

**DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES**
Bio-Environmental Services Division
Air and Water Pollution Control



November 5, 1985

NOV 7 1985

BAQM

Mr. Bruce Mitchell
Bureau of Air Quality Management
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: **Anheuser-Busch, Inc.**
Power Boilers 1 - 4

Dear Mr. Mitchell:

The following comments are provided concerning the captioned facility's request for a BACT determination on the captioned sources:

- (1) The review of past Department of Environmental Regulation (DER) determinations for BACT on similar size and fuel type boilers does not support a fuel sulphur content of 2.27% by weight as BACT.
- (2) It is suggested that a mass emission limit be established as BACT for particulate matter and a mass emission limit be established as BACT for SO₂. Under this scenario the particulate matter limit could be met by using varying types of fuel oil, combustion controls, or control equipment. A mass emission limit for particulate matter would eliminate the uncertainties of relying solely upon sulphur content of fuel oil to comply with a mass particulate matter emission limit.

Likewise a mass emission limit for SO₂ would allow the source options in meeting the standard (i.e. sulphur content in the oil or control equipment).

- (3) Bio-Environmental Services Division (BESD) recommends the following:

Particulate BACT - 0.12 to 0.13 lb/10⁶ BTU heat input.

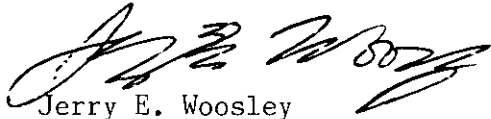
SO₂ BACT - 1.60 to 1.70 lb/10⁶ BTU heat input.

Note: The above limits are approximately equivalent to using 1.5% sulphur content fuel oil according to AP-42 calculations and assuming 152 x 10³ BTUs/Gal of oil.



If BESD may be of further assistance in this matter, please advise.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jerry E. Woosley". The signature is stylized and cursive, written over the printed name.

Jerry E. Woosley
Associate Engineer

JEW/ecr

cc: Mr. Mort Benjamin, DER
BESD/File 1060-B



ANHEUSER-BUSCH COMPANIES

October 23, 1985

Mr. Bruce Mitchell
Bureau of Air Quality Management
State of Florida
Dept. of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Jacksonville Brewery
Boiler Particulate Emission Compliance

Dear Bruce:

In response to your July 17, 1985 letter and in accordance with our meeting on October 9, 1985, attached is an economic analysis of the various sulfur content fuel oils and pollution control equipment available, a historical listing of boiler fuel oil usage by vendor since January 1976, and actual annual emissions of sulfur dioxide and particulate matter from the boilers since 1976.

This letter shall also serve as a request to amend the existing boiler operating permits to incorporate the proposed BACT level of 2.27% sulfur residual fuel oil and 0.18 lbs/MMBTU particulate matter.

As discussed in my January 30, 1985 letter to the Jacksonville Bio-Environmental Services Division, the relaxation in allowable or permitted particulate emissions to 0.18 lbs/MMBTU should not be considered as an increment consumer since actual emissions of particulate and sulfur dioxide will not be increased. As shown in the attached table, actual annual emissions from the boilers have decreased substantially since the baseline year of 1978. For these reasons, an increment consumption analysis has not been prepared.

As shown in the economic impact analysis, various sulfur fuel oils are available by blending high and low sulfur oils. Breaks were chosen at 1.0% to correspond with a 0.1 lb/MMBTU particulate limit, 1.5, 1.8, and 2.0% to represent previous BACT determinations, and 2.27% sulfur which is the current operating permit limitation. Compliance with the permit limitation of 0.1 lb/MMBTU particulate can also be achieved by installation of an electrostatic precipitator. The estimated cost for this control is included in the analysis.

Anheuser-Busch Companies, Inc.
Executive Offices
One Busch Place
St. Louis, MO U.S.A. 63118-1852
Telex 447 117 ANBUSCH STL

DER
OCT 28 1985
BAQM

October 23, 1985

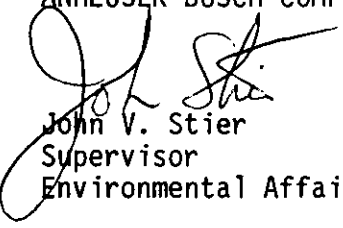
Since there are no definite breaks in the cost-effectiveness data, retention of the permitted fuel oil sulfur content of 2.27% and particulate matter emission level of 0.18 lbs/MMBTU are proposed as BACT for the following reasons:

1. Achievement of the current permit limitation of 0.1 lbs/MMBTU is not cost effective;
2. Dispersion modeling submitted in January and July 1985 indicates that the proposed levels will not have a significant impact on the particulate non-attainment area and will not violate any applicable ambient air quality standards.

I would like to again extend my appreciation for your cooperation and patience and hope this information will help provide a final resolution to this issue.

Sincerely,

ANHEUSER-BUSCH COMPANIES, INC.



John V. Stier
Supervisor
Environmental Affairs

JVS/bkb

Enc.

cc: Mr. Jerry Woosely, BESD w/att.
Mr. John Wilchek, Anheuser-Busch, Inc. w/att.

ANHEUSER-BUSCH, INC.
 JACKSONVILLE BREWERY
 BOILER AIR EMISSIONS INVENTORY

<u>Year</u>	<u>Oil Consumed (MM Gals)</u>	<u>Actual Annual Emissions (tons) SO₂</u>	<u>Particulates</u>
1984	8.36	1210	80
1983	7.44	1157	76
1982	8.67	1370	100
1981	8.89	1513	110
1980	10.01	1680	122
1979	10.12	1734	126
1978	9.78	1647	120
1977*	8.34	1353	99
1976	8.39	1494	108

*Baseline date is December 27, 1977

JVS 10/10/85

ANHEUSER-BUSCH, INC.
 JACKSONVILLE BREWERY
 BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

<u>% Sulfur Fuel Oil</u>	<u>\$/Gal</u>	<u>PM (tons)</u>	<u>Annual* Cost (\$)</u>	<u>Incremental Cost (\$)</u>	<u>Cost Effectiveness (\$/ton Removed)</u>
2.27	0.5940	98.95	4,574,167	Baseline	Baseline
2.0	0.6131	88.55	4,720,833	146,667	14,109
1.8	0.6226	80.85	4,794,167	220,000	12,158
1.5	0.6310	69.30	4,858,333	284,167	9,586
1.0	0.6548	50.05	5,041,667	467,500	9,561
Electrostatic Precipitator		50.05	5,564,034	989,867	20,243
South Coast Air Quality Management District BACT Guideline					5,300

*Annual cost based upon projected 1985 fuel oil usage of 7.7 MM gallons.

ANHEUSER-BUSCH, INC.
 JACKSONVILLE BREWERY

RESIDUAL FUEL OIL RECORDS
 JANUARY 1976 - JULY 1985

YEAR	MONTH	EASTERN SEABOARD			AMERADA HESS			TOTAL GALLONS	SO2 (TONS)	PM (TONS)
		GALLONS	% SULFUR	BTU/GAL	GALLONS	% SULFUR	BTU/GAL			
1985	JUNE	376,202	1.26	151,984	195,543	1.58	150,504	574,745	61.79	4.23
	MAY	458,514	1.43	153,674	207,490	1.61	149,682	666,004	77.69	5.26
	APRIL	472,902	1.38	147,160	195,268	1.42	150,241	668,170	73.00	4.94
	MARCH	471,340	1.40	150,360	196,379	1.48	152,746	667,719	74.62	5.05
	FEBRUARY	432,407	1.36	146,566	138,198	1.51	148,652	570,605	62.55	4.19
	JANUARY	476,269	1.02	152,060	195,410	2.12	145,401	671,679	70.65	4.79
	TOTAL		2,689,534			1,129,288			3,818,922	420.29
1984	DECEMBER	378,321	1.15	150,139	220,801	1.53	151,576	599,122	60.67	4.20
	NOVEMBER	390,095	1.92	150,281	195,795	1.56	149,875	585,890	82.77	5.57
	OCTOBER	431,957	2.00	151,875	214,097	1.95	151,012	646,054	100.59	6.73
	SEPTEMBER	457,665	1.44	153,360	163,887	2.12	149,921	621,552	79.01	5.28
	AUGUST	499,892	1.84	151,614	182,091	1.87	149,557	681,983	98.93	6.57
	JULY	532,032	1.76	150,529	163,834	1.92	150,678	695,866	98.20	6.50
	JUNE	517,953	2.15	150,777	170,525	1.87	149,360	688,478	112.45	7.42
	MAY	576,017	2.13	150,967	166,883	1.91	149,646	742,900	121.33	7.98
	APRIL	485,412	2.13		157,718	1.60		643,131	103.45	6.83
	MARCH	522,962	1.56	150,611	140,999	1.27	149,695	663,961	78.10	5.19
	FEBRUARY	652,327	2.13	149,735	168,609	1.66	151,458	1,020,935	167.13	10.90
	JANUARY	580,149	1.85	147,253	194,218	1.52	151,109	774,367	107.43	7.13
TOTAL		6,224,783			2,139,457			8,364,240	1210.07	80.28
1983	DECEMBER	350,889	1.68		152,872	1.98		503,761	70.04	4.69
	NOVEMBER	365,461	2.06		165,376	1.60		530,837	82.47	5.50
	OCTOBER	384,533	2.15		147,261	1.98		531,794	87.79	5.81
	SEPTEMBER	388,675	2.21		133,660	2.00		522,335	88.41	5.83
	AUGUST	567,245	1.92		615,451	1.80		1,182,697	172.46	11.91
	JULY	550,430	2.20		73,011	1.80		623,441	105.38	6.82
	JUNE	564,934	1.72		73,086	2.07		638,020	88.15	5.72
	MAY	615,998	1.91		73,050	2.07		689,048	104.23	6.75
	APRIL	237,886	2.20		24,319	2.01		262,205	44.92	2.90
	MARCH	493,627	2.21		66,597	2.01		560,224	96.21	6.23
	FEBRUARY	503,888	2.27		60,775	2.25		664,663	118.34	7.63
	JANUARY	647,784	1.68		77,909	2.20		725,693	98.88	6.42
TOTAL		5,771,351			1,663,767			7,435,118	1157.28	76.21
1982	DECEMBER		2.10			2.05		622,852	101.45	7.40
	NOVEMBER		2.18			2.05		614,576	102.04	7.42
	OCTOBER		2.24			1.94		667,335	109.49	7.97
	SEPTEMBER		1.58			2.32		667,492	102.18	7.51
	AUGUST		1.50			0.80		731,202	66.01	5.30
	JULY		1.49			2.27		764,362	112.80	8.33
	JUNE		1.86			2.34		762,792	125.75	9.15
	MAY		2.12			2.12		706,212	117.53	8.55
	APRIL		2.18			2.18		777,972	133.13	9.65
	MARCH		2.16			2.07		732,626	121.64	8.85
	FEBRUARY		2.16			2.25		855,420	148.40	10.74
	JANUARY		2.13			2.13		772,026	129.09	9.38
TOTAL								8,674,867	1369.50	100.24

1981	DECEMBER	2.17	2.16	652,247	109.31	7.94
	NOVEMBER	2.21	2.09	636,529	107.43	7.80
	OCTOBER	2.26	2.14	622,195	107.45	7.78
	SEPTEMBER	2.22	2.27	811,777	143.06	10.33
	AUGUST	2.27	2.27	775,581	138.20	9.97
	JULY	2.24	2.24	817,913	143.82	10.39
	JUNE	2.25	2.25	737,767	130.31	9.41
	MAY	2.21	1.98	783,566	128.86	9.38
	APRIL	2.18	1.99	764,972	125.20	9.12
	MARCH	2.07	2.07	809,467	131.53	9.59
	FEBRUARY	2.13	2.13	743,866	124.38	9.04
	JANUARY	2.14	2.14	733,011	123.14	8.94
				8,888,891	1512.71	109.68
1980	DECEMBER	2.09	2.09	681,792	111.86	8.15
	NOVEMBER	2.09	2.09	665,033	109.11	7.95
	OCTOBER	2.05	2.05	847,055	136.31	9.95
	SEPTEMBER	2.17	2.17	879,516	149.82	10.86
	AUGUST	2.07	2.07	900,660	146.35	10.67
	JULY	1.87	1.87	851,099	124.94	9.23
	JUNE	2.27	2.27	813,066	144.88	10.45
	MAY	2.27	2.27	804,112	143.29	10.33
	APRIL	2.27	2.27	849,787	151.43	10.92
	MARCH	2.36	2.10	896,465	156.93	11.34
	FEBRUARY	2.15	2.11	868,983	148.64	10.80
	JANUARY	2.15	2.11	933,259	156.05	11.34
				10,010,827	1679.61	122.00
1979	DECEMBER	2.27	2.27	778,597	138.74	10.00
	NOVEMBER	2.27	2.27	804,818	143.41	10.34
	OCTOBER	2.27	2.27	924,143	164.68	11.88
	SEPTEMBER	2.19	2.19	811,674	139.54	10.11
	AUGUST	2.19	2.19	895,013	153.87	11.14
	JULY	1.20	2.27	897,124	122.19	9.13
	JUNE	2.27	2.27	812,946	144.86	10.45
	MAY	2.27	2.27	823,023	146.66	10.58
	APRIL	2.27	2.11	852,113	146.49	10.61
	MARCH	2.27	2.11	890,029	153.01	11.08
	FEBRUARY	2.27	2.11	777,190	133.61	9.68
	JANUARY	2.27	2.11	852,190	146.50	10.61
				10,118,860	1733.56	125.60
1978	DECEMBER	2.20	2.15	670,950	114.56	8.30
	NOVEMBER	2.20	2.15	760,069	129.77	9.41
	OCTOBER	2.13	2.23	916,016	156.76	11.36
	SEPTEMBER	2.13	2.23	902,029	154.36	11.19
	AUGUST	2.02	2.23	979,513	163.40	11.88
	JULY	2.02	2.23	838,837	139.93	10.17
	JUNE	1.88	2.17	748,637	119.01	8.70
	MAY	1.88	2.17	972,502	154.59	11.31
	APRIL	1.88	2.17	843,148	134.03	9.80
	MARCH	2.24	2.27	713,859	126.37	9.12
	FEBRUARY	2.24	2.27	683,331	120.96	8.73
	JANUARY	2.24	2.27	750,398	132.83	9.59
				9,779,289	1646.56	119.55

1977	DECEMBER	1.65	2.20	523,866	79.16	5.83
	NOVEMBER	1.65	2.20	621,454	93.91	6.91
	OCTOBER	1.65	2.20	633,386	95.71	7.05
	SEPTEMBER	2.27	2.18	630,000	110.04	7.95
	AUGUST	2.27	2.18	667,900	116.66	8.43
	JULY	2.27	2.18	755,500	131.96	9.54
	JUNE	1.55	2.11	782,500	112.41	8.33
	MAY	2.20	2.27	834,900	146.48	10.58
	APRIL	0.98	2.27	783,500	99.95	7.54
	MARCH	2.27	2.27	788,700	140.54	10.13
	FEBRUARY	2.27	2.27	592,200	105.53	7.61
	JANUARY	1.85	2.25	752,400	121.08	8.84

8,366,306 1353.42 98.75

1976	DECEMBER	2.27	2.27	631,600	112.55	8.12
	NOVEMBER	2.27	2.27	587,800	104.74	7.55
	OCTOBER	2.27	2.27	773,200	137.78	9.94
	SEPTEMBER	2.27	2.27	882,900	157.33	11.35
	AUGUST	2.27	2.27	892,100	158.97	11.46
	JULY	2.27	2.27	964,900	171.94	12.40
	JUNE	2.27	2.27	695,900	124.01	8.94
	MAY	2.27	2.27	645,600	115.08	8.30
	APRIL	2.27	2.27	457,100	81.45	5.87
	MARCH	2.27	2.27	284,500	50.70	3.66
	FEBRUARY	2.27	2.27	667,900	119.02	8.58
	JANUARY	2.27	2.27	902,600	160.84	11.60

8,386,300 1494.40 107.76

P 408 530 283

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL

(See Reverse)

PS Form 3800, Feb. 1982

Sent to	
Mr. John V. Stier	
Street and No.	
P.O., State and ZIP Code	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to whom and Date Delivered	
Return Receipt Showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	\$
Postmark or Date	
7/17/85	

PS Form 3811, July 1983

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. Show to whom, date and address of delivery.
2. Restricted Delivery.

3. Article Addressed to:
Mr. John V. Stier
Anheuser-Busch Companies
Mail Code 202-4, One Busch Place
St. Louis, Missouri 63118

4. Type of Service:	Article Number
<input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail	P 408 530 283

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee
X *John V. Stier*

6. Signature - Agent
X

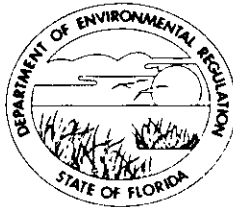
7. Date of Delivery

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

DOMESTIC RETURN RECEIPT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

July 17, 1985

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John V. Stier
Supervisor, Environmental Affairs
Anheuser-Busch Companies, Inc.
Mail Code 202-4
One Busch Place
St. Louis, Missouri 63118

Dear Mr. Stier:

Re: Boilers Nos. 1-4, Jacksonville Plant

In order to reconcile the existing situation with the operational and permitted parameters applicable to the above referenced sources, the following information will have to be submitted:

- o Request an amendment to the existing operating permit(s), which will include your recommendation for a best available control technology (BACT) determination. Submit this request to the City of Jacksonville Bio-Environmental Services Division;
- o Provide a justification for your recommendation for BACT by completing the BACT section of the enclosed application forms. It should include an economic analysis of the various sulfur content fuel oils available from the ABC's Jacksonville plant's vendor(s);
- o Compile on a monthly basis, from January 1982 to present, the sulfur content, by weight (average), and the amount of the fuel oil received per vendor; and,
- o Demonstrate that an increase in the sulfur content, by weight, from the compliance 1% sulfur oil to the requested BACT level, will not violate PSD increments for both PM (particulate matter) and SO₂. This is usually done by modeling.

Mr. John V. Stier
Page Two
July 17, 1985

If there are any questions, please call Bruce Mitchell at
(904)488-1344 or write to me at the above address.

Sincerely,



C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ks

cc: J. Woosley, BES
J. Brown, NE District

May 8, 1985

by: Bruce Mitchell

Subj.: Oil Market Survey for Anheuser-Busch Company Project

See: John V. Stier's letter + attachment dated January 30, 1985

A. ABC purchases their petroleum products from

1. Amvado Hess in New Jersey

704-393-2202

contact: Vicki (receptionist)

Ron Rhodes

2. Eastern Seaboard Petroleum in Fax

704-355-9675

contact: Ron Seaton

Kevin Purcell

B. I asked, "what would I pay per barrel on a 1.0% and a 2.27% sulfur content fuel oil?"

1. Amvado Hess

1.0% - 27.20 / bbl

1.5% - 27.65 / bbl

27.20

2.0% - 27.05 / bbl

24.85

2.3% - 26.25 / bbl

* 1.45 / bbl difference

2.5% - 26.05 / bbl

± 42 gals / bbl = * 0.0345 / gal

2. Eastern Seaboard Petroleum

1.0% - 29.50 / bbl

2.25% - 28.05 / bbl

* 1.45 / bbl difference

± 42 gals / bbl = * 0.0345 / gal

C. The following calculations present the costs per ton of removal as a comparison to what ABC contends.

For 1.1% sulfur fuel oil considered No. 6 (residual) and
2.27% sulfur fuel oil considered No. 6 (residual)

assume: AP-42, Table 1.3-1 8.01×10^6 gals. used 1984
[10 (s) + 3.16 / 10^3 gals.]

$$8.01 \times 10^6 \text{ gals} \times \frac{10(1.1\%) + 3.16}{10^3 \text{ gals}} \times \frac{\text{ton}}{2000 \text{ gals}} = 102.9 \text{ Tons}$$

$$8.01 \times 10^6 \text{ gals} \times \frac{10(2.27\%) + 3.16}{10^3 \text{ gals}} \times \frac{\text{ton}}{2000 \text{ gals}} = 52.1 \text{ Tons}$$

$$8.01 \times 10^6 \text{ gals} \times \$0.0345 = \$276,345$$

$$\frac{\$276,345}{(102.9 - 52.1)} = \$5440 / \text{Ton removed}$$

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)

Larry George

Initial

Date

2.

Initial

Date

3.

Initial

Date

4.

Initial

Date

REMARKS:

I would like you to take the lead on sorting out this one,

My concerns are:

- ① Did they need a permit back when they got one
- ② If we give them sel: F, will it be a different policy than we have given Jay Kraft or others in NAPA
- ③ Would EPA have any problem with this?
- ④ Are there any other arguments legitimate?

please give high priority to this -

INFORMATION

Review & Return

Review & File

Initial & Forward

DISPOSITION

Review & Respond

Prepare Response

For My Signature

For Your Signature

Let's Discuss

Set Up Meeting

Investigate & Report

Initial & Forward

Distribute

Concurrence

For Processing

Initial & Return

FROM:

Clair

DATE

2/27

PHONE

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Air and Water Pollution Control

DER
FEB 18 1985
BAQM



February 13, 1985

Mr. Clair Fancy, P.E.
Central Air Permitting Section
Department of Environmental Regulation
2600 Blainstone Road
Tallahassee, Florida 32301-8241

Re: Anheuser Busch, Inc.
Four Steam Generating Boilers
Jacksonville, Florida

Dear Mr. Fancy:

The Bio-Environmental Services Division (BESD) staff has reviewed John Stier's letter dated January 30, 1985 concerning exceedances of the permitted particulate emission limiting standard of 0.1 lbs/10⁶ BTU heat input. It is requested that your staff complete the review of the modelling results and determine the appropriate course of action to take concerning the operating permit.

BESD recommends revision of the current operating permit based on the following reasons:

- (1) Anheuser Busch is exempt from RACT since ambient impact is less than significance levels.
- (2) The four boilers:
 - (a) Did not originally have a construction permit
 - (b) Did not require construction permit AC16-39951, because according to definitions, changes performed pursuant to issuance of this permit, did not constitute a modification.
 - (c) Original applications indicated a maximum steam production of 80 X 10³ lbs/hr (each boiler) which is approximately equivalent to 100 X 10⁶ BTUs/hr heat input even though heat input given on applications was average usage.

The revised permit should stipulate allowable limit for particulates as that emission level necessary to keep ambient impact in TSP Non-Attainment area below significance levels.

Your favorable response is requested in order that this situation may be

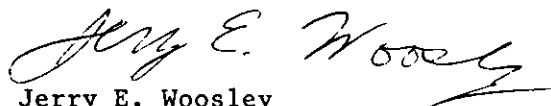


Page 2
February 13, 1985

resolved in an expeditious manner.

Please direct all questions concerning the above to the undersigned.

Very truly yours,

A handwritten signature in cursive script that reads "Jerry E. Woosley". The signature is written in dark ink and is positioned above the typed name and title.

Jerry E. Woosley
Assistant Engineer

JEW/cb

cc: Mr. John Stier
Mr. John Mueller
Mr. John Brown
BESD File/ 1060-B



ANHEUSER-BUSCH COMPANIES

January 30, 1985

DER
FEB 4 1985
BAQIM

Mr. Jerry Woosely
Department of Health & Welfare
and Bio-Environmental Services
Air and Water Pollution Control
515 West 6th Street
Jacksonville, Florida 32206

Dear Jerry:

Pursuant to our January 17th meeting in Tallahassee, Anheuser-Busch contracted with Radian Corporation in Austin, Texas to perform an air quality impact analysis for the Jacksonville particulate non-attainment area. Attached are the results of this analysis.

As indicated in the letter from Radian Corporation, particulate emissions from the brewery complex have a maximum 24-hour impact of 4.7 ug/m^3 and are therefore exempt from the RACT requirements under 17-2.650(2). This exemption is available under 17-2.650(2)(b)2.

As you are well aware, the Anheuser-Busch, Inc. brewery in Jacksonville has spent considerable time and expense in an attempt to meet the current boiler particulate emission limitation of 0.1 lb/MMBTU. As indicated in the January 17th meeting, the only options remaining are to switch to a 1% sulfur fuel oil at considerable expense, or request a relaxation of the boiler emission limitation to a level consistent with the combustion of the permitted 2.27% sulfur oil.

Anheuser-Busch requests a relaxation in the boiler emission limitation to 0.18 lb/MMBTU since:

1. Considerable effort has been spent in an attempt to comply with the existing unrealistic permit condition;
2. Dispersion modeling indicates that particulate emissions from the brewery do not significantly impact the non-attainment area; and
3. The cost to comply with the existing permit condition is estimated to be \$457,000 per year. This results in an exorbitant cost-effectiveness value of \$9,000 per ton of particulate removed.

To: Mr. Jerry Woosely

-2-

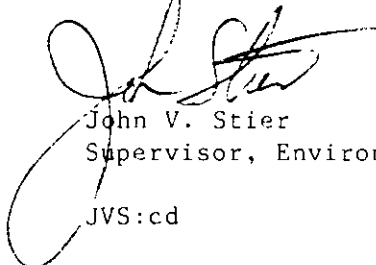
January 30, 1985

Also attached is a copy of the original permits issued for the four boilers. The relaxation to 0.18 lb/MMBTU should not be considered a modification subject to PSD review, since actual emissions of particulate will not be increased. In addition, the original permits are for four boilers rated at 80,000 pounds of steam per hour each. As discussed at the January 17th meeting, the permit history for the boilers is somewhat confusing. Based upon the attached permits, it appears that the BES office can issue this relaxation as an administrative change and resolve this issue.

Anheuser-Busch appreciates the patience and suggestions offered by the BES during the past year and hopes this information will be adequate to make a final determination.

Sincerely,

ANHEUSER-BUSCH COMPANIES



John V. Stier
Supervisor, Environmental Affairs

JVS:cd

cc: J. Mueller- Anheuser-Busch, Inc. w/att.
C. Fancy - DER, Tallahassee w/att.—

ANHEUSER-BUSCH, INC.
JACKSONVILLE BREWERY BOILER EMISSIONS
PARTICULATE COST-EFFECTIVENESS

ASSUMPTIONS:

1. Average 1984 price upcharge of \$0.057 per gallon for 1.0% versus 2.27% sulfur residual oil.
2. 1984 residual fuel oil usage of 8.01 million gallons.
3. Average oil heat content of 143,500 BTU per gallon.
4. AP-42 particulate emission factor of 10(S) + 3 lbs per 1000 gallons.

CALCULATIONS:

$$8.01 \text{ MM gals X } \frac{10 (2.27\%S) + 3}{\text{M gals}} \text{ X } \frac{\text{ton}}{2000 \text{ lbs}} = 102.9 \text{ Tons}$$

$$8.01 \text{ MM gals X } \frac{10 (1.0\%S) + 3}{\text{M gals}} \text{ X } \frac{\text{ton}}{2000 \text{ lbs}} = 52.1 \text{ Tons}$$

$$8.01 \text{ MM gals X } \underline{\$0.057} = \$457,000$$

$$\frac{\$457,000}{102.9-52.1 \text{ Tons}} = \$9,000 \text{ per Ton Removed}$$



DISPERSION MODELING ANALYSIS OF PARTICULATE
EMISSIONS IMPACTS ON THE JACKSONVILLE, FLORIDA
NON-ATTAINMENT AREA

Anheuser-Busch, Inc. Jacksonville Brewery

Prepared by:
Radian Corporation

January 30, 1985

1.0 INTRODUCTION

Anheuser-Busch, Inc., operates a brewery in Jacksonville, Florida approximately seven kilometers north of an area designated as non-attainment for total suspended particulate (TSP). Particulate matter (PM) is emitted at the brewery from four oil-fired boilers, grain and dust handling systems, and spent grain drying operations.

Anheuser-Busch desires to modify its existing permit to operate to allow PM emissions from the boilers of 0.18 pounds per million Btu (lb/MM Btu) of heat input. To ensure that reasonable progress is being made toward attaining compliance with the TSP standard in the non-attainment area, PM emissions from the brewery complex may not have a significant impact on the designated area.

Anheuser-Busch has requested Radian Corporation to perform a dispersion modeling analysis of the impacts on the non-attainment area from PM emissions from the brewery facility. This report presents the emissions used in the analysis, the modeling methodology employed, and the resultant TSP impacts.

2.0 EMISSIONS INVENTORY

The emissions characteristics of the brewery's sources are presented in Table 1. All data were supplied by Anheuser-Busch. To facilitate the modeling effort, adjacent sources with identical stack characteristics were consolidated into a single source, e.g., the four boilers were modeled as one source.

TABLE 1. PARTICULATE MATTER EMISSIONS INVENTORY

Source	Stack Height (m)	Stack Diameter (m)	Stack Exit Temp (°K)	Stack Velocity (m/s)	Particulate Emissions (g/sec)
Boiler #1	30.4	1.07	488.9	16.2	2.27
Boiler #2	30.4	1.07	488.9	16.2	2.27
Boiler #3	30.4	1.07	488.9	16.2	2.27
Boiler #4	30.4	1.07	488.9	16.2	2.27
Grain Dryer #1	21.3	1.7	322	9.6	0.88
Grain Dryer #2	21.3	2.0	327	9.0	1.26
Grain Unloading #1	9.8	0.2	Ambient	25.5	.011
Grain Unloading #2	9.8	0.3	Ambient	14.2	.011
Grain Conv. #1	9.8	0.15	Ambient	17.0	.004
Grain Conv. #2	9.8	0.15	Ambient	17.0	.004
Grain Dust Coll. #1	36.6	0.33	Ambient	36.2	.014
Grain Dust Coll. #2	36.6	0.33	Ambient	36.2	.014
Vacuum Cing. #1	36.6	0.15	Ambient	5.7	0.142
Vacuum Cing. #2	36.6	0.15	Ambient	5.7	0.142

(Continued)

TABLE 1. Continued

Source	Stack Height (m)	Stack Diameter (m)	Stack Exit Temp (°K)	Stack Velocity (m/s)	Particulate Emissions (g/sec)
Grain Dust Conveying	18.3	0.3	Ambient	2.8	0.060
Lime Unloading (Brewery)	14.0	0.2	Ambient	6.4	0.019
Lime Unloading (L. A.)	9.3	0.2	Ambient	19.1	0.028
Bulk Salt Unloading	4.9	0.5	Ambient	1.5	0.048
Cooling Coll. #1	15.2	0.5	Ambient	15.3	0.006
Cooling Coll. #2	15.2	0.6	Ambient	21.6	0.007
Dried Grain Conv. & Sto.	15.5	0.2	Ambient	12.7	0.009
Dried Grain Loadout	15.5	0.2	Ambient	15.9	0.015

3.0 MODELING METHODOLOGY

Dispersion modeling was performed utilizing the Industrial Source Complex - Short-term (ISC-ST) model (Bowers et al, 1979). The model was executed following the guidelines set forth in the above referenced User's Guide and the Draft Guideline on Air Quality Models (EPA, 1984).

Source input parameters were based on the emissions inventory presented in Table 1. To evaluate the culpability of selected groups of sources for a given impact, their contribution was determined by grouping sources according to the brewery operations that they serve. Four source groups were evaluated for their culpability; boilers, grain dryers, grain and miscellaneous dust handling, and spent grain handling.

To more accurately simulate the advection and diffusion of PM emissions, the effects of gravitational settling and particle deposition should be evaluated. A distribution of settling velocities by particle size categories is required for modeling of particle settling in the ISC-ST model.

Particle size distribution data were obtained for oil-fired boilers (API, 1983). However, these data were based on combustion of oil with a slightly different composition than that burned at the brewery. Thus, to avoid compromising the representativeness and accuracy of the modeling and to ensure conservatism, deposition was not applied to the boiler emissions.

Particle size data for grain dryer PM emissions were provided by Anheuser-Busch. These data, based upon measurements at the grain dryer scrubber outlet, were used to calculate settling velocities which were subsequently input into the model.

The effects of building induced downwash and turbulent wakes and eddies were evaluated for those sources whose stacks would be affected by nearby structures. Building dimensions and locations were provided by Anheuser-Busch.

Meteorological data input consisted of hourly data based on surface observations from 1970 through 1974 at Jacksonville and upper air observations at Waycross, Georgia.

Modeling was performed with receptors located along the northern, western and eastern boundaries of the non-attainment area. Receptors were also located within the area. Spacing of these receptors ranged from 1/2 to 3/4 kilometer.

Maximum 24-hour and annual impacts were determined for each of the five years of input meteorological data. The meteorological data for those time periods which were identified as producing maximum impacts for each year were evaluated for excessive occurrences of calm winds. The impacts predicted for days with excessive calms were recalculated utilizing the procedure recommended in the Modeling Guideline (EPA, 1984). This methodology was utilized to identify the maximum 24-hour impact for the five year period of record.

4.0 MODELING RESULTS

The results of the dispersion modeling analysis are presented in Table 2. The maximum 24-hour impact was predicted to occur at the northern boundary of the non-attainment area, 6900 meters and 170° (clockwise from north) from the brewery's boiler stacks on day 278 in 1973. The maximum annual impact was predicted at 6800 meters and 174° from the boiler stacks.

TABLE 2. 24-HOUR AND ANNUAL TSP CONCENTRATIONS (ug/m³)

	Total Concentration	Boilers	Source Contribution		
			Grain Dryers	Grain & Dust Handling	Spent Grain Handling
24-Hour	4.7	3.3	1.1	0.3	< 0.05
Annual	0.4	0.3	0.1	< 0.05	< 0.05

5.0 CONCLUSIONS

The modeling results indicate that with boiler PM emission rates of 0.18 lb/MM Btu, the maximum TSP impact in the non-attainment area from all PM sources will be less than the 24-hour and annual significance levels of 5.0 $\mu\text{g}/\text{m}^3$ and 1.0 $\mu\text{g}/\text{m}^3$, respectively. Thus, modification of the existing permit to operate the brewery boilers at the 0.18 lb/MM Btu PM emission rate will not have a significant impact on the non-attainment area and will not prevent further progress toward attaining compliance with the TSP standard.

REFERENCES

Bowers, J. F., et al, 1979, Industrial Complex (ISC) Dispersion Model User's Guide, U.S. EPA, Research Triangle Park, North Carolina.

Environmental Protection Agency, 1984, Guideline on Air Quality Models (Revised) - Draft, Research Triangle Park, North Carolina.

American Petroleum Institute, 1983, Characterization of Particulate Emissions from Refinery Process Heaters and Boilers, Washington, D.C.