

South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

March 22, 2012

Mr. Gerardo Rios
Chief – Permits Office
U. S. EPA, Region IX
75 Hawthorne Street, Air 3
San Francisco, CA 94105

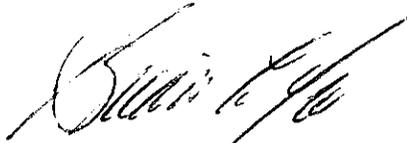
Dear Mr. Rios:

Subject: LA County Harbor UCLA Medical Center (ID 800312) – Title V Permit
Revision (Application No. 530236)

Harbor UCLA Medical Center has proposed to revise their Title V permit by installing Low NOx burners on Boiler Nos. 1, 2, and 3 to meet the upcoming Rule 1146 limits. This is a medical care facility (SIC 8060) located at 1000 West Carson St., Torrance, CA 90509. This proposed permit revision is considered a “de minimis significant permit revision” to their Title V permit. Attached for your review are the permit evaluation and proposed Section D. With your receipt of the proposed Section D today, we will note that the EPA 45-day review period begins on March 22, 2012.

If you have any questions or need additional information regarding the proposed permit revision, please call Chris Perri at (909) 396-2696.

Very truly yours,



Brian L. Yeh
Senior Manager
Chemical, Mechanical & Public Services

BLY:AYL:JTY:cgp

cc: Jose Mendoza, LA County UCLA Medical Center

Attachments

FACILITY PERMIT TO OPERATE L.A. COUNTY HARBOR UCLA MEDICAL CENTER

PERMIT TO CONSTRUCT

A/N 530237

Equipment Description:

MODIFICATION OF:

BOILER NO. 1, SUPERIOR IRON WORKS, MODEL NO. 4-2007, 400 HP, RATED AT 16,800,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 210 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91425

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. NO MORE THAN TWO OF THE THREE SUPERIOR IRON WORKS BOILERS NOS. 1, 2 AND 3 SHALL BE FIRED AT ANY ONE TIME EXCEPT DURING A WARM-UP PERIOD FOR ONE OF THE BOILERS THIS WARM-UP PERIOD SHALL NOT EXCEED FOUR (4) HOURS.
[RULE 1303 (b)(2)]
4. THE BURNER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR, FUEL AND RECIRCULATED FLUE GAS AS THE EQUIPMENT LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR COMMENCING FROM START-UP ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.
[RULE 1146, RULE 1303 (a)(1)]
5. THE BOILER SHALL BE FIRED WITH NATURAL GAS ONLY, LOW NITROGEN FUEL OIL WITH LESS THAN 0.01% NITROGEN AND SULFUR CONTENT WHICH MEETS THE RULE 431.2 LIMIT, MAY BE FIRED DURING PERIODS OF FORCED MAJEURE GAS CURTAILMENTS, DURING MAINTENANCE TESTING OF THE BOILER WHICH SHALL NOT EXCEED 30 MINUTES PER MONTH, OR DURING COMPLIANCE TESTING WITH FUEL OIL.
[RULE 1303 (a)(1)]

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6. RECORDS OF SUCH ADJUSTMENTS, TUNE-UPS AND CALIBRATIONS AS STATED IN CONDITION NUMBER 6 SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO THE AQMD UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
7. THIS BOILER SHALL BE EQUIPPED WITH A NON-RESETTABLE, TOTALIZING FUEL FLOW METER FOR EACH FUEL BURNED.
[RULE 1146]
8. AN INDICATOR SHALL BE INSTALLED MAINTAINED TO INDICATE THE AMOUNT OF FLUE GAS RECIRCULATED FROM THE EXHAUST STACK TO THE BURNER.
[RULE 1303 (a)(1)]
9. ALL RECORDS, INCLUDING DAILY FUEL USE, SHALL BE KEPT FOR A PERIOD OF AL LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
10. THE OPERATOR SHALL PERFORM PERIODIC EMISSION TESTS ON THE BOILER WITH A PORTABLE ANALYZER IN ACCORDANCE WITH THE SCHEDULE AND SPECIFICATIONS OUTLINED IN RULE 1146.
[RULE 1146]
11. THE OPERATOR SHALL CONDUCT A SOURCE TEST ON THE BOILER UNDER THE FOLLOWING CONDITIONS:
 - A. THE INITIAL TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER APPROVAL OF THE SOURCE TEST PROTOCOL BUT NO LATER THAN 180 DAYS AFTER THE PERMIT IS ISSUED. AFTER THE INITIAL TEST, TESTING SHALL BE CONDUCTED ONCE EVERY 3 YEARS, OR IN ACCORDANCE WITH THE SCHEDULE SPECIFIED IN RULE 1146.
 - B. THE TEST SHALL BE CONDUCTED TO DETERMINE THE EMISSIONS OF NOX AND CO USING ONE OF THE TEST METHODS SPECIFIED IN RULE 1146. THE TEST SHALL BE CONDUCTED OVER 15 MINUTE AVERAGING TIME. THE TEST SHALL BE CONDUCTED DURING GAS FIRING AT A GREATER THAN 90% LOAD, 50% LOAD, AND 25% LOAD. THE TEST SHALL BE CONDUCTED DURING OIL FIRING AT GREATER THAN 90% LOAD ONLY.
 - C. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AN AQMD APPROVED TEST PROTOCOL. THE PROTOCOL SHALL BE SUBMITTED TO THE AQMD ENGINEER NO LATER THAN 45 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY THE AQMD BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE BOILER DURING THE TESTS, THE IDENTITY OF THE TESTING LAB, A STATEMENT FROM THE TESTING LAB CERTIFYING THAT IT MEETS THE CRITERIA OF RULE 304, AND A DESCRIPTION OF ALL SAMPLING AND ANALYTICAL PROCEDURES. THE AQMD SHALL BE NOTIFIED ON THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST. TEST RESULTS SHALL BE SUBMITTED TO THE AQMD WITHIN 30 DAYS OF COMPLETION OF THE TEST.
[RULE 1146]

Periodic Monitoring:

12. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY

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OVER A FIVE YEAR PERIOD. THE INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE HOUR, THE OPERATOR SHALL EITHER:

- A. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN THE SAME FASHION AS DEVIATIONS ARE REQUIRED TO BE REPORTED IN SECTION K OF THIS PERMIT; OR
- B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
 - B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
 - C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
 - D. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.
[RULE 3004 (a)(4)]
13. UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DOES NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.
[RULE 3004 (a)(4)]

Emissions and Requirements:

14. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 30 PPMV FOR NATURAL GAS FIRING, UNTIL 12/31/12 [RULE 1146]
NOX: 9 PPMV FOR NATURAL GAS FIRING, ON AND AFTER 1/1/13 [RULE 1146]
NOX: 40 PPMV FOR OIL FIRING, [RULE 1146]
CO: 400 PPMV, RULE 1146

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L.A. COUNTY HARBOR UCLA MEDICAL CENTER**

CO: 2000 PPMV, RULE 407
PM: 0.1 GR/SCF, RULE 409

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L.A. COUNTY HARBOR UCLA MEDICAL CENTER**

PERMIT TO CONSTRUCT

A/N 530238

Equipment Description:

MODIFICATION OF:

BOILER NO. 2, SUPERIOR IRON WORKS, MODEL NO. 4-2007, 400 HP, RATED AT 16,800,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 210 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91424

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. NO MORE THAN TWO OF THE THREE SUPERIOR IRON WORKS BOILERS NOS. 1, 2 AND 3 SHALL BE FIRED AT ANY ONE TIME EXCEPT DURING A WARM-UP PERIOD FOR ONE OF THE BOILERS THIS WARM-UP PERIOD SHALL NOT EXCEED FOUR (4) HOURS.
[RULE 1303 (b)(2)]
4. THE BURNER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR, FUEL AND RECIRCULATED FLUE GAS AS THE EQUIPMENT LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR COMMENCING FROM START-UP ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.
[RULE 1146, RULE 1303 (a)(1)]
5. THE BOILER SHALL BE FIRED WITH NATURAL GAS ONLY, LOW NITROGEN FUEL OIL WITH LESS THAN 0.01% NITROGEN AND SULFUR CONTENT WHICH MEETS THE RULE 431.2 LIMIT, MAY BE FIRED DURING PERIODS OF FORCED MAJEURE GAS CURTAILMENTS, DURING MAINTENANCE TESTING OF THE BOILER WHICH SHALL NOT EXCEED 30 MINUTES PER MONTH, OR DURING COMPLIANCE TESTING WITH FUEL OIL.
[RULE 1303 (a)(1)]

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6. RECORDS OF SUCH ADJUSTMENTS, TUNE-UPS AND CALIBRATIONS AS STATED IN CONDITION NUMBER 6 SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO THE AQMD UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
7. THIS BOILER SHALL BE EQUIPPED WITH A NON-RESETTABLE, TOTALIZING FUEL FLOW METER FOR EACH FUEL BURNED.
[RULE 1146]
8. AN INDICATOR SHALL BE INSTALLED MAINTAINED TO INDICATE THE AMOUNT OF FLUE GAS RECIRCULATED FROM THE EXHAUST STACK TO THE BURNER.
[RULE 1303 (a)(1)]
9. ALL RECORDS, INCLUDING DAILY FUEL USE, SHALL BE KEPT FOR A PERIOD OF AL LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
10. THE OPERATOR SHALL PERFORM PERIODIC EMISSION TESTS ON THE BOILER WITH A PORTABLE ANALYZER IN ACCORDANCE WITH THE SCHEDULE AND SPECIFICATIONS OUTLINED IN RULE 1146.
[RULE 1146]
11. THE OPERATOR SHALL CONDUCT A SOURCE TEST ON THE BOILER UNDER THE FOLLOWING CONDITIONS:
 - A. THE INITIAL TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER APPROVAL OF THE SOURCE TEST PROTOCOL BUT NO LATER THAN 180 DAYS AFTER THE PERMIT IS ISSUED. AFTER THE INITIAL TEST, TESTING SHALL BE CONDUCTED ONCE EVERY 3 YEARS, OR IN ACCORDANCE WITH THE SCHEDULE SPECIFIED IN RULE 1146.
 - B. THE TEST SHALL BE CONDUCTED TO DETERMINE THE EMISSIONS OF NOX AND CO USING ONE OF THE TEST METHODS SPECIFIED IN RULE 1146. THE TEST SHALL BE CONDUCTED OVER 15 MINUTE AVERAGING TIME. THE TEST SHALL BE CONDUCTED DURING GAS FIRING AT A GREATER THAN 90% LOAD, 50% LOAD, AND 25% LOAD. THE TEST SHALL BE CONDUCTED DURING OIL FIRING AT GREATER THAN 90% LOAD ONLY.
 - C. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AN AQMD APPROVED TEST PROTOCOL. THE PROTOCOL SHALL BE SUBMITTED TO THE AQMD ENGINEER NO LATER THAN 45 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY THE AQMD BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE BOILER DURING THE TESTS, THE IDENTITY OF THE TESTING LAB, A STATEMENT FROM THE TESTING LAB CERTIFYING THAT IT MEETS THE CRITERIA OF RULE 304, AND A DESCRIPTION OF ALL SAMPLING AND ANALYTICAL PROCEDURES. THE AQMD SHALL BE NOTIFIED ON THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST. TEST RESULTS SHALL BE SUBMITTED TO THE AQMD WITHIN 30 DAYS OF COMPLETION OF THE TEST.
[RULE 1146]

Periodic Monitoring:

12. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY

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OVER A FIVE YEAR PERIOD. THE INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE HOUR, THE OPERATOR SHALL EITHER:

- A. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN THE SAME FASHION AS DEVIATIONS ARE REQUIRED TO BE REPORTED IN SECTION K OF THIS PERMIT; OR
- B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
 - B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
 - C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
 - D. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.
[RULE 3004 (a)(4)]
13. UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DOES NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.
[RULE 3004 (a)(4)]

Emissions and Requirements:

14. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 30 PPMV FOR NATURAL GAS FIRING, UNTIL 12/31/12 [RULE 1146]
NOX: 9 PPMV FOR NATURAL GAS FIRING, ON AND AFTER 1/1/13 [RULE 1146]
NOX: 40 PPMV FOR OIL FIRING, [RULE 1146]
CO: 400 PPMV, RULE 1146

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CO: 2000 PPMV, RULE 407
PM: 0.1 GR/SCF, RULE 409

**FACILITY PERMIT TO OPERATE
L.A. COUNTY HARBOR UCLA MEDICAL CENTER**

PERMIT TO CONSTRUCT

A/N 530239

Equipment Description:

MODIFICATION OF:

BOILER NO. 3, SUPERIOR IRON WORKS, MODEL NO. 4-2007, 300 HP, RATED AT 12,600,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 145 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91424

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. NO MORE THAN TWO OF THE THREE SUPERIOR IRON WORKS BOILERS NOS. 1, 2 AND 3 SHALL BE FIRED AT ANY ONE TIME EXCEPT DURING A WARM-UP PERIOD FOR ONE OF THE BOILERS THIS WARM-UP PERIOD SHALL NOT EXCEED FOUR (4) HOURS.
[RULE 1303 (b)(2)]
4. THE BURNER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR, FUEL AND RECIRCULATED FLUE GAS AS THE EQUIPMENT LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR COMMENCING FROM START-UP ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.
[RULE 1146, RULE 1303 (a)(1)]
5. THE BOILER SHALL BE FIRED WITH NATURAL GAS ONLY, LOW NITROGEN FUEL OIL WITH LESS THAN 0.01% NITROGEN AND SULFUR CONTENT WHICH MEETS THE RULE 431.2 LIMIT, MAY BE FIRED DURING PERIODS OF FORCED MAJEURE GAS CURTAILMENTS, DURING MAINTENANCE TESTING OF THE BOILER WHICH SHALL NOT EXCEED 30 MINUTES PER MONTH, OR DURING COMPLIANCE TESTING WITH FUEL OIL.
[RULE 1303 (a)(1)]

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[RULE 1146, RULE 1303 (a)(1)]
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[RULE 1146]
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[RULE 1303 (a)(1)]
9. ALL RECORDS, INCLUDING DAILY FUEL USE, SHALL BE KEPT FOR A PERIOD OF AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
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[RULE 1146]
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 - B. THE TEST SHALL BE CONDUCTED TO DETERMINE THE EMISSIONS OF NOX AND CO USING ONE OF THE TEST METHODS SPECIFIED IN RULE 1146. THE TEST SHALL BE CONDUCTED OVER 15 MINUTE AVERAGING TIME. THE TEST SHALL BE CONDUCTED DURING GAS FIRING AT A GREATER THAN 90% LOAD, 50% LOAD, AND 25% LOAD. THE TEST SHALL BE CONDUCTED DURING OIL FIRING AT GREATER THAN 90% LOAD ONLY.
 - C. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AN AQMD APPROVED TEST PROTOCOL. THE PROTOCOL SHALL BE SUBMITTED TO THE AQMD ENGINEER NO LATER THAN 45 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY THE AQMD BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE BOILER DURING THE TESTS, THE IDENTITY OF THE TESTING LAB, A STATEMENT FROM THE TESTING LAB CERTIFYING THAT IT MEETS THE CRITERIA OF RULE 304, AND A DESCRIPTION OF ALL SAMPLING AND ANALYTICAL PROCEDURES. THE AQMD SHALL BE NOTIFIED ON THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST. TEST RESULTS SHALL BE SUBMITTED TO THE AQMD WITHIN 30 DAYS OF COMPLETION OF THE TEST.
[RULE 1146]

Periodic Monitoring:

12. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY

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- B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
 - B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
 - C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
 - D. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.
[RULE 3004 (a)(4)]
13. UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DOES NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.
[RULE 3004 (a)(4)]

Emissions and Requirements:

14. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:
- NOX: 30 PPMV FOR NATURAL GAS FIRING, UNTIL 12/31/12 [RULE 1146]
 - NOX: 9 PPMV FOR NATURAL GAS FIRING, ON AND AFTER 1/1/13 [RULE 1146]
 - NOX: 40 PPMV FOR OIL FIRING, [RULE 1146]
 - CO: 50 PPMV FOR NATURAL GAS FIRING [RULE 1303 – BACT]

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L.A. COUNTY HARBOR UCLA MEDICAL CENTER**

CO: 400 PPMV, [RULE 1146]
CO: 2000 PPMV, [RULE 407]
PM: 0.1 GR/SCF, [RULE 409]



South Coast
Air Quality Management District



Engineering Division
Application Processing & Calculations

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APPL NO. 530237,8	DATE 3/8/2012
PROCESSED BY CGP	CHECKED BY

PERMIT TO CONSTRUCT EVALUATION

APPLICANT:

LA County Harbor-UCLA Medical Center
1000 West Carson Blvd.
Torrance, CA 90509
Facility ID# 800312

EQUIPMENT LOCATION:

1000 West Carson Blvd.
Torrance, CA 90509

EQUIPMENT DESCRIPTION:

A/N 530237

MODIFICATION OF:

BOILER NO. 1, SUPERIOR IRON WORKS, MODEL NO. 4-2007, 400 HP, RATED AT 16,800,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 210 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91425

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.

A/N 530238

MODIFICATION OF:

BOILER NO. 2, SUPERIOR IRON WORKS, MODEL NO. 4-2007, 400 HP, RATED AT 16,800,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 210 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91424

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.



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BACKGROUND:

The facility submitted these 2 applications to retrofit their boilers with new Low NOx burners for Rule 1146 compliance. The applications were submitted as Class I on December 13, 2011. They also submitted 1 other application to retrofit the other boiler at this site (A/N's 530239). The following evaluation applies only to Boilers 1 and 2.

The boilers, along with Boiler 3, were originally permitted and installed in 1995 as replacements for 2 older boilers at the facility. There have been no modifications to the boilers since their original permits were issued.

This facility IS subject to Title V, but IS NOT in RECLAIM.

PROCESS DESCRIPTION:

The boilers are used to produce steam for heating and cooling. The facility is proposing to retrofit the units with an upgraded low NOx burner manufactured by Power Flame to reduce outlet NOx emissions to 9 ppm to comply with Rule 1146.

These 2 boilers are identical units each rated at 16.8 mmbtu/hr. The burners are designed to reduce NOx emissions to 9 ppm at 3% O2 while firing natural gas, and 40 ppm @ 3% O2 while firing oil, with a maximum turndown ratio of 5:1 (3200 scf/hr). The manufacturer has provided guarantees which are included in the file for reference. Following are the specifications:

Specification	
Boiler Manufacturer	Superior
Model	4-2007
Fuel Type	Natural gas primary, low nitrogen emergency
Maximum Fuel Consumption	16,000 ft ³ /hr natural gas ⁽¹⁾ , 120.9 gal/hr oil ⁽¹⁾
Maximum Exhaust Flow	171,204 ft ³ /hr natural gas, 180,639 ft ³ /hr oil ⁽²⁾
Maximum Heat Input	16.8 mmbtu/hr
NOx Combustion Control	FGR, Low NOx Burner
Number of Burners	1 per boiler
Burner Manufacturer/Model	Power Flame UCM 400-GO-30
Outlet NOx	9 ppm @ 3% O2 natural gas

(1) Based on 1050 btu/cf natural gas and 139,000 btu/gal oil

(2) Based on an F factor of 8710 cf/mmbtu for natural gas and 9190 cf/mmbtu for oil, corrected to 3% O2

EMISSIONS:

Emission estimates are based on standard boiler emission factors for CO, ROG, PM, and SOx. NOx is based on the rule limit of 9 ppm. Calculations are shown in Appendix A, following is a summary.



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Natural Gas Fired Emissions

1. Before Modification

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions ⁽¹⁾
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.62	14.9	0.62	14.9	15	5431
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88

2. After Modification

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.19	4.6	0.19	4.6	5	1664
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88

30 Day Average Emissions were entered as 0's for the previous applications. The NSR database will be updated to show the following changes to the emissions for these applications:

30 Day Average Emissions

Pollutant	Boiler 1		Boiler 2	
	A/N 281072	A/N 530237	A/N 281071	A/N 530238
NOx	15	5	15	5
CO	32	32	32	32
ROG	2	2	2	2
PM10	3	3	3	3
SOx	0	0	0	0

The reduction in NOx reflects the installation of the new burner, all other pollutants remain the same.



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EVALUATION:

Rule 212 – Standards for Approving Permits

There are no schools within 1000 feet of the equipment (the closest school is Harbor – UCLA Children’s Center about 0.2 miles to the north), there is no increase in 30 day average emissions, and there is no increase in cancer risk. Therefore, a public notice is not required.

Rule 401 – Visible Emissions

Visible emissions are not expected under normal operation firing gaseous fuel. However, fuel oil combustion has the potential to result in visible emissions. Fuel oil is only fired in the unit during a natural gas curtailment, or during maintenance testing.

Rule 402 – Nuisance

Nuisance problems are not expected from the normal operation of these boilers.

Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits the CO emissions to 2000 ppm, and also limits the SO2 emissions to 500 ppm when firing fuel oil. The Rule 1146 CO limit of 400 ppm is more stringent. The burner manufacturer guarantees CO emissions of < 50 ppm. After installation of the new Low NOx burners, compliance with the CO limit will be verified through a source test. The units have not been tested for SO2 emissions, however, since 15 ppm sulfur fuel oil is required by Rule 431.2, the equipment should theoretically be able to comply with the 500 ppm SO2 limit.

Rule 409 – Combustion Contaminants

This rule restricts the discharge of contaminants from the combustion of fuel to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12% CO₂, averaged over 15 minutes. The boilers are expected to meet this limit at the maximum firing load based on the calculations shown below. Compliance will be verified through the initial performance test.

$$\text{Grain Loading} = [(A \times B)/(C \times D)] \times 7000 \text{ gr/lb}$$

where:

A = PM10 emission rate during normal operation, 0.12 lb/hr

B = Rule specified percent of CO₂ in the exhaust (12%)

C = Percent of CO₂ in the exhaust (approx. 4.29% for natural gas)

D = Stack exhaust flow rate, 171,204 scf/hr

$$\begin{aligned} \text{Grain Loading} &= \frac{0.12 \text{ lbs/hr} \times [(7000 \text{ grains/lb}) \times (12/4.29)]}{171,204 \text{ scf/hr}} \\ &= \boxed{0.014 \text{ grains/scf}} \end{aligned}$$



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Rule 431.1. - Sulfur Content of Gaseous Fuels

The boiler will be fired on pipeline natural gas, which under this rule, is required to meet a sulfur content of 16 ppm sulfur. Compliance is expected.

Rule 431.2 – Sulfur Content of Liquid Fuels

The applicant is expected to comply with the requirements that the maximum sulfur content of diesel fuel used in these boilers cannot exceed 500 ppm, if the fuel was purchased prior to June 1, 2004, and that only 15 ppm sulfur fuel can be purchased after June 1, 2004.

Rule 1146 – NOx from Boilers

This rule applies to all boilers, process heaters, or thermal fluid heaters 5 mmbtu/hr and greater. Current emission limits are 30 ppm NOx for gas firing, and 40 ppm NOx for oil firing, and 400 ppm CO for all fuels. The new NOX limit of 9 ppm @ 3% O2 on a 15 minute average basis for natural gas firing takes effect on January 1, 2013 for a unit with a rating less than 20 mmbtu/hr. The oil firing NOx limit remains at 40 ppm at 3% O2, and the CO limit remains at 400 ppm at 3% O2 for both fuels.

Under the rule, these boilers are classified as Group III Units because their rating is between 5 and 20 mmbtu/hr. With the installation of the new Low NOX burner, the units should be able to meet the new limit. The burner manufacturer has provided a guarantee for NOx of < 9 ppm for natural gas firing, NOx < 40 ppm for oil firing, and CO < 50 ppm. A source test will be required to verify compliance. Stack testing for units > 10 mmbtu/hr is required once every 3 years using reference methods. Periodic testing for NOx using a portable analyzer is required every 750 operating hours. If 3 consecutive test show compliance with no adjustment to O2 sensor set points, then the frequency of testing can be reduced to once every 2000 hours. The facility has several options on which test method to use. The rule specifies either District Methods 100.1 or 7.1, or a portable analyzer method.

The rule also requires submittal of a compliance plan specifying when the facility will come into compliance with the limits. Harbor-UCLA submitted their plan under A/N 517128 on 12/14/10, the plan was submitted within the required timeframe (before 1/1/11), and was approved by AQMD on January 14, 2011. The plan specified a 9 ppm NOx compliance level to be achieved by January 1, 2013. The facility also has submitted their modification applications within the required timeframe (before 1/1/12).

Regulation XIII – New Source Review

There is no increase in any criteria pollutant as a result of the installation of the new Low NOx burners.

Rule 1401 – Toxic Air Contaminants

There is no increase in emissions of toxic contaminants as a result of the new burner installation, therefore Rule 1401 is not applicable to this modification.

Regulation XXX – Title V

Harbor UCLA is a Title V facility because it is a major source of NOx emissions. The facility is currently operating under a valid Title V permit issued on October 19, 2011. The installation of the Low NOx burners is considered a de minimis significant permit revision because although



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there is no increase in emissions from Boilers 1 and 2, there is a slight increase in CO, ROG, PM10, and HAP emissions from Boiler 3 due to the rating increase. As a de minimis significant revision, the proposed permit is subject to a 45 day EPA review and comment period.

RECOMMENDATION:

A Permit to Construct is recommended, subject to the conditions listed below.

The following condition changes are recommended:

1. Add a source test condition.
2. Update the condition language pertaining to oil firing.
3. Remove the old periodic monitoring conditions pertaining to NOx and CO, and add a condition specifying the units must now be periodically tested in accordance with the requirements of Rule 1146.
4. Remove condition #3.

All other existing conditions will remain the same.

CONDITIONS:

Proposed new condition language is shown in **bold underline**.

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. ~~THIS EQUIPMENT SHALL BE OPERATED AND MAINTAINED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.~~
~~[RULE 204]~~
4. NO MORE THAN TWO OF THE THREE SUPERIOR IRON WORKS BOILERS NOS. 1, 2 AND 3 SHALL BE FIRED AT ANY ONE TIME EXCEPT DURING A WARM-UP PERIOD FOR ONE OF THE BOILERS THIS WARM-UP PERIOD SHALL NOT EXCEED FOUR (4) HOURS.
[RULE 1303 (b)(2)]



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5. THE BURNER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR, FUEL AND RECIRCULATED FLUE GAS AS THE EQUIPMENT LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR COMMENCING FROM START-UP ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.
[RULE 1146, RULE 1303 (a)(1)]
6. THE BOILER SHALL BE FIRED WITH NATURAL GAS ONLY, ~~EXCEPT DURING COMPLIANCE TESTING, DURING PERIODS OF NATURAL GAS CURTAILMENT OR DURING MAINTENANCE TESTING WITH THE STAND-BY FUEL.~~ **LOW NITROGEN FUEL OIL WITH LESS THAN 0.01% NITROGEN AND SULFUR CONTENT WHICH MEETS THE RULE 431.2 LIMIT, MAY BE FIRED DURING PERIODS OF FORCED MAJEURE GAS CURTAILMENTS, DURING MAINTENANCE TESTING OF THE BOILER WHICH SHALL NOT EXCEED 30 MINUTES PER MONTH, OR DURING COMPLIANCE TESTING WITH FUEL OIL.**
[RULE 1303 (a)(1)]
7. RECORDS OF SUCH ADJUSTMENTS, TUNE-UPS AND CALIBRATIONS AS STATED IN CONDITION NUMBER 6 SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO THE AQMD UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
8. THIS BOILER SHALL BE EQUIPPED WITH A NON-RESETTABLE, TOTALIZING FUEL FLOW METER FOR EACH FUEL BURNED.
[RULE 1146]
9. AN INDICATOR SHALL BE INSTALLED MAINTAINED TO INDICATE THE AMOUNT OF FLUE GAS RECIRCULATED FROM THE EXHAUST STACK TO THE BURNER.
[RULE 1303 (a)(1)]
10. ALL RECORDS, INCLUDING DAILY FUEL USE, SHALL BE KEPT FOR A PERIOD OF AT LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
11. **THE OPERATOR SHALL PERFORM PERIODIC EMISSION TESTS ON THE BOILER WITH A PORTABLE ANALYZER IN ACCORDANCE WITH THE SCHEDULE AND SPECIFICATIONS OUTLINED IN RULE 1146.**
[RULE 1146]
12. **THE OPERATOR SHALL CONDUCT A SOURCE TEST ON THE BOILER UNDER THE FOLLOWING CONDITIONS:**
 - A. **THE INITIAL TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER APPROVAL OF THE SOURCE TEST PROTOCOL BUT NO LATER THAN 180 DAYS AFTER THE PERMIT IS ISSUED. AFTER THE INITIAL TEST, TESTING SHALL BE CONDUCTED ONCE EVERY 3 YEARS, OR IN ACCORDANCE WITH THE SCHEDULE SPECIFIED IN RULE 1146.**



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- B. THE TEST SHALL BE CONDUCTED TO DETERMINE THE EMISSIONS OF NOX AND CO USING ONE OF THE TEST METHODS SPECIFIED IN RULE 1146. THE TEST SHALL BE CONDUCTED OVER 15 MINUTE AVERAGING TIME. THE TEST SHALL BE CONDUCTED DURING GAS FIRING AT A GREATER THAN 90% LOAD, 50% LOAD, AND 25% LOAD. THE TEST SHALL BE CONDUCTED DURING OIL FIRING AT GREATER THAN 90% LOAD ONLY.**
- C. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AN AQMD APPROVED TEST PROTOCOL. THE PROTOCOL SHALL BE SUBMITTED TO THE AQMD ENGINEER NO LATER THAN 45 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY THE AQMD BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE BOILER DURING THE TESTS, THE IDENTITY OF THE TESTING LAB, A STATEMENT FROM THE TESTING LAB CERTIFYING THAT IT MEETS THE CRITERIA OF RULE 304, AND A DESCRIPTION OF ALL SAMPLING AND ANALYTICAL PROCEDURES. THE AQMD SHALL BE NOTIFIED ON THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST. TEST RESULTS SHALL BE SUBMITTED TO THE AQMD WITHIN 30 DAYS OF COMPLETION OF THE TEST.**
[RULE 1146]

Periodic Monitoring:

13. ~~THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE NOX EMISSION LIMIT (S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD APPROVED TEST METHOD. IF THE UNIT SHOWS COMPLIANCE WITH 3 CONSECUTIVE PORTABLE ANALYZER TESTS WITHOUT ANY ADJUSTMENT TO THE OXYGEN SENSOR SET POINTS THEN THE UNIT MAY BE CHECKED QUARTERLY OR EVERY 2000 OPERATING HOURS WHICHEVER OCCURS LATER UNTIL THERE IS AN EMISSION CHECK INDICATING NON-COMPLIANCE. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.~~
~~[RULE 3004 (a)(4)]~~
14. ~~THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT (S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.~~
~~[RULE 3004 (a)(4)]~~



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15. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY OVER A FIVE YEAR PERIOD. THE INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE HOUR, THE OPERATOR SHALL EITHER:
- A. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN THE SAME FASHION AS DEVIATIONS ARE REQUIRED TO BE REPORTED IN SECTION K OF THIS PERMIT; OR
 - B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
 - B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
 - C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
 - D. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.
[RULE 3004 (a)(4)]
16. UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DOES NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.
[RULE 3004 (a)(4)]



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Emissions and Requirements:

17. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 30 PPMV FOR NATURAL GAS FIRING, UNTIL 12/31/12 [RULE 1146]

NOX 9 PPMV FOR NATURAL GAS FIRING, ON AND AFTER 1/1/13 [RULE 1146]

NOX: 40 PPMV FOR OIL FIRING, [RULE 1146]

CO: 400 PPMV, RULE 1146

CO: 2000 PPMV, RULE 407

PM: 0.1 GR/SCF, RULE 409



Appendix A

Boilers 1 and 2 Emission Calculations

Emission Factors

1. Before Modification

Pollutant	Natural Gas (lbs/mmcf)	Oil (lbs/Mgal)
NOx	30 ppm (R1=R2)	40 ppm (R1=R2)
CO	84.0 (R1 = R2)	0.2 (R1 = R2)
ROG	5.5 (R1 = R2)	0.2 (R1 = R2)
PM10	7.6 (R1 = R2)	2.0 (R1 = R2)
SOx	0.6 (R1 = R2)	2.13 (R1 = R2)

2. After Modification

Pollutant	Natural Gas (lbs/mmcf)	Oil (lbs/Mgal)
NOx	9 ppm (R1=R2)	40 ppm (R1=R2)
CO	84.0 (R1 = R2)	0.2 (R1 = R2)
ROG	5.5 (R1 = R2)	0.2 (R1 = R2)
PM10	7.6 (R1 = R2)	2.0 (R1 = R2)
SOx	0.6 (R1 = R2)	2.13 (R1 = R2)

Factors are from Form B-1, except NOx which reflects R1146 limits

Data:

Exhaust flow

Natural gas 171,204 ft³/hr (based on F factor of 8710 corrected to 3% O₂)
Oil 180,639 ft³/hr (based on F factor of 9190 corrected to 3% O₂)

Fuel Use

Natural gas 16,000 ft³/hr (based on 1050 btu/ft³)
Oil 120.9 gal/hr (based on 139,000 btu/gal)

Molecular weight

NO₂ 46 lbs/lb-mole

Specific Molar Volume

380 ft³/lb-mole

Calculations



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1. Before Modification

Natural Gas

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions ⁽¹⁾
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.62	14.9	0.62	14.9	15	5431
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88

Oil

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		Average Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day
NOx	0.87	20.9	0.87	20.9	0.44
CO	0.02	0.48	0.02	0.48	0.01
ROG	0.02	0.48	0.02	0.48	0.01
PM10	0.24	5.8	0.24	5.8	0.12
SOx	0.26	6.2	0.26	6.2	0.13

* note that the maximum emissions would only occur during an emergency situation, typically the unit would only be fired on oil 1 day per month for about 30 minutes.

2. After Modification

Natural Gas

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.19	4.6	0.19	4.6	5	1664
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88



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Oil

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		Average Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day
NOx	0.87	20.9	0.87	20.9	0.44
CO	0.02	0.48	0.02	0.48	0.01
ROG	0.02	0.48	0.02	0.48	0.01
PM10	0.24	5.8	0.24	5.8	0.12
SOx	0.26	6.2	0.26	6.2	0.13

** note that the maximum emissions would only occur during an emergency situation, typically the unit would only be fired on oil 1 day per month for about 30 minutes.*

Comparison of Existing to Proposed 30 Day Average Emissions

Pollutant	30 Day Average (lbs/day)	
	Existing	Proposed
NOx	15	5
CO	32	32
ROG	2	2
PM10	3	3
SOx	0	0



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PERMIT TO CONSTRUCT EVALUATION

APPLICANT:

LA County Harbor-UCLA Medical Center
1000 West Carson Blvd.
Torrance, CA 90509
Facility ID# 800312

EQUIPMENT LOCATION:

1000 West Carson Blvd.
Torrance, CA 90509

EQUIPMENT DESCRIPTION:

MODIFICATION OF:
BOILER NO. 3, SUPERIOR IRON WORKS, MODEL NO. ~~4-1506-4~~2007, 300 HP, RATED AT 12,600,000 BTU/HR, WITH A LOW NOX BURNER, INDUSTRIAL COMBUSTION, MODEL NO. 145 P/LNMEG, NATURAL GAS AND FUEL OIL FIRED, EQUIPPED WITH A FLUE GAS RECIRCULATION SYSTEM AND A 20 HP COMBUSTION AIR BLOWER.

OPERATING UNDER P/O D91424

BY REMOVAL OF THE INDUSTRIAL COMBUSTION BURNER AND INSTALLATION OF 1 POWER FLAME LOW NOX BURNER, MODEL NO. UCM 400-GO-30, 16,800,000 BTU/HR, NATURAL GAS, LOW NITROGEN FUEL OIL.

BACKGROUND:

The facility submitted this application to retrofit Boiler 3 with a new Low NOx burner for Rule 1146 compliance. The application was submitted as Class I on December 13, 2011. They also submitted 2 other applications to retrofit the other 2 boilers at this site (A/N's 530237 and 530238). The following evaluation applies only to Boiler 3.

This boiler, along with Boilers 1 and 2, were originally permitted and installed in 1995 as replacements for 2 older boilers at the facility. There have been no modifications to the boilers since their original permits were issued.

This facility IS subject to Title V, but IS NOT in RECLAIM.



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PROCESS DESCRIPTION:

The boilers are used to produce steam for heating and cooling. The facility is proposing to retrofit the units with an upgraded low NOx burner manufactured by Power Flame to reduce outlet NOx emissions to 9 ppm to comply with Rule 1146.

Boiler 3 is currently rated at 12.8 mmbtu/hr, however, the facility is proposing to upgrade this unit to a 16.8 mmbtu/hr rating due to an expansion of the hospital. The burner is designed to reduce NOx emissions to 9 ppm at 3% O2 while firing natural gas, and 40 ppm @ 3% O2 while firing oil, with a maximum turndown ratio of 5:1 (3200 scf/hr). The manufacturer has provided guarantees which are included in the file for reference. Following are the specifications:

Specification	
Boiler Manufacturer	Superior
Model	4-2007
Fuel Type	Natural gas primary, low nitrogen emergency
Maximum Fuel Consumption	16,000 ft ³ /hr natural gas ⁽¹⁾ , 120.9 gal/hr oil ⁽¹⁾
Maximum Exhaust Flow	171,204 ft ³ /hr natural gas, 180,639 ft ³ /hr oil ⁽²⁾
Maximum Heat Input	16.8 mmbtu/hr
NOx Combustion Control	FGR, Low NOx Burner
Number of Burners	1 per boiler
Burner Manufacturer/Model	Power Flame UCM 400-GO-30
Outlet NOx	9 ppm @ 3% O2 natural gas

(1) Based on 1050 btu/cf natural gas and 139,000 btu/gal oil

(2) Based on an F factor of 8710 cf/mmbtu for natural gas and 9190 cf/mmbtu for oil, corrected to 3% O2

EMISSIONS:

Emission estimates are based on standard boiler emission factors for CO, ROG, PM, and SOx. NOx is based on the rule limit of 9 ppm. Calculations are shown in Appendix A, following is a summary.

Natural Gas Fired Emissions

1. Before Modification

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.47	11.3	0.47	11.3	11	4117
CO	1.02	24.5	1.02	24.5	25	8935
ROG	0.07	1.7	0.07	1.7	2	613
PM10	0.09	2.2	0.09	2.2	2	788
SOx	0.007	0.17	0.007	0.17	0	61

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2. After Modification

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.19	4.6	0.19	4.6	5	1664
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88

Daily Emissions

Pollutant	Daily Emissions Prior to Modification	Daily Emissions After Modification	Change in Emissions
NOx	11.3	4.6	-6.7
CO	24.5	32.1	+7.6
ROG	1.7	2.2	+0.5
PM10	2.2	2.9	+0.7
SOx	0.17	0.24	+0.07

30 Day Average Emissions were entered as 0's for the previous applications. The NSR database will be updated to show the following changes to the emissions for this application:

30 Day Average Emissions

Pollutant	30 Day Average Emissions	
	A/N 281073	A/N 530239
NOx	11	5
CO	25	32
ROG	2	2
PM10	2	3
SOx	0	0

The reduction in NOx reflects the difference between the increase in rating and the reduction from the installation of the new burner, with the increase in CO and PM10 due to the increase in rating.



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EVALUATION:

Rule 212 – Standards for Approving Permits

There are no schools within 1000 feet of the equipment (the closest school is Harbor – UCLA Children’s Center about 0.2 miles to the north), the increase in CO and PM10 does not exceed the daily threshold limits of the rule, and the cancer risk is less than 1 in a million. Therefore, no public notice is required.

Rule 401 – Visible Emissions

Visible emissions are not expected under normal operation firing gaseous fuel. However, fuel oil combustion has the potential to result in visible emissions. Fuel oil is only fired in the unit during a natural gas curtailment, or during maintenance and testing.

Rule 402 – Nuisance

Nuisance problems are not expected from the normal operation of these boilers.

Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits the CO emissions to 2000 ppm, and also limits the SO2 emissions to 500 ppm when firing fuel oil. The Rule 1146 CO limit of 400 ppm is more stringent. The burner manufacturer guarantees CO emissions of < 50 ppm. After installation of the new Low NOx burners, compliance with the CO limit will be verified through a source test. The units have not been tested for SO2 emissions, however, since 15 ppm sulfur fuel oil is required by Rule 431.2, the equipment should theoretically be able to comply with the 500 ppm SO2 limit.

Rule 409 – Combustion Contaminants

This rule restricts the discharge of contaminants from the combustion of fuel to 0.23 grams per cubic meter (0.1 grain per cubic foot) of gas, calculated to 12% CO₂, averaged over 15 minutes. The boiler is expected to meet this limit at the maximum firing load based on the calculations shown below. Compliance will be verified through the initial performance test.

$$\text{Grain Loading} = [(A \times B)/(C \times D)] \times 7000 \text{ gr/lb}$$

where:

- A = PM10 emission rate during normal operation, 0.12 lb/hr
- B = Rule specified percent of CO₂ in the exhaust (12%)
- C = Percent of CO₂ in the exhaust (approx. 4.29% for natural gas)
- D = Stack exhaust flow rate, 171,204 scf/hr

$$\begin{aligned} \text{Grain Loading} &= \frac{0.12 \text{ lbs/hr} \times [(7000 \text{ grains/lb}) \times (12/4.29)]}{171,204 \text{ scf/hr}} \\ &= \boxed{0.014 \text{ grains/scf}} \end{aligned}$$



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Rule 431.1. - Sulfur Content of Gaseous Fuels

The boiler will be fired on pipeline natural gas, which under this rule, is required to meet a sulfur content of 16 ppm sulfur. Compliance is expected.

Rule 431.2 – Sulfur Content of Liquid Fuels

The applicant is expected to comply with the requirements that the maximum sulfur content of diesel fuel used in this boiler cannot exceed 500 ppm, if the fuel was purchased prior to June 1, 2004, and that only 15 ppm sulfur fuel can be purchased after June 1, 2004.

Rule 1146 – NOx from Boilers

This rule applies to all boilers over 5 mmbtu/hr. Current emission limits are 30 ppm NOx for gas firing, and 40 ppm NOx for oil firing, and 400 ppm CO for all fuels.

Under the rule, this boiler is classified as Group III Unit because its rating is between 5 and 20 mmbtu/hr. For Group III Units, the new limit that takes effect January 1, 2013 is 9 ppm NOx for gas firing. With the installation of the new Low NOX burner, the unit should be able to meet the new limit. The burner manufacturer has provided a guarantee for NOx of < 9 ppm for natural gas firing, NOx < 40 ppm for oil firing, and CO < 50 ppm. A source test will be required to verify compliance. The facility has several options on which test method to use. The rule specifies either District Methods 100.1 or 7.1, or a portable analyzer method. Furthermore, periodic testing with a portable analyzer, and stack testing every 3 years will be required for this unit.

The rule also requires submittal of a compliance plan specifying when the facility will come into compliance with the limits. Harbor-UCLA submitted their plan under A/N 517128 on 12/14/10, the plan was submitted within the required timeframe (before 1/1/11), and was approved by AQMD on January 14, 2011. The plan specified a 9 ppm NOx compliance level to be achieved by January 1, 2013. The facility also has submitted their modification applications within the required timeframe (before 1/1/12).

Regulation XIII – New Source Review

There is an increase equal to or greater than 0.5 lbs/day for CO, ROG, and PM10 emissions as a result of the increase in rating. NOx is being reduced in spite of the increase in rating due to the new Low NOX burner. The increase in SOx emissions is less than 0.5 lbs/day. Therefore, NSR for CO, ROG, and PM10 is applicable. This is a Major Source facility.

BACT

Pollutant	CO	PM10	ROG
Required BACT	No more than 50 ppm	Natural Gas	None
Proposed	50 ppm	Natural Gas*	None
Compliance?	Yes	Yes	Yes

*Primary fuel is natural gas, oil is ONLY used in case of a natural gas curtailment.



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Modeling

Rule 1301 Screening Levels Table A-1

Pollutant	Emission Rate, lbs/hr		Modeling Required?
	Allowed	Calculated	
NOx	0.86	0.19	No
CO	47.3	1.34	No
PM10	5.2	0.12	No

Therefore, no modeling is required.

Offsets

The facility is a hospital. Therefore, it qualifies as an Essential Public Service, and can utilize the Priority Reserve for offsets. The following table summarizes the offsets required:

Pollutant	Offset Required
NOx	0
ROG	0
PM10	1
SOx	0

Note that CO is an attainment pollutant and offsets are not required

Rule 1401 – Toxic Air Contaminants

Because of the increase in rating of the boiler, there is a corresponding increase in emissions of toxic contaminants, therefore Rule 1401 is applicable.

A Tier 2 risk analysis was conducted to determine the impact of the increase in toxic emissions from this project. The emission rates used in the calculations can be referenced in Appendix B. Results can be reference in the file. Following is a summary:

Model Inputs

Stack Height	26 ft
Residential Receptor Distance	75 m
Commercial Receptor Distance	342 m
Met Data	Compton

Model Results

	MICR	HIA	HIC
Residential	1.06E-07	2.40E-03	2.92E-03
Commercial	1.49E-09	6.54E-04	3.87E-04



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The unit complies with the limits of this rule.

Regulation XXX – Title V

Harbor UCLA is a Title V facility because it is a major source of NOx emissions. The facility is currently operating under a valid Title V permit issued on October 19, 2011. The installation of the Low NOx burners is considered a de minimis significant permit revision because although there is no increase in emissions from Boilers 1 and 2, there is a slight increase in CO, ROG, PM10, and HAP emissions from Boiler 3 due to the rating increase. As a de minimis significant revision, the proposed permit is subject to a 45 day EPA review and comment period.

RECOMMENDATION:

A Permit to Construct is recommended, subject to the conditions listed below.

The following condition changes are recommended:

1. Add a source test condition.
2. Update the condition language pertaining to oil firing.
3. Remove the old periodic monitoring conditions pertaining to NOx and CO, and add a condition specifying the units must now be periodically tested in accordance with the requirements of Rule 1146.
4. Remove condition #3.

All other existing conditions will remain the same.

CONDITIONS:

Proposed new condition language is shown in **bold underline**.

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN COMPLIANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.
[RULE 204]
2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.
[RULE 204]
3. ~~THIS EQUIPMENT SHALL BE OPERATED AND MAINTAINED BY PERSONNEL PROPERLY TRAINED IN ITS OPERATION.~~
[RULE 204]



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4. NO MORE THAN TWO OF THE THREE SUPERIOR IRON WORKS BOILERS NOS. 1, 2 AND 3 SHALL BE FIRED AT ANY ONE TIME EXCEPT DURING A WARM-UP PERIOD FOR ONE OF THE BOILERS THIS WARM-UP PERIOD SHALL NOT EXCEED FOUR (4) HOURS.
[RULE 1303 (b)(2)]
5. THE BURNER SHALL BE EQUIPPED WITH A CONTROL SYSTEM TO AUTOMATICALLY REGULATE COMBUSTION AIR, FUEL AND RECIRCULATED FLUE GAS AS THE EQUIPMENT LOAD VARIES. THIS AUTOMATIC CONTROL SYSTEM SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR COMMENCING FROM START-UP ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RATE.
[RULE 1146, RULE 1303 (a)(1)]
6. THE BOILER SHALL BE FIRED WITH NATURAL GAS ONLY, ~~EXCEPT DURING COMPLIANCE TESTING, DURING PERIODS OF NATURAL GAS CURTAILMENT OR DURING MAINTENANCE TESTING WITH THE STAND-BY FUEL.~~ **LOW NITROGEN FUEL OIL WITH LESS THAN 0.01% NITROGEN AND SULFUR CONTENT WHICH MEETS THE RULE 431.2 LIMIT, MAY BE FIRED DURING PERIODS OF FORCED MAJEURE GAS CURTAILMENTS, DURING MAINTENANCE TESTING OF THE BOILER WHICH SHALL NOT EXCEED 30 MINUTES PER MONTH, OR DURING COMPLIANCE TESTING WITH FUEL OIL.**
[RULE 1303 (a)(1)]
7. RECORDS OF SUCH ADJUSTMENTS, TUNE-UPS AND CALIBRATIONS AS STATED IN CONDITION NUMBER 6 SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO THE AQMD UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
8. THIS BOILER SHALL BE EQUIPPED WITH A NON-RESETTABLE, TOTALIZING FUEL FLOW METER FOR EACH FUEL BURNED.
[RULE 1146]
9. AN INDICATOR SHALL BE INSTALLED MAINTAINED TO INDICATE THE AMOUNT OF FLUE GAS RECIRCULATED FROM THE EXHASUT STACK TO THE BURNER.
[RULE 1303 (a)(1)]
10. ALL RECORDS, INCLUDING DAILY FUEL USE, SHALL BE KEPT FOR A PERIOD OF AL LEAST FIVE YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
[RULE 1146, RULE 1303 (a)(1)]
11. **THE OPERATOR SHALL PERFORM PERIODIC EMISSION TESTS ON THE BOILER WITH A PORTABLE ANALYZER IN ACCORDANCE WITH THE SCHEDULE AND SPECIFICATIONS OUTLINED IN RULE 1146.**
[RULE 1146]
12. **THE OPERATOR SHALL CONDUCT A SOURCE TEST ON THE BOILER UNDER THE FOLLOWING CONDITIONS:**



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- A. THE INITIAL TEST SHALL BE CONDUCTED WITHIN 60 DAYS AFTER APPROVAL OF THE SOURCE TEST PROTOCOL BUT NO LATER THAN 180 DAYS AFTER THE PERMIT IS ISSUED. AFTER THE INITIAL TEST, TESTING SHALL BE CONDUCTED ONCE EVERY 3 YEARS, OR IN ACCORDANCE WITH THE SCHEDULE SPECIFIED IN RULE 1146.
- B. THE TEST SHALL BE CONDUCTED TO DETERMINE THE EMISSIONS OF NOX AND CO USING ONE OF THE TEST METHODS SPECIFIED IN RULE 1146. THE TEST SHALL BE CONDUCTED OVER 15 MINUTE AVERAGING TIME. THE TEST SHALL BE CONDUCTED DURING GAS FIRING AT A GREATER THAN 90% LOAD, 50% LOAD, AND 25% LOAD. THE TEST SHALL BE CONDUCTED DURING OIL FIRING AT GREATER THAN 90% LOAD ONLY.
- C. THE TEST SHALL BE CONDUCTED IN ACCORDANCE WITH AN AQMD APPROVED TEST PROTOCOL. THE PROTOCOL SHALL BE SUBMITTED TO THE AQMD ENGINEER NO LATER THAN 45 DAYS BEFORE THE PROPOSED TEST DATE AND SHALL BE APPROVED BY THE AQMD BEFORE THE TEST COMMENCES. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE BOILER DURING THE TESTS, THE IDENTITY OF THE TESTING LAB, A STATEMENT FROM THE TESTING LAB CERTIFYING THAT IT MEETS THE CRITERIA OF RULE 304, AND A DESCRIPTION OF ALL SAMPLING AND ANALYTICAL PROCEDURES. THE AQMD SHALL BE NOTIFIED ON THE DATE AND TIME OF THE TEST AT LEAST 10 DAYS PRIOR TO THE TEST. TEST RESULTS SHALL BE SUBMITTED TO THE AQMD WITHIN 30 DAYS OF COMPLETION OF THE TEST.
[RULE 1146]

Periodic Monitoring:

13. ~~THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE NOX EMISSION LIMIT (S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.~~
~~[RULE 3004 (a)(4)]~~
14. ~~THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT (S) EITHER BY: (a) CONDUCTING A SOURCE TEST AT LEAST ONCE EVERY FIVE YEARS USING OR (b) CONDUCTING A TEST AT LEAST ANNUALLY USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD. THE TEST SHALL BE CONDUCTED WHEN THE EQUIPMENT IS OPERATING UNDER NORMAL CONDITIONS TO DEMONSTRATE COMPLIANCE WITH RULE 1146 CONCENTRATION LIMIT. THE OPERATOR SHALL COMPLY WITH ALL GENERAL TESTING, REPORTING, AND~~



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~~RECORDKEEPING REQUIREMENTS IN SECTIONS E AND K OF THIS PERMIT.~~
[RULE 3004 (a)(4)]

15. THE OPERATOR SHALL CONDUCT AN INSPECTION FOR VISIBLE EMISSION FROM ALL STACKS AND OTHER EMISSION POINTS OF THIS EQUIPMENT WHENEVER THIS EQUIPMENT HAS COMBUSTED ONE MILLION GALLONS OF DIESEL FUEL, TO BE COUNTED CUMULATIVELY OVER A FIVE YEAR PERIOD. THE INSPECTION SHALL BE CONDUCTED WHILE THE EQUIPMENT IS IN OPERATION AND DURING DAYLIGHT HOURS. IF ANY VISIBLE EMISSIONS (NOT INCLUDING CONDENSED WATER VAPOR) ARE DETECTED THAT LAST MORE THAN THREE MINUTES IN ANY ONE HOUR, THE OPERATOR SHALL EITHER:
- A. TAKE CORRECTIVE ACTION(S) THAT ELIMINATES THE VISIBLE EMISSIONS WITHIN 24 HOURS AND REPORT THE VISIBLE EMISSIONS AS A POTENTIAL DEVIATION IN THE SAME FASHION AS DEVIATIONS ARE REQUIRED TO BE REPORTED IN SECTION K OF THIS PERMIT; OR
 - B. HAVE A CARB-CERTIFIED SMOKE READER DETERMINE COMPLIANCE WITH THE OPACITY STANDARD, USING EPA METHOD 9 OR THE PROCEDURES IN THE CARB MANUAL "VISIBLE EMISSION EVALUATION", WITHIN THREE BUSINESS DAYS AND REPORT ANY DEVIATIONS TO AQMD.

IN ADDITION, THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. STACK OR EMISSION POINT IDENTIFICATION;
 - B. DESCRIPTION OF ANY CORRECTIVE ACTIONS TAKEN TO ABATE VISIBLE EMISSIONS;
 - C. DATE AND TIME VISIBLE EMISSION WAS ABATED; AND
 - D. VISIBLE EMISSION OBSERVATION RECORDED BY A CERTIFIED SMOKE READER.
- [RULE 3004 (a)(4)]
16. UNITS WITH A HEAT INPUT GREATER THAN 10 MMBTU/HR AND ANNUAL OIL USAGE GREATER THAN 1,000,000 GALLONS OR GREATER THAN 336 HOURS OF OPERATION, BUT DOES NOT EXCEED 2,000,000 GALLONS IN ANY ONE YEAR. THE OPERATOR SHALL CONDUCT AN ANNUAL MAINTENANCE INSPECTION CHECK OF THE OPERATING PRESSURE, TEMPERATURE, AIR SUPPLY, VENT, SMOKE SPOT, BURNER CONDITION, HEAT-TRANSFER SURFACE CONDITION, WATER TREATMENT, BLOWDOWN AND LEAKAGE.

THE OPERATOR SHALL KEEP THE RECORDS IN ACCORDANCE WITH THE RECORDKEEPING REQUIREMENTS IN SECTION K OF THIS PERMIT AND THE FOLLOWING RECORDS:

- A. DATE WHEN ANNUAL MAINTENANCE INSPECTION WAS CONDUCTED.
- [RULE 3004 (a)(4)]



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Emissions and Requirements:

17. THIS EQUIPMENT IS SUBJECT TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING RULES AND REGULATIONS:

NOX: 30 PPMV FOR NATURAL GAS FIRING, UNTIL 12/31/12 [RULE 1146]
NOX 9 PPMV FOR NATURAL GAS FIRING, ON AND AFTER 1/1/13 [RULE 1146]
NOX: 40 PPMV FOR OIL FIRING, [RULE 1146]
CO: 400 PPMV, RULE 1146
CO: 50 PPMV FOR NATURAL GAS FIRING [RULE 1303 BACT]
CO: 2000 PPMV, RULE 407
PM: 0.1 GR/SCF, RULE 409



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Appendix A

Emission Calculations

Emission Factors

1. Before Modification

Pollutant	Natural Gas (lbs/mmcf)	Oil (lbs/Mgal)
NOx	30 ppm (R1=R2)	40 ppm (R1=R2)
CO	84.0 (R1 = R2)	0.2 (R1 = R2)
ROG	5.5 (R1 = R2)	0.2 (R1 = R2)
PM10	7.6 (R1 = R2)	2.0 (R1 = R2)
SOx	0.6 (R1 = R2)	2.13 (R1 = R2)

2. After Modification

Pollutant	Natural Gas (lbs/mmcf)	Oil (lbs/Mgal)
NOx	9 ppm (R1=R2)	40 ppm (R1=R2)
CO	84.0 (R1 = R2)	0.2 (R1 = R2)
ROG	5.5 (R1 = R2)	0.2 (R1 = R2)
PM10	7.6 (R1 = R2)	2.0 (R1 = R2)
SOx	0.6 (R1 = R2)	2.13 (R1 = R2)

Factors are from Form B-1, except NOx which reflects R1146 limits

Data:

Molecular weight

NO2 46 lbs/lb-mole

Specific Molar Volume

380 ft³/lb-mole

Proposed New Rating (16.8 mmbtu/hr)

Exhaust flow

Natural gas 171,204 ft³/hr (based on F factor of 8710 corrected to 3% O₂)

Oil 180,639 ft³/hr (based on F factor of 9190 corrected to 3% O₂)

Fuel Use

Natural gas 16,000 ft³/hr (based on 1050 btu/ft³)

Oil 120.9 gal/hr (based on 139,000 btu/gal)



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Existing Rating (12.6 mmbtu/hr)

Exhaust flow

Natural gas 128,403 ft³/hr (based on F factor of 8710 corrected to 3% O₂)
Oil 137,629 ft³/hr (based on F factor of 9190 corrected to 3% O₂)

Fuel Use

Natural gas 12,190 ft³/hr (based on 1050 btu/ft³)
Oil 92.1 gal/hr (based on 139,000 btu/gal)

Calculations

1. Before Modification

Natural Gas

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.47	11.3	0.47	11.3	11	4117
CO	1.02	24.5	1.02	24.5	25	8935
ROG	0.07	1.7	0.07	1.7	2	613
PM10	0.09	2.2	0.09	2.2	2	788
SOx	0.007	0.17	0.007	0.17	0	61

Oil

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		Average Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day
NOx	0.67	16.1	0.67	16.1	0.34
CO	0.02	0.48	0.02	0.48	0.01
ROG	0.02	0.48	0.02	0.48	0.01
PM10	0.18	4.3	0.18	4.3	0.09
SOx	0.20	4.8	0.20	4.8	0.10

** note that the maximum emissions would only occur during an emergency situation, typically the unit would only be fired on oil 1 day per month for about 30 minutes.*



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2. After Modification

Natural Gas

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		30 Day Average Emissions	Annual Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day	lbs/yr
NOx	0.19	4.6	0.19	4.6	5	1664
CO	1.34	32.1	1.34	32.1	32	11738
ROG	0.09	2.2	0.09	2.2	2	788
PM10	0.12	2.9	0.12	2.9	3	1051
SOx	0.01	0.24	0.01	0.24	0	88

Oil

Pollutant	Maximum Emissions, Uncontrolled		Maximum Emissions, Controlled		Average Emissions
	Lbs/hr	lbs/day	Lbs/hr	Lbs/day	lbs/day
NOx	0.87	20.9	0.87	20.9	0.44
CO	0.02	0.48	0.02	0.48	0.24
ROG	0.02	0.48	0.02	0.48	0.24
PM10	0.24	5.8	0.24	5.8	0.12
SOx	0.26	6.2	0.26	6.2	0.13

** note that the maximum emissions would only occur during an emergency situation, typically the unit would only be fired on oil 1 day per month for about 30 minutes.*

Daily Emissions

Pollutant	Daily Emissions Prior to Modification	Daily Emissions After Modification	Change in Emissions
NOx	11.3	4.6	-6.7
CO	24.5	32.1	+7.6
ROG	1.7	2.2	+0.5
PM10	2.2	2.9	+0.7
SOx	0.17	0.24	+0.07



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Comparison of Existing to Proposed 30 Day Average Emissions

Pollutant	30 Day Average (lbs/day)	
	Existing	Proposed
NOx	11	5
CO	25	32
ROG	2	2
PM10	2	3
SOx	0	0

The reduction in NOx emissions reflects the increase in rating minus the reduction from the installation of the Low NOx burner, the increase in CO and PM10 comes from the increase in rating.



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Appendix B

Toxic Emissions

Toxic Emissions are based on the Ventura County APCD AB2588 External Combustion Emission Factors, May 17, 2001 for boilers between 10-100 mmbtu/hr.

Boiler Data:

Maximum heat input 16.8 mmbtu/hr
 Maximum fuel use 0.016 mmcf/hr (based on 1050 btu/cf)
 Annual hours of operation 8760 hours

Table 1 – Boiler 3 Total Toxic Emissions

Pollutant	Emission Factors lbs/mmcf	Emissions (lbs/hr)	Emissions (lbs/yr)
Toluene	2.65E-02	4.24E-04	3.71E+00
Xylenes	1.97E-02	3.15E-04	2.76E+00
Naphthalene	3E-04	4.80E-06	4.20E-02
PAH	1E-04	1.60E-06	1.40E-02
Acrolein	2.7E-03	4.32E-05	3.78E-01
Acetaldehyde	3.1E-03	4.96E-05	4.34E-01
Benzene	5.8E-03	9.28E-05	8.13E-01
Formaldehyde	1.23E-02	1.97E-04	1.72E+00
Propylene	5.300E-01	8.48E-03	7.43E+01
ethy benzene	6.9E-03	1.10E-04	9.67E-01
Hexane	4.6E-03	7.36E-05	6.45E-01

Table 2 – Boiler 3 Increase in Toxic Emissions Resulting from Larger Burner

Heat Input Increase 4.2 mmbtu/hr (16.8 mmbtu/hr -12.6 mmbtu/hr)
 Fuel Use Increase 0.004 mmcf/hr (based on 1050 btu/cf)
 Annual hours of operation 8760 hours

Pollutant	Emission Factors lbs/mmcf	Emissions Increase (lbs/hr)	Emissions Increase (lbs/yr)
Toluene	2.65E-02	1.06E-04	9.29E-01
Xylenes	1.97E-02	7.88E-05	6.90E-01
Naphthalene	3E-04	1.20E-06	1.05E-02
PAH	1E-04	4.00E-07	3.50E-03
Acrolein	2.7E-03	1.08E-05	9.46E-02
Acetaldehyde	3.1E-03	1.24E-05	1.09E-01
Benzene	5.8E-03	2.32E-05	2.03E-01
Formaldehyde	1.23E-02	4.92E-05	4.31E-01
Propylene	5.300E-01	2.12E-03	1.86E+01



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ethy benzene	6.9E-03	2.76E-05	2.42E-01
Hexane	4.6E-03	1.84E-05	1.61E-01