<table>
<thead>
<tr>
<th>Category:</th>
<th>SMALL EMITTER (PTE &lt; 10 LBS/DAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATEGORY:</td>
<td>BOILER/HEATER &lt; 5 MMBTU</td>
</tr>
<tr>
<td>BACT Category:</td>
<td>SMALL EMITTER (PTE &lt; 10 LBS/DAY)</td>
</tr>
</tbody>
</table>

**BACT Determination Information**

<table>
<thead>
<tr>
<th>BACT Determination Number: 240</th>
<th>BACT Determination Date: 4/14/2020</th>
</tr>
</thead>
</table>

**Equipment Information**

<table>
<thead>
<tr>
<th>Permit Number:</th>
<th>N/A -- Generic BACT Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Description:</td>
<td>BOILER</td>
</tr>
<tr>
<td>Unit Size/Rating/Capacity:</td>
<td>LPG fired ≥2 &amp; &lt;5 MMBTU/HR</td>
</tr>
<tr>
<td>Equipment Location:</td>
<td></td>
</tr>
</tbody>
</table>

**BACT Determination Information**

<table>
<thead>
<tr>
<th>District Contact: Jeffrey Quok</th>
<th>Phone No.: (916) 874-4863</th>
<th>email: <a href="mailto:jquok@airquality.org">jquok@airquality.org</a></th>
</tr>
</thead>
</table>

**ROCs**

- **Standard:** Good combustion practice, Use of LPG
- **Technology Description:**
- **Basis:** Achieved in Practice

**NOx**

- **Standard:** 12 ppmvd @ 3% O2
- **Technology Description:**
- **Basis:** Achieved in Practice

**SOx**

- **Standard:** Good combustion practice, Use of LPG
- **Technology Description:**
- **Basis:** Achieved in Practice

**PM10**

- **Standard:** Good combustion practice, Use of LPG
- **Technology Description:**
- **Basis:** Achieved in Practice

**PM2.5**

- **Standard:** Good combustion practice, Use of LPG
- **Technology Description:**
- **Basis:** Achieved in Practice

**CO**

- **Standard:** Firetube: 50 ppmvd @ 3% O2, Watertube: 100 ppmvd @3% O2
- **Technology Description:**
- **Basis:** Achieved in Practice

**LEAD**

- **Standard:**
- **Technology Description:**
- **Basis:**

**Comments:**

This is a generic BACT determination based on BACT determinations made and published by other air agencies in California and/or other states.

This BACT Determination is for units classified as small emitters (less than 10 lbs/day of VOC, NOx, SOx, PM10, or PM2.5 and less than 550 lbs/day CO) and are located at non-major stationary sources.

Printed: 4/14/2020
BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

DETERMINATION NO.: 240
DATE: 4/14/20
ENGINEER: Jeffrey Quok

Category/General Equip Description: Boilers/Heaters – LPG Fired

Equipment Specific Description: #240 – Boiler/heater propane fired greater or equal to 2 MMBtu/hr to less than 5 MMBtu/hr

Equipment Size/Rating: Minor Source BACT

Previous BACT Det. No.: 130

This BACT/T-BACT determination will update BACT Determination #130 which was made on 7/1/2016.

The District’s Small Emitter and “Otherwise-Exempt Equipment” BACT Determinations policy states that units which are classified as small emitters (less than 10 lbs/day of VOC, NOx, SOx, PM10, or PM2.5 and less than 550 lbs/day of CO) and are located at non-major stationary sources are only required to meet BACT standards that have been achieved in practice. Therefore, this BACT determination will only be based on what is achieved in practice and will be only applied to small emitters at non-major sources. BACT will be evaluated on a case-by-case basis for units that do not fit this criteria.
BACT ANALYSIS

A: ACHIEVED IN PRACTICE (Rule 202, §205.1a)

The following control technologies are currently employed as BACT for boilers/heaters propane fired greater or equal to 2 and less than 5 MMBTU/hr by the following air pollution control districts:

<table>
<thead>
<tr>
<th>District/Agency</th>
<th>Best Available Control Technology (BACT)/Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>US EPA</td>
<td></td>
</tr>
<tr>
<td><strong>BACT:</strong></td>
<td>Source: EPA RACT/BACT/LAER Clearinghouse</td>
</tr>
<tr>
<td></td>
<td>RBLC ID: CA-1190</td>
</tr>
<tr>
<td></td>
<td>For LPG/propane fired units with a rating of ≥ 2 to &lt;5 MMBtu/hr</td>
</tr>
<tr>
<td>VOC</td>
<td>No standard</td>
</tr>
<tr>
<td>NOx</td>
<td>12 ppmvd corrected to 3% O₂*</td>
</tr>
<tr>
<td>SOx</td>
<td>No standard</td>
</tr>
<tr>
<td>PM10</td>
<td>No standard</td>
</tr>
<tr>
<td>PM2.5</td>
<td>No standard</td>
</tr>
<tr>
<td>CO</td>
<td>No standard</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>* This BACT determination was found to be the most stringent Achieved in Practice BACT determination published in the EPA clearinghouse. See Attachment A for more information.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RULE REQUIREMENTS:</strong></td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>ARB</td>
<td></td>
</tr>
<tr>
<td><strong>BACT:</strong></td>
<td>Source: ARB BACT Clearinghouse</td>
</tr>
<tr>
<td></td>
<td>ATC 12949-01 (1-24-12) SBAPCD</td>
</tr>
<tr>
<td></td>
<td>For LPG/propane fired units with a rating of ≥ 2 to &lt;5 MMBtu/hr</td>
</tr>
<tr>
<td>VOC</td>
<td>No standard</td>
</tr>
<tr>
<td>NOx</td>
<td>20 ppmvd corrected to 3% O₂ [SBCAPCD]</td>
</tr>
<tr>
<td>SOx</td>
<td>No standard</td>
</tr>
<tr>
<td>PM10</td>
<td>No standard</td>
</tr>
<tr>
<td>PM2.5</td>
<td>No standard</td>
</tr>
<tr>
<td>CO</td>
<td>No standard</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>RULE REQUIREMENTS:</strong></td>
</tr>
<tr>
<td></td>
<td>None</td>
</tr>
<tr>
<td>District/Agency</td>
<td>Best Available Control Technology (BACT)/Requirements</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------------------------------</td>
</tr>
</tbody>
</table>
| SMAQMD          | **BACT:**  
Source: SMAQMD BACT Clearinghouse  
For LPG/propane fired units with a rating of ≥ 2 to < 5 MMBtu/hr  
VOC: Good combustion practice; Use of LPG  
NOx: 12 ppmvd at 3% O₂, Ultra Low-NOx burner  
SOx: Good combustion practice; Use of LPG  
PM10: Good combustion practice; Use of LPG  
PM2.5: Good combustion practice; Use of LPG  
CO: Firetube: 50 ppmvd at 3% O₂; Watertube: 100 ppmvd at 3% O₂ |
| South Coast AQMD| **BACT:**  
For units fueled by natural gas or LPG/propane, with a rating of ≥ 2 and < 5 MMBtu/hr:  
VOC: No standard  
NOx: 12 ppmvd corrected to 3% O₂ (A)  
SOx: No standard  
PM10: No standard  
PM2.5: No standard  
CO: Firetube Boiler: 50 ppmvd corrected to 3% O₂  
Watertube Boiler: 100 ppmvd corrected to 3% O₂ |

*(A) This limit was verified by source test on 1/21/16 (see Attachment B). Based on the research that was performed for this determination, Power Flame has provided the lowest NOx limit for units in this size range and fired on LPG/propane. The tested boiler is equipped with a Power Flame ultra low NOx burner. Power Flame provided an emissions sheet showing the limits that are achievable by their burners when fired on natural gas and LPG (see Attachment C). Power Flame was contacted on 4/14/16 for an updated emissions sheet and the response was that limits provided in the 2009 version were still current. 12 ppmvd @ 3% O₂ is the lowest limit that is listed for LPG fired units.*
### South Coast AQMD

**Best Available Control Technology (BACT)/Requirements**

**RULE REQUIREMENTS:**


Requirements Table 1146-1

<table>
<thead>
<tr>
<th>Category</th>
<th>NOx Limit</th>
<th>CO Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG/propane Fired Units</td>
<td>30 ppmvd @ 3% O&lt;sub&gt;2&lt;/sub&gt;</td>
<td>400 ppmvd @ 3% O&lt;sub&gt;2&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

### San Diego County APCD

**BACT:**

Source: *NSR Requirements for BACT, page 3-5 (6-11)*

Note: SDCAPCD BACT Guidelines do not contain a specific determination for boilers/heaters in the size range of 2 to less than 5 MMBtu/hr, since these units are not required to obtain a written permit, pursuant to SDAPCD Regulation II Rule 11 – Exemptions from Rule 10 Permit Requirements.

**SDAPCD Rule 11(d)**

Any equipment, operation, or process that is listed below in Subsections (d)(1) through (d)(20), and that meets the stated exemption provision, parameter, requirement, or limitation, is exempt from the requirements of Rule 10. (d)(2)(v) Any boiler, process heater, or steam generator with a manufacturer’s maximum gross heat input rating of less than 5 million BTU per hour fired exclusively with natural gas and/or liquefied petroleum gas.

The SDCAPCD has a BACT determination that applies to natural gas or propane fired boilers/heaters with a rating of less than 50 MMBtu/hr. The SDCAPCD has a BACT trigger level of 10.0 lbs/day for NOx, VOC, SOx and PM10. No limits have been established for PM2.5 or CO. Since, boilers in the size range of 2 to less than 5 MMBtu/hr are exempt from permit requirements, this BACT guideline does not apply.

**RULE REQUIREMENTS:**

*Regulation 4, Rule 69.2.1 – Industrial and Commercial Boilers, Process Heaters and Steam Generators (3-25-2009)*

For any unit with a heat input rating from 600,000 Btu/hr to 2 MMBtu/hr. (Note that for this BACT determination only units rated exactly at 2 MMBtu/hr would apply)

1. 30 ppmvd of NOx when operated on a gaseous fuel, corrected to 3% O<sub>2</sub>
2. 40 ppmvd of NOx when operated on a liquid fuel, corrected to 3% O<sub>2</sub>
3. 400 ppmvd of CO corrected to 3% O<sub>2</sub>

The SDCAPCD does not have a prohibitory rule that applies to boilers rated at greater than or equal to 2 MMBtu/hr and less than 5 MMBtu/hr.
## District/Agency

<table>
<thead>
<tr>
<th>District/Agency</th>
<th>Best Available Control Technology (BACT)/Requirements</th>
</tr>
</thead>
</table>
| **Bay Area AQMD**     | **BACT:**  
Source: [BAAQMD BACT Workbook](#)  
Note: BAAQMD BACT Workbook does not contain a determination for boilers/heaters 5 MMBtu/hr or less fired exclusively on natural gas or LPG, since these units are not required to obtain a written permit, pursuant to BAAQMD Regulation 2, Rule 1 – General Requirements.  
**BAAQMD Rule 2-1-114 – General Requirements**  
The following equipment is exempt from the, requirements of Sections 2-1-301 and 302 (requirement to obtain an ATC or PTO): (114.1) Boilers, Heaters, Steam Generators, Duct Burners, and Similar Combustion Equipment:  
1.2 Any of the above equipment with less than 10 million BTU per hour rated heat input if fired exclusively with natural gas (including compressed natural gas), liquefied petroleum gas (e.g. propane, butane, isobutane, propylene, butylenes, and their mixtures), or any combination thereof.  
**RULE REQUIREMENTS:**  
None |
| **San Joaquin Valley APCD** | **BACT:**  
Source: [SJVUAPCD BACT Guideline (Rescinded)](#)  
The boiler BACT determinations listed in the SJVAPCD Clearinghouse have been rescinded.  
Note: SJVUAPCD BACT Guidelines do not contain a determination for boilers 5 MMBtu/hr or less, since these units are not required to obtain a written permit, pursuant to SJUVAPCD Rule 2020 - Exemptions.  
**SJVUAPCD Rule 2020 §6.0**  
No Authority to Construct or Permit to Operate shall be required for (§6.1) steam generators, steam super heaters, water boilers, water heaters, steam cleaners, and closed indirect heat transfer systems that have a maximum input heat rating of 5,000,000 Btu per hour (gross) or less and is equipped to be fired exclusively with (§6.1.1.1) natural gas, (§6.1.1.2) liquefied petroleum gas, or (§6.1.1.3) any combination of the two. |
### San Joaquin Valley APCD

<table>
<thead>
<tr>
<th>District/Agency</th>
<th>Best Available Control Technology (BACT)/Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RULE REQUIREMENTS:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Rule 4307 – Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr (4-21-2016)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>NOx Limit ppmvd @ 3% O&lt;sub&gt;2&lt;/sub&gt;</th>
<th>CO Limit ppmvd @ 3% O&lt;sub&gt;2&lt;/sub&gt;</th>
<th>Effective Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>New or replacement atmospheric units not listed below</td>
<td>12</td>
<td>400</td>
<td>1/1/2010</td>
</tr>
<tr>
<td>New or replacement atmospheric unit that is one of the following: - A unit used at a school, or - A unit in an oil field or refinery, or - A glycol reboiler, or - A unit with a heat input of greater than 1.8 billion Btu but less than 5.0 billion Btu per calendar year.</td>
<td>12</td>
<td>400</td>
<td>1/1/2016</td>
</tr>
<tr>
<td>New or replacement non-atmospheric units not listed below</td>
<td>9</td>
<td>400</td>
<td>1/1/2010</td>
</tr>
<tr>
<td>New or replacement non-atmospheric unit that is one of the following: - A unit used at a school, or - A unit in an oil field or refinery, or - A glycol reboiler, or - A unit with a heat input greater than 1.8 billion Btu but less than 5.0 billion Btu per calendar year.</td>
<td>9</td>
<td>400</td>
<td>1/1/2016</td>
</tr>
</tbody>
</table>

The SJVAPCD has a permit registration program that is regulated under Rule 2250 Permit Exempt Equipment Registration (10/19/06) for units that would normally be exempt from permitting requirements. There are currently no certified LPG/propane fired boilers ≥ 2 and < 5 MMBtu/hr at the SJVAPCD. The District received confirmation from the SJVAPCD on 1/10/19 stating no LPG/propane fired boilers in this size range have been tested in their district (see Attachment F for correspondence). Therefore, these limits have not been achieved in practice for LPG/propane.
The following control technologies have been identified and are ranked based on stringency:

### SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Source</th>
</tr>
</thead>
</table>
| VOC       | 1. Good combustion practice; Use of LPG – [SMAQMD]  
2. No standard – [SCAQMD, SJVAPCD, BAAQMD, SDCAPCD, EPA, ARB] |        |
| NOx       | 1. 12 ppmvd corrected to 3% O₂ – [SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse]  
2. 20 ppmvd corrected to – [ARB BACT Clearinghouse]  
3. 30 ppmvd corrected to 3% O₂ – [SDCAPCD] |        |
| SOx       | 1. Good Combustion Practice; Use of LPG – [SMAQMD]  
2. No standard – [SCAQMD, SJVAPCD, BAAQMD, SDCAPCD, EPA, ARB] |        |
| PM10      | 1. Good Combustion Practice; Use of LPG – [SMAQMD]  
2. No standard – [SCAQMD, SJVAPCD, BAAQMD, SDCAPCD, EPA, ARB] |        |
| PM2.5     | 1. Good Combustion Practice; Use of LPG – [SMAQMD]  
2. No standard – [SCAQMD, SJVAPCD, BAAQMD, SDCAPCD, EPA, ARB] |        |
| CO        | 1. Firetube Boilers: 50 ppmvd corrected to 3% O₂, and  
Watertube Boilers: 100 ppmvd corrected to 3% O₂ – [SMAQMD, SCAQMD]  
2. 400 ppm of CO corrected to 3% O₂ – [SVAPCD, SDCAPCD]  
3. No standard – [BAAQMD, EPA, ARB] |        |

The following control technologies have been identified as the most stringent, achieved in practice control technologies:

### BEST CONTROL TECHNOLOGIES ACHIEVED

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC</td>
<td>Good combustion practice; Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>NOx</td>
<td>12 ppmvd at 3% O₂</td>
<td>SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse</td>
</tr>
<tr>
<td>SOx</td>
<td>Good combustion practice; Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>PM10</td>
<td>Good combustion practice; Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>PM2.5</td>
<td>Good combustion practice; Use of LPG</td>
<td>SMAQMD</td>
</tr>
</tbody>
</table>
| CO        | Firetube Boilers: 50 ppmvd at 3% O₂  
Watertube Boilers: 100 ppmvd at 3% O₂ | SMAQMD, SCAQMD |
B: TECHNOLOGICALLY FEASIBLE AND COST EFFECTIVE (Rule 202, §205.1.b.)

The District’s Small Emitter and “Otherwise-Exempt Equipment” BACT Determinations policy (dated 5/16/2019) states that units which are classified as small emitters (less than 10 lbs/day of VOC, NOx, SOx, PM10, or PM2.5 and less than 550 lbs/day of CO) and are located at non-major stationary sources are only required to meet BACT standards that have been achieved in practice. Therefore, this BACT determination will only be based on what is achieved in practice and will only be applied to small emitters at non-major sources. BACT will be evaluated on a case-by-case basis for units that do not fit these criteria.

C: SELECTION OF BACT

Based on the above analysis, BACT for VOC, NOx, SOx, PM10, PM2.5 and CO will be the most stringent standards of what is currently achieved in practice.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Standard</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC</td>
<td>Good combustion practice, Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>NOx</td>
<td>12 ppmvd at 3% O₂</td>
<td>SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse</td>
</tr>
<tr>
<td>SOx</td>
<td>Good combustion practice, Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>PM10</td>
<td>Good combustion practice, Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>PM2.5</td>
<td>Good combustion practice, Use of LPG</td>
<td>SMAQMD</td>
</tr>
<tr>
<td>CO</td>
<td>Firetube Boilers: 50 ppmvd at 3% O₂ Watertube Boilers: 100 ppmvd at 3% O₂</td>
<td>SMAQMD, SCAQMD</td>
</tr>
</tbody>
</table>

D: SELECTION OF T-BACT:

Toxics are in the form of VOCs and particulate matter. Since toxic emissions from natural gas fired boilers in the 2 to less than 5 MMBtu/hr size range are so small and the cancer risk is not expected to be anywhere close to 1 in a million cases, T-BACT was not evaluated for this determination.

APPROVED BY:  

Brian F Krebs  

DATE: 4/15/20
Attachment A

Review of BACT Determinations Published by EPA, ARB, and Districts
List of BACT determinations published in EPA’s RACT/BACT/LAER Clearinghouse for boilers ≥ 2 MMBtu/hr to < 5 MMBtu/hr:

<table>
<thead>
<tr>
<th>Capacity MMBtu/hr</th>
<th>Source</th>
<th>Date</th>
<th>Type</th>
<th>NOx ppmv @ 3% O₂</th>
<th>CO ppmv @ 3% O₂</th>
<th>VOC lb/MMBtu</th>
<th>Filerable PM10 lb/MMBtu</th>
<th>SO₂ lb/MMBtu</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.00</td>
<td>SANTA BARBARA COUNTY APCD</td>
<td>1/24/2012</td>
<td>Not Specified</td>
<td>12</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>2.00</td>
<td>SANTA BARBARA COUNTY APCD</td>
<td>1/24/2012</td>
<td>Not Specified</td>
<td>20</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

= Selected as the most stringent BACT determination achieved in practice.
Process Information - Details

For information about the pollutants related to this process, click on the specific pollutant in the list below.

RBLC Home  New Search  Search Results  Facility Information  Process List  Process Information

RBLC ID: CA-1189
Corporate/Company: PETROROCK- TUNNELL LEASE
Facility Name: PETROROCK- TUNNELL LEASE
Process: Boiler

Primary Fuel: Propane, field gas, PUC natural gas
Throughput: 2.00 MMBTU/H
Process Code: 13.310

Pollutant Information - List of Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary Emission Limit</th>
<th>Basis</th>
<th>Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>20.0000 PPMVD@3%</td>
<td>OTHER</td>
<td>CASE-BY- UNKNOWN CASE</td>
</tr>
<tr>
<td>Oxides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(PM2.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Process Notes: Oilfield tank heater
Facility Information

To learn more about the processes associated with this facility, click the Process List button. You can then view pollutant information for each process.

RBLC Home  New Search  Search Results  Facility Information  Process List

Date Entered: 04/23/2012
Date Last Modified: 09/06/2012

RBLC ID: CA-1190

Corporate/Company: PETROROCK- TUNNELL LEASE
Facility Name: PETROROCK- TUNNELL LEASE

State: CA
County: SANTA BARBARA
SPA Region: 9

Facility Description:

Zip Code: 93454
Country: USA

Facility Contact Information:

Name:
Phone:
E-Mail:

Agency Contact Information:

Agency: CA033 - SANTA BARBARA COUNTY APCD, CA
Contact: MR. BEN ELLERBERGER
Address: SANTA BARBARA COUNTY AIR POLLUTION CONTROL DISTRICT
260 NORTH SAN ANTONIO RD.
SUITE A.
SANTA BARBARA, CA 93110-1315
Phone: (805) 961-8879
Other Agency Contact Info: 805-961-8800

EST/ACT DATE
Complete Application ACT 03/07/2011
Date: Permit Issuance ACT 01/24/2012
Date:

FRS Number: Not Available
SIC Code: 1311
NAICS Code: 211111

Permit Number: ATC- 12949-01 (3)

Permit Type: B: Add new process to existing facility

PERMIT URL:
Affected Class I / U.S. Border Area:

No affected Class I areas identified.

Facility-Wide Emission Increase/Decrease:
(After prevention/control measures)

No facility wide emissions data available for this facility.

Other Permitting Information:
Process Information - Details

For information about the pollutants related to this process, click on the specific pollutant in the list below.

RBLC ID: CA-1190
Corporate/Company: PETROROCK - TUNNELL LEASE
Facility Name: PETROROCK - TUNNELL LEASE
Process: Heater

Primary Fuel: Propane, field gas, PUC natural gas
Throughput: 3.00 MMBTU/H
Process Code: 13.310

Pollutant Information - List of Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary Emission Limit</th>
<th>Basis</th>
<th>Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>12.0000 PPMVD@3%</td>
<td>OTHER</td>
<td>CASE-BY-</td>
</tr>
<tr>
<td>Nitrogen Oxides (NOx)</td>
<td>02</td>
<td>CASE</td>
<td>UNKNOWN CASE</td>
</tr>
</tbody>
</table>

Process Notes:
Facility Information

To learn more about the processes associated with this facility, click the Process List button. You can then view pollutant information for each process.

RBLC Home New Search Search Results Facility Information Process List

Date Entered: 04/23/2012

RBLC ID: CA-1189
Corporate/Company: PETROROCK TUNNELL LEASE
Facility Name: PETROROCK- TUNNELL LEASE
Facility Description:

State: CA
County: SANTA BARRARA
EPA Region: 9
Zip Code: 93454
Country: USA

Facility Contact Information:

Name: 
Phone: 
E-Mail: 

Agency Contact Information:

Agency: CA033 - SANTA BARRARA COUNTY APOD, CA
Contact: MR. BEN ELLERBERGER
Address: SANTA BARRARA COUNTY AIR POLLUTION CONTROL DISTRICT
          260 NORTH SAN ANTONIO RD.
          SUITE A.
          SANTA BARRARA, CA 93110 1315
Phone: (805) 961-9879

Other Agency Contact Info:

Permit Number: AYC- 12949-01 (2)

Permit Type: B: Add new process to existing facility

PERMIT URL: 

http://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.FacilityInfo&facility_id=27287

Date Last Modified: 09/06/2012

FINAL
Affected Class I / U.S. Border Area:
No affected Class 1 areas identified.

Facility-Wide Emission Increase/Decrease:
(After prevention/control measures)

No facilitywide emissions data available for this facility.

Other Permitting Information:
BACT Determination Detail

Category

Source Category: Boiler: < 5 MMBtu/hr
SIC Code 1311
NAICS Code 211111

Emission Unit Information

Manufacturer: Rite Engineering & Manufacturing
Type:
Model: W200WG
Equipment Description: Hot Water Heater
Capacity / Dimensions 2.00 MMBtu/hr
Fuel Type Field Gas
Multiple Fuel Types Propane, Field Gas, PUC natural gas
Continuous (24/7/365)

http://www.arb.ca.gov/baet/baetnew/determination.php?var=992

2/1/2016
BACT Determination Detail

Operating Schedule
(hours/day)/(days/week)/(weeks/year)

Function of Equipment
Oilfield tank heater

---

**Bact Information**

<table>
<thead>
<tr>
<th>NOx Limit</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx Limit Units</td>
<td>ppmvd @ 3% O2</td>
</tr>
<tr>
<td>NOx Average Time</td>
<td>40 minutes</td>
</tr>
<tr>
<td>NOx Control Method</td>
<td>Pollution Prevention</td>
</tr>
<tr>
<td>NOx Control Method Desc</td>
<td>Low-Nox burner</td>
</tr>
<tr>
<td>NOx Percent Control Efficiency</td>
<td></td>
</tr>
<tr>
<td>NOx Cost Effectiveness (%/ton)</td>
<td></td>
</tr>
<tr>
<td>NOx Incremental Cost Effectiveness (%/ton)</td>
<td></td>
</tr>
<tr>
<td>NOx Cost Verified (Y/N)</td>
<td></td>
</tr>
<tr>
<td>NOx Dollar Year</td>
<td></td>
</tr>
</tbody>
</table>

---

**Project / Permit Information**

Application/Permit No.: ATC 12949-01 (2)

Application Completeness Date:

http://www.arb.ca.gov/bact/bactnew/determination.php?var=992

2/1/2016
New Construction/Modification: New Construction

ATC Date: 01-24-2012

PTO Date:

Startup Date: 01-31-2012

Technology Status: BACT Determination

Source Test Available: No

Source Test Results:

---

Facility / District Information

Facility Name: PetroRock - Tunnell Lease

Facility Zip Code: 93454

Facility County: Santa Barbara

District Name: Santa Barbara County APCD

District Contact: Ben Ellenberger

Contact Phone No.: (805) 901-8800

Contact E-Mail: cbe@sbcapcd.org

---

Notes

http://www.arb.ca.gov/bact/bactnew/determination.php?var=992

2/1/2016
BACT Determination Detail

Notes:

Report Error In Determination
**BOILER/HEATER < 5 MM BTU**

**BACT Determination Number:** 130  
**BACT Determination Date:** 7/1/2016

### Equipment Information

- **Permit Number:** 24855  
- **Equipment Description:** BOILER/HEATER  
- **Unit Size/Rating/Capacity:** Boiler/Heater >= 2 and < 5 mbmtu/hr, Propane Fired  
- **Equipment Location:** TELFER PAVEMENT TECHNOLOGIES, LLC  
  5330 SHELTER RD  
  MCCLELLAN, CA

### BACT Determination Information

| ROCS | Standard: Good combustion practice; Use of LPG
| Basis: Achieved in Practice |
| NOx | Standard: 12 ppmvd  
| Technology Description: Ultra Low-NOx burner  
| Basis: Achieved in Practice |
| SOx | Standard: Good combustion practice; Use of LPG  
| Technology Description:  
| Basis: Achieved in Practice |
| PM10 | Standard: Good combustion practice; Use of LPG  
| Technology Description:  
| Basis: Achieved in Practice |
| PM2.5 | Standard: Good combustion practice; Use of LPG  
| Technology Description:  
| Basis: Achieved in Practice |
| CO | Standard: Firetube: 50 ppmvd; Watertube: 100 ppmvd  
| Technology Description: Ultra Low-NOx burner  
| Basis: Achieved in Practice |
| LEAD | Standard:  
| Technology Description:  
| Basis: |

**Comments:** PPMVD is corrected to 3% O2.

**District Contact:** Felix Trujillo  
**Phone No.:** (916) 874 - 7357  
**email:** ftrujillo@airquality.org
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Best Available Control Technology (BACT) Guidelines for Non-Major Polluting Facilities*

10-20-2000 Rev. 0
10-03-2008 Rev. 1
12-02-2010 Rev. 2

Equipment or Process: Boiler

<table>
<thead>
<tr>
<th>Subcategory/Rating/Size</th>
<th>VOC</th>
<th>NOx(^1)</th>
<th>SOx</th>
<th>CO</th>
<th>PM(_{10})</th>
<th>Inorganic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas Fired, &gt; 2 and &lt; 20 MMBtu/HR</td>
<td>Compliance with SCAQMD Rules 1146 or 1146.1(^2) (12-02-2016)</td>
<td>Natural Gas (10-20-2000)</td>
<td>≤50 ppmvd for firetube type, ≤100 ppmvd for watertube type, corrected to 3% O(_2) (04-10-98)</td>
<td>Natural Gas (04-10-98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propane Fired, &gt; 2 and &lt; 70 MMR/Btu/HR</td>
<td>≤12 ppmvd corrected to 3% O(_2) (10-20-2000)</td>
<td>≤50 ppmvd for firetube type, ≤100 ppmvd for watertube type, corrected to 3% O(_2) (04-10-98)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas or Propane Fired, &gt; 20 and &lt; 75 MM Btu/HR</td>
<td>With Low-NOx Burner: ≤0 ppmvd dry corrected to 3% O(_2) With Add-On Controls: ≤7 ppmvd dry corrected to 3% O(_2) (10-20-2000)</td>
<td>Natural Gas (10-20-2000)</td>
<td>Same as above. (04-10-98)</td>
<td>Natural Gas (04-10-98) With Add-On Controls: ≤5 ppmvd NH3, corrected to 3% O(_2) ≤1 ppmvd ozone, corrected to 3% O(_2) (10-20-2000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Gas or Propane Fired, &gt; 75 MM Btu/HR</td>
<td>Compliance with SCAQMD Rule 1146 (12-02-2016)</td>
<td>Natural Gas (10-20-2000)</td>
<td>Same as above. (04-10-98)</td>
<td>Natural Gas (04-10-98) With Add-On Controls: ≤5 ppmvd NH3, corrected to 3% O(_2) ≤1 ppmvd ozone, corrected to 3% O(_2) (10-20-2000)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(Continued on next page)*

* Means those facilities that are minor facilities as defined by Rule 1302 - Definitions
Attachment B

SCAQMD Source Test Results
COMPLIANCE SOURCE TEST REPORT PERFORMED ON
1/21/2016 AT THE SANCON ENGINEERING, INC., HURST
BOILER
FACILITY ID 108214, APPLICATIONS NUMBER 512499

Prepared for, Facility:

Sancon Engineering, Inc.
5841 Engineer Dr.
Huntington Beach, CA 92649

Facility Contact: ____________________________
Gary Drew
Equipment Description: _______________________
Hurst Boiler
Applications Numbers: _________________________
512499
Test Date(s): _______________________________
1/21/2016
Issue Date: _________________________________
1/25/2016

Prepared by: ________________________________
Wally Moe
Source Testing Manager

Reviewed by: ________________________________
Hasan Amin
Project Manager

Source Testing Firm:

Accurate Environmental Services, Inc.
8200 Katella Ave, Suite D
Stanton, CA 90680
(714) 379-9200

Report Identification Number: R 04006 SEI
2.0 Summary of Results

The source testing was conducted on the Hurst Boiler in order to determine the emissions of nitrogen oxides (NOx), carbon monoxide (CO), carbon dioxide (CO2), and oxygen (O2) at the exhaust. The source test also determined flow rate, temperature, and moisture at the exhaust of the unit. SCAQMD method 100.1 was used to measure NOx, CO, CO2, and O2. The NOx and CO concentrations were corrected to 3% oxygen. Moisture at the exhausts of the unit was calculated using Oxygen concentration calculations. The stack gas flow rate was measured using SCAQMD methods 1.1-3.1. The results show the boiler is in compliance with the permitted NOx and CO concentration limits. The Compliance Test results are summarized in Tables 2-1. Tables 2-2 & 2-3 presents a Summary of the Reference Method Quality Assurance Checks.

![Table 2-1 Summary of Results](image)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>High Load</th>
<th>Low Load</th>
<th>Average Load</th>
<th>Normal Load</th>
<th>Allowable Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx, Concentration</td>
<td>ppm</td>
<td>6.07</td>
<td>5.87</td>
<td>6.01</td>
<td>6.93</td>
<td>N/A</td>
</tr>
<tr>
<td>NOx, @ 3% O2</td>
<td>ppm</td>
<td>8.42</td>
<td>8.26</td>
<td>8.41</td>
<td>9.57</td>
<td>12</td>
</tr>
<tr>
<td>NOx Emission Rate</td>
<td>lb/hr</td>
<td>0.039</td>
<td>0.011</td>
<td>0.026</td>
<td>0.030</td>
<td>N/A</td>
</tr>
<tr>
<td>CO, Concentration</td>
<td>ppm</td>
<td>16.08</td>
<td>15.48</td>
<td>15.48</td>
<td>15.96</td>
<td>N/A</td>
</tr>
<tr>
<td>CO, @ 3% O2</td>
<td>ppm</td>
<td>22.29</td>
<td>21.79</td>
<td>21.64</td>
<td>22.05</td>
<td>50</td>
</tr>
<tr>
<td>CO Emission Rate</td>
<td>lb/hr</td>
<td>0.06</td>
<td>0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Stack Flow Rate, measured</td>
<td>dscfm</td>
<td>873</td>
<td>251</td>
<td>588</td>
<td>602</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Stack Flow Rate, calculated</td>
<td>dscfm</td>
<td>914</td>
<td>273</td>
<td>554</td>
<td>564</td>
<td>N/A</td>
</tr>
<tr>
<td>% Difference</td>
<td>%</td>
<td>4.63</td>
<td>8.53</td>
<td>5.72</td>
<td>6.31</td>
<td>15</td>
</tr>
<tr>
<td>Stack Gas Flow Rate, Actual</td>
<td>acfm</td>
<td>1,579</td>
<td>432</td>
<td>1,029</td>
<td>1,057</td>
<td>N/A</td>
</tr>
<tr>
<td>Fuel Flow Rate</td>
<td>scfm</td>
<td>25.66</td>
<td>7.54</td>
<td>15.44</td>
<td>15.91</td>
<td>N/A</td>
</tr>
<tr>
<td>Stack Temperature</td>
<td>°F</td>
<td>365.58</td>
<td>327.58</td>
<td>340.25</td>
<td>340.87</td>
<td>N/A</td>
</tr>
<tr>
<td>Air/Fuel Ratio</td>
<td>N/A</td>
<td>35.98</td>
<td>35.18</td>
<td>40.26</td>
<td>40.06</td>
<td>N/A</td>
</tr>
<tr>
<td>O2</td>
<td>%</td>
<td>7.99</td>
<td>8.18</td>
<td>8.10</td>
<td>7.95</td>
<td>N/A</td>
</tr>
<tr>
<td>Firing Rate</td>
<td>MMBtu/hr</td>
<td>3.89</td>
<td>1.14</td>
<td>2.34</td>
<td>2.41</td>
<td>N/A</td>
</tr>
<tr>
<td>% of Full Load</td>
<td>%</td>
<td>92.52</td>
<td>27.2</td>
<td>55.7</td>
<td>57.4</td>
<td>N/A</td>
</tr>
</tbody>
</table>
3.0 Processes and Equipment Description

The Hurst Boiler, Fire-Tube Type Model S5-X-100-150, with one Low-Nox Burner, Model NP2-S20-G-30, Rated at 4.20 MM BTU/hr, Liquid Propane Gas Fired. A blocks flow diagrams are presented as Figures 3-1.

Figure 3-1
Simplified Boiler Diagram
Attachment C

Power Flame, Inc. Emissions Sheet
# Typical Flue Product Emissions

Data for Power Flame Burners

<table>
<thead>
<tr>
<th></th>
<th>Natural Gas</th>
<th>L.P. Gas</th>
<th># 2 Fuel Oil (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon Monoxide - CO</strong></td>
<td>.037 lb CO 10^6 BTU input (50 PPM)</td>
<td>.037 lb CO 10^6 BTU input (50 PPM)</td>
<td>.037 lb per 10^6 BTU INPUT (50 PPM)</td>
</tr>
<tr>
<td><strong>Sulfur Dioxide - SO₂</strong></td>
<td>(1.05) x (% Sulfur by weight in fuel) = lb SO₂ per 10^6 BTU input</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Particulate Matter</strong></td>
<td>.0048 lb PM per 10^6 BTU input</td>
<td>.0048 lb PM per 10^6 BTU input</td>
<td>.0143 lb PM per 10^6 BTU input</td>
</tr>
<tr>
<td><strong>Hydrocarbons</strong></td>
<td>.025 lb HC's per 10^6 BTU input</td>
<td>.025 lb HC's per 10^6 BTU input</td>
<td>.038 lb HC's per 10^6 BTU input</td>
</tr>
<tr>
<td><strong>CO₂</strong></td>
<td>9 % to 10%</td>
<td>10% to 12%</td>
<td>10% to 13%</td>
</tr>
<tr>
<td><strong>Nitrogen Oxides - NOₓ</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard J, FDM &amp; X4 Gas Burners</td>
<td>.088 lb NOₓ per 10^6 BTU input (75 PPM)</td>
<td>.092 lb NOₓ per 10^6 BTU input (75 PPM)</td>
<td>N/A</td>
</tr>
<tr>
<td>Standard C(R) Burners</td>
<td>.088 lb NOₓ per 10^6 BTU input (75 PPM)</td>
<td>.092 lb NOₓ per 10^6 BTU input (75 PPM)</td>
<td>.159 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>LNIC(R) Burners</td>
<td>.029 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.159 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>Fire box/Cast iron boilers</td>
<td>.024 lb NOₓ per 10^6 BTU input (20 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.159 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>LNIC Burners</td>
<td>.029 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.12 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>Water tube boilers</td>
<td>.024 lb NOₓ per 10^6 BTU input (20 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.12 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>CM Burners</td>
<td>.070 lb NOₓ per 10^6 BTU input (60 PPM)</td>
<td>.074 lb NOₓ per 10^6 BTU input (50 PPM)</td>
<td>.146 lb NOₓ per 10^6 BTU input (110 PPM)</td>
</tr>
<tr>
<td>IFGR LNIC NOₓ Burners</td>
<td>.029 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.126 lb NOₓ per 10^6 BTU input (110 PPM)</td>
</tr>
<tr>
<td>LNICM Burners</td>
<td>.029 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.12 lb NOₓ per 10^6 BTU input (90 PPM)(2)</td>
</tr>
<tr>
<td>NPM Premix Burners</td>
<td>.029 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>.031 lb NOₓ per 10^6 BTU input (25 PPM)</td>
<td>N/A</td>
</tr>
<tr>
<td>Nova Plus Burners</td>
<td>.010 lb NOₓ per 10^6 BTU input (5 PPM)</td>
<td>.015 lb NOₓ per 10^6 BTU input (12 PPM)</td>
<td>N/A</td>
</tr>
<tr>
<td>NVC AND NP2</td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOₓ emissions at 3 % 0₂ will vary based on the percent of fuel bound nitrogen (these are based on 0.22%) and boiler or heat exchanger configurations.
90 PPM NOₓ on cast iron sectional, fire box and water tube boiler, 120 PPM on fire tube boilers.
Burning natural gas the VOC are estimated at 0.003 # per million BTU and SO₂ are 0.0005 # per million BTU.
These emission rates are general estimates and do not constitute guarantees by Power Flame Inc.
In instances where guarantees are required, please consult the factory with the specific application information.
All NOₓ numbers stated are corrected to 3% O₂.