TECHNICAL REVIEW DOCUMENT
for
OPERATING PERMIT 95OPLR064

to be issued to:

Anheuser Busch, Inc.
Larimer County
Source ID 0690060

Cathy Rhodes
March, 1999

I. PURPOSE:

This document will establish the basis for decisions made regarding the applicable requirements, emissions factors, monitoring plan and compliance status of emission units covered by the operating permit proposed for this site. It is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. This narrative is intended only as an adjunct for the reviewer and has no legal standing. The conclusions made in this report are based on information provided in the original application submittal May 1, 1995, subsequent supplemental technical submittals, and previous inspection reports.

Any revisions made to the underlying construction permits associated with this facility in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit..any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised Construction Permit.

II. SOURCE DESCRIPTION:

This facility produces beer. The plant is divided into Areas of operation as described under "Emission Sources'" below. Brewery wastewater is piped to Nutriturf, Inc., a subsidiary of Anheuser-Busch, for land application in Weld County. The Nutri-turf facility and the Brewery are considered to be a single source for Prevention of Significant Deterioration requirement purposes. The Division is currently reviewing the landfarm activity, and will issue a separate Operating Permit for the landfarm.

This facility is located in Fort Collins, Larimer County, Colorado. The area is classified as a nonattainment area for carbon monoxide (CO). Wyoming is an affected state within 50 miles of the facility. There are two Federal Class I areas within 100 kilometers of the facility: Rocky Mountain National Park and Rawah National Wilderness Area.

Facility wide emissions are as follows:

Pollutant	Allowable (TPY)	Actual (TPY)
Particulate Matter (PM)	184	8
PM_{10}	184	8
Nitrogen Oxides (NO_x)	621	73
Sulfur Dioxide (SO_2)	1388	<1
Volatile Organic Compounds (VOC)	184	66
CO	64*	18

*See discussion under Emission Sources, Area 9 - Utilities - Boilers, below.

Allowable emissions are based on permitted levels. Actual emissions are based on 1996 data, except for the can and bottling lines, which were undergoing construction permit review at the time. Can and bottling line actual emissions are based on the permitted limit. Fuel oil has not been used at the boilers for a number of years, thus actual fuel burning emissions are much lower than allowables.

Potential landfarm VOC emissions (mainly ethanol) are reported as 2,127 tons/year. The permittee estimates actual controlled VOC emissions from the landfarm operation to be about 40 tons per year. The Division expects actual emissions from the landfarm will be less than 100 tons per year, depending on the BACT determination and review of calculation procedures.

This source does not emit major amounts of any Hazardous Air Pollutants.

Prevention of Significant Deterioration (PSD) Analysis

This source (which includes the Nutri-turf landfarm site) is classified as a major stationary source for PSD purposes. SO_2, NO_x, PM, and VOC emissions are subject to PSD requirements. If CO emissions exceed 100 tons per year, the CO emissions are subject to nonattainment New Source Review (NSR) provisions (see discussion under Emission Sources, Area 9 - Utilities - Boilers - Emission Factors). The EPA issued the plant a PSD permit for PM, SO_2, and NO_x on March 15, 1984. At the time of the PSD application the best available emission factors for VOCs indicated emissions were below the significant level of 40 tons/year, and therefore not subject to PSD. Recent studies indicate that VOC emissions are greater than first thought, and that VOC emissions are subject to PSD review. Anheuser-Busch and the Division entered into a Settlement Agreement which required Anheuser-Busch to submit a PSD application for VOC sources at the brewery and the landfarm. The application was submitted in July, 1996. PSD requirements for VOC

sources are incorporated into this Operating Permit through a combined construction/operating permit procedure.

Best Available Control Technology (BACT)

The Division determined BACT for VOC sources as described for each individual process under “Emission Sources,” below. In general, pollution prevention and efficient operating practices represents BACT for the brewery sources. In addition, a distillation process recovers ethanol from several process waste streams. VOC outlet concentrations are too dilute and/or cannot be effectively captured for add-on control equipment to be cost effective. The Division will determine BACT for the landfarm through a separate combined construction/operating permit process.

Ambient Air Quality Impact

The brewery and landfarm have been in operation since 1988, and ambient monitoring data for the Fort Collins area have not indicated any exceedance of the National Ambient Air Quality Standard for ozone. In addition, modeling performed during the preliminary analysis for the Construction Permits, based on 22 tons/year of VOC, resulted in a 1 hour impact of .05 micrograms per cubic meter. The Division expects the impact based on the emission rate listed in the above table will not cause or contribute to an exceedance of the ambient standard.

Air Quality Related Values (AQRVs)

The Division notified the National Park Service and United States Forest Service regarding these VOC emissions. Preliminary review indicates the Federal Land Managers (FLMs) do not expect the emissions to adversely affect Air Quality Related Values. The FLMs will have an opportunity to fully review the PSD application and analyses during the public notice period.

III. EMISSION SOURCES

The following sources are specifically regulated under terms and conditions of the Operating Permit for this site:

A. Area 2 - Grains Handling

The grains handling area includes equipment for unloading, storing, and conveying grains delivered to the brewery by railcar. Grains are unloaded from the railcars by a pnuematic conveyance system, then conveyed through an unloading filter receiver and into storage silos. Fabric filters control PM emissions from the filter receiver, storage bins, and transfer equipment.

From the silos, the grains are conveyed to milling and weighing operations through product receivers equipped with fabric filters. A fabric filter controls PM emissions from the mills, scale hoppers, and associated surge bins, as well as the building vacuum system (used for cleanup of spilled grains and grains dust).

Applicable Requirements - Final Approval Construction Permits 83LR045 (2),(3),(4),(5),(6), and (8) were issued for these activities. 83LR045(8) for the vacuum cleaning system was subsequently canceled, because actual uncontrolled emissions are below the APEN reporting de minimis level. The EPA issued a PSD permit in 1984. The applicable requirements are as follows.

Colorado Regulation No. 1

- Opacity shall not exceed 20% during normal operations (Section II.A.1)
- Opacity shall not exceed 30%, for a period or periods aggregating more than six (6) minutes in any sixty (60) minute period, during fire building, cleaning of fire boxes, soot blowing, start-up, process modifications, or adjustment of control equipment (Section II.A.4)
- Particulate emissions shall not exceed a lbs/hour limit, using an equation based on process weight rate (Section III.C.1)

Colorado Regulation No. 3

- APEN reporting (Part A, Section II)
- PSD requirements for major stationary sources (Part B, IV.D.3)

BACT

BACT limits are applicable at all times except during malfunction or upset conditions

PSD Permit

- Limits PM emissions in grams/second (for Operating Permit purposes, the Division converted these limits to lb/hour units) (BACT) *(Because emissions from the vacuum system are negligible, the PSD limits for the vacuum system are not included in the Operating Permit)*
- Baghouses used to control emissions (BACT)
- 0.020 grain/scf PM emissions (BACT)
- 20% opacity limit (BACT)

Colorado Regulation No. 6, Part B

- Opacity shall not exceed 20% (III.C.3)
- PM emissions shall not exceed a lb/hour limit, using equations based on the process weight rate (III.C)

Construction Permits 83LR045(2-6)

- 20% opacity limit
- Consumption of grains is limited *(the permittee requested that some instances where the construction permits indicate rice is the grain used be changed to indicate that rice <u>and grits</u> are used. A review of the PSD permit application indicates that the original description of the operations included the use of corn grits, therefore the Operating Permit conditions are written to correctly describe the process throughputs - In addition, short term consumption limits are maintained in the Operating Permit as a method for monitoring compliance with the PSD permit short term emission limits)*
- Limits PM emissions

Additional Applicable Requirements

- PM_{10} emissions (incorporated directly into operating permit)

Streamlining of Applicable Requirements

The Regulation No. 1 and 6 process weight PM emission limits and opacity limits are streamlined out because the PSD permit limits are more stringent. The 20% PSD opacity limit applies at all times, except during malfunction or upset conditions, and is more stringent than the Regulation No. 1 and 6 limits.

Emission Factors - PM emissions result from handling and processing grains. The permittee uses factors based on engineering judgement and the fines content of the grains. These factors are greater than or comparable to those contained in the EPA's AP-42 document (Section 9.9.1, May, 1998), therefore the Division accepts the permittee's factors as a conservative method of estimating emissions. The Construction Permits and Operating Permit application do not contain PM_{10} emission limits or estimates. AP-42 indicates that, for barley grain handling activities, assume PM_{10} emissions equal 100% of the PM emissions. PM_{10} emission rates are not available for rice and grits either, therefore for all activities the Division assumed PM_{10} emissions equal 100% of the PM emissions.

Monitoring Plan - The permittee will perform a Method 9 opacity reading at one representative baghouse semiannually.

The permittee will perform a stack test for a representative bagfilter during each five year permit term to monitor compliance with the grain/scf limit. In addition, the permittee will perform periodic bagfilter maintenance and inspections to ensure proper operation of the control equipment.

The permittee measures the weekly amounts of grain unloaded and sent to the brewery. The permittee can use this information, along with the baghouse inspection and

maintenance plan, to monitor compliance with the emissions limits. The exception to this is P025 (Grain Milling and Weighing). This activity processes both barley and a combination of rice/grits grains. The construction permit contains separate limits for barley and rice/grits throughputs, and PM emissions are limited to 2 tons per year. Throughput of only barley to the maximum limit allowed in the permit results in 2 TPY PM. Likewise, throughput of only rice/grits to the maximum limit results in 2 TPY. In reality, both barley and rice/grits are processed throughout the year, in different combinations. For P025, the source needs to maintain records of the annual grain throughputs and apply the appropriate emission factors. Records of P025 weekly throughputs suffice for monitoring, because the maximum hourly emissions from processing both grain types are the same.

Compliance Status - The Division accepts that these activities were in compliance with applicable requirements at the time the Title V application was submitted.

B. Area 3 - Brewhouse

The milled grains are blended with water in four mash cookers. Mash and adjunct mash are combined and the resulting mixture is boiled.

Cooked mash is pumped into one of two lauter tubs, which separate the dissolved extract from the insoluble grain particles in the mash. The spent grains are removed from the tubs and transferred to two spent grains loading tanks.

The resulting liquid, called wort, is drawn from the lauter tubs into one of three brewkettles, where it is boiled, and hops are added. When boiling is complete, the wort passes through a hops strainer. Additional solids formed during the boil, called trub, are settled out in two hot wort receivers.

Small amounts of volatile organic compounds are emitted from each of these brewhouse steps.

Applicable Requirements - Final Approval Construction Permits 89LR410(01) and 83LR045(10) and (11) were issued for these processes. The applicable requirements are as follows.

PSD Regulations (Colorado Regulation No. 3, Part B, IV.D.3)

- BACT -
  The applicant submitted a BACT analysis for VOC sources at the brewery in July, 1996. The BACT requirements are incorporated directly into this operating permit through a combined construction/operating permit procedure.

Possible add-on control technologies include wet scrubbers, incineration, and carbon adsorption. Due to the low concentration of VOC emissions (the largest vent concentration is less than 10 ppm), and the high cost effectiveness associated with controlling these small amounts of emissions with add on control equipment, the Division determined efficient process operation represents BACT for these sources.

Construction Permit

- Limits beer production
- Limits VOC emissions *(In October, 1989, the permittee submitted a Revised APEN requesting the emission limits for the Lauter Tubs be increased from 1.2 to 2.15 tons/year, based on new emission factors. The new emission rate is incorporated directly into this Operating Permit.)*
- Opacity not to exceed 20% *(this condition is not included in the Operating Permit - these sources are VOC sources which do not result in visible emissions)*
  Note also that Construction Permit 89LR410(1) indicates there are 6 mash cookers - this is incorrect - there are only 4 mash cookers, as indicated in the Operating Permit

PSD Permit

- Limits VOC emissions in grams per second *(These emission limits are not included in the Operating Permit. At the time of the PSD permit issuance, VOC was not subject to PSD provisions because, based on available information, VOC emissions were thought to be below significance levels. The limits in the PSD permit are no longer valid, since subsequent information indicates VOC emissions are higher.)*

Emission Factors - VOC emission factors are based on "Characterization of Fermentation Emissions from California Breweries," California Air Resources Board, Section 1.2.5.2., October 26, 1983. These factors are more conservative than the factors in AP-42, Section 9.12.1.

Monitoring - Beer meters and case counters monitor the amount of beer packaged. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met. The permittee will develop written operating procedures for preventing and reducing VOC emissions. The procedures will be updated as part of the Operating Permit renewal procedure.

Compliance Status - Although these sources had obtained the required Construction Permits, at the time of original operating permit application, the sources had not undergone

formal PSD requirements (BACT review, etc.). Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

C. Area 4 - Starting Cellar

The clear wort is decanted off the hot wort receivers and cooled in two wort aerator/coolers. Additional trub is formed during this process, and settled out in six cold wort settlers. The cooled wort is decanted off the settlers and pumped into the alpha fermentator tanks. As it is pumped to the 27 fermenters, yeast from 6 yeast brink tanks is blended into the cold wort stream. Volatile organic emissions are vented from the aerator/coolers through two stacks.

Applicable Requirements - A Construction Permit was not previously issued for these sources. Under the Settlement Agreement provisions, the permittee submitted the proper forms and information for a construction permit, including information required for a PSD permit. The following applicable requirements are incorporated directly into this operating permit through a combined construction/operating permit procedure.

- Beer production limit
- VOC emission limit
- BACT (Colorado Regulation No. 3, Part B, IV.D.3)

  The applicant submitted a BACT analysis for VOC sources at the brewery in July, 1996. The BACT requirements are incorporated directly into this operating permit through a combined construction/operating permit procedure.

  Possible add-on control technologies include wet scrubbers, incineration, and carbon adsorption. Due to the low concentration of VOC emissions (the largest vent concentration is less than 10 ppm), and the high cost effectiveness associated with controlling these small amounts of emissions with add on control equipment, the Division determined efficient process operation represents BACT for these sources.

Emission Factors - VOC emissions are estimated based on engineering judgement and experience at this brewery. Given measured brewkettle emissions, along with experience that wort boiling in the brewkettle will drive off more organics than the aeration process, an emission rate of 50 percent of the kettle factor is deemed to be appropriate. This method of estimating emissions is more conservative than the factors in AP-42, Section 9.12.1.

Monitoring - Beer meters and case counters monitor the amount of beer packaged. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being

met. The permittee will develop written operating procedures for preventing and reducing VOC emissions. The procedures will be updated as part of the Operating Permit renewal procedure.

Compliance Status - At the time of original operating permit application, the Division believes these sources were not in compliance with the PSD permitting provisions. Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

D. Area 5 - Fermenting Cellar

During primary, or alpha fermentation, yeast activity is greatest and most of the wort sugars are converted to alcohol and carbon dioxide (CO_2)**.** The fermenters operate at low pressure so that most of the CO_2 created during the conversion of sugars is released from the beer. This gas stream is vented for about 24 hours. A pure CO_2 atmosphere then forms in the tanks and is diverted to a gas collection system which is used to maintain an oxygen-free CO_2 blanket that protects the beer. After fermentation, the beer is transferred to 130 chip tanks for secondary fermentation, or lagering. Some of the alpha beer is pumped through two alpha drop receivers prior to the chip tanks.

Applicable Requirements - A Construction Permit was not previously issued for these sources. Under the Settlement Agreement provisions, the permittee submitted the proper forms and information for a construction permit, including information required for a PSD permit. The following applicable requirements are incorporated directly into this operating permit through a combined construction/operating permit procedure.

- Beer production limit
- VOC emission limits
- BACT (Colorado Regulation No. 3, Part B, IV.D.3)

  The Division determined efficient process operation represents BACT for these sources.

Emission Factors - VOC emissions are estimated based on source testing performed by the Coors Brewing Company. These factors are more conservative than those presented in AP-42 Section 9.12.1.

Monitoring - Beer meters and case counters monitor the amount of beer packaged. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met. The permittee will develop written operating procedures for preventing and reducing VOC emissions. The procedures will be updated as part of the Operating Permit renewal procedure.

Compliance Status - At the time of original operating permit application, the Division believes these sources were not in compliance with the PSD permitting provisions. Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

E. Area 6 - Chip Cellar and Annex

During lagering, the beer is held at elevated temperature under a CO_2 blanket to carbonate it and keep it free from oxygen. Some of the beer goes through the kraeusening process, in which a portion of freshly-yeasted, unfermented wort is added to a chip tank.

The chip tanks contain beechwood chips, which improve the yeast-to-beer contact during lagering. Prior to use, the chips are heated and treated with sodium bicarbonate in two chip cookers. The yeast settles onto the chips in the chip tanks during lagering. The beer is transferred to the schoene and finishing area and the chips are removed from the tanks. The chips are then cleaned in chip washers for reuse. VOC emissions are generated from the chip tanks and chip washers.

Applicable Requirements - Final Approval Construction Permit 89LR410(2) was issued for the chip washers. A Construction Permit was not previously issued for the chip tanks. Under the Settlement Agreement provisions, the permittee submitted the proper forms and information for a construction permit, including information required for a PSD permit. The applicable requirements are as follows.

Construction Permit 89LR410(2)

- Limits VOC emissions
- Limits beer production
- 20% opacity limit (*this condition is not included in the Operating Permit - these sources are VOC sources which do not result in visible emissions)*

- VOC limit for chip tanks incorporated directly into this operating permit

- BACT (Colorado Regulation No. 3, Part B, IV.D.3)
  The Division determined efficient process operation represents BACT for these sources.

Emission Factors - VOC emissions from the chip washers are based on California Air Resource Board factors. VOC emissions from the chip tanks are estimated based on source testing performed by the Coors Brewing Company.

Monitoring - Beer meters and case counters monitor the amount of beer packaged. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met. The permittee will develop written operating procedures for preventing and reducing

VOC emissions. The procedures will be updated as part of the Operating Permit renewal procedure.

Compliance Status - At the time of original operating permit application, the Division believes these sources were not in compliance with the PSD permitting provisions. Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

F. Area 7 - Schoene and Finishing

Yeast and unstable protein materials are removed in the finishing process by chill-proofing (in a process known as schoene and decant) and filtration. The beer is pumped from the chip tanks through the schoene cooler, which cools the beer to near-freezing temperatures. A chill- proofing material (tannin or silica gel) is added, and the protein/tannin or protein/silica gel solids are settled out in the schoene tanks. The clear beer is decanted off the schoene tanks and additional solids are removed in diatomaceous earth filters. After filtration, the beer is sent to finishing tanks for storage prior to packaging. To produce a non-alcoholic product, ethanol is removed from some of the beer by semi-permeable membranes. The concentrated alcohol is stored in the 20% Alcohol Condensate Tank.

Initial Approval Construction Permit 90LR134(1) was issued for the Alcohol Condensate Tank. Actual uncontrolled VOC emissions are less than 1 ton/year, therefore, as requested by the permittee, the Division will cancel Construction Permit 90LR134(1).

G. Area 8 - Packaging and Shipping

After finishing, the beer is sent to packaging where bottles, cans and kegs are filled. Other operations in this area include videojet inking, hot melt glue, can and bottle crushing, bottle lube, bottle label adhesive, and keg washing, There are two Bottle filler lines and three can filler lines. Bottles, cans, and kegs are first filled with CO_2 which is then displaced with beer. Uncontrolled emissions of VOCs occur during the filling process.

Applicable Requirements - A Construction Permit was not previously issued for these processes. Under the Settlement Agreement provisions, the permittee submitted the proper forms and information for a construction permit, including information required for a PSD permit. This information was to be incorporated directly into the Operating Permit. In the interim, Anheuser-Busch submitted an application to install a new bottle filling line, and Initial Approval Construction Permit 97LR0631 was issued for Bottle Packaging Line 30 and two (2) associated ink jet coders. 97LR0631 served as a “place holder” until the Operating Permit could be issued. The Operating Permit combines Line 30 and the associated ink jet coders with the other filling lines and coders in Area 8. Thus, the following applicable requirements supersede the applicable requirements in 97LR0631, and are incorporated into the Operating Permit through a combined construction/operating permit process. In addition, the permittee submitted the required documents to request a

revision to the Construction Permit to add Plastic Bottle filling Line 40. The addition of the line increase packaging flexibility to allow for better response to market demands, but will not change the brewing capacity of the brewery. In addition, because the current maximum possible VOC emission limit is based on the worst case assumption that all beer is bottled, the maximum possible VOC emission rate will remain unchanged at 49.6 tons/year. Line 40 is added through this Operating Permit process.

Colorado Regulation No. 3, Part B, IV.D.3

- BACT

  The Division determined that pollution prevention measures implemented thorough a Process Loss Tracking and Improvement Program represents BACT for the filling lines. The program includes the following measures.

  development of information management systems which enhance operator involvement in planning, quality assurance and maintenance. These systems provide production schedules, efficiencies, trends and product availability directly to operators on the production floor

  enhanced operator training

  development of performance objectives and metrics

  operating philosophy changes integrated with state-of-the art packaging equipment improvements that have resulted in reduced breakage and downtime

  development and implementation of enhanced maintenance programs

  specification of fill-techs, x-ray devices that check the fill level of all filled bottles and cans. The result of this procedure is less rejected product (because upsets in filler operations are discovered immediately), which in turn result in less VOC emissions.

  The Division determined that no control represents BACT for the ink coding process. There are 34 coders located throughout the packaging area, making add-on control infeasible.

- Limits VOC emissions
- Limits beer production and ink coding fluid use

Emission Factors - The VOC emission factors for the filling lines are based on “Stationary Source Sampling Report - Anheuser-Busch Brewery, Fort Collins, Colorado,” Entropy, Inc., July, 1994. Emissions from can filling are less than emissions from bottle filling. Note that

this process also involves keg filling, for which AP-42 indicates emissions are orders of magnitude less than can or bottle filling. The emission limit in the operating permit is based on the worst case assumption that all of the beer produced is bottled. Note that these factors are less than those in AP-42 Section 9.12.1. Since the Anheuser-Busch factors are based on specific tests at this source, the Division accepts the Anheuser-Busch factors as appropriate. Emissions from the ink coding process are estimated by mass balance, using Material Safety Data Sheet information regarding the VOC content of the fluid.

Monitoring Plan - Beer meters and case counters monitor the amount of beer packaged. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met. This also applies to the ink jet coder emissions, unless the VOC content of the fluid changes. If the VOC content of the fluid changes, the permittee will need to calculate monthly emissions based on the new VOC content of the fluid. The permittee will develop written operating procedures for preventing and reducing VOC emissions. The procedures will be updated as part of the Operating Permit renewal procedure.

Compliance Status - At the time of original operating permit application, the Division believes these sources were not in compliance with the PSD permitting provisions. Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

H. Area 9 - Utilities

The utility area includes four boilers, a CO_2 regeneration system, and an ammonia refrigeration system. The boilers produce steam for process and space heat, and are fired with natural gas, with the capability to burn oil as a backup fuel (the Construction Permit for the boilers is based on burning No. 6 fuel oil, the permittee has requested that this be changed to diesel oil. In addition, the Construction Permit allowed combustion of unfinished spirits - The permittee indicates that spirits are not combusted in the boilers, and requested that the reference be deleted.). Each boiler is rated at 99 mmBtu/hour heat input. The CO_2 regeneration system collects, purifies, and stores CO_2 generated by the alpha fermenters. As part of this system, packed towers containing activated carbon remove organic compounds and taste and odor contaminants from the CO_2. These carbon beds are periodically recharged or regenerated with hot air, resulting in VOC emissions. The ammonia refrigeration system includes compressors, condensers, coolers, and associated piping, valves, flanges, etc. The system also includes a pumpout system used to evacuate any portion of the ammonia system to allow for repairs and maintenance. Purging units continually purge non-condensible gases from the system. Ammonia emissions can occur from 1) fugitive leaks from equipment, valves, flanges, etc., 2) the pumpout system, which minimizes air emissions with a water scrubber, 3) the purgers, and 4) cooling towers if undetected leaks occur in the evaporative condensers, allowing ammonia to be absorbed into the condenser cooling water. The Ammonia System is not subject to Construction Permit requirements, however, an APEN is required.

Four (4) Boilers, 99 mmBtu/hour each

Applicable Requirements - Final Approval Construction Permit 83LR045(1) was issued for these boilers. In addition, these boilers are covered under the PSD permit. Applicable requirements are as follows.

Colorado Regulation No. 1, II.A.4

- Opacity not to exceed 30% during special conditions

Colorado Regulation No. 1, II.A.1.b and No. 6, Part B, II.C.2

- Limit PM emissions (lb/mmBtu) using an equation based on heat content of the fuel

Construction Permit 83LR045(1)

- 20% opacity (also Colorado Regulation No. 1, II.A.1 and No.6, II.C.3)
- Limits PM, SO_2, NO_x, VOC, and CO emissions *(Note the PM emission limits are based on 0.1 lb/mmBtu as "BACT" - the Operating Permit includes this limit as an applicable requirement. In addition, VOC emission limits are revised in the Operating Permit to reflect new AP-42 emission factors. Construction Permit limits were based on total organic compounds, not VOCs. NO_x emission limits were based on AP-42 factors. The limits are revised in the Operating Permit to reflect the lb/mmBtu limits instead of AP-42 factors (limit decreases from 621 tons/year to 520 tons/year).)*
- Limits fuel consumption *(short term limits are maintained as a method for monitoring compliance with the PSD Permit short term emission limits - In addition, the Construction Permit includes limits for combusting spirits in the boilers - Anheuser-Busch has indicated that they do not combust spirits in the boilers, and requested that the requirements referring to spirits be deleted from the Operating Permit)*
- Limits total heat input for the four boilers *(the permittee avoided New Source Performance Standards by keeping the heat input below 100 mmBtu/hour)*
- Limits sulfur content of fuel *(the Construction Permit requires the permittee to determine the sulfur content and provide it to the Division prior to use - This is revised in the Operating Permit to require the permittee to determine, record, and provide the sulfur content for Division inspection upon request.)*

PSD Permit

- BACT - NO_x emissions limits (lb/mmBtu) for natural gas and fuel oil burning - install and calibrate a NO_x Continuous Emission Monitor - Opacity limited to 10%
- Limits emissions (*these limits are expressed in terms of grams/second - the Division converted these to lb/hour units for the Operating Permit limits)*

- Record sulfur and nitrogen content of fuel oil - (*the requirement for determining the nitrogen content of the fuel oil was included because the permittee was given the option of methods other than CEMs for monitoring NO_x emissions (with EPA approval). The permittee is using CEMs to monitor NO_x emissions, therefore the requirement for determining the nitrogen content of the fuel oil is not included in the Operating Permit)*

Streamlining of Applicable Requirements - The preliminary analysis for the Initial Construction Permit indicate that the PM emission limits are based on a BACT limit of 0.1 lb/mmBtu. This limit is more stringent than the lb/mmBtu limit calculated under Regulations No. 1 and 6, therefore only the 0.1 lb/mmBtu limit is included in the Operating Permit. The PSD permit opacity limit of 10% is more stringent than Regulation No. 1 and 6 requirements, therefore Regulation No. 1 and 6 requirements are streamlined out.

Emission Factors - PM emissions are estimated using AP-42 factors, or when diesel is used for production purposes for 45 days or more, lb/mmBtu values determined from stack tests. SO_2 emissions are estimated using the actual sulfur content of the fuel. NO_x emissions are determined from CEM data. VOC and CO emissions are based on AP-42 factors (Sections 1.3 and 1.4).

When the initial construction permit was issued, the AP-42 factor for CO emissions resulting from combustion of natural gas was 35 lbs/10^6 scf. The most recent AP-42 factor has increased to 84 lbs/10^6 scf. Using the most recent factor, CO emissions exceed the nonattainment NSR trigger level of 100 tons/year. Redesignation of the area to attainment is pending, and should occur in 1999. At that time, PSD requirements may replace nonattainment NSR requirements for the area. The Operating Permit requires the permittee to conduct a stack test, in order to determine the appropriate emission factor, and actual emissions. If the CO emissions are determined to exceed the 100 tons/ year threshold, the Division will will need to further review the situation.

Monitoring - Fuel sampling will monitor compliance with SO_2 emission and sulfur content limits. A CEM is installed to measure NO_x emissions. Compliance with VOC and CO emission limits is based on fuel use records. Flow meters measure fuel usage. Method 9 opacity observations are required when diesel fuel is used.

Compliance Status - The Division believes these sources were in compliance with applicable compliance at the time of application. Due to revised AP-42 emission factors, there is uncertainty regarding the CO emissions from the boilers. A stack test will be performed to determine the appropriate emission factor and actual emissions.

CO_2 Regeneration System

Applicable Requirements - Final Approval Construction Permit 83LR045(12) was issued for this source. The applicable requirements are as follows.

Construction Permit 83LR045(12)

- Limits production rate
- Limits VOC emissions
- Limits opacity to 20%(*this condition is not included in the Operating Permit - this source is a VOC source which does not result in visible emissions)*

PSD Permit

- Limits VOC emissions *(These emission limits are not included in the Operating Permit. At the time of the PSD permit issuance, VOC was not subject to PSD provisions because, based on available information, VOC emissions were thought to be below significance levels. The limits in the PSD permit are no longer valid, since subsequent information indicates VOC emissions are higher.)*

Emission Factors - Emissions are based on factors from the California Air Resources Board.

Monitoring - Beer meters and case counters monitor the amount of beer produced. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met.

Compliance Status - Although these sources had obtained the required Construction Permits at the time of original Operating Permit application, they had not gone through formal PSD requirements (BACT review, etc.). Since then, the permittee has entered into a Settlement Agreement which resolves this issue.

I. Area 13 - Wastewater Pumping Station

Wastewater generated by the brewery is piped to a land application site located 6 miles from the brewery. Wastewater passes through two influent wells, which are unenclosed concrete pits below ground surface. Wastewater is stored in tanks prior to being discharged, via two effluent wells, to the land application site.

Applicable Requirements - No Construction Permit was issued for this source. The applicable requirements, incorporated directly into this Operating Permit, are as follows.

- Limits beer production

- Limits VOC emissions

BACT - The BACT limits and measures listed for other sources at the brewery reduces the ethanol content (VOC emissions) of the wastewater.

Emission Factors - VOC emissions are estimated using results from on-site emission tests and wastewater sampling.

Monitoring Plan - The permittee records the amount of beer produced. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met.

Compliance Status - Issuance of this Operating Permit brings the source into compliance with applicable requirements.

J. Area 14 - Alcohol Distillation

Residual process streams are sent to a distillation system for alcohol recovery. The alcohol distillation system includes: rectifying and stripping towers; two process residual storage tanks for storing Schoene sludge and waste beer; three alcohol storage day tanks; two alcohol storage tanks; a 20% alcohol waste tank and O'Douls waste tank; and an alcohol loading facility.

Applicable Requirements - Final Construction Permits 85LR127 (1-6) and Initial Construction Permit 90LR134(2) were issued for these activities. Emissions from the individual storage tanks are less than 1 ton/year, therefore Construction Permits 85LR127(2-6) and 90LR134(2) will be canceled. The applicable requirements are as follows.

Construction Permit 85LR127(1)

- Limit throughput and production rates
- Limit VOC emissions

Note: The Construction Permit limits throughput and emissions from the distillation unit. If ethanol is recovered at the distillation unit, then emissions are reduced at another area of the plant, because the ethanol is not disposed of in another manner that would result in more ethanol emissions. Therefore, to encourage pollution prevention at this facility, the Operating Permit does not include the throughput and emission limits for the distillation unit. The permittee must, however, track emissions on a rolling twelve month total in order to track overall facility VOC emissions for PSD/NSR applicability purposes.

BACT

- To reduce ethanol emissions, various streams from processes throughout the brewery are sent to the still for ethanol recovery. This reduces the amount of ethanol sent to the wastewater system. In addition, Anheuser-Busch has automated the drawoff of still bottoms and collects the initial rinse water for the still bottoms for processing. These measures also reduce ethanol loss. These operational procedures represent BACT for VOC emissions.

Emission Factors - VOC emission from the distillation unit and ethanol truck loading are estimated using AP-42 factors (Section 4.7).

Monitoring - The permittee tracks and records the amount of alcohol sold. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met.

Compliance Status - This source was in compliance with all applicable requirements at the time of application submittal.

K. Area 18 - Diesel Oil Storage

Diesel fuel, the alternate fuel for the boilers, is stored in a 600,600 gallon capacity storage tank.

Applicable Requirements - Final Approval Construction Permit 83LR045(13) was issued for this tank. The Construction Permit reflects the use of residual oil. The permittee has changed the alternate fuel to diesel fuel, therefore the Operating Permit conditions reflect the use of diesel fuel. The applicable requirements are as follows.

Construction Permit 83LR045(13)

- Limits storage to residual fuel oil
- Limits throughput and VOC emissions

Colorado Regulation No. 7, VI.B.2.b

- Requires above ground tanks storing petroleum liquids to meet particular external surface coating requirements (Note: This requirement does not apply to the storage of diesel fuel, therefore, it is not included in the Operating Permit.)

40 CFR Part 60, Subpart Kb, Standards of Performance for VOL Storage Vessels, as adopted by reference in Colorado Regulation No. 6, Part A

- This tank is exempt from Subpart Kb requirements, but must maintain records of tank dimensions and capacity to demonstrate the exemption

(60.116(a) and (b)) *(Note that (a) requires retention of records for two years - this is superseded by the Title V requirement to maintain records for five years)*

Emission Factors - VOC emissions from the storage tanks are estimated using the most recent version of the EPA's TANKS computer program.

Monitoring - The tank is equipped with level transmitters and flow meters. Compliance with the emission limits can be monitored based on the production records. If production limits are met, the Division can assume that the emission limits are also being met. Records are kept regarding the type of external tank coating used and the dimensions and capacity of the tank.

Compliance Status - This source was in compliance with all applicable requirements at the time of application submittal.

IV. Alternate Operating Scenarios

The Title V application did not include a request for any Alternate Operating Scenarios.

V. Short Term Limits

On April 16, 1998 the Colorado Air Quality Control Commission directed the Division to implement new procedures regarding the use of short term emission and production/throughput limits on Construction Permits. These procedures are being directly implemented in all operating permits that had not started their Public Comment period as of April 16, 1998. All short term emission and production/throughput limits that appeared in the construction permits associated with this facility that are not required by a specific State or Federal standard or by the above referenced Division procedures have been deleted and all annual emission and production/throughput limits converted to a rolling 12 month total. Note that, if applicable, appropriate modeling to demonstrate compliance with the National Ambient Air Quality Standards was conducted as part of the Construction Permit processing procedures. If required by this permit, portable monitoring results and/or EPA reference test method results will be multiplied by 8760 hours for comparison with annual emission limits unless there is a specific condition in the permit restricting hours of operation.

Note that the EPA issued this source a PSD permit in 1984. The Division policy does not include short term emission limits established by the EPA in PSD permits, therefore short term limits from the PSD permit are retained in the Operating Permit. In addition, in order to monitor compliance with the hourly emission limits, the hourly grain throughput and fuel use limits are retained in the Operating Permit. Regarding the short term limits included in the PSD permit for VOC sources, the Division is not including them in this Operating Permit

because at the time of PSD permit issuance, VOC emissions were thought not to be subject to PSD requirements. In addition, the latest available information indicates that VOC emissions are actually higher than those listed in the PSD permit, therefore the PSD limits are no longer valid. The PSD VOC limits are not based on a BACT determination.

The following table lists the short term limits that were included in the Construction Permits but not included in the Operating Permit.

Discontinued Short Term Limits Anheuser Busch, Inc.	
Source	Short Term Limit
P021 - Barley Malt and Rice Grain Unloading*	0.72 lb/hour PM emissions 60 tons grain/hour
P022 - Barley Malt Conveyor*	0.3 lb/hour PM emissions 25 tons grain/hour
P023 - Rice Conveyor*	0.18 lb/hour PM emissions 15 tons grain/hour
P024 - Grain Transfer and Storage*	0.36 lb/hour PM emissions 6.0 tons grain/hour
P025 - Grain Milling and Weighing*	0.45 lb/hour PM emissions 25 tons barley/hour 15 tons rice/hour
P035, P036 - Two (2) Lauter Tubs***	0.04 grams/second
P037, 38, 39 - Three (3) Brewkettles***	0.09 grams/second
B091 through B095 - Four (4) Boilers*	39.9 lbs/hour PM emissions 316.8 lbs/hour SO_2 emissions 141.8 lbs/hour NOx emissions 3.6 lbs/hour VOC emissions 14.6 lbs/hour CO emissions 2 gallons unfinished and finished spirits/minute 443450 scf natural gas/hour 2750 gallons fuel oil/hour
P141 - APV Crepaca Alcohol Distillation Unit and Ethanol Truck Loadout	1.63 lbs/hour VOC emissions** 3,400 gallons ethanol/day

* The hourly short term emissions limits for these sources are included in the Operating Permit because these limits were set forth in the PSD Permit, to which the State's short term limit policy does not apply. In addition, the operating permit includes the short term throughput limits as a method for monitoring compliance with the short term emissions limits.
**The Construction Permit for this source limited hourly emissions to 1.48 lbs, however, the permittee subsequently submitted a request for a Construction Permit modification to increase the emissions rate to 1.63 lbs/hour, based on a revised emission factor.
***Based on recent information, these PSD permit limits are no longer valid, and are not included in the Operating Permit.

VI. Emission Factors

From time to time published emission factors are changed based on new or improved data. A concern is what happens if the use of the new emission factor in a calculation results in a source being out of compliance with a permit limit. For this operating permit, the emission factors or emission factor equations included in the permit are considered to be fixed until changed by the permit. Obviously, factors dependent on the fuel sulfur content or heat content can not be fixed and will vary with the test results. The formula for determining the emission factors is, however, fixed. It is the responsibility of the permittee to be aware of changes in the factors, and to notify the Division in writing of impacts on the permit requirements when there is a change in factors. Upon notification, the Division will work with the permittee to address the situation.

VII. Final Approval for Previously Unpermitted Sources and for Initial Construction Permits

For those existing sources that were previously unreported, the Division directly incorporated the applicable requirements into the operating permit, thus streamlining the process and avoiding duplicate public comment periods. In addition, there are some Construction Permits that have not yet been issued Final Approval. Since these pieces of equipment will have been in operation for more than 180 days by the due date of the first semi-annual monitoring required by the operating permit, the Division will consider the Responsible Official certification submitted with that report to serve as the self-certification for Final Approval for these sources.

VIII. Accidental Release Program - 112(r)

The Title V application reports the facility is subject to the Accidental Release Plan provisions of 112(r)(7) of the Clean Air Act.

Section 112(r) of the Clean Air Act mandates a new federal focus on the prevention of chemical accidents. Sources subject to these provision must develop and implement risk management programs that include hazard assessment, a prevention program, and an emergency response program. They must prepare and implement a Risk Management Plan (RMP) as specified in the Rule.

Section 68.215(e) of the Federal Clean Air Act requires the Division to address four issues in regards to operating permit sources subject to 112(r):

1. Verify source submitted and register an RMP by deadline

EPA is in the process of setting up a Website specifically for 112(r) plans. All 112(r) sources will electronically submit their plans to this "designated central location". The Division will require sources to certify in their annual compliance certification that they are/are not subject to 112(r) and they have/have not submitted a Risk Management Plan (RMP) to the designated central location by June 20, 1999. In addition, the Division will check the 112(r) website to verify that a RMP was actually submitted to the website by the deadline. Failure to submit a RMP by the June deadline by sources subject to 112(r) will be considered a permit deviation for reporting purposes under Title V.

2. Verify that source owner/operator has submitted a source certification or in its absence has submitted a compliance schedule.

As mentioned above, the Division will require that sources certify in their annual compliance certification that they are/are not subject to 112(r) and they have/have not submitted a Risk Management Plan (RMP) to the designated central location by June 20,1999. If they are subject to 112(r) but did not submit an RMP on time, a compliance schedule under the provisions of Title V must be submitted to the Division by the source. Failure to submit a RMP or a compliance schedule by the June deadline by sources subject to 112(r) will be considered a permit deviation for reporting purposes under Title V.

3. For some or all sources use one or more mechanisms such as completeness check, source audits, record review, or facility inspections to ensure permitted sources are in compliance with the requirements of this part

The Division may choose to perform any or all of the activities listed under this subsection. Although there is no specific number of such actions required in the 112(r) rule, a June 3, 1997 draft 112(r) implementation guidance from EPA states that "Congress considered a requirement that 1.4 percent of the RMPs be audited annually, but dropped that provision."

The Division will, at a minimum, perform a "completeness check" on an unspecified number of Title V 112(r) sources. The website that EPA is in the process of developing to accept 112(r) RMP's will include software that will electronically conduct a completeness check on the RMP's. For the purposes of this operating permit, such check shall serve as the completeness check required under 68.215(e)(3). As noted in the Preamble to the final 112(r) rule (June 20, 1996 Federal Register, page 31691), "EPA agrees that the review for quality or adequacy of the RMP is best accomplished by the implementing agency..." In Colorado, the implementing agency is the U.S. EPA. If the EPA website software indicates

that a source did not submit a complete plan, it will be considered a permit deviation for reporting purposes under Title V and the Division may initiate an enforcement action for failure to meet the Title V permit condition (see below). Per the Preamble (page 31691), the Division may perform the completeness checks in a timeframe consistent with the source's Title V certifications.

4. Initiate enforcement action as necessary

This refers to enforcement under Title V, not under Part 68 (112(r)). If a source fails to file a RMP or a compliance schedule by the June deadline or the EPA software indicates that the RMP is not complete, it will be considered a permit deviation for reporting purposes under Title V and the Division may initiate an enforcement action.