Facility Name: **CITGO Asphalt Refining Company**
City: Savannah
County: Chatham
AIRS #: 04-13-051-00012 Application #: TV- 8901

Date Application Received: August 29, 1996
Date Application Deemed Administratively Complete: February 21, 1997
Date of Draft Permit: February 28, 1999
Permit No: 2911-051-0012-V-01-0

Program	Review Engineers	Review Managers
SSPP/ASU	Susan Jenkins	John Yntema
SSCP/ASU	Alicia Woods	Lou Musgrove
ISMP	George Garten	Richard Taylor
TOXICS	Not Applicable	Not Applicable

Introduction

This narrative is being provided to assist the reader in understanding the content of the attached draft Title V operating permit. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being proposed pursuant to: (1) Section 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The primary purpose of this permit is to consolidate and identify existing state and federal air requirements applicable to **CITGO Asphalt Refining Company** and to provide practical methods for determining compliance with these requirements. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. It initially describes the facility receiving the permit, then the applicable requirements and their significance, and finally the methods for determining compliance with those applicable requirements. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public participation process will be described in an addendum to this narrative.

I. Facility Description

A. Facility Identification

1. Facility Name: CITGO Asphalt Refining Company

2. Parent/Holding Company Name: CITGO Petroleum Corporation

3. Previous and/or Other Name(s): Amoco Oil Company

4. Facility Location: Foundation Drive, Savannah, Chatham County, Georgia 31408

5. Attainment or Non-attainment Area Location

   The facility is located in Chatham County, Georgia which is in attainment for all criteria pollutants.

6. Class I Area Impacts

   CITGO Asphalt Refining Company is located within 100 km of the Wolf Island Class I Area.

B. Site Determination

CITGO Asphalt Refining Company (AFS No. 051-00012) and CITERCO (AFS No. 051-00200) are parts of the same Title V Site. The companies are located on contiguous property, operate under common control, and have the same first 2-digit SIC code (29). Note, this site is a Title V synthetic minor source for HAPs. This Title V Permit will cover only CITGO Asphalt Refining Company (AFS No. 051-00012). CITERCO (AFS No. 051-00200) has applied for a separate Title V Permit under application number TV-1536.

C. Existing Permits

Based on a comparative review of Item 19 in Section 1.10 of the Title V application and the "Permit" file(s) on the facility found in the Air Branch office, there are no comments.

Table 1: List of Current Permits, as Amended

Permit Number and/or Purpose of Issuance	Date of Issuance and Date of Amendments (if any)	Comments	
		Yes	No
2911-025-12438	May 22, 1997 Amended August 7, 1998 Amended August 14, 1998		X

D. Process Description

1. SIC Code(s)

   Major - 2911
   Other - None

2. Description of Product(s)

   This plant produces asphalt, naphtha, and gas oils.

3. Overall Facility Process Description

   Crude oil, received by marine vessel, is temporarily held in storage tanks. Crude oil is then pumped from storage to one of two independent distillation units (D001 and D002). The incoming crude to D001 is heated by the No. 1 heater F001. The incoming crude oil to D002 is heated by the No. 2 heater F002. D001 receives heat energy from boiler B004. D002 receives heat energy from boiler B005. Distillation is a separation process in which a liquid is converted to a vapor and the vapor then condensed to a liquid. Asphalt, naphtha, and various weight gas oils are distilled from crude oil. The heavier distillates are separated from the crude at higher temperatures than are the lighter distillates. Gas oils are usually separated from the crude oil within the general range of 300^0F to 750^0F. VOC and HAP emissions from D001 and D002 are controlled by a refrigeration/condenser system (REF1). All liquid products are held in storage prior to being shipped. Heavy and medium gas oil and naphtha are shipped by marine vessel; asphalt is shipped by marine vessel, tank car, and tank truck.

4. Overall Process Flow Diagram (optional):

   Received as a hard copy attachment with the application.

E. Regulatory Status

1. PSD/NSR

   The facility is a major PSD source.

2. Title V Major Source Status by Pollutant

Table 3: Title V Major Source Status

Pollutant	Is the pollutant emitted?	If emitted, what is the facility's Title V status?		
		Major Source Status	Major Source requesting SM Status	Non-Major Source Status
PM	Yes	No	No	Yes
PM_{10}	Yes	No	No	Yes
SO_2	Yes	Yes	No	No
VOC	Yes	Yes	No	No
NO_x	Yes	Yes	No	No
CO	Yes	No	No	Yes
TRS	Yes	Yes	No	No
H_2S	Yes	Yes	No	No
Individual HAP	Yes	Yes	Yes	No
Total HAPs	Yes	Yes	Yes	No

Note: CITGO already has a federally enforceable permit amendment that limits individual and total HAPs below the Title V major source thresholds. This permit amendment was issued August 14, 1998.

3. MACT Standards

This site is not subject to a MACT standard because they obtained a Title V Synthetic Minor permit for HAPs before any applicable compliance date.

4. Program Applicability

Program Code 6 - PSD: no
Program Code 8 - Part 61 NESHAP: no
Program Code 9 - NSPS: yes
Program Code M - Part 63 NESHAP: no
Program Code V - Title V: yes

Regulatory Analysis

II. Facility Wide Requirements

A. Emission and Operating Cap

Facility-wide individual and total HAPs are limited to not equal or exceed 10 tons or 25 tons, respectively, during any twelve consecutive months to remove 40 CFR 63, Subpart CC as an applicable requirement. CITERCO (AFS No. 051-00200) does not have the potential to emit any HAPs.

B. Applicable Rules and Regulations

- Rules and Regulations Assessment

The facility-wide PM emissions are limited by Georgia Rule for Air Quality Control 391-3-1-.02(2)(e)1.(i), and this limit is expressed by the following equation:

$E = 4.1P^{0.67}$

where E equals the allowable PM emission limit in pounds per hour and P equals the maximum dry process weight input rate in tons per hour.

- Emission and Operating Standards - Not applicable.

C. Compliance Status: See Section VII.F

D. Operational Flexibility: See Section VII.A

E. Permit Conditions

Condition 2.1.1 limits facility-wide individual and total HAPs to below Part 70 thresholds.

Condition 2.3.1 limits facility-wide PM emissions to that allowed by Georgia Rule (e).

III. Regulated Equipment Requirements

A. Brief Process Description

Crude oil, received by marine vessel, is temporarily held in storage tanks. Crude oil is then pumped from storage to one of two independent distillation units (D001 and D002). The incoming crude to D001 is heated by the No. 1 heater F001. The incoming crude oil to D002 is heated by the No. 2 heater F002. D001 receives heat energy from boiler B004. D002 receives heat energy from boiler B005. VOC and HAP emissions from D001 and D002 are controlled by a refrigeration/condenser system (REF1). All liquid products are held in storage prior to being shipped. Heavy and medium gas oil and naphtha are shipped by marine vessel; asphalt is shipped by marine vessel, tank car, and tank truck.

B. Equipment List for the Process

Emission Unit ID No.	Emission Unit Description	Pollutant(s) Emitted	Applicable Requirements	Is the Rule or Regulation Federally Enforceable?	APCE Control ID No.	APCE Description
B004	52.83 MMBtu/hr boiler	PM, PM-10, NOx, CO, VOC, SO_2	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) 391-3-1-.02(2)(b)	Yes Yes Yes	None	None
B005	59.40 MMBtu/hr boiler	PM, PM-10, NOx, CO, VOC, SO_2	391-3-1-.02(2)(d) 391-3-1-.02(2)(g) 391-3-1-.02(2)(b)	Yes Yes Yes	None	None
F001	No. 1 Unit Heater, rated at 56.40 MMBtu/hr	PM, PM-10, NOx, CO, VOC, SO_2	391-3-1-.02(2)(d) 391-3-1-.02(2)(g)	Yes Yes	None	None
F002	No. 2 Unit Heater, rated at 56.40 MMBtu/hr	PM, PM-10, NOx, CO, VOC, SO_2	391-3-1-.02(2)(d) 391-3-1-.02(2)(g)	Yes Yes	None	None
D001	Crude oil distillation tower no. 1	VOC HAPs	None	Not applicable	REF1	Refrigeration/ Condenser system
D002	Crude oil distillation tower no. 2	VOC HAPs	None	Not applicable	REF1	Refrigeration/ Condenser system
API1	Process oil-water separator	VOC	391-3-1-.02(2)(ee)	Yes	None	None
T007	External floating roof storage tank	VOC PM	None	Not applicable	None	None
T017	Fixed roof storage tank	VOC PM	None	Not applicable	None	None
T019	Fixed roof w/internal floating roof storage tank	VOC PM	391-3-1-.02(2)(bb)	Yes	None	None

Emission Unit ID No.	Emission Unit Description	Pollutant(s) Emitted	Applicable Requirements	Is the Rule or Regulation Federally Enforceable?	APCE Control ID No.	APCE Description
T050	External floating roof storage tank	VOC PM	40 CFR 60.110a(a)	Yes	None	None
T051	Fixed roof asphalt storage tank	VOC PM	40 CFR 60, Subpart UU	Yes	TC51	Mist eliminator
T052	Fixed roof asphalt storage tank	VOC PM	40 CFR 60, Subpart UU	Yes	TC52	Mist eliminator
T053	Fixed roof asphalt storage tank	VOC PM	40 CFR 60, Subpart UU	Yes	TC53	Mist eliminator
T413	Fixed roof storage tank	VOC	40 CFR 60.116b(b)	Yes	None	None
FE01	Valves in natural gas service	VOC HAPs	391-3-1-.02(2)(hh)	Yes	None	None
FE02	Valves in naphtha service	VOC HAPs	391-3-1-.02(2)(hh)	Yes	None	None
FE03	Connectors in naphtha service	VOC HAPs	391-3-1-.02(2)(hh)	Yes	None	None
FE04	Pumps in naphtha service	VOC HAPs	391-3-1-.02(2)(hh)	Yes	None	None
FE05	Pumps in gas oil service	VOC HAPs	391-3-1-.02(2)(hh)	Yes	None	None

* APCE = Air Pollution Control Equipment

C. Equipment & Rule Applicability

Combustion Equipment

CITGO operates four combustion devices, namely B004 (52.83 MMBtu/hr), B005 (59.40 MMBtu/hr), F001 (56.4 MMBtu/hr), and F002 (56.4 MMBtu/hr). Units F001 and F002 are used to heat the incoming crude oil to the distillation columns (D001 and D002). Boilers B004 and B005 supply heat energy to the distillation columns. Primary fuels for each device are natural gas with residual fuel oil backup capability. The residual fuel oil is also referred to as heavy gas oil. Of the four devices, only F002, is not a grandfathered PSD source. F002 was replaced in 1984, and this unit received a PSD avoidance permit, through a PSD netting exercise. The SO_2 and NOx emissions from F002 were capped by limiting the residual fuel oil usage of F002. Their existing permit also limits the weight percent sulfur content of the fuel oil to 2.4 percent, which is lower than that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(g), "Sulphur Dioxide." I recommend that the existing weight percent sulfur

content remain in their Title V permit.

Combustion devices B004 and B005 are each subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(d)1.(ii) which is expressed as follows:

$$E = 0.7(10/R)^{0.202}$$

where E is the allowable PM emission rate expressed in pounds per million Btu heat input and R equals the heat input in million Btu per hour. These units were constructed and installed prior to January 1, 1972. Units B004 and B005 are subject to the 40% opacity limit expressed in Georgia Rule for Air Quality Control 391-3-1-.02(2)(b).

Combustion devices F001 and F002 are subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(d)2.(ii) which is expressed as follows:

$$E = 0.5(10/R)^{0.5}$$

where E is the allowable PM emission rate expressed in pounds per million Btu heat input and R equals the heat input in million Btu per hour. These combustion devices were constructed after January 1, 1972. Units F001 and F002 are subject to the opacity requirements of Georgia Rule for air Quality Control 391-3-1-.02(2)(d)3.

40 CFR 60 Subpart J is not an applicable requirement for each combustion device for various reasons. Boilers B004 and B005 were constructed (and not modified) prior to June 11, 1973, and they do not burn a fuel gas (as defined in the regulation) generated by distillation towers D001 and D002. Heaters F001 and F002 were constructed after 1973; however, they do not burn a fuel gas a defined in the regulation. A Title V permit condition has been added that prohibits CITGO from burning a fuel gas, as defined in the regulation, in units F001 and F002.

Distillation Towers

Distillation towers D001 and D002 separate crude oil into asphalt, heavy gas oil, medium gas oil, light gas oil, and naphtha. Each product is routed to storage; however, some of the heavy gas oil is routed to the inlet of the distillation tower. The naphtha exits the top of D001 and D002 where it is piped through an accumulator and a refrigeration/condenser system (REF1) before being transferred to storage. REF1 contains a process vent from which VOC and hexane are emitted. CITGO must operate REF1 in order to maintain a potential individual and total HAP emission rate below 10 tons and 25 tons, respectively, per year. Thus they are a Part 63 Synthetic Minor, avoiding applicability to 40 CFR 63, Subpart CC. Also, these distillation units are not subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(ee) because they operate under atmospheric conditions and not a vacuum.

API1 - Oil-Water Separator

API1 receives oily process wastewater from D001 and D002. This unit is subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(ee) which requires that API1 be equipped with a cover; however, on January 10, 1983, the Division Director determined that API1 did not have to be equipped with a cover or some other air pollution control device due to high costs.

Storage Tank Farm

Storage Tank T007 - Tank T007 is an external floating roof tank made of welded construction and equipped with a metallic-type shoe seal (primary) and rim-mounted seal (secondary). This tank was installed in 1929 and had been used to store gasoline, prior to 1995. Beginning in 1995, CITGO used T007 to store naphtha. Currently, CITGO routinely stores naphtha in T007; however, they may store gas oils in this tank. The capacity of T007 is approximately 3,000,000 gallons.

I reviewed the definition of modification in the NSPS General Provisions (40 CFR 60.14) to determine if this tank was subject to an NSPS while being used to store naphtha or gas oil. According to 40 CFR 60.14, "any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act." Based on the information noted above, I do not believe that using T007 to store naphtha rather than gasoline constitutes a modification according to 40 CFR 60.14. I do not believe that this change in material stored, in 1995, resulted in an increase in emissions, nor had to be accomplished by a physical or operational change. Thus T007 is not subject to 40 CFR 60 Subpart Kb as stated in their existing state air quality permit.

I have also determined that tank T007 is not subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(nn) - "VOC Emissions from External Floating Roof Tanks" as stated in their existing state air quality permit because it meets the exempted category listed in Georgia Rule 391-3-1-.02(2)(nn)6.(iv) [i.e., T007 is of welded construction and possesses a metallic-type shoe seal].

Storage Tank T017 - Tank T017 was equipped with a fixed roof and was used to store diesel fuel, prior to 1987. [The tank was constructed prior to June 11, 1973.] The tank was used to store naphtha in 1987, rather than diesel fuel. Prior to 1987, Tank T017 was capable of receiving naphtha; however, to actually receive naphtha, the tank had to be fitted with an internal floating roof. Thus tank T017 was converted from a fixed roof to an internal floating roof tank in 1987. The internal floating roof was removed in 1995, thereby converting it back to a conventional cone roof tank. Since that time T017 has been used to store medium gas oil which, according to CITGO, is a material whose vapor pressure does not require a floating roof (i.e., true vapor pressure less than 0.5 psia).

I reviewed the definition of modification in the NSPS General Provisions (40 CFR 60.14) to determine if this tank was subject to an NSPS. Based on information concerning this tank, supplied by CITGO on February 8, 1999, I do not believe that T017 is subject to an NSPS because the physical change to the tank in 1995 was not accompanied by an increase in emissions. Thus, 40 CFR 60 Subpart Kb is not an applicable requirement as stated in their existing air quality permit.

CITGO routinely stores a material with a true vapor pressure less than 1.52 psia; thus, this tank is not subject to Georgia Rule for Air Quality Control 391-3-1-.02(2)(bb).

Storage Tank T019 - Tank T019 is a fixed roof/internal floating roof storage tank with a capacity of approximately 1,400,000 gallons. This tank was installed in 1970 and had been used to store gasoline, prior to 1995. Beginning in 1995, CITGO used T019 to store naphtha; however, they may use this tank to store gas oil. I reviewed the definition of modification in the NSPS General Provisions (40 CFR 60.14) to determine if this tank was subject to an NSPS. Based on that information, I do not believe that T019 is subject to an NSPS because the physical change to the tank in 1995 was not accompanied by an increase in emissions. Thus, 40 CFR 60 Subpart Kb is not an applicable requirement as stated in

their existing air quality permit.

Tank T019 is potential subject to Georgia Rule (bb) when it is used to store a volatile petroleum liquid whose true vapor pressure is greater than 1.52 psia. Hence, T019 is subject to Georgia Rule (bb) when it contain naphtha, and not gas oil. Note, gas oils typically have a vapor pressure less than 0.5 psia. Georgia Rule (bb) imposes no monitoring or recordkeeping requirements.

Storage Tank T050 - This storage tank is an external floating roof storage tank that stores crude oil. This tank has a capacity greater than 40,000 gallons, stores a petroleum liquid as defined in 40 CFR 60, Subpart Ka - "Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984." In addition, the date of construction (installation) is within the applicable dates for this federal regulation. Thus storage tank T050 is subject to NSPS Ka. The only portion of this regulation which is applicable is 40 CFR 60.110a(a) stating that the tank is subject to the regulation. This regulation imposes no VOC emission standards, monitoring, or recordkeeping requirements because CITGO routinely stores a material whose vapor pressure is less than 1.5 psia.

I have also determined that T050 is not subject to Georgia Rule (nn) because it meets the exemption noted in Georgia Rule 391-3-1-.02(2)(nn)6.(iv).

Storage Tanks T051, T052, and T053 - Each of these storage tanks is a fixed roof asphalt storage tank constructed or modified after November 18, 1990. These storage tanks are subject to 40 CFR 60, Subpart UU - "Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture" because of their construction and/or modification date, material stored, and because they are located at a facility classified as a petroleum refinery (i.e., SIC Code 2911).

NSPS Subpart UU imposes a PM standard of zero percent opacity, except for one consecutive 15-minute period in any 24-hour period when the transfer lines are being blown for clearing (40 CFR 60.472(c)). CITGO maintains a mist eliminator on each tank to help assure compliance with this standard. Please note that T053 has not yet been constructed. NSPS Subpart UU imposes no monitoring or reporting requirements because the tanks are not subject to PM standards specified in 40 CFR 60.472(a).

Storage Tank 413 - Tank T413 is a fixed roof tank installed in 1992, and CITGO routinely stores an asphalt additive whose true vapor pressure is approximately 0.19 psia. The capacity of T413 is approximately 12,600 gallons. This tank is subject to 40 CFR 60 Subpart Kb because it was constructed after July 23, 1984 and has a capacity greater than 10,568 gallons (40 m^3). This regulation imposes no emissions standard or monitoring requirements because the tank's capacity is less than 19,815 gallons (75 m^3). This regulation does impose recordkeeping requirements as stated in 40 CFR 60.116b(b).

Fugitive Emissions Associated with Leak Detection and Repair (LDAR) Standards

The operation of FE01, FE02, FE03, FE04, and FE05 must comply with Georgia Rule for Air Quality Control 391-3-1-.02(2)(hh). Fugitive emissions are independent of process unit throughput and are generally assumed to occur if there is material present, regardless of the activity of the process. Likewise, fugitive emissions are independent of the hours of service as there is material in the pipes at all times unless they are purged.

D. Compliance Status: See Section VII.F

E. Operational Flexibility: See Section VII.A

F. Permit Conditions

Condition 3.2.1 establishes the fuel oil sulfur content limit of 2.4 percent, by weight.

Condition 3.2.2 limits the annual volume of fuel oil that can be consumed by crude oil heater F002.

Condition 3.2.3 prohibits CITGO from burning any fuel gas in any combustion device so that 40 CFR 60, Subpart J is not triggered as an applicable requirement without notification to the Division.

Condition 3.3.1 limits the opacity of the exhaust gases from storage tanks T051, T052, and T053 to that allowed by 40 CFR 60.472(c).

Condition 3.4.1 limits the PM emissions from crude oil heaters B004 and B005 to that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(d)1.(ii).

Condition 3.4.2 limits the PM emissions from boilers F001 and F002 to that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(d)2.(ii).

Condition 3.4.3 limits the opacity of the exhaust gases from boilers F001 and F002 to that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(d)3.

Condition 3.4.4 limits the opacity from emission units, other than F001, F002, T051, T052, and T053, to that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(b).

Condition 3.4.5 subjects storage tank T019 to Georgia Rule for Air Quality Control 391-3-1-.02(2)(bb) whenever this tank is used to store a petroleum liquid with a vapor pressure greater than 1.52 psia.

IV. Testing Requirements (with Associated Recordkeeping and Reporting)

A. General Testing Requirements

None of the applicable regulations require performance testing; therefore, the permit does not contain any specific testing requirements. The permit does specify that a performance test may be required at anytime upon request by the Division to determine compliance with the limits in Part 3 of their Title V permit, and test methods for measuring emissions are listed in Condition 4.1.3.

1. Exceptions to General Testing Requirements - Not Applicable.

B. Specific Testing Requirements

1. Individual Equipment - Not Applicable.

2. Equipment Groups (all subject to the same test requirements) - Not Applicable.

V. Monitoring Requirements (with Associated Recordkeeping and Reporting)

A. General Monitoring Requirements

Condition 5.1.1 requires that all monitors be operated continuously except during breakdowns, repairs, and quality assurance activities. Any repairs or maintenance should be completed in an expeditious manner so downtime is minimized. All data should also be recorded during any calibration activity to help verify that the calibration was performed and completed properly.

1. Exceptions to General Monitoring Requirements - Not Applicable.

B. Specific Monitoring Requirements

1. Individual Equipment

a. Specific monitoring requirements

Combustion devices B004, B005, F001, and F002 burn only natural gas with residual oil as backup. The PM emissions from each of these devices must stay below that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(d). Minimal PM emissions will result from burning natural gas; thus no periodic monitoring to assure compliance with Georgia Rule (d) is necessary when CITGO is burning natural gas. PM emissions from the firing of residual oil can be significant if there is incomplete combustion; therefore, CITGO is required to measure and record the oxygen concentration (%) at the exit of the firebox of B004, B005, F001, and F002, every hour that the device burns residual oil, to assure compliance with Georgia Rule (d).

The opacity of the exhaust from combustion devices F001 and F002 must stay below that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(d). The opacity of the exhaust from combustion devices B004 and B005 must stay below that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(b). No additional periodic monitoring is added because the likelihood of violation of either opacity standard is minimal.

CITGO is subject to a more stringent fuel oil sulfur content than that allowed by Georgia Rule for Air Quality Control 391-3-1-.02(2)(g). CITGO cannot fire any fuel oil whose sulfur content exceeds 2.4 weight percent, instead of the Georgia Rule (g) limit of 2.5 weight percent. The sulfur content of natural gas is considered to be insignificant; therefore, no periodic monitoring is required. A periodic monitoring requirement is included which requires CITGO to verify that each shipment of fuel oil complies with the sulfur weight percent content limit of 2.4. The Permittee is given the option of either sampling and analyzing the oil (by approved methods) or obtaining from the oil supplier, a statement certifying that the oil has been sampled and analyzed using approved methods. In either case, the Permittee must report the results of the analysis.

CITGO must monitor the monthly volume of fuel oil consumed by crude oil heater F002.

The PM emissions from bulk storage tanks T051, T052, and T053 are controlled by their own mist eliminator. The pressure differential across each mist eliminator is required to be continuously monitored and the value of the pressure difference should be recorded at least once per operating shift. The pressure differential across each mist eliminator must be maintained at 8 inches of water

or less to assure compliance with 40 CFR 60, Subpart UU. This value was obtained from data recorded by the Division during the last several inspections of the source. Any three consecutive readings above 8 inches of water shall be reported as a deviation.

CITGO must maintain the temperature at the inlet of the liquid knockout drum of REF1 at or below 72 deg F when distillation columns D001 and D002 are in operation in order to remain a Title V Synthetic Minor for HAPs. Periodic monitoring consists of operating a device to continuously monitor and record this temperature.

FE01, FE02, FE03, FE04, and FE05 are subject to the requirements of Georgia Rule for Air Quality Control 391-3-1-.02(2)(hh), "Petroleum Refinery Equipment Leaks." CITGO submitted their plan for monitoring VOC leaks, as required by this regulation, on October 30, 1981. The Division approved the plan on December 8, 1981. They submitted an updated LDAR program on December 29, 1998 which was found to meet the requirements of Georgia Rule (hh). The minimum requirements of CITGO's LDAR program, as defined by Georgia Rule (hh), have been specified in Part 5 of CITGO's Title V permit.

2. Equipment Groups (all subject to the same monitoring requirements) - Not Applicable.

VI. Other Recordkeeping and Reporting Requirements

A. General Recordkeeping and Reporting Requirements

General requirements for the maintenance of all records for a period of five years are included in Condition 5.3.3. Prompt reporting shall be as described in Condition 6.1.1.

B. Specific Recordkeeping and Reporting Requirements

In order to compute actual VOC and HAP emissions, CITGO is required to maintain the following monthly records: (1) the barrels of raw crude oil (not to include heavy gas oil recycle rate) charged to both D001 and D002 combined; (2) the barrels of naphtha loaded onto marine vessels; (3) the barrels of naphtha loaded into trucks; and (4) the storage tank capacity (based on tank design), tank type (i.e., fixed roof, etc.) and material stored, and the material's true vapor pressure in psia, for each storage tank at facility. Equations are provided in CITGO's Title V permit that specify how VOC and HAP emissions are to be computed.

In order to compute emissions from the combustion devices, CITGO is required to maintain records of the volume of residual fuel oil and natural gas consumed on a monthly basis.

CITGO must maintain the records required by 40 CFR 60.116b(b) for storage tank T413. These records need to include the dimension and an analysis showing the capacity of the tank.

Tank T019 is potentially subject to Georgia Rule (bb); however, this regulation imposes no recordkeeping or reporting requirements.

Tank T050 is subject to NSPS Subpart Ka; however, this regulation imposes no recordkeeping requirements because CITGO routinely stores a material whose vapor pressure is less than 1.5 psia.

VII. Specific Requirements

Note: Be sure to discuss any stratospheric ozone protection requirements (see subsection J.) that may apply to the source.

A. Operational Flexibility

Operational flexibility does not need to be incorporated into this Title V Permit. The applicant did not include any alternative operating scenarios in their Title V permit application.

B. Alternative Requirements

There are no alternative requirements that need to be incorporated into this Title V Permit.

C. Insignificant Activities

- refer to §4.10 of the Title V permit application

Category	Description of Insignificant Activity	Quantity
Combustion Equipment	1. Fire fighting and similar safety equipment used to train fire fighters or other emergency personnel.	1
	4. i) Stationary engines burning natural gas, gasoline, diesel fuel, or dual fuel which are used exclusively for emergency power generation.	2
Trade Operations	1. Brazing, soldering, and welding equipment, and cutting torches related to manufacturing and construction activities whose emissions of hazardous air pollutants (HAPs) fall below 1,000 pounds per year.	4
Maintenance, Cleaning, and Housekeeping	4. Cold cleaners having an air/vapor interface of not more than 10 square feet and that do not use a halogenated solvent.	4
	5. Non-routine clean out of tanks and equipment for the purposes of worker entry or in preparation for maintenance or decommissioning.	40
Laboratories and Testing	1. Research and development facilities, quality control facilities and/or small pilot projects, where combined daily emissions from all operations are not individually major or are support facilities not making significant contributions to the product of a collocated major manufacturing facility.	8
Industrial Operations	9. Ozonization process or process equipment.	1

Category	Description of Insignificant Activity	Quantity
Storage Tanks and Equipment	1. All petroleum liquid storage tanks storing a liquid with a true vapor pressure of equal to or less than 0.50 psia as stored.	26
	2. All petroleum liquid storage tanks with a capacity of less than 40,000 gallons storing a liquid with a true vapor pressure of equal to ore less than 2.0 psia as stored that are not subject to any standard, limitation or other requirement under Section 111 or 112 (excluding 112(r)) of the Federal Act.	1
	3. All petroleum liquid storage tanks with a capacity of less than 10,000 gallons storing a petroleum liquid.	1
	6. Portable drums, barrels and totes provided that the volume of each container does not exceed 550 gallons.	5
	7. All chemical storage tanks used to store a chemical with a true vapor pressure of less than or equal to 10 millimeters of mercury (0.19 psia).	1

D. Temporary Sources

CITGO Asphalt Refining Company has not requested to operate any temporary sources.

E. Short-Term Activities

CITGO has indicated that they operate a short term activity that is comprised of decoking heaters F001 and F002. During operation of F001 and F002, a thin layer of petroleum coke deposits on the inside of their heater tubes, reducing heat transfer efficiency. Process upsets rapidly increase coke deposition. During shutdown, a mixture of steam and air is injected into the furnace tubes to slowly oxidize away the coke. Furnace outlet products consists of large coke particulate, carbon dioxide and steam, and are routed through a water spray to cool the outlet gases and capture the PM. The PM emissions from the decoking operation must comply with Georgia Rule for Air Quality Control 391-3-1-.02(2)(e).

F. Compliance Schedule/Progress Reports

The facility is in compliance with all Air Quality Regulations. Therefore, no compliance schedule or process reports are necessary.

G. Emissions Trading

This facility is not involved in any emission trading programs.

H. Acid Rain Requirements

This facility is not subject to any requirements in Title IV of the Clean Air Act.

I. Prevention of Accidental Releases

CITGO Asphalt Refining Company is not subject to the requirements of 40 CFR 68.

J. Stratospheric Ozone Protection Requirements

The standard permit condition pursuant to 40 CFR 82 Subpart F has been included in the Title V Permit. These Title VI requirements apply to all air conditioning and refrigeration units containing ozone-depleting substances regardless of the size of the unit or of the source. Since CITGO Asphalt Refining has at least some air conditioners, chillers and refrigerators Subpart F is an applicable requirement.

K. Pollution Prevention

There are no pollution prevention provisions incorporated into this Title V Permit.

L. Specific Conditions: None

VIII. General Provisions

Generic provisions have been included in this permit to address the requirements in 40 CFR Part 70 that apply to all Title V sources, and the requirements in Chapter 391-3-1 of the Georgia Rules for Air Quality Control that apply to all stationary sources of air pollution.

TITLE V APPLICATION REVIEW

Closing Block: We have reviewed and recommend issuance of draft Permit No. 2493-157-0012-V-01-0.

Program	Review Engineers	Dates	Review Managers	Dates
SSPP/ASU				
SSCP/ASU				
ISMP				
TOXICS				

Stationary Source Permitting Program Manager Date

Addendum to Narrative

Public notice of CITGO's Title V permit was run in the Wednesday, February 24, 1999, Savannah Morning News. The public notice comment period ended April 4, 1999, and comments were received from CITGO on March 15, 1999. The EPA comment period ended February 19, 1999, and comments were received from EPA on May 19, 1999 and June 4, 1999.

CITGO's Comments on Draft Title V Permit No. 2911-051-0012-V-01-0

1. Condition 5.2.1a:

Condition 5.2.1a prescribes the specific monitoring requirements for the mist eliminators on the asphalt storage tanks subject to NSPS Subpart UU. NSPS Subpart UU establishes a zero percent opacity standard for these tanks/mist eliminators. The SIP permit monitoring requirements specify that they operate and maintain pressure drop indicators across each mist eliminator. No frequency of recording is specified; however, they must clean or replace the filters as necessary to maintain the pressure drop within the range recommended by the manufacturer.

The draft Title V permit condition requires that CITGO continuously monitor the pressure differential across each mist eliminator and record the pressure drop at least once per shift so as to verify that the pressure differential is being maintained within the range recommended by the manufacturer. CITGO requested that we requires that the pressure differential be recorded once per week instead of once per shift since their experience indicates that monitoring the pressure differential on a weekly basis gives plenty of forewarning in case cleaning or element change out becomes necessary.

Emissions from the asphalt storage tanks should occur primarily when the tanks are being filled and mixed. In addition, the mist eliminators will only show a pressure drop when the tanks are being filled or mixed. Breathing losses are negligible since the asphalt is maintained at a temperature that does not cause the asphalt to volatilize. Based on these facts and upon the recommendation of the reviewers of this permit, Condition 5.2.1a is revised to read as follows:

5.2.1a The Permittee shall install, calibrate, maintain, and operate continuous monitoring systems [or devices] for the measurement of the following ~~pollutants [or~~ parameters~~]~~ on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. The Permittee shall install, calibrate, maintain, and operate a continuous monitoring device to measure the pressure differential across mist eliminators TC51, TC52, and TC53. The Permittee shall record the pressure drop, for each mist eliminator, at least once ~~per shift.~~ each time while the applicable storage tank is being filled or the contents mixed.

This change in the prescribed periodic monitoring should not be construed as a weakening of the existing monitoring requirements at the facility. This change is to make the periodic monitoring plan realistic and appropriate for purposes of verifying compliance with NSPS Subpart UU.

2. Condition 5.2.1b:

Draft Condition 5.2.1b prescribes the specific monitoring requirements for the liquid knockout drum of REF1. REF1 is a refrigeration/condensation process that reduces emissions of hexane (a HAP) and other VOCs from the distillation process. Potential hexane emissions are maintained below 10 tpy by the operation of REF1 to make CITGO a synthetic minor for 40 CFR Part 63. Consequently, the periodic monitoring requirement of the REF1 vent gas temperature should be at a frequency no greater than is sufficient to verify compliance with this rolling annual emissions cap.

The existing SIP permit monitoring requirement and proposed Title V periodic monitoring requirement for the liquid knockout drum of REF1, requires that CITGO continuously monitor the vent gas temperature of this unit and compute hexane emissions per job (or run) based on the average REF1 vent gas temperature for that run. However, the production of the various products is not like a batch operation, but more resembles a continuous operation. Consequently, it makes little sense to require monitoring of REF1 vent gas temperature and computing of hexane (and VOC) emissions on a per run basis.

Because the HAP emissions limit, for which the monitoring is required, is annual and because the plant does not track its distillation operation on a per run basis, CITGO requests that we remove the requirement to compute an average REF1 vent gas temperature per run (or job) and that it be replaced with a requirement to compute a monthly REF1 vent gas temperature. This would be consistent with proposed Conditions No. 6.2.4 and No. 6.2.5 which require that CITGO use the average REF1 vent gas temperature for the month to compute emissions.

This requirement to compute monthly average temperatures is not onerous, as CITGO already continuously measures the instantaneous REF1 vent gas temperature. A data acquisition system computes average temperature, based on the instantaneous temperature values in the system memory for that calendar month.

CITGO requests that draft Condition 5.2.1b be modified to change the time-period for deviations determined using REF1 vent gas temperature. Instead of "any period of three hours", the condition would state "any calendar month." With these facts in mind, and with the concurrence of the Air Branch reviewers of the draft permit, Condition 5.2.1b is revised to read as follows:

5.2.1 The Permittee shall install, calibrate, maintain, and operate continuous monitoring systems [or devices] for the measurement of the following ~~pollutants [or~~ parameters~~]~~ on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

b. The Permittee shall install, calibrate, maintain, and operate a device to continuously monitor and record the temperature at the inlet of the liquid knockout drum of REF1. The Permittee shall record, as deviations to be reported in accordance with Condition 5.3.1, any calendar month period ~~of three hours~~ during which the average temperature at the inlet to the liquid knockout drum of REF1 is above 72 deg F. The Permittee shall maintain a log for such periods that this temperature requirement is not applicable.

This change in the prescribed periodic monitoring should not be construed as a weakening of the existing monitoring requirements for the facility. This change is to make the periodic monitoring plan realistic and appropriate for purposes of verifying compliance with their Part 63 synthetic minor status.

3. Condition 5.2.3

Condition 5.2.3 specifies the maximum value of the pressure differential across each mist eliminator that is acceptable, namely 8 inches of water. CITGO stated that the manufacturer of the mist eliminator recommends cleaning or change out when the pressure differential reaches 14 inches of water, not 8 inches of water. Upon the recommendation of the reviewers of this permit, Condition 5.2.3 is revised to read as follows:

5.2.3 The Permittee shall clean each mist eliminator, TC51, TC52, and TC53, or replace as necessary, in order to maintain a pressure differential of 14 ~~8~~ inches of water or less across each mist eliminator. The Permittee shall record, as deviations to be reported in accordance with Condition 5.3.1, any three consecutive readings in which the pressure differential across ~~each~~ any mist eliminator, TC51, TC52, and TC53 , is greater than 14 ~~8~~ inches of water. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

4. Condition 5.2.5f:

Condition 5.2.5 is taken directly from Georgia Rule 391-3-1-.02(2)(hh) - "Petroleum Refinery Equipment Leaks." Condition 5.2.5f is taken from Georgia Rule 391-3-1-.02(2)(hh)1.(iv) and it defines how soon a leaking component must be repaired. A leaking component may be repaired at the regularly scheduled turnaround unless the Director at his discretion requires early unit turnaround. CITGO objects to this language. According to CITGO, unit turnarounds are scheduled based on business decisions, and are generally conducted annually during the winter season. A shutdown at the ". . . Director's discretion . . ." would put them in violation of contracts with southeastern states to whom they sell asphalt.

Upon the recommendation of the reviewers of this permit, Condition 5.2.5f will not be changed. It is expected that the Director will consult with the plant and be judicial in exercising his authority to require early turnaround.

5. Condition 6.2.3:

Condition 6.2.3 references Condition 2.2.1 instead of 2.1.1. Upon the recommendation of the reviewers of this permit, Condition 6.2.3 has been changed as requested by CITGO and now reads as follows:

6.2.3 The Permittee shall use the monthly records required in Condition 6.2.2 to calculate total monthly VOC emissions and total monthly emissions of each listed HAP. The total monthly emissions values shall include VOC emissions and individual HAP emissions from the following sources at the facility: (1) process vent from REF1; (2) marine vessel load racks (for naphtha); (3) truck loading racks (for naphtha only); (4) storage tanks. The Permittee shall notify the Division in writing if emissions of any individual HAP exceeds 0.83 tons, or if emissions of all listed HAPs combined exceed 2.08 tons during any calendar month. This notification shall be postmarked by the fifteenth day of the following month and shall include an explanation of how the Permittee intends to maintain compliance with the emission limits in Condition No. ~~2.2.1.~~ **2.1.1.** [391-3-1-.03(2)]

6. Condition 8.13.2d:

Condition 8.13.2 defines when an emergency shall constitute an affirmative defense to an action. CITGO objects to the way "promptly" is defined in Condition 8.13.2d. Condition 8.13.2d requires that they promptly

notify the Division and submit written notice of the emergency within two working days of the time when emission limitations were exceeded due to the emergency. CITGO requested that the condition allow for contingency notification, i.e., a telephone call from someone in the Refinery to an appropriate person in the Division, with a follow-up letter at a later date.

40 CFR 70.6(g)(2) requires that this notification be submitted in writing within two working days of the time when emission limitations were exceeded due to the emergency. Since this condition was taken directly from 40 CFR 70.6(g)(2), this condition will not be revised as requested by CITGO.

7. Condition 8.19.1:

Condition 8.19.1 specifies the allowable PM emission rate from any fuel-burning equipment with rated heat input capacity of less than 10 MMBtu/hr in operation or under construction on or before January 1, 1972. CITGO states that they do not operate any equipment that is subject to this rule and would therefore like this condition removed.

Condition 8.19.1 is part of Georgia's Title V permit template and is needed because it allows the facility to add any such emission unit(s) without having to reopen or amend the Title V Permit. Condition 8.19.1 will not be removed as requested.

8. Condition 8.19.2:

Condition 8.19.2 specifies the allowable PM emission rate from any fuel-burning equipment with rated heat input capacity of less than 10 MMBtu/hr in operation or under construction after January 1, 1972. CITGO states that they do not operate any equipment that is subject to this rule and would therefore like this condition removed.

Condition 8.19.2 is part of Georgia's Title V permit template and is needed because it allows the facility to add any such emission unit(s) without having to reopen or amend the Title V Permit. Condition 8.19.1 will not be removed as requested.

9. Condition 8.22:

Condition 8.22 is the permit condition that is taken directly from Georgia Rule 391-3-1-.02(2)(n). CITGO states that they are not subject to this rule and would therefore like this condition removed.

Condition 8.22 is part of Georgia's Title V permit template and are needed because it allows the facility to add any such emission unit(s) without having to reopen or amend the Title V Permit. Condition 8.22 will not be removed as requested.

Other Changes

1. Condition 5.2.2:

Condition 5.2.2 requires that CITGO measure and record the oxygen concentration at the exit of the firebox of certain combustion devices once each hour that the device is combusting oil. CITGO does not implement such monitoring at this time and consequently will need time to implement this condition upon permit issuance. Thus, this condition has been revised as follows:

5.2.2 The Permittee shall measure and record the oxygen concentration (%) at the exit from the firebox of each combustion device, B004, B005, F001, and F002, once each hour that the device is combusting residual oil. The Permittee shall record, as deviations to be reported in accordance with Condition 5.3.1, any period of three hours during when the oxygen concentration measure at the exit of each combustion device, B004, B005, F001, and F002, when combusting No. 6 fuel oil, is less than 3.0 percent. The Permittee shall implement this condition within 180 days of Permit issuance. [391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

EPA Comments

EPA submitted to EPD on May 19, 1999 one significant comment and two general comments on the proposed Title V permit for CITGO.

1. Significant Comment - Condition 3.3.1

Condition 3.3.1 establishes the opacity standard for asphalt storage tanks T051, T052, and T053 in accordance with 40 CFR 60 Subpart UU [40 CFR 60.472(c)]. Each of these tanks are equipped with a mist eliminator which minimizes emissions from the tanks. NSPS Subpart UU does not specify specific monitoring parameters for the mist eliminators on these tanks; however, it does require that EPA be provided with a description of the operation of the control device and the process parameters which would indicate proper operation. EPA stated that the proposed Title V permit needs to include provisions requiring adequate periodic monitoring of visible emissions as well as associated record keeping and reporting in Sections 5.2 and 5.3, respectively.

Emissions from the asphalt storage tanks should occur primarily when the tanks are being filled and mixed. Breathing losses are negligible since the asphalt is maintained at a temperature that does not cause the asphalt to volatilize. Verification of continual compliance with Condition 3.3.1 is assessed by monitoring the pressure drop across each mist eliminator, as required by Condition 5.2.1a. Please note that the mist eliminators will only show a pressure drop when the tanks are being filled or mixed. Thus, we believe that Condition 5.2.1a prescribes sufficient periodic monitoring to ensure continual compliance with the opacity standard specified in Condition 3.3.1 and no additional monitoring requirements are prescribed.

2. Significant Comment - Condition 3.4.3

Condition 3.4.3 establishes the opacity standard for heaters F001 and F002 in accordance with Georgia Rule for Air Quality 391-3-1-.02(2)(d)3. The primary fuel for each device is natural gas with residual fuel oil as backup. EPA stated that the proposed Title V permit needs to include provisions requiring adequate periodic monitoring of visible emissions as well as associated record keeping and reporting in Sections 5.2 and 5.3, respectively.

The likelihood of violating the opacity standard when burning natural gas in F001 and F002 is minimal. Thus, no periodic monitoring has been defined for that operational scenario. Condition 5.2.2 requires that CITGO measure and record, once each hour, the oxygen concentration at the exit of the firebox of each combustion device whenever the device is combusting residual oil. These devices will fire residual fuel oil during periods of natural gas curtailment. Hence, EPD believes that hourly monitoring of the oxygen concentration whenever the combustion device burns residual fuel oil is sufficient to assure continual compliance with the opacity standard in Condition 3.4.3.

3. Significant Comment - Condition 3.4.4

Condition 3.4.4 establishes the opacity standard for the facility, excluding the combustion equipment, in accordance with Georgia Rule for Air Quality Control 391-3-1-.02(2)(b). EPA stated that the proposed Title V permit needs to include provisions requiring adequate periodic monitoring of visible emissions as well as associated record keeping and reporting in Sections 5.2 and 5.3.

Emissions points covered by this include the discharge from REF1, the oil water separator, and the storage tanks not subject to 40 CFR 60 Subpart UU. REF1 reduces VOC and condensible PM emissions from the distillation towers by condensation. The likelihood of violation of Georgia Rule (b) at the exhaust of REF1 is minimal because REF1 will condense out the gases which would cause an opacity problem. Thus, no additional periodic monitoring is recommended for REF1. The likelihood of violation of Georgia Rule (b) for the remaining equipment, by their very nature, is minimal; thus, no additional periodic monitoring is required.

4. General Comments - Condition 5.2.2

The EPA comments that the language of Condition 5.2.2 appears not to accurately reflect the intended periodic monitoring for the firebox oxygen concentration and EPD somewhat agrees. We intended to specify that once each hour a measurement (either by installed meter of by separate portable instrumentation) be made and that any three successive values less than the 3.0 percent trigger value would constitute a deviation. Thus, this was not meant to be a continuous monitoring device but rather a periodic measurement procedure. The permit condition will be reworded as follows:

5.2.2 "The Permittee shall measure and record the oxygen concentration(%) at the exit ~~from~~ of the firebox of each combustion device, B004, B005, F001, and F002, once each hour ~~that~~ whenever the device is ~~combusting~~ using residual oil as fuel. The Permittee shall record for each combustion device, as deviations to be reported in accordance with Condition 5.3.1, any period consisting of three successive hourly ~~hours during when the average oxygen concentration measure at the exit of each combustion device, B004, B005, F001, and F002, when combusting No. 6 fuel oil,~~ measurements for which the oxygen concentration is less than 3.0 percent. The Permittee shall implement this condition within 180 days of Permit issuance.

5. General Comments

EPA requested that the latest version of the template be used for Condition Nos. 5.3.1, 6.1.2 and 6.1.3. Those conditions have been revised as requested.

Other Comments

Condition 5.2.6 was added.

EPA Comments Dated June 4, 1999

1. Condition 5.2.2

EPD requested that more detail relating to the establishment of the 3 percent trigger value for oxygen concentration be provided in the statement of basis (i.e., the significance of 3 percent oxygen concentration

and why such a value was selected as defining a deviation. Good combustion of No. 6 (residual) fuel oil will ensure that levels of PM and opacity are below applicable limitations for these pollutants. Several technical documents (Cleaver Brooks *Boiler Room Guide, Combustion Engineering*, and Air Pollution Training Institute's *Combustion Evaluation Student Manual*) were reviewed and all indicated that, for good combustion of residual oil, 10 to 15 percent excess air was necessary. Additionally, below 10 percent excess air, soot could start to develop. Boiler oxygen concentrations corresponding to 10 and 15 percent levels of excess air are 2 and 3 percent, respectively. Based upon this review and evaluation of technical information, a minimum level of 3 percent boiler oxygen was chosen as the trigger value for determining that good combustion was occurring and, as a result, the applicable limitations were not being exceeded.