiler No.2	405	194	65	118	6,948	193
Boiler No.3	222	127	36	65	3,801	106
Boiler No.4	605	174	198	348	10,418	246
Boiler No.7	493	313	435	721	16,575	413
Total TPY		1,007	801	1,374	44,907	1,157

Table 2-4
Clewiston Mill Potential Emissions (24-hour case)

Fuel Oil Combustion

	MMBtu/hr Avg.	Mgal/yr	PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	103.5	0.69	10.4	270.8	38.0	3.45	0.19	72,000
Boiler No.2	94.5	0.63	9.5	247.3	34.7	3.15	0.18	65,739
Boiler No.3	57.0	0.38	5.7	149.2	20.9	1.90	0.11	41,044
Boiler No.4	0.0	0.00	0.0	0.0	0.0	0.00	0.00	0
Boiler No.7	0.0	0.00	0.0	0.0	0.0	0.00	0.00	0
Total lb/hr		1.70	25.5	667.3	93.5	8.50	0.48	178,783

Bagasse Combustion

	MMBtu/hr Avg.	Wet Feed Ton/yr	PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	341	42.6	85.2	21.3	51.1	3,067	85.2	163,000
Boiler No.2	354	44.2	88.5	22.1	53.1	3,185	88.5	169,261
Boiler No.3	190	23.7	56.9	11.9	28.5	1,708	47.4	93,956
Boiler No.4	707	88.3	106.0	117.3	180.7	6,359	150.2	335,000
Boiler No.7	738	92.3	110.7	122.5	180.7	6,644	156.9	350,000
Total lb/hr		**291**	**447**	**295**	**494**	**20,964**	**528**	**1,111,217**

Total Hourly Emissions

	MMBtu/hr Avg.		PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	444		96	292	89	3,071	85	235,000
Boiler No.2	448		98	269	88	3,188	89	235,000
Boiler No.3	247		63	161	49	1,710	48	135,000
Boiler No.4	707		106	117	181	6,359	150	335,000
Boiler No.7	738		111	123	181	6,644	157	350,000
Total lb/hr			**473**	**962**	**588**	**20,973**	**529**	**1,290,000**

Table 2-5
Clewiston Mill Potential Emissions (3-hour case)

Fuel Oil Combustion

	MMBtu/hr Ave.	Mgal/yr	PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	122.3	0.82	12.2	320.0	44.8	4.08	0.23	85,078
Boiler No.2	120.0	0.80	12.0	314.0	44.0	4.00	0.22	83,478
Boiler No.3	72.8	0.49	7.3	190.5	26.7	2.43	0.14	52,421
Boiler No.4	0.0	0.00	0.0	0.0	0.0	0.00	0.00	0
Boiler No.7	0.0	0.00	0.0	0.0	0.0	0.00	0.00	0
Total lb/hr	**315.1**	**2.10**	**31.5**	**824.5**	**115.5**	**10.50**	**0.59**	**220,978**

Bagasse Combustion

	MMBtu/hr Ave.	Wet Feed Ton/yr	PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	313	39.2	78.4	19.6	47.0	2,821	78.4	149,922
Boiler No.2	317	39.6	79.2	19.8	47.5	2,851	79.2	151,521
Boiler No.3	167	20.9	50.0	10.4	25.0	1,501	41.7	82,579
Boiler No.4	707	88.3	106.0	117.3	192.4	6,359	150.2	335,000
Boiler No.7	738	92.3	110.7	122.5	192.4	6,644	156.9	350,000
Total lb/hr		**280**	**424**	**290**	**504**	**20,177**	**506**	**1,069,021**

Total Hourly Emissions:

	MMBtu/hr Ave.		PM	SO2	NOx	CO	VOC	Steam Lb/hr
Boiler No.1	436		91	340	92	2,825	79	235,000
Boiler No.2	437		91	334	92	2,855	79	235,000
Boiler No.3	240		57	201	52	1,504	42	135,000
Boiler No.4	707		106	117	192	6,359	150	335,000
Boiler No.7	738		111	123	192	6,644	157	350,000
Total lb/hr			**456**	**1,114**	**620**	**20,188**	**507**	**1,289,999**

Table 2-6
Clewiston Mill Air Toxics Emissions

POLLUTANT	Annual Emission TPY	24-hour Emission lb/hr	3-hour Emission lb/hr
Antimony	0.00519	0.00593	0.00732
Arsenic	0.00424	0.00485	0.00599
Barium	0.01495	0.01707	0.02109
Beryllium	0.00094	0.00107	0.00132
Bromine	0.00156	0.00178	0.00220
Cadmium	0.00351	0.00400	0.00495
Chromium	0.00469	0.00536	0.00662
Chromium (IV)	0.00094	0.00107	0.00066
Cobalt	0.02621	0.02993	0.03698
Copper	0.06254	0.07140	0.08823
Fluoride	0.00140	0.00160	0.03781
Formaldehyde	0.09046	0.10328	0.12762
Hydrogen Chloride	0.14222	0.16238	0.20065
Lead	0.00625	0.00714	0.00882
Manganese	0.00581	0.00663	0.00819
Mercury	0.00071	0.00082	0.00101
Molybdenum	0.01090	0.01245	0.01538
Nickel	0.28142	0.32130	0.39703
Phosphorus	0.01298	0.01482	0.01831
Selenium	0.00831	0.00948	0.01172
Tin	0.07371	0.08415	0.10399
Zinc	0.01495	0.01707	0.02109

ATTACHMENT 10

Revised Tables 3-3, H-1 and H-2

Table 3-3
PSD Source Applicability Analysis for Clewiston Boiler No. 7

Regulated Pollutant	Baseline[1] Emissions (TPY)	Boilers No. 1-4 and 7 Proposed Project Emissions (TPY)	Net Change (TPY)	Significant Emission Rate (TPY)	PSD Applies
Particulate (TSP)	750	1,007	257	25	Yes
Particulate (PM10)	750	1,007	257	15	Yes
Sulfur Dioxide	366	801	435	40	Yes
Nitrogen Oxides	709	1,374	665	40	Yes
Carbon Monoxide	28,425	44.907	16,482	100	Yes
VOC	837	1,157	320	40	Yes
Lead	0.00058	0.00683	0.00625	0.6	No
Mercury	0.00007	0.00078	0.00071	0.1	No
Beryllium	0.00009	0.00102	0.00093	0.0004	Yes
Fluorides	0.00013	0.00153	0.00140	3	No
Sulfuric Acid Mist	37	80	43	7	Yes
Total Reduced Sulfur	--	--	0	10	No
Asbestos	--	--	0	0.007	No
Vinyl Chloride	--	--	0	0	No

[1] See Attachment H for the derivation of baseline emissions.

TABLE H-1. ACTUAL EMISSIONS FOR BOILERS No. 5 AND 6, 1991-1992

	Activity Factor TPY Wet Feed	PM Emission Ton/yr	SO2 Emission Ton/yr	NOx Emission Ton/yr	CO Emission Ton/yr	VOC Emission Ton/yr
Boiler No.5	42,522	26.7	0.0	25.5	42.5	42.5
Boiler No.6	50,458	28.6	0.0	30.2	50.5	50.5
Total TPY	92,980	55.3	0.0	55.7	93.0	93.0

TABLE H-2. CLEWISTON MILL PSD BASELINE ANNUAL EMISSIONS (TON/YEAR)

FUEL OIL COMBUSTION

	Avg. MMBtu/hr	Day/yr	Mgal/yr	PM	SO2	NOx	CO	VOC
Boiler No.1	3.49	160	89.23	0.67	17.51	2.45	0.22	0.01
Boiler No.2	3.38	160	86.51	0.65	16.98	2.38	0.22	0.01
Boiler No.3	1.91	160	48.97	0.37	9.61	1.35	0.12	0.01
Boiler No.4	1.93	160	49.33	0.37	5.81	1.36	0.12	0.01
Total TPY			274	2.1	49.9	7.5	0.7	0.0

	Be	Fl	Pb	Hg
Boiler No.1	2.81E-05	4.20E-05	1.87E-04	2.14E-05
Boiler No.2	2.73E-05	4.07E-05	1.82E-04	2.08E-05
Boiler No.3	1.54E-05	2.30E-05	1.03E-04	1.18E-05
Boiler No.4	1.55E-05	2.32E-05	1.04E-04	1.18E-05
Total TPY	8.63E-05	1.29E-04	5.76E-04	6.58E-05

BAGASSE COMBUSTION

	Avg. MMBtu/hr	Day/yr	Wet Feed TPY	PM	SO2	NOx	CO	VOC
Boiler No.1	415	160	199,054	199.1	49.8	119.4	7,166	199.1
Boiler No.2	402	160	192,982	193.0	48.2	115.8	6,947	193.0
Boiler No.3	220	160	105,569	126.7	26.4	63.3	3,800	105.6
Boiler No.4	603	160	289,384	173.6	192.2	346.9	10,418	246.0
Boiler No.5	97	147	42,522	26.7	0.0	25.5	42.5	42.5
Boiler No.6	112	151	50,458	28.6	0.0	30.3	50.5	50.5
Total TPY			879,968	748	317	701	28,425	837

TOTAL COMBUSTION EMISSIONS

	Avg. MMBtu/hr	PM	SO2	NOx	CO	VOC
Boiler No.1	418	200	67	122	7,166	199
Boiler No.2	405	194	65	118	6,948	193
Boiler No.3	222	127	36	65	3,801	106
Boiler No.4	605	174	198	348	10,418	246
Boiler No.5	97	27	0	26	43	43
Boiler No.6	112	29	0	30	51	50
Total TPY		750	366	709	28,425	837

ATTACHMENT 11

Precautions to Minimize Dust Emissions

Reasonable Precautions Taken To Date At US Sugar Clewiston Mill To Minimize Dust Emissions From Bagasse

To minimize fugitive or unconfined emissions from bagasse handling in conveyors and storage systems, U.S. Sugar Corporation has taken the following reasonable precautions at its Clewiston mill:

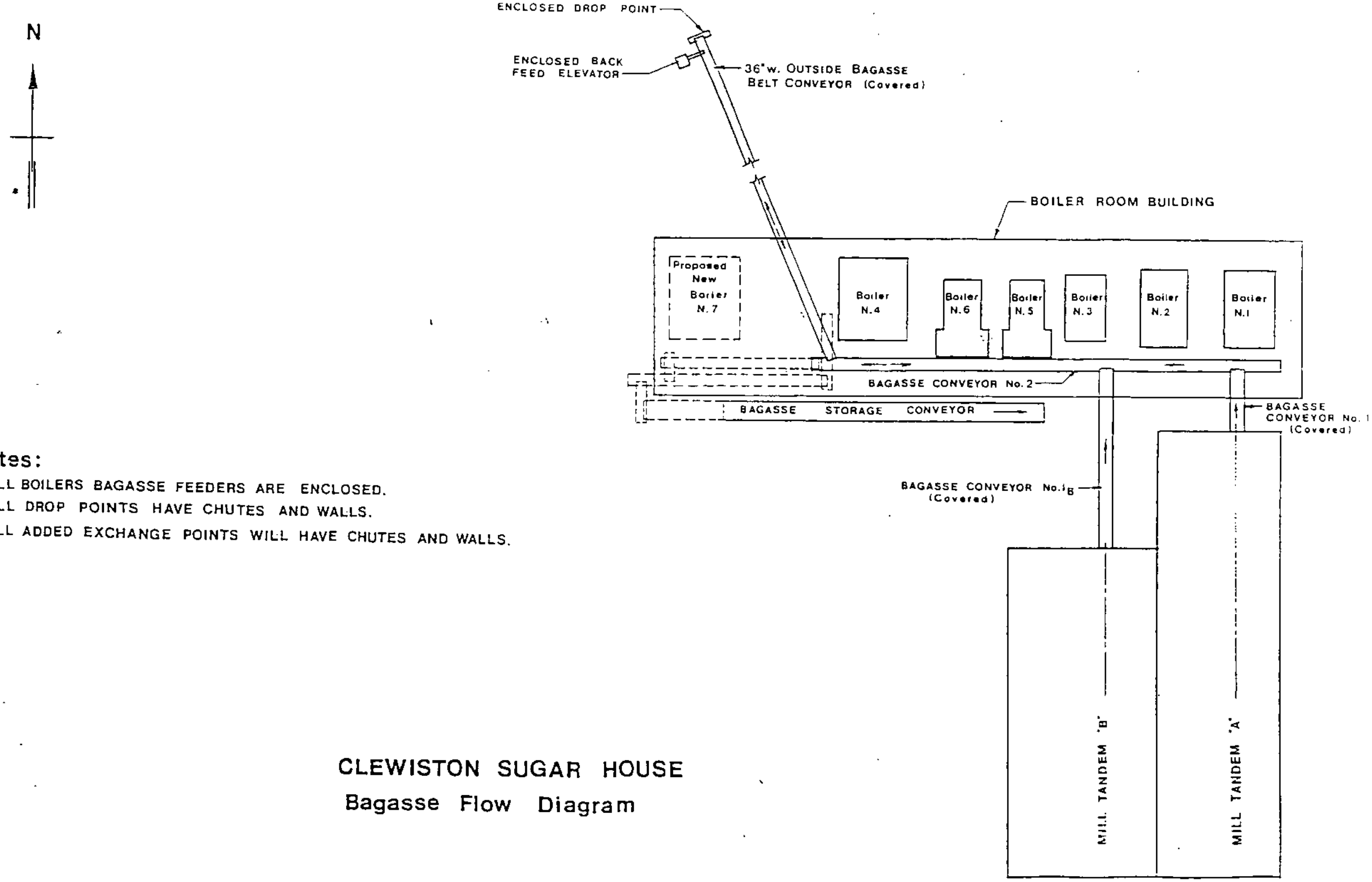
1. Belt Conveyors - Belt conveyors, or that portion of belt conveyors used for bagasse handling and located outside of mill buildings, are enclosed or properly covered with seals.

2. Drag Conveyors - Drag conveyors, or that portion of drag conveyors used for bagasse handing and located outside of mill buildings, are equipped with sideboards or other structures to enclose or cover the sides of the conveyor.

3. Transfer Points - All transfer points, or conveyor systems (belt or drag) used for bagasse handling and located outside of mill buildings, are enclosed or covered.

4. End of Conveyor - The drop point at the end of any bagasse handling conveyor system is designed and equipped with either: (1) Devices that will reduce the distance of free fall from the drop point (such as boot and chute arrangement with a canvas or similar material "split skirt"), or (2) A windbreaker system that will protect the drop point from wind.

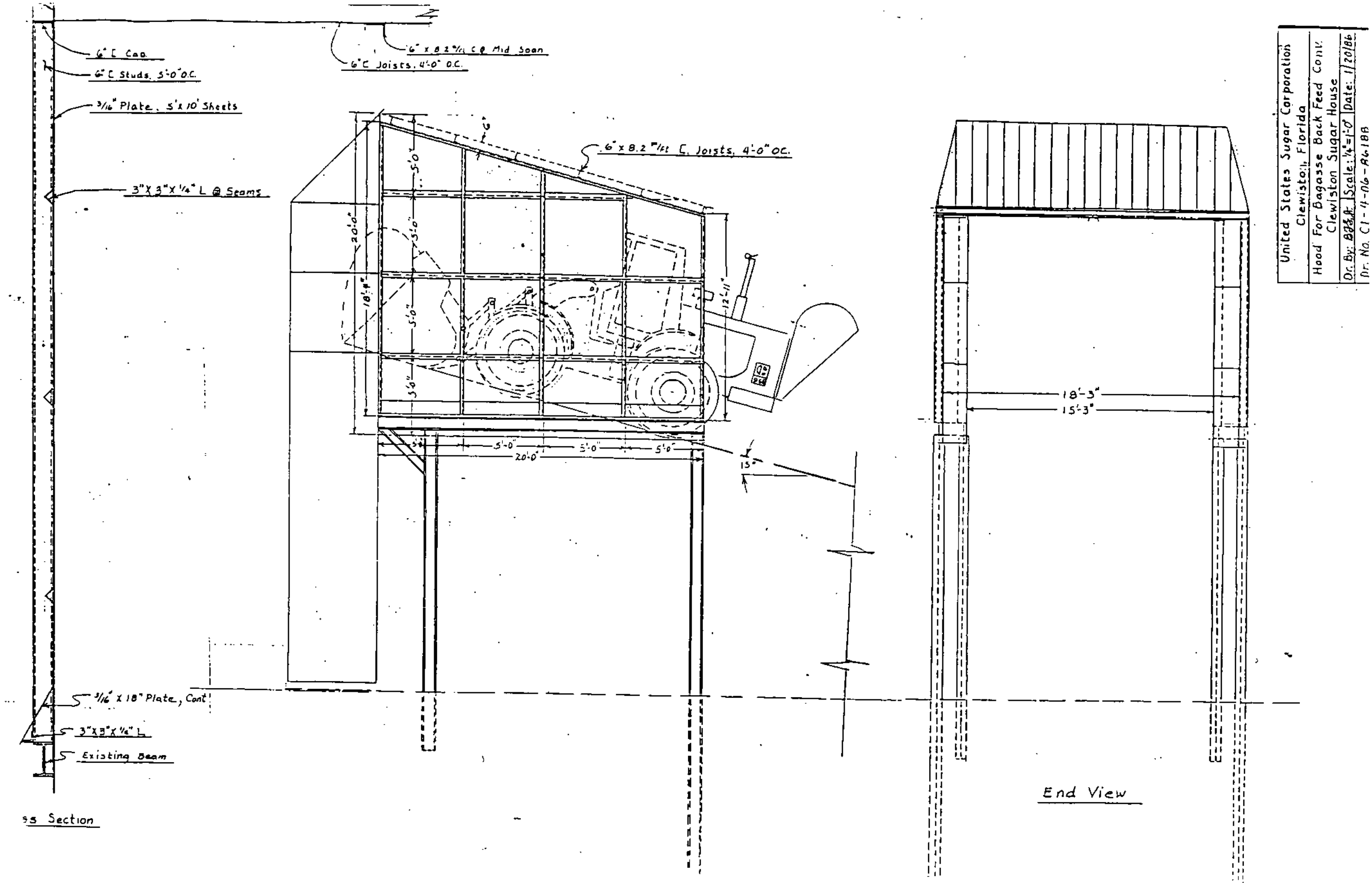
5. Payloader Drop Point to Backfeed - The drop point for payloaders to backfeed the bagasse conveyor/elevator system is located inside an enclosure with walls and roof to provide a windbreak.



Notes:

1. ALL BOILERS BAGASSE FEEDERS ARE ENCLOSED.
2. ALL DROP POINTS HAVE CHUTES AND WALLS.
3. ALL ADDED EXCHANGE POINTS WILL HAVE CHUTES AND WALLS.

CLEWISTON SUGAR HOUSE
Bagasse Flow Diagram


6" [Cap
6" [Studs, 5'-0" O.C.
3/16" Plate, 5'x10' Sheets
3"X3"X1/4" L @ Seams
3/16" X 18" Plate, Cont
3"X3"X1/4" L
Existing Beam
ss Section
6" x 8.2 #/ft [@ Mid Span
6" [Joists, 4'-0" O.C.
6" x 8.2 #/ft [Joists, 4'-0" OC.
20'-0"
18'-4"
5'-0"
12'-11"
5'-0"
20'-0"
15°
18'-3"
15'-3"
End View
United States Sugar Corporation
Clewiston, Florida
Hood For Bagasse Back Feed Conv.
Clewiston Sugar House
Dr. By: BJB.A. Scale: 1/4"=1'-0" Date: 1/20/86
Dr. No. C1-4-06-A618A

ATTACHMENT 4

CO Emission Limit Correspondence

C-4

UNITED STATES SUGAR CORPORATION

Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121 Telex: 510-952-7753

October 8, 1990

Mr. David Knowles
Florida Department of Environmental
Regulation
2269 Bay Street
Fort Myers, Florida 33901-2896

RE: Hendry County - AP
U. S. Sugar Corporation
Clewiston Boiler No. 4
Permit AC26-126965 and
AO26-144701

Dear Mr. Knowles:

Following Mr. Philip R. Edward's request as per his letter of October 26, 1989, we are sending you Report No. 1376-A for CO Emissions from Boiler No. 4.

We would have wanted to make more tests in this boiler, but due to certain difficulties with the testing company and the early end of the crop due to the extensive freeze which we sustained last winter, we were unable to run a more adequate number of tests.

Results from these three (3) one (1) hour runs might not be representative of the actual range and average emissions from this boiler.

The purpose of this test as requested by Mr. Edwards is to help the Department determine a reasonable CO Emission Factor for boilers of this type. We suggest you consider and evaluate the results of the nine (9) runs carried out at our Bryant Boiler No. 5 as well, in making this determination.

Very truly yours,

UNITED STATES SUGAR CORPORATION

Peter Barquin
Administative Ass't. to
Senior Vice President
Sugar Houses

PB:jt
Enclosures

ATTACHMENT 5

CO BACT Analysis

5.4 BACT EVALUATION FOR CO AND VOC EMISSIONS

In this section, the available control technologies capable of reducing CO and VOC emissions produced from firing bagasse and residual oil will be identified and evaluated. Potential application of these technologies as BACT for the proposed spreader-stoker boiler, rated on oil at 255 MM Btu/hr, is discussed. Table 5-8 is a summary of the potential CO and VOC control technologies presented in this section.

The EPA BACT/LAER clearinghouse has no BACT determinations for CO or VOC emission from bagasse combustors or residual oil combustion in boilers. Historically, BACT and LAER emission limits for CO and VOC on bagasse and oil-fired boilers have been based on the use of good combustion practices, rather than add-on control systems.

In bagasse-fired boilers, the fuel characteristics and the combustion practices result in CO and VOC emissions that are somewhat high, relative to fossil-fuel fired boilers. Improving combustion would likely require improving fuel quality (e.g., lowering bagasse moisture content through drying), which would make use of this waste fuel uneconomical and result in higher fossil fuel usage. The use of FGR could theoretically reduce CO and VOC emissions by reburning a portion of the VOCs in the recirculated exhaust. The overall effectiveness of fluegas recirculation would be limited because:

- The extremely high particulate loading of the combustion gas and the abrasive nature of the flyash would make this system very unreliable

- This has never been applied to a bagasse combustor

- This technology would not be economically feasible, per the analysis done for NO_x control

Post-combustion VOC controls have not been applied to bagasse-fired boilers. Such common techniques as direct-flame incineration, catalytic oxidation, and carbon absorption are also inappropriate technologies for bagasse boilers for the same reasons as above.

The only technically feasible CO and VOC control technology for bagasse-fired boilers is good combustion practices.

Because of their utility in reducing CO and VOC emissions, along with its success record in the sugar industry, **good combustion practices are proposed as BACT for emissions for the proposed boiler No. 7 when firing bagasse or oil.**

Table 5-8
Summary of Potential CO and VOC control Technologies[1]

Control Technology	Typical Effic. (% CO)	Typical Effic. (% VOC)	In Service On Bagasse Combustors?	In Service On Other Combustion Sources?	Technically Feasible For This Combustor?
Direct-flame Oxidation	90-99	90-99	No	Yes	No[2]
Catalytic Oxidation	90-95	90-95	No	Yes	No[3]
Fluegas Recirculation	30-50%	30-50%	No	No	Yes[4]
Good Combustion Practices	15-50	15-50	Yes	Yes	Yes

Notes:
[1] Source: Air Pollution Engineering Manual, AWMA, 1992.
[2] Abrasive Particulate loading to high in combustor.
[3] Same as above.
[4] See discussion under NO_x control.

For the proposed boiler No. 7, the most appropriate BACT precedent for VOC, CO and NO_x appears to be the permit for Clewiston boiler No. 4, which relies on the inherent design features of the bagasse boiler along with the appropriate operating procedures to ensure that emission will be maintained at the lowest possible level. That permit imposes no requirement for add-on control technology, and that is the approach recommended here for the U.S. Sugar Corporation Clewiston mill boiler No. 7.

5.5 BACT EVALUATION FOR SULFURIC ACID MIST EMISSIONS

Sulfuric acid mist is generated from the emissions of SO_3 when oil is combusted. Sulfur trioxide can further react with water present in the fluegas to form sulfuric acid mist. The control of acid gas emissions is primarily controlled by removing the precursor pollutants from the fluegas with either wet or semi-dry scrubbing processes. Sulfuric acid mist emissions will be therefore be controlled by reducing the amount of sulfur in the stack gases by the following methods discussed previously:

- Installation of a wet impingement scrubber for SO_2 emissions from bagasse combustion

- Use of low-sulfur fuel oil for SO_2 emissions from residual oil combustion

5.6 BACT EVALUATION FOR BERYLLIUM EMISSIONS

Beryllium emissions were estimated using EPA factors for fuel oil combustion and assuming no removal in the scrubbing system, as there are no published factors for beryllium removal efficiency in the scrubber. Beryllium emissions are primarily controlled by removing the gaseous or particulate metal from the fluegas with either wet or semi-dry scrubbing processes. Beryllium emissions will be therefore be controlled for this project by installation of a wet impingement scrubber for PM emissions from fuel oil combustion.

Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

December 6, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Murray T. Brinson
Vice President of Sugar Processing
United States Sugar Corporation
Post Office Drawer 1207
Clewiston, Florida 33440

Dear Mr. Brinson:

Re: U.S. Sugar Corp., Clewiston Mill Boiler No. 4

The Department acknowledges receipt of your November 30, 1994 letter granting a waiver of the 90-day time limit on processing the application for permit to increase carbon monoxide (CO) emissions from the referenced source. To justify an emission rate higher than 3.5 lbs CO/MMBtu for this boiler, we request you furnish the following information:

- Please provide the make, model, year of manufacture and furnace volume for Boilers 3 and 6 at Osceola Farms, Boiler 5 at Atlantic Sugar and U.S. Sugar Boiler No. 4 to the extent that the information wasn't provided with your application. Address the difference in the boilers that result in the variability of the test data.

- If available, please provide copies of the most recent stack tests for each boiler that was conducted to provide the basis for the 3.5 lb/MMBtu and 6.5 lb/MMBtu CO limits for Boilers No. 3 and No. 6, respectively, at Osceola farms. Also provide the most recent test for Boiler No. 5 at Atlantic Sugar. If these and the data requested above are not available, we can request the data directly from Atlantic Sugar and Osceola. That would create a further delay in evaluating your permit application.

- Provide all the stack test data that was used as a basis for your request for the new emissions limit for Boiler No. 4, in the application dated April 7, 1994.

- It is noted that the U.S. Sugar Corporation's Clewiston Boiler No. 4 with half the furnace volume is operated at a maximum heat input rate essentially equivalent to Clewiston Boiler No. 7, the Okeelanta Cogeneration boilers and the Osceola Cogeneration boilers. This suggests that the Btu input rate is too high (that more bagasse is fed into the boiler than can result in good combustion). Please explain and provide any information available for stack tests at lower input rates.

The Department will consider any information provided by U.S. Sugar Corporation in a timely manner prior to issuing an intent on application to increase CO emissions from Boiler No. 4. If you have any questions on this matter, please write to me or call Martin Costello at (904) 488-1344.

Sincerely,

John Brown

John C. Brown, Jr., P.E.
Administrator
Air Permitting and Standards

JCB/WH/bjb

cc: David Knowles, SD
Jewell Harper, EPA
John Bunyak, NPS
David Buff, KBN

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Murray T. Brinson
Vice President of Sugar Processing
United States Sugar Corporation
Post Office Drawer 1207
Clewiston, Florida 33440

4a. Article Number
Z 751 860 006

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery DEC 12 1994

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)
USSC [signature]

PS Form **3811**, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

Z 751 860 006

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Mr. Murray T. Brinson	
Street and No.: Post Office Drawer 1207	
P.O., State and ZIP Code: Clewiston, Florida 33440	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: Mailed: 12/06/94 U.S. Sugar Corp., Clewiston Mill Boiler No. 4	

PS Form **3800**, March 1993

UNITED STATES SUGAR CORPORATION
Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121

November 30, 1994

RECEIVED
DEC 1 1994
Bureau of Air Regulation

Mr. Clair Fancy, P.E.
Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

RE: U S. Sugar Corporation - Boiler No. 4 - Waiver
Permit Application AC26-126965 & AO-223258

Dear Mr. Fancy:

Enclosed please find a duly-signed waiver of the 90-day time limit in which DEP is normally required to approve or deny an application to modify a construction permit.

We understand that DEP expects to complete its review of all outstanding permit modification issues as soon as practicable and issue its determination by January 17, 1995.

Very truly yours,

UNITED STATES SUGAR CORPORATION

Murray T. Brinson
Vice President
Sugar Processing

MTB:jt

Attachment

cc: Mr. Willard Hanks, DEP Tallahassee
Mr. David Knowles
Mr. Robert Van Voorhees
Mr. Donald Griffin

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTIONS 120.50(2) AND 403.0876, FLORIDA STATUTES

Permit Application No: AC26-126965 & AO26-223258

Applicant's Name: UNITED STATES SUGAR CORPORATION

The undersigned has read Sections 120.60(2) and 403.0876, Florida Statutes (F.S.), and fully understands the applicant's rights under the section.

With regard to the above referenced permit application, the applicant hereby with full knowledge and understanding of its rights under Sections 120.60(2) and 403.0876, F.S., waives the right under Sections 120.60(2) and 403.0876, F.S., to have the application approved or denied by the State of Florida Department of Environmental Protection within the 90 day period prescribed in Sections 120.60(2) and 403.0876, F.S. Said waiver is made freely and voluntarily by the applicant, in its self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This waiver shall expire on the 17th day of January 1995.

The undersigned is authorized to make this waiver on behalf of the applicant.

11/30/94
Date

Murray T. Brinson
Vice President, Sugar Processing
United States Sugar Corporation

WAIVER OF 90 DAY TIME LIMIT

UNDER SECTIONS 120.50(2) AND 403.0876, FLORIDA STATUTES

Permit Application No: AC26-126965 & AO26-223258

Applicant's Name: UNITED STATES SUGAR CORPORATION

The undersigned has read Sections 120.60(2) and 403.0876, Florida Statutes (F.S.), and fully understands the applicant's rights under the section.

With regard to the above referenced permit application, the applicant hereby with full knowledge and understanding of its rights under Sections 120.60(2) and 403.0876, F.S., waives the right under Sections 120.60(2) and 403.0876, F.S., to have the application approved or denied by the State of Florida Department of Environmental Protection within the 90 day period prescribed in Sections 120.60(2) and 403.0876, F.S. Said waiver is made freely and voluntarily by the applicant, in its self-interest, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This waiver shall expire on the 17th day of January 1995.

The undersigned is authorized to make this waiver on behalf of the applicant.

11/30/94
Date

Murray T. Bronson
Vice President, Sugar Processing
United States Sugar Corporation

UNITED STATES SUGAR CORPORATION
Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121

November 30, 1994

Mr. Clair Fancy, P.E.
Bureau Chief
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Fl. 32399-2400

RE: U S. Sugar Corporation - Boiler No. 4 - Waiver
Permit Application AC26-126965 & AO-223258

Dear Mr. Fancy:

Enclosed please find a duly-signed waiver of the 90-day time limit in which DEP is normally required to approve or deny an application to modify a construction permit.

We understand that DEP expects to complete its review of all outstanding permit modification issues as soon as practicable and issue its determination by January 17, 1995.

Very truly yours,

UNITED STATES SUGAR CORPORATION

Murray T. Brinson
Vice President
Sugar Processing

MTB:jt

Attachment

cc: Mr. Willard Hanks, DEP Tallahassee
Mr. David Knowles
Mr. Robert Van Voorhees
Mr. Donald Griffin

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 2

To Mr C. Fancy	From Mr Brinson
Co. Fl DEP	Co. USSC
Dept. Burl Air Reg	Phone # 813/983-8121
Fax # 904/922-6979	Fax # 813/983-4255

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

November 22, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Murray T. Brinson
Vice President of Sugar Processing
United States Sugar Corporation
Post Office Drawer 1207
Clewiston, Florida 33440

Dear Mr. Brinson:

Attached is a copy of the Technical Evaluation and Preliminary Determination and proposed BACT determination and permit to increase the allowable carbon monoxide emission limit for the Clewiston Mill Boiler No. 4.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. John Brown of the Department's Bureau of Air Regulation.

Sincerely,

C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/WH/wh

Attachment

cc: David Knowles, SD
Jewell Harper, EPA
John Bunyak, NPS
David Buff, P.E., KBN

UNITED STATES SUGAR CORPORATION
Post Office Drawer 1207 Clewiston, Florida 33440
Telephone: (813) 983-8121 Telex: 510-952-7753

September 08, 1994

John C. Brown Jr., P.E., Administrator
Air Permitting and Standards
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED
SEP 12 1994
Bureau of
Air Regulation

RE: U.S. Sugar Corp., Clewiston Mill Boiler No. 4

Dear Mr. Brown,

In response to your letter of July 18, 1994, the United States Sugar Corporation (U.S. Sugar) submits the enclosed letter from David Buff of KBN providing information relating to revision of the carbon monoxide (CO) emission limits for Clewiston Boiler No. 4. The information enclosed should be sufficient to allow the Department to complete the administrative process to modify or amend the permit to reflect expected CO emissions for this boiler, as the Department has done for a number of other bagasse boilers.

The Department initiated this administrative process in 1989 in conjunction with the U.S. Environmental Protection Agency Region 4 (EPA Region 4) and the sugar mill operators as a mutually acceptable means for adjusting CO emission factors and amending permit emission levels. The need for an adjustment process was identified during discussions with the Department and with EPA Region 4 in response to test data and test reports on bagasse boilers showing that the emission factor for CO that had been previously used throughout the sugar industry was low when compared with the results of tests conducted using EPA Method 10. Adjustments have been completed for most of the other boilers in the industry. EPA Region 4 has concurred in the use of this adjustment process for modification of the CO emission levels and has accepted the permit amendments adopted for the other bagasse boilers.

To provide a basis for modification, the Department requested U.S. Sugar and other sugar mill operators to collect CO emission data during the 1989-90 crop season and to submit the data as the basis for establishing new emission levels. U.S. Sugar submitted its first test data to the Department on October 8, 1990. U.S. Sugar has supplemented the initial 1989-90 crop data by submitting the results of substantial additional testing conducted during the 1990-91, 1991-92, 1992-93, and 1993-94 crop seasons. These data show the average CO emissions based on the average of all test data for Clewiston Boiler No. 4 to be approximately 6.7 lb/MMBtu.

On June 27, 1994, and in the enclosed letter from David Buff of KBN, U.S. Sugar has also submitted information on the potential for controlling CO emissions from bagasse boilers. This information, though not previously obtained from others requesting CO emission level adjustments, confirms that, even today, good combustion practices constitute the best available control technology (BACT) for CO emissions from bagasse boilers. Accordingly, this information serves to confirm the validity of the Departments's 1985 determination for Clewiston Boiler No. 4 that "add on controls" for CO were not warranted, and the Department's consistent determination for other bagasse boilers that good combustion practices constitute BACT for CO. There is no basis for concluding that any other BACT determination could have or should have been made at that time. Nor is there any basis for reopening that decision at this time.

Assuming that the Department does not intend to impose any different standard of process on this boiler than it has consistently applied and followed to date in making CO emission level adjustments for each of the other bagasse boilers, the information submitted by U.S. Sugar provides a sound and sufficient basis on which to amend the CO emission level for Clewiston Boiler No. 4.

More over, the new modeling results developed by KBN confirm that operation of the Clewiston boilers will not result in exceedance of the national ambient air quality standards for CO, and even these results are very conservative since they are based on background CO levels many times those ever likely to occur in the vicinity of the Clewiston Mill. This is true because the background level used in the original modeling was taken from CO monitors in Palm Beach County (see Attachment A to permit modification application at page 6-22), where the motor vehicle population (the principal source of CO emissions) is more than 25 times greater than the motor vehicle population in Hendry County.

With the enclosed information, the Department now has all of the information necessary to complete the permit amendment process to establish reasonable CO emission levels for Clewiston Boiler No. 4 as the Department has done for the other bagasse boilers that have completed this administrative revision process. To complete the process, U.S. Sugar requests that specific condition No. 13 in permit AC 26-126965 be revised to read as follows:

> "13. Emissions of carbon monoxide and volatile organic compounds shall be maintained at the lowest possible level through the implementation of the Operation

and Maintenance plan dated June 29, 1993. Emissions of carbon monoxide shall not exceed 6.7 lb/million BTU for the crop season as determined by EPA Method 10. Emissions of nonmethane volatile organic compounds shall not exceed 1.7 lb/ton of wet bagasse as determined by EPA Method 25A. in conjunction with EPA Method 18. These test methods are described in 40 C.F.R. 60, Appendix A. Compliance tests for these pollutants will not be required if the visible emissions from boiler No. 4 are below 20 percent opacity."

Please contact me or Don Griffin at (813) 983-8121 if you have any questions about the enclosed information. We look forward to working with you and our staff to assist in your review and approval of this application

Very truly yours,

Murray T. Brinson
Vice President, Sugar Houses

MTB:ph
Enclosure

cc: Willard M. Hanks, FDEP
Cleve G. Holladay, FDEP
David M. Knowles, P.E. FDEP SD
William Congdon, Esq. FDEP
Peter Briggs
Don Griffin
David Buff, P.E. KBN
Robert Van Voorhees, Esq, Bryan Cave

KBN

August 31, 1994

Mr. John C. Brown, Jr., P.E.
Administrator, Air Permitting and Standards
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: U.S. Sugar Clewiston Mill Boiler No. 4
Permit AO26-223258

Dear Mr. Brown:

United States Sugar Corporation (U.S. Sugar) has received the Florida Department of Environmental Protection's (Department's) letter dated July 19, 1994, requesting additional information for the above referenced application. KBN Engineering and Applied Sciences, Inc. (KBN), has assisted U.S. Sugar in developing responses to these questions. On behalf of U.S. Sugar, responses to each of the Department's comments are provided below in the same order as they appear in the July 19 letter.

Based on discussions with the potential vendors for the proposed Boiler No. 7 at Clewiston and the vendor for the new Okeelanta and Osceola cogeneration boilers, these new boilers are designed to achieve the 0.35 lb/MMBtu level for carbon monoxide (CO) by increasing the residence time of the flue gases in the boiler. Increasing the residence time of the flue gases in the boiler allows combustion to proceed to a more complete state (i.e., greater carbon burnout). This results in lower CO emissions. This design is reflected in the design heat release rates for these new boilers compared to the existing Clewiston Boiler No. 4:

Boiler	Maximum Heat Input (MMBtu/hr)	Furnace Volume (ft^3)	Heat Release Rate (Btu/hr-ft^3)
Clewiston Boiler 7	738	44,925	16,427
Okeelanta Cogen Boilers	715	39,917	17,912
Osceola Cogen Boilers	665	35,945	18,500
Clewiston Boiler 4	707	21,245	33,278

KBN ENGINEERING AND APPLIED SCIENCES, INC.

1034 Northwest 57th Street
Gainesville, Florida 32605
904-331-9000
FAX 904-332-4189

5405 West Cypress Street,
Suite 215
Tampa, Florida 33607
813-287-1717 FAX 813-287-1716

1801 Clint Moore Road, Suite 105
Boca Raton, Florida 33487
407-994-9910
FAX 407-994-9393

6821 Southpoint Drive North,
Suite 215
Jacksonville, Florida 32216
904-296-9663 FAX 904-296-0146

One Church Street, Suite 801
Rockville, Maryland 20850
301-738-1100
FAX 301-738-1105

Clewiston Boiler No. 4 has a heat release rate that is nearly double that of the new or proposed boilers. The heat release rate is a direct measure of the flue gas residence time within the boiler (i.e., the lower the heat release rate, the longer the residence time). It is noted that none of the new boilers have yet been constructed. No operating bagasse boiler has achieved a CO emission rate of 0.35 lb/MMBtu.

Based on information provided by the boiler vendors, no decrease in CO emissions could be anticipated from retrofitting a new bagasse feed or air distribution system on Boiler No. 4. The bagasse feed/air distribution system on the new boilers has little or no effect on CO emissions. The low CO emissions result from the increased residence time of the flue gases in the boiler.

Capital cost information was presented in the June 27 letter to the Department. The capital costs of a retrofit flue gas recirculation (FGR) application on Boiler No. 4 were estimated at $1.4 million. The annual operating costs would be approximately $1.0 million per year. In addition to this extremely high cost, operational difficulties would be expected with such a retrofit installation and the CO reduction achievable by an FGR system is not known. Potentially no reduction would be realized. Such a system has never been attempted on a bagasse boiler.

CO oxidation catalyst system vendors have provided information which indicates no application of a catalytic oxidation system exists for bagasse-fired boilers such as Boiler No. 4. Catalyst systems require elevated temperatures (>500 °F) and low particulate matter (PM) loading (<0.1 lb/MMBtu). There is no point along the exhaust gas flow for Boiler No. 4 where these conditions are met. The particulate loading in the flue gas stream prior to the scrubber is much too high to allow an oxidation catalyst system to be implemented. The flue gas temperature after the scrubber is much too low and contains too much moisture for a catalyst system. Therefore, as stated in the June 27 response, a CO oxidation catalyst is considered technically infeasible for a bagasse boiler.

In regard to bagasse drying systems, it is stressed that bagasse boilers are already designed to dry the bagasse prior to combustion. This occurs in the boiler as the fuel exits from the feeders and passes down through the boiler and onto the grate or boiler floor. There are no known add-on bagasse drying systems currently in use in the United States today. Any such system would have limited ability to reduce moisture content and would be expected to have minimal effect upon CO emissions. As discussed above, the major factor affecting CO emissions is residence time of the flue gases in the boiler. Due to the unproven nature of this technology, the unavailability of equipment, and the uncertainty of any CO reduction, this alternative is considered technically infeasible.

The Department should consider in its evaluation that best available control technology (BACT) is based on technologies and costs that other similar sources have implemented as BACT. No other existing bagasse boiler in Florida has ever been required to implement add-on or retrofit technology as BACT for CO emissions. The three other CO emission level revisions issued to date for existing bagasse boilers have specified CO limits up to 6.5 lb/MMBtu with the use of good combustion practices for the same type boiler. U.S. Sugar is relying on the same BACT technology and requesting similar limits as these previous BACT determinations. It would be unfair to require U.S. Sugar to implement costly controls, particularly considering the unproven nature of any such controls on bagasse boilers. The Department should also consider in its evaluation that based on information presented in the June 27 letter the average CO emissions from Boiler No. 4 are approximately 6.7 lb/MMBtu. This is lower than the requested maximum limit of 9.0 lb/MMBtu. However, this higher short-term limit is necessary in order to account for the normal fluctuations in emissions experienced by bagasse boilers.

In order to address the ambient CO impact concerns raised by the Department, the following approach was used to estimate maximum CO impacts in the vicinity of the Clewiston mill. Maximum 1-hour and 8-hour CO impacts due to the U.S. Sugar Clewiston mill have already been determined in the prevention of significant deterioration (PSD) permit application for Clewiston Boiler No. 7. In this application, a very conservative CO background concentration was used and added to predicted model results to predict total ambient impacts (for convenience, Table 6-7 from the Clewiston Boiler No. 7 permit application is attached). The maximum predicted CO impacts from the Clewiston Boiler No. 7 application were 13,505 micrograms per cubic meter ($\mu g/m^3$), 1-hour average, and 7,720 $\mu g/m^3$, 8-hour average.

The background CO concentrations included in the PSD permit application for Boiler No. 7 were obtained from a SLAMS monitor located in West Palm Beach. The background concentrations provided were added to the modeled CO sources for comparison to the Ambient Air Quality Standards (AAQS). The 8-hour non-modeled background concentration was 4,600 $\mu g/m^3$ [4 parts per million (ppm)], which is nearly half of the ambient standard of 10,000 $\mu g/m^3$ (9 ppm), and the 1-hour background concentration was 7,400 $\mu g/m^3$. Background CO concentrations are primarily due to vehicular traffic. The vehicle traffic density in the West Palm Beach area is much greater than that in the Clewiston area. The registered vehicle population in Palm Beach County (872,476 vehicles) is approximately 25 times greater than the number of registered vehicles in Hendry County (32,615 vehicles). Therefore, the background CO concentrations used for Boiler No. 7 are very conservative.

To demonstrate that the impact of all bagasse boilers emitting CO at 9.0 lb/MMBtu will not cause or contribute to exceedances of the ambient air quality standards, these other bagasse boilers were modeled for receptors surrounding the Clewiston mill, and the impacts were then added directly to the total CO impacts presented in the Clewiston Boiler No. 7 application. This is extremely conservative, since the Boiler No. 7 impacts already reflect some contribution from other bagasse boilers, as well as the very conservative background concentration.

A dispersion modeling analysis was performed to estimate the maximum worst-case modeled source CO concentrations in the vicinity of the Clewiston mill due to all other non-U.S. Sugar Clewiston bagasse boilers. All bagasse boiler CO emissions were conservatively assumed to be 9.0 lb/MMBtu, except for three boilers which have specific CO emission limits in their permits (two boilers at Osceola Farms and one at Atlantic Sugar). For these three boilers, the specified permit levels were used. For each of the other bagasse boilers, CO emissions were determined by taking the maximum heat input times the CO emission rate in lb/MMBtu. A listing of the bagasse boilers and the CO emission rates is presented in Table 1.

Maximum predicted impacts were determined with a 5-year meteorological data record from West Palm Beach. Impacts were obtained at a polar receptor grid which included receptors every 10 degrees of azimuth and at ring distances of 300, 600, 900, 1,200, 1,500 and 2,000 m from the Clewiston mill. Impacts were determined for time periods during which the other sugar mills are operational (i.e., October 1 through April 30). The highest predicted 1- and 8-hour CO concentrations due to all non-Clewiston bagasse boilers based on this analysis are 3,876 and 1,068 $\mu g/m^3$, respectively (refer to attached modeling results). When added directly to the predicted total CO impacts from the Boiler No. 7 application, the total CO impacts are 17,381 $\mu g/m^3$, 1-hour average and 8,788 $\mu g/m^3$, 8-hour average. These totals are below the ambient standards of 40,000 $\mu g/m^3$, 1-hour average and 10,000 $\mu g/m^3$, 8-hour average. This analysis demonstrates that Clewiston Boiler No. 4, when emitting CO at 9.0 lb/MMBtu in conjunction with all other bagasse boilers emitting at 9.0 lb/MMBtu (or permitted rate, if applicable) and background sources, will not cause or contribute to exceedances of the ambient CO standards.

These responses should provide all of the information necessary to complete your review and approval of the PSD permit modification for Clewiston Boiler No. 4. A summary of the modeling results is attached. A diskette containing the input and output files are being sent to Cleve Holliday under separate cover. If you have any questions concerning this information, please call (904) 331-9000.

Sincerely,

David A. Buff

David A. Buff
Principal Engineer
Florida P.E. #19011

SEAL

cc: File (2)

14015A1/3

Table 6-7
Predicted Short-Term Crop Season Impacts for the Ambient Air Quality Analysis

Pollutant	Averaging Time	Year	Background Concentration ($\mu g/m^3$)	Modeled Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	AAQS ($\mu g/m^3$)
SO_2	3-Hour	1985	53	374	427	1300
		1986		404	457	
		1987		440	493	
		1988		379	432	
		1989		407	460	
	24-Hour	1985	21	150	171	260
		1986		128	149	
		1987		159	180	
		1988		173	194	
		1989		140	161	
PM10	24-Hour[1]	1985	53	69.8	123	150
		1986		85.7	139	
		1987		69.5	123	
		1988		107	160	
				(HSH) 107	160	
				(HTH) 81.3	134	
		1989		75.7	131	
CO	1-Hour	1985	7,400	6,105	13,505	40,000
		1986		6,481	13,881	
		1987		5,682	13,082	
		1988		6,376	13,776	
		1989		6,190	13,590	
	8-Hour	1985	4,600	3,120	7,720	10,000
		1986		2,458	7,058	
		1987		2,983	7,583	
		1988		3,124	7,724	
		1989		3,270	7,870	

[1] Reported PM10 concentrations are the maximum predicted concentrations with the exception of 1988 HSH and 1988 highest-third-highest (HTH) concentrations.

Table 1. Summary of Non-U.S. Sugar Clewiston Source Data Used in Modeling Analysis

Facility/Source	Heat Input Rate (MMBtu/Hr)	CO Emission Rate (lb/MMBtu)	CO Emission Rate (lb/hr)	CO Emission Rate (g/s)	Stack Height (m)	Stack Height (ft)	Stack Diameter (m)	Stack Diameter (ft)	Stack Temp (K)	Stack Temp (F)	Stack Velocity (m/s)	Stack Velocity (ft/s)
Okeelanta												
Boiler 4	181.42	9.00	1,632.78	205.73	22.90	75.13	2.29	7.51	333.20	140.04	7.36	24.15
Boiler 5	235.51	9.00	2,119.60	267.07	22.90	75.13	2.29	7.51	333.20	140.04	12.07	39.60
Boiler 6	239.95	9.00	2,159.52	272.10	22.90	75.13	2.29	7.51	334.30	142.02	8.74	28.63
Boiler 10	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	334.30	142.02	10.35	33.96
Boiler 11	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	341.50	154.98	9.89	32.45
Boiler 12	302.45	9.00	2,722.06	342.98	22.90	75.13	2.29	7.51	329.80	133.92	8.16	26.77
Boiler 14	302.45	9.00	2,722.06	342.98	22.90	75.13	2.29	7.51	333.20	140.04	8.28	27.17
Boiler 15	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	332.00	137.88	10.23	33.56
Osceola												
Boiler 2	280.00	9.00	2,520.00	317.52	25.00	82.03	1.52	4.99	341.00	154.08	18.10	59.39
Boiler 3	292.00	3.50	1,021.98	128.77	21.90	71.85	1.93	6.33	341.00	154.08	14.50	47.57
Boiler 4	280.00	9.00	2,520.00	317.52	25.00	82.03	1.83	6.00	341.00	154.08	18.80	61.68
Boiler 5	330.00	9.00	2,970.00	374.22	25.00	82.03	1.52	4.99	341.00	154.08	14.90	48.89
Boiler 6	379.00	6.50	2,463.49	310.40	27.40	89.90	1.93	6.33	341.00	154.08	14.90	48.89
Sugar Cane Growers												
Boiler 1	285.76	9.00	2,571.83	324.05	24.40	80.06	1.40	4.59	344.00	159.48	11.40	37.40
Boiler 2	285.76	9.00	2,571.83	324.05	24.40	80.06	1.40	4.59	344.00	159.48	11.40	37.40
Boiler 3	228.64	9.00	2,057.78	259.28	24.40	80.06	1.60	5.25	344.00	159.48	15.60	51.18
Boiler 4	571.67	9.00	5,145.00	648.27	33.50	109.91	1.63	5.35	344.00	159.48	10.60	34.78
Boiler 5	419.20	9.00	3,772.78	475.37	24.40	80.06	1.40	4.59	344.00	159.48	15.20	49.87
Boiler 8	504.00	9.00	4,536.03	571.54	47.20	154.86	3.05	10.01	344.00	159.48	10.60	34.78
US Sugar Corp, Bryant												
Boiler 1	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 2	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 3	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 5	671.00	9.00	6,038.97	760.91	42.70	140.10	2.90	9.51	345.00	161.28	11.49	37.70
Atlantic Sugar												
Boiler 1	214.00	9.00	1,926.03	242.68	18.90	62.01	1.92	6.30	346.00	163.08	12.70	41.67
Boiler 2	214.00	9.00	1,926.03	242.68	18.90	62.01	1.92	6.30	342.00	155.88	10.90	35.76
Boiler 3	260.00	9.00	2,340.00	294.84	21.90	71.85	1.83	6.00	341.00	154.08	17.50	57.42
Boiler 4	275.00	9.00	2,475.00	311.85	18.30	60.04	1.83	6.00	344.00	159.48	15.00	49.22
Boiler 5	252.65	6.50	1,642.22	206.92	27.40	89.90	1.68	5.51	339.00	150.48	15.70	51.51
Talisman Sugar												
Boiler 4	224.00	9.00	2,016.03	254.02	21.30	69.89	1.59	5.22	336.00	145.08	22.90	75.13
Boiler 5	224.00	9.00	2,016.03	254.02	21.30	69.89	1.59	5.22	336.00	145.08	22.90	75.13
Boiler 6	400.00	9.00	3,600.00	453.60	22.90	75.13	3.05	10.01	361.00	190.08	9.10	29.86

CO MODELING RESULTS

ALL NON-CLEWISTON BAGASSE BOILERS

```
SO SRCPARAM OSCEO3    128.77    21.9    341.0    14.50      1.93
SO SRCPARAM OSCEO4    317.52    25.0    341.0    18.80      1.83
SO SRCPARAM OSCEO5    374.22    25.0    341.0    14.90      1.52
SO SRCPARAM OSCEO6    310.40    27.4    341.0    14.90      1.93
** SUGAR CANE GROWERS MILL BOILERS 1,2,3,4,5,8 AT 9.0 LB/MMBTU
SO SRCPARAM SCGRW12   648.10    24.4    344.0    11.40      1.40
SO SRCPARAM SCGRW3    259.28    24.4    344.0    15.60      1.60
SO SRCPARAM SCGRW4    648.27    33.5    344.0    10.60      1.63
SO SRCPARAM SCGRW5    475.37    24.4    344.0    15.20      1.40
SO SRCPARAM SCGRW8    571.54    47.2    344.0    10.60      3.05
** US SUGAR CORP - BRYANT MILL BOILERS 1,2,3,5 AT 9.0 LB/MMBTU
SO SRCPARAM USBRY123 1309.77    19.8    342.0    36.40      1.64
SO SRCPARAM USBRY4    760.91    42.7    345.0    11.49      2.90
** ATLANTIC SUGAR BOILERS 1,2,3,4 AT AT 9.0 LB/MMBTU, BLR 5 AT 6.5 LB/MMBTU
SO SRCPARAM ATLSUG1   242.68    18.9    346.0    12.70      1.92
SO SRCPARAM ATLSUG2   242.68    18.9    342.0    10.90      1.92
SO SRCPARAM ATLSUG3   294.84    21.9    341.0    17.50      1.83
SO SRCPARAM ATLSUG4   311.85    18.3    344.0    15.00      1.83
SO SRCPARAM ATLSUG5   206.92    27.4    339.0    15.70      1.68
** TALISMAN SUGAR MILL BOILERS 4 TO 6 AT 9.0 LB/MMBTU
SO SRCPARAM TALIS45   508.03    21.3    336.0    22.90      1.59
SO SRCPARAM TALIS6    453.60    22.9    361.0     9.10      3.05

SO EMISUNIT    .100000E+07 (GRAMS/SEC)          (MICROGRAMS/CUBIC-METER)
SO SRCGROUP ALL
SO FINISHED

RE STARTING
RE GRIDPOLR POL STA
** GRID ORIGIN IS US SUGAR CORP-CLEWISTON UTM COORDINATES
RE GRIDPOLR POL ORIG  506100.  2956900.
RE GRIDPOLR POL DIST 300. 600. 900. 1200. 1500.  2000.
RE GRIDPOLR POL GDIR   36  10.00   10.00
RE GRIDPOLR POL END
RE FINISHED

ME STARTING
ME INPUTFIL C:\MET\WPBPRL82.BIN       UNFORM
ME ANEMHGHT    22  FEET
ME SURFDATA  12844  1982             WEST-PALM-BCH
ME UAIRDATA  12844  1982             WEST-PALM-BCH
ME DAYRANGE  10/1-12/31 1/1-4/30
ME FINISHED

OU STARTING
OU RECTABLE ALLAVE FIRST  SECOND
OU FINISHED
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ISCBOO2 RELEASE 93364

ISCST2 OUTPUT FILE NUMBER 1 :SUGCO.082
ISCST2 OUTPUT FILE NUMBER 2 :SUGCO.083
ISCST2 OUTPUT FILE NUMBER 3 :SUGCO.084
ISCST2 OUTPUT FILE NUMBER 4 :SUGCO.085
ISCST2 OUTPUT FILE NUMBER 5 :SUGCO.086
First title for last output file is: 1982 BACKGROUND SUGAR MILL CO IMPACTS 8/22/94
Second title for last output file is: SUGAR MILL SEASON, RECEPTOR GRID AROUND US SUGAR - CLEWISTON

New

AVERAGING TIME	YEAR	CONC (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
HIGH 8-Hour					
	1982	1059.77	180.	2000.	82113008
	1983	793.00	210.	2000.	83013124
	1984	1067.24	200.	2000.	84042024
	1985	1067.73	170.	2000.	85111708
	1986	887.58	160.	600.	86020308
HSH 8-Hour					
	1982	1008.23	180.	2000.	82110224
	1983	652.98	250.	2000.	83100108
	1984	833.03	50.	2000.	84042608
	1985	956.94	70.	2000.	85032824
	1986	704.44	120.	1500.	86013124
HIGH 1-Hour					
	1982	3845.27	190.	2000.	82110220
	1983	3875.68	120.	2000.	83033022
	1984	3756.23	70.	2000.	84042822
	1985	3834.22	170.	2000.	85031121
	1986	3803.54	190.	2000.	86101406
HSH 1-Hour					
	1982	3423.00	210.	2000.	82110220
	1983	3479.76	110.	2000.	83033022
	1984	3002.12	90.	2000.	84042822
	1985	3718.61	70.	2000.	85022702
	1986	3307.60	150.	1500.	86112704

All receptor computations reported with respect to a user-specified origin

GRID	506100.00	2956900.00
DISCRETE	0.00	0.00

```
** Source Parameter Cards:
** POINT:   SRCID         QS       HS        TS     VS        DS
**                      (g/s)      (m)       (K)   (m/s)      (m)
** OKEELANTA MILL BOILERS 4,5,6,10,11,12,14,15  AT 9.0 LB/MMBTU
SO SRCPARAM OKEEL4    205.73     22.9      333.2    7.36      2.29
SO SRCPARAM OKEEL5    267.07     22.9      333.2   12.07      2.29
SO SRCPARAM OKEEL6    272.10     22.9      334.3    8.74      2.29
SO SRCPARAM OKEEL10   285.82     22.9      334.3   10.35      2.29
SO SRCPARAM OKEEL11   285.82     22.9      341.5    9.89      2.29
SO SRCPARAM OKEEL12   342.98     22.9      329.8    8.16      2.29
SO SRCPARAM OKEEL14   342.98     22.9      333.2    8.28      2.29
SO SRCPARAM OKEEL15   285.82     22.9      332.0   10.23      2.29
** OSCEOLA MILL BOILERS 2,4,5 AT 9.0 LB/MMBTU, BLR 3 AT 3.5 LB, AND BLR 6 AT 6.5 LB/MMBTU
SO SRCPARAM OSCEO2    317.52     25.0      341.0   18.10      1.52
```

KBN

RECEIVED
SEP 1 1994
Bureau of
Air Regulation

August 31, 1994

Mr. John C. Brown, Jr., P.E.
Administrator, Air Permitting and Standards
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: U.S. Sugar Clewiston Mill Boiler No. 4
Permit AO26-223258

Dear Mr. Brown:

United States Sugar Corporation (U.S. Sugar) has received the Florida Department of Environmental Protection's (Department's) letter dated July 19, 1994, requesting additional information for the above referenced application. KBN Engineering and Applied Sciences, Inc. (KBN), has assisted U.S. Sugar in developing responses to these questions. On behalf of U.S. Sugar, responses to each of the Department's comments are provided below in the same order as they appear in the July 19 letter.

Based on discussions with the potential vendors for the proposed Boiler No. 7 at Clewiston and the vendor for the new Okeelanta and Osceola cogeneration boilers, these new boilers are designed to achieve the 0.35 lb/MMBtu level for carbon monoxide (CO) by increasing the residence time of the flue gases in the boiler. Increasing the residence time of the flue gases in the boiler allows combustion to proceed to a more complete state (i.e., greater carbon burnout). This results in lower CO emissions. This design is reflected in the design heat release rates for these new boilers compared to the existing Clewiston Boiler No. 4:

Boiler	Maximum Heat Input (MMBtu/hr)	Furnace Volume (ft^3)	Heat Release Rate ($Btu/hr\text{-}ft^3$)
Clewiston Boiler 7	738	44,925	16,427
Okeelanta Cogen Boilers	715	39,917	17,912
Osceola Cogen Boilers	665	35,945	18,500
Clewiston Boiler 4	707	21,245	33,278

14015A1/3

Clewiston Boiler No. 4 has a heat release rate that is nearly double that of the new or proposed boilers. The heat release rate is a direct measure of the flue gas residence time within the boiler (i.e., the lower the heat release rate, the longer the residence time). It is noted that none of the new boilers have yet been constructed. No operating bagasse boiler has achieved a CO emission rate of 0.35 lb/MMBtu.

Based on information provided by the boiler vendors, no decrease in CO emissions could be anticipated from retrofitting a new bagasse feed or air distribution system on Boiler No. 4. The bagasse feed/air distribution system on the new boilers has little or no effect on CO emissions. The low CO emissions result from the increased residence time of the flue gases in the boiler.

Capital cost information was presented in the June 27 letter to the Department. The capital costs of a retrofit flue gas recirculation (FGR) application on Boiler No. 4 were estimated at $1.4 million. The annual operating costs would be approximately $1.0 million per year. In addition to this extremely high cost, operational difficulties would be expected with such a retrofit installation and the CO reduction achievable by an FGR system is not known. Potentially no reduction would be realized. Such a system has never been attempted on a bagasse boiler.

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In regard to bagasse drying systems, it is stressed that bagasse boilers are already designed to dry the bagasse prior to combustion. This occurs in the boiler as the fuel exits from the feeders and passes down through the boiler and onto the grate or boiler floor. There are no known add-on bagasse drying systems currently in use in the United States today. Any such system would have limited ability to reduce moisture content and would be expected to have minimal effect upon CO emissions. As discussed above, the major factor affecting CO emissions is residence time of the flue gases in the boiler. Due to the unproven nature of this technology, the unavailability of equipment, and the uncertainty of any CO reduction, this alternative is considered technically infeasible.

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In order to address the ambient CO impact concerns raised by the Department, the following approach was used to estimate maximum CO impacts in the vicinity of the Clewiston mill. Maximum 1-hour and 8-hour CO impacts due to the U.S. Sugar Clewiston mill have already been determined in the prevention of significant deterioration (PSD) permit application for Clewiston Boiler No. 7. In this application, a very conservative CO background concentration was used and added to predicted model results to predict total ambient impacts (for convenience, Table 6-7 from the Clewiston Boiler No. 7 permit application is attached). The maximum predicted CO impacts from the Clewiston Boiler No. 7 application were 13,505 micrograms per cubic meter ($\mu g/m^3$), 1-hour average, and 7,720 $\mu g/m^3$, 8-hour average.

The background CO concentrations included in the PSD permit application for Boiler No. 7 were obtained from a SLAMS monitor located in West Palm Beach. The background concentrations provided were added to the modeled CO sources for comparison to the Ambient Air Quality Standards (AAQS). The 8-hour non-modeled background concentration was 4,600 $\mu g/m^3$ [4 parts per million (ppm)], which is nearly half of the ambient standard of 10,000 $\mu g/m^3$ (9 ppm), and the 1-hour background concentration was 7,400 $\mu g/m^3$. Background CO concentrations are primarily due to vehicular traffic. The vehicle traffic density in the West Palm Beach area is much greater than that in the Clewiston area. The registered vehicle population in Palm Beach County (872,476 vehicles) is approximately 25 times greater than the number of registered vehicles in Hendry County (32,615 vehicles). Therefore, the background CO concentrations used for Boiler No. 7 are very conservative.

To demonstrate that the impact of all bagasse boilers emitting CO at 9.0 lb/MMBtu will not cause or contribute to exceedances of the ambient air quality standards, these other bagasse boilers were modeled for receptors surrounding the Clewiston mill, and the impacts were then added directly to the total CO impacts presented in the Clewiston Boiler No. 7 application. This is extremely conservative, since the Boiler No. 7 impacts already reflect some contribution from other bagasse boilers, as well as the very conservative background concentration.

A dispersion modeling analysis was performed to estimate the maximum worst-case modeled source CO concentrations in the vicinity of the Clewiston mill due to all other non-U.S. Sugar Clewiston bagasse boilers. All bagasse boiler CO emissions were conservatively assumed to be 9.0 lb/MMBtu, except for three boilers which have specific CO emission limits in their permits (two boilers at Osceola Farms and one at Atlantic Sugar). For these three boilers, the specified permit levels were used. For each of the other bagasse boilers, CO emissions were determined by taking the maximum heat input times the CO emission rate in lb/MMBtu. A listing of the bagasse boilers and the CO emission rates is presented in Table 1.

Maximum predicted impacts were determined with a 5-year meteorological data record from West Palm Beach. Impacts were obtained at a polar receptor grid which included receptors every 10 degrees of azimuth and at ring distances of 300, 600, 900, 1,200, 1,500 and 2,000 m from the Clewiston mill. Impacts were determined for time periods during which the other sugar mills are operational (i.e., October 1 through April 30). The highest predicted 1- and 8-hour CO concentrations due to all non-Clewiston bagasse boilers based on this analysis are 3,876 and 1,068 $\mu g/m^3$, respectively (refer to attached modeling results). When added directly to the predicted total CO impacts from the Boiler No. 7 application, the total CO impacts are 17,381 $\mu g/m^3$, 1-hour average and 8,788 $\mu g/m^3$, 8-hour average. These totals are below the ambient standards of 40,000 $\mu g/m^3$, 1-hour average and 10,000 $\mu g/m^3$, 8-hour average. This analysis demonstrates that Clewiston Boiler No. 4, when emitting CO at 9.0 lb/MMBtu in conjunction with all other bagasse boilers emitting at 9.0 lb/MMBtu (or permitted rate, if applicable) and background sources, will not cause or contribute to exceedances of the ambient CO standards.

These responses should provide all of the information necessary to complete your review and approval of the PSD permit modification for Clewiston Boiler No. 4. A summary of the modeling results is attached. A diskette containing the input and output files are being sent to Cleve Holliday under separate cover. If you have any questions concerning this information, please call (904) 331-9000.

Sincerely,

David A. Buff

David A. Buff
Principal Engineer
Florida P.E. #19011

SEAL

cc: File (2)
H. Hanks
C. Halladay
D. Knowles, S. Dist
J. Harper, EPA
J. Bunyak, NPS

14015A1/3

Table 6-7
Predicted Short-Term Crop Season Impacts for the Ambient Air Quality Analysis

Pollutant	Averaging Time	Year	Background Concentration ($\mu g/m^3$)	Modeled Concentration ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)	AAQS ($\mu g/m^3$)
SO_2	3-Hour	1985	53	374	427	1300
		1986		404	457	
		1987		440	493	
		1988		379	432	
		1989		407	460	
	24-Hour	1985	21	150	171	260
		1986		128	149	
		1987		159	180	
		1988		173	194	
		1989		140	161	
PM10	24-Hour[1]	1985	53	69.8	123	150
		1986		85.7	139	
		1987		69.5	123	
		1988		107	160	
				(HSH) 107	160	
				(HTH) 81.3	134	
		1989		75.7	131	
CO	1-Hour	1985	7,400	6,105	13,505	40,000
		1986		6,481	13,881	
		1987		5,682	13,082	
		1988		6,376	13,776	
		1989		6,190	13,590	
	8-Hour	1985	4,600	3,120	7,720	10,000
		1986		2,458	7,058	
		1987		2,983	7,583	
		1988		3,124	7,724	
		1989		3,270	7,870	

[1] Reported PM10 concentrations are the maximum predicted concentrations with the exception of 1988 HSH and 1988 highest-third-highest (HTH) concentrations.

Table 1. Summary of Non-U.S. Sugar Clewiston Source Data Used in Modeling Analysis

Facility/Source	Heat Input Rate (MMBtu/Hr)	CO Emission Rate (lb/MMBtu)	CO Emission Rate (lb/hr)	CO Emission Rate (g/s)	Stack Height (m)	Stack Height (ft)	Stack Diameter (m)	Stack Diameter (ft)	Stack Temp (K)	Stack Temp (F)	Stack Velocity (m/s)	Stack Velocity (ft/s)
Okeelanta												
Boiler 4	181.42	9.00	1,632.78	205.73	22.90	75.13	2.29	7.51	333.20	140.04	7.36	24.15
Boiler 5	235.51	9.00	2,119.60	267.07	22.90	75.13	2.29	7.51	333.20	140.04	12.07	39.60
Boiler 6	239.95	9.00	2,159.52	272.10	22.90	75.13	2.29	7.51	334.30	142.02	8.74	28.68
Boiler 10	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	334.30	142.02	10.35	33.96
Boiler 11	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	341.50	154.98	9.89	32.45
Boiler 12	302.45	9.00	2,722.06	342.98	22.90	75.13	2.29	7.51	329.80	133.92	8.16	26.77
Boiler 14	302.45	9.00	2,722.06	342.98	22.90	75.13	2.29	7.51	333.20	140.04	8.28	27.17
Boiler 15	252.05	9.00	2,268.41	285.82	22.90	75.13	2.29	7.51	332.00	137.88	10.23	33.56
Osceola												
Boiler 2	280.00	9.00	2,520.00	317.52	25.00	82.03	1.52	4.99	341.00	154.08	18.10	59.39
Boiler 3	292.00	3.50	1,021.98	128.77	21.90	71.85	1.93	6.33	341.00	154.08	14.50	47.57
Boiler 4	280.00	9.00	2,520.00	317.52	25.00	82.03	1.83	6.00	341.00	154.08	18.80	61.68
Boiler 5	330.00	9.00	2,970.00	374.22	25.00	82.03	1.52	4.99	341.00	154.08	14.90	48.89
Boiler 6	379.00	6.50	2,463.49	310.40	27.40	89.90	1.93	6.33	341.00	154.08	14.90	48.89
Sugar Cane Growers												
Boiler 1	285.76	9.00	2,571.83	324.05	24.40	80.06	1.40	4.59	344.00	159.48	11.40	37.40
Boiler 2	285.76	9.00	2,571.83	324.05	24.40	80.06	1.40	4.59	344.00	159.48	11.40	37.40
Boiler 3	228.64	9.00	2,057.78	259.28	24.40	80.06	1.60	5.25	344.00	159.48	15.60	51.18
Boiler 4	571.67	9.00	5,145.00	648.27	33.50	109.91	1.63	5.35	344.00	159.48	10.60	34.78
Boiler 5	419.20	9.00	3,772.78	475.37	24.40	80.06	1.40	4.59	344.00	159.48	15.20	49.87
Boiler 8	504.00	9.00	4,536.03	571.54	47.20	154.86	3.05	10.01	344.00	159.48	10.60	34.78
US Sugar Corp. Bryant												
Boiler 1	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 2	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 3	385.00	9.00	3,465.00	436.59	19.80	64.96	1.64	5.38	342.00	155.88	36.40	119.43
Boiler 5	671.00	9.00	6,038.97	760.91	42.70	140.10	2.90	9.51	345.00	161.28	11.49	37.70
Atlantic Sugar												
Boiler 1	214.00	9.00	1,926.03	242.68	18.90	62.01	1.92	6.30	346.00	163.08	12.70	41.67
Boiler 2	214.00	9.00	1,926.03	242.68	18.90	62.01	1.92	6.30	342.00	155.88	10.90	35.76
Boiler 3	260.00	9.00	2,340.00	294.84	21.90	71.85	1.83	6.00	341.00	154.08	17.50	57.42
Boiler 4	275.00	9.00	2,475.00	311.85	18.30	60.04	1.83	6.00	344.00	159.48	15.00	49.22
Boiler 5	252.65	6.50	1,642.22	206.92	27.40	89.90	1.68	5.51	339.00	150.48	15.70	51.51
Talisman Sugar												
Boiler 4	224.00	9.00	2,016.03	254.02	21.30	69.89	1.59	5.22	336.00	145.08	22.90	75.13
Boiler 5	224.00	9.00	2,016.03	254.02	21.30	69.89	1.59	5.22	336.00	145.08	22.90	75.13
Boiler 6	400.00	9.00	3,600.00	453.60	22.90	75.13	3.05	10.01	361.00	190.08	9.10	29.86

CO MODELING RESULTS

ALL NON-CLEWISTON BAGASSE BOILERS

ISCBOB2 RELEASE 93364

ISCST2 OUTPUT FILE NUMBER 1 :SUGCO.082
ISCST2 OUTPUT FILE NUMBER 2 :SUGCO.083
ISCST2 OUTPUT FILE NUMBER 3 :SUGCO.084
ISCST2 OUTPUT FILE NUMBER 4 :SUGCO.085
ISCST2 OUTPUT FILE NUMBER 5 :SUGCO.086
First title for last output file is: 1982 BACKGROUND SUGAR MILL CO IMPACTS 8/22/94
Second title for last output file is: SUGAR MILL SEASON, RECEPTOR GRID AROUND US SUGAR - CLEWISTON

New

AVERAGING TIME	YEAR	CONC (ug/m3)	DIR (deg) or X (m)	DIST (m) or Y (m)	PERIOD ENDING (YYMMDDHH)
SOURCE GROUP ID: ALL					
HIGH 8-Hour					
	1982	1059.77	180.	2000.	82113008
	1983	793.00	210.	2000.	83013124
	1984	1067.24	200.	2000.	84042024
	1985	1067.73	170.	2000.	85111708
	1986	887.58	160.	600.	86020308
HSH 8-Hour					
	1982	1008.23	180.	2000.	82110224
	1983	652.98	250.	2000.	83100108
	1984	833.03	50.	2000.	84042608
	1985	956.94	70.	2000.	85032824
	1986	704.44	120.	1500.	86013124
HIGH 1-Hour					
	1982	3845.27	190.	2000.	82110220
	1983	3875.68	120.	2000.	83033022
	1984	3756.23	70.	2000.	84042822
	1985	3834.22	170.	2000.	85031121
	1986	3803.54	190.	2000.	86101406
HSH 1-Hour					
	1982	3423.00	210.	2000.	82110220
	1983	3479.76	110.	2000.	83033022
	1984	3002.12	90.	2000.	84042822
	1985	3718.61	70.	2000.	85022702
	1986	3307.60	150.	1500.	86112704

All receptor computations reported with respect to a user-specified origin

GRID	506100.00	2956900.00
DISCRETE	0.00	0.00

```
SO SRCPARAM OSCEO3   128.77    21.9    341.0    14.50      1.93
SO SRCPARAM OSCEO4   317.52    25.0    341.0    18.80      1.83
SO SRCPARAM OSCEO5   374.22    25.0    341.0    14.90      1.52
SO SRCPARAM OSCEO6   310.40    27.4    341.0    14.90      1.93
** SUGAR CANE GROWERS MILL BOILERS 1,2,3,4,5,8 AT 9.0 LB/MMBTU
SO SRCPARAM SCGRW12  648.10    24.4    344.0    11.40      1.40
SO SRCPARAM SCGRW3   259.28    24.4    344.0    15.60      1.60
SO SRCPARAM SCGRW4   648.27    33.5    344.0    10.60      1.63
SO SRCPARAM SCGRW5   475.37    24.4    344.0    15.20      1.40
SO SRCPARAM SCGRW8   571.54    47.2    344.0    10.60      3.05
** US SUGAR CORP - BRYANT MILL BOILERS 1,2,3,5 AT 9.0 LB/MMBTU
SO SRCPARAM USBRY123 1309.77   19.8    342.0    36.40      1.64
SO SRCPARAM USBRY4    760.91   42.7    345.0    11.49      2.90
** ATLANTIC SUGAR BOILERS 1,2,3,4 AT AT 9.0 LB/MMBTU, BLR 5 AT 6.5 LB/MMBTU
SO SRCPARAM ATLSUG1   242.68   18.9    346.0    12.70      1.92
SO SRCPARAM ATLSUG2   242.68   18.9    342.0    10.90      1.92
SO SRCPARAM ATLSUG3   294.84   21.9    341.0    17.50      1.83
SO SRCPARAM ATLSUG4   311.85   18.3    344.0    15.00      1.83
SO SRCPARAM ATLSUG5   206.92   27.4    339.0    15.70      1.68
** TALISMAN SUGAR MILL BOILERS 4 TO 6 AT 9.0 LB/MMBTU
SO SRCPARAM TALIS45   508.03   21.3    336.0    22.90      1.59
SO SRCPARAM TALIS6    453.60   22.9    361.0     9.10      3.05

SO EMISUNIT    .100000E+07 (GRAMS/SEC)         (MICROGRAMS/CUBIC-METER)
SO SRCGROUP ALL
SO FINISHED

RE STARTING
RE GRIDPOLR POL STA
** GRID ORIGIN IS US SUGAR CORP-CLEWISTON UTM COORDINATES
RE GRIDPOLR POL ORIG  506100.  2956900.
RE GRIDPOLR POL DIST 300. 600. 900. 1200. 1500.  2000.
RE GRIDPOLR POL GDIR   36  10.00   10.00
RE GRIDPOLR POL END
RE FINISHED

ME STARTING
ME INPUTFIL C:\MET\WPBPRL82.BIN       UNFORM
ME ANEMHGHT    22  FEET
ME SURFDATA  12844  1982           WEST-PALM-BCH
ME UAIRDATA  12844  1982           WEST-PALM-BCH
ME DAYRANGE  10/1-12/31 1/1-4/30
ME FINISHED

OU STARTING
OU RECTABLE ALLAVE FIRST  SECOND
OU FINISHED
```

```
CO STARTING
CO TITLEONE 1982 BACKGROUND SUGAR MILL CO IMPACTS                    8/22/94
CO TITLETWO SUGAR MILL SEASON, RECEPTOR GRID AROUND US SUGAR - CLEWISTON
CO MODELOPT DFAULT CONC   RURAL
CO AVERTIME  8 1
CO POLLUTID CO
CO DCAYCOEF     .000000
CO EVENTFIL SUGCOEV.I82
CO RUNORNOT RUN
CO FINISHED


SO STARTING

** Source Location Cards:
**          SRCID SRCTYP          XS        YS        ZS
**                              UTM (m)  UTM (m)     (m)
** Okeelanta Boilers
SO LOCATION OKEEL4    POINT     525000.  2939400.     0.
SO LOCATION OKEEL5    POINT     525000.  2939400.     0.
SO LOCATION OKEEL6    POINT     525000.  2939400.     0.
SO LOCATION OKEEL10   POINT     525000.  2939400.     0.
SO LOCATION OKEEL11   POINT     525000.  2939400.     0.
SO LOCATION OKEEL12   POINT     525000.  2939400.     0.
SO LOCATION OKEEL14   POINT     525000.  2939400.     0.
SO LOCATION OKEEL15   POINT     525000.  2939400.     0.
** Osceola Boilers
SO LOCATION OSCEO2    POINT     544200.  2968000.     0.
SO LOCATION OSCEO3    POINT     544200.  2968000.     0.
SO LOCATION OSCEO4    POINT     544200.  2968000.     0.
SO LOCATION OSCEO5    POINT     544200.  2968000.     0.
SO LOCATION OSCEO6    POINT     544200.  2968000.     0.
** Sugar Cane Growers
SO LOCATION SCGRW12   POINT     534900.  2953300.     0.
SO LOCATION SCGRW3    POINT     534900.  2953300.     0.
SO LOCATION SCGRW4    POINT     534900.  2953300.     0.
SO LOCATION SCGRW5    POINT     534900.  2953300.     0.
SO LOCATION SCGRW8    POINT     534900.  2953300.     0.
** US Sugar Corp. Bryant Mill
SO LOCATION USBRY123 POINT      538800.  2968100.     0.
SO LOCATION USBRY4    POINT     538800.  2968100.     0.
** Atlantic Sugar
SO LOCATION ATLSUG1   POINT     552900.  2945200.     0.
SO LOCATION ATLSUG2   POINT     552900.  2945200.     0.
SO LOCATION ATLSUG3   POINT     552900.  2945200.     0.
SO LOCATION ATLSUG4   POINT     552900.  2945200.     0.
SO LOCATION ATLSUG5   POINT     552900.  2945200.     0.
** Talisman Sugar
SO LOCATION TALIS45   POINT     531500.  2928400.     0.
SO LOCATION TALIS6    POINT     531500.  2928400.     0.

** Source Parameter Cards:
** POINT:   SRCID       QS        HS        TS     VS        DS
**                     (g/s)      (m)       (K)   (m/s)      (m)
** OKEELANTA MILL BOILERS 4,5,6,10,11,12,14,15  AT 9.0 LB/MMBTU
SO SRCPARAM OKEEL4    205.73     22.9     333.2     7.36      2.29
SO SRCPARAM OKEEL5    267.07     22.9     333.2    12.07      2.29
SO SRCPARAM OKEEL6    272.10     22.9     334.3     8.74      2.29
SO SRCPARAM OKEEL10   285.82     22.9     334.3    10.35      2.29
SO SRCPARAM OKEEL11   285.82     22.9     341.5     9.89      2.29
SO SRCPARAM OKEEL12   342.98     22.9     329.8     8.16      2.29
SO SRCPARAM OKEEL14   342.98     22.9     333.2     8.28      2.29
SO SRCPARAM OKEEL15   285.82     22.9     332.0    10.23      2.29
** OSCEOLA MILL BOILERS 2,4,5 AT 9.0 LB/MMBTU, BLR 3 AT 3.5 LB, AND BLR 6 AT 6.5 LB/MMBTU
SO SRCPARAM OSCEO2    317.52     25.0     341.0    18.10      1.52
```

Department of
Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

July 19, 1994

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Murray T. Brinson
Vice President of Sugar Processing
United States Sugar Corporation
Post Office Drawer 1207
Clewiston, Florida 33440

Dear Mr. Brinson:

Re: U. S. Sugar Corp., Clewiston Mill Boiler No. 4

The Department acknowledges receipt of the proper application processing fee ($7,500) and the additional copies of the application to increase carbon monoxide (CO) emissions from the reference boiler. We will need additional information on the Best Available Control Technology (BACT) evaluation and ambient air modeling analysis for CO before this application can be processed.

New bagasse boilers are proposing to meet a CO emission standard of 0.35 lbs/MMBtu. The applications for the new boilers indicate that this standard can be met with the new bagasse feed/combustion air distribution system. Can boiler No. 4 be retrofited with a new feed/air distribution system? What would the CO emissions and the cost of the new system (capitol, operation, and $/ton CO removed) be?

What is the estimated cost (capitol, operation, and $/ton CO removed) to install flue gas recirculation and catalytic oxidation on boiler No. 4?

Will drying of the bagasse prior to using it as a fuel lower the CO emissions? What is the feasibility on this process?

The modeling analysis for boiler No. 7 shows the ambient air impact at the actual CO emission rate from the U. S. Sugar boilers. However, it does not address the impact of similar CO emission rates from the bagasse boilers at other sugar mills in the area. Please address the total CO ambient air impact of all the bagasse boilers in the sugar industry by modeling.

We will resume processing this application after the requested information is received. If you have any questions on this matter, please write to me or call Willard Hanks, review engineer, or Cleve Holladay, meteorologist, at (904) 488-1344.

Sincerely,

John C. Brown, Jr., P.E.
Administrator
Air Permitting and Standards

JCB/WH/plm

cc: David Knowles, SD
John Bunyak, NPS
David Buff, KBN

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Murray T. Brinson
Vice President of Sugar Processing
U.S. Sugar Corporation
P. O. Drawer 1207
Clewiston, FL 33440

RECEIVED
JUL 29 1994
Bureau of Air Regulation

4a. Article Number
P 872 563 646

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
7-25-94

5. Signature (Addressee)

6. Signature (Agent)

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 ☆U.S. GPO: 1992—323-402 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

P 872 563 646

Receipt for Certified Mail

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to: Mr. Murray T. Brinson	
Street and No.: P. O. Drawer 1207	
P.O., State and ZIP Code: Clewiston, FL 33440	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date: Mailed: 7-~~15~~ 27-94 Permit: AC 26-248809 PSD-FL-217	

PS Form 3800, JUNE 1991

Department of Environmental Protection

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

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

July 12, 1994

Ms. Jewell A. Harper, Chief
Air Enforcement Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308

Dear Ms. Harper:

RE: United States Sugar Corporation
Boiler No. 4
Hendry County, PSD-FL-217

The Department has received the above referenced PSD application package. Please review this package and forward your comments to the Department's Bureau of Air Regulation by July 25, 1994. The Bureau's FAX number is (904)922-6979.

If you have any questions, please contact Willard Hanks or Cleve Holladay at (904)488-1344 or write to me at the above address.

Sincerely,

Patricia G. Adams
for C. H. Fancy, P.E.
Chief
Bureau of Air Regulation

CHF/pa

Enclosures