

SMAQMD BACT CLEARINGHOUSE

CATEGORY Type:

BOILER/HEATER < 5 MMBTU

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

BACT Determination Number: 239	BACT Determination Date: 4/14/2020
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Equipment Information

Permit Number: N/A -- Generic BACT Determination
Equipment Description: BOILER
Unit Size/Rating/Capacity: Natural gas fired ≥2 MMBtu/hr & <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
	Technology Description:	
	Basis:	Achieved in Practice
NOx	Standard:	
	Technology Description:	Non-atmospheric units: 9 ppmvd at 3% O2, Atmospheric units/thermal fluid heaters: 12 ppmvd at 3% O2
	Basis:	Achieved in Practice
SOx	Standard:	Good combustion practice
	Technology Description:	
	Basis:	Achieved in Practice
PM10	Standard:	Good combustion practice
	Technology Description:	
	Basis:	Achieved in Practice
PM2.5	Standard:	Good combustion practice
	Technology Description:	
	Basis:	Achieved in Practice
CO	Standard:	
	Technology Description:	Firetube Boilers: 50 ppmvd at 3% O2, Watertube Boilers: 100 ppmvd at 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.



BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

EXPIRED

DETERMINATION NO.:	239
DATE:	4/14/20
ENGINEER:	Jeffrey Quok

Category/General Equip Description:	Boiler/Heater – Natural Gas Fired
Equipment Specific Description:	#239 – Boiler/heater natural gas fired greater or equal to 2 MMBtu/hr to less than 5 MMBtu/hr
Equipment Size/Rating:	Minor Source BACT
Previous BACT Det. No.:	128

This BACT/T-BACT determination will update BACT Determination #128 which was made on 7/15/2016.

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, NO_x, SO_x, PM₁₀, or PM_{2.5} 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 greater or equal to 2 and less than 5 MMBTU/hr by the following air pollution control districts:

District/ Agency	Best Available Control Technology (BACT)/Requirements														
US EPA	<p>BACT: Source: EPA RACT/BACT/LAER Clearinghouse RBLC ID: CA-1185</p> <table border="1" data-bbox="386 415 1458 747"> <tr> <td colspan="2">For non-atmospheric units with a rating of ≥ 2 to < 5 MMBtu/hr*</td> </tr> <tr> <td>VOC</td> <td>Use natural gas and good combustion techniques</td> </tr> <tr> <td>NOx</td> <td>12 ppmvd corrected to 3% O₂</td> </tr> <tr> <td>SOx</td> <td>Use natural gas and good combustion techniques</td> </tr> <tr> <td>PM10</td> <td>Use natural gas and good combustion techniques</td> </tr> <tr> <td>CO</td> <td>100 ppmvd corrected to 3% O₂</td> </tr> </table> <p>* This BACT determination was found to be the most stringent <u>Achieved in Practice</u> BACT determination published in the EPA clearinghouse. See Attachment A for more information.</p> <p>No BACT determinations found for atmospheric units in the ≥ 2 to < 5 MMBtu/hr range.</p> <p><u>RULE REQUIREMENTS:</u> None.</p>	For non-atmospheric units with a rating of ≥ 2 to < 5 MMBtu/hr*		VOC	Use natural gas and good combustion techniques	NOx	12 ppmvd corrected to 3% O ₂	SOx	Use natural gas and good combustion techniques	PM10	Use natural gas and good combustion techniques	CO	100 ppmvd corrected to 3% O ₂		
For non-atmospheric units with a rating of ≥ 2 to < 5 MMBtu/hr*															
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SOx	Use natural gas and good combustion techniques														
PM10	Use natural gas and good combustion techniques														
CO	100 ppmvd corrected to 3% O ₂														
ARB	<p>BACT: Source: ARB BACT Clearinghouse ATC 13623 (6-7-11) SBCAPCD</p> <table border="1" data-bbox="386 1171 1458 1587"> <tr> <td colspan="2">For non-atmospheric units with a rating of ≥ 2 to < 5 MMBtu/hr</td> </tr> <tr> <td>VOC</td> <td>No BACT determinations found for VOC in the ≥ 2 to < 5 MMBtu/hr range.</td> </tr> <tr> <td>NOx</td> <td>12 ppmvd corrected to 3% O₂ [SBCAPCD]</td> </tr> <tr> <td>SOx</td> <td>No BACT determinations found for SOx in the ≥ 2 to < 5 MMBtu/hr range.</td> </tr> <tr> <td>PM10</td> <td>No BACT determinations found for PM10 in the ≥ 2 to < 5 MMBtu/hr range.</td> </tr> <tr> <td>PM2.5</td> <td>No BACT determinations found for PM2.5 in the ≥ 2 to < 5 MMBtu/hr range.</td> </tr> <tr> <td>CO</td> <td>100 ppmvd corrected to 3% O₂ [SBCAPCD]</td> </tr> </table> <p>Note: The most stringent standards in the ARB BACT Clearinghouse was from the SCAQMD having a NOx standard of 2 ppmvd @ 3% O₂ using SCONOX technology. The determination noted that the SCAQMD does not consider this standard achieved in practice and therefore, the next most stringent standard was selected. See Attachment B for more information.</p> <p>No BACT determinations found for atmospheric units in the ≥ 2 to < 5 MMBtu/hr range.</p> <p><u>RULE REQUIREMENTS:</u> None</p>	For non-atmospheric units with a rating of ≥ 2 to < 5 MMBtu/hr		VOC	No BACT determinations found for VOC in the ≥ 2 to < 5 MMBtu/hr range.	NOx	12 ppmvd corrected to 3% O ₂ [SBCAPCD]	SOx	No BACT determinations found for SOx in the ≥ 2 to < 5 MMBtu/hr range.	PM10	No BACT determinations found for PM10 in the ≥ 2 to < 5 MMBtu/hr range.	PM2.5	No BACT determinations found for PM2.5 in the ≥ 2 to < 5 MMBtu/hr range.	CO	100 ppmvd corrected to 3% O ₂ [SBCAPCD]
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SOx	No BACT determinations found for SOx in the ≥ 2 to < 5 MMBtu/hr range.														
PM10	No BACT determinations found for PM10 in the ≥ 2 to < 5 MMBtu/hr range.														
PM2.5	No BACT determinations found for PM2.5 in the ≥ 2 to < 5 MMBtu/hr range.														
CO	100 ppmvd corrected to 3% O ₂ [SBCAPCD]														

District/ Agency	Best Available Control Technology (BACT)/Requirements														
SMAQMD	<p>BACT: Source: SMAQMD BACT Clearinghouse (BACT #128)</p> <table border="1" data-bbox="386 401 1450 877"> <tr> <td colspan="2" data-bbox="386 401 1450 457">For boilers/heaters ≥ 2 to < 5 MMBtu/hr, fired on natural gas</td> </tr> <tr> <td data-bbox="386 457 496 520">VOC</td> <td data-bbox="496 457 1450 520">Good combustion practices and fired with natural gas</td> </tr> <tr> <td data-bbox="386 520 496 604">NOx</td> <td data-bbox="496 520 1450 604">9 ppmvd corrected to 3% O₂ for non-atmospheric boilers 12 ppmvd corrected to 3% O₂ for atmospheric boilers</td> </tr> <tr> <td data-bbox="386 604 496 667">SOx</td> <td data-bbox="496 604 1450 667">Good combustion practices and fired with natural gas</td> </tr> <tr> <td data-bbox="386 667 496 730">PM10</td> <td data-bbox="496 667 1450 730">Good combustion practices and fired with natural gas</td> </tr> <tr> <td data-bbox="386 730 496 793">PM2.5</td> <td data-bbox="496 730 1450 793">Good combustion practices and fired with natural gas</td> </tr> <tr> <td data-bbox="386 793 496 877">CO</td> <td data-bbox="496 793 1450 877">Firetube Boiler: 50 ppmvd corrected to 3% O₂ Watertube Boiler: 100 ppmvd corrected to 3% O₂</td> </tr> </table> <p>RULE REQUIREMENTS:</p> <p>Rule 411 – NOx from Boilers, Process Heaters, and Steam Generators (8-23-2007) For units with a rating of ≥ 2 and < 5 MMBtu/hr, emissions shall not exceed the following levels:</p> <ol style="list-style-type: none"> 30 ppmvd of NOx corrected to 3% O₂ 400 ppmvd of CO corrected to 3% O₂ 	For boilers/heaters ≥ 2 to < 5 MMBtu/hr, fired on natural gas		VOC	Good combustion practices and fired with natural gas	NOx	9 ppmvd corrected to 3% O ₂ for non-atmospheric boilers 12 ppmvd corrected to 3% O ₂ for atmospheric boilers	SOx	Good combustion practices and fired with natural gas	PM10	Good combustion practices and fired with natural gas	PM2.5	Good combustion practices and fired with natural gas	CO	Firetube Boiler: 50 ppmvd corrected to 3% O ₂ Watertube Boiler: 100 ppmvd corrected to 3% O ₂
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South Coast AQMD	<p>BACT: Source: SCAQMD BACT Guidelines for Non-Major Polluting Facilities, page 14.</p> <table border="1" data-bbox="386 1262 1450 1797"> <tr> <td colspan="2" data-bbox="386 1262 1450 1356">For both atmospheric and non-atmospheric fired units, fueled by natural gas, with a rating of > 2 and < 5 MMBtu/hr:</td> </tr> <tr> <td data-bbox="386 1356 496 1419">VOC</td> <td data-bbox="496 1356 1450 1419">No Standard</td> </tr> <tr> <td data-bbox="386 1419 496 1493">NOx</td> <td data-bbox="496 1419 1450 1493">Compliance with SCAQMD Rules 1146 or 1146.1 (see below)</td> </tr> <tr> <td data-bbox="386 1493 496 1566">SOx</td> <td data-bbox="496 1493 1450 1566">Use of natural gas</td> </tr> <tr> <td data-bbox="386 1566 496 1640">PM10</td> <td data-bbox="496 1566 1450 1640">Use of natural gas</td> </tr> <tr> <td data-bbox="386 1640 496 1703">PM2.5</td> <td data-bbox="496 1640 1450 1703">No standard</td> </tr> <tr> <td data-bbox="386 1703 496 1797">CO</td> <td data-bbox="496 1703 1450 1797">Firetube Boiler: 50 ppmvd corrected to 3% O₂ Watertube Boiler: 100 ppmvd corrected to 3% O₂</td> </tr> </table>	For both atmospheric and non-atmospheric fired units, fueled by natural gas, with a rating of > 2 and < 5 MMBtu/hr:		VOC	No Standard	NOx	Compliance with SCAQMD Rules 1146 or 1146.1 (see below)	SOx	Use of natural gas	PM10	Use of natural gas	PM2.5	No standard	CO	Firetube Boiler: 50 ppmvd corrected to 3% O ₂ Watertube Boiler: 100 ppmvd corrected to 3% O ₂
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VOC	No Standard														
NOx	Compliance with SCAQMD Rules 1146 or 1146.1 (see below)														
SOx	Use of natural gas														
PM10	Use of natural gas														
PM2.5	No standard														
CO	Firetube Boiler: 50 ppmvd corrected to 3% O ₂ Watertube Boiler: 100 ppmvd corrected to 3% O ₂														

District/ Agency	Best Available Control Technology (BACT)/Requirements										
South Coast AQMD	<p><u>RULE REQUIREMENTS:</u></p> <p><u>Reg XI, Rule 1146.1 – Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (12-7-2018)</u></p> <p>Requirements Table 1146-1</p> <table border="1" data-bbox="388 522 1438 989"> <thead> <tr> <th data-bbox="388 522 1005 585">Category</th> <th data-bbox="1005 522 1438 585">NOx Limit</th> </tr> </thead> <tbody> <tr> <td data-bbox="388 585 1005 669">Natural Gas Fired Atmospheric Units</td> <td data-bbox="1005 585 1438 669">12 ppmvd @ 3% O₂ or 0.015 lbs/10⁶ BTU</td> </tr> <tr> <td data-bbox="388 669 1005 785">Any unit fired on natural gas, excluding fire-tube boilers subject to (c)(1)(F), atmospheric units and thermal fluid heaters</td> <td data-bbox="1005 669 1438 785">9 ppm @ 3% O₂ or 0.011 lbs/10⁶ BTU</td> </tr> <tr> <td data-bbox="388 785 1005 900">Any fire-tube boilers fired on natural gas, excluding units with less than or equal to 12 ppm and greater than 9 ppm prior to 12/7/18</td> <td data-bbox="1005 785 1438 900">7 ppm @ 3% O₂ or 0.0085 lbs/10⁶ Btu</td> </tr> <tr> <td data-bbox="388 900 1005 989">Thermal Fluid Heaters</td> <td data-bbox="1005 900 1438 989">12 ppm @ 3% O₂ or 0.015 lbs/10⁶ Btu</td> </tr> </tbody> </table> <p>All units rated > 2 MMBtu/hr must have CO emissions ≤ 400 ppmvd @ 3% O₂</p>	Category	NOx Limit	Natural Gas Fired Atmospheric Units	12 ppmvd @ 3% O ₂ or 0.015 lbs/10 ⁶ BTU	Any unit fired on natural gas, excluding fire-tube boilers subject to (c)(1)(F), atmospheric units and thermal fluid heaters	9 ppm @ 3% O ₂ or 0.011 lbs/10 ⁶ BTU	Any fire-tube boilers fired on natural gas, excluding units with less than or equal to 12 ppm and greater than 9 ppm prior to 12/7/18	7 ppm @ 3% O ₂ or 0.0085 lbs/10 ⁶ Btu	Thermal Fluid Heaters	12 ppm @ 3% O ₂ or 0.015 lbs/10 ⁶ Btu
Category	NOx Limit										
Natural Gas Fired Atmospheric Units	12 ppmvd @ 3% O ₂ or 0.015 lbs/10 ⁶ BTU										
Any unit fired on natural gas, excluding fire-tube boilers subject to (c)(1)(F), atmospheric units and thermal fluid heaters	9 ppm @ 3% O ₂ or 0.011 lbs/10 ⁶ BTU										
Any fire-tube boilers fired on natural gas, excluding units with less than or equal to 12 ppm and greater than 9 ppm prior to 12/7/18	7 ppm @ 3% O ₂ or 0.0085 lbs/10 ⁶ Btu										
Thermal Fluid Heaters	12 ppm @ 3% O ₂ or 0.015 lbs/10 ⁶ Btu										
San Diego County APCD	<p><u>BACT</u> Source: NSR Requirements for BACT, page 3-5</p> <p>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.</p> <p><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.</p> <p>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.</p>										

District/ Agency	Best Available Control Technology (BACT)/Requirements
San Diego County APCD	<p><u>RULE REQUIREMENTS:</u></p> <p><u>Regulation 4, Rule 69.2.1 – Industrial and Commercial Boilers, Process Heaters and Steam Generators (3-25-2009)</u> 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)</p> <ol style="list-style-type: none"> 1. 30 ppmvd of NOx when operated on a gaseous fuel, corrected to 3% O₂ 2. 40 ppmvd of NOx when operated on a liquid fuel, corrected to 3% O₂ 3. 400 ppmvd of CO corrected to 3% O₂ <p>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.</p>
Bay Area AQMD	<p><u>BACT</u> Source: BAAQMD BACT Workbook</p> <p>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.</p> <p><u>BAAQMD Rule 2-1-114 – General Requirements</u> 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:</p> <p>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.</p> <p><u>RULE REQUIREMENTS:</u></p> <p><u>Regulation 9, Rule 6 – Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters (11-7-2007)</u> For units with a rating of 400,001 Btu/hr to 2 MMBtu/hr:</p> <ol style="list-style-type: none"> 1. Manufactured after 1/1/2008: NOx limit of 30 ppmvd corrected to 3% O₂. 2. Manufactured after 1/1/2013: NOx limit of 20 ppmvd corrected to 3% O₂. <p><u>Regulation 9, Rule 7 – Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters (5-4-2011)</u> For units with a rating of greater than 2 MMBtu/hr and less than or equal to 5 MMBtu/hr:</p> <ol style="list-style-type: none"> 1. NOx limit of 30 ppmvd corrected to 3% O₂ 2. CO limit of 400 ppmvd corrected to 3% O₂

District/ Agency	Best Available Control Technology (BACT)/Requirements			
San Joaquin Valley APCD	<p>BACT Source: SJVUAPCD BACT Guideline (Rescinded) The boiler BACT determinations listed in the SJVAPCD Clearinghouse have been rescinded.</p> <p>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.</p> <p><u>SJVUAPCD Rule 2020 §6.0</u> 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.</p> <p><u>RULE REQUIREMENTS:</u></p> <p><u>Rule 4307 – Boilers, Steam Generators, and Process Heaters – 2.0 MMBtu/hr to 5.0 MMBtu/hr (4-21-2016)</u></p>			
	Type	NOx Limit ppmvd @ 3% O ₂	CO Limit ppmvd @ 3% O ₂	Effective Date
	New or replacement atmospheric units not listed below	12 or 0.014 lb/MMBtu	400	1/1/2010
	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 1.8 to 5.0 billion Btu per calendar year.	12 or 0.014 lb/MMBtu	400	1/1/2016
	Type	NOx Limit ppmvd @ 3% O ₂	CO Limit ppmvd @ 3% O ₂	Effective Date
	New or replacement non-atmospheric units not listed below	9 or 0.011 lb/MMBtu	400	1/1/2010
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 of 1.8 to 5.0 billion Btu per calendar year.	9 or 0.011 lb/MMBtu	400	1/1/2016	

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

SUMMARY OF ACHIEVED IN PRACTICE CONTROL TECHNOLOGIES	
VOC	<ol style="list-style-type: none"> 1. Good combustion practice and use of natural gas – [EPA Clearinghouse - Clark County Dept. of Air Quality, SMAQMD] 2. Use of natural gas – [SCAQMD] 3. No standard – [SJVAPCD, BAAQMD, SDCAPCD]
NOx	<ol style="list-style-type: none"> 1. Non-atmospheric: 9 ppmvd corrected to 3% O₂ Atmospheric units & Thermal Fluid Heaters: 12 ppmvd corrected to 3% O₂ – [SCAQMD] 2. Non-atmospheric: 9 ppmvd corrected to 3% O₂ Atmospheric: 12 ppmvd corrected to 3% O₂ – [SMAQMD, SJVUAPCD] 3. Non-atmospheric units: 12 ppmvd corrected to 3% O₂ – [SBCAPCD] 4. 20 ppmvd corrected to 3% O₂ - [BAAQMD] 5. No standard – [SDCAPCD]
SOx	<ol style="list-style-type: none"> 1. Good combustion practice and use of natural gas – [EPA Clearinghouse - Clark County Dept. of Air Quality, SMAQMD] 2. Use of natural gas – [SCAQMD] 3. No standard – [SJVUAPCD, BAAQMD, SDCAPCD]
PM10	<ol style="list-style-type: none"> 1. Good combustion practice and use of natural gas – [EPA Clearinghouse - Clark County Dept. of Air Quality, SMAQMD] 2. Use of natural gas – [SCAQMD] 3. No standard – [BAAQMD, SJVAPCD, SDCAPCD]
PM2.5	<ol style="list-style-type: none"> 1. Good combustion practices and use of natural gas 2. No standard – [SCAQMD, SDCAPCD, BAAQMD, SJVAPCD, EPA Clearinghouse - Clark]
CO	<ol style="list-style-type: none"> 1. Firetube Boilers: 50 ppmvd corrected to 3% O₂, and Watertube Boilers: 100 ppmvd corrected to 3% O₂ – [SMAQMD, SCAQMD] 2. Non-atmospheric units: 100 ppmvd corrected to 3% O₂ [SBCAPCD] 3. 400 ppm of CO corrected to 3% O₂ – [BAAQMD, SJVAPCD] 4. No standard – [SDCAPCD]

SCAQMD's BACT Determination and Rule 1146.1 requires that fire-tube boilers meet 7 ppmvd NOx corrected to 3% O₂. SMAQMD has received comments from Cleaver Brooks that the 7 ppmvd standard for fire-tube boilers is not feasible for boilers in the 2-5 MMBtu/hr size range, which is primarily for commercial heating boilers. To determine if 7 ppm boilers have been achieved in practice, SCAQMD was contacted to provide the source test results used to determine the 7 ppm standard for Rule 1146.1. In the provided source tests, only one fire-tube boiler under 5 MMBtu/hr had been tested to meet the standard. However, it was permitted at 9 ppm and was rated at 4.2 MMBtu/hr.

Additionally, SCAQMD's Public Document Search was used to identify permitted boilers under 5 MMBtu/hr, since the 7 ppm NOx standard was added to Rule 1146.1 on 12/7/18. Only two fire-tube boilers were found to be permitted at the 7 ppm standard. The two boilers are identical 4.2 MMBTU/hr

Burnham Commercial boilers at the same facility (Permit Numbers G58482 & G58483 - the units are listed as 3.348 MMBTU/hr, but based on the burners used, the 3.348 MMBTU/hr is heat output which equates to 4.2 MMBTU/hr heat input). A distributor for Burnham Commercial Boilers was contacted to see what size range 7 ppm NOx could be guaranteed. It was explained that to meet 7 ppm NOx, boilers are installed with a ST Johns Model NM-A burner (<http://www.johnsonburners.com/model-nm-a.php>). The burner brochure shows that a 5-9 ppm NOx could be guaranteed for burner ranges of 4.2 MMBtu/hr to 33.6 MMBtu/hr. Only one burner model (100A) listed in the brochure falls under the 2 to less than 5 MMBtu/hr BACT size category, which is rated at 4.2 MMBtu/hr.

SMAQMD, SCAQMD, and SJVAPCD Achieved in Practice require the following criteria. Per SMAQMD's Small Emitter Policy, to be Achieved in Practice "the rating and capacity for the achieved in practice device is approximately the same as that for the proposed device" and "the control technology must be verified to perform effectively over the range of operations expected for that class and category of source." SCAQMD has "the control technology must be verified to perform effectively over the range of operation expected for that type of equipment." and SJVAPCD has "The rating and capacity for the unit where the control was achieved must be approximately the same as that for the proposed unit."

However, the only permitted boilers found in SCAQMD to achieve the 7 ppm standard are rated at 4.2 MMBtu/hr. This does not cover the entire BACT size category of 2 to less than 5 MMBtu/hr. Therefore, the control of 7 ppm NOx has not been shown to be achieved in practice across the rating and capacity of the proposed BACT Determination size category.

Likewise, the 2 ppmvd NOx at 3% O₂ determination, achieved with SCONOx technology in the SCAQMD, that is listed in the CARB BACT clearinghouse, will also not be considered achieved in practice. SCAQMD has permitted several small boilers since the time of this determination and has not required the installation of SCONOx. Additionally, in the notes to the determination the SCAQMD states that they do not consider this determination achieved in practice.

Therefore, 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	Clark County Dept. of AQ (BACT) SMAQMD (BACT), SCAQMD (BACT)
NOx	Non-atmospheric units: 9 ppmvd at 3% O ₂ Atmospheric units and thermal fluid heaters: 12 ppmvd at 3% O ₂	SMAQMD (BACT), SCAQMD (Rule 1146.1), SJVUAPCD (Rule 4307)
SOx	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (BACT), SCAQMD (BACT)
PM10	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (BACT), SCAQMD (BACT)
PM2.5 (A)	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (BACT), SCAQMD (BACT)

BEST CONTROL TECHNOLOGIES ACHIEVED		
Pollutant	Standard	Source
CO	Firetube Boilers: 50 ppmvd at 3% O ₂ Watertube Boilers: 100 ppmvd at 3% O ₂	SMAQMD (BACT), SCAQMD (BACT)

(A) By assuming that all PM10 is PM2.5 we can conclude that the same standard should be used as PM10 despite not having a documented standard in place.

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 #239 FOR BOILERS ≥ 2 AND < 5 MMBTU/HR		
Pollutant	Standard	Source
VOC	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (current BACT), SCAQMD (BACT)
NOx	Non-atmospheric units: 9 ppmvd at 3% O ₂ Atmospheric units and thermal fluid heaters: 12 ppmvd at 3% O ₂	SMAQMD (current BACT), SCAQMD (Rule 1146.1), SJVUAPCD (Rule 4307)
SOx	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (current BACT), SCAQMD (BACT), SDCAPCD (BACT)
PM10	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (current BACT), SCAQMD (BACT)
PM2.5	Good combustion practice	Clark County Dept. of AQ (BACT) SMAQMD (current BACT), SCAQMD (BACT)
CO	Firetube Boilers: 50 ppmvd at 3% O ₂ Watertube Boilers: 100 ppmvd at 3% O ₂	SMAQMD (BACT), SCAQMD (BACT)

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 expected to be well below 1 in a million, 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

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 lbs/MMBtu	Filterable PM10 lbs/MMBtu	SO ₂ lbs/MMBtu
3.00	SANTA BARBARA COUNTY APCD	6/7/2011	Non-Atmospheric	12	100	NA	NA	NA
2.00	SANTA BARBARA COUNTY APCD	1/24/2012	Not Specified	20	NA	NA	NA	NA
3.00	SANTA BARBARA COUNTY APCD	1/24/2012	Not Specified	12	NA	NA	NA	NA
3.85	CLARK COUNTY DEPT. OF AIR QUALITY	5/16/2006	Not Specified	83	112	0.0052	0.0078	0.0026
3.85	CLARK COUNTY DEPT. OF AIR QUALITY	5/16/2006	Not Specified	82	112	0.005	0.0078	0.0015
2.10	CLARK COUNTY DEPT. OF AIR QUALITY	11/30/2009	Non-Atmospheric	20	52	0.0048	0.0095	0.0048
4.30	CLARK COUNTY DEPT. OF AIR QUALITY	11/30/2009	Non-Atmospheric	12	49	0.0054	0.007	0.0006
4.20	CLARK COUNTY DEPT. OF AIR QUALITY	11/30/2009	Non-Atmospheric	12	19	0.0048	0.0071	0.0024
4.19	WASHINGTON STATE DEPT. OF ECOLOGY; AIR QUALITY PROGRAM	6/14/2006	Not Specified	34	NA	NA	NA	NA

 = For these units the emission limits are not verified through testing and are only manufacturer's guarantees. Verification consists of the owner/operator using natural gas and good combustion practices. Therefore, the numeric standards are not considered achieved in practice.

 = Selected as the most stringent BACT determination achieved in practice.



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 Last updated on 4/8/2016

Technology Transfer Network

Clean Air EPA Home Ozone Radiation IT-NWPA Technology Transfer Network Clean Air Technology Center
 RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Process Information - Details

Process Information - Details

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

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FINAL

RBLC ID: CA-1185
Corporate/Company: SANTA BARBARA AIRPORT
Facility Name: SANTA BARBARA AIRPORT
Process: Boiler, Forced Dratf

Pollutant Information - List of Pollutants

[Help](#)

Primary Fuel: Natural gas
Throughput: 3.00 MMBTU/H
Process Code: 13.310

Pollutant	Primary Emission Limit	Basis	Verified
<u>Carbon Monoxide</u>	100.0000 PPMVD@3% O2	OTHER CASE-BY-CASE	UNKNOWN
<u>Nitrogen Oxides (NOx)</u>	12.0000 PPMVD@3% O2	OTHER CASE-BY-CASE	UNKNOWN

Process Notes:



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.FacilityInfo&facility_id=27283
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Clean Air Technology Transfer Network | RACT/BACT/LAER Clearinghouse | RBLC Basic Search | RBLC Search Results | Facility Information

Facility Information

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Date Entered:04/23/2012

Date Last Modified:09/06/2012

FINAL

RBLC ID: CA-1185
Corporate/Company: SANTA BARBARA AIRPORT
Facility Name: SANTA BARBARA AIRPORT
Facility Description:

State: CA **Zip Code:** 93117
County: SANTA BARBARA **Country:** USA
EPA Region: 9

Facility Contact Information:

Name:
Phone: **E-Mail:**

Agency Contact Information:

Agency: CA033 - SANTA BARBARA COUNTY APCD, CA
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: 805-961-8800.
Contact Info:
 cbe@sbcapcd.org

[EXIT Disclaimer](#) [Agency Link](#)

Permit Number: ATC 13623

Permit Type: B: Add new process to existing facility

PERMIT URL:

EST/ACT DATE
Complete
Application ACT 03/11/2011
Date:
Permit
Issuance ACT 06/07/2011
Date:
FRS Number: 110038091962
SIC Code: 4581
NAICS Code: 488119

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:



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.ProcessInfo&facility_id=27287&PROCESS_ID=108062
 Last updated on 4/8/2016

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[RACT/BACT/LAER Clearinghouse](#) | [RBLC Basic Search](#) | [RBLC Search Results](#) | [Process Information - Details](#)

Process Information - Details

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

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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

Pollutant Information - List of Pollutants

[Help](#)

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

Process Notes: Oilfield tank heater



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Last updated on 4/8/2016

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[RACT/BACT/LAER Clearinghouse](#) | [RBLC Basic Search](#) | [RBLC Search Results](#) | [Facility Information](#)

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.

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[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

Zip Code: 93454

County: SANTA BARBARA

Country: USA

EPA Region: 9

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)

EST/ACT DATE

Complete
Application ACT 03/07/2011
Date:

Permit
Issuance ACT 01/24/2012
Date:

Permit Type: B: Add new process to existing facility

FRS Number: Not Available

SIC Code: 1311

NAICS Code: 211111

PERMIT URL:

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:



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.ProcessInfo&facility_id=27288&PROCESS_ID=108063
 Last updated on 4/8/2016

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[RACT/BACT/LAER Clearinghouse](#) | [RBLC Basic Search](#) | [RBLC Search Results](#) | [Process Information - Details](#)

Process Information - Details

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

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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
<u>Nitrogen Oxides (NOx)</u>	12.0000	OTHER	
	PPMVD@3%	CASE-BY-	UNKNOWN
	O2	CASE	

Process Notes:



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.FacilityInfo&facility_id=27288
Last updated on 4/8/2016

Technology Transfer Network

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[RACT/BACT/LAER Clearinghouse](#) [RBLC Basic Search](#) [RBLC Search Results](#) [Facility Information](#)

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.

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[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
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

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Permit Number: ATC- 12949-01 (3)	EST/ACT DATE
	Complete
	Application ACT 03/07/2011
	Date:
	Permit
	Issuance ACT 01/24/2012
	Date:
Permit Type: B: Add new process to existing facility	FRS Number: Not Available
	SIC Code: 1311
	NAICS Code: 211111

PERMIT URL:

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:



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.ProcessInfo&facility_id=26743&PROCESS_ID=106333

Last updated on 4/8/2016

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[RACT/BACT/LAER Clearinghouse](#)
[Technology Transfer Network](#)
[Clean Air Technology Center](#)
[RACT/BACT/LAER Clearinghouse](#)
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Process Information - Details

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

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FINAL

RBLC ID: NV-0046

Corporate/Company: KERN RIVER GAS TRANSMISSION COMPANY

Facility Name: GOODSPRINGS COMPRESSOR STATION

Process: COMMERCIAL/INSTITUTIONAL BOILER

Pollutant Information - List of Pollutants

[Help](#)

Primary Fuel: NATURAL GAS
Throughput: 3.85 MMBTU/H
Process Code: 13.310

Pollutant	Primary Emission Limit	Basis	Verified
<u>Carbon Monoxide</u>	0.0830 LB/MMBTU	BACT- PSD	YES
<u>Nitrogen Oxides (NOx)</u>	0.1010 LB/MMBTU	BACT- PSD	YES
<u>Particulate matter, filterable < 10 µ (FPM10)</u>	0.0078 LB/MMBTU	BACT- PSD	YES
<u>Sulfur Dioxide (SO2)</u>	0.0026 LB/MMBTU	BACT- PSD	YES
<u>Volatile Organic Compounds (VOC)</u>	0.0052 LB/MMBTU	BACT- PSD	NO

Process Notes: THE UNIT'S MODEL IDENTIFICATION IS PEERLESS 724 FDA WU.



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Last updated on 4/8/2016

Technology Transfer Network

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RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Facility Information

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.

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Date Entered:12/03/2007

Date Last Modified:12/03/2007

FINAL

RBLC ID: NV-0046

Corporate/Company: KERN RIVER GAS TRANSMISSION COMPANY

Facility Name: GOODSPRINGS COMPRESSOR STATION

Facility Description: THE FACILITY IS A COMPRESSOR STATION ON AN INTER-STATE PIPELINE FOR TRANSPORTING NATURAL GAS. THE FACILITY IS A MAJOR STATIONARY SOURCE FOR NITROGEN OXIDES IN A NON-ATTAINMENT AREA FOR OZONE AIR QUALITY.

State: NV
County: CLARK
EPA Region: 9

Zip Code: 89019
Country: USA

Facility Contact Information:

Name: DAVE DAHL
Phone: 7026393600

E-Mail:

Agency Contact Information:

Agency: NV002 - CLARK CO. DEPT. OF AIR QUALITY

[EXIT Disclaimer](#) [Agency Link](#)

Contact: MR. SANTOSH MATHEW

Address: AIR QUALITY SUPERVISOR
DEPARTMENT OF AIR QUALITY, CLARK COUNTY
4701 WEST RUSSELL ROAD, SUITE 200
LAS VEGAS, NV 89118

Phone: (702) 455-5942

Other Agency

Contact Info: RBLC COORDINATOR: DAVID LEE, TEL: 602-455-1673

Permit Number: 468

EST/ACT DATE

Complete Application ACT 06/05/2002

Date:

Permit

Issuance ACT 05/16/2006

Date:

FRS Number: 110006825294

SIC Code: 4922

NAICS Code: 486210

Permit Type: A: New/Greenfield Facility

PERMIT URL:

Affected Class I / U.S. Border Area:

Distance to Area	Area Name
----- Between 100km and 250km	----- Grand Canyon NP, AZ

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

Pollutant	Increase (+)/Decrease (-), Tons/Year
Carbon Monoxide	51.4300
Nitrogen Oxides (NOx)	130.4700
Particulate Matter (PM)	9.5000
Sulfur Oxides (SOx)	4.8500
Volatile Organic Compounds (VOC)	9.9200

Other Permitting Information:

THE FACILITY WAS INITIALLY PERMITTED ON OCTOBER 23, 1991 AS A NON-MAJOR STATIONARY SOURCE CONSISTING OF ONLY ONE GAS-FIRED TURBINE COMPRESSOR RATED AT 11,000 HP. ON MARCH 29, 2001, A PERMIT WAS ISSUED TO THE FACILITY FOR REPLACING THE ORIGINAL COMPRESSOR WITH A LARGER ONE RATED AT 15,000 HP. ON JUNE 5, 2002, THE FACILITY OWNER APPLIED FOR A MAJOR-SOURCE PERMIT, WHICH WAS FOR CONSTRUCTING TWO ADDITIONAL COMPRESSORS OF THE SAME MODEL. AN INITIAL PERMIT FOR AUTHORITY TO CONSTRUCT WAS ISSUED ON MAY 11, 2004. AN AMENDED AUTHORITY TO CONSTRUCT/OPERATING PERMIT WAS ISSUED ON MAY 16, 2006. THIS REPORT IS BASED ON THE BACT DETERMINATIONS CONTAINED IN THE PERMITS FOR MAY 11, 2004 AND MAY 16, 2006. A PART 70 OPERATING PERMIT WILL BE ISSUED IN THE NEAR FUTURE.



Technology Transfer Network

Clean Air EPA Home Air Radiation TTN RACT/BACT/LAER Clearinghouse Clean Air Technology Center
 RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Process Information - Details

Process Information - Details

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

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FINAL

RBLC ID: NV-0048
Corporate/Company: KERN RIVER GAS TRANSMISSION COMPANY
Facility Name: GOODSPRINGS COMPRESSOR STATION
Process: COMMERCIAL/INSTITUTIONAL-SIZE BOILER (<100 MMBTU/H)

Pollutant Information - List of Pollutants

[Help](#)

Primary Fuel: NATURAL GAS
Throughput: 3.85 MMBTU/H
Process Code: 13.310

Pollutant	Primary Emission Limit	Basis	Verified
<u>Carbon Monoxide</u>	0.0830 LB/MMBTU	Other Case-by-Case	UNKNOWN
<u>Nitrogen Oxides (NOx)</u>	0.1000 LB/MMBTU	Other Case-by-Case	UNKNOWN
<u>Particulate matter, filterable < 10 μ (FPM10)</u>	0.0078 LB/MMBTU	Other Case-by-Case	UNKNOWN
<u>Sulfur Dioxide (SO2)</u>	0.0015 LB/MMBTU	BACT-PSD	UNKNOWN
<u>Volatile Organic Compounds (VOC)</u>	0.0050 LB/MMBTU	Other Case-by-Case	UNKNOWN

Process Notes: THE PROCESS CONSISTS OF ONE PEERLESS BOILER. THE BOILER IS ALLOWED TO OPERATE 8,760 HOURS PER YEAR.



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 Last updated on 4/8/2016

Technology Transfer Network

Clean Air EPA Home Air Quality Radiation IT-NWPA Technology Transfer Network Clean Air Technology Center
 RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Facility Information

Facility Information

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[Help](#)

Date Entered:12/15/2008

Date Last Modified:02/10/2009

FINAL

RBLC ID: NV-0048

Corporate/Company: KERN RIVER GAS TRANSMISSION COMPANY

Facility Name: GOODSPRINGS COMPRESSOR STATION

Facility Description: THE FACILITY CONSISTS OF THREE SIMPLE-CYCLE GAS TURBINES, WHICH PUMP NATURAL GAS THROUGH THE INTERSTATE PIPELINE. EACH TURBINE IS RATED 15,000 HORSE POWER (HP).

State: NV
County: CLARK COUNTY
EPA Region: 9

Zip Code: 89019
Country: USA

Facility Contact Information:

Name: LARRY D. LEONARD
Phone: 8019376154

E-Mail:

Agency Contact Information:

Agency: NV002 - CLARK CO. DEPT. OF AIR QUALITY

[EXIT Disclaimer](#) [Agency Link](#)

Contact: MR. SANTOSH MATHEW

Address: AIR QUALITY SUPERVISOR
 DEPARTMENT OF AIR QUALITY, CLARK COUNTY
 4701 WEST RUSSELL ROAD, SUITE 200
 LAS VEGAS, NV 89118

Phone: (702) 455-5942

Other Agency: DAVID C. LEE, RBLC COORDINATOR

Contact Info: TEL: 702-455-1673

Permit Number: 468

Permit Type: A: New/Greenfield Facility

PERMIT URL:

EST/ACT DATE
Complete
Application ACT 03/23/2006
Date:
Permit
Issuance ACT 05/16/2006
Date:
FRS Number: UNKNOWN
SIC Code: 4922
NAICS Code: 486210

Affected Class I / U.S. Border Area:

Distance to Area	Area Name
-----	-----
Between 100km and 250km	Grand Canyon NP, AZ

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

Pollutant	Increase (+)/Decrease (-), Tons/Year
Carbon Monoxide	51.4300
Nitrogen Oxides (NOx)	130.4700
Particulate Matter (PM)	9.5000
Sulfur Oxides (SOx)	4.8500
Volatile Organic Compounds (VOC)	9.9200

Other Permitting Information:

THIS REPORT IS BASED ON THE AUTHORITY TO CONSTRUCT/OPERATING PERMIT, AMENDMENT 1 (AMENDED ATC/OP) ISSUED TO KERN RIVER GAS TRANSMISSION COMPANY (KERN RIVER) ON MAY 16, 2006. BASED ON THE AMENDED ATC/OP, A PART 70 OPERATING PERMIT WAS COMPOSED AND ISSUED TO KERN RIVER ON JANUARY 28, 2008. THE STATIONARY SOURCE COMMENCED INITIAL CONSTRUCTION IN 1991, AND EXPANDED THEREAFTER. THE MAJOR-SOURCE THRESHOLD AT THE FACILITY'S LOCATION IS 50 TONS PER YEAR FOR NITROGEN OXIDES. ON MAY 1, 2003, THE FACILITY COMMENCED OPERATION AS A MAJOR SOURCE FOR NITROGEN OXIDES, AND A MINOR SOURCE FOR ALL THE OTHER CRITERIA AIR POLLUTANTS. IN MAY 2008, KERN RIVER PROVIDED UPDATE OF COMPANY'S NEW RESPONSIBLE OFFICIAL FOR ALL COMPLIANCE MATTERS.



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Technology Transfer Network

Clean Air EPA Home Air Quality Criteria (AQCR) RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Clean Air Technology Center
 RACT/BACT/LAER Clearinghouse RBLC Basic Search RBLC Search Results Process Information - Details

Process Information - Details

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

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FINAL

RBLC ID: NV-0050
Corporate/Company: MGM MIRAGE
Facility Name: MGM MIRAGE
Process: BOILER - UNIT BE111 AT BELLAGIO

Pollutant Information - List of Pollutants

[Help](#)

Primary Fuel: NATURAL GAS
Throughput: 2.10 MMBTU/H
Process Code: 11.310

Pollutant	Primary Emission Limit	Basis	Verified
<u>Carbon Monoxide</u>	0.0380 LB/MMBTU	LAER	YES
<u>Nitrogen Oxides (NOx)</u>	0.0240 MMBTU	Other Case- by-Case	YES
<u>Particulate matter, filterable < 10 µ (FPM10)</u>	0.0095 LB/MMBTU	LAER	YES
<u>Sulfur Oxides (SOx)</u>	0.0048 LB/MMBTU	BACT- PSD	YES
<u>Volatile Organic Compounds (VOC)</u>	0.0048 LB/MMBTU	Other Case- by-Case	YES

Process Notes: THE UNIT IS A HURST SERIES 400 BOILER. THE UNIT IS ALLOWED TO OPERATE 24 HOURS/DAY AND 8,760 HOURS/YEAR. THE EMISSION LIMITS ARE BASED ON THE ATC PERMIT FOR MODIFICATION #13 DATED NOVEMBER 30, 2009.



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.ProcessInfo&facility_id=27043&PROCESS_ID=107311
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Technology Transfer Network

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[RACT/BACT/LAER Clearinghouse](#) [RBLC Basic Search](#) [RBLC Search Results](#) [Process Information - Details](#)

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: NV-0050
Corporate/Company: MGM MIRAGE
Facility Name: MGM MIRAGE
Process: BOILERS - UNITS CC004, CC005, AND CC006 AT CITY CENTER

Pollutant Information - List of Pollutants

[Help](#)

<p>Primary Fuel: NATURAL GAS Throughput: 4.20 MMBTU/H Process Code: 11.310</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Pollutant</th> <th style="text-align: left;">Primary Emission Limit</th> <th style="text-align: left;">Basis</th> <th style="text-align: left;">Verified</th> </tr> </thead> <tbody> <tr> <td>Carbon Monoxide</td> <td>0.0214 LB/MMBTU</td> <td>LAER</td> <td>NO</td> </tr> <tr> <td>Hazardous Air Pollutants (HAP)</td> <td>0.0019 LB/MMBTU</td> <td>Other Case-by-Case</td> <td>YES</td> </tr> <tr> <td>Nitrogen Oxides (NOx)</td> <td>0.0143 LB/MMBTU</td> <td>Other Case-by-Case</td> <td>NO</td> </tr> <tr> <td>Particulate matter, filterable < 10 μ (FPM10)</td> <td>0.0071 LB/MMBTU</td> <td>Other Case-by-Case</td> <td>NO</td> </tr> <tr> <td>Sulfur Oxides (SOx)</td> <td>0.0024 LB/MMBTU</td> <td>BACT-PSD</td> <td>NO</td> </tr> <tr> <td>Volatile Organic Compounds (VOC)</td> <td>0.0048 LB/MMBTU</td> <td>Other Case-by-Case</td> <td>YES</td> </tr> </tbody> </table>	Pollutant	Primary Emission Limit	Basis	Verified	Carbon Monoxide	0.0214 LB/MMBTU	LAER	NO	Hazardous Air Pollutants (HAP)	0.0019 LB/MMBTU	Other Case-by-Case	YES	Nitrogen Oxides (NOx)	0.0143 LB/MMBTU	Other Case-by-Case	NO	Particulate matter, filterable < 10 μ (FPM10)	0.0071 LB/MMBTU	Other Case-by-Case	NO	Sulfur Oxides (SOx)	0.0024 LB/MMBTU	BACT-PSD	NO	Volatile Organic Compounds (VOC)	0.0048 LB/MMBTU	Other Case-by-Case	YES
Pollutant	Primary Emission Limit	Basis	Verified																										
Carbon Monoxide	0.0214 LB/MMBTU	LAER	NO																										
Hazardous Air Pollutants (HAP)	0.0019 LB/MMBTU	Other Case-by-Case	YES																										
Nitrogen Oxides (NOx)	0.0143 LB/MMBTU	Other Case-by-Case	NO																										
Particulate matter, filterable < 10 μ (FPM10)	0.0071 LB/MMBTU	Other Case-by-Case	NO																										
Sulfur Oxides (SOx)	0.0024 LB/MMBTU	BACT-PSD	NO																										
Volatile Organic Compounds (VOC)	0.0048 LB/MMBTU	Other Case-by-Case	YES																										

Process Notes: THE THREE UNITS ARE IDENTICAL HURST BOILERS, EACH OF WHICH IS RATED AT 4.2 MMBTU/HR. EACH OF THESE EMISSION UNITS IS ALLOWED TO OPERATE 24 HOURS/DAY AND UP TO 5,800 HOURS/YEAR. THE EMISSION LIMITS ARE BASED ON THE ATC PERMIT FOR MODIFICATION #8 DATED MARCH 30, 2006.



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[RBLC Search Results](#)
[Process Information - Details](#)

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: NV-0050
Corporate/Company: MGM MIRAGE
Facility Name: MGM MIRAGE
Process: BOILER - UNIT MB090 AT MANDALAY BAY

Pollutant Information - List of Pollutants

[Help](#)

Primary Fuel: NATURAL GAS
Throughput: 4.30 MMBTU/H
Process Code: 11.310

Pollutant	Primary Emission Limit	Basis	Verified
<u>Carbon Monoxide</u>	0.0362 LB/MMBTU	LAER	YES
<u>Hazardous Air Pollutants (HAP)</u>	0.0018 LB/MMBTU	Other Case-by-Case	YES
<u>Nitrogen Oxides (NOx)</u>	0.0140 LB/MMBTU	Other Case-by-Case	UNKNOWN
<u>Particulate matter, filterable < 10 μ (FPM10)</u>	0.0070 LB/MMBTU	Other Case-by-Case	YES
<u>Sulfur Oxides (SOx)</u>	0.0006 LB/MMBTU	BACT-PSD	YES
<u>Volatile Organic Compounds (VOC)</u>	0.0054 LB/MMBTU	Other Case-by-Case	YES

Process Notes: THE UNIT IS A HURST SCOTCH MARINE "WETBACK 400 SERIES" BOILER. THE EMISSION LIMITS REPORTED HEREIN ARE BASED ON THE ATC FOR MODIFICATION #11 DATED NOVEMBER 16, 2006. THE UNIT IS ALLOWED TO OPERATE 24 HOURS/DAY AND 8,760 HOURS/YEAR.



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[RACT/BACT/LAER Clearinghouse](#) | [RBLC Basic Search](#) | [RBLC Search Results](#) | [Facility Information](#)

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:02/16/2010

Date Last Modified:03/15/2010

FINAL

RBLC ID: NV-0050

Corporate/Company: MGM MIRAGE

Facility Name: MGM MIRAGE

Facility Description: THE FACILITY IS A MAJOR SOURCE FOR CO, NOX, PM-10, AND A NON-MAJOR SOURCE FOR SO2, VOC, AND HAP. THE FACILITY IS A CONGLOMERATE OF HOTELS AND CASINOS LOCATED IN A CONTIGUOUS AREA, WHICH AIR QUALITY IS NON-ATTAINMENT FOR CO, OZONE, AND PM-10, AND ATTAINMENT FOR THE OTHER CRITERIA AIR POLLUTANTS.

State: NV

Zip Code: 89109

County: CLARK

Country: USA

EPA Region: 9

Facility Contact Information:

Name: CINDY ORTEGA

Phone: 7026506765

E-Mail:

Agency Contact Information:

Agency: NV002 - CLARK CO. DEPT. OF AIR QUALITY

[EXIT Disclaimer](#) [Agency Link](#)

Contact: MR. SANTOSH MATHEW

Address: AIR QUALITY SUPERVISOR
DEPARTMENT OF AIR QUALITY, CLARK COUNTY
4701 WEST RUSSELL ROAD, SUITE 200
LAS VEGAS, NV 89118

Phone: (702) 455-5942

Other Agency

Contact Info: DAVID C. LEE, RBLC COORDINATOR, 702-455-1673

Permit Number: 825

EST/ACT DATE

Complete

Application ACT 05/22/2008

Date:

Permit

Issuance ACT 11/30/2009

Date:

FRS Number: UNKNOWN

SIC Code: 701

NAICS Code: 721120

Permit Type: A: New/Greenfield Facility

PERMIT URL:

Affected Class I / U.S. Border Area:

Distance to Area	Area Name
----- Between 100km and 250km	----- Grand Canyon NP, AZ

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

Pollutant	Increase (+)/Decrease (-), Tons/Year
Carbon Monoxide	197.4400
Nitrogen Oxides (NOx)	153.3800
Particulate Matter (PM)	79.5900
Sulfur Oxides (SOx)	4.4200
Volatile Organic Compounds (VOC)	48.9000

Other Permitting Information:

THE FACILITY IS A CONGLOMERATE OF TEN BUSINESS ENTITIES, WHICH ARE: (1) MGM GRAND, (2) NEW YORK-NEW YORK, (3) MANDALAY BAY, (4) LUXOR, (5) EXCALIBUR, (6) BELLAGIO, AND (7) CITY CENTER, (8) SIGNATURE (THE RESIDENCES), (9) MONTE CARLO, AND (10) FOUR SEASONS. ALL OF THESE ENTITIES ARE IN A CONTIGUOUS PROPERTY AND HAD BEEN PERMITTED INDIVIDUALLY PRIOR TO THE ACQUISITION PROCESS BEGINNING FROM 2005. THE FACILITY BECAME A MAJOR STATIONARY SOURCE FOR CO WHEN THE ATC FOR MODIFICATION #8 WAS ISSUED ON MARCH 30, 2006. MODIFICATION #8 CONSISTED OF CONSTRUCTING THE NEW CITY CENTER, WHICH COMMENCED OPERATION IN DECEMBER 2009. ALL EMISSION UNITS PERMITTED ON OR AFTER MARCH 30, 2006 ARE CONSIDERED NEW FOR THIS REPORT.



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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: WA-0316
Corporate/Company: NORTHWEST PIPELINE CORP.
Facility Name: NORTHWEST PIPELINE CORP.-MT VERNON COMPRESSOR
Process: BOILER, NATURAL GAS

Primary Fuel: NATURAL GAS
Throughput: 4.19 MMBTU/H
Process Code: 13.310

Pollutant Information - List of Pollutants

[Help](#)

Pollutant	Primary Emission Limit	Basis	Verified
<u>Nitrogen Oxides (NOx)</u>	34.0000 PPMDV @ 3%	BACT- PSD	UNKNOWN

Process Notes: Sellers C100 heater/boiler



https://cfpub.epa.gov/rblc/index.cfm?action=PermitDetail.FacilityInfo&facility_id=25751
Last updated on 4/8/2016

Technology Transfer Network

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[RACT/BACT/LAER Clearinghouse](#) [RBLC Basic Search](#) [RBLC Search Results](#) [Facility Information](#)

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:03/11/2004

Date Last Modified:06/04/2009

FINAL

RBLC ID: WA-0316
Corporate/Company: NORTHWEST PIPELINE CORP.
Facility Name: NORTHWEST PIPELINE CORP.-MT VERNON COMPRESSOR
Facility Description: NATURAL GAS TRANSMISSION STATION

State: WA
County: SKAGIT
EPA Region: 10

Zip Code: 841580900
Country: USA

Facility Contact Information:

Name:
Phone: **E-Mail:**

Agency Contact Information:

Agency: WA001 - WASHINGTON STATE DEPARTMENT OF ECOLOGY (ECY); AIR QUALITY PROGRAM
Contact: MR. MARC CROOKS
Address: WASHINGTON STATE DEPT. OF ECOLOGY
PO BOX 47600
OLYMPIA, WA 98504-7600
Phone: (360) 407-6803
Other Agency: DAN MEYER
Contact Info: 1200 6TH AVENUE
SEATTLE, WA 98101
206-553-4150

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[Agency Link](#)

Permit Number: PSD-01-09 AMENDMENT 5

Permit Type: D: Both B (Add new process to existing facility) & C (Modify process at existing facility)

PERMIT URL:

EST/ACT DATE
Complete
Application
Date:
Permit
Issuance ACT 06/14/2006
Date:

FRS Number: 110017421841

SIC Code: 4923
NAICS Code: 486210

Affected Class I / U.S. Border Area:

Distance to Area -----	Area Name -----
Less than 100km	US/Canada Border,
Less than 100km	North Cascades NP, WA
Between 100km and 250km	Alpine Lakes, WA
Between 100km and 250km	Glacier Peak, WA
Between 100km and 250km	Olympic NP, WA
Between 100km and 250km	Pasayten, WA

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

No facilitywide emissions data available for this facility.

Other Permitting Information:

MODIFICATION ADDS 1 MARS 90S TURBINE, 1 CENTAUR 50S, REPLACING AN EXISTING STANDBY GENERATOR WITH A 450 KW GENERATOR, AND REPLACING AN EXISTING BOILER WITH A 4.186 MMBTU/H BOILER. ONLY NOX IS SUBJECT TO PSD REVIEW. THE AMENDMENTS DID NOT AFFECT EMISSIONS LEVELS, BACT DETERMINATIONS, OR MEODELING RESULTS.

Attachment B

Review of BACT Determinations published by CARB

List of BACT determinations published in CARB's BACT 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 lbs/MMBtu	Filterable PM10 lbs/MMBtu	SO ₂ lbs/MMBtu
3.00	SANTA BARBARA COUNTY APCD	6/7/2011	Non-Atmospheric	12	100	NA	NA	NA
2.00	SANTA BARBARA COUNTY APCD	1/24/2012	Not Specified	20	NA	NA	NA	NA
4.2	SOUTH COAST AQMD	5/1/2000	Not Specified	2	NA	NA	NA	NA

 = The determination noted that the SCAQMD does not consider this standard achieved in practice.

 = Selected as the most stringent BACT determination achieved in practice.



BACT Determination Detail

Category

Source Category:	Boiler: < 5 MMBtu/hr
SIC Code	4581
NAICS Code	48811

Emission Unit Information

Manufacturer:	Cleaver-Brooks
Type:	
Model:	FLX700-300-160HW
Equipment Description:	Forced draft boiler
Capacity / Dimentions	3.00 MMBtu/hr
Fuel Type	Natural Gas
Multiple Fuel Types	
	Continuous (24/7/52)

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

Function of Equipment

Bact Information

NOx Limit	12
NOx Limit Units	ppmvd @ 3% O2
NOx Average Time	40 minutes
NOx Control Method	Pollution Prevention
NOx Control Method Desc	Forced draft, full modulation, flue gas recirculation
NOx Percent Control Efficiency	
NOx Cost Effectiveness (%/ton)	
NOx Incremental Cost Effectiveness (%/ton)	
NOx Cost Verified (Y/N)	
NOx Dollar Year	
CO Limit	100
CO Limit Units	ppmvd @ 3% O2
CO Average Time	40 minutes

CO Control Method	Pollution Prevention
CO Control Method Desc	Forced draft, full modulation, flue gas recirculation
CO Percent Control Efficiency	
CO Cost Effectiveness (%/ton)	
CO Incremental Cost Effectiveness (%/ton)	
CO Cost Verified (Y/N)	
CO Dollar Year	

Project / Permit Information

Application/Permit No.:	ATC 13623
Application Completeness Date:	
New Construction/Modification:	New Construction
ATC Date:	06-07-2011
PTO Date:	04-01-2012
Startup Date:	09-26-2011
Technology Status:	BACT Determination
Source Test Available:	Yes
Source Test Results:	Boiler 1: 9.7 ppmvd NOx @ 3% O2 53.6 ppmvd CO @ 3% O2 Boiler 2: 11.7 ppmvd NOx @ 3% O2 21.8 ppmvd CO @ 3% O2

Facility / District Information

Facility Name: Santa Barbara Airport

Facility Zip Code: 93117

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: 2 identical units. Tuning required twice per year with a portable CO/NOx analyzer.

[Report Error In Determination](#)



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



BACT Determination Detail

Category

Source Category: Boiler: < 5 MMBtu/hr
SIC Code 3552
NAICS Code 314

Emission Unit Information

Manufacturer: Kewanee
Type: Fire tube
Model: 100 HP
Equipment Description:
Capacity / Dimentions 4.2 MMBtu/hr
Fuel Type Natural Gas
Multiple Fuel Types

Continuous (24/7/52)

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

Function of Equipment Steam Generator

Bact Information

NOx Limit 2

NOx Limit Units ppmvd@3% O2

NOx Average Time 15-min

NOx Control Method

NOx Control Method Desc SCONOx Catalytic Absorption System

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.: 366323

Application Completeness
Date:

New Construction/Modification: New Construction

ATC Date: 05-01-2000

PTO Date:

Startup Date:

Technology Status: BACT Determination

Source Test Available: No

Source Test Results:

Facility / District Information

Facility Name: Margaretis Textile Services/MTS Inc.

Facility Zip Code:

Facility County:

District Name: South Coast AQMD

District Contact: Martin Kay

Contact Phone No.: 909-396-3115

Contact E-Mail: mkay@aqmd.gov

Notes

Notes:

The applicant requested 2 ppm NOx based on the guarantee of the control technology manufacture. At this time, 2 ppm NOx is not considered achieved in practice for this category of equipment.

Report Error In Determination

Attachment C

**Review of BACT Determinations published by
California Air Districts**

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

Subcategory/Rating/Size	Criteria Pollutants					Inorganic
	VOC	NOx ¹	SOx	CO	PM ₁₀	
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		<u>With Low-NOx Burner:</u> ≤ 9 ppmv dry corrected to 3% O ₂ <u>With Add-On Controls:</u> ≤ 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)	<u>With Add-On Controls:</u> ≤ 5 ppmvd NH ₃ , corrected to 3% O ₂ ≤ 1 ppmvd ozone, corrected to 3% O ₂ (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)	<u>With Add-On Controls:</u> ≤ 5 ppmvd NH ₃ , corrected to 3% O ₂ ≤ 1 ppmvd ozone, corrected to 3% O ₂ (10-20-2000)

(Continued on next page)

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

CATEGORY:

BOILER/HEATER < 5 MMBTU

BACT Size: Minor Source BACT

BOILER

BACT Determination Number: 128	BACT Determination Date: 7/15/2016
---------------------------------------	---

Equipment Information

Permit Number: N/A -- Generic BACT Determination
Equipment Description: BOILER
Unit Size/Rating/Capacity: Boiler/Heater >= 2 and < 5 mmbtu/hr, fired on NG
Equipment Location:

BACT Determination Information

ROCs	Standard:	Good combustion practices and fire with NG
	Technology Description:	Practices
	Basis:	Achieved in Practice
NOx	Standard:	9 ppmvd for non-atmos. 12 ppmvd for atmos.
	Technology Description:	Low NOx Bumer
	Basis:	Achieved in Practice
SOx	Standard:	Good combustion practices and fire with NG
	Technology Description:	Practices
	Basis:	Achieved in Practice
PM10	Standard:	Good combustion practices and fire with NG
	Technology Description:	Practices
	Basis:	Achieved in Practice
PM2.5	Standard:	Good combustion practices and fire with NG
	Technology Description:	Practices
	Basis:	Achieved in Practice
CO	Standard:	50 ppmvd for firetube/ 100 ppmvd for watertube
	Technology Description:	Low NOx Bumer
	Basis:	Achieved in Practice
LEAD	Standard:	
	Technology Description:	
	Basis:	

Comments: All ppmvd are at 3% O2
 Atmos. stands for atmospheric.

District Contact: Joe Carle Phone No.: (916) 874 - 4838 email: jcarle@airquality.org

Attachment D

**Contact with Burnham Commercial Boilers Distributor
and 7 ppm Burner Brochure**

Hello Jeff,

It was a pleasure speaking with you on the phone today!

As discussed, I attached the ST Johnson brochure for you below. Their NMA series can go down to 7ppm NOx, but that is usually paired with an O2 Trim. The last page specifically gives the possible boiler range with this model.

If you have any questions, please let me know.

Best Regards,



Heidi Mae Worachek





Application Engineer

O: 714-897-1036

F: 714-894-7586

DBsales.net

[LinkedIn](#)

BURNER MODELS	FUEL OPTIONS	NO _x LEVELS	SIZE RANGE (HP)															
			40	50	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
 FD68	NG, LPG, Biogas or Dual-Fuel (#2-6 Oil)	Uncontrolled	50 – 1,200 HP															
 FD68-LN	NG, LPG, Biogas or Dual-Fuel (#2-6 Oil)	Sub 30 ppm	50 – 1,200 HP															
 FD68-RF	NG, LPG, Biogas or Dual-Fuel (#2-6 Oil)	Uncontrolled or Sub 30 ppm												1,200 – 1,500 HP				
 NMV	Natural Gas	9 ppm	40 – 200 HP															
 NMA	Natural Gas or Dual-Fuel (#2 Oil)	5 - 9 ppm	100 – 800 HP															
 NM-RF	Natural Gas or Dual-Fuel (#2 Oil)	5 - 9 ppm									800 – 1,500 HP							

NOTE: All specifications and dimensions provided in this document are approximate and for reference only. S.T. Johnson practices continuous product improvement and reserves the right to change specifications and/or dimensions without notice. Graphics shown may not be representative of actual product.



S.T. Johnson Company
5160 Fulton Drive
Fairfield, CA 94534

Call: (510) 652-6000
Fax: (510) 652-4302
www.stjohnson.com

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Model NMA

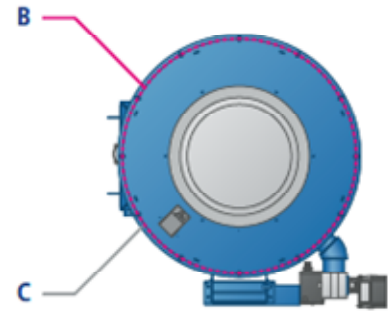
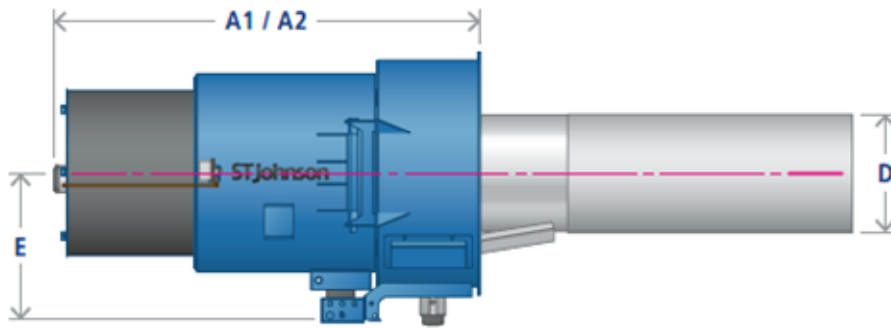
QUIET & RELIABLE AXIAL-FLOW BURNER

SIZE RANGE	100 – 800 HP
EMISSIONS	5 – 9 ppm NOx
TURNDOWN	Up to 6:1
FUEL OPTIONS	Natural Gas or Dual-Fuel (#2 Oil)



EASY TO SERVICE & MAINTAIN

The NMA features a convenient swing-open housing which provides quick and easy access to burner head. This streamlines routine burner maintenance and makes dual-fuel conversion simple and fast.



		MODEL:	100A	125A	150A	200A	238A	250A	300A	350A	400A	500A	600A	800A
SPECIFICATIONS	Boiler Output	HP	100	125	150	200	238	250	300	350	400	500	600	800
	Gas Capacity	MMBH	4,200	5,250	6,300	8,400	10,000	10,500	12,600	14,700	16,800	21,000	25,200	33,600
	Blower Motor	HP	5	5	7.5	10	10	15	15	20	25	40	40	75
	Gas Pressure	PSIG	1.5	1.7	1.9	2.3	2.0	2.1	1.7	1.9	2.1	1.9	2.2	1.9
	Furnace Pressure	IN W.C.	2	2	2	2	2	4	4	4	4	4	4	4
	Ship Weight	LBS	1,000	1,000	1,000	1,200	1,200	1,500	1,500	1,600	1,600	2,000	2,000	2,500
DIMENSIONS	A1	IN	47.9	47.9	47.9	58.3	58.3	58.3	58.3	69	69	72	72	78.4
	A2 (Swing Length)	IN	50.6	50.6	50.6	62.3	62.3	62.3	62.3	73.5	73.5	81	81	89.7
	B	IN	25.25	25.25	25.25	30.25	30.25	30.25	30.25	35.25	35.25	39.5	39.5	39.5
	C	IN	26.5	26.5	26.5	31.5	31.5	31.5	31.5	36.5	36.5	41	41	41
	D	IN	9.5	9.5	9.5	11	11	14	14	16	16	20	20	21.5
E	IN	17.9	17.9	17.9	20.5	20.5	20.5	20.5	23.2	23.2	25.2	25.2	25.2	