Anheuser-Busch, Inc.

ST. LOUIS, MO., U.S.A. 63118

January 10, 1980

Mr. Mark Hodges, Scheduler
Bureau of Air Quality Management
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301

Re: Application No. AC 21892

Dear Mr. Hodges:

The letter from Mr. J. P. Subramani, Chief, Bureau of Air Quality Management, to Mr. John Mueller of the Anheuser-Busch Jacksonville Brewery, noted several deficiencies in the permit application for modifications to the No. 1 Grains Dryer. This letter transmits Anheuser-Busch's responses to the noted deficiencies.

Please schedule the review of this information as quickly as possible. We have had several delays in responding to the deficiencies. This is now causing delays in making the modifications. Thus, we would like to get an estimate of when a construction permit could be issued so that the construction of the modifications can be rescheduled.

If you or the person who is to review these responses have any questions or need additional information, then please contact me at our St. Louis office. My phone number is (314) 241-5415. I do intend to follow up this letter by phone in one to two weeks to check on the progress of the application.

Yours truly,

ANHEUSER-BUSCH, INC.

Donald M. DeHart

Donald M. DeHart
Sr. Environmental Engineer

cc: Mrs. Marion DeGrove (w/encl.)
Jacksonville Bioenvironmental Services Div.

DMD:de

encl.

Keep America Beautiful
Pitch In!

ANHEUSER-BUSCH COMPANIES, INC.
JACKSONVILLE BREWERY
GRAIN DRYER NO. 1
APPLICATION NO. 21892
FOR SOURCE MODIFICATION
RESPONSES TO TECHNICAL DISCREPANCIES

January 9, 1980

1. The existing dryer burner has not been completely reliable in recent years for long-term, continuous operation. Thus, to get better long term control, Anheuser-Busch is proposing to replace this Heil burner with a Peabody M-15 burner of exactly the same input capacity, namely 30 x 10^6 BTU/hr. Both burners are dual fuel burners capable of burning No. 6 fuel oil or natural gas. Anheuser-Busch has had good experiences with the proposed Peabody burner at several other grains drying facilities.

   As burner control was a problem, a slight decrease in emissions could be expected from the new burner with its better control. Practically speaking, no measurable changes in emissions are expected.

   The burner combustion gases are used in the drum dryer to dry the wet spent grains. These gases are then vented, with extra conveying air, through the wet scrubber (Present Source No. 62). This present exhaust configuration is not being changed in the modifications.

   As far as the burner combustion gases are concerned, the proposed modification will only change the location of the fan (blower) conveying the combustion gases to the scrubber. Presently the fan is located between the drum dryer and the Product Collector Cyclone (termed a positive pressure system). The modification would locate the conveying fan between the Product Collector Cyclone and the wet scrubber (termed a negative pressure system). This modification will make the conveying of the dryer exhaust gases (including the burner combustion gases) and the dried spent grain similar to the No. 2 Dryer and practically all of Anheuser-Busch's other spent grain dryers.

2. The proposed modifications will not increase the drying capacity nor the potential emissions of the dryer system. Presently the potential emissions come from the Product Collector Cyclone with about 32,000 SCFM of conveying air plus the Cooling Collector Cyclone with about 7,000 SCFM. The dust-laden air from both cyclones passes through the wet scrubber. See the enclosed revised Drawing No. 1 for the correct present configuration. A revised Drawing No. 1 M showing the modified configuration is also enclosed.

After the modifications, only the Product Collector Cyclone using about 30,000 SCFM of conveying air will discharge dust-laden air to the wet scrubber. A new Cooling Filter Collector (an integral combination of a product separating cyclone plus a fabric baghouse) using about 6,250 SCFM (stated as ACFM on application) will replace the present Cooling Collector Cyclone. This Cooling Filter Collector will be a new direct discharge (No. 62b).

As there have been no changes in the dryer capacity, the dried grain condition, and the basic grains being dried and there is a slight decrease in the conveying air to and from the two product separation cyclones, it seems reasonable to say that there will be no increase in potential emissions from the two product separation cyclones to the respective wet scrubber and baghouse. In fact, because of the decrease in conveying air, one could expect less particulate entrainment as the conveying air leaves the cyclones and thus a lower potential emission.

2a. The scrubber loadings are expected to drop as a result of the proposed modifications. The particulates from the Product Collector Cyclone are expected to stay the same or decrease slightly as the dried grain input to the cyclone will not be changed and the conveying air volume will be decreased slightly. The location of the conveying air fan is the primary change.

Presently there are particulates to the scrubber from the Cooling Collector Cyclone. The modification will remove these particulates from the scrubber. Based on the calculations submitted with the application dated August 9, 1976, the Colling Collector Cyclone has 35% to 40% (product only) of the throughput of the Product Collector Cyclone (product plus dry recycle). Thus, removing the Cooling Collector Cyclone from the scrubber input would reduce the particulate loadings to the scrubber by 25% to 30% for any given dryer input.

The modification would integrate the cooling cyclone function into a baghouse assembly (the product separation cyclone is normally attached to the bottom of the bag filter housing for this type of use). The air pollution control collection efficiency on the product cooling function would increase from an assumed 98% for the wet scrubber to 99.7% for a baghouse (Reference: AP-42) while not increasing the potential, uncontrolled input to the pollution control device.

Concerning the scrubbing liquid, about four years ago both wet scrubbers were converted to use the secondary centrifuge feed liquor as a one or two pass scrubbing media. As the scrubbing liquid is not recirculated, the moderate changes in the particulate loads to the scrubber should have little or no effect on the scrubbing liquid. The secondary centrifuge feed liquor contains about ½% to 3% of fine suspended solids.

Please note that improvements in the last several years now involve two different centrifuge processes. The original centrifuge process, now called the secondary centrifuges, still takes the liquid from the grain presses and other low solids residual streams plus centrate from the primary centrifuges. The secondary centrifuges remove additional suspended solids from the residual liquids in preparation for the evaporation process where suspended solids cause fouling problems. It is the feed to the secondary centrifuges that is used as the scrubbing liquid in both scrubbers (Dryers Nos. 1 and 2).

The new centrifuge process, called the primary centrifuges, takes wet spent grain from the brewing process to make the first cut on the wet grain and excess liquid. The wet spent grain from the brewing process can now be processed through either the primary centrifuges or the wet grain presses.

3. The dryer has an input heat capacity of 30×10^6 BTU/hr. This will not be changed by the modification. Anheuser-Busch experience shows that it takes about 2000 BTU input to evaporate one (1) pound of water from the incoming grain. Thus, this dryer could remove up to 15,000 lb/hr of water from the incoming grain at its drying capacity.

In order to avoid having the wet grain stick in the dryer, the wet grain from the grain presses and/or the primary centrifuges plus other high moisture residual streams (secondary centrifuge or cake, evaporator concentrate, etc.) are blended in the mixing conveyor with dry recycle to obtain an acceptable input to the dryer. This input is usually in the range of 40% to 60% moisture. The input is subsequently dried in the dryer to about 9% moisture (typically 7% to 11%). This correlates to 91% total solids.

A 50% input moisture to the dryer at the above drying capacity correlates to about 33,300 lb/hr wet grain (16,650 lb/hr on a dry basis) process weight to the dryer and about 6,900 lb/hr (6280 lb/hr dry basis) of product out.

Operation of one dryer near the capacity over the years has led to higher than usual maintenance. This has been due to fast deterioration at the higher operating temperatures. About a year ago, the brewery started using both dryers at reduced drying loads in order to minimize the deterioration and temperatures. Except for a major equipment failure, Dryers Nos. 1 and 2 are now operated at no more than two-thirds of their drying capacity. This means that for the No. 1 Dryer a maximum dryer input (at about 50% moisture) would be in the range of 22,000 lb/hr (11,000 lb/hr dry basis) with dry product being around 4,600 lb/hr (4,190 lb/hr dry basis).

On November 1, 1979, emission tests were conducted on the No. 1 Dryer. As a typical operation for that date, I chose Test No. 3 where the dryer input was found to average 16,174 lb/hr input at 46.0% total solids (TS). This corresponded to 7,442 lb/hr on a dry basis. For this test, there was no evaporator concentrate and all of the wet grain from the brewhouse was being processed through the primary centrifuges rather than the wet grain presses.

Unfortunately, the data does not include solids contents for the primary centrifuge sludge (cake) or the recycle. However, typical solids contents of 30% TS and 91% TS respectively can be used for these streams. These values correspond to 70% and 9% moisture respectively. Also, one secondary centrifuge was operating. Representative values for this input could be 2000 lb/hr at 25% TS. Thus, the typical inputs and outputs for this November 1st test could be:

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4. Continuous operating time is requested. The dryer will probably operate about 80% of the time but the exact hours in any given day, week, or month are not certain.

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   Latitude - 30° 25' 59" N

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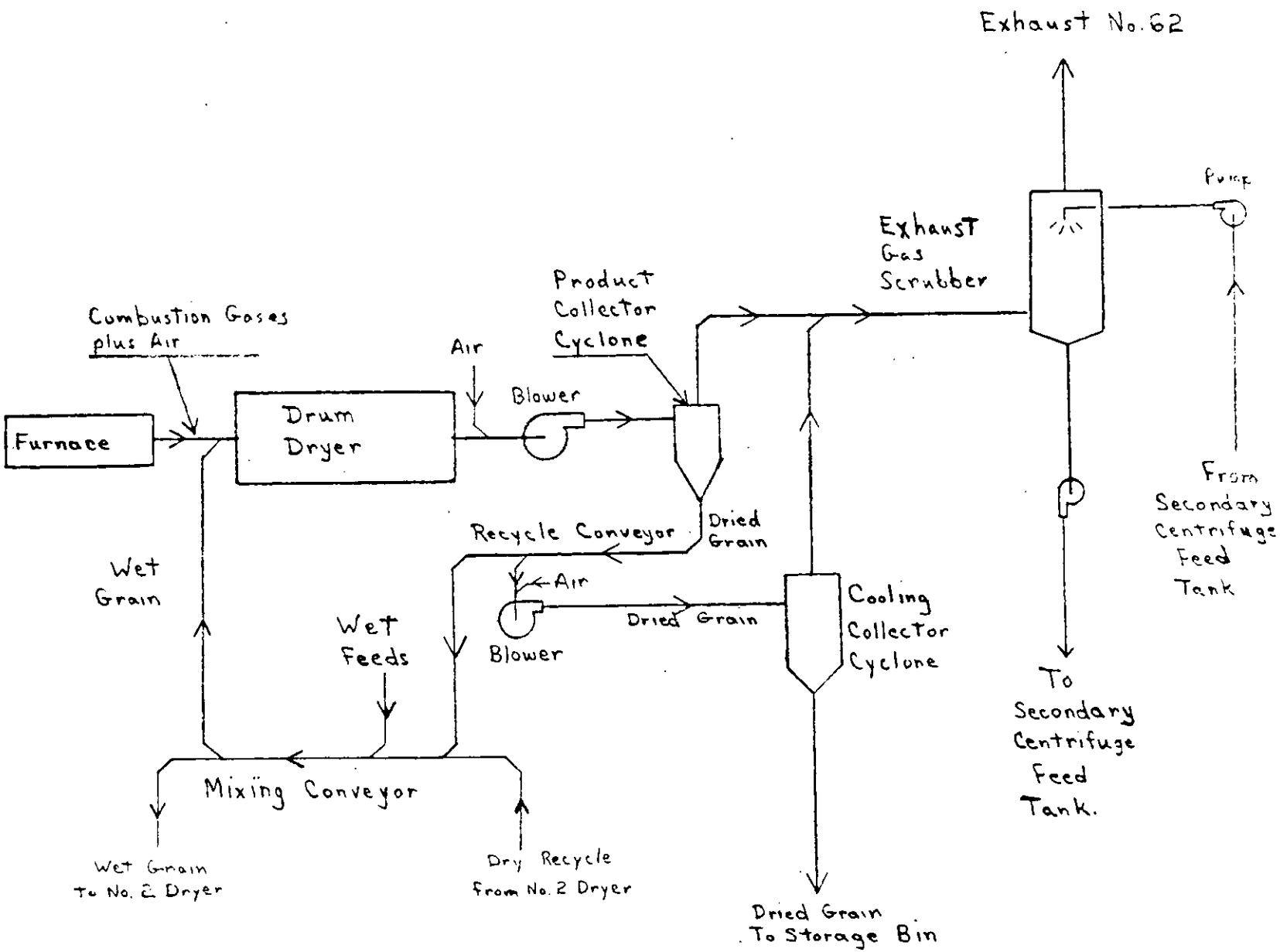


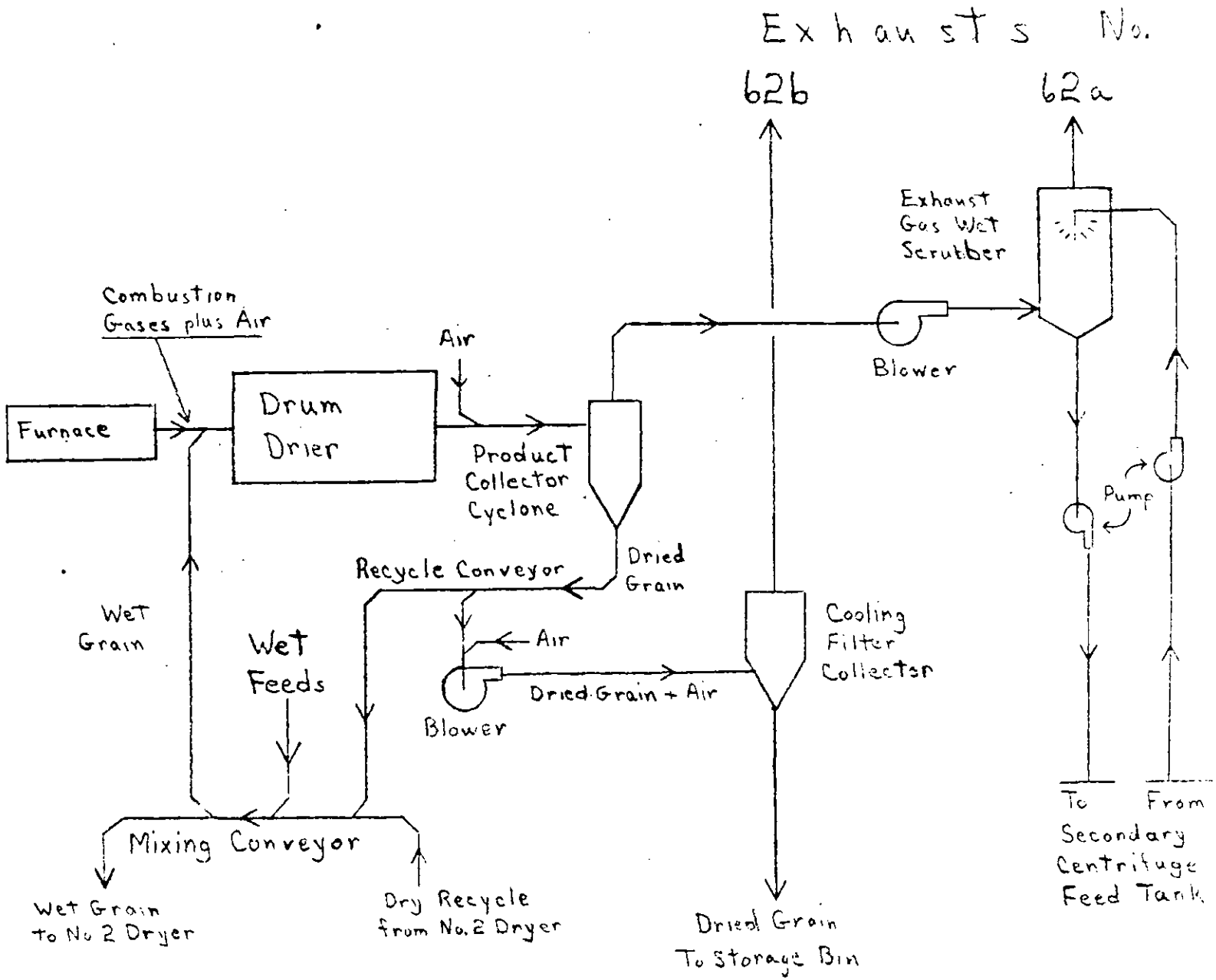
ANHEUSER-BUSCH, INC.
ST. LOUIS, MO.
ENGINEERING DEPARTMENT

Spent Grain Dryer System II

Jacksonville Brewery

DRAWN BY	APPROVED BY	DRAWING NO.
DHD 7-1-74		1

Rev 2 1-8-80
Rev. 1 8-1 76



ANHEUSER-BUSCH, INC.
ST. LOUIS, MO.
ENGINEERING DEPARTMENT

Spent Grain Dryer I, Modified

Jacksonville Brewery, Rev. 1 1-9-80

DRAWN BY	APPROVED BY	DRAWING NO.
DMD 6-21-79		1M

ANHEUSER-BUSCH COMPANIES, INC.
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GRAIN DRYER NO. 1
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not 6900 #/hr final moisture content

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1-28-80 call Dettart

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60% no 40% 4600

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

BOB GRAHAM
GOVERNOR

JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

August 10, 1979

CERTIFIED MAIL

Mr. John Mueller
Plant Manager
Anheuser Busch Inc.
111 Busch Drive
Jacksonville, Florida 32218

Dear Mr. Mueller:

We have received & reviewed for completeness the application which you filed with the City of Jacksonville Air & Water Pollution Control July 12, 1979.

Your application has been found to be incomplete in several respects.

The applicable rule on the date you filed your application was the March, 1979 version of the Nonattainment rule (17-2.17 & 17-2.18). This rule requires an ambient impact evaluation of the particulate emissions resulting from your proposed modification on the Duval County Particulate Nonattainment area.

The increase in potential emissions together with the ambient impact evaluation, both of which must be established will determine the applicable requirements of 17-2.

In addition to the information needed to answer the above general questions, specific answers to various technical questions are needed in order to fully evaluate your application. These items are set forth in the attached report and include, but are not limited to information on particulate collection/ capture systems used in conjunction with control equipment, operating parameters of control equipment, as well as corrections, additions or clarifications concerning process flow rates and supporting technical data.

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It may be in your interest to meet with the individuals within the Bureau of Air Quality Management who have the responsibility of reviewing, processing and recommending issuance or denial of the construction permit you have requested. We will be glad to meet with you to assist you in filing a complete application, and to work with you in any way possible to expedite the processing of your application.

For your information, I have attached a copy of 17-2 FAC as it existed prior to March, 1979, a copy of the March, 1979 revisions, and a copy of the June 20, 1979 revisions which corrected several technical deficiencies in the March, 1979 Nonattainment Rule. The June 20, 1979 corrections became effective July 19, 1979.

Should you have any questions, please contact Steve Smallwood at (904) 488-1344.

Sincerely,

J. P. Subramani, Ph.D., P.E.
Chief, Bureau of Air Quality Management

JPS/es

Attachments

cc: S. Smallwood
G. Doug Dutton
J. Cole
M. DeGrove
R. Cunningham
File

original typed on 100% recycled paper

Completeness Report for Modification to Anheuser-Busch Grain Dryer No. 1, Jacksonville.

Application No. AC 21892

Determination of Applicable Rules

Due to the location of your facility in proximity to the Duval particulate nonattainment area, evaluation requirements may be imposed under both the nonattainment rules (17-2.17) and the PSD rules (17-2.04).

Your application as submitted indicates 3 separate changes which may be considered to be modifications to a single source: (1) change in dryer burner, (2) addition of cooling collection bag filter and (3) increase in process rate which will also increase the "potential to emit" (see definition 17-2.02(90)) of the source.

Exemption from the nonattainment rules would require either a demonstration that actual or potential emissions from the source would not increase (see "modification" definition 17-2.02(71)) or a demonstration in accordance with 17-2.17(1)(b) that the impact of the modifications on the nonattainment area will not cause the tabulated significance levels to be exceeded.

Failure to qualify for either of these exemptions would subject your modification to the applicable requirements of the nonattainment rules to be determined by the potential emission to be established.

Your facility will also be subject to the PSD review requirements of 17-2.04(6) unless data can be submitted showing that the "potential to emit" of your entire facility is less than 250 tons per year or that all of the proposed changes can qualify for exemption under 17-2.04(6)(f). While either or both changes (1) & (2) above might, upon evaluation of submissions, be exempted under 17-2.04(6)(d)4., change (3) will require application of BACT unless it can be demonstrated that no increase in pollutant concentration over the baseline will result in accordance with 17-2.04(6)(c).

Technical Discrepancies

1. Explain nature and extent of changes to dryer burner and expected change in emissions. What control exists on furnace particulate? ie Do gases pass through drum dryer or does furnace have separate stack?

2. Quantify potential emissions both in present configuration and after the proposed modifications with technical justification of emissions factors assumed to derive control device input loadings.

2a. Quantify scrubber loadings and origin using consistent basis for determining process materials flow. Specify design solids content of recirculated scrubber water & explain its effect on scrubber operation.

3. Furnish more detail on process materials flow including rates & moisture content. ie Mixing conveyor shown on diagram has no apparent function or flow from data furnished.

4. Specify what limitations of operating hours, if any, are requested.

5. Existing permit for Grains Dryer No. 1. shows "cooling filter collector". Is proposed "cooling collection bag filter" a replacement or additional equipment? Explain.

6. Furnish longitude of the source.

7. Specify water vapor content for the baghouse flow characteristics.