OCT 13 2010

Mr. Brent Winn
Aera Energy LLC
P.O. Box 11164
Bakersfield, CA 93389-1164

Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # S-1547
Project # S-1084210 & S-1084433

Dear Mr. Winn:

Enclosed for your review and comment is the District’s analysis of an application for Authorities to Construct for Aera Energy LLC Heavy Oil Western stationary source, CA. The project is to install up to eleven (11) new 85 MMBtu/hr steam generators equipped with low NOx burners.

After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the Authorities to Construct will be issued to the facility with Certificates of Conformity. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

The public notice will be published approximately three days from the date of this letter. Please submit your written comments within the 30-day public comment period which begins on the date of publication of the public notice.

If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW: DG/cm

Enclosures
OCT 13 2010

Gerardo C. Rios, Chief
Permits Office
Air Division
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105

Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # S-1547
Project # S-1084210 & S-1084433

Dear Mr. Rios:

Enclosed for your review is the District’s engineering evaluation of an application for Authorities to Construct for Aera Energy LLC Heavy Oil Western stationary source, CA, which has been issued a Title V permit. Aera Energy LLC is requesting that Certificates of Conformity, with the procedural requirements of 40 CFR Part 70, be issued with this project. The project is to install up to eleven (11) new 85 MMBtu/hr steam generators equipped with low NOx burners.

Enclosed is the engineering evaluation of this application and proposed Authorities to Construct # S-1547-1162-0 through '1180-0 with Certificates of Conformity. After demonstrating compliance with the Authority to Construct, the conditions will be incorporated into the facility’s Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW: DG/cm
Enclosures
OCT 13 2010

Mike Tollstrup, Chief
Project Assessment Branch
Air Resources Board
P O Box 2815
Sacramento, CA 95812-2815

Re: Notice of Preliminary Decision - ATC / Certificate of Conformity
Facility # S-1547
Project # S-1084210 & S-1084433

Dear Mr. Tollstrup:

Enclosed for your review and comment is the District's analysis of an application
for Authorities to Construct for Aera Energy LLC Heavy Oil Western stationary
source, CA. The project is to install up to eleven (11) new 85 MMBtu/hr steam
generators equipped with low NOx burners.

The public notice will be published approximately three days from the date of this
letter. Please submit your written comments within the 30-day public comment
period which begins on the date of publication of the public notice.

Thank you for your cooperation in this matter. If you have any questions, please
contact Mr. Leonard Scandura, Permit Services Manager, at (661) 392-5500.

Thank you for your cooperation in this matter.

Sincerely,

David Warner
Director of Permit Services

DW: DG/cm

Enclosures
NOTICE OF PRELIMINARY DECISION
FOR THE PROPOSED ISSUANCE OF
AUTHORITY TO CONSTRUCT

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed issuance of Authority To Construct to Aera Energy LLC for its heavy oil operation at Heavy Oil Western stationary source, California. The project is to install up to eleven (11) new 85 MMBtu/hr steam generators equipped with low NOx burners.

The analysis of the regulatory basis for these proposed actions, Project #S-1084210 & S-1084433, is available for public inspection at http://www.valleyair.org/notifications/public_notices_idx.htm and the District office at the address below. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 34945 FLYOVER COURT, BAKERSFIELD, CA 93308.
San Joaquin Valley Air Pollution Control District
Authority to Construct
New Steam Generators

Facility Name: Aera Energy LLC
Mailing Address: P O Box 11164
Bakersfield, CA 93389
Contact Person: Brent Winn
Telephone: 661-665-4363
Fax: 661-665-7437
E-mail: btwinn@aeraenergy.com
Application #(s): S-1547-1162-0 through S-1180-0
Project #: S-1084210 and 1084433
Deemed Complete: May 5, 2010

I. PROPOSAL

Aera Energy LLC (Aera) is an oil production company. Aera is requesting Authorities to Construct (ATCs) for the installation of up to 22 new 85 MMBtu/hr natural gas-fired steam generators at two locations within the Belridge Oilfield within Aera’s Heavy Oil Western Stationary source. The steam generators will be installed as two separate projects based on the two locations.

The first project (Project 1 – consisting of Project #s S-1084210 and S-1084433) will be located within the northern area of the “project” area (Appendix A) and is the subject of this evaluation. Full buildout of this project is expected to occur by 2012. The second project (Project 2 – consisting of Project #s S-1084406 and S-1084434) will be located within the southern “project” area and will have a separate evaluation. Per Aera, the status, extent, and timing of Project 2 will be somewhat dependent on the success of a biomass steam generation facility proposed by Global Greensteam, which would provide steam to a portion of the second project area. As both Project 1 and Project 2 are part of a common business plan by Aera, they are the same “project” for Federal NSR applicability.

Nineteen (19) ATCs will be issued for each project for a total of thirty eight (38) for both projects (locations). Each project will consist of the following options (see summary chart below):

Option 1: Installation of eleven (11) new 85 MMBtu/hr steam generators equipped to achieve 5 ppm NOx @ 3% O2.

Option 2: Installation of eight (8) new 85 MMBtu/hr steam generators equipped to achieve 7 ppm NOx @ 3% O2.
Aera may install a combination of steam generators from Options 1 and 2, not to exceed maximum allowable emissions based on 11 steam generators with a limit of 5 ppmvd NOx.

<table>
<thead>
<tr>
<th>Location</th>
<th>Project Option</th>
<th>Annual emissions (lb/yr)</th>
<th>NOx</th>
<th>CO</th>
<th>PM_{10}</th>
<th>SOx</th>
<th>VOC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>11 SG @ 5 ppmv NOx</td>
<td>or 49,990 151,608 62,282 17,210 24,585</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 SG @7 ppmv NOx</td>
<td>46,720 108,040 44,384 12,264 46,720</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Combination of above may be installed not to exceed emissions equivalent to the 11SG @ 5 ppmv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 SG @ 5 ppmv NOx</td>
<td>or 49,990 151,608 62,282 17,210 24,585</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 SG @7 ppmv NOx</td>
<td>46,720 108,040 44,384 12,264 46,720</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Combination of above may be installed not to exceed emissions equivalent to the 11SG @ 5 ppmv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total emissions, for both locations combined (not to exceed emissions from equivalent of 22 SG @ 5 ppmv NOx)</td>
<td>99,980 303,216 124,564 34,420 49,170</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Option 1, three (3) of the eleven (11) steam generators will be equipped with Selective Catalytic Reduction (SCR) system to achieve 5 ppm NOx @ 3% O2 to satisfy BACT and Rule 4320 requirements. Eight of the steam generators will be equipped with ultra-low NOx burner capable of achieving 5 ppmv NOx @ 3% O2. Eleven ATCs will be issued for this option.

For Option 2, all of the eight (8) steam generators will be equipped with ultra low NOx burners to achieve 7 ppm NOx @ 3% O2 to satisfy BACT and Rule 4320 requirements. Eight ATCs will be issued for this option.

Up to eleven steam generators from Options 1 and 2 may be installed with maximum emissions limits calculated using 11 units at 5 ppm NOx. This option will allow Aera the flexibility to install the needed equipment and still be in compliance with applicable District requirements.

Aera received their Title V Permit on January 31, 2003. This modification can be classified as a Title V Minor Modification pursuant to Rule 2520, Section 3.20, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Aera shall apply to administratively amend their Title V Operating Permit to include the requirements of the ATCs issued with this project.
II. APPLICABLE RULES

District Rule 2201  New and Modified Stationary Source Review Rule (9/21/06)
District Rule 2520  Federally Mandated Operating Permits (6/21/01)
District Rule 4001  New Source Performance Standards (4/14/99)
District Rule 4101  Visible Emissions (2/17/05)
District Rule 4102  Nuisance (12/17/92)
District Rule 4201  Particulate Matter Concentration (12/17/92)
District Rule 4301  Fuel Burning Equipment (12/17/92)
District Rule 4305  Boilers, Steam Generators and Process Heaters - Phase 2 (8/21/03)
District Rule 4306  Boilers, Steam Generators and Process Heaters - Phase 3 (3/17/05)
District Rule 4320  Advanced Emission Reductions Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr (10/16/08)
District Rule 4351  Boilers, Steam Generators and Process Heaters – Phase 1 (8/21/03); Not applicable – located west of I-5
District Rule 4405  Oxides of Nitrogen Emissions from Existing Steam Generators Used in Thermally Enhanced Oil Recovery – Central and Western Kern County Fields (12/17/92); Not Applicable – these are not existing steam generators
District Rule 4406  Sulfur Compounds from Steam Generators – Kern County (12/17/92)
Not applicable – ATCs issued after 9/12/79
District Rule 4801  Sulfur Compounds (12/17/92)
CH&SC 41700  Health Risk Assessment
CH&SC 42301.6  School Notice
Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. PROJECT LOCATION

The steam generators will be operated at the following various specified locations at the Belridge Oilfield within Aera’s Heavy Oil Western stationary source in Kern County.

<table>
<thead>
<tr>
<th>ATC</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>MDB&amp;M</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-1547-1162-0</td>
<td>SW/4 Section 20</td>
<td>28S</td>
<td>21E</td>
<td>MDB&amp;M</td>
</tr>
<tr>
<td>S-1547-1180-0</td>
<td>NE/4 and SE/4 Section 29</td>
<td>28S</td>
<td>21E</td>
<td>MDB&amp;M</td>
</tr>
<tr>
<td></td>
<td>NW/4, SW/4 &amp; SE/4 Section 28</td>
<td>28S</td>
<td>21E</td>
<td>MDB&amp;M</td>
</tr>
</tbody>
</table>

The above locations are not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project. A map of the proposed locations is included in Appendix A.
IV. PROCESS DESCRIPTION

The new steam generators will be used for steam enhanced oil production at various specified locations. The steam generators produce steam, which is injected into the formation to lower the viscosity of underground deposits of crude oil and thereby increase oil flow.

The steam generators will be authorized to burn only PUC, FERC regulated natural gas, low-sulfur produced gas or treated produced gas from Aera’s Section 32 gas plant (S-1543). They will not be authorized to burn gas from Aera’s thermally enhanced oil recovery operation (TEOR) casing vent gas collection systems or vapor control systems.

Depending on the location, the steam generators will provide steam to steam enhanced wells permitted under S-1547-359 (1,657 wells), S-1547-638 (396 cyclic and 5,384 steam drive wells), S-1548-423 (300 wells) and S-1548-470 (8 wells). The produced fluids will continue to go to existing vapor controlled tanks at Dehy 20 (S-1548-144 et al) and Dehy 2 (S-1547-888 et al).

V. EQUIPMENT LISTING

Equipment Description:

S-1547-1162-0 through '-1169-0 (eight identical steam generators with ultra-low NOx burner):
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

S-1547-1170-0 through '-1172-0 (three identical steam generators with SCR):
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NATIONWIDE BOILER MODEL CATASTAK SELECTIVE CATALYTIC REDUCTION SYSTEM OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

S-1547-1173-0 through '-1180-0 (eight identical steam generators):
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

VI. EMISSION CONTROL TECHNOLOGY EVALUATION

The steam generators in this project are capable of generating NOx, CO, VOC, PM10 and SOx emissions due to the combustion of natural gas. Aera plans on using PUC or FERC natural gas, low-sulfur produced gas, or treated produced gas from Section 32 gas plant (S-1543). The sulfur content of each of these gas streams is ≤ 0.75 gr-S/100 dscf.
Three (3) of the steam generators will be equipped with a Selective Catalytic Reduction (SCR) system. SCR systems selectively reduces NOx emissions by injecting ammonia (NH3) into the gas exhaust stream upstream of a catalyst. NOx, NH3, and O2 react on the surface of the catalyst to form molecular nitrogen (N2) and H2O. SCR is capable of 90% NOx reduction. The most commonly used catalyst material is titanium oxide, although vanadium pentoxide, noble metals and zeolites are also used. The ideal operating temperature for a conventional SCR catalyst is 350 to 750 deg F. Exhaust gas temperatures greater than the upper limit (750 deg F) will cause NOx and NH3 to pass through the catalyst unreacted.

Sixteen (16) of the steam generators will be equipped with ultra-low NOx burner capable of achieving 5 to 7 ppmv NOx @ 3% O2. Low-NOX burners reduce NOx formation by producing lower flame temperatures (and longer flames) than conventional burners. Conventional burners thoroughly mix all the fuel and air in a single stage just prior to combustion, whereas low-NOX burners delay the mixing of fuel and air by introducing the fuel (or sometimes the air) in multiple stages. Generally, in the first combustion stage, the air-fuel mixture is fuel rich. In a fuel rich environment, all the oxygen will be consumed in reactions with the fuel, leaving no excess oxygen available to react with nitrogen to produce thermal NOx. In the secondary and tertiary stages, the combustion zone is maintained in a fuel-lean environment. The excess air in these stages helps to reduce the flame temperature so that the reaction between the excess oxygen with nitrogen is minimized.

The proposed SCR system will meet NOx level equivalent to the most stringent technologically feasible option for NOx. Per applicant, steam generator and burner manufacturers indicate that 5 ppm NOx can also now be achieved with just a low-NOx burner in an oilfield setting.

VII. GENERAL CALCULATIONS

A. Assumptions

- Steam generators operate 24 hours/day and 365 days/week.
- Steam generators are fired exclusively on gaseous fuels.
- Maximum heat input rating per generator = 85 MMBtu/hr
- Natural Gas Heating Value: 1,000 Btu/scf (District Practice)
- F-Factor for Natural Gas: 8,578 dscf/MMBtu corrected to 60°F (40 CFR 60, Appendix B)
- Maximum annual fuel use for each SG = 745,000 MMBtu/yr (per applicant) for Option 1.
- Maximum annual fuel use for each SG = 730,000 MMBtu/yr (per applicant) for Option 2
B. Emission Factors

Option 1:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Project Emission Factors (EF2)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>6.1 lb-NOx/MMscf 0.0061 lb-NOx/MMBtu 5 ppmvd NOx (@ 3%O2)</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>SOx</td>
<td>2.1 lb-SOx/MMscf 0.0021 lb-SOx/MMBtu 0.75 gr-S/100 scf</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>PM10</td>
<td>7.6 lb-PM10/MMscf 0.0076 lb-PM10/MMBtu</td>
<td>AP-42 (07/98) Table 1.4-2</td>
</tr>
<tr>
<td>CO</td>
<td>18.5 lb-CO/MMscf 0.0185 lb-CO/MMBtu 25 ppmv CO @ 3% O2</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>VOC</td>
<td>3 lb-VOC/MMscf 0.003 lb-VOC/MMBtu</td>
<td>--</td>
</tr>
</tbody>
</table>

Option 2:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Project Emission Factors (EF2)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>8 lb-NOx/MMscf 0.008 lb-NOx/MMBtu 7 ppmvd NOx (@ 3%O2)</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>SOx</td>
<td>2.1 lb-SOx/MMscf 0.0021 lb-SOx/MMBtu 0.75 gr-S/100 scf</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>PM10</td>
<td>7.6 lb-PM10/MMscf 0.0076 lb-PM10/MMBtu</td>
<td>AP-42 (07/98) Table 1.4-2</td>
</tr>
<tr>
<td>CO</td>
<td>18.5 lb-CO/MMscf 0.0185 lb-CO/MMBtu 25 ppmv CO @ 3% O2</td>
<td>Applicant's Proposal</td>
</tr>
<tr>
<td>VOC</td>
<td>3 lb-VOC/MMscf 0.003 lb-VOC/MMBtu</td>
<td>--</td>
</tr>
</tbody>
</table>

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since these are new emissions units, PE1 = 0 for all criteria pollutants.

2. Post-Project Potential to Emit (PE2)

Option 1:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>EF (lb/MMBtu)</th>
<th>Heat Input (MMBtu/hr)</th>
<th>Hours/day</th>
<th>Daily PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.0061</td>
<td>85</td>
<td>24</td>
<td>12.4</td>
</tr>
<tr>
<td>SOx</td>
<td>0.0021</td>
<td>85</td>
<td>24</td>
<td>4.3</td>
</tr>
<tr>
<td>PM10</td>
<td>0.0076</td>
<td>85</td>
<td>24</td>
<td>15.5</td>
</tr>
<tr>
<td>CO</td>
<td>0.0185</td>
<td>85</td>
<td>24</td>
<td>37.7</td>
</tr>
<tr>
<td>VOC</td>
<td>0.003</td>
<td>85</td>
<td>24</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Each SG Total**
### Annual Post-Project Potential to Emit (PE2), lb/yr

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>EF (lb/MMBtu)</th>
<th>Fuel use (MMscf/yr)</th>
<th>MMBtu/yr</th>
<th>Annual PE Each SG</th>
<th>Total**</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.0061</td>
<td>745</td>
<td>745,000</td>
<td>4,545</td>
<td>49,990</td>
</tr>
<tr>
<td>SOx</td>
<td>0.0021</td>
<td>745</td>
<td>745,000</td>
<td>1,565</td>
<td>17,210</td>
</tr>
<tr>
<td>PM10</td>
<td>0.0076</td>
<td>745</td>
<td>745,000</td>
<td>5,682</td>
<td>62,282</td>
</tr>
<tr>
<td>CO</td>
<td>0.0185</td>
<td>745</td>
<td>745,000</td>
<td>13,783</td>
<td>151,608</td>
</tr>
<tr>
<td>VOC</td>
<td>0.003</td>
<td>745</td>
<td>745,000</td>
<td>2,235</td>
<td>24,585</td>
</tr>
</tbody>
</table>

** Maximum project emissions

### Option 2:

### Daily Post-Project Potential to Emit (PE2), lb/day

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>EF (lb/MMBtu)</th>
<th>Heat Input (MMBtu/hr)</th>
<th>Hours/day</th>
<th>Daily PE Each SG</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.008</td>
<td>85</td>
<td>24</td>
<td>16.3</td>
<td>131</td>
</tr>
<tr>
<td>SOx</td>
<td>0.0021</td>
<td>85</td>
<td>24</td>
<td>4.3</td>
<td>34</td>
</tr>
<tr>
<td>PM10</td>
<td>0.0076</td>
<td>85</td>
<td>24</td>
<td>15.5</td>
<td>124</td>
</tr>
<tr>
<td>CO</td>
<td>0.0185</td>
<td>85</td>
<td>24</td>
<td>37.7</td>
<td>302</td>
</tr>
<tr>
<td>VOC</td>
<td>0.003</td>
<td>85</td>
<td>24</td>
<td>6.1</td>
<td>49</td>
</tr>
</tbody>
</table>

### Annual Post-Project Potential to Emit (PE2), lb/yr

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>EF (lb/MMBtu)</th>
<th>Fuel Use (MMscf/yr)</th>
<th>MMBtu/yr</th>
<th>Annual PE Each SG</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.008</td>
<td>730</td>
<td>730,000</td>
<td>5,840</td>
<td>46,720</td>
</tr>
<tr>
<td>SOx</td>
<td>0.0021</td>
<td>730</td>
<td>730,000</td>
<td>1,533</td>
<td>12,264</td>
</tr>
<tr>
<td>PM10</td>
<td>0.0076</td>
<td>730</td>
<td>730,000</td>
<td>5,548</td>
<td>44,384</td>
</tr>
<tr>
<td>CO</td>
<td>0.0185</td>
<td>730</td>
<td>730,000</td>
<td>13,505</td>
<td>108,040</td>
</tr>
<tr>
<td>VOC</td>
<td>0.003</td>
<td>730</td>
<td>730,000</td>
<td>2,190</td>
<td>17,520</td>
</tr>
</tbody>
</table>

### 3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.
Facility emissions are already above the Offset and Major Source Thresholds for all the criteria pollutants; therefore, SSPE1 calculations are not necessary.

4. **Post-Project Stationary Source Potential to Emit (SSPE2)**

Pursuant to Section 4.10 of District Rule 2201, the Post-Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Facility emissions are already above the Offset and Major Source Thresholds for all the criteria pollutants; therefore, SSPE2 calculations are not necessary.

5. **Major Source Determination**

Pursuant to Section 3.24 of District Rule 2201, a major source is a stationary source with a Post-Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the Major Source threshold values (excluding ERCs banked onsite that have not been used onsite).

This source is an existing Major Source for all the criteria pollutants and will remain so. No change in Major Source status is proposed or expected as a result of this project.

6. **Baseline Emissions (BE)**

The BE calculation (in lbs/year) is performed pollutant-by-pollutant for each unit within the project, to calculate the QNEC and if applicable, to determine the amount of offsets required.

BE = Pre-project Potential to Emit (PE1) for:
- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit (80% of pre-project emissions), located at a Major Source,
- Any Fully-Offset Emissions Unit (a unit for which offsets have been provided), located at a Major Source, or
- Any Clean Emissions Unit located at a Major Source.

Otherwise,

BE = Historic Actual Emissions (HAE)

Since these are new emissions units, \( BE = PE1 = 0 \) for all criteria pollutants.
7. Major Modification

Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act." Because Project 1 and Project 2 (as described in Section I of this document) are part of a common effort by Aera, they are the same "project" for federal NSR purposes. Since Project 1 and Project 2 involve the same number of units, the total "project" emissions are twice of those quantified in this application review.

As discussed in Section VII.C.5 above, the facility is an existing Major Source for all criteria air contaminants. The emissions units within this project have a total potential to emit which is greater than Major Modification thresholds (see table below). Therefore, the project is a significant increase and constitutes a Major Modification.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Project 1 Maximum PE (lb/yr)</th>
<th>Project 2 Maximum PE (lb/yr)</th>
<th>Total Project PE (lb/yr)</th>
<th>Threshold (lb/year)</th>
<th>Major Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>49,990</td>
<td>49,990</td>
<td>99,980</td>
<td>50,000</td>
<td>Y</td>
</tr>
<tr>
<td>SOx</td>
<td>17,210</td>
<td>17,210</td>
<td>34,420</td>
<td>80,000</td>
<td>N</td>
</tr>
<tr>
<td>PM10</td>
<td>62,282</td>
<td>62,282</td>
<td>124,564</td>
<td>30,000</td>
<td>Y</td>
</tr>
<tr>
<td>VOC</td>
<td>24,585</td>
<td>24,585</td>
<td>49,170</td>
<td>50,000</td>
<td>N</td>
</tr>
</tbody>
</table>

8. Federal Major Modification

District Rule 2201, Section 3.17 states that major modifications are also federal major modifications, unless they qualify for either a "Less-Than-Significant Emissions Increase" exclusion or a "Plantwide Applicability Limit" (PAL) exclusion.

The potential to emit (PE) is equal to the Net Emissions Increase (NEI calculated in the previous section). As shown below, total PE from these new emissions units exceed the Federal Major Modification thresholds for NOx and PM10 as shown below; therefore, this project is a Federal Major Modification for NOx and PM10.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Project 1 Maximum PE (lb/yr)</th>
<th>Project 2 Maximum PE (lb/yr)</th>
<th>Total Project PE (lb/yr)</th>
<th>Threshold (lb/year)</th>
<th>Major Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>49,990</td>
<td>49,990</td>
<td>99,980</td>
<td>50,000</td>
<td>Y</td>
</tr>
<tr>
<td>SOx</td>
<td>17,210</td>
<td>17,210</td>
<td>34,420</td>
<td>80,000</td>
<td>N</td>
</tr>
</tbody>
</table>
9. Quarterly Net Emissions Change (QNEC)

The QNEC is used to complete the emission profile for the District's PAS database. The QNEC for each unit is calculated as the difference between the quarterly PE2 and the quarterly BE, which in this project is the PE1, as discussed in VII (C)(6) above.

\[
\text{QNEC (lb/qtr)} = \left[ \text{PE2 (lb/yr)} - \text{PE1 (lb/yr)} \right] / 4
\]

**Option 1:**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>PE2 (lb/yr)</th>
<th>PE1 (lb/yr)</th>
<th>QNEC (lb/qtr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x}</td>
<td>4,545</td>
<td>0</td>
<td>1,136</td>
</tr>
<tr>
<td>SO\textsubscript{x}</td>
<td>1,565</td>
<td>0</td>
<td>391</td>
</tr>
<tr>
<td>PM\textsubscript{10}</td>
<td>5,662</td>
<td>0</td>
<td>1,416</td>
</tr>
<tr>
<td>CO</td>
<td>13,783</td>
<td>0</td>
<td>3,446</td>
</tr>
<tr>
<td>VOC</td>
<td>2,235</td>
<td>0</td>
<td>559</td>
</tr>
</tbody>
</table>

**Option 2:**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>PE2 (lb/yr)</th>
<th>PE1 (lb/yr)</th>
<th>QNEC (lb/qtr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO\textsubscript{x}</td>
<td>5,840</td>
<td>0</td>
<td>1,460</td>
</tr>
<tr>
<td>SO\textsubscript{x}</td>
<td>1,533</td>
<td>0</td>
<td>383</td>
</tr>
<tr>
<td>PM\textsubscript{10}</td>
<td>5,548</td>
<td>0</td>
<td>1,387</td>
</tr>
<tr>
<td>CO</td>
<td>13,505</td>
<td>0</td>
<td>3,376</td>
</tr>
<tr>
<td>VOC</td>
<td>2,190</td>
<td>0</td>
<td>548</td>
</tr>
</tbody>
</table>

VIII. COMPLIANCE

**District Rule 2201 New and Modified Stationary Source Review Rule**

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following: 
a. Any new emissions unit with a potential to emit exceeding two pounds per day,
   b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
   c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
   d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As seen in Section VII.C.2 of this evaluation, the applicant is proposing to install steam generators with a PE greater than 2 lb/day for all air contaminants. BACT is triggered for NOx, SOx, PM10, CO and VOC since the PEs are greater than 2 lbs/day.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered for relocation of an emissions unit with a PE > 2 lb/day.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section I above, there are no modified emissions units associated with this project; therefore BACT is not triggered for modification of an emissions unit with an AIPE > 2 lb/day.

d. Major Modification

As discussed in Section VII.C.7 above, this project constitutes a Major Modification for PM10; therefore, BACT is triggered for PM10 major modification purposes.

2. BACT Guideline

Please note that BACT Guideline 1.2.1 [Steam Generator (≥ 5 MMBtu/hr, Oilfield] has been rescinded. The NOx emission limit requirement of District Rule 4320 is lower than the Achieved-in-Practice requirement of BACT Guideline 1.2.1 (14 ppmv @ 3% O2); therefore a project specific BACT analysis will be performed to determine BACT for this project. More details regarding this are provided in Appendix B.

3. Top-Down BACT Analysis

Pursuant to the attached Top-Down BACT Analysis (see Appendix B), BACT has been satisfied with the following:
NO\textsubscript{X}: 5 ppmvd @ 3\% O\textsubscript{2} (Option 1) and 7 ppmvd @ 3\% O\textsubscript{2} (Option 2)
SO\textsubscript{X}: Natural gas
PM\textsubscript{10}: Natural gas
CO: 25 ppmvd @ 3\% O\textsubscript{2}
VOC: Gaseous fuel

B. Offsets

1. Offset Applicability

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post Project Stationary Source Potential to Emit (SSPE\textsubscript{2}) equals to or exceeds the offset threshold levels in Table 4-1 or Rule 2201.

The applicant concedes they are over the offset threshold for all five criteria air contaminants. Therefore offsets are triggered for the emissions increases associated with this project approval.

2. Quantity of Offsets Required

As seen above, the SSPE\textsubscript{2} is greater than the offset thresholds for all five criteria air contaminants; therefore offset calculations will be required for this project.

Per Sections 4.7.1 and 4.7.3; the quantity of offsets in pounds per year is calculated as follows for sources with an SSPE\textsubscript{1} greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = \((\Sigma[PE2 - BE] + ICCE) \times DOR\), for all new or modified emissions units in the project,

Where,
PE\textsubscript{2} = Post Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8
BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, Located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE)

BE = 0 for these new emissions units.
The facility is proposing to install new emissions units; therefore, Baseline Emissions are equal to zero. Also, there are no increases in cargo carrier emissions; therefore offsets can be determined as follows:

**Offsets Required (lb/year) = PE2 x DOR**

Aera provided two offsetting proposals, one for each option as presented below. Please note that PM10 emission increases will be offset with SOX emission reduction credits at a ratio of 1:1 consistent with Draft District Policy APR 14XX.

**Option 1:**

DOR = 1.0 or 1.5  
Reductions (ERCs) proposed to be used for offsets in this project occurred in the Central stationary sources and within the Heavy oil western source (the same stationary source). The offsets required for this project are calculated in the tables below:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>PE2 (Each steam generator)</th>
<th>PE2 (All 11 SG combined)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>lb/year</td>
<td>lb/qtr</td>
</tr>
<tr>
<td>NOx</td>
<td>4,545</td>
<td>1,136</td>
</tr>
<tr>
<td>SOx</td>
<td>1,565</td>
<td>391</td>
</tr>
<tr>
<td>PM10</td>
<td>5,662</td>
<td>1,416</td>
</tr>
<tr>
<td>CO</td>
<td>13,783</td>
<td>3,446</td>
</tr>
<tr>
<td>VOC</td>
<td>2,235</td>
<td>559</td>
</tr>
</tbody>
</table>

Aera is proposing to use the following ERCs to offset the emission increases from this option.

<table>
<thead>
<tr>
<th>ERC Certificate</th>
<th>Originally Issued To</th>
<th>Location Generated</th>
<th>Distance Offset Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-257-2</td>
<td>Shell Western E &amp; P Inc</td>
<td>Sec 21, T27S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-0135-2</td>
<td>Shell Western E &amp; P Inc</td>
<td>Sec 16, T27S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-0133-2</td>
<td>Shell Western E &amp; P Inc</td>
<td>Sec 29, T28S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-40130321-2</td>
<td>Aera Energy LLC</td>
<td>Sec 16, T27S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-1821-2</td>
<td>Aera Energy LLC</td>
<td>Sec 30, T28S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-796-2</td>
<td>Aera Energy LLC</td>
<td>Sec 1 &amp; 2, T29S, R21E</td>
<td>1:1</td>
</tr>
<tr>
<td>S-784-2</td>
<td>Aera Energy LLC</td>
<td>Sec 18, T28S, R21E</td>
<td>1:1</td>
</tr>
<tr>
<td>S-2958-2</td>
<td>Aera Energy LLC</td>
<td>Sec 28, T28S, R21E</td>
<td>1:1</td>
</tr>
<tr>
<td>S-2395-1</td>
<td>Aera Energy LLC</td>
<td>Sec 16, T31S, R22E</td>
<td>1:1</td>
</tr>
<tr>
<td>S-2010-5</td>
<td>Aera Energy LLC</td>
<td>Sec 29, T28S, R28E</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-1825-5</td>
<td>Aera Energy LLC</td>
<td>Heavy Oil Central</td>
<td>1.5:1</td>
</tr>
<tr>
<td>S-1337-5</td>
<td>Aera Energy LLC</td>
<td>Central SS</td>
<td>1.5:1</td>
</tr>
</tbody>
</table>
## OFFSET CALCULATIONS

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NOx Offsets req'd (w/o DOR)</td>
<td>12,498</td>
<td>12,498</td>
<td>12,498</td>
<td>12,498</td>
</tr>
<tr>
<td>Available NOx ERCs (Central SS, 1.5:1 DOR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC S-257-2</td>
<td>1,508</td>
<td>1,272</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>ERC S-0135-2</td>
<td>5,032</td>
<td>1,152</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ERC S-0133-2</td>
<td>3,203</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>ERC S-1821-2</td>
<td>5,454</td>
<td>6,771</td>
<td>6,946</td>
<td>3,638</td>
</tr>
<tr>
<td>ERC S-40130321-2</td>
<td>9,180</td>
<td>6,501</td>
<td>2,218</td>
<td>3,514</td>
</tr>
<tr>
<td>Total available NOx ERCs (Central SS)</td>
<td>24,377</td>
<td>15,696</td>
<td>9,166</td>
<td>7,154</td>
</tr>
<tr>
<td>NOx Offsets req'd at 1.5:1 DOR</td>
<td>18,747</td>
<td>18,747</td>
<td>18,747</td>
<td>18,747</td>
</tr>
<tr>
<td>NOx ERC withdrawn from NOx ERCs Central SS</td>
<td>18,747</td>
<td>15,696</td>
<td>9,166</td>
<td>7,154</td>
</tr>
<tr>
<td>Remaining NOx ERCs from Central SS after withdrawal</td>
<td>5,630</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NOx offsets still req'd at 1.5:1 DOR</td>
<td>0</td>
<td>3,051</td>
<td>9,581</td>
<td>11,593</td>
</tr>
<tr>
<td>NOx offsets still req'd at 1:1 DOR</td>
<td>0</td>
<td>2,034</td>
<td>6,387</td>
<td>7,729</td>
</tr>
<tr>
<td>Available NOx ERC S-784-2 (Heavy Oil Western SS, 1:1 DOR)</td>
<td>7,140</td>
<td>3,993</td>
<td>228</td>
<td>0</td>
</tr>
<tr>
<td>NOx ERC withdrawn from S-784-2</td>
<td>0</td>
<td>2,034</td>
<td>228</td>
<td>0</td>
</tr>
<tr>
<td>Remaining NOx credits from ERC S-784-2</td>
<td>7,140</td>
<td>1,959</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NOx offsets still req'd</td>
<td>0</td>
<td>0</td>
<td>6,159</td>
<td>7,729</td>
</tr>
<tr>
<td>NOx ERC withdrawn from Q2 to offset Q3</td>
<td>1,959</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remaining ERC after withdrawal from Q2 ERC S-784-2</td>
<td>7,140</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NOx offsets still req'd</td>
<td>0</td>
<td>0</td>
<td>4,200</td>
<td>7,729</td>
</tr>
<tr>
<td>Available NOx ERC S-796-2</td>
<td>16,403</td>
<td>14,218</td>
<td>15,065</td>
<td>18,484</td>
</tr>
<tr>
<td>NOx ERC withdrawn for remaining offset</td>
<td>0</td>
<td>0</td>
<td>4,200</td>
<td>7,729</td>
</tr>
<tr>
<td>Remaining NOx credits from ERC S-796-2</td>
<td>16,403</td>
<td>14,218</td>
<td>10,865</td>
<td>10,755</td>
</tr>
<tr>
<td>VOC offsets req'd</td>
<td>6,146</td>
<td>6,146</td>
<td>6,146</td>
<td>6,146</td>
</tr>
<tr>
<td>VOC ERC S-2395-1 (Heavy Oil Western SS, 1:1 DOR)</td>
<td>59,410</td>
<td>59,839</td>
<td>60,983</td>
<td>61,950</td>
</tr>
<tr>
<td>VOC ERCs withdrawn at 1:1 DOR</td>
<td>6,146</td>
<td>6,146</td>
<td>6,146</td>
<td>6,146</td>
</tr>
<tr>
<td>Remaining VOC credits from ERC S-2395-1</td>
<td>53,264</td>
<td>53,693</td>
<td>54,837</td>
<td>55,804</td>
</tr>
<tr>
<td>SOx offsets req'd (w/o DOR)</td>
<td>4,303</td>
<td>4,303</td>
<td>4,303</td>
<td>4,303</td>
</tr>
</tbody>
</table>
As seen above, the facility has sufficient credits to fully offset the quarterly emissions increases associated with this option.

District recognizes SOx:PM10 interpollutant offset ratio of 1:1 (District's Draft APR 14XX).

Proposed Rule 2201 (offset) Conditions for Option 1 (ATCs S-1547-1162-0 through '1172-0):

- Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBtu/year. [District Rule 2201]
- Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201]
ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]

- Any of units S-1547-1162 through '1-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOX: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201]

Option 2:

Since the maximum allowable emissions for this project is based on 11 steam generators with 5 ppmv NOx limit, the proposed offsetting scheme for Option 1 should be adequate to cover the emissions increases for this project.

Proposed Rule 2201 (offset) Conditions for Option 2 (ATCs S-1547-1173-0 through '1-1180-0):

- Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBtu/year. [District Rule 2201]
- Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 12/18/2008). [District Rule 2201]
- ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201]
- Any of units S-1547-1162 through '1-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201]

C. Public Notification

1. Applicability

Public noticing is required for:

a. Any new Major Source, which is a new facility that is also a Major Source,

b. Major Modifications,
c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
d. Any project which results in the offset thresholds being surpassed, and/or
e. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

b. Major Modification

As demonstrated in VII.C.7, this project does constitute a Major Modification; therefore, public notifying for Major Modification purposes is required.

c. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. There are no new emissions units which will have daily emissions greater than 100 lb/day for any pollutant associated with this project; therefore, public noticing is not required.

d. Offset Threshold

The facility is already over the offset thresholds for all five criteria air contaminants; therefore this project will not result in emissions going from below the thresholds to a level above the thresholds.

Therefore public noticing is not triggered for crossing the offset thresholds.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant.

This project has an SSIPE > 20,000 lb/year for every pollutant except SOx. The SSIPE is compared to the SSIPE Public Notice thresholds below:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SSIPE ** (lb/year)</th>
<th>SSIPE Public Notice Threshold</th>
<th>Public Notice Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>49,990</td>
<td>20,000 lb/year</td>
<td>Yes</td>
</tr>
<tr>
<td>SOx</td>
<td>17,210</td>
<td>20,000 lb/year</td>
<td>No</td>
</tr>
<tr>
<td>PM10</td>
<td>62,282</td>
<td>20,000 lb/year</td>
<td>Yes</td>
</tr>
</tbody>
</table>
As demonstrated above, the SSIPeS for NOx, PM10, CO and VOC were > 20,000 lb/year; therefore, public noticing for SSIPe purposes is required.

2. Public Notice Action

As discussed above, public notice will be required for this project.

D. Daily Emission Limits (DELs)

The DELs for the units are stated in the form of emission factors as shown:

- **Emissions from the natural gas-fired unit shall not exceed any of the following limits:**
  - NOx: 5 (or 7) ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320]
  - The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [Rules 2201 and 4320]

E. Compliance Assurance

1. Source Testing

The units in this project are subject to District Rule 4305, Boilers, Steam Generators and Process Heaters, Phase 2, District Rule 4306, Boilers, Steam Generators and Process Heaters, Phase 3, and District Rule 4320, Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5 MMBtu/hr. Source testing requirements will be discussed in the compliance review section of this evaluation.

2. Monitoring

As required by District Rules 4305, 4306 and 4320, the units are subject to monitoring requirements. Monitoring requirements, in accordance with District Rules will be discussed in the compliance review section of this evaluation.

3. Recordkeeping

As required by District Rules 4305, 4306 and 4320, the units are subject to recordkeeping requirements. Recordkeeping requirements, in accordance with District Rules will be discussed in the compliance review of this evaluation.

The following permit condition will be listed on permit as follows:
All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320]

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis

Section 4.14.1 of this Rule requires that an ambient air quality analysis (AAQA) be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Appendix D of this document for the AAQA summary sheet.

The results from the Criteria Pollutant Modeling for both options are shown as follows:

Criteria Pollutant Modeling Results*

<table>
<thead>
<tr>
<th></th>
<th>1 Hour</th>
<th>3 Hours</th>
<th>8 Hours</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>Pass</td>
<td></td>
<td>Pass</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>NOx</td>
<td>Pass</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SOx</td>
<td>Pass</td>
<td></td>
<td></td>
<td>Pass</td>
<td>Pass</td>
</tr>
<tr>
<td>PM10</td>
<td></td>
<td>X</td>
<td>X</td>
<td>Pass</td>
<td>Pass</td>
</tr>
</tbody>
</table>

*Results were taken from the attached PSD spreadsheet.

The threshold for PM10 was reached in the scenario described above with the following results:

PM10 Pollutant Modeling Results*  
Values are in μg/m³

<table>
<thead>
<tr>
<th>Category</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed</td>
<td>5.03</td>
<td>0.78</td>
</tr>
<tr>
<td>Significance Level</td>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Result</td>
<td>Pass</td>
<td>Pass</td>
</tr>
</tbody>
</table>

The associated PM10 daily emission limits are listed in the proposed permit conditions section. No limits were necessary for locations associated with stacks 1 and 2.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS, if compliance with the proposed conditions in the ATCs is maintained.
G. Federal Major Modification Certification of Compliance

The compliance certification is required for any project, which constitutes a New Major Source or a Federal Major Modification.

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Sections VII-C.8, this project constitutes a Federal Major Modification, therefore this requirement is applicable. Included in Appendix C is Aera's compliance certification.

District Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. The proposed modification may be considered a significant modification to the Title V Permit. As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment/minor modification, prior to operating with the proposed modifications. Aera's Title V compliance certification form is included in Appendix C. The following permit conditions will be listed to ensure compliance:

- \{1830\} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201]

- \{1831\} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]

District Rule 4001 New Source Performance Standards

40 CFR Part 60, Subpart Dc applies to Small Industrial-Commercial-Industrial Steam Generators between 10 MMBtu/hr and 100 MMBtu/hr (post-6/9/89 construction, modification or, reconstruction).

The subject steam generators have a rating of 85 MMBtu/hr and are fired on natural gas. Subpart Dc has no standards for gas-fired steam generators. Therefore, the subject steam generators are not affected facilities and subpart Dc does not apply.

District Rule 4101 Visible Emissions

District Rule 4101, Section 5.0, indicates that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour, which is dark or darker than Ringlemann 1 or equivalent to 20% opacity.

Gas-fired equipment typically operates without visible emissions. Compliance with District Rule 4101 is expected.
District Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 - Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score ≤ one. According to the Technical Services Memo for both options of this project (Appendix D), the total prioritization score for each option in this project were less than or equal to one. Therefore, no future analysis is required to determine the impact from this project and compliance with the District’s Risk Management Policy is expected.

Option 1:

<table>
<thead>
<tr>
<th>RMR Summary</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories</td>
<td>Steam Gen (Unit 1162-0 thru 1172-0)</td>
<td>Project Totals for 11 units</td>
<td>Facility Totals</td>
</tr>
<tr>
<td>Prioritization Score</td>
<td>0.0</td>
<td>0.007</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Acute Hazard Index</td>
<td>N/A</td>
<td>N/A</td>
<td>0.1</td>
</tr>
<tr>
<td>Chronic Hazard Index</td>
<td>N/A</td>
<td>N/A</td>
<td>0.0</td>
</tr>
<tr>
<td>Maximum Individual Cancer Risk (10⁻⁶)</td>
<td>N/A</td>
<td>N/A</td>
<td>1.6</td>
</tr>
<tr>
<td>T-BACT Required?</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Permit Conditions?</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Even though the facility prioritization score was greater than one, no further analysis is required since the prioritization score for the project was insignificant (<0.05).

2 Facility totals are maintained in the AERA Cumulative Risk document at G:\PER\TOXICSCREEN\DATA\SOUTH\1547 Aera Energy

Option 2:

<table>
<thead>
<tr>
<th>RMR Summary</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories</td>
<td>Steam Gen (Unit 1173-0 thru 1180-0)</td>
<td>Project Totals for 8 units</td>
<td>Facility Totals</td>
</tr>
<tr>
<td>Prioritization Score</td>
<td>0.0</td>
<td>0.005</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Acute Hazard Index</td>
<td>N/A</td>
<td>N/A</td>
<td>0.1</td>
</tr>
</tbody>
</table>

21
Even though the facility prioritization score was greater than one, no further analysis is required since the prioritization score for the project was insignificant (~0.05).

Facility totals are maintained in the AERA Cumulative Risk document at G:\PER\TOXIC\SCREEN\DATA\SOUTH\1547 Aera Energy.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 10 in a million). As outlined by the HRA Summaries in Appendix D of this report, the emissions increases for this project was determined to be less than significant. However, to ensure that human health risks will not exceed District allowable levels, the following permit conditions will be included in the ATCs for both options:

- The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

- The total PM10 emissions from Units S-1547-1162-0 through '1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

- The total PM10 emissions from Units S-1547-1162 through '1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

- Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

**District Rule 4201 Particulate Matter Concentration**

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.

F-Factor for NG: 8,578 dscf/MMBtu at 60 °F
PM10 Emission Factor: 0.0076 lb-PM10/MMBtu
Percentage of PM as PM10 in Exhaust: 100%
Exhaust Oxygen (O2) Concentration: 3%

Excess Air Correction to F Factor =

\[
\frac{20.9}{(20.9 - 3)} = 1.17
\]
Therefore, compliance with District Rule 4201 requirements is expected and a permit condition will be listed on the permit as follows:

- Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rule 4201 and District Rule 4301, 5.1 and 5.2.3]

**District Rule 4301 Fuel Burning Equipment**

This rule specifies maximum emission rates in lb/hr for SO2, NO2, and combustion contaminants (defined as total PM in Rule 1020). This rule also limits combustion contaminants to ≤ 0.1 gr/sfc. According to AP 42 (Table 1.4-2, footnote c), all PM emissions from natural gas combustion are less than 1 μm in diameter.

The maximum emission rates in lb/hr for each of the steam generator in this project are as follows:

**Option 1:**

<table>
<thead>
<tr>
<th>District Rule 4301 Limits (lb/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Each steam generator</td>
</tr>
<tr>
<td>Rule Limit (lb/hr)</td>
</tr>
</tbody>
</table>

**Option 2:**

<table>
<thead>
<tr>
<th>District Rule 4301 Limits (lb/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Each steam generator</td>
</tr>
<tr>
<td>Rule Limit (lb/hr)</td>
</tr>
</tbody>
</table>

The above table indicates compliance with the maximum lb/hr emissions in this rule; therefore, continued compliance is expected.
District Rule 4305  Boilers, Steam Generators and Process Heaters – Phase 2

The proposed steam generators are natural gas-fired with a maximum heat input of 85.0 MMBtu/hr each. Pursuant to Section 2.0 of District Rule 4305, the units are subject to District Rule 4305, Boilers, Steam Generators and Process Heaters – Phase 2.

In addition, the units are also subject to District Rule 4306, Boilers, Steam Generators and Process Heaters – Phase 3 and Rule 3420, Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4305 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4305.

District Rule 4306 Boilers, Steam Generators and Process Heaters – Phase 3

The proposed steam generators are natural gas-fired with a maximum heat input of 85.0 MMBtu/hr each. Pursuant to Section 2.0 of District Rule 4306, the units are subject to District Rule 4306, Boilers, Steam Generators and Process Heaters – Phase 3.

In addition, the units are also subject to District Rule 4320, Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr.

Since emissions limits of District Rule 4320 and all other requirements are equivalent or more stringent than District Rule 4306 requirements, compliance with District Rule 4320 requirements will satisfy requirements of District Rule 4306.

District Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators and Process Heaters Greater than 5 MMBtu/hr

This rule limits NOx, CO, SO2 and PM10 emissions from boilers, steam generators and process heaters rated greater than 5 MMBtu/hr. This rule also provides a compliance option of payment of fees in proportion to the actual amount of NOx emitted over the previous year.

The units in this project are all rated at greater than 5 MMBtu/hr heat input and are subject to this rule.

Section 5.1 NOx Emission Limits

Section 5.1 states that an operator of a unit(s) subject to this rule shall comply with all applicable requirements of the rule and one of the following, on a unit-by-unit basis:

5.1.1 Operate the unit to comply with the emission limits specified in Sections 5.2 and 5.4; or
5.1.2 Pay an annual emissions fee to the District as specified in Section 5.3 and comply with the control requirements specified in Section 5.4; or
5.1.3 Comply with the applicable Low-use Unit requirements of Section 5.5.
Section 5.2.1 states that on and after the indicated Compliance Deadline, units shall not be operated in a manner which exceeds the applicable NOx limit specified in Table 1 of this rule, shown below. On and after October 1, 2008, units shall not be operated in a manner to which exceeds a carbon dioxide (CO) emissions limit of 400 ppmv.

### Rule 4320 NOx Emission Limits

<table>
<thead>
<tr>
<th>C. Oilfield Steam Generators</th>
<th>NOx Limit</th>
<th>Authority to Construct</th>
<th>Compliance Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Units with a total rated heat input &gt;20 MMBtu/hr</td>
<td>a) Standard Schedule 7 ppmv or 0.008 lb/MMBtu; or</td>
<td>July 1, 2009</td>
<td>July 1, 2010</td>
</tr>
<tr>
<td></td>
<td>b) Staged Enhanced Schedule Initial Limit 9 ppmv or 0.011 lb/MMBtu; and</td>
<td>July 1, 2011</td>
<td>July 1, 2012</td>
</tr>
<tr>
<td></td>
<td>Final Limit 5 ppmv or 0.0062 lb/MMBtu</td>
<td>January 1, 2013</td>
<td>January 1, 2014</td>
</tr>
<tr>
<td>3. Units firing on less than 50% by volume, PUC quality gas</td>
<td>Staged Enhanced Schedule Initial Limit 12 ppmv or 0.014 lb/MMBtu; and</td>
<td>July 1, 2010</td>
<td>July 1, 2011</td>
</tr>
<tr>
<td></td>
<td>Final Limit 9 ppmv or 0.011 lb/MMBtu</td>
<td>January 1, 2013</td>
<td>January 1, 2014</td>
</tr>
</tbody>
</table>

For the subject steam generators, Aera is proposing to comply with Category C2 – standard schedule (7 ppmv) and final limit (5 ppmv calculated at 0.0061 lb/MMBtu not 0.0062 lb/MMBtu).

- The proposed NOx emission factor is 5 ppmvd @ 3% O2 or (0.0061 lb/MMBtu) for Option 1 and 7 ppmvd @ 3% O2 (0.008 lb/MMBtu)
- The proposed CO emission factor is 25 ppmvd @ 3% O2 or 0.0021 lb/MMBtu.

Compliance with the rule emission requirements is expected.

Section 5.2.4 applies to units firing on a combination of gaseous and liquid fuels. Aera is not proposing to fire on liquid fuels.

### Section 5.4 Particulate Matter Control Requirements

Section 5.4.1 states that to limit particulate matter emissions, an operator shall comply with one of the options listed in the rule.

Section 5.4.1.1 provides option for the operator to comply with the rule by firing the unit exclusively on PUC-quality gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases;
Section 5.4.1.2 provides option for the operator to comply with the rule by limiting the fuel sulfur content to no more than five (5) grains of total sulfur per hundred (100) standard cubic feet.

Section 5.4.1.3 provides option for the operator to comply with the rule by installing and properly operating an emissions control system that reduces SO2 emissions by at least 95% by weight; or limit exhaust SO2 to less than or equal to 9 ppmv corrected to 3 % O2.

The steam generators will be fired on PUC or FERC natural gas. Aera will have a fuel sulfur content limit of 0.75 gr S/100 scf. The ATCs will have conditions specifying these limits to ensure compliance with this section of the rule.

Section 5.5 Low-Use Unit

This section discusses the requirements of low-use units. Aera is not requesting low-use status; therefore, this section of the rule is not applicable to this project.

Section 5.6 Startup and Shutdown Provisions

Section 5.6 states that on and after the full compliance deadline specified in Section 5.0, the applicable emission limits of Sections 5.2, Table 1 and 5.5.2 shall not apply during start-up or shutdown provided an operator complies with the requirements specified in Sections 5.6.1 through 5.6.5.

Aera has requested startup, shutdown and refractory curing provisions for these steam generators, consistent with past District approvals. The following conditions will be placed on the permits:

- **Duration of start-up and shutdown shall not exceed 2 hours each per occurrence.** [District Rules 4305, 4306 and 4320]

- **Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request.** [District Rules 4305, 4306 and 4320]

- **Emission rates during startup, shutdown and refractory curing shall not exceed:**
  - particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801]

Section 5.7 Monitoring Provisions

Section 5.7.1 requires that permit units subject to District Rule 4320, Section 5.2 shall either install and maintain an operational APCO approved Continuous Emission Monitoring
System (CEMS) for NO\textsubscript{x}, CO and O\textsubscript{2}, or implement an APCO-approved alternate monitoring.

Aera has proposed to implement Alternate Monitoring Scheme A or H (pursuant to District Policy SSP-1105), which requires periodic monitoring of NO\textsubscript{x}, CO, O\textsubscript{2} and ammonia slip emissions concentrations for units equipped with selective catalytic reduction (SCR). The following conditions will be placed in the ATCs to ensure compliance with the requirements of this alternate monitoring plan (NH\textsubscript{3} monitoring will only be for the units with SCR):

- \{2395\} The permittee shall monitor and record the stack concentration of NO\textsubscript{x}, CO, and O\textsubscript{2} at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]

- The permittee shall monitor and record the stack concentration of NH\textsubscript{3} at least once during each month in which a source test is not performed. NH\textsubscript{3} monitoring shall be conducted utilizing District approved gas-detection tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation; i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within one day of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320]

- If the NO\textsubscript{x} or CO concentrations corrected to 3\%, as measured by the portable analyzer, or the NH\textsubscript{3} concentrations corrected to 3\% O\textsubscript{2}, as measured by District approved gas-detection tubes, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320]

- All NO\textsubscript{x}, CO, O\textsubscript{2} and NH\textsubscript{3} emission readings shall be taken with the unit operating at either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NO\textsubscript{x}, CO, and O\textsubscript{2} analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. NH\textsubscript{3} emission readings shall be measured in accordance with the gas sample tube manufacturer's specifications and recommendations. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample
reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320]

- The permittee shall maintain records of: (1) the date and time of NO\textsubscript{X}, CO, O\textsubscript{2} and NH\textsubscript{3} measurements, (2) the O\textsubscript{2} concentration in percent by volume and the measured NO\textsubscript{X}, CO and NH\textsubscript{3} concentrations corrected to 3% O\textsubscript{2}, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, (5) method of determining the NH\textsubscript{3} concentration, and (6) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320]

- Ammonia emissions readings shall be conducted at the time the NO\textsubscript{X}, CO and O\textsubscript{2} readings are taken. The readings shall be converted to ppmvd @ 3% O\textsubscript{2}. [District Rules 4305, 4306 and 4320]

Section 5.7.6 requires monitoring SO\textsubscript{X} emissions. The following condition will be placed in the ATCs to be in compliance with this rule requirement:

- PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320]

- If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320]

- When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320]

- If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320]

Section 5.8 Compliance Determination

Section 5.8.1 requires that the operator of any unit have the option of complying with either the applicable heat input (lb/MMBtu), emission limits or the concentration (ppmv) emission limits specified in Section 5.2. The emission limits selected to demonstrate compliance shall be specified in the source test proposal pursuant to Rule 1081 (Source Sampling). Therefore, the following condition will be retained or listed on the ATCs as follows:

- (2976) The source plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320]
Section 5.8.2 requires that all emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0. Therefore, the following permit condition will be listed on the ATCs as follows:

- (2972) All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the Permit to Operate, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320]

- Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201]

Section 5.8.4 requires that for emissions monitoring pursuant to Sections 5.7.1 and 6.3.1 using a portable NOx analyzer as part of an APCO approved Alternate Emissions Monitoring System, emission readings shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15-consecutive-minute sample reading or by taking at least five (5) readings evenly spaced out over the 15-consecutive-minute period. Therefore, the following previously listed permit condition will be on the ATCs as follows:

- (2937) All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the permit-to-operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306 and 4320]

Section 5.8.5 requires that for emissions source testing performed pursuant to Section 6.3.1 for the purpose of determining compliance with an applicable standard or numerical limitation of this rule, the arithmetic average of three (3) 30-consecutive-minute test runs shall apply. If two (2) of three (3) runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. Therefore, the following permit condition will be listed on the permit as follows:

- (2980) For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320]
Section 6.1 Recordkeeping

Section 6.1 requires that the records required by Sections 6.1.1 through 6.1.5 shall be maintained for five calendar years and shall be made available to the APCO and EPA upon request. Failure to maintain records or information contained in the records that demonstrate noncompliance with the applicable requirements of this rule shall constitute a violation of this rule.

The condition on start-up and shutdown record keeping conditions shall be retained in the ATCs to ensure Aera's compliance with this section of the rule.

Section 6.2, Test Methods

Section 6.2 identifies test methods to be used when determining compliance with the rule. The following existing permit conditions will be retained on the ATCs:

- \{109\} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]

- The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities – EPA Method 2; Stack gas moisture content – EPA Method 4; SOx – EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content – EPA Method 11 or 15; and fuel hhv (MMBtu) –ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320]

Section 6.3, Compliance Testing

Section 6.3.1 requires that each unit subject to the requirements in Section 5.2 shall be source tested at least once every 12 months, except if two consecutive annual source tests demonstrate compliance, source testing may be performed every 36 months. If such a source test demonstrates non-compliance, source testing shall revert to every 12 months. The following conditions will be included in the appropriate ATCs:

- A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320]

- Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201 and 4320]
• {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]

Section 6.3.1.2 specifies tune-up requirements. Aera will use pre-approved Alternate Monitoring Scheme "A" or "H" using a portable analyzer. Therefore the tune-up requirements listed in Section 6.3.1.2 are not applicable. This section also requires, that during the 36-month source testing interval, the owner/operator shall monitor monthly the operational characteristics recommended by the unit manufacturer. Since the pre-approved alternate monitoring requires monthly monitoring of NOx, CO and O2 exhaust emission concentrations using a portable analyzer, the operational characteristics monitoring requirements is satisfied.

Conclusion

Conditions will be incorporated into the ATCs in order to ensure compliance with each section of this rule, see attached draft ATCs. Therefore, compliance with District Rule 4320 requirements is expected.

District Rule 4351 Boilers, Steam Generators and Process Heaters – Phase 1

This rule applies to boilers, steam generators, and process heaters at NOx Major Sources that are not located west of Interstate 5 in Fresno, Kings, or Kern counties. The steam generators are located within the Heavy Oil Western stationary source. The units in this project are located west of I-5; therefore, the provisions of this rule do not apply.

District Rule 4801 Sulfur Compounds

A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume calculated as SO2, on a dry basis averaged over 15 consecutive minutes.

Using the ideal gas equation and the emission factors presented in Section VII, the sulfur compound emissions are calculated as follows:

\[
\text{Volume SO}_2 = \frac{nRT}{P}
\]

With:

- \( N = \text{moles SO}_2 \)
- \( T \text{ (Standard Temperature)} = 60°F = 520°R \)
- \( P \text{ (Standard Pressure)} = 14.7 \text{ psi} \)
- \( R \text{ (Universal Gas Constant)} = \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R}} \)

\[
\frac{0.0021 \text{ lb} - \text{SO}_x}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} \cdot \text{mol}}{64 \text{ lb}} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot \text{°R} \times 14.7 \text{ psi} \times \frac{520°R}{1,000,000 \cdot \text{parts}} = 1.45 \text{ parts per million}}\]

31
\[\text{Sulfur Concentration} = 1.45 - \frac{\text{parts}}{\text{million}} < 2,000 \text{ ppmv (or 0.2\%)}\]

Therefore, compliance with District Rule 4801 requirements is expected.

**California Health & Safety Code 42301.6 (School Notice)**

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

**California Environmental Quality Act (CEQA)**

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The San Joaquin Valley Unified Air Pollution Control District (District) adopted its Environmental Review Guidelines (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The District determined that no other agency has broader discretionary approval power over the project and that the District is the first agency to act on the project, therefore establishing the District as the Lead Agency for the project (CEQA Guidelines §15051(b)). The District's engineering evaluation of the project (this document) determined that compliance with District rules and permit conditions would reduce and mitigate the project's potential air quality impacts to less than significant.

An Initial Study is being prepared, to determine if the project may have a significant effect on the environment. A Negative Declaration or Mitigated Negative Declaration will be prepared if there is no substantial evidence that the project or any of its aspects may cause a significant effect on the environment. Otherwise, an Environmental Impact Report will be prepared. The public review period will not be less than 20-days for a Negative or Mitigated Negative Declaration and not less than 30-days for an EIR (CCR §15105).

The issuance of the Authority to Construct (ATC) constitutes the final decision to approve the project and will not be issued until the District has certified the final environmental assessment. Pursuant to CEQA Guidelines §15075 a Notice of Determination will be filed within five (5) days of the issuance of the ATC.
IX. RECOMMENDATION

Compliance with all applicable rules and regulations is expected. Issue the ATCs listed below subject to the permit conditions on the attached draft Authorities to Construct in Appendix F.

X. BILLING INFORMATION

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Fee Schedule</th>
<th>Fee Description</th>
<th>Annual Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>All units</td>
<td>3020-02-H</td>
<td>85 MMBtu/hr</td>
<td>$1,030.00 ea</td>
</tr>
</tbody>
</table>

APPENDICES

A: Map of Project Area
B: BACT Guideline & Top-Down BACT Analysis
C: Compliance Certifications
D: RMR and AAQA Summaries
E: BPS for CEQA-GHG Compliance
F: Draft ATCs
APPENDIX A

Map of Project Area
APPENDIX B

BACT Guideline and Top Down BACTAnalysis
San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 1.2.1*
Last Update: 3/11/2005

Steam Generator (> or = 5 MMBtu/hr, Oil Field)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Achieved in Practice or contained in the SIP</th>
<th>Technologically Feasible</th>
<th>Alternate Basic Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>50 ppmvd @ 3% O2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOx</td>
<td>14 ppmvd @ 3% O2</td>
<td>7 ppmvd @ 3% O2 with SCR</td>
<td>9 ppmvd @ 3% O2</td>
</tr>
<tr>
<td>PM10</td>
<td>Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOx</td>
<td>Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VOC</td>
<td>Gaseous fuel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

*This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)
Option 1: Top Down BACT Analysis

Top Down BACT Analysis for NOx Emissions:

Step 1 - Identify All Possible Control Technologies

The District adopted District Rule 4320 on October 16, 2008. The NOx emission limit requirements in District Rule 4320 are lower than the current BACT limits listed in BACT Guideline 1.2.1; therefore a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings > 20.0 MMBtu/hr to 7 ppm @ 3% O2. This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule with initial and final limit options that allows applicants additional time to meet the requirements of the rule. The enhanced schedule NOx emission initial limit requirement is 9 ppmv @ 3% O2 and final limit of 5 ppmv @ 3% O2. Since this is an enhanced option in the rule, the final limit of 5 ppmv @ 3% O2 will be considered the Technologically Feasible control technology for the BACT analysis.

The SJVUAPCD BACT Clearinghouse Guideline 1.2.1 has been rescinded. Therefore a new BACT analysis is required. The following are possible control technologies:

1. 7 ppmvd @ 3% O2 - Achieved in Practice.
2. 5 ppmvd @ 3% O2 - Technologically Feasible

Step 2 - Eliminate Technologically Infeasible Options

None of the above listed technologies are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 7 ppmvd @ 3% O2 - Achieved in Practice.
2. 5 ppmvd @ 3% O2 - Technologically Feasible

Step 4 - Cost Effectiveness Analysis

Applicant has proposed the technologically feasible from Step 1. Therefore a cost analysis is not required.

Step 5 – Select BACT for NOx

5 ppmv @ 3% O2 with SCR is proposed by the applicant.
Top Down BACT Analysis for VOC Emissions:

**Step 1 - Identify all control technologies**

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMbtu/hr, at an oil field as follows:

1. Gaseous fuel - achieved in practice

**Step 2 - Eliminate Technologically Infeasible Options**

The above listed technology is technologically feasible.

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. Gaseous fuel - achieved in practice

**Step 4 - Cost Effectiveness Analysis**

Only one control technology identified and this technology is achieved in practice, therefore, cost effectiveness analysis not necessary.

**Step 5 - Select BACT for VOC**

The use of gaseous fuel (natural gas) is selected as BACT for VOC emissions.

Top Down BACT Analysis for PM$_{10}$ and SOx Emissions:

**Step 1 - Identify all control technologies**

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMbtu/hr, at an oil field as follows:

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - achieved in practice

**Step 2 - Eliminate Technologically Infeasible Options**

The above listed technology is technologically feasible.
Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - achieved in practice

Step 4 - Cost Effectiveness Analysis

Only one control technology identified and this technology is achieved in practice, therefore, cost effectiveness analysis not necessary.

Step 5 - Select BACT for SOx and PM10

The use of natural gas as a primary fuel with a sulfur content not to exceed 0.75 gr-S/100 scf with no back up fuel is selected as BACT for SOx and PM10 emissions.

Top Down BACT Analysis for CO Emissions:

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator > 5 MMbtu/hr, at an oil field as follows:

1. 50 ppmvd @ 3% O2 - achieved in practice

Step 2 - Eliminate Technologically Infeasible Options

The above listed technology is technologically feasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

1. 50 ppmvd @ 3% O2 - achieved in practice

Step 4 - Cost Effectiveness Analysis

Only one control technology identified and this technology is achieved in practice, therefore, cost effectiveness analysis not necessary.

Step 5 - Select BACT for CO

25 ppmvd CO @ 3% O2 is proposed and satisfies BACT for CO emissions.
**Option 2: Top Down BACT Analysis**

**Top Down BACT Analysis for NOx Emissions:**

**Step 1 - Identify All Possible Control Technologies**

The District adopted District Rule 4320 on October 16, 2008. The NO\textsubscript{x} emission limit requirements in District Rule 4320 are lower than the current BACT limits listed in BACT Guideline 1.2.1; therefore a project specific BACT analysis will be performed to determine BACT for this project. District Rule 4320 includes a compliance option that limits oilfield steam generators with heat input ratings > 20.0 MMBtu/hr to 7 ppm @ 3% O\textsubscript{2}. This emission limit is Achieved in Practice control technology for the BACT analysis. District Rule 4320 also contains an enhanced schedule with initial and final limit options that allows applicants additional time to meet the requirements of the rule. The enhanced schedule NO\textsubscript{x} emission initial limit requirement is 9 ppmv @ 3% O\textsubscript{2} and final limit of 5 ppmv @ 3% O\textsubscript{2}. Since this is an enhanced option in the rule, the final limit of 5 ppmv @ 3% O\textsubscript{2} will be considered the Technologically Feasible control technology for the BACT analysis.

The SJVUAPCD BACT Clearinghouse Guideline 1.2.1 has been rescinded. Therefore, a new BACT analysis is required. The following are possible control technologies:

1. 5 ppmvd @ 3% O\textsubscript{2} - Technologically Feasible
2. 7 ppmvd @ 3% O\textsubscript{2} - Achieved in Practice

**Step 2 - Eliminate Technologically Infeasible Options**

None of the above listed technologies are technologically infeasible.

**Step 3 - Rank Remaining Control Technologies by Control Effectiveness**

1. 5 ppmvd @ 3% O\textsubscript{2} - Technologically Feasible
2. 7 ppmvd @ 3% O\textsubscript{2} - Achieved in Practice

**Step 4 - Cost Effectiveness Analysis**

The applicant has proposed a NO\textsubscript{x} limit of 7 ppmvd @ 3% O\textsubscript{2}, therefore a cost analysis for the 5 ppmvd (SCR) option is required.
SCR Cost Effective Analysis:

Assumptions:
- Industry standard (IS) is assumed to be a NOx emission rate of 15 ppmv @3% O2 in accordance with Rule 4306
- Unit's maximum emissions are defined by the burner size multiplied by the emissions rate and a maximum annual operating schedule of 8,760 hours

Calculations:

Industry Std NOx Emissions = 85 MMBtu/hr x 0.018 lb/MMBtu x 8,760 hr/yr
= 13,403 lb/yr

Feasible NOx Emissions = 85 MMBtu/hr x 0.0062 lb/MMBtu x 8,760 hr/yr
= 4,617 lb/yr

NOx reduction due to SCR:

Total reduction = Emissions (15 ppmv) – Emissions (5 ppmv)
Total reduction = 13,403 lb/yr – 4,617 lb/yr
Total reduction = 8,786 lb/yr = 4.39 ton/yr

SCR Capital Cost (SCR Vendor & TJ Cross, provided for Project S-1084509):
$1,102,046.00 (includes all purchased equipment, taxes, freight and installation of SCR for a 62.5 MMBtu/hr unit) – detailed cost follow/attached.

Equivalent Annual Capital Cost (CC):

\[ A = \left( P \right) \left[ \frac{(1+i)^n}{(1+i)^n - 1} \right] \]

where:

A: Equivalent annual capital cost of the control equipment
P: Present value of the control equipment
I: Interest rate (District policy is to use 10%)
n: Equipment life (District policy is to use 10 years)

A = ($1,102,046) \left[ \frac{(0.1)(1+0.1)^{10}}{(1+0.1)^{10} - 1} \right] = $179,300/yr

Because the capital recovery and annual costs of ammonia, catalyst replacement, and energy ($179,300/yr + $35,583/yr + $10,512/yr = $225,395/yr) correspond to a 62.5 MMBtu/hr unit, they wer adjusted using the "6/10" rule as follows:

$225,395/yr \times (85.0/62.5)^{0.8} = $271,061/yr
Annual Direct Cost (ADC):
Operation & Maintenance = $9,059/yr

Annual Indirect Cost (AIC) = $30,965/yr

Total Annualized Cost = CC + ADC + AIC
= $271,061 + $9,059 + $30,965
= $311,085/yr

Cost Effectiveness:
Cost effectiveness = $311,085/4.39 ton/yr
Cost effectiveness = $70,862/ton

The cost effectiveness is greater than the $24,500/ton cost effectiveness threshold of the District BACT policy. Therefore, the use of SCR with ammonia injection is not cost effective and is not required as BACT.

Step 5 – Select BACT for NOx

BACT for NOx emissions from each oilfield steam generator is 7 ppmv @ 3% O2. The applicant has proposed to install the steam generators each with a NOx limit of 7 ppmvd @ 3% O2; therefore, BACT for NOx emissions is satisfied.

Top Down BACT Analysis for VOC Emissions:

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMbtu/hr, at an oil field as follows:

2. Gaseous fuel - achieved in practice

Step 2 - Eliminate Technologically Infeasible Options

The above listed technology is technologically feasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

2. Gaseous fuel - achieved in practice

Step 4 - Cost Effectiveness Analysis

Only one control technology is identified and this technology is achieved in practice; therefore, a cost effectiveness analysis not necessary.
Step 5 - Select BACT for VOC

The use of gaseous fuel (natural gas) is selected as BACT for VOC emissions.

Top Down BACT Analysis for PM_{10} and SOx Emissions:

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMbtu/hr, at an oil field as follows:

2. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - achieved in practice

Step 2 - Eliminate Technologically Infeasible Options

The above listed technology is technologically feasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

2. Natural gas, LPG, waste gas treated to remove 95% by weight of sulfur compounds or treated such that the sulfur content does not exceed 1 gr of sulfur compounds (as S) per 100 scf, or use of a continuously operating SO2 scrubber and either achieving 95% by weight control of sulfur compounds or achieving an emission rate of 30 ppmvd SO2 at stack O2 - achieved in practice

Step 4 - Cost Effectiveness Analysis

Only one control technology is identified and this technology is achieved in practice; therefore, a cost effectiveness analysis not necessary.

Step 5 - Select BACT for SOx and PM_{10}

The use of natural gas as a primary fuel with a sulfur content not to exceed 0.75 gr-S/100 scf with no back up fuel is selected as BACT for SOx and PM_{10} emissions.
Top Down BACT Analysis for CO Emissions:

Step 1 - Identify all control technologies

The SJVUAPCD BACT Clearinghouse guideline 1.2.1, 3rd quarter 2010, identifies achieved in practice and technologically feasible BACT for Steam Generator ≥ 5 MMbtu/hr, at an oil field as follows:

2. 50 ppmvd @ 3% O2 - achieved in practice

Step 2 - Eliminate Technologically Infeasible Options

The above listed technology is technologically feasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

2. 50 ppmvd @ 3% O2 - achieved in practice

Step 4 - Cost Effectiveness Analysis

Only one control technology is identified and this technology is achieved in practice; therefore, a cost effectiveness analysis not necessary.

Step 5 - Select BACT for CO

25 ppmvd CO @ 3% O2 is proposed and satisfies BACT for CO emissions.
### SCR FOR STEAM GENERATOR; CAPITAL & OPERATING COSTS (RE-WORKED)

#### Direct Installation Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Footnotes</th>
<th>Unit Cost</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCR Equipment (Purchase Costs)</td>
<td>(1)</td>
<td>A</td>
<td>$200,000</td>
</tr>
<tr>
<td>Instrumentation &amp; Controls (22%)</td>
<td>(2)</td>
<td>0.22 A</td>
<td>$44,000</td>
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<tr>
<td>Foundation/Supports, Civil/Structural (15%)</td>
<td>(2)</td>
<td>0.15 A</td>
<td>$30,000</td>
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<tr>
<td>Handling/Erection, Equipment Install (15%)</td>
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<td>0.15 A</td>
<td>$30,000</td>
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<tr>
<td>Electrical (15%)</td>
<td>(2)</td>
<td>0.15 A</td>
<td>$30,000</td>
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<tr>
<td>Piping (50%)</td>
<td>(2)</td>
<td>0.50 A</td>
<td>$100,000</td>
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</table>

Total Direct Cost B $434,000

#### Indirect Installation Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Footnotes</th>
<th>Unit Cost</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Sales Tax &amp; Freight (5%)</td>
<td>(2)</td>
<td>0.09 A</td>
<td>$18,000</td>
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<tr>
<td>FEL Engineering (5%)</td>
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<td>Detailed Engineering (21%)</td>
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<tr>
<td>Construction Indirects (21%)</td>
<td>(2)</td>
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<td>$91,140</td>
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</table>

Total Indirect Cost, IC $221,980

Total Direct + Indirect D $855,980

Contingency (50%) 0.5 D $327,990

Subtotal w/ Contingency E $983,970

G&A at 12% of Subtotal w/contingency 0.12 E $118,076

Grand Total $1,102,046

**ANNUALIZED CAPITAL COST (\( I = 10\% \) & \( N = 10 \) years)** $179,303

### ANNUAL MAINTENANCE & OPERATING COSTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Suggested Factor</th>
<th>Unit Cost</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td><strong>Direct Annual Costs, DC</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Op &amp; Main Labor (850 man-hours/year) x 1/2</td>
<td>(3) &amp; (4)</td>
<td>$25.0/hr</td>
<td>$7,875</td>
</tr>
<tr>
<td>Supervisor (15% of Operator)</td>
<td>(4)</td>
<td></td>
<td>$1,161</td>
</tr>
<tr>
<td>Materials: Catalyst &amp; Ammonia</td>
<td>(4)</td>
<td>$35,583</td>
<td>$35,583</td>
</tr>
<tr>
<td>Energy (15 kw * $0.08/kW-hr * 6760 hrs/yr)</td>
<td>(5)</td>
<td>$0.08/kW-hr</td>
<td>$10,512</td>
</tr>
</tbody>
</table>

**Indirect Annual Costs, DC** $4,725

Admin Charges (2% of TECC) (4) $13,120

Property Taxes & Ins (2% of TECC) (4) $13,120

**TOTAL ANNUAL MAINTENANCE & OPERATING COSTS** $88,116

**TOTAL EQUIVALENT ANNUAL OPERATING COSTS** $265,419

**References:**

1. Reflects budgetary estimate from C&C Panasa presented at 10/22/09 Meeting.
2. Cost factors used by TJ Cross Engineers Inc. and referenced from "Plant Design and Economics for Chemical Engineers" by Pielers and Timmerhaus, Third Edition.
3. Hourly labor/maintenance rates typically assumed in BACT analyses. Assumed 50% of one Man.
4. Direct/Indirect installation costs and hourly labor/maintenance costs are estimated based on procedure O AQPS Control Cost Manual (EPA/452/R-02-001), Section 3.2, Chapter 1.
5. Electrical cost of 0.08kW-hr is consistent with past BACT reviews and is used to estimate annual energy cost due to added Horsepower requirements of SCR Equipment. Estimated at about 15 KW.
APPENDIX C

Compliance Certifications
CERTIFICATION

Aera Energy LLC hereby certifies as follows:

1. Aera Energy LLC owns or operates certain major stationary sources in the State of California. Such sources are comprised of a large number of emission points. As used in this certification, the term “major stationary source” shall, with respect to Aera Energy LLC stationary sources in the SJVUAPCD, have the meaning ascribed thereto in SJVUAPCD Rule 2201.3.24, and shall, with respect to all of Aera Energy LLC’s other stationary sources in the State of California, have the meaning ascribed thereto in section 302(J) of the Clean Air Act (42 U.S.C. Section 7602 (J)).

2. Subject to paragraphs 3 and 4 below, all major stationary sources owned or operated by Aera Energy LLC in the State of California are either in compliance, or on an approved schedule of compliance, with all applicable emission limitations and standards under the Clean Air Act and all of the State Implementation Plan approved by the Environmental Protection Agency.

3. This certification is made on information and belief and is based upon a review of Aera Energy LLC’s major stationary sources in the State of California by those employees of Aera Energy LLC who have operational responsibility for compliance. In conducting such reviews, Aera Energy LLC and its employees have acted in good faith and have exercised reasonable best efforts to identify any exceedances of the emission limitations and standards referred to in paragraph 2 thereof.

4. This certification shall speak as of the time and date of its execution.

CERTIFICATION

By: [Signature] Date: 9/17/08
Title: EHS Manager Time: 3:30 PM,
San Joaquin Valley
Unified Air Pollution Control District

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM
Authorities to Construct for Eight 85 MMBTU Steam Generators – North DSD Area

I. TYPE OF PERMIT ACTION (Check appropriate box)

[X] SIGNIFICANT PERMIT MODIFICATION
[ ] ADMINISTRATIVE
[ ] MAJOR PERMIT MODIFICATION AMENDMENT

<table>
<thead>
<tr>
<th>COMPANY NAME: AERA ENERGY LLC</th>
<th>FACILITY ID: S-1547</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of Organization: [X] Corporation [ ] Sole Ownership [ ] Government [ ] Partnership [ ] Utility</td>
<td></td>
</tr>
<tr>
<td>2. Owner's Name: AERA ENERGY LLC</td>
<td></td>
</tr>
<tr>
<td>3. Agent to the Owner: N/A</td>
<td></td>
</tr>
</tbody>
</table>

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial all circles for confirmation):

☒ Based on information and belief formed after reasonable inquiry, the emissions unit(s) identified in this application will continue to comply with the applicable federal requirement(s) which the emissions unit(s) is in compliance.

☒ Based on information and belief formed after reasonable inquiry, the emissions unit(s) identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

☒ Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

☒ Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate and complete.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

[Signature]
R.A. Roeder
Name of Responsible Official (please print)
Process Supervisor
Title of Responsible Official (please print)

[Date]
APPENDIX D

RMR and AAQA Summaries
San Joaquin Valley Air Pollution Control District
Risk Management Review

To: Michael Buss
From: Matthew Cegielski-Technical Services
Date: October 6, 2008

Facility Name: ERA Energy
Location: Sections 20, 29 and or 28, T28S, R21E Belridge, CA
Application #(s): 3-1547
Project #: S-1084210 1162-0 through 1172-0

A. RMR SUMMARY

<table>
<thead>
<tr>
<th>Categories</th>
<th>85 MMBtu/hr NG Steam Generator (Each Unit)</th>
<th>11 Units Project Totals</th>
<th>Facility Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritization Score</td>
<td>0.0</td>
<td>0.007</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Acute Hazard Index</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>0.1²</td>
</tr>
<tr>
<td>Chronic Hazard Index</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>0.0²</td>
</tr>
<tr>
<td>Maximum Individual Cancer Risk (10⁻⁸)</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>1.6²</td>
</tr>
<tr>
<td>T-BACT Required?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Special Permit Conditions?</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

¹ Even though the facility prioritization score was greater than one, no further analysis is required since the prioritization score for the project was insignificant (< 0.05).
² Facility totals are maintained in the AERA Cumulative Risk document at G:\PER\TOXIC\SCREEN\DATA\SOUTH\1547 Aera Energy

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Units 1162-0 through 1172-0
1. [1898] The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102] N
2. PM10 emissions shall not exceed 124 lb/day at location # 2038 (District Rule 2201)
3. PM10 emissions shall not exceed 168 lb/day at location # 2972 (District Rule 2201)
4. Standard conditions in the ATC
B. RMR REPORT

I. Project Description

Technical Services received a request on October 6, 2008 to perform a Risk Management Review (RMR) and an Ambient Air Quality Analysis (AAQA) for the installation of eleven 85 MMBtu/hr Natural Gas-Fired Steam Generators equipped with a Selective Catalytic Reduction (SCR) system for enhanced oil production in the Belridge Oilfield.

II. Analysis

Toxic emissions for this proposed unit were calculated using Ventura County's emission factors for natural gas external combustion. In accordance with the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for the proposed units were less than 1.0 (see RMR Summary Table). Therefore, no further analysis was necessary.

The following parameters were used for the review:

<table>
<thead>
<tr>
<th>Analysis Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>NG fired Steam Generators (1162-0 through 1172-0, 11 units)</td>
</tr>
<tr>
<td>Source Type</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Stack Height (m)</td>
</tr>
<tr>
<td>Stack Diameter. (m)</td>
</tr>
<tr>
<td>Stack Exit Velocity (m/s)</td>
</tr>
<tr>
<td>Stack Exit Temp. (°K)</td>
</tr>
<tr>
<td>Source Type</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Stack Height (m)</td>
</tr>
<tr>
<td>Stack Diameter. (m)</td>
</tr>
<tr>
<td>Stack Exit Velocity (m/s)</td>
</tr>
<tr>
<td>Stack Exit Temp. (°K)</td>
</tr>
</tbody>
</table>

Technical Services performed AAQA modeling for criteria pollutants CO, NOx, SOx and PM10; to determine the maximum allowable emissions from the four proposed locations for the use of 19 Natural Gas Fired Steam Generators, 11 from this project and 8 from project 1084433. The emission rates used for criteria pollutant modeling are listed in the table below:

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>NG SG 5ppmv NOx lb/yr</th>
<th>NG SG 7ppmv NOx lb/yr</th>
<th>11 units total lb/yr</th>
<th>8 units total lb/yr</th>
<th>11 units total lb/yr</th>
<th>8 units total lb/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>4,519</td>
<td>6,200</td>
<td>49,709</td>
<td>49,600</td>
<td>49,709</td>
<td>49,600</td>
</tr>
<tr>
<td>SOx</td>
<td>1,596</td>
<td>1,564</td>
<td>17,556</td>
<td>17,512</td>
<td>17,556</td>
<td>17,512</td>
</tr>
<tr>
<td>PM10</td>
<td>5,859</td>
<td>5,546</td>
<td>62,249</td>
<td>44,368</td>
<td>62,249</td>
<td>44,368</td>
</tr>
<tr>
<td>CO</td>
<td>13,752</td>
<td>13,477</td>
<td>151,272</td>
<td>107,816</td>
<td>151,272</td>
<td>107,816</td>
</tr>
<tr>
<td>VOC</td>
<td>2,234</td>
<td>2,189</td>
<td>24,574</td>
<td>17,512</td>
<td>24,574</td>
<td>17,512</td>
</tr>
</tbody>
</table>
The locations proposed are illustrated in the diagram below:

The location coordinates are listed below:

<table>
<thead>
<tr>
<th>Stack</th>
<th>AERA listing</th>
<th>UTM N</th>
<th>UTM E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loc 2857</td>
<td>253,587.4</td>
<td>3,927,373</td>
</tr>
<tr>
<td>2</td>
<td>Loc 2829</td>
<td>252,699.5</td>
<td>3,927,762</td>
</tr>
<tr>
<td>3</td>
<td>Loc 2972</td>
<td>252,413.5</td>
<td>3,928,275</td>
</tr>
<tr>
<td>4</td>
<td>Loc 2038</td>
<td>251,669</td>
<td>3,928,698</td>
</tr>
</tbody>
</table>

Stack 4 was determined to be the greatest contributor of the locations to the emissions that could exceed the Ambient Air Quality Standards. The modeling of the stacks was simplified to a worst case scenario to model multiple Steam Generators' stacks' emissions as one stack in each location. In analyzing the maximum allowable emissions possible at each location, stack 4 was used as the default location for any extra steam generators not used at the location in question. When considering stack 4, stack 3 was determined to be the next greatest contributor.

The modeling that resulted in the maximum allowable emissions was having 8 steam generators (5 ppmv type) at stack 4 and the rest at stack 3 (3 of the 5ppmv type and 8 of the 7ppmv type). The results from the Criteria Pollutant Modeling are as follows:
Criteria Pollutant Modeling Results*

<table>
<thead>
<tr>
<th>Diesel ICE</th>
<th>1 Hour</th>
<th>3 Hours</th>
<th>8 Hours</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>Pass</td>
<td>X</td>
<td>Pass</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>NOx</td>
<td>Pass</td>
<td>X</td>
<td>Pass</td>
<td>X</td>
<td>Pass</td>
</tr>
<tr>
<td>SOx</td>
<td>Pass</td>
<td>Pass</td>
<td>Pass</td>
<td>Pass</td>
<td>Pass</td>
</tr>
<tr>
<td>PM_{10}</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Pass</td>
<td>Pass</td>
</tr>
</tbody>
</table>

*Results were taken from the attached PSD spreadsheet.
*The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

The threshold for PM10 was reached in the scenario described above with the following results:

**PM_{10} Pollutant Modeling Results**

Values are in μg/m³

<table>
<thead>
<tr>
<th>Category</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed</td>
<td>5.03</td>
<td>0.78</td>
</tr>
<tr>
<td>Significance Level</td>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Result</td>
<td>Pass</td>
<td>Pass</td>
</tr>
</tbody>
</table>

The associated PM10 daily emission limits are listed in the proposed permit conditions section. No limits were necessary for locations associated with stacks 1 and 2.

### III. Conclusion

The prioritization score is less than 1.0. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

**AAQA**

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS if compliance with the proposed conditions is maintained.

**Attachments:**

A. RMR Request
B. AAQA
C. Toxic emissions summary
D. Prioritization score
E. Miscellaneous
San Joaquin Valley Air Pollution Control District
Risk Management Review

To: Michael Buss
From: Matthew Cegielski-Technical Services
Date: October 6, 2008
Facility Name: AERA Energy
Location: Sections 20, 29 and or 28, T28S, R21E Belridge, CA
Application #s: S-1547
Project #: S-1084433 1173-0 through 1180-0

A. RMR SUMMARY

<table>
<thead>
<tr>
<th>Categories</th>
<th>85 MMBtu/hr NG Steam Generator (Each Unit)</th>
<th>8 Units Project Totals</th>
<th>Facility Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritization Score</td>
<td>0.0</td>
<td>0.005</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Acute Hazard Index</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>0.1²</td>
</tr>
<tr>
<td>Chronic Hazard Index</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>0.0³</td>
</tr>
<tr>
<td>Maximum Individual Cancer Risk (10⁶)</td>
<td>N/A¹</td>
<td>N/A¹</td>
<td>1.6³</td>
</tr>
<tr>
<td>T-BACT Required?</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Permit Conditions?</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Even though the facility prioritization score was greater than one, no further analysis is required since the prioritization score for the project was insignificant (< 0.05).
2. Facility totals are maintained in the AERA Cumulative Risk document at G:\PER\TOXIC\SCREEN\DATA\SOUTH\1547 Aera Energy

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels, the following permit conditions must be included for:

Units 1173-0 through 1180-0
1. (1898) The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102] N
2. PM10 emissions shall not exceed 124 lb/day at location # 2038 (District Rule 2201)
3. PM10 emissions shall not exceed 168 lb/day at location # 2972 (District Rule 2201)
4. Standard conditions in the ATC
B. RMR REPORT

I. Project Description

Technical Services received a request on October 6, 2008 to perform a Risk Management Review (RMR) and an Ambient Air Quality Analysis (AAQA) for the installation of eight 85 MMBtu/hr Natural Gas-Fired Steam Generators for enhanced oil production in the Belridge Oilfield.

II. Analysis

Toxic emissions for this proposed unit were calculated using Ventura County's emission factors for natural gas external combustion. In accordance with the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for the proposed units were less than 1.0 (see RMR Summary Table). Therefore, no further analysis was necessary.

The following parameters were used for the review:

<table>
<thead>
<tr>
<th>Analysis Parameters</th>
<th>NG fired Steam Generators (1173-0 through 1180-0, 8 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Type</td>
<td>Point</td>
</tr>
<tr>
<td>Stack Height (m)</td>
<td>6.1</td>
</tr>
<tr>
<td>Stack Diameter. (m)</td>
<td>0.76</td>
</tr>
<tr>
<td>Stack Exit Velocity (m/s)</td>
<td>10.96</td>
</tr>
<tr>
<td>Stack Exit Temp. (°K)</td>
<td>394.3</td>
</tr>
</tbody>
</table>

Technical Services performed AAQA modeling for criteria pollutants CO, NOx, SOx and PM10, to determine the maximum allowable emissions from the four proposed locations for the use of 19 Natural Gas Fired Steam Generators, 8 from this project and 11 from project 1084210. The emission rates used for criteria pollutant modeling are listed in the table below:

<table>
<thead>
<tr>
<th>Criteria Pollutant</th>
<th>NG SG 5ppmv NOX lb/yr</th>
<th>11 units total lb/yr</th>
<th>NG SG 7ppmv NOX lb/yr</th>
<th>8 units total lb/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>4,519</td>
<td>49,709</td>
<td>6,200</td>
<td>49,600</td>
</tr>
<tr>
<td>SOx</td>
<td>1,596</td>
<td>17,556</td>
<td>1,564</td>
<td>12,512</td>
</tr>
<tr>
<td>PM10</td>
<td>5,659</td>
<td>62,249</td>
<td>5,546</td>
<td>44,368</td>
</tr>
<tr>
<td>CO</td>
<td>13,752</td>
<td>151,272</td>
<td>13,477</td>
<td>107,816</td>
</tr>
<tr>
<td>VOC</td>
<td>2,234</td>
<td>24,574</td>
<td>2,189</td>
<td>17,512</td>
</tr>
</tbody>
</table>
The locations proposed are illustrated in the diagram below:

The location coordinates are listed below:

<table>
<thead>
<tr>
<th>Stack</th>
<th>AERA listing</th>
<th>UTM N</th>
<th>UTM E</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Loc 2857</td>
<td>253,587.4</td>
<td>3,927,373</td>
</tr>
<tr>
<td>2</td>
<td>Loc 2829</td>
<td>252,699.5</td>
<td>3,927,762</td>
</tr>
<tr>
<td>3</td>
<td>Loc 2972</td>
<td>252,413.5</td>
<td>3,928,275</td>
</tr>
<tr>
<td>4</td>
<td>Loc 2038</td>
<td>251,669</td>
<td>3,928,698</td>
</tr>
</tbody>
</table>

Stack 4 was determined to be the greatest contributor of the locations to the emissions that could exceed the Ambient Air Quality Standards. The modeling of the stacks was simplified to a worst case scenario to model multiple Steam Generators stacks' emissions as one stack in each location. In analyzing the maximum allowable emissions possible at each location, stack 4 was used as the default location for any extra steam generators not used at the location in question. When considering stack 4, stack 3 was determined to be the next greatest contributor.

The modeling that resulted in the maximum allowable emissions was having 8 steam generators (5 ppmv type) at stack 4 and the rest at stack 3 (3 of the 5ppmv type and 8 of the 7ppmv type). The results from the Criteria Pollutant Modeling are as follows:
Criteria Pollutant Modeling Results*

<table>
<thead>
<tr>
<th>Diesel</th>
<th>1 Hour</th>
<th>3 Hours</th>
<th>8 Hours</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>NOx</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>SOx</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>PM10</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
</tr>
</tbody>
</table>

*Results were taken from the attached PSD spreadsheet.

The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

The threshold for PM10 was reached in the scenario described above with the following results:

**PM10 Pollutant Modeling Results**

Values are in \( \mu g/m^3 \)

<table>
<thead>
<tr>
<th>Category</th>
<th>24 Hours</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed</td>
<td>5.03</td>
<td>0.78</td>
</tr>
<tr>
<td>Significance Level</td>
<td>5.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Result</td>
<td>Pass</td>
<td>Pass</td>
</tr>
</tbody>
</table>

The associated PM10 daily emission limits are listed in the proposed permit conditions section. No limits were necessary for locations associated with stacks 1 and 2.

### III. Conclusion

The prioritization score is less than 1.0. In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

**AAQA**

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS if compliance with the proposed conditions is maintained.

### Attachments:

A. RMR Request
B. AAQA
C. Toxic emissions summary
D. Prioritization score
E. Miscellaneous
APPENDIX E

BPS for CEQA-GHG Compliance
July 12, 2010

San Joaquin Valley APCD
1990 East Gettysburg Avenue
Fresno, CA 93726-0244

ATTN: Jessica Willis

RE: CEQA / GHG Requirements for Aera 85 MMBTU/hr Steam Generator Projects

Attached are CEQA documents to support the following projects for Aera facility ID S-1547:

S-1084210/S-1084433
S-1084406/S-1084434

Attachments are as listed:

- Summary page for steam generator Best Performance Standard
- Specification excerpts for steam generator convection section
- Calculation of heat transfer surface/heat input ratio
- Specification excerpts for high-efficiency motor specifications

Should you have any questions concerning this submittal or require additional information, do not hesitate to contact me at (661) 665-4363.

Sincerely,

Brent Winn
Environmental Engineer – Belridge
Attachment(s)

CC: DOLORES GODIN
SOUTHERN REGION

AERA Energy LLC • 59231 Main Camp Road • McKittrick, CA 93251
San Joaquin Valley Unified Air Pollution Control District

Best Performance Standard (BPS) x.x.xx

Date: 6/24/10

<table>
<thead>
<tr>
<th>Class</th>
<th>Steam Generators</th>
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<tr>
<td>Category</td>
<td>Oilfield</td>
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<tr>
<td>Best Performance Standard</td>
<td>Very High Efficiency Steam Generator Design With:</td>
</tr>
<tr>
<td></td>
<td>1. A convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%.</td>
</tr>
<tr>
<td></td>
<td>And</td>
</tr>
<tr>
<td></td>
<td>2. Variable frequency drive high efficiency electrical motors driving the blower and water pump.</td>
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<td>Percentage Achieved GHG Emission Reduction Relative to Baseline Emissions</td>
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<table>
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Attachment 2

Specification Excerpts for
Steam Generator Convection Section
85 MMBTU/HR OILFIELD STEAM GENERATOR
For DSD Cyclic Service Pressure Rating of 2060 psig
and
For DSD Continuous Service Pressure Rating of 1850 psig

Aera Energy LLP
Belridge Oil Field
McKittrick, California

November 7, 2007
(updated 6/09/2010)
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SECTION 2  SCOPE OF WORK

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  2.2  GENERAL PERFORMANCE AND DESIGN REQUIREMENTS
  2.3  RADIANT SECTION
  2.4  CONVECTION SECTION
  2.5  STRUCTURAL SKID
  2.6  DRAIN SYSTEM
  2.7  PIPING
  2.8  PIPING INSULATION
  2.9  FEED WATER
  2.10  FUEL GAS SYSTEM
  2.11  BURNER AND BLOWER
  2.12  INSTRUMENTATION AND AIR SYSTEM
  2.13  ELECTRICAL
  2.14  PAINTING & COATING
  2.15  PROJECT DOCUMENTATION

SECTION 3  DATA SHEETS, DRAWINGS AND STANDARD SPECIFICATIONS

  3.1  GENERAL
  3.2  LIST OF DATA SHEETS, DRAWINGS, AND SPECIFICATIONS
burner end wall and will be air-cooled and one will be on the target wall of the radiant section to view flame pattern. CONTRACTOR shall install access platform and steps to allow for safe and easy viewing on the target wall. The view window shutters are to be equipped with a positive lock close device.

2.3.5. The radiant section shall be provided with a minimum of two (2) drain connections as described in Section 2.6.

2.3.6. A high point vent for the generator must be installed in the piping between the convection section and the radiant section.

2.3.7. Radiant section will have heat transfer calculations completed, by CONTRACTOR, showing the duty of the steam generator. This should be submitted to COMPANY for approval prior to drawing approval.

2.4. **CONVECTION SECTION**

2.4.1. Generator shall be provided with a new lay down high efficiency style convection section. (PCL Econovection or equivalent)

2.4.2. Fin density on finned convection tubes shall be no more than 6 fins per inch with maximum 1" high, 0.059-inch thick fins. Fins are to be a combination of solid and serrated design and are to be high frequency continuously welded to pipe. Minimum surface area of the convection section shall be 635 bare plus 25,785 extended square feet.

2.4.3. Inlet and outlet piping shall be ANSI Class 1500 raised face flanged fittings for quick assembly and disassembly. Flanged piping spools are to be provided for pigging the convection section. Flange gaskets shall be spiral wound metallic gaskets, Flexitallic type CGI or Selco Gaskets.

2.4.4. All convection section to transition section and stack flanges shall have double thickness gaskets consisting of ceramic fiber gasket material. CONTRACTOR should consider eliminating bolt up transition section in favor of welded transition to radiant and convection system.

2.4.5. Design working pressure (MAWP) shall be per the value listed in data sheet

2.4.6. Exhaust stack shall be separate from convection section and shall be connected by a transition section. The exhaust stack will be designed by CONTRACTOR and have a 48" diameter and be 20' tall. It will be mounted onto its own structural steel skid. Contractor's design shall provide for Flue Gas Recirculation system and allow for all emissions sampling requirements. (See Section 2.4.12 & 2.4.13)

2.4.7. New lay down convection section will have heat transfer calculations
completed, by CONTRACTOR, showing the duty of the steam generator. This should be submitted to COMPANY for approval prior to drawing approval.

2.4.8. Convection Section Refractory

A. General

Convection section doors shall be covered with ceramic fiber. Steel under ceramic fiber shall be protected by an internal coating specified in section 2.14. Replacement refractory on the floor of the transition section shall be castable refractory. Following installation of convection and radiant at site, CONTRACTOR to insulate the transition section seams.

B. Installation

Castable refractory installed in the transition section shall have a minimum uniform thickness of 6 inches. Castable refractory type referenced in Radiant section is recommended.

2.4.9. The convection section shall be equipped with a drain located at lowest point per Section 2.6.

2.4.10. An excess Oxygen sample connection shall be installed in the stack.

2.4.11. Sample connections shall be installed on the exhaust stack. Two 3" Couplings with plugs shall be installed 90° apart near the top of the stack, per the requirements of EPA 40CFR60. A third 3" Coupling shall be installed at about 5' above grade.

2.4.12. One unit will require a stack extension for PM 10 testing per EPA 40CFR60. Two ports should be 6" pipe and extend a minimum of 4" from the exterior of the stack wall to allow the installation of test adapters. The ports should be installed on perpendicular diameters and situated to allow access by a technician working from the basket of a man-lift.

2.5. STRUCTURAL SKID

2.5.1. All cab personnel access areas shall be fully covered with new removable welded steel bar grating, 1-1/4" x 1/8" serrated, hot-dip galvanized, with stainless steel saddle clips.

2.5.2. Where penetrations through structural components of the skid frame are required for routing of piping and conduit, a sleeve shall be installed to ensure that structural integrity is not reduced. Sleeves shall consist of Schedule 80 pipe, four inches long, one size larger than the pipe or conduit passing through the structural member.
The convection section for the subject steam generators is to include fins with a combination of solid and serrated design and are to be high frequency continuously welded to pipe. Minimum surface area of the convection section shall be 635 bare plus 25,785 extended square feet.

[Total surface area 26,420 square feet].

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<th>Rated heat input</th>
<th>85 MMBTU/hr</th>
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<td>26,420 sq ft / (85 MMBTU/hr)</td>
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<td><strong>310.8 sq ft per MMBTU/hr of heat input</strong></td>
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<td>[BPS criteria = 235 sq ft per MMBTU/hr]</td>
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</table>
Attachment 4

Specification Excerpts For High-Efficiency Motor Specifications
2.7.15. Hydrostatic testing requirements are as follows:

A. All piping shall be hydrotested to 1.5 times MAWP with hold time per applicable Code.

B. Test procedure to be approved by COMPANY. All hydrotesting shall be witnessed by COMPANY.

2.8. PIPING INSULATION

2.8.1. CONTRACTOR shall provide all labor, equipment, materials and supervision to install, inspect and test insulation requirements on piping and vessels.

2.8.2. Feedwater piping shall be insulated for personal protection. Convection section discharge piping and steam discharge piping shall be insulated for thermal heat conservation. Insulated lines shall have shoes at all pipe supports.

2.8.3. Insulation shall be 8 lb/ft\(^3\) pre-formed Mineral Wool.

2.8.4. Minimum insulation thickness for personal protection shall be perforated aluminum jacketing or 1" expanded metal with 1" standoff.

2.8.5. Insulation thickness for thermal heat conservation shall be three inches (3") for feedwater and four inches (4") for steam piping.

2.8.6. New 0.016 inch thick aluminum jacketing shall be used, with a 2-inch overlap, fastened with cadmium-plated screws or stainless steel banding.

2.8.7. Valves, flow meters, pigging blind flanges etc. shall have blanket insulation jackets.

2.9. FEED WATER

2.9.1. COMPANY will be using and supplying individual National Oilwell 300Q-5M positive displacement pump with high efficiency 250 hp motor to supply feed water to each Steam Generator.

2.9.2. CONTRACTOR shall supply a 250 hp VFD system for the feedwater pump which will be installed in cab section of Steam Generator.

2.9.3. CONTRACTOR shall provide for installation, wiring, and controls of the pump VFD.
2.10. FUEL GAS SYSTEM

2.10.1. CONTRACTOR shall supply fuel gas piping, controls, and instruments per P&ID. Maxon or equivalent Safety Valves and Fisher Control Valves shall be provided.

2.10.2. The fuel gas & pilot vent valves installed between the shutoff valves shall be vented to a point two (2) feet above the top of the radiant section.

2.11. BURNER AND BLOWER

2.11.1. The steam generator will be equipped with a new CONTRACTOR provided North American 4231-85 GLE Ultra Low NOx Combustion System with flue gas re-circulation or equivalent, oxygen controller, and variable speed drive on the blower. Fuel gas piping ahead of the burner shall be installed by CONTRACTOR, and shall have UV type flame detectors and a gas pilot.

2.11.2. When there is a conflict in specifications that may affect safety or emissions performance, the requirements of the burner manufacturer shall take precedence over the requirements of this specification.

2.11.3. Generator will be equipped with new CONTRACTOR supplied, North American forced draft high efficiency 150 hp combustion air blower or equivalent, sized for the firing rate and operating pressure of the burner using a variable speed drive.

2.11.4. CONTRACTOR shall laser align the burner to +/- .5" (one half inch) along a centerline from the burner mounting wall to the target wall.

2.11.5. CONTRACTOR shall supply Rosemount WC-3000 Oxygen Analyzers.

2.11.6. The primary and secondary fuel valves shall control firing rate.

2.11.7. CONTRACTOR shall install field proven Flue Gas Recirculation System.

2.12. INSTRUMENTATION AND AIR SYSTEM

2.12.1. All instrument tubing shall be new. Instrument air supply and signal transmission tubing shall nominally be 1/4" OD x 0.035" wall 316 stainless steel per ASTM A269. Process tubing shall nominally be 3/8" OD x 0.049" wall 316 stainless steel per ASTM A269. All tubing fittings shall be Swagelok or COMPANY approved equal.

2.12.2. CONTRACTOR shall supply and install new pressure gauges, temperature gauges, and thermowells.
# Low Voltage, Squirrel-Cage Induction Motors

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<th>Eng Approvals</th>
<th>Aera Approvals</th>
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<td>Orig. QA</td>
<td>Disc. Mgmt. Appl.</td>
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<td>0 8/03/09</td>
<td>CPE – EE CPE – EE KL</td>
<td>Electrical KL</td>
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Document: Low Voltage, Squirrel-Cage Induction Motors

Document No: GN00-GEN-500-177-MTL

Project No: MTL

Project Name: Electric Orig.

Date: 08/03/09

Name: KL Mgmt. Appl.
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<tr>
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<td>REFERENCES</td>
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<td>ELECTRICAL DESIGN FEATURES</td>
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<tr>
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<td>TESTING AND INSPECTION</td>
<td>8</td>
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<td>MECHANICAL DESIGN FEATURES</td>
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<td>SHIPPING AND HANDLING</td>
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</table>
1.0 SCOPE

This specification defines the minimum requirements for low-voltage, squirrel-cage, induction motors in the NEMA frame sizes for classified electrical hazardous and non-classified area service. Driven equipment specifications and motor data sheets shall be used to supplement this specification and identify any special requirements.

This specification does not include rod pump motors.

2.0 REFERENCES

The following publications form a part of this Guide. Unless otherwise specified herein, use the latest edition.

AFBMA (Anti-Friction Bearing Manufacturers Association) Standard

9 Load Ratings and Fatigue Life for Ball Bearings
10 Load Ratings and Fatigue Life for Roller Bearings
11 Load Rated and Fatigue Life for Sleeve Bearings

IEEE (The Institute of Electrical and Electronics Engineers) Standards

85 Test Procedure for Airborne Sound Measurements on Rotating Electric Machinery
112 Standard Test Procedure for Polyphase Induction Motors and Generators.
841 Recommended Practice for Chemical Industry Severe Duty Squirrel-Cage Induction Motors — 600 V and Below
1 General Principles for Temperature Limits in the Rating of Electric Equipment and for the Evaluation of Electrical Insulation

NEMA (National Electrical Manufacturers Association) Standard

MG 1 Motors and Generators

NFPA (National Fire Protection Association) Code

70 National Electrical Code
3.0 GENERAL

3.1 The references and requirements of GN00-GEN-500-001-DES shall apply to this Guide.

3.2 Squirrel-cage induction motors, 600 V and below rated less than 250 hp in NEMA frame size shall conform to IEEE Std 841.

3.3 Squirrel-cage induction motors, 600V and below rated from 250 hp to 500 hp in NEMA frame sizes shall conform to IEEE Std 841 for the following cases:

(a) TEFC or TENV motors
(b) Drive centrifugal loads (or API 547)
(c) Drive loads having inertia values within those listed in NEMA MG1 Part 20 or API 547
(d) Not induction generators
(e) Drive belted loads
(f) Drive axial loads
(g) Drive vertical pumps
(h) Adjustable speed drive service

3.4 Motor noise level shall be determined in accordance with IEEE 85. Levels of noise generated by a motor shall not exceed 85dB at a distance of 3.3ft unless specified otherwise on the data sheet.

3.5 High-efficiency and high power factor motors are recommended for driving equipment that will be in continuous operation. Guaranteed
3.6 Motors shall be designed for operation in a dusty environment, at a temperature of up to 110°F and at an elevation of up to 3300 ft above sea level unless specified otherwise on the data sheets.

4.0 APPLICATION

4.1 Generally, three-phase squirrel-cage induction motors shall be used to drive pumps, blowers, agitators, compressors, and other constant-speed continuously-operated equipment. Motors shall have ample capacity to supply the maximum output demanded by the driven equipment and shall have a speed-torque-current characteristic appropriate to the driven equipment.

4.2 When the power requirement of the driven equipment falls between two standard motor ratings, the motor having the larger power rating shall be selected. Service factors shall not be used in the selection of the motor power rating unless approved by Aera.

4.3 All motors and auxiliary equipment to be installed in classified locations shall meet the equipment and installation requirements specified in NFPA 70. When the motor and auxiliary equipment are to be installed in a classified location, the contractor (in conjunction with Aera) shall specify the Class, Atmosphere Group, and Division classification, and the type of enclosure required for both the motor and auxiliary equipment.

4.4 Generally, motors shall be suitable for continuous duty. Motors with limited duty ratings that are supplied as valve actuators by the valve operator manufacturers for intermittent opening and closing operation are exceptions to this requirement.

4.5 Motors shall be suitable for operation in severe environments. Motors, including internal components, shall be protected to resist chemicals, moisture, and abrasives.

4.6 Where applicable, motor frame sizes shall be selected in accordance with NEMA MG 1. Motors of the same rating, mounting, and characteristics shall be interchangeable.

4.7 Induction motors driving centrifugal pumps, compressors, blowers, mixers, and similar rotating equipment shall normally be Design B, as
defined in NEMA MG 1, with normal torque and low starting current. Motors driving reciprocating or other similar equipment that require high starting torque shall be Design C, as defined in NEMA MG 1, with high starting torque and low starting current. Single-phase fractional horsepower motors shall be NEMA Design N.

4.8 Motor shall be designed to overcome starting load inertia and accelerate the load to rated speed within 15 seconds at 80 percent of rated nameplate voltage, without exceeding the motor time-temperature damage curve.

4.9 Special operating conditions shall be individually considered and specified in conformance with the requirements of the driven equipment. Such conditions include automatic and frequent starting, operation of induced-draft fans under cold and hot air temperatures, and variable or multispeed operation.

4.10 In addition to the other requirements of this Guide, the following shall apply to belt-connected vertically-mounted motors installed for air-cooler fan applications:

(a) The motor manufacturer shall be advised as to the type of motor drive arrangement, method of mounting, and environment in which the motor will be operated.

(b) Preferably, motors should be located below the air cooler. Installations requiring the motor to be mounted above the air cooler shall be approved by Aera.

(c) The belt sheaves on motors mounted with the shaft up shall be designed or modified to prevent water from accumulating and then be directed down the motor shaft.

(d) A shaft slinger shall be shrink-fitted or cemented on the motor shaft directly above the motor housing. The slinger shall be of adequate diameter and tightness to direct water away from the bearing housing and to prevent water from entering the motor housing along the shaft both when the motor is stationary and while it is running.

(e) Motors shall be provided with Class F insulation systems in accordance with Paragraph 5.7.1.

(f) Motors shall be provided with threaded drain plugs in the lower end bell to allow removal of moisture.
Motors shall be provided with an epoxy compound coating on the end turns and on the air gap surfaces of the rotor and stator.

Where available and suitable for the application, motors having roller-type drive-end bearings should be considered for V-belt drives.

For bearing and lubrication considerations, refer to Paragraph 7.2.1.

4.11 Motors to be operated from adjustable-frequency power supplies for adjustable-speed drive applications shall be inverter duty rated to provide satisfactory performance. The motor manufacturer shall be consulted before selecting a motor for such applications.

4.12 Motors shall have a 1.15 service factor (SF) rating unless specified otherwise on the data sheets. Motor nameplate horsepower rating (at 1.0 SF) shall be at least 1.15 times the maximum continuous brake horsepower of the load at all operating conditions.

5.0 ELECTRICAL DESIGN FEATURES

5.1 General

5.1.1 Motor sizes generally shall be selected to operate at the following voltage levels:

<table>
<thead>
<tr>
<th>Motor Size</th>
<th>kW</th>
<th>HP</th>
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<tbody>
<tr>
<td>Nonessential service</td>
<td>0.4 and below</td>
<td>½ and below</td>
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<tr>
<td>Continuous/Critical process</td>
<td>0.4 and below</td>
<td>½ and below</td>
</tr>
<tr>
<td></td>
<td>0.4 through 112</td>
<td>½ through 200</td>
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</tbody>
</table>

5.1.2 When motor rated voltages are not specified in the project specifications, the voltages shall be selected by the contractor and submitted to Aera for approval.

5.1.3 The rated nameplate voltage of a motor shall not be greater than approximately 96 percent of the nominal system voltage.
PRODUCT SCOPE AND NOMINAL EFFICIENCY LEVELS

The NEMA Premium™ efficiency electric motor program scope is single-speed, polyphase, 1-500 horsepower, 2, 4, and 6 pole, squirrel cage induction motors, NEMA Design A or B, continuous rated. Products must meet or exceed the nominal energy efficiency levels presented below.

The NEMA Premium™ efficiency levels are contained in NEMA Standards Publication MG 1-2006, in Tables 12-12 and 12-13, respectively.

Table 12-12
FULL-LOAD EFFICIENCIES FOR 60 HZ NEMA PREMIUM™ EFFICIENCY ELECTRIC MOTORS RATED 600 VOLTS OR LESS (RANDOM WOUND)

<table>
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<th>HP</th>
<th>2 POLE Nominal Efficiency</th>
<th>Minimum Efficiency</th>
<th>4 POLE Nominal Efficiency</th>
<th>Minimum Efficiency</th>
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### Table 12-12 (Continued)

**FULL-LOAD EFFICIENCIES FOR 60 HZ NEMA PREMIUM EFFICIENCY ELECTRIC MOTORS RATED 600 VOLTS OR LESS (RANDOM WOUND)**

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Table 12-13
FULL-LOAD EFFICIENCIES FOR 60 HZ NEMA PREMIUM® EFFICIENCY ELECTRIC MOTORS
RATED 5000 VOLTS OR LESS (FORM WOUND)

OPEN MOTORS

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ENCLOSED MOTORS

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For more information about the NEMA Premium™ efficiency electric motor program, go to www.nema.org/premiummotors.

6-3-09 Updated
APPENDIX F

Draft ATCs
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1162-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3]

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 though S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOX: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 108] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1163-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBTu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO₂, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM₁₀ emissions from Units S-1547-1162-0 through '-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM₁₀ emissions from Units S-1547-1162 through '-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM₁₀ emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O₂ or 0.0061 lb-NOₓ/MMBTu; PM₁₀: 0.0076 lb-PM₁₀/MMBTu; CO: 25 ppmvd @ 3% O₂ or 0.0185 lb-CO/MMBTu or VOC: 0.003 lb-VOC/MMBTu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO₂; sulfur - 200 pounds of SO₂ per hour, or 2000 ppmv as SO₂, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO₂ - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOX: 17,210 lb/yr; PM₁₀: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3% as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer’s specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1164-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO₂, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3]

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM₁₀ emissions from Units S-1547-1162-0 through '-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM₁₀ emissions from Units S-1547-1162 through '-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM₁₀ emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOₓ: 5 ppmvd @ 3% O₂ or 0.0061 lb-NOₓ/MMBTU; PM₁₀: 0.0076 lb-PM₁₀/MMBTU; CO: 25 ppmvd @ 3% O₂ or 0.0185 lb-CO/MMBTU or VOC: 0.003 lb-VOC/MMBTU. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO₂; sulfur - 200 pounds of SO₂ per hour, or 2000 ppmv as SO₂, or 0.11 pounds sulfur (as S) per MMBTU on average-wide basis for all units in Rule 4406 plan; NO₂ - 140 pounds per hour or 0.14 pounds per MMBTU. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOₓ: 49,990 lb/yr; SOₓ: 17,210 lb/yr; PM₁₀: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOₓ and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOₓ and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e., the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer’s specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District’s determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1165-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION: 85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

DAVID WARNER, Director of Permit Services
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through '1-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through '1-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOX: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '1-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOX: 49,990 lb/yr; SOX: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 108] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack-gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOX - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1166-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadedin, Executive Director APCO

DAVID WARNER, Director of Permit Services
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally, Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through '1-1180-0 shall not exceed 164 lb/day at location #2972. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through '1-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/MMBtu. [District Rules 2201 and 4320] Federally, Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally, Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally, Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '1-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally, Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally, Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally, Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally, Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally, Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally, Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally, Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally, Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19, CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer’s specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1136 lb/quarter; SOx: 391 lb/quarter; PM10: 1416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1167-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA
EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]
4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit
5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]
6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1167-0: 08-12-2010 2:34 PM - DOUGHD - Joint Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3]

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBTu; PM10: 0.0076 lb-PM10/MMBTu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBTu or VOC: 0.003 lb-VOC/MMBTu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBTu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBTu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1168-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTUIHR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1168 (D) 12/12/2010 2:39 PM – OOUHH Joint Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% 02 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% 02 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOX: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1169-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadreddin, Executive Director APCO

DAVID WARNER, Director of Permit Services
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO₂, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM₁₀ emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM₁₀ emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permitee shall maintain records of daily PM₁₀ emissions from Units S-1547-1162-0 through S-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOₓ: 5 ppmvd @ 3% O₂ or 0.0061 lb-NOₓ/MMBtu; PM₁₀: 0.0076 lb-PM₁₀/MMBtu; CO: 25 ppmvd @ 3% O₂ or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO₂; sulfur - 200 pounds of SO₂ per hour, or 2000 ppmv as SO₂, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO₂ - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOₓ: 49,990 lb/yr; SOₓ: 17,210 lb/yr; PM₁₀: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOₓ and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOₓ and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1170-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NATIONWIDE BOILER MODEL CATASTAK
SELECTIVE CATALYTIC REDUCTION SYSTEM OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS
SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW1/4 of Section 20, NE1/4 & SE1/4 of Section 29, and NW1/4, SW1/4 & SE1/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located In excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER - Director of Permit Services
S-1547-1170-0 06-12-2010 2:21 PM - DRAFT • Joint inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through '1-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through '1-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801]

15. Any of units S-1547-1162 through '1-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOX: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBtu/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of 
three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. 
[District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - 
EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or 
ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA 
Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - 
ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally 
Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District 
Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] 
Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in 
which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not 
be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring 
shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. 
[District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. The permittee shall monitor and record the stack concentration of NH3 at least once during each month in which a 
source test is not performed. NH3 monitoring shall be conducted utilizing District approved gas-detection tubes or a 
District approved equivalent method. Monitoring shall not be required if the unit is not in operation; i.e. the unit need 
not be started solely to perform monitoring. Monitoring shall be performed within one day of restarting the unit unless 
monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable 
Through Title V Permit

29. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, or the NH3 concentrations 
corrected to 3% O2, as measured by District approved gas-detection tubes, exceed the allowable emissions limit, the 
permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of 
operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration 
after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct 
a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may 
stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show 
compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying 
breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the 
notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable 
Through Title V Permit

30. All NOx, CO, O2 and NH3 emission readings shall be taken with the unit operating either at conditions representative 
of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be 
calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a 
protocol approved by the APCO. NH3 emission readings shall be measured in accordance with the gas sample tube 
manufacturer's specifications and recommendations. Portable analyzer emission readings taken shall be averaged over 
a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by 
taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 
4306 and 4320] Federally Enforceable Through Title V Permit

31. The permittee shall maintain records of: (1) the date and time of NOx, CO, O2 and NH3 measurements, (2) the O2 
concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make 
and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, (5) method of determining the NH3 
concentration, and (6) a description of any corrective action taken to maintain the emissions within the acceptable 
range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Ammonia emissions readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings 
shall be converted to ppmv @ 3% O2. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V 
Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

34. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

35. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

37. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

38. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

40. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

41. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

42. The permittee shall obtain written District approval for the use of any equivalent SCR equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

43. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1171-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
                  BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
           KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NATIONWIDE BOILER MODEL CATASTAK
SELECTIVE CATALYTIC REDUCTION SYSTEM OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS
SPECIFIED LOCATIONS

CONDITIONS

1. {1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadrein, Executive Director APCO
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NOx - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180-0 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBtu/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. The permittee shall monitor and record the stack concentration of NH3 at least once during each month in which a source test is not performed. NH3 monitoring shall be conducted utilizing District approved gas-detection tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation; i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within one day of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, or the NH3 concentrations corrected to 3% O2, as measured by District approved gas-detection tubes, exceed the allowable emissions limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. All NOx, CO, O2 and NH3 emission readings shall be taken with the unit operating at either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. NH3 emission readings shall be measured in accordance with the gas sample tube manufacturer's specifications and recommendations. Portable analyzer emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. The permittee shall maintain records of: (1) the date and time of NOx, CO, O2 and NH3 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, (5) method of determining the NH3 concentration, and (6) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Ammonia emissions readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmvd @ 3% O2. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit
33. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

34. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

35. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

37. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

38. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

40. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

41. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reassessed, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

42. The permittee shall obtain written District approval for the use of any equivalent SCR equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

43. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1172-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
                    BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
          KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH NATIONWIDE BOILER MODEL CATASTAK
SELECTIVE CATALYTIC REDUCTION SYSTEM OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS
SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1172-0 02/12/15 2:35PM - D00094 - Joint Inspection NOT Required

Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 5 ppmvd @ 3% O2 or 0.0061 lb-Nox/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 745,000 MMBtu/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. The permittee shall monitor and record the stack concentration of NH3 at least once during each month in which a source test is not performed. NH3 monitoring shall be conducted utilizing District approved gas-detection tubes or a District approved equivalent method. Monitoring shall not be required if the unit is not in operation; i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within one day of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, or the NH3 concentrations corrected to 3% O2, as measured by District approved gas-detection tubes, exceed the allowable emissions limit, the permittee shall return the emissions to the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. All NOx, CO, O2 and NH3 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. NH3 emission readings shall be measured in accordance with the gas sample tube manufacturer's specifications and recommendations. Portable analyzer emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. The permittee shall maintain records of: (1) the date and time of NOx, CO, O2 and NH3 measurements, (2) the O2 concentration in percent by volume and the measured NOx, CO and NH3 concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, (5) method of determining the NH3 concentration, and (6) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Ammonia emissions readings shall be conducted at the time the NOx, CO and O2 readings are taken. The readings shall be converted to ppmv@3% O2. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

34. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

35. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

37. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

38. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

39. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

40. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,136 lb/quarter; SOx: 391 lb/quarter; PM10: 1,416 lb/quarter and VOC: 559 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

41. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

42. The permittee shall obtain written District approval for the use of any equivalent SCR equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

43. The permittee’s request for approval of equivalent equipment shall include the make, model, manufacturer’s maximum rating, manufacturer’s guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
Seyed Sadredfii, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1173-0  OGl 12 2010 2:20PM  DOUGRD  Joint Inspection NOT Required
Southern Regional Office  •  34946 Flyover Court  •  Bakersfield, CA 93308  •  (661) 392-5500  •  Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through -1 1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through -1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/MMBtu. [District Rules 2201 and 43201] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBTu; PM10: 0.0076 lb-PM10/MMBTu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBTu or VOC: 0.003 lb-VOC/MMBTu. [District Rules 2201 and 43201] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through -1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4, SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hlv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1174-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredini, Executive Director APCO

DAVID WARNER, Director of Permit Services
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3]

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1175-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1175-D 03/12/2010 240PM - DOUGRDJ Draft Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through '1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through '1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; Stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1176-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. [1830] This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. [1831] Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadrein, Executive Director / APCO

DAVID WARNER, Director of Permit Services
S-1547-1176-0; 06/12/10 2:49PM; DRAFT - Joint Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 43,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 108] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of
three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.
[District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100. NOx (lb/MMBtu) -
EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or
ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA
Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) -
ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally
Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District
Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in
which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not
be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring
shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month.
[District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable
emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no
longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable
emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the
following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a
source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must
then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the
deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply
with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305,
4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of
normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated,
maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol
approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by
either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced
out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through
Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2
concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and
model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective
action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally
Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal
operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination
of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off
for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For
the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time
after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally
Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by
submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally
Enforceable Through Title V Permit
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 43201] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 43201] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 43201] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 43201] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 43201] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1177-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1177-0 Oct 12 2010 2:40PM DRAFT Joint Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 5 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1178-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC

MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
S-1547-1178-0 05 12 2010 2:35PM - DOUG/H2 - Jorn Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 Ib/day at location #2038 in the SW of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr/S1000 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3%, as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1179-0
LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164
LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. (1830) This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. (1831) Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through '1180-0 shall not exceed 124 lb/day at location #2038 in the SW/4 of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through '1180-0 shall not exceed 168 lb/day at location #2972 in the SE/4 of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/100 scf. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 4101, 4102, 4301, 4405, 4406 and 4801] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through '1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730,000 MMBTU/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 108] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOX (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) - EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; Stack gas oxygen (O2) - EPA Method 3 or 3A or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas moisture content - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) - ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable analyzer that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

28. If the NOx or CO concentrations corrected to 3% as measured by the portable analyzer, exceed the applicable emission limit, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

29. All NOx, CO, and O2 emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The NOx, CO, and O2 analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute sample period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive minute period. [District Rules 4102, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

30. The permittee shall maintain records of: (1) the date and time of NOx, CO and O2 measurements, (2) the O2 concentration in percent by volume and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

31. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. Unless otherwise specified in the PTO, no determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. For the purposes of permittee-performed alternate monitoring, emissions measurements may be performed at any time after the unit reaches conditions representative of normal operation. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

32. Shorter time periods for demonstration of compliance after startup or re-ignition may be approved by the APCO by submittal of appropriate technical justification upon implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
33. PUC quality natural gas is any gaseous fuel where the sulfur content is no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet, no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet, and at least 80% methane by volume. [District Rule 4320] Federally Enforceable Through Title V Permit

34. If the steam generator is not fired on PUC-regulated natural gas and compliance is achieved through fuel sulfur content limitations, then the sulfur content of the fuel shall be determined by testing sulfur content at a location after all fuel sources are combined prior to incineration, or by performing mass balance calculations based on monitoring the sulfur content and volume of each fuel source. The sulfur content of the fuel shall be determined using the test methods referenced in this permit. [District Rule 4320] Federally Enforceable Through Title V Permit

35. When complying with sulfur emission limits by fuel analysis or by a combination of source testing and fuel analysis, permittee shall demonstrate compliance at least annually. [District Rule 4320] Federally Enforceable Through Title V Permit

36. If the unit is fired on PUC-regulated natural gas, valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320] Federally Enforceable Through Title V Permit

37. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

38. Prior to operating under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,460 lb/quarter; SOx: 383 lb/quarter; PM10: 1,387 lb/quarter and VOC: 548 lb/quarter. Offset shall be provided at the applicable offset ratio specified in Table 4-2 of Rule 2201 (as amended 9/21/2006). [District Rule 2201] Federally Enforceable Through Title V Permit

39. ERC Certificate Numbers S-257-2, S-0135-2, S-0133-2, S-1821-2, S-40130321-2, S-784-2, S-796-2, S-2958-2, S-2395-1, S-2010-5, S-1825-5, and S-1337-5 (or certificates split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit

40. The permittee shall obtain written District approval for the use of any equivalent equipment not specifically approved by this ATC. Approval of the equivalent equipment shall be made in writing and only after the District's determination that the submitted design and performance of the proposed alternative equipment is equivalent to the authorized equipment. [District Rule 2010] Federally Enforceable Through Title V Permit

41. The permittee's request for approval of equivalent equipment shall include the make, model, manufacturer's maximum rating, manufacturer's guaranteed emissions rates, equipment drawing(s) and operational characteristics/parameters. [District Rule 2010] Federally Enforceable Through Title V Permit
San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: S-1547-1180-0

LEGAL OWNER OR OPERATOR: AERA ENERGY LLC
MAILING ADDRESS: PO BOX 11164
BAKERSFIELD, CA 93389-1164

LOCATION: HEAVY OIL WESTERN STATIONARY SOURCE
KERN COUNTY, CA

EQUIPMENT DESCRIPTION:
85 MMBTU/HR NATURAL GAS-FIRED STEAM GENERATOR WITH COEN MODEL QLN-ULN ULTRA LOW NOX BURNER, OR NORTH AMERICAN MODEL MAGNA FLAME LEX ULTRA LOW NOX BURNER, OR ADVANCED COMBUSTION TECHNOLOGY GIDEON ULTRA LOW NOX BURNER OR EQUIVALENT, APPROVED TO OPERATE AT VARIOUS SPECIFIED LOCATIONS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District NSR Rule] Federally Enforceable Through Title V Permit

2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

3. This unit is approved for operation at the following locations: SW/4 of Section 20, NE/4 & SE/4 of Section 29, and NW/4, SW/4 & SE/4 of Section 28, T28S, R21E. [District Rule 4102]

4. Permittee shall notify the District Compliance Division of each location at which the unit is located in excess of 24 hours. Such notification shall be made no later than 48 hours after starting operation at the location. [District Rule 1070] Federally Enforceable Through Title V Permit

5. This unit shall be equipped with a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer). [CEQA]

6. This unit shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump. [CEQA]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (661) 392-5500 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances, and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredini, Executive Director APCO

DAVID WARNER - Director of Permit Services
S-1547-1180-0: 06/12/10 2:40PM - 0000000 - Just Inspection NOT Required
Southern Regional Office • 34946 Flyover Court • Bakersfield, CA 93308 • (661) 392-5500 • Fax (661) 392-5585
7. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2, nor 10 lb/hr. [District Rules 4201, 4301, 5.1 and 5.2.3] Federally Enforceable Through Title V Permit

8. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]

9. The total PM10 emissions from Units S-1547-1162-0 through S-1180-0 shall not exceed 124 lb/day at location #2038 in the SW of Section 20, T28S, R21E. [District Rule 4102]

10. The total PM10 emissions from Units S-1547-1162 through S-1180-0 shall not exceed 168 lb/day at location #2972 in the SE of Section 29, T28S, R21E. [District Rule 4102]

11. Permittee shall maintain records of daily PM10 emissions from Units S-1547-1162-0 through S-1547-1180-0 at locations #2038 and #2972. [District Rule 4102]

12. The unit shall only be fired on natural gas with sulfur content not to exceed 0.75 gr-S/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

13. Emissions from the natural gas-fired unit shall not exceed any of the following limits: NOx: 7 ppmvd @ 3% O2 or 0.008 lb-NOx/MMBtu; PM10: 0.0076 lb-PM10/MMBtu; CO: 25 ppmvd @ 3% O2 or 0.0185 lb-CO/MMBtu or VOC: 0.003 lb-VOC/MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

14. Emission rates during startup, shutdown and refractory curing shall not exceed: particulate matter - 10 pounds per hour, or 0.1 grains/dscf calculated to 12% CO2; sulfur - 200 pounds of SO2 per hour, or 2000 ppmv as SO2, or 0.11 pounds sulfur (as S) per MMBtu on average-wide basis for all units in Rule 4406 plan; NO2 - 140 pounds per hour or 0.14 pounds per MMBtu. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

15. Any of units S-1547-1162 through S-1180 may be installed provided that permitted annual emissions do not exceed any of the following limits: NOx: 49,990 lb/yr; SOx: 17,210 lb/yr; PM10: 62,282 lb/yr; CO: 151,608 lb/yr or VOC: 24,585 lb/yr, consistent with the quantity of ERCs identified in this project. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Annual quantity of natural gas fuel burned in this steam generator shall not exceed 730 MMsccf/year. [District Rule 2201] Federally Enforceable Through Title V Permit

17. Duration of start-up and shutdown shall not exceed 2 hours each per occurrence. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

18. Duration of refractory curing shall not exceed 30 hours per each occurrence. Permittee shall keep accurate records of refractory curing duration and make records readily available to the District upon request. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

19. Permittee shall maintain records of duration of each start-up and shutdown, and refractory curing, for a period of five years and make such records readily available for District inspection upon request. [District Rule 4320] Federally Enforceable Through Title V Permit

20. A source test to demonstrate compliance with NOx and CO emission limits shall be performed within 60 days of startup of this unit. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit

21. Source testing to measure natural gas-combustion NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months (no more than 30 days before or after the required annual source test date). After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months (no more than 30 days before or after the required 36-month source test date). If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

22. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE
23. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of
three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit.
[District Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

24. The following test methods shall be used: NOx (ppmv) - EPA Method 7E or ARB Method 100, NOx (lb/MMBtu) -
EPA Method 19; CO (ppmv) - EPA Method 10 or ARB Method 100; stack gas velocities - EPA Method 2; Stack gas oxygen (O2) - EPA Method 3 or 3A or
ARB Method 100; stack gas oxygen (O2) - EPA Method 4; SOx - EPA Method 6C or 8 or ARB Method 100; fuel gas sulfur as H2S content - EPA Method 11 or 15; and fuel hhv (MMBtu) -
ASTM D 1826 or D 1945 in conjunction with ASTM D 3588. [District Rules 4305, 4306 and 4320] Federally
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25. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District
Rules 4305, 4306 and 4320] Federally Enforceable Through Title V Permit

26. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
Federally Enforceable Through Title V Permit

27. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in
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model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective
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