SMAQMD BACT CLEARINGHOUSE

CATEGORY Type: **BOILER/HEATER < 5 MMBTU**

BACT Category: SMALL EMITTER (PTE < 10 LBS/DAY)

BACT Determination Number:	240	**BACT Determination Date:**	**4/14/2020**

Equipment Information

Permit Number: N/A -- Generic BACT Determination
Equipment Description: BOILER
Unit Size/Rating/Capacity: LPG fired ≥2 & <5 MMBTU/HR
Equipment Location:

EXPIRED

BACT Determination Information

District Contact: Jeffrey Quok Phone No.: (916) 874-4863 email: jquok@airquality.org

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:**	
	Technology Description:	Firetube: 50 ppmvd @ 3% O2, Watertube: 100 ppmvd @3% O2
	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

777 12th Street, Third Floor

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Sacramento, CA 95814

BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

EXPIRED

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>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/Requirements</th></tr>
<tr><td>US EPA</td><td>
<u>BACT:</u>
Source: EPA RACT/BACT/LAER Clearinghouse
RBLC ID: CA-1190

<table>
<tr><td colspan="2">For LPG/propane fired units with a rating of ≥ 2 to <5 MMBtu/hr</td></tr>
<tr><td>VOC</td><td>No standard</td></tr>
<tr><td>NOx</td><td>12 ppmvd corrected to 3% O_2*</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>
</table>
* 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.

<u>RULE REQUIREMENTS</u>:
None.
</td></tr>
<tr><td>ARB</td><td>
<u>BACT:</u>
Source: ARB BACT Clearinghouse
ATC 12949-01 (1-24-12) SBAPCD

<table>
<tr><td colspan="2">For LPG/propane fired units with a rating of ≥ 2 to <5 MMBtu/hr</td></tr>
<tr><td>VOC</td><td>No standard</td></tr>
<tr><td>NOx</td><td>20 ppmvd corrected to 3% O_2 [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>
</table>
<u>RULE REQUIREMENTS</u>:
None
</td></tr>
</table>

<table>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/Requirements</th></tr>
<tr><td>SMAQMD</td><td>
<u>BACT:</u>
Source: SMAQMD BACT Clearinghouse
<table>
<tr><td colspan="2">For LPG/propane fired units with a rating of ≥ 2 to < 5 MMBtu/hr</td></tr>
<tr><td>VOC</td><td>Good combustion practice; Use of LPG</td></tr>
<tr><td>NOx</td><td>12 ppmvd at 3% O_2, Ultra Low-NOx burner</td></tr>
<tr><td>SOx</td><td>Good combustion practice; Use of LPG</td></tr>
<tr><td>PM10</td><td>Good combustion practice; Use of LPG</td></tr>
<tr><td>PM2.5</td><td>Good combustion practice; Use of LPG</td></tr>
<tr><td>CO</td><td>Firetube: 50 ppmvd at 3% O_2; Watertube: 100 ppmvd at 3% O_2</td></tr>
</table>
<u>RULE REQUIREMENTS</u>:

<u>Rule 411 – NOx from Boilers, Process Heaters, and Steam Generators</u> (8-23-2007)
For units with a rating of ≥ 2 and < 5 MMBtu/hr, emissions shall not exceed the following levels:
1. 30 ppmvd of NOx corrected to 3% O2
2. 400 ppmvd of CO corrected to 3% O2
</td></tr>
<tr><td>South Coast AQMD</td><td>
<u>BACT:</u>
Source: SCAQMD BACT Guidelines for Non-Major Polluting Facilities, page 14. (2-2-2019)
<table>
<tr><td colspan="2">For units fueled by natural gas or LPG/propane, with a rating of ≥ 2 and < 5 MMBtu/hr:</td></tr>
<tr><td>VOC</td><td>No standard</td></tr>
<tr><td>NOx</td><td>12 ppmvd corrected to 3% O_2 (A)</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>Firetube Boiler: 50 ppmvd corrected to 3% O_2
Watertube Boiler: 100 ppmvd corrected to 3% O_2</td></tr>
</table>
(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% O_2 is the lowest limit that is listed for LPG fired units.
</td></tr>
</table>

<table>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/Requirements</th></tr>
<tr><td>South Coast AQMD</td><td>
<u>RULE REQUIREMENTS</u>:

<u>Reg XI, Rule 1146.1</u> – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (12-7-2018)

Requirements Table 1146-1
<table>
<tr><th>Category</th><th>NOx Limit</th><th>CO Limit</th></tr>
<tr><td>LPG/propane Fired Units</td><td>30 ppmvd @ 3% O_2</td><td>400 ppmvd @ 3% O_2</td></tr>
</table>
</td></tr>
<tr><td>San Diego County APCD</td><td>
<u>BACT:</u>
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.

<u>SDAPCD Rule 11(d)</u>
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.

<u>RULE REQUIREMENTS</u>:

<u>Regulation 4, Rule 69.2.1 – Industrial and Commercial Boilers, Process Heaters and Steam Generators</u> (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_2
2. 40 ppmvd of NOx when operated on a liquid fuel, corrected to 3% O_2
3. 400 ppmvd of CO corrected to 3% O_2

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.
</td></tr>
</table>

District/ Agency	Best Available Control Technology (BACT)/Requirements
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.

<table>
<tr><th>District/ Agency</th><th>Best Available Control Technology (BACT)/Requirements</th></tr>
<tr><td>San Joaquin Valley APCD</td><td>

RULE REQUIREMENTS:

Rule 4307 – Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr (4-21-2016)

<table>
<tr><th>Type</th><th>NOx Limit ppmvd @ 3% O_2</th><th>CO Limit ppmvd @ 3% O_2</th><th>Effective Date</th></tr>
<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>
</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.

</td></tr>
</table>

The following control technologies have been identified and are ranked based on stringency:

SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES	
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% O_2 – [SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse] 2. 20 ppmvd corrected to – [ARB BACT Clearinghouse] 3. 30 ppmvd corrected to 3% O_2 – [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% O_2, and Watertube Boilers: 100 ppmvd corrected to 3% O_2 – [SMAQMD, SCAQMD] 2. 400 ppm of CO corrected to 3% O2 – [SJVAPCD, 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		
Pollutant	**Standard**	**Source**
VOC	Good combustion practice; Use of LPG	SMAQMD
NOx	12 ppmvd at 3% O_2	SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse
SOx	Good combustion practice; Use of LPG	SMAQMD
PM10	Good combustion practice; Use of LPG	SMAQMD
PM2.5	Good combustion practice; Use of LPG	SMAQMD
CO	Firetube Boilers: 50 ppmvd at 3% O_2 Watertube Boilers: 100 ppmvd at 3% O_2	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.

BACT #240 FOR BOILERS PROPANE FIRED ≥ 2 AND < 5		
Pollutant	**Standard**	**Source**
VOC	Good combustion practice, Use of LPG	SMAQMD
NOx	12 ppmvd at 3% O_2	SMAQMD, SCAQMD, SJVAPCD, EPA: CA-1190, ARB BACT Clearinghouse
SOx	Good combustion practice, Use of LPG	SMAQMD
PM10	Good combustion practice, Use of LPG	SMAQMD
PM2.5	Good combustion practice, Use of LPG	SMAQMD
CO	Firetube Boilers: 50 ppmvd at 3% O_2 Watertube Boilers: 100 ppmvd at 3% O_2	SMAQMD, SCAQMD

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:

Capacity MMBtu/hr	Source	Date	Type	NOx ppmv @ 3% O_2	CO ppmv @ 3% O_2	VOC lb/MMBtu	Filerable PM10 lb/MMBtu	SO_2 lb/MMBtu
3.00	SANTA BARBARA COUNTY APCD	1/24/2012	Not Specified	12	NA	NA	NA	NA
2.00	SANTA BARBARA COUNTY APCD	1/24/2012	Not Specified	20	NA	NA	NA	NA

= 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

Help

FINAL

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

Process Notes: Oilfield tank heater

Pollutant Information - List of Pollutants

Help

Pollutant	Primary Emission Limit	Basis	Verified
Nitrogen Oxides (NOx)	20.0000 PPMVD@3% O2	OTHER CASE-BY-CASE	UNKNOWN

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

Help

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

FINAL

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

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

Facility Contact Information:

Name:
Phone:
E-Mail:

Agency Contact Information:

Agency: CA033 - SANTA BARBARA COUNTY APCD, CA
EXIT Disclaimer | Agency Link
Contact: MR. BEN ELLENBERGER
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

Permit Number: ATC- 12949-01 (3)

Permit Type: B: Add new process to existing facility

PERMIT URL:

	EST/ACT DATE
Complete Application Date:	ACT 03/07/2011
Permit Issuance Date:	ACT 01/24/2012
FRS Number:	Not Available
SIC Code:	1311
NAICS Code:	211111

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:

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

Help

FINAL

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

Help

Pollutant	Primary Emission Limit	Basis	Verified
Nitrogen Oxides (NOx)	12.0000 PPMVD@3% O2	OTHER CASE-BY-CASE	UNKNOWN

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

Help

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

FINAL

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

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

Facility Contact Information:

Name:
Phone:
E-Mail:

Agency Contact Information:

Agency: CA033 - SANTA BARBARA COUNTY APCD, CA
EXIT Disclaimer | Agency Link
Contact: MR. BEN ELLENBERGER
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:

Permit Number: ATC- 12949-01 (2)

Permit Type: B: Add new process to existing facility

PERMIT URL:

	EST/ACT DATE
Complete Application Date:	ACT 03/07/2011
Permit Issuance Date:	ACT 01/24/2012
FRS Number:	Not Available
SIC Code:	1311
NAICS Code:	211111

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:

California Environmental Protection Agency
Air Resources Board

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 / Dimentions	2.00 MMBtu/hr
Fuel Type	Field Gas
Multiple Fuel Types	Propane, Field Gas, PUC natural gas
	Continuous (24/7/52)

Operating Schedule (hours/day)/(days/week)/ (weeks/year)e	
Function of Equipment	Oilfield tank heater

Bact Information

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

Project / Permit Information

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

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) 961-8800
Contact E-Mail:	cbe@sbcapcd.org

Notes

Notes:

Report Error In Determination

EXPIRED SMAQMD BACT CLEARINGHOUSE

CATEGORY: **BOILER/HEATER < 5 MMBTU**

BACT Size: Minor Source BACT **BOILER/HEATER**

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 mmbtu/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
	Technology Description:	
	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
12-02-2016 Rev. 2

Equipment or Process: Boiler

	Criteria Pollutants					
Subcategory/Rating/ Size	**VOC**	**NOx[1]**	**SOx**	**CO**	**PM_{10}**	**Inorganic**
Natural Gas Fired, > 2 and < 20 MMBtu/HR		Compliance with SCAQMD Rules 1146 or 1146.1[2] (12-02-2016)	Natural Gas (10-20-2000)	≤50 ppmvd for firetube type, ≤ 100 ppmvd for watertube type, corrected to 3% O_2 (04-10-98)	Natural Gas (04-10-98)	
Propane Fired, > 2 and < 20 MMBtu/HR		≤ 12 ppmvd corrected to 3% O_2[2] (10-20-2000)		≤50 ppmvd for firetube type, ≤ 100 ppmvd for watertube type, corrected to 3% O_2 (04-10-98)		
Natural Gas or Propane Fired, ≥ 20 and < 75 MM Btu/HR		With Low-NOx Burner: ≤ 9 ppmv dry corrected to 3% O_2 With Add-On Controls: ≤ 7 ppmv dry corrected to 3% O_2 (10-20-2000)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH3, corrected to 3% O2 ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)
Natural Gas or Propane Fired, ≥ 75 MM Btu/HR		Compliance with SCAQMD Rule 1146 (12-02-2016)	Natural Gas (10-20-2000)	Same as above. (04-10-98)	Natural Gas (04-10-98)	With Add-On Controls: ≤ 5 ppmvd NH3, corrected to 3% O2 ≤ 1 ppmvd ozone, corrected to 3% O2 (10-20-2000)

(Continued on next page)

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

Attachment B

SCAQMD Source Test Results

Accurate Environmental Services, Inc.

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:

Hassan 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 (NO_x), carbon monoxide (CO), carbon dioxide (CO_2), and oxygen (O_2) 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 NO_x, CO, CO_2, and O_2. The NO_x 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 NO_x 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.

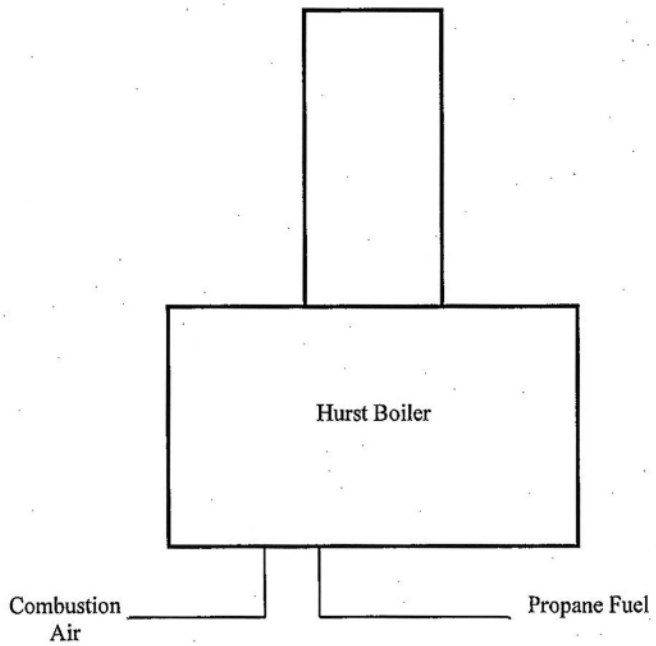
Table 2-1
Summary of Results

Parameter	Units	High Load	Low Load	Average Load	Normal Load	Allowable Limit
NOx, Concentration	ppm	6.07	5.87	6.01	6.93	N/A
NO_x, @ 3% O_2	ppm	**8.42**	**8.26**	**8.41**	**9.57**	**12**
NO_x, Emission Rate	lb/hr	0.039	0.011	0.026	0.030	N/A
CO, Concentration	ppm	16.08	15.48	15.48	15.96	N/A
CO, @ 3% O_2	ppm	**22.29**	**21.79**	**21.64**	**22.05**	**50**
CO Emission Rate	lb/hr	0.06	0.02	0.04	0.04	N/A
Total Stack Flow Rate, measured	dscfm	873	251	588	602	N/A
Total Stack Flow Rate, calculated	dscfm	914	273	554	564	N/A
% Difference	%	**4.63**	**8.53**	**5.72**	**6.31**	**15**
Stack Gas Flow Rate, Actual	acfm	**1,579**	**432**	**1,029**	**1,057**	N/A
Fuel Flow Rate	scfm	**25.66**	**7.54**	**15.44**	**15.91**	N/A
Stack Temperature	°F	**365.58**	**327.58**	**340.25**	**340.87**	N/A
Air/Fuel Ratio	N/A	**35.98**	**35.18**	**40.26**	**40.06**	N/A
O_2	%	7.99	8.18	8.10	7.95	N/A
Firing Rate	MMBtu/hr	**3.89**	**1.14**	**2.34**	**2.41**	N/A
% of Full Load	%	**92.52**	**27.2**	**55.7**	**57.4**	N/A

3.0 Processes and Equipment Description

The Hurst Boiler, Fire-Tube Type Model S5-X-100-150, with one Low-Nox Burner, Model NP2-520-G-30, Rated at 4.20 MMBTU/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

Power Flame Incorporated

9/28/2006
Rev. 03/06/2009

Typical Flue Product Emissions Data for Power Flame Burners

	Natural Gas	L.P. Gas	# 2 Fuel Oil [1]
Carbon Monoxide - CO	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb CO 10^6 BTU input (50 PPM)	.037 lb per 10^6 BTU INPUT (50 PPM)
Sulfur Dioxide - SO_2	(1.05) x (% Sulfur by weight in fuel) = lb SO_2 per 10^6 BTU Input		
Particulate Matter	.0048 lb PM per 10^6 BTU input	.0048 lb PM per 10^6 BTU input	.0143 lb PM per 10^6 BTU input
Hydrocarbons	.025 lb HC's per 10^6 BTU input	.025 lb HC's per 10^6 BTU input	.038 lb HC's per 10^6 BTU input
CO_2	9 % to 10%	10% to 12%	10% to 13%
Nitrogen Oxides - NO_x			
Standard J, FDM & X4 Gas Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	N/A N/A
Standard C(R) Burners	.088 lb NO_x per 10^6 BTU input (75 PPM)	.092 lb NO_x per 10^6 BTU input (75 PPM)	.159 lb NO_x per 10^6 BTU Input (90) PPM [2]
LNIC(R) Burners Fire box/Cast Iron boilers	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.159 lb NO_x per 10^6 BTU Input (90) PPM [2]
LNIC(R) Burners Water tube boilers	.024 lb NO_x per 10^6 BTU input (20 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.159 lb NO_x per 10^6 BTU Input (90) PPM [2]
LNIAC Burners	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.12 lb NO_x per 10^6 BTU Input (90) PPM
CM Burners	.070 lb NO_x per 10^6 BTU input (60 PPM)	.074 lb NO_x per 10^6 BTU input (60 PPM)	.146 lb NO_x per 10^6 BTU Input (110) PPM
IFGR LNIC NO_x Burners	.029 lb NO_x per 10^6 BTU input (25 PPM)	.031 lb NO_x per 10^6 BTU input (25 PPM)	.126 lb NO_x per 10^6 BTU Input (110) PPM
LNICM Burners	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	.12 lb NO_x per 10^6 BTU Input (90) PPM
NPM Premix Burners	.029 lb NO_x per 10^6 BTU input (25) PPM	.031 lb NO_x per 10^6 BTU input (25) PPM	N/A N/A
Nova Plus Burners NVC AND NP2	.010 lb NO_x per 10^6 BTU input (9) PPM	.015 lb NO_x per 10^6 BTU input (12) PPM	N/A N/A

NOx emissions at 3 % 02 will vary based on the percent of fuel bound nitrogen (these are based on .02%) 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 SO_X 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% O_2