PREVENTION OF SIGNIFICANT DETERIORATION PERMIT FOR GREENHOUSE GAS EMISSIONS ISSUED PURSUANT TO THE REQUIREMENTS AT 40 CFR § 52.21

March 9, 2014 Proposed Draft

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6

PSD PERMIT NUMBER: PSD-TX-1328-GHG

PERMITTEE: The Dow Chemical Company- Freeport Tx
2301 N. Brazosport Blvd APB Building
Freeport, TX 77541-3257

FACILITY NAME: Dow Texas Operations- Freeport
Light Hydrocarbons Plant No.9

FACILITY LOCATION: 2301 N. Brazosport Boulevard
Freeport, TX 77541-2357

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. Section 7470, *et. Seq.*), and the Code of Federal Regulations (CFR) Title 40, Section 52.21, and the Federal Implementation Plan at 40 CFR § 52.2305 (effective May 1, 2011 and published at 76 FR 25178), the U.S. Environmental Protection Agency, Region 6 is issuing a *Prevention of Significant Deterioration* (PSD) permit to Dow Chemical Company – Freeport TX (Dow Freeport) for Greenhouse Gas (GHG) emissions. The Permit applies to the addition of a new ethylene production facility consisting of eight steam cracking furnaces and related utilities at their Dow Texas Operations Light Hydrocarbon Plant No. 9 (LHC-9) at Freeport, Texas.

Dow Freeport is authorized to construct the new LHC-9 ethylene production facility as described herein, in accordance with the permit application (and plans submitted with the permit application), the federal PSD regulations at 40 CFR § 52.21, and other terms and conditions set forth in this PSD permit in conjunction with the corresponding Texas Commission on Environmental Quality (TCEQ) NSR permit No. 107153/PSDTX1328, as adopted. Failure to comply with any condition or term set forth in this PSD Permit may result in enforcement action pursuant to Section 113 of the Clean Air Act (CAA). This PSD Permit does not relieve Dow Freeport of the responsibility to comply with any other applicable provisions of the CAA (including applicable implementing regulations in 40 CFR Parts 51, 52, 60, 61, 72 through 75, and 98) or other federal and state requirements (including the state PSD program that remains under approval at 40 CFR § 52.2303).

In accordance with 40 CFR §124.15(b), this PSD Permit becomes effective 30 days after the service of notice of this final decision unless review is requested on the permit pursuant to 40 CFR §124.19.

_____ _____

Wren Stenger, Director — Date
Multimedia Planning and Permitting Division

Dow Chemical Company, Freeport TX, LHC-9 (PSD-TX-1328-GHG)
Prevention of Significant Deterioration Permit
For Greenhouse Gas Emissions
Draft Permit Conditions

PROJECT DESCRIPTION

The project includes construction and operation of the Light Hydrocarbons Plant No. 9 (LHC-9) consisting of a new ethylene unit and associated utilities. The plant will process hydrocarbon feedstocks (ethane and propane) to produce nominally 1.5 MM tons per year ethylene and other high value products such as propylene, butadiene, and hydrogen.

The new unit will include eight (8) new steam cracking furnaces, recovery equipment, utility, refrigeration, cooling, and treatment systems. The major pieces of recovery equipment include a quench tower, cracked gas compression, caustic wash tower, chilling train, refrigeration systems, deethanizer, ethylene/ethane (C2) splitter, demethanizer, depropanizer, and debutanizer. In addition, a cooling tower, a flare system, and a waste gas thermal oxidizer is included.

The operating schedule for this facility is 8760 hours per year. This permit authorizes the emissions of GHG from this project, the TCEQ permit 107153/PSD-TX-1328 addresses emissions of non GHG air contaminants for the same project.

EQUIPMENT LIST

Table 1 lists the processes identified by Facility Information Numbers (FIN) and Emission Point Number (EPN) authorized by and subject to the requirements of this GHG PSD permit. No other GHG emitting sources are authorized by this permit.

Table 1. GHG emissions sources authorized by this permit

EPN	FIN	Description
OC2H121	OC2L9H121	Ethane Cracking Furnace, F-121
OC2H122	OC2 L9H122	Ethane Cracking Furnace, F-122
OC2H123	OC2 L9H123	Ethane Cracking Furnace, F-123
OC2H124	OC2 L9H124	Ethane Cracking Furnace, F-124
OC2H125	OC2 L9H125	Ethane Cracking Furnace, F-125
OC2H126	OC2 L9H126	Ethane or Propane Cracking Furnace, F-126
OC2H127	OC2 L9H127	Ethane or Propane Cracking Furnace, F-127
OC2H128	OC2 L9H128	Ethane or Propane Cracking Furnace, F-128
OC2TOX	OC2L9TOX	LHC-9 Thermal Oxidizer (LHC-9TOX)
OC2F597	OC2L9F597	Low Pressure Flare, FS-597
OC2F5961	OC2L9F596	Pressure Assisted Flare, GF-596
OC2FU2	OC2L9FU2	Process Area Fugitives
OC2CT936	OC2L9CT936	Cooling Tower CT-936 Heat Exchanger System
OC2GE1	OC2L9GE1	Backup Generator No. 1
OC2GE2	OC2L9GE2	Backup Generator No. 2

I. GENERAL PERMIT CONDITIONS

A. Permit Expiration

1. As provided in 40 CFR §52.21(r), this PSD Permit shall become invalid if construction:
   a. is not commenced (as defined in 40 CFR §52.21(b)(9)) within 18 months after the approval takes effect; or
   b. is discontinued for a period of 18 months or more; or
   c. is not completed within a reasonable time.
2. Pursuant to 40 CFR §52.21(r), EPA may extend the 18-month period upon a written satisfactory showing that an extension is justified.

B. Permit Notification Requirements

1. Permittee shall notify EPA Region 6 in writing and by electronic mail of the:
   a. date construction is commenced, postmarked within 30 days of such date;
   b. actual date of initial startup, as defined in 40 CFR §60.2, postmarked within 15 days of such date;
   c. date upon which initial performance tests will commence, in accordance with the provisions of Special Condition No.III.B, postmarked not less than 30 days prior to such date. Notification may be provided with the submittal of the performance test protocol required pursuant to Special Condition No.III.B.2.d.

C. Facility Operations

At all times, including periods of startup, shutdown, and maintenance, Permittee shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the EPA, which may include, but is not limited to, monitoring results, review of operating maintenance procedures and inspection of the facility.

D. Malfunction Reporting

1. Permittee shall notify EPA REGION 6 by mail within 48 hours following the discovery of any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner, which results in an increase in GHG emissions above the allowable emission limits stated in Section II of this permit.
2. Within 10 days of the restoration of normal operations after any failure described in General Condition I.D.1 of this permit, Permittee shall provide a written supplement to the initial notification that includes a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed in Section II, the methods utilized to mitigate emissions and the date normal operations were restored.

3. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such malfunction may cause.

E. Right of Entry

1. EPA authorized representatives, or representatives of any air pollution control program with jurisdiction, upon the presentation of credentials, shall be permitted:
   a. to enter the premises where the facility is located or where any records are required to be kept under the terms and conditions of this PSD Permit;
   b. during normal business hours, to have access to and to copy any records required to be kept under the terms and conditions of this PSD Permit;
   c. to inspect any equipment, operation, or method subject to requirements in this PSD Permit; and,
   d. to sample materials and emissions from the source(s).

F. Transfer of Ownership

In the event of any changes in control or ownership of the facilities to be constructed, this PSD Permit shall be binding on all subsequent owners and operators. Permittee shall notify the succeeding owner and operator of the existence of the PSD permit and its conditions by letter; a copy of the letter shall be forwarded to EPA Region 6 within thirty days of the letter signature.

G. Severability

The provisions of this PSD Permit are severable, and, if any provision of the PSD Permit is held invalid, the remainder of this PSD Permit shall not be affected.

H. Adherence to Application and Compliance with Other Environmental Laws

Permittee shall construct and operate this project in compliance with this PSD Permit, the application on which this permit is based, TCEQ PSD Permit PSD-TX-1328 and all other applicable federal, state, and local air quality regulations. This PSD permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.

I. Acronyms and Abbreviations

AVO	Auditory, Visual, and Olfactory
AVG	average
BACT	Best Available Control Technology
CAA	Clean Air Act
CC	Carbon Content
CCS	Carbon Capture and Sequestration
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
dscf	Dry Standard Cubic Foot
EF	Emission Factor
EPN	Emission Point Number
FIN	Facility Identification Number
FR	Federal Register
GCV	Gross Calorific Value
GHG	Greenhouse Gas
gr	Grains
GWP	Global Warming Potential
HHV	High Heating Value
hr	Hour
HRSG	Heat Recovery Steam Generating
HRVOC	Highly Reactive VOC
LAER	Lowest Achievable Emission Rate
lb	Pound
LDAR	Leak Detection and Repair
LHV	lower heating value
MAPD	Methyl Acetylene Propadiene
mm	Million
mmBtu	Million British Thermal Units
MSS	Maintenance, Start-up and Shutdown
NAAQS	National Ambient Air Quality Standards
NNSR	Nonattainment New Source Review
N_2O	Nitrous Oxides
NSPS	New Source Performance Standards
PSD	Prevention of Significant Deterioration
QA/QC	Quality Assurance and/or Quality Control
SCFH	Standard Cubic Feet per Hour
SCR	Selective Catalytic Reduction
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TOC	Total Organic Carbon
TPY	Tons per Year
URL	Universal Resource Locator (web address)
USC	United States Code
VDU	Vapor Destruction Unit
VHP	Very High Pressure
VOC	Volatile Organic Compound

II. EMISSIONS LIMITATIONS AND BACT REQUIREMENTS SUMMARY

A. Annual Emissions Limitations: Table 2

1. The facilities (FINs) listed in Table 2 are authorized to emit GHG pollutants up to the amounts listed in that Table for each respective individual facility through the referenced emissions point numbers (EPNs).
2. The mass emissions rate limitations are based on rolling 12-month total emissions for each facility and include all authorized operating scenarios, including normal operations and planned MSS emissions.
3. Annual CO_2e per facility is calculated by summing the product of the mass emission rate for the air pollutant by the Global Warming Potential (GWP) found in Table A-1 of Subpart A of 40 CFR Part 98 (78 FR 71904) for each pollutant. The relevant GWP values include: CO_2 =1; CH_4 = 25; N_2O = 298.

Table 2. Annual BACT Emissions Limitations for LHC-9

EPN	FIN	Description	GHG Mass Basis Emission Rates		CO_2e
			Pollutant	Tons per Year Per EPN	Tons per Year Per EPN
OC2H121 OC2H122 OC2H123 OC2H124 OC2H125	OC2L9H121 OC2L9H122 OC2L9H123 OC2L9H124 OC2L9H125	Cracking Furnace, F-121 Cracking Furnace, F-122 Cracking Furnace, F-123 Cracking Furnace, F-124 Cracking Furnace, F-125	CO_2 CH_4 N_2O	278,357 5.19 0.52	278,641
OC2H126 OC2H127 OC2H128	OC2L9H126 OC2L9H127 OC2L9H128	Cracking Furnace, F-126 Cracking Furnace, F-127 Cracking Furnace, F-128	CO_2 CH_4 N_2O	301,855 5.63 0.56	302,164
OC2F597	OC2L9F597	Low Pressure Flare, FS-597	CO_2 CH_4 N_2O	14,034 0.22 0.02	14,046
OC2F5961	OC2L9F596	Pressure-Assisted Flare, GF-596	CO_2 CH_4 N_2O	43,910 2.13 0.42	44,089
OC2TOX	OC2L9TOX	LHC-9 TOX	CO_2 CH_4 N_2O	3,320 0.06 0.007	3,324
OC2FU2	OC2L9FU2	Process Area Fugitives	CO_2 CH_4	0.02 3.82	81[1]
OC2CT936	OC2L9CT936	Cooling Tower CT-936 Heat Exchanger System	CH_4	1	25[1]
OC2GE1 OC2GE2	OC2L9GE1 OC2L9GE2	Backup Diesel Generator No. 1 Backup Diesel Generator No. 2	CO_2 CH_4 N_2O	16.04 0.001 0.0001	17
Total of all facilities authorized by this permit			CO_2 CH_4 N_2O	2,358,647 50.07 4.73	2,361,294

[1] Emissions are estimates only, and are controlled through BACT workpractice requirements.

B. BACT Requirements Summary: Table 3

1. Table 3 lists the BACT requirements upon which the annual emissions limitations found in Table 2 are based. The BACT element summary listed in this Table applies to each respective individual facility and must be adhered to.

2. Details of the BACT requirements summarized in this table are found in the relevant Special Conditions of this permit.

Table 3. Summary of BACT requirements upon which Table 2 annual limitations are based

EPN	FIN	Description	BACT Summary[1] Selection applicable to each facility[2]
OC2H121 OC2H122 OC2H123 OC2H124 OC2H125	OC2L9H121 OC2L9H122 OC2L9H123 OC2L9H124 OC2L9H125	Cracking Furnace, F-121 Cracking Furnace, F-122 Cracking Furnace, F-123 Cracking Furnace, F-124 Cracking Furnace, F-125	• Ethane feedstock cracking only. • Avg fuel carbon content < 0.72 lbs carbon per lb fuel 12-month rolling. • Hourly average heat input ≤ 598MMBtu/hr and 12-month rolling average heat input ≤537 mmBtu/hr. • Hourly average CO Concentration :≤50 ppmvd (@ 3% O_2) and 12-month rolling average CO concentration of ≤20 ppmvd(@ 3% O_2). • Avg O_2 ≤ 3.2% ppmvd 12-month rolling. • Avg flue gas exit temperature ≤ 330° F hourly. • ≥ 92% normal operations LHV thermal efficiency. • Avg ratio of CO_2e/ethylene: ≤ 1.1lb/lb hourly and annually. • Good operation and maintenance practices.
\OC2H126 OC2H127 OC2H128	OC2L9H126 OC2L9H127 OC2L9H128	Cracking Furnace, F-126 Cracking Furnace, F-127 Cracking Furnace, F-128	• Ethane or propane feedstock cracking. • Avg fuel carbon content < 0.72 lbs carbon per lb fuel 12-month rolling. • Hourly average heat input ≤ 599MMBtu/hr and 12-month rolling average heat input ≤583 mmBtu/hr. • Hourly average CO Concentration :≤50 ppmvd (@ 3% O_2) and 12-month rolling average CO concentration of ≤20 ppmvd(@ 3% O_2). • Avg O_2 ≤ 3.2% ppmvd 12-month rolling. • Avg flue gas exit temperature ≤ 330° F hourly. • ≥ 92% normal operations LHV thermal efficiency. • Avg ratio of CO_2e/ethylene: ≤ 1.1lb/lb hourly and annually. • Good operation and maintenance practices.
OC2F597	OC2L9F597	Low Pressure Flare, FS-597	Use of good combustion practices Good plant design,operation, and maintenance practices
OC2F5961	OC2L9F596	Pressure-Assisted Flare, GF-596	Use of good combustion practices. Good plant design, operation and maintenance practices
OC2TOX	OC2L9TOX	LHC-9 TOX	• Use of good combustion practices. • Firebox temperature ≥ 1400°F[3]. • VOC + methane outlet concentration of ≤ 10 ppmvd @3%O_2 or a destruction efficiency ≥ 99.9%
OC2FU2	OC2L9FU2	Process Area Fugitives	Use of 28VHP and Connector LDAR TCEQ program
OC2CT936	OC2L9CT936	Cooling Tower CT-936 Heat Exchanger System	Use of cooling tower heat exchanger system requirements of 30 TAC 115 Subchapter H as surrogate for methane leaks
OC2GE1 OC2GE2	OC2L9GE1 OC2L9GE2	Backup Diesel Generator No. 1 Backup Diesel Generator No. 2	Use of good combustion practices. Non-emergency use limited to 96 hours/year each engine. Compliance with manufacturers operation and maintenance requirements.

1 See Special Conditions for details of BACT requirements.

2 Unless otherwise noted, hourly rates are hourly averages and annual rates are 12-month rolling averages.

3. 1400 •F or the minimum established during the performance test as allowed by Special Condition III.A.4.c.

III. SPECIAL PERMIT CONDITIONS

A. Emission Unit BACT Requirements, Operational Requirements and Work Practices

1. LHC-9 combustion device fuel specifications.

   a. Fuel used in the cracking furnaces (EPNs OC2H121 thru OC2H128) are limited to gaseous fuels and may be pipeline quality natural gas or resid gas or off gas or a combination of these fuels (collectively "fuel gas"). The allowed resid gas and off gas fuels are produced on site while the natural gas must be at least pipeline quality. The carbon content of the fuel gas fired in the cracking furnaces shall have an average fuel carbon content not to exceed 0.72 lb carbon/lb fuel on a rolling 365-day average.

   b. Fuel used to fire the thermal oxidizer (EPN OC2TOX), used as purge or supplemental fuel, and pilot gas in the flares (EPNS OC2F5961, OC2F597) shall be pipeline quality natural gas.

   c. Fuel fired in the emergency generators (EPNs OC2GE1 and OC2GE2) shall be limited to low sulfur diesel fuel.

2. **Cracking Furnaces.** Ethane cracking furnaces (EPNs: OC2H121 through OC2H125), and ethane or propane cracking furnaces (EPNs: OC2H126 through OC2H128) shall be designed and operated in accordance with the following requirements:

   a. Fuel firing rate may not exceed 598 mmBtu/hr (hourly average) and ≤ 537 mmBtu/hr (on a 12-month rolling average basis) for each of the five ethane cracking furnaces and may not exceed 599 mmBtu/hr (hourly average) and ≤583mmBtu/hr (on a 12-month rolling average basis) for each of the three ethane or propane cracking furnaces. All heat values are HHV.

   b. CO emissions from each furnace shall not exceed 50 parts per million by volume dry (ppmvd) carbon monoxide (CO) corrected to 3.0% excess oxygen (O_2) on an hourly average basis and 20 ppmvd CO corrected to 3.0% excess O_2 on a rolling 12-month average basis.

   c. Maintain a furnace O_2% to ≤ 3.2% by volume, dry basis on a 12-month rolling average basis.

   d. Maintain an average flue gas temperature not exceeding 330°F on a 12-month rolling basis.

   e. Each of the eight cracking furnaces are limited to ≥92% thermal efficiency (LHV basis) 12-month rolling average basis during normal operations.

   f. Each of the eight cracking furnaces are limited to ≤1.1 lb CO_2e/lb ethylene hourly and ≤1.1lb CO_2e/lb ethylene 12-month rolling average during normal operations.

   g. Decoking cycle emissions (vents) for all furnaces shall be routed to the furnace firebox. Maintenance (including, but not limited to) cleaning of burner tips shall be performed as needed to ensure maximum furnace cracking efficiency.

3. **Flares.** The Low Pressure flare (EPN: OC2F597) and Pressure Assisted Flare (EPN: OC2F5961) are subject to the following requirements:

   a. The routine vent waste gas streams represented in the permit application (Appendix B, updated September 12, 2013) to be routed to the Thermal Oxidizer (EPN OC2TOX) shall be controlled by the Low Pressure Flare at any time that the Thermal Oxidizer is unable to control those same streams.

   b. The flare systems shall be designed such that the combined assist natural gas and waste stream to each flare meets the 40 CFR § 60.18 specifications of minimum heating value and maximum tip velocity under normal, upset, and maintenance flow conditions. The Pressure Assisted Flare, GF-596, (EPN OC2F5961), is excluded from § 60.18 during upset and high pressure conditions, where specific heating value and tip velocity standards must be established and approved by the EPA Region 6 prior to operation of the flare for these purposes.

   c. The heating value and velocity requirements shall be satisfied during operations authorized by this permit. Flare testing per 40 CFR § 60.18(f) may be requested by the appropriate EPA, TCEQ, or local air program personnel with jurisdiction to demonstrate compliance with these requirements.

   d. The flare shall be operated with a flame present at all times and/or have a constant pilot flame. The pilot flame shall be continuously monitored by a thermocouple or an infrared monitor. The time, date, and duration of any loss of pilot flame shall be recorded. Each monitoring device shall be accurate to, and shall be calibrated at a frequency in accordance with, the manufacturer's specifications.

   e. The flare shall be operated with no visible emissions except periods not to exceed a total of five minutes during any two consecutive hours. This shall be ensured by the use of steam assist to the Low pressure Flare FS-597, (EPN OC2F597), and the initial stage of Flare GF-596 (EPN: OC2F5961), and by pressure-assist in the following stages of Flare GF-596. Steam flows shall be monitored and controllable.

   f. The permit holder shall install a continuous flow monitor and composition analyzer that provides a record of the vent stream flow and composition to the flare. The flow monitor sensor and analyzer sample points shall be installed in the vent stream as near as possible to the flare inlet such that the total vent stream to the flare is measured and analyzed. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow and composition shall be recorded each hour.

   g. The monitors shall be calibrated on an annual basis to meet the following accuracy specifications: the flow monitor shall be ±5.0%, temperature monitor shall be ±2.0% at absolute temperature, and pressure monitor shall be ±5.0 mm Hg;

   h. Calibration of the analyzer shall follow the procedures and requirements of Section 10.0 of 40 CFR Part 60, Appendix B, Performance Specification 9, as amended through October 17, 2000 (65 FR 61744), except that the multi-point calibration procedure in Section 10.1 of Performance Specification 9 shall be performed at least once every calendar quarter instead of once every month, and the mid-level calibration check procedure in Section 10.2 of Performance Specification 9 shall be performed at least once every calendar week instead of once every 24 hours. The calibration gases used for calibration procedures shall be in accordance with Section

7.1 of Performance Specification 9. Net heating value of the gas combusted in the flare shall be calculated according to the equation given in 40 CFR §60.18(f)(3) as amended through October 17, 2000 (65 FR 61744).

i. The monitors and analyzers shall operate as required by this section at least 95% of the time when the flare is operational, averaged over a rolling 12 month period. Flared gas net heating value and actual exit velocity determined in accordance with 40 CFR §60.18(f)(4) shall be recorded at least once every 15 minutes. Hourly mass emission rates shall be determined and recorded using the above readings and the emission factors used in the permit application.

j. CO_2 emissions from the flares shall be calculated per the equation for estimating CO_2 emissions as specified in 40 CFR 98.253(b)(1)(ii)(A). The GHG mass emission limits in TPY associated with CH_4 and N_2O are calculated based on emission factors provided in 40 CFR Part 98 Subpart C, Table C-2 using the GWPs as published on 11/29/2013 in (78 FR 71904), site specific analysis of waste gas, and the actual heat input (HHV).

4. **Thermal Oxidizer.** The thermal oxidizer LHC-9 TOX, (EPN OC2TOX), shall be designed and operated in accordance with the following requirements:

a. The VOC +methane concentration in the exhaust gas must be maintained at less than 10 ppmvd corrected to 3 % excess O_2 or the thermal oxidizer must achieve a VOC + methane destruction efficiency greater than 99.9 percent.

b. The permit holder shall install a continuous flow monitor and composition analyzer that provides a record of the vent stream flow and composition to the TOX. The flow monitor sensor and analyzer sample points shall be installed in the vent stream as near as possible to the TOX inlet such that the total vent stream to the TOX is measured and analyzed. Readings shall be taken at least once every 15 minutes and the average hourly values of the flow and composition shall be recorded each hour. A single waste gas continuous flow monitor and composition analyzer may be installed to measure flow to either the TOX or the Low Pressure Flare. If such a device is used, the device to which the waste gas is routed shall be recorded along with the flow and composition data.

c. The firebox exit temperature shall be maintained at not less than 1400 °F or the minimum temperature established during the performance test and exhaust oxygen concentration not less than 3 percent while waste gas is being fed into the oxidizer prior to initial stack testing. After the initial stack test has been completed, the six minute average temperature and six minute average oxygen concentration shall be at greater than the respective hourly average maintained during the most recent satisfactory representative stack testing conducted in accordance with Special Condition No. III.B.2.

d. The thermal oxidizer exhaust temperature and percent excess oxygen shall be continuously monitored and recorded when waste gas is directed to the oxidizer. The measurements systems shall reduce the readings to a 6 minutes or less averaging period and record it at that frequency. The monitoring devices shall meet the following requirements:

(1). The temperature measurement device shall:

(i) be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications, and

(ii) have an accuracy of the greater of ±0.75 percent of the temperature being measured expressed in degrees Celsius or ±2.5ºC.

(2) The oxygen analyzer shall:

(i) be zeroed and spanned daily and corrective action taken when the 24-hour span drift exceeds two times the amounts specified Performance Specification No. 3, 40 CFR Part 60, Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

(ii) be quality-assured at least semiannually using cylinder gas audits (CGAs) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, § 5.1.2, with the following exception: a relative accuracy test audit is not required once every four quarters (i.e., two successive semiannual CGAs may be conducted). An equivalent quality-assurance method approved by the EPA may also be used. Successive semiannual audits shall occur no closer than four months. Necessary corrective action shall be taken for all CGA exceedances of ±15 percent accuracy and any continuous emissions monitoring system downtime in excess of 5 percent of the incinerator operating time. These occurrences and corrective actions shall be reported to the EPA Region 6 on a quarterly basis. Supplemental stack concentration measurements may be required at the discretion of the EPA Region 6.

e. Valid, quality assured data must be generated when the thermal oxidizer is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the thermal oxidizer operated over the previous rolling 12 month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded.

f. During any TOX outage, the waste gas streams represented in permit application (Appendix B update dated September 12, 2013) to be routed to the Thermal Oxidizer (EPN:OC2TOX) shall be sent to the Low Pressure Flare (EPN: FS-597). The waste gas streams may not be routed to both control devices simultaneously. Monthly records of TOX outages shall include the downtimes, the operational times, rates and volumes of waste gas being rerouted to the flare.

g. Emissions shall be calculated based on the measured flows and waste gas composition using the equations found in 40 CFR 98 Subpart C, Tier 3, Equation C-5 for CO_2. Emissions of CH_4 and N_2O are to be calculated in accordance with 40 CFR 98 Subpart C Equation C-8.

5. The following requirements apply to capture systems for the flares and the thermal oxidizer.

   a. Conduct a once a month visual, audible, and/or olfactory inspection of the capture system to verify there are no leaking components in the capture system or verify the capture system is leak-free by inspecting in accordance with 40 CFR Part 60, Appendix A, Test Method 21 once each calendar year. Leaks, including methane leaks, shall be indicated by an instrument reading greater than or equal to 500 ppmv above background.

   b. Install a flow indicator that records and verifies zero flow at least once every fifteen minutes immediately downstream of each valve that if opened would allow a vent stream to bypass the control device and be emitted, either directly or indirectly, to the atmosphere; or once a month, inspect the valves, verifying the position of the valves and the condition of the car seals prevent flow out the bypass.

   c. The date and results of each inspection performed shall be recorded. If the results of any inspection are not satisfactory, the deficiencies shall be recorded and the permit holder shall promptly take necessary corrective action, recording each action with the date completed.

6. **Cooling Tower.** The cooling tower CT-936 and heat exchange system (EPN OC2CT936) shall be designed and operated in accordance with the following requirements:

   a. As a surrogate for methane and because methane could be a constituent of Highly Reactive Volatile Organic Compound (HRVOC) bearing streams sent to the cooling tower and heat exchange system, such waters shall be monitored and controlled for HRVOC emissions in accordance with the requirements of 30 TAC Chapter 115 Subchapter H.

   b. Cooling water sampling shall be representative of the water being cooled in the tower and ensure potential heat exchanger HRVOC leaks to the cooling water can be detected and shall be conducted using the sampling method outlined in 30 TAC Chpater 115 Subchapter H, and must include methane as one of the speciated materials required to be sample under the Subchapter H rules. Alternate sampling and analysis methods may be used to comply, with written approval from the EPA Region 6.

   c. Records of all instrument calibrations and test results and process measurements made for the emission calculations, including such data for methane, shall be retained.

   d. Identification of all leaks detected and corrective actions taken.

   e. All sampling, analysis and emissions calculation records must be kept for 5 years.

7. Process wastewater shall be hard piped without venting from the process equipment to the wastewater treatment system.

8. **Generators.** The diesel engines used to drive emergency generators (EPNs: OC2GE1 and OC2GE2) shall be fueled with low sulfur diesel, are each limited to 96 hours of non-emergency operation per year, and must comply with the requirements of 40 CFR 60 Subpart IIII . Records of the dates, times and purpose of operation of the engines shall

be maintained.

9. **Fugitives.** Process Area Fugitive Emissions (EPN: OC2FU2): Piping, Valves, Connectors, Pumps, Agitators, and Compressors - in VOC, including methane, service (28VHP+methane).

   Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment:

   a. The requirements of paragraphs f and g shall not apply (1) where the VOC (including methane) has an aggregate partial pressure or vapor pressure of less than 0.044 pounds per square inch, absolute (psia) at 68° F or (2) operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list or by one of the methods described below to be made readily available upon request.

      The exempted components may be identified by one or more of the following methods:

      (1) piping and instrumentation diagram (PID);
      (2) a written or electronic database or electronic file;
      (3) color coding;
      (4) a form of weatherproof identification; or
      (5) designation of exempted process unit boundaries.

   b. Construction of new and reworked piping, valves, pump systems, and compressor systems shall conform to applicable American National Standards Institute (ANSI), American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), or equivalent codes.

   c. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical. New and reworked buried connectors shall be welded.

   d. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Difficult-to-monitor and unsafe-to-monitor valves, as defined by Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115), shall be identified in a list to be made readily available upon request. The difficult-to-monitor and unsafe-to-monitor valves may be identified by one or more of the methods described in subparagraph A above. If an unsafe to monitor component is not considered safe to monitor within a calendar year, then it shall be monitored as soon as possible during safe to monitor times. A difficult to monitor component for which quarterly monitoring is specified may instead be monitored annually.

   e. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. Gas or hydraulic testing of the new and reworked piping connections at no less than operating pressure shall be performed prior to returning the components to service or they shall be monitored for leaks using an approved gas analyzer within 15 days of the components being returned to service. Adjustments shall be made as necessary to obtain leak-free performance. Connectors shall be inspected by visual, audible,

and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with an appropriately sized cap, blind flange, plug, or a second valve to seal the line. Except during sampling, both valves shall be closed. If the isolation of equipment for hot work or the removal of a component for repair or replacement results in an open ended line or valve, it is exempt from the requirement to install a cap, blind flange, plug, or second valve for 72 hours. If the repair or replacement is not completed within 72 hours, the permit holder must complete either of the following actions within that time period;

(1) a cap, blind flange, plug, or second valve must be installed on the line or valve; or

(2) the open-ended valve or line shall be monitored once for leaks above background for a plant or unit turnaround lasting up to 45 days with an approved gas analyzer and the results recorded. For all other situations, the open-ended valve or line shall be monitored once within the 72 hour period following the creation of the open ended line and monthly thereafter with an approved gas analyzer and the results recorded. For turnarounds and all other situations, leaks are indicated by readings of 500 ppmv and must be repaired within 24 hours or a cap, blind flange, plug, or second valve must be installed on the line or valve.

f. Accessible valves shall be monitored by leak checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. If a relief valve is equipped with rupture disc, a pressure-sensing device shall be installed between the relief valve and rupture disc to monitor disc integrity.

A check of the reading of the pressure-sensing device to verify disc integrity shall be performed at least quarterly and recorded in the unit log or equivalent. Pressure-sensing devices that are continuously monitored with alarms are exempt from recordkeeping requirements specified in this paragraph. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

The gas analyzer shall conform to requirements listed in Method 21 of 40 CFR part 60, appendix A. The gas analyzer shall be calibrated with methane. In addition, the response factor of the instrument for a specific VOC of interest shall be determined and meet the requirements of Section 8 of Method 21. If a mixture of VOCs is being monitored, the response factor shall be calculated for the average composition of the process fluid. A calculated average is not required when all of the compounds in the mixture have a response factor less than 10 using methane. If a response factor less than 10 cannot be achieved using methane, then the instrument may be calibrated with one of the VOC to be measured or any other VOC so long as the instrument has a response factor of less than 10 for each of the VOC (including methane) to be measured.

Replacements for leaking components shall be re-monitored within 15 days of being placed back into VOC (including methane) service.

g. Except as may be provided for in the special conditions of this permit, all pump,

compressor, and agitator seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of methane from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic-driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.

h. Damaged or leaking valves or connectors found to be emitting VOC (including methane) in excess of 500 parts per million by volume (ppmv) or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. Damaged or leaking pump, compressor, and agitator seals found to be emitting VOC (including methane) in excess of 2,000 ppmv or found by visual inspection to be leaking (e.g., dripping process fluids) shall be tagged and replaced or repaired. A first attempt to repair the leak must be made within 5 days and a record of the attempt shall be maintained.

i. A leaking component shall be repaired as soon as practicable, but no later than 15 days after the leak is found. If the repair of a component would require a unit shutdown that would create more emissions than the repair would eliminate, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging within 15 days of the detection of the leak. A listing of all components that qualify for delay of repair shall be maintained on a delay of repair list. The cumulative daily emissions from all components on the delay of repair list shall be estimated by multiplying by 24 the mass emission rate for each component calculated in accordance with the instructions in 30 TAC 115.782 (c)(1)(B)(i)(II). The calculations of the cumulative daily emissions from all components on the delay of repair list shall be updated within ten days of when the latest leaking component is added to the delay of repair list. When the cumulative daily emission rate of all components on the delay of repair list times the number of days until the next scheduled unit shutdown is equal to or exceeds the total emissions from a unit shutdown as calculated in accordance with 30 TAC 115.782 (c)(1)(B)(i)(I), the EPA, the TCEQ Regional Manager and any local programs shall be notified and may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown. This notification shall be made within 15 days of making this determination.

j. Records of repairs shall include date of repairs, repair results, justification for delay of repairs, and corrective actions taken for all components. Records of instrument monitoring shall indicate dates and times, test methods, and instrument readings. The instrument monitoring record shall include the time that monitoring took place for no less than 95% of the instrument readings recorded. Records of physical inspections shall be noted in the operator's log or equivalent.

k. Alternative monitoring frequency schedules of 30 TAC §§ 115.352 - 115.359 or

National Emission Standards for Organic Hazardous Air Pollutants, 40 CFR Part 63, Subpart H, may be used in lieu of items f through g of this condition.

l. Compliance with the requirements of this condition does not assure compliance with requirements of 30 TAC Chapter 115, an applicable New Source Performance Standard (NSPS), or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.

10. In addition to the weekly physical inspection required by item e of Special Condition III.A.9, all accessible connectors in VOC (including methane) service shall be monitored quarterly with an approved gas analyzer in accordance with items f thru j of Special Condition III.A.9 (28CNTQ+methane).

a. Connectors may be monitored on a semiannual basis if the percent of connectors leaking for two consecutive quarterly monitoring periods is less than 0.5 percent.

Connectors may be monitored on an annual basis if the percent of connectors leaking for two consecutive semiannual monitoring periods is less than 0.5 percent.

If the percent of connectors leaking for any semiannual or annual monitoring period is 0.5 percent or greater, the facility shall revert to quarterly monitoring until the facility again qualifies for the alternative monitoring schedules previously outlined in this paragraph.

b. The percent of connectors leaking used in paragraph A shall be determined using the following formula:

((Cl + Cs) x 100)/Ct = Cp

Where:

Cl=the number of connectors found leaking by the end of the monitoring period, either by Method 21 or sight, sound, and smell.

Cs=the number of connectors for which repair has been delayed and are listed on the facility shutdown log.

Ct=the total number of connectors in the facility subject to the monitoring requirements, as of the last day of the monitoring period, not including nonaccessible and unsafe-to-monitor connectors.

Cp=the percentage of leaking connectors for the monitoring period.

B. Demonstration of Compliance: Performance Testing

1. Sampling ports and platform(s) shall be incorporated into the design of the Cracking Furnace stacks, EPNs OC2H121 to OC2H128; the thermal oxidizer waste gas line and stack, EPN OC2TOX; the waste gas line to the Pressure Assisted and Low Pressure Flares, EPNs OC2F5961 and OC2F597 respectively, according to the specifications set forth in Chapter 2, "Stack Sampling Facilities" of the TCEQ Sampling Procedures Manual. The referenced chapter of the manual can be found at the TCEQ Air Regulatory

Compliance web page: http://www.tceq.state.tx.us/field/acguide.html.

The permit holder is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense, including the sampling of the cooling tower under Special Condition No. III.A.6. Sampling shall be conducted in accordance with the appropriate procedures of the TCEQ Sampling Procedures Manual and the U.S. Environmental Protection Agency (EPA) Reference Methods.

2. The permit holder shall perform stack sampling and other testing as required to:

   a. Establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the following facilities:

      (1) Steam cracking furnaces: four representative steam cracking furnaces shall be tested (three cracking ethane feedstock (from EPNs: OC2H121-125) and one cracking propane feedstock (two from EPNs: OC2H126-128));

      (2) Thermal Oxidizer, EPN OC2TOX.

      (3) Each flare (EPNs: OC2F5961 and OC2F597), in accordance with Special Condition No. III.B.3, if so required by the EPA at initial startup. The nature and extent of initial performance testing, if required, shall be determined at the time of the pre-test meeting.

      Such testing shall be used to demonstrate or establish compliance with the emissions rates in Table 2.

   b. Establish compliance with the additional BACT and operational requirements found in Special Condition No.s III.A.1 (fuel carbon content), III.A.2 (steam cracking furnaces), III.A.3 (Flare requirements), and III.A.4 (TOX requirements).

   c. Requests to waive testing for any pollutant specified in this condition shall be submitted to EPA Region 6. Test waivers and alternate/equivalent procedure proposals for Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60) testing which must have EPA approval shall be submitted to EPA Region 6..

   d. The EPA Region 6 shall be notified not less than 45 days prior to sampling. The notice shall include:

      (1) Proposed date for pretest meeting.

      (2) Date sampling will occur.

      (3) Name of firm conducting sampling.

      (4) Type of sampling equipment to be used.

      (5) Method or procedure to be used in sampling.

      (6) Description of any proposed deviation from the sampling procedures specified in this permit or TCEQ/EPA sampling procedures.

      (7) Procedure/parameters to be used to determine worst case emissions including but not limited to flow, composition, and HHV of fuel, fuel and waste gas flow, and the temperature of the steam cracking furnaces and thermal oxidizer, and waste gas flow and composition, during the sampling period.

The purpose of the pretest meeting is to review the necessary sampling and testing procedures, to provide the proper data forms for recording pertinent data, and to review the format procedures for the test reports. The EPA Region 6 must approve any deviation from specified sampling procedures.

e. Testing for air contaminants emitted and BACT operational and workpractice limitations include but are not limited to:

(1) From the steam cracking furnaces:

(i) CO_2, CO, and O_2;

(ii) Average Heat Input (HHV), fuel flow,composition, and molecular weight, flue gas exit temperature, furnace thermal efficiency, CO_2e to ethylene ratio.

(2) From the flares, when required to be tested, shall be tested for the parameters established during the pre-test meeting.

(3) From the thermal oxidizer:

(i) CO_2, CO, VOC, and O_2;

(ii) Fuel and waste gas flow, composition, and molecular weight, furnace temperature, and destruction efficiency.

f. Sampling shall occur within 60 days after startup for the flares (if flare testing is required), the steam cracking furnaces, and, all sources that can direct flow to the Thermal Oxidizer are operational, but no later than 180 days after initial start-up of the facilities controlled by the Thermal Oxidizer and at such other times as may be required by the TCEQ Executive Director. Requests for additional time to perform sampling shall be submitted to the appropriate regional office.

g. The plant shall operate as close as technically practicable to the maximum fuel firing rates to the furnaces and normal fuel and maximum waste gas rates to the thermal oxidizer, and normal operations to the flares (if the flares are to be tested) during stack emission testing. Primary operating parameters that enable determination of maximum rate shall be monitored and recorded during the stack test. These parameters shall be determined at the pretest meeting and shall be stated in the sampling report. Permit conditions and parameter limits may be waived during stack testing performed under this condition if the proposed condition/parameter range is identified in the test notice specified in paragraph III.B.2.d above and accepted by the EPA Region 6. Permit allowable emissions and emission control requirements are not waived and still apply during stack testing periods. If the plant is unable to operate at maximum rates during testing, then future rates may be limited to the rates established during testing. Additional stack testing may be required when higher rates are achieved.

h. Three copies of the final sampling report shall be forwarded to the EPA Region 6 and to the appropriate TCEQ Regional Office within 60 days after sampling is completed. Sampling reports shall comply with the provisions of Chapter 14, "Contents of Sampling Reports" of the TCEQ Sampling Procedures Manual. Note, two of the copies may be electronic as specified in the Chapter 14 Guidance. The referenced chapter of the manual can be found at the TCEQ Air Regulatory Compliance web

page: http://www.tceq.state.tx.us/field/acguide.html

i. For all annual emissions or operational limitations, a projection of test period results against annual operations shall be made and documented. If the calculated emissions values or operational parameters total do not project to violate the annual limits, then no compliance strategy needs to be developed. If the contrary is true, then for each such parameter, the facility shall:

(1) Document the exceedance in the test report; and,

(2) Explain within the report how the facility will assure compliance with the limitation(s) projected to not be met.

C. Continuous Compliance Demonstration for Steam Cracking Furnaces

1. The permit holder shall install, calibrate, and maintain continuous emission monitoring systems (CEMS) to measure and record the in-stack concentration of CO and O_2 and a continuous fuel flow and composition monitoring system to measure and record a speciated fuel usage to determine the firing rate, exhaust flow in each furnace, and a continuous flue gas temperature monitor.

   a. The CEMS shall meet the design and performance specifications, pass the field tests, and meet the installation requirements and the data analysis and reporting requirements specified in the applicable Performance Specification Nos. 1 through 9, Title 40 Code of Federal Regulation Part 60 (40 CFR Part 60), Appendix B and in 40 CFR §60.13. If there are no applicable performance specifications in 40 CFR Part 60, Appendix B, contact the EPA Region 6 for requirements to be met.

   b. The CEMS shall be zeroed and spanned daily, and corrective action taken when the 24-hour span drift exceeds two times the amounts specified in the applicable Performance Specification Nos. 1 through 9, 40 CFR Part 60, Appendix B, or as specified by the TCEQ if not specified in Appendix B. Zero and span is not required on weekends and plant holidays if instrument technicians are not normally scheduled on those days.

      Each CO and O_2 CEMs shall be quality assured daily and maintained at the frequency interval and in a manner in accordance with the requirements of the CEMs system manufacturer. Perform Cylinder Gas Audits (CGA) in accordance with 40 CFR Part 60, Appendix F, Procedure 1, Section 5.1.2, with the following exception: a relative accuracy test audit (RATA) is not required once every four quarters (i.e., four successive quarterly CGA may be conducted). An equivalent quality-assurance method approved by the EPA Region 6 may also be used. Successive quarterly audits shall occur no closer than two months. Supplemental stack concentration measurements may be required at the discretion of the EPA Region 6.

   c. Furnace stack temperature shall be monitored and recorded continuously. The fuel flow monitor and composition analyzer shall be installed such that the total fuel flow to each furnace is measured and analyzed continuously.

The monitors shall be calibrated on an annual basis to meet the following accuracy specifications: the flow monitor shall be ±5.0%, temperature monitor shall be ±2.0% at absolute temperature, and pressure monitor shall be ±5.0 mm Hg. Calibration of the fuel analyzer shall follow the procedures and requirements the manufacturer. Fuel flow and composition monitors shall comply with the relevant requirements of 40 CFR §98.34.

d. The CEMS data shall be reduced to at least 1-hour average concentrations and combined with the total fuel flow and average fuel composition data for the hour in accordance with EPA Reference Method 19 and the representations in the permit application to determine and record the hourly average flow weighted % O_2 and ppmvd CO at 3% O_2. Hourly CO_2, CH_4, N_2O, and CO_2e shall be calculated in accordance with the methods in 40 CFR 98 Subchapter C for each furnace at least once every day. The flow weighted average 12 month rolling average %O_2 and ppmvd CO at 3% O_2, shall be determined and recorded monthly. Data regarding the state of furnace operation (normal operations, startup, shutdown, upset, down, etc) shall be maintained concurrent with the CEMs data for each furnace.

e. All monitoring data shall be maintained by the source for 5 years, and quality-assurance data shall be maintained by the source for the lesser of 5 years or the period of time in which the monitored values remain relevant to support demonstrations of compliance. The data may, at the discretion of the EPA, be used to determine compliance with the conditions of this permit.

f. The EPA Region 6 and the appropriate TCEQ regional office shall be notified at least 30 days prior to any required RATA in order to provide them the opportunity to observe the testing.

g. Quality-assured (or valid) data must be generated when the cracking furnace is operating except during the performance of a daily zero and span check. Loss of valid data due to periods of monitor break down, out-of-control operation (producing inaccurate data), repair, maintenance, or calibration may be exempted provided it does not exceed 5 percent of the time (in minutes) that the cracking furnace operated over the previous rolling 12-month period. The measurements missed shall be estimated using engineering judgment and the methods used recorded. Options to increase system reliability to an acceptable value, including a redundant CEMS, may be required by the EPA Region 6.

D. Recordkeeping Requirements Summary

1. The following records shall be kept at the plant in a form suitable for inspection for the life of the permit. All records required in this permit shall be made immediately available upon request to representatives of the EPA, the TCEQ, or any air pollution control agency with jurisdiction:

   a. Permit application dated November 28, 2012 and subsequent application related submittals and representations submitted to EPA Region 6.

b. A complete copy of stack testing reports and other records of the performance testing including all parameter monitoring records relevant to the intent of stack tests or the equivalent for facilities authorized by this permit.

c. Analyzer and other instrumentation manufacturer's specifications and instructions, and any accepted practice installation, operation and maintenance guidelines utilized that may apply to stack testing records.

2. The following data shall be recorded and maintained by the permit holder for five years and shall be made available upon request to representatives of the EPA, the TCEQ, or any local air pollution control program having jurisdiction:

a. Records for each furnace, EPNs OC2H121 through 128 as follows:

(1) CEMS hourly average CO and O_2 monitoring data.

(2) Fifteen minute and hourly average fuel composition, flow rates and heating value in mmBtu/hr [HHV].

(3) Hourly and 12 month rolling mass emissions rates of CO_2, CH_4, and N_2O, and CO_2e emissions data.

(4) The hourly average % O_2 and ppmvd CO at 3% O_2 for each furnace and the flow weighted average 12 month rolling %O_2 and ppmvd CO at 3% O_2.

(5) Daily average thermal efficiency calculated on a monthly basis.

(6) Analyzer maintenance and calibration.

(7) CEMS daily and quarterly QA/QC data.

(8) CEMS and fuel composition and flow measurement downtime.

(9) Records of furnace operations, including the operating mode and time (startup, shutdown, decoking, normal operations, etc). Records of all maintenance activities performed, including decoking operations, the time that they began and duration of events.

b. Records for each Flare, EPNs OC2F5961 and OC2F597, as required in Special Condition III.A.3 as follows:

(1) Continuous flare pilot monitoring.

(2) Steam flow records.

(3) 15 minute and average hourly values of the vent stream flow and composition to the flares.

(4) Analyzer maintenance, calibration and instrument accuracy determination and data.

(5) 15 minute flared gas net heating value and exit velocity.

(6) Hourly mass emission rates for CO_2, CH_4, and N_2O, calculated CO_2e from the flares.

c. Records for the Thermal Oxidizer LHC-9 TOX (EPN OC2TOX) as required in Special Condition III.A.4 as follows:

(1) Firebox exit temperature and percent O_2 as 6-minute averages.

(2) Analyzer maintenance, calibration and accuracy data, including manufacturer's specifications and accepted practices.

(3) Corrective actions and down time data.

d. Records of compliance with the Thermal Oxidizer and Flares capture system as required in Special Condition III.A.5 as follows:

(1) 15 minute potential bypass flow, if utilized.

(2) All monthly and annual inspection dates and results.

(3) Corrective action timing and dates.

e. Records for the Cooling Tower (EPNs OC2CT936) as required in Special Condition III.A.6 as follows:

(1) Cooling water circulation data.

(2) Measured hourly HRVOC, estimated hourly methane and monthly methane analysis of cooling tower return water data.

(3) Any corrective actions taken.

f. Records of the dates, times and purpose of operation each month for the diesel engines as required in Special Condition III.A.8.

g. Records for the leak detection and repair programs associated with EPN OC2FU2 as required by Special Conditions III.A.9 and 10 as follows:

(1) Low vapor pressure and vacuum service equipment exempted from instrument monitoring, and difficult-to-monitor and unsafe-to-monitor valves identification.

(2) Piping pressure testing, if utilized.

(3) 12 hour and weekly walk through notes.

(4) Open-ended valve or line date and time.

(5) Monitoring and maintenance program observations, measurements, instrument calibrations and component repair results.

(6) Delay of repair rationale and potential emission data.

(7) Alternate monitoring frequency data justification.

h. Documentation sufficient to demonstrate compliance with the emission rates listed on Table 2 entitled "Annual BACT Emissions Limitations for LHC-9" and the BACT and other limitations summarized in Table 3 entitled "BACT requirements summary upon which Table 2 annual emissions limitations are based" and detailed in Special Condition No.s: III.A.1 thru III.A.10.

i. Permittee shall maintain records and submit a written report of all excess emissions or instance of failure to meet any of the BACT or other operational limitations to EPA semi-annually, except when: more frequent reporting is specifically required by an

applicable subpart; or the Administrator or authorized representative, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. The first semiannual report is due within 180 days of startup and may cover a shorter period of time to allow aligning of this report with any required Title V deviation reports. Subsequent reports are due on the 30th day following the end of each semi-annual period and shall include the following for each instance of excess emissions or failure to meet a BACT or operational requirement:

(1) Time intervals, data and magnitude of the excess emissions, the nature and cause (if known), corrective actions taken and preventive measures adopted;

(2) Applicable time and date of each period during which the monitoring equipment was inoperative (monitoring down-time);

(3) A statement in the report of a negative declaration; that is; a statement when no excess emissions occurred or when the monitoring equipment has not been inoperative, repaired or adjusted;

(4) Any failure to conduct any required source testing, monitoring, or other compliance activities;

(5) Any failure to meet any of the BACT or operational limitations set forth in this permit; and,

(6) Any violation of limitations on operation, including but not limited to restrictions on hours of operation of the emergency generator or fire pump.

Excess emissions shall be defined as any period in which the facility emissions exceed a maximum emission limit set forth in this permit, a malfunction occurs of an emission unit listed in the Equipment List that results in excess GHG emissions, or any other unauthorized GHG emissions occur.

Excess emissions indicated by GHG emission source certification testing or compliance monitoring shall be considered violations of the applicable emission limits in Table 2 for the purpose of this permit.

j. Unless otherwise noted, instruments and monitoring systems required by this PSD permit shall have a 95% on-stream time on a 12-month rolling average basis.

IV. Agency Notifications

Permittee shall submit GHG permit applications, permit amendments, and other applicable permit information to:

Multi Media Planning and Permitting Division
EPA Region 6
1445 Ross Avenue (6 PD-R)
Dallas, TX 75202

Email: Group R6AirPermits@EPA.gov

Permittee shall submit a copy of all compliance and enforcement correspondence as required by this Approval to Construct to:

Compliance Assurance and Enforcement Division
EPA Region 6
1445 Ross Avenue (6EN)
Dallas, TX 75202