

**Tucson Electric Power  
DeMoss Petrie Generating Station  
Air Quality Permit # 910**

**Technical Support Document  
July 2008**

**I. GENERAL COMMENTS:**

**A. Company Information**

1. Tucson Electric Power – DeMoss Petrie Generating Station (TEP-DMP)
2. Source Location: Interstate 10 and Grant Road
3. Mailing Address: 1 S. Church Ave, P.O. Box 711, Tucson, AZ 85701

**B. Background**

This permit is the second Class I 5-year permit for this source. The previous permit was written prior to construction/installation of the gas turbine.

**C. Attainment Classification**

The facility is located in an area that is in attainment for all criteria pollutants.

**II. SOURCE DESCRIPTION**

The source is a simple cycle combustion turbine-generator unit. The generating unit is a General Electric, Model number 7A1PEA190-1, consisting of a natural gas-fired combustion turbine and an attached generator. The turbine-generator unit has a nameplate capacity of 85 megawatts (gross) and is equipped with dry low-NOx combustors to reduce oxides of nitrogen below the level required by the New Source Performance Standards (NSPS) for Stationary Gas Turbines (40 CFR 60 – Subpart GG). The unit is used to supply power at times of peak customer demand.

**A. Process Description**

The unit fires natural gas delivered via pipeline to produce electricity for customer consumption.

**B. Air Pollution Control Equipment**

Not required, however, the unit is equipped with Low-NOx combustors [40 CFR 64.1].

**III. REGULATORY HISTORY**

This is the second 5-year permit for TEP – DMP; the first permit was written to allow the Permittee to install and begin operation of the unit.

**A. Testing & Inspections**

Inspections have been conducted regularly. In 2001 TEP was found deficient for failure to submit written notification within 30 days after the date construction commenced. This was resolved in 2001. TEP – DMP is currently in compliance with all permit and regulatory requirements. The last inspection at the facility was in October 2007.

**B. Excess Emissions**

There have been no excess emissions at this facility.

**IV. EMISSION ESTIMATES**

The following table summarizes the potential to emit (PTE) with the federally enforceable controls contained in the permit. These figures were taken from information contained in the applications dated January 5, 2005 and December 21, 1999. The unit is equipped with a Continuous Emissions Monitoring System (CEMS) to ensure the facility does not exceed the PSD thresholds for NOx and CO (250 tpy). The following estimates are provided accordingly and other than NOx and CO estimates, the other estimates are for reference purposes only and are not intended to be directly enforceable limits unless otherwise specified in the specific conditions of the permit. See VIII – miscellaneous comments of the TSD for further comments on the PTE.

<b>Pollutant</b>	<b>Tons per Year</b>
Nitrogen Oxides (NOx)	<250
Carbon Monoxide (CO)	<250
Volatile Organic Compounds (VOC)	9
Particulate Matter (as PM <sub>10</sub> )	47
Sulfur Oxides (SOx)	10
Formaldehyde	<10

**V. APPLICABLE REQUIREMENTS**

**A. Code of Federal Regulations Title 40:**

**1. NSPS**

Part 60 Subpart A General Provisions  
Part 60 Subpart GG Standards of Performance for Stationary Gas Turbines

**2. NESHAP**

Part 61 Subpart M National Emission Standard for Asbestos

**3. OTHERS**

Part 75 Continuous Emission Monitoring  
Part 82 Subpart F Protection of Stratospheric Ozone - Recycling and Emissions Reduction

**B. Pima County State Implementation Plan (SIP):**

Rule 321 Standards and Applicability (Including NESHAPs)  
Rule 332 Compilation of Mass Rates and Concentrations  
Rule 343 Visibility Limiting Standard

**C. Pima County Code (PCC) Title 17, Chapter 17.16:**

17.12.190	Permits Containing Voluntarily Accepted Emission Limitations and Standards
17.16.020	Noncompliance with Applicable Standards
17.16.040	Standards and Applicability (Includes NESHAP)
17.16.050	Visibility Limiting Standards
17.16.080	Vacant Lots and Open Spaces

Not Applicable: 40 CFR 64 – Compliance Assurance Monitoring

Applicability requires: The presence of a “control device” to meet an applicable emission limit or standard (Low-NOx combustors are a “passive control measure” which are not considered a control device by definition (40 CFR 64.1)).

## VI. PERMIT CONTENTS

**NOTE:** The order of the permit contents have been reorganized to emphasize the stricter conditions of the permit – such as NSPS and voluntarily accepted emission limitations and standards.

### A. Applicability:

- A. Stationary Gas Turbine.
- B. Affected Emission Source Classification: **Class I; Stationary Major Source for NOx & CO.**

### B. Emission Limits/ Standards:

Stationary Gas Turbine:

- II.A.1 – NOx emission rate standard required by NSPS.
- II.A.2 – Voluntarily accepted emission limitation by the source to keep the emissions below PSD thresholds. This is monitored by NOx CEMS and CO CEMS.
- II.A.3 – Voluntarily accepted fuel limitation to limit applicability of NSPS standards; Sulfur content limitation for stationary turbines required by NSPS.
- II.A.4.a – Requirements to operate and maintain equipment consistent with good air pollution control practice.
- II.A.4.b – Requirement to operate and maintain CEMS and fuel flow monitoring equipment as recommended by the manufacturer or approved by the manufacturer.

Facility-Wide Operations:

- II.B.1 – Opacity standard for the whole facility including the stationary gas turbine.
- II.B.2 – Local Visibility Limiting Standard (property boundary line standard).
- II.B.3 – Fugitive dust control requirements for unpaved service roads and parking areas.
- II.B.4 – Asbestos NESHAP requirements during demolitions/ renovations.
- II.B.5 – Protection of Stratospheric Ozone - Recycling and Emissions Reduction requirements

### C. Monitoring Requirements:

Stationary Gas Turbine:

- III.A.1 – See Recordkeeping.
- III.A.2 – Monitoring of sulfur content of fuel. Compliance will be addressed through recordkeeping.

III.A.3-5 – Standards pertaining to the proper operation of the NOx & CO CEMS unit. CO CEMS standards were carried over from the previous permit.

Facility-Wide Operations:

- II.B.1 – Quarterly visible emissions check to demonstrate compliance with the opacity and visibility limiting standard in II.B.1 & 2.
- II.B.2 – Fugitive dust control requirements for unpaved service roads and parking areas.
- II.B.3-4 – See Recordkeeping.

**D. Recordkeeping Requirement**

Stationary Gas Turbine:

- IV.A.1 – Standard requiring ongoing calculation of emissions including back-calculating emissions for periods when the CEMS are inoperative in order to show compliance with the NOx standard and NOx and CO emission limits.
- IV.A.2 – Recordkeeping to demonstrate compliance with fuel and sulfur content standard in II.A.3.
- IV.A.3 – Standard requiring documentation of all CEMS related activities, including activities associated with fuel flow monitoring.

Facility-Wide Operations:

- IV.B.1-2 – Requirement to record all results from the opacity and visibility standard monitoring checks.
- IV.B.3-4 – Requirement to keep relevant paperwork that shows compliance with the Asbestos NESHAP and 40 CFR 82, Subpart F.

**E. Reporting Requirements:**

Stationary Gas Turbine:

- V.A.1-2 – Notifications required when physical or operational changes are made.
- V.A.3 – NSPS Standard requirement for prompt reporting of permit deviations and excess emissions.

Facility-Wide Operations:

- V.B.1 – Local Standard requirement for prompt reporting of permit deviations and excess emissions.
- V.B.2-3 – Standard requirement for semi-annual reports of required monitoring.
- V.4 – Standard requirement for annual compliance certifications.
- V.5 – Standard requirement for Emissions Inventory when requested.

**E. Testing Requirements:**

**The initial performance testing requirements have been removed. Since they have been fulfilled they are no longer required in the permit.**

- VI.A – Annual RATA requirement to ensure CEMS is accurate and source is in compliance.
- VI.B-E – Standards and requirements which govern RATA and performance tests.
- VI.F – Requirement that a written request with applicable test methods be made to the Control

Officer or the Permittee depending on who is requesting a test.

**F. Miscellaneous Comments:**

1. TEP proposed ADEQ's part A for their permit. PDEQ has used the county's Part A for Class I sources which is substantially similar to ADEQ's but with county citations.
2. In its proposed draft permit TEP has deleted all references to formaldehyde. Although, the Permittee has not explained why PDEQ has accepted this due to performance test results submitted to PDEQ dated 07/09/2001. The results showed formaldehyde emissions at a maximum of 0.509 lb/hr. This equates to 2.23 TPY of formaldehyde at 8760 hours of operation.
3. *Demolition/Renovation AND Non-vehicle Air Conditioner Maintenance and/or Services:* These standards were contained in the previous permit and have been carried over to the renewal.
4. PTE calculations were not necessary for this permit renewal as no changes or revisions have been implemented at the site or requested. PDEQ verified that the calculations submitted by TEP in the original application were accurate. These are based on data provided by the manufacturer, and are backed up by a CEMS which ensures the annual emissions limit are not exceeded. The CEMS is far more reliable than the crude calculations provided by the average PTE.

**VII. ACID RAIN PROVISIONS**

Carried over from the previous permit – no changes were requested in the application. The control officer will evaluate the Acid Rain Provisions at each renewal to ensure they are accurate.