

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

#### **U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION 6**

| PSD PERMIT NUMBER: | PSD-TX-760-GHG   |
|--------------------|--|
| · PERMITTEE:       | Formosa Plastics Corporation, Texas                                      |
| FACILITY NAME:     | Chemical Complex Expansion: Two New<br>Combined-Cycle Gas-Fired Turbines |
| FACILITY LOCATION: | 201 Formosa Drive  |
|                    | Point Comfort, Texas 77978   |

Pursuant to the provisions of the Clean Air Act (CAA), Subchapter I, Part C (42 U.S.C. § 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 the Formosa Plastics Corporation, Texas (Formosa) for Greenhouse Gas (GHG) emissions. The Permit applies to the expansion of the existing utility plant at the Point Comfort, Texas chemical complex by adding two natural gas-fired combined-cycle turbines to the existing six combined-cycle gas turbines.

Formosa is authorized to construct two new natural gas-fired combined-cycle gas turbines 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) PSD permit No. PSD-TX-760M9. 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 Formosa 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)(3), this PSD Permit becomes effective immediately upon issuance of this final decision.

Wren Stenger, Director U Multimedia Planning and Permitting Division

8/1/14 Date

### Formosa Plastics Corporation, Texas (PSD-TX-760-GHG) Prevention of Significant Deterioration Permit For Greenhouse Gas Emissions Final Permit Conditions

#### **PROJECT DESCRIPTION**

Formosa is proposing to add two new gas-fired combined-cycle gas turbines to the existing chemical complex's utility plant in Point Comfort, C3alhoun County, Texas. The two proposed combined-cycle gas turbines project is to expand the existing utility plant's generation capacity to support the overall chemical complex expansion project. Each gas turbine would have a capacity to generate 80 megawatts (MW) of gross electrical power. The existing utility plant will consist of the six existing General Electric (GE) 7EA gas-fired turbines plus the two proposed GE 7EA gas-fired turbines with duct burners, for a total of eight, each exhausting to a dedicated heat recovery steam generator (HRSG) to produce steam and electricity for the multiple operating plants at the existing Formosa chemical complex.

Formosa will consist of the following sources of GHG emissions:

- Two natural gas-fired combined-cycle combustion turbines equipped with dry low-NOx combustors;
- Two HRSG with duct burners;
- Natural gas and Olefins Unit (OL) Tail Gas piping and metering fugitives;
- Electrical equipment insulated with sulfur hexafluoride (SF<sub>6</sub>); and
- Turbine startup natural gas purges.

#### **EQUIPMENT LIST**

The following devices are subject to this GHG PSD permit:

| FIN                    | EPN                    | Description   |  |  |
|------------------------|------------------------|---|--|--|
| 7K<br>7L               | 7K<br>7L               | 2 Natural Gas-Fired Combined-cycle Combustion Turbines rated at 80 MW each. The combustion turbines are equipped with heat recovery steam generators (HRSG), duct burners, and selective catalytic reduction (SCR). |  |  |
| 7K-NGVENT<br>7L-NGVENT | 7K-NGVENT<br>7L-NGVENT | A portion of the natural gas supply line is purged through a purge vent stack during startup of each gas turbine.   |  |  |
| SF <sub>6</sub> -FUG   | SF <sub>6</sub> -FUG   | SF <sub>6</sub> Insulated Electrical Equipment (i.e., circuit breakers) with 248 lb SF <sub>6</sub> capacity per circuit breaker.   |  |  |
| NG-FUG                 | NG-FUG                 | Natural Gas Fugitives.  |  |  |

#### I. GENERAL PERMIT CONDITIONS

#### A. **PERMIT EXPIRATION**

As provided in 40 CFR §52.21(r), this PSD Permit shall become invalid if construction:

- 1. is not commenced (as defined in 40 CFR §52.21(b)(9)) within 18 months after the approval takes effect; or
- 2. is discontinued for a period of 18 months or more; or
- 3. is not completed within a reasonable time.

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**

Permittee shall notify EPA Region 6 in writing or by electronic mail of the:

- 1. date construction is commenced, postmarked within 30 days of such date;
- 2. actual date of initial startup, as defined in 40 CFR §60.2, postmarked within 15 days of such date; and
- date upon which initial performance tests will commence, in accordance with the provisions of Section V, 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 Condition V.C.

# C. FACILITY OPERATION

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 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 Sections II and III of this permit.
- 2. Within 10 days of the restoration of normal operations after any failure described in I.D.1., 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 and III, and the methods utilized to mitigate emissions and restore normal operations.
- 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**

EPA authorized representatives, upon the presentation of credentials, shall be permitted:

- 1. 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;
- 2. 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;
- 3. to inspect any equipment, operation, or method subject to requirements in this PSD Permit; and,
- 4. 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 this project in compliance with this PSD Permit, the application on which this permit is based, the TCEQ PSD Permit PSD-TX-760M9 (when issued) 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               | Audio/Visual/Olfactory                    |  |  |  |
|-------------------|---|--|--|--|
| BACT              | Best Available Control Technology         |  |  |  |
| CAA               | Clean Air Act                             |  |  |  |
| CC                | Carbon Content                            |  |  |  |
| CCS               | Carbon Capture and Storage                |  |  |  |
| CEMS              | Continuous Emissions Monitoring System    |  |  |  |
| CFR               | Code of Federal Regulations               |  |  |  |
| CH <sub>4</sub>   | Methane                                   |  |  |  |
| CHP               | Combined Heat and Power                   |  |  |  |
| $CO_2$            | Carbon Dioxide                            |  |  |  |
| CO <sub>2</sub> e | Carbon Dioxide Equivalent                 |  |  |  |
| СТ                | Combustion Turbine                        |  |  |  |
| DCS               | Distributed Control System                |  |  |  |
| DLNB              | Dry Low-NO <sub>x</sub> Burner            |  |  |  |
| 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                        |  |  |  |
| HRSG              | Heat Recovery Steam Generator             |  |  |  |
| hr                | Hour                                      |  |  |  |
| LAER              | Lowest Achievable Emission Rate           |  |  |  |
| lb                | Pound                                     |  |  |  |
| LDAR              | Leak Detection and Repair                 |  |  |  |
| MMBtu             | Million British Thermal Units             |  |  |  |
| MSS               | Maintenance, Start-up and Shutdown        |  |  |  |
| MW                | Megawatt                                  |  |  |  |
| $N_2O$            | Nitrous Oxides                            |  |  |  |
| NO <sub>x</sub>   | Nitrogen Oxides                           |  |  |  |
| NSPS              | New Source Performance Standards          |  |  |  |
| OL                | Olefins Unit Tail Gas                     |  |  |  |
| PSD               | Prevention of Significant Deterioration   |  |  |  |
| QA/QC             | Quality Assurance and/or Quality Control  |  |  |  |
| SCFH              | Standard Cubic Feet per Hour              |  |  |  |
| SCR               | Selective Catalytic Reduction             |  |  |  |
| $SF_6$            | Sulfur Hexafluoride                       |  |  |  |
| TAC               | Texas Administrative Code                 |  |  |  |
| TCEQ              | Texas Commission on Environmental Quality |  |  |  |
| TPY               | Tons per Year                             |  |  |  |
| USC               | United States Code                        |  |  |  |
| VOC               | Volatile Organic Compound                 |  |  |  |

| E.        |  |
|-----------|--|
| -         |  |
|           |  |
|           |  |
| ≥         |  |
| Π         |  |
| б         |  |
| Ξ         |  |
| Q         |  |
|           |  |
| ш         |  |
| >         |  |
| Η         |  |
| -         |  |
| σ         |  |
| $\approx$ |  |
| -         |  |
| 4         |  |
| -         |  |
| 4         |  |
| -         |  |
|           |  |
| ທ         |  |

#### **II.** Annual Emission Limits

Annual emissions, in tons per year (TPY) on a 12-month, rolling total, shall not exceed the following:

|                     |   |  | GHG Mass Basis                                    |   | ТРҮ   |  |
|---------------------|---|--|---|---|---|--|
| FIN                 | EPN   | Description                              |   | TPY   | CO <sub>2</sub> e <sup>2,3</sup>  | BACT Requirements  |
| 7K 7K               | Combined-cycle<br>Combustion<br>Turbine/Heat<br>Recovery Steam                                  | CO <sub>2</sub>                          | 571,875   | 572,466   | 11,650 Btu/kWh (gross) on a 365-<br>day rolling average. See Special<br>Condition III. B.1 and III.B.2. |  |
|                     |   | CH4                                      | 10.8  |   |   |  |
|                     |   | Generator with<br>Duct Burner            | N <sub>2</sub> O                                  | 1.1   |   | Condition III. D.1 and III.D.2.  |
| 7L 7L               | Combined-cycle<br>Combustion<br>Turbine/Heat<br>Recovery Steam<br>Generator with<br>Duct Burner | CO <sub>2</sub>                          | 571,875   | 572,466   | 11,650 Btu/kWh (gross) on a 365-<br>day rolling average. See Special<br>Condition III. B.1 and III.B.2. |  |
|                     |   | CH4                                      | 10.8  |   |   |  |
|                     |   | N <sub>2</sub> O                         | 1.1   |   |   |  |
| NG-FUG NG-FUG       | Natural Gas and<br>OL Tail Gas  | CO <sub>2</sub>                          | No Numerical<br>Limit<br>Established <sup>4</sup> | No<br>Numerical                                   | Implementation of an AVO program. See Special Condition   |  |
|                     | NG-FUG  | Fugitives                                | CH4   | No Numerical<br>Limit<br>Established <sup>4</sup> | Limit<br>Established <sup>4</sup>   | III. C.1. and III.C.4.   |
| SF6-FUG             | SF6-FUG   | SF6 Insulated<br>Equipment               | SF6   | No Numerical<br>Limit<br>Established <sup>5</sup> | No<br>Numerical<br>Limit<br>Established <sup>5</sup>  | Good Combustion and Operating<br>Practices. Limit to 50 hours of<br>operation per year. See Special<br>Condition III. C.2. through<br>III.C.4. |
| 7K-<br>NGVENT       | 7K-<br>NGVENT   | Turbine Startup<br>Natural Gas<br>Purges | CO <sub>2</sub>                                   | 0.41  | 30  | Limit turbines to 15 start ups per year. See Special Condition III.D.  |
| 7L-<br>NGVENT       | 7L-<br>NGVENT   |  | CH <sub>4</sub>                                   | 1.20  |   |  |
| Totals <sup>6</sup> |   |  | CO <sub>2</sub>                                   | 1,143,751   |   |  |
|                     |   | CH4                                      | 41.6  | CO <sub>2</sub> e                                 |   |  |
|                     |   | N <sub>2</sub> O                         | 2.2   | 1,145,489   |   |  |
|                     |   |  | SF <sub>6</sub>                                   | 0.0012  |   |  |

1. Compliance with the annual emission limits (tons per year) is based on a 12-month rolling total.

- 2. The TPY emission limits specified in this table are not to be exceeded for this facility and include emissions from the facility during all operations and include MSS activities.
- 3. Global Warming Potentials (GWP):  $CH_4 = 25$ ,  $N_2O = 298$ ,  $SF_6 = 22,800$
- Fugitive process emissions from EPN NG-FUG are estimated to be 0.69 TPY CO<sub>2</sub>, 20 TPY of CH<sub>4</sub> and 500 TPY CO<sub>2</sub>e. In lieu of an emission limit, the emissions will be limited by implementing a weekly AVO monitoring program.
- 5. SF<sub>6</sub> fugitive emissions from EPN SF6-FUG are estimated to be 0.0012 TPY of SF<sub>6</sub> and 27 TPY of CO<sub>2</sub>e. In lieu of an emission limit, the emissions will be limited by using state of the art enclosed-pressure SF<sub>6</sub> circuit breakers with leak detection.

6. Total emissions include the PTE for fugitive emissions (including SF<sub>6</sub>). Totals are given for informational purposes only and do not constitute emission limits.

#### **III. SPECIAL PERMIT CONDITIONS**

# A. Combustion Turbine and Heat Recovery Steam Generators (HRSG) with Duct Burners (EPNs: 7K and 7L) Work Practice Standards, Operational Requirements, and Monitoring

- 1. Permittee shall limit fuel to the combustion turbine to pipeline quality natural gas. Fuel for the HRSG duct burners shall be limited to pipeline quality natural gas, a pure hydrogen stream, and a hydrogen/methane mixture (OL tail gas).
- 2. The gross calorific value of the fuel, except pipeline quality natural gas, shall be determined monthly by the procedures contained in 40 CFR Part 98 and records shall be maintained of the monthly fuel gross calorific value for a period of five years.
- 3. The natural gas quality fuels carbon content will be obtained by semiannual testing per 40 CFR § 98.34(b)(3)(A).
- 4. Upon request, Permittee shall provide a sample and/or analysis of the fuel that is fired in the combustion turbines or duct burners at the time of the request, or shall allow a sample to be taken by EPA for analysis.
- 5. Permittee shall monitor fuel gas flow continuously; determine fuel higher heating value whenever there is a fuel change or monthly, whichever is less; and calculate the total daily heat input.
- 6. The flow rate of the fuel combusted in the combustion turbine and HRSG duct burners shall be measured and recorded using an operational non-resettable elapsed flow meter.
- 7. Natural gas, pure hydrogen, and OL tail gas flow meters shall be calibrated in accordance with 40 CFR § 98.34(b)(1).
- 8. Flow meters shall meet the specification in 40 CFR Part 60, Appendix B, Spec. 6.
- 9. All flow meters shall meet the Quality Assurance Specifications in 40 CFR Part 60, Appendix F.
- 10. In accordance with 40 CFR Part 60, the Permittee shall ensure that all required fuel flow meters are installed, a periodic schedule for GCV fuel sampling is initiated and all certification tests are completed on or before the earlier of 90 unit operating days or 180 calendar days after the date the affected combustion unit commences commercial operation.
- 11. Permittee shall measure and record the energy output (MWh [based on adjusted gross energy output and equivalent energy produced]) on an hourly basis.
- 12. The emission limits established in Table 1 include emissions associated with MSS activities.
- 13. Permittee shall monitor and record the following parameters daily:
  - a. CT/HRSG fuel input volumetric measurement of fuel flow converted into mass (lb/hr) and energy flow (MMBtu/hr);
  - b. Gross hourly energy output (Mwh);

- c. CT/HRSG plant efficiency;
- d. Gas turbine electrical output, MW; and
- e. Mass of steam produced.
- 14. Permittee shall determine the hourly CO<sub>2</sub> emission rate in accordance with 40 CFR § 98.33(a)(1)(i) and 98.33(a)(3)(iii).
- 15. Permittee shall calculate the CH<sub>4</sub> and N<sub>2</sub>O emissions on a 12-month rolling basis to be updated by the last day of the following month. Permittee shall determine compliance with the CH<sub>4</sub> and N<sub>2</sub>O emissions limits contained in this section using the default CH<sub>4</sub> and N<sub>2</sub>O emission factors contained in Table C-2 and equation C-8 of 40 CFR Part 98 and the HHV (for natural gas and/or OL tail gas), converted to short tons.
- 16. Permittee shall calculate the CO<sub>2</sub>e emissions on a 12-month rolling basis, based on the procedures and Global Warming Potentials (GWP) contained in Greenhouse Gas Regulations, 40 CFR Part 98, Subpart A, Table A-1, as published on November 29, 2013 (78 FR 71904). The record shall be updated by the last day of the following month.

#### **B.** Combustion Turbine/HRSG BACT Emission Limits

- Permittee shall not exceed a Combustion Turbine average heat rate of 11,650 Btu/kWh (HHV, adjusted gross energy heat rate with compliance margin) on a 365day rolling average. To determine this limit, Permittee shall calculate the average heat rate on a hourly basis using the fuel flow rate, fuel HHV, and the measured hourly energy output (kwh [based on adjusted gross energy output and equivalent energy produced]). The calculated hourly heat rate is averaged daily.
- 2. The Permittee shall calculate the combined-cycle unit thermal efficiency daily using the following equations:

Thermal Efficiency = 
$$\left(\frac{HI_{GT} + HI_{HRSG}}{P_{GT} + P_{HRSG}}\right) x 1,000,000$$

Where:

Thermal efficiency = heat rate of combined-cycle unit (Btu/kWh)  $HI_{GT}$  = Heat input of fuel to the gas turbine (MMBtu/day)  $HI_{HRSG}$  = Heat input of fuels to the HRSG (MMBtu/day)  $P_{GT}$  = Gross Electrical Power produced from the gas turbine (kWh/day)  $P_{HRSG}$  = Gross energy (electrical equivalent) produced from the HRSG (kWh/day), calculated using Equation 11-2 below. 1,000,000 = Btu/MMBtu conversion

# $P_{HRSG} = m_{steam} x \ 14.11$

Where:

 $m_{steam}$  = mass flow rate of steam produced from the HRSG (lb/day) 14.11 = steam to electric conversion rate (lb/kWh), based on the existing plant steam turbines

- 3. Within 180 days of the date of initial startup of the combustion turbine, the Permittee shall perform an initial emission test for CO<sub>2</sub> and use emission factors from 40 CFR Part 98, Subpart C, Table C-1. If the combustion turbine/HRSG does not meet the emissions limit, the Permittee may continue operation of the combustion turbine/HRSG in order to perform necessary corrective actions and to continue plant operations. Once corrective actions have been made, the Permittee will schedule a follow-on emissions test and will make appropriate notifications to the EPA.
- 4. On or after initial performance testing, Permittee shall use the combustion turbines, HRSG energy efficiency processes, work practices, and designs as represented in the permit application.
- 5. The BACT limit will be met at all times, including periods of startup, shutdown, and maintenance.

#### C. Requirements for Fugitive Emission Sources (NG-FUG and SF6-FUG)

- 1. The Permittee shall implement an audio, visual, and olfactory (AVO) method for detecting leaks in natural gas piping components, OL tail gas piping components, and fugitive emission of methane from natural gas piping components. AVO monitoring shall be performed daily.
- For emission unit SF6-FUG, SF<sub>6</sub> emissions shall be calculated annually (calendar year) in accordance with the mass balance approach provided in equation DD-1 of the Mandatory Greenhouse Gas Reporting rules for Electrical Transmission and Distribution Equipment Use, 40 CFR Part 98, Subpart DD. Permittee shall not exceed insulated circuit breaker SF6 capacity exceeding 248 lbs.
- 3. Permittee shall equip the circuit breakers with instrumentation to identify and/or prevent leaks. The SF<sub>6</sub> leak detection system shall be able to detect a leak of at least 1 lb per year.
- 4. Permittee shall maintain a file of all records, data measurements, reports and documents related to the fugitive emission sources including, but not limited to, the following: all records or reports pertaining to maintenance performed, all records relating to compliance with the Monitoring and Quality Assurance and Quality Control (QA/QC) procedures outlined in 40 CFR 98.304.

# D. Requirements for Turbine Startup Natural Gas Purges (7K-NGVENT and 7L-NGVENT)

Permittee shall limit the turbine startup purges to 15 per year per turbine.

# E. Continuous Emissions Monitoring Systems (CEMS)

- 1. As an alternative to Special Conditions III.A.14. Permittee may install a CO<sub>2</sub> CEMS and volumetric stack gas flow monitoring system with an automated data acquisition and handling system for measuring and recording CO<sub>2</sub> emissions discharged to the atmosphere, and use these values to show compliance with the annual emission limit in Table 1.
- 2. Permittee shall ensure that all required CO<sub>2</sub> monitoring system/equipment are installed and all certification tests are completed on or before the earlier of 90 unit operating days or 180 calendar days after the date the unit commences operation.
- 3. Permittee shall ensure compliance with the specifications and test procedures for CO<sub>2</sub> emission monitoring system at stationary sources, 40 CFR Part 98, or 40 CFR Part 60, Appendix B, Performance Specification numbers 1 through 9, as applicable.

# IV. RECORDKEEPING AND REPORTING

- 1. In order to demonstrate compliance with the GHG emission limits in Table 1, the Permittee will monitor the following parameters and summarize the data on a calendar month basis.
  - a. Operating hours for all air emission sources, except for fugitive emission sources;
  - b. The natural gas fuel usage for all combustion sources, using continuous fuel flow monitors (a group of equipment can utilize a common fuel flow meter, as long as actual fuel usage is allocated to the individual equipment based upon actual operating hours and maximum firing rate);
  - c. Annual fuel sampling for natural gas; and
  - d. Any CO<sub>2</sub> CEMS data.
- 2. Permittee shall implement an AVO program and keep records of the monitoring results, as well as the repair and maintenance records.
- 3. Permittee shall maintain all records, data, measurements, reports, and documents related to the operation of the facility, including, but not limited to, the following: all records or reports pertaining to significant maintenance performed on any system or device at the facility; duration of startup, shutdown; the initial startup period for the emission units; pollution control units; malfunctions; all records relating to performance tests, calibrations, checks, and monitoring of combustion equipment; duration of an inoperative

monitoring device and emission units with the required corresponding emission data; and all other information required by this permit recorded in a permanent form suitable for inspection. The records must be retained for not less than five years following the date of such measurements, maintenance, reports, and/or records.

- 4. Permittee shall maintain records of all GHG emission units and CO<sub>2</sub> emission certification tests and monitoring and compliance information required by this permit.
- 5. Permittee shall maintain records and submit a written report of all GHG excess emissions 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 report is due on the 30<sup>th</sup> day following the end of each semi-annual period and shall include the following:
  - a. Time intervals, data and magnitude of the excess emissions, the nature and cause (if known), corrective actions taken and preventive measures adopted;
  - b. Applicable time and date of each period during which the monitoring equipment was inoperative (monitoring down-time);
  - c. 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; and
  - d. Any failure to conduct any required source testing, monitoring, or other compliance activities.
- 6. Excess emissions shall be defined as any period in which the facility emissions exceed a maximum emission limit set forth in this permit.
- 7. Excess emissions indicated by GHG emission source certification testing or compliance monitoring shall be considered violations of the applicable emission limit for the purpose of this permit.
- 8. All records required by this PSD Permit shall be retained and remain accessible for not less than 5 years following the date of such measurements, maintenance, and reporting.

# V. PERFORMANCE TESTING

- A. The Permittee shall perform stack sampling and other testing to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere from the stacks of the Combustion Turbines and HRSGs (7K and 7L) to determine the initial compliance with the CO<sub>2</sub> emission limits established in this permit. Sampling shall be conducted in accordance with 40 CFR § 60.8 and EPA Method 3a or 3b for the concentration of CO<sub>2</sub>.
  - 1. Multiply the CO<sub>2</sub> hourly average emission rate determined under maximum operating test conditions by 8,760 hours for the combustion turbines.

- If the above calculated CO<sub>2</sub> emission total does not exceed the tons per year (TPY) specified in Table 1, no compliance strategy needs to be developed.
  If the above calculated CO<sub>2</sub> emission total exceeds the tons per year (TPY) specified in Table 1, the facility shall:
  - a. Document the potential to exceed in the test report; and
  - b. Explain within the report how the facility will assure compliance with the CO<sub>2</sub> emission limit listed in Table 1.
- **B.** Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of the facility, performance tests(s) must be conducted and a written report of the performance testing results furnished to the EPA. Additional sampling may be required by TCEQ or EPA.
- **C.** Permittee shall submit a performance test protocol to EPA no later than 30 days prior to the test to allow review of the test plan and to arrange for an EPA observer to be present at the test. The performance test shall be conducted in accordance with the submitted protocol, and any changes required by EPA.
- **D.** The turbine shall be tested at or above ninety percent (90%) of maximum load operations for the atmospheric conditions which exist during testing. The tested turbine load shall be identified in the sampling report. The permit holder shall present in the performance test protocol the manner in which stack sampling will be executed in order to demonstrate compliance with the emissions limits contained in Section II.
- **E.** Air emissions from emission points 7K and 7L shall be tested while firing at the minimum load in the normal operating range. The normal operating range consistent with emission limits is to be determined during stack testing. Air emissions that will be sampled and analyzed while at the minimum load include (but are not limited to) CO<sub>2</sub>.
- **F.** Performance tests must be conducted under such conditions to ensure representative performance of the affected facility. The owner or operator must make available to the EPA such records as may be necessary to determine the conditions of the performance tests.
- **G.** The owner or operator shall provide, or cause to be provided, performance testing facilities as follows:
  - 1. Sampling ports adequate for test methods applicable to this facility,
  - 2. Safe sampling platform(s),
  - 3. Safe access to sampling platform(s), and
  - 4. Utilities for sampling and testing equipment.
- **H.** Unless otherwise specified, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For purposes of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply.
- **I.** Emissions testing, as outlined above, shall be performed every five years, plus or minus 6 months, of when the previous performance test was performed, or within 180 days after the

issuance of a permit renewal, whichever comes later to verify continued performance at permitted emission limits.

## VI. Agency Notifications

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

Multimedia 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