



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE OFFICE

APPLICATION PROCESSING AND CALCULATIONS

Pages 9	Page 1
A/N 521334	Date 5-24-11
Processed by RNL	Checked by

Minor Title V Permit Revision
Section H (PC)
Boiler Burner Upgrade

Legal Owner
or Operator: TED LEVINE DRUM COMPANY
1817 CHICO AVE.
SOUTH EL MONTE, CA 91733

ID: 71797

Equipment
Location: 1729 CHICO AVE., SOUTH EL MONTE, CA 91733

Equipment Description:
A/N 5????? (Title V Permit Revision)

A/N 521334 (Modification, Previous PO No. F27257, A/N 339734)

MODIFICATION OF:

BOILER, HOT WATER AND STEAM, CYCLOTHERM, SERIAL NO. 13950,
6.3-MMBTU/HR NATURAL GAS FIRED, WITH ONE GORDON PIATT LOW-
NOX BURNER, MODEL NO. LNS 12.9-6-30-A, AND ONE FLUE GAS
RECIRCULATION.

BY THE REMOVAL OF:

ONE GORDON PIATT 6.3-MMBTU/HR LOW-NOX BURNER, MODEL NO. LNS
12.9-6-30-A AND ONE FLUE GAS RECIRCULATION

WITH THE ADDITION OF:

ONE WEBSTER 6.3-MMBTU/HR ULTRA LOW-NOX BURNER, MODEL NO.
HDRMB10G-150 AND ONE FLUE GAS RECIRCULATION

History

The above pending application was submitted as Class I to upgrade a low-NO_x burner used in the permitted boiler to an ultra low-NO_x, emitting less than 9 ppmv at 3% O₂, in compliance with Rule 1146. The replaced burner will also have the same MMBTU/hr rating as the existing burner. Reductions of NO_x emissions are expected from this project without emission increases of any other criteria pollutants.

Ted Levine Drum operates a non-RECLAIM Title V facility at the above address. Within the last two years, there were two complaints filed against the company. The company received two notices of violations and one notice to comply. All non-compliant issues have been resolved and the company is currently operating in compliance with District rules without any pending issues.



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Process Description

The boiler is used to generate hot water and steam to be used for washing recycled drums. The emissions from natural gas combustion are minimized by the ultra low-NO_x burner and flue gas recirculation.

Emission Calculations

The proposed burner is guaranteed by Webster to emit less than 9 ppmv NO_x at 3% O₂, in compliance with Rule 1146 limit. Therefore, emission reductions of NO_x emissions are expected from the proposed burner upgrade.

The following equation is used to compute the hourly emissions:

Emissions of ith compound from the combustion of natural gas (lb/hr) =

$$\frac{\text{Max. Heat Input Rating} \left(10^6 \frac{\text{BTU}}{\text{hr}}\right) \cdot \text{Emission Factor of } i^{\text{th}} \text{ compound} \left(\frac{\text{lb}}{10^6 \text{ ft}^3}\right)}{\text{Gross Heating Value} \left(\frac{\text{BTU}}{\text{ft}^3}\right)}$$

Criteria pollutant emission factors are taken from AP-42, section 1.4, revised 10/96, except for NO_x factor, which is based on the Rule 1146 limit of 9 ppmv at 3% O₂.

Please see the attached Excel worksheets for detailed calculations.



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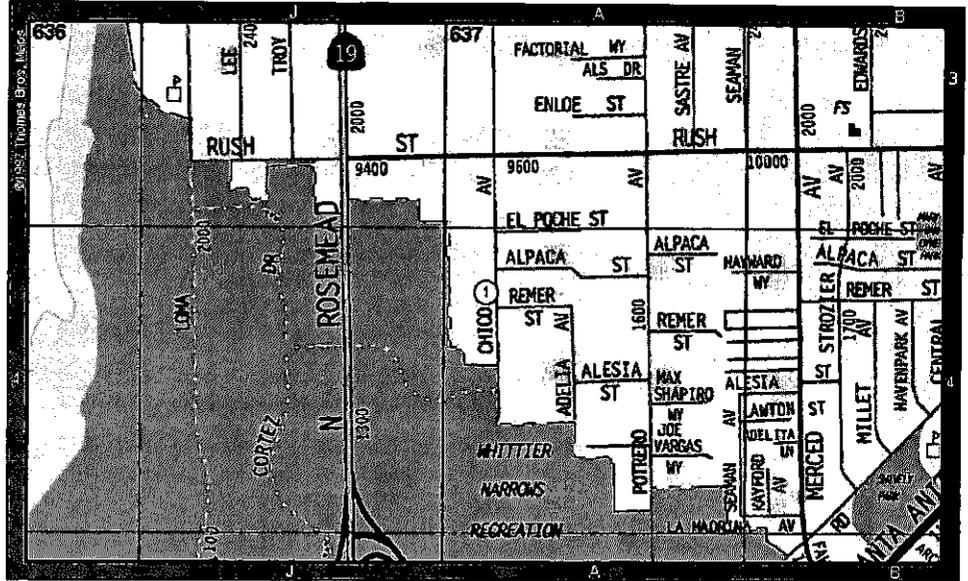
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Rule Evaluation

Rule 212(c) (1):

This section requires a public notice for all new or modified permit units that may emit air contaminants located within 1,000 feet from the outer boundary of a school.



Since no school is located within 1,000 ft, this section will not require a public notice.

Rule 212(c) (2):

This section requires a public notice for all new or modified facilities that have on-site emission increases exceeding any of the daily maximums as specified by Rule 212(g).

	MDC (lb/dy)					
	ROG	NO _x	PM ₁₀	SO ₂	CO	Pb
Increase from Facility	0	0	0	0	0	0
MAX Limit	30	40	30	60	220	3
Required Public Notice	No	No	No	No	No	No

The above table summarizes the emission limits and increases. Since emission increases are less than the limits, a public notice will not be required per this section.

Rule 212(c) (3):

This section requires a public notice for all new or modified permit unit with increases in emissions of toxic air contaminants listed in Table I of Rule 1401 resulted in MICR greater than 1E-6 per permit unit or greater than 10E-6 per facility.

Since this project will not result in emission increases of TACs, a public notice will not be required.



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Rule 212(g):

This section requires a public notice for all new or modified sources that have equipment emission increases exceeding any of the daily maximums as specified by Rule 212(g).

The following table summarizes the limit and MDC:

	<u>ROG</u>	<u>NO_x</u>	<u>PM₁₀</u>	<u>SO₂</u>	<u>CO</u>	<u>Pb</u>
Increase from Project	0	0	0	0	0	0
MAX MDC Limit (lb/dy)	30	40	30	60	220	3
Required Public Notice	Yes	No	No	No	No	No

The above table summarizes the emission limits and increases. Since emission increases are less than the limits, a public notice will not be required per this section.

Rule 401:

Visible emissions are not expected with the proper operation of the equipment.

Rule 402:

Nuisance is not expected with the proper operation of the equipment. There is no complaint history for this company for both the current and previous owners based on the District computer database.

Rule 404:

Table 404(a) specifies limits of PM concentrations in an effluent gas stream at standard conditions. However, boilers are exempt from these limits per Section 404(c).

Rule 407:

Compliance is expected.

	Rule 407 Limit	Calculated Value	Compliance Status
CO (ppmv)	2000	50	Yes

Rule 409:

Compliance is expected.

	Rule 409 Limit	Calculated Value	Compliance Status
PM (grain/ft ³)	0.1	5.5E-9	Yes

Rule 431.1:

Compliance is met by the use of natural gas. Rule 431.1(c) (1) requires the Gas Company to



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supply only the low-sulfur content natural gas, containing no more than 16 ppmv of H₂S.

Rule 1146: Compliance is expected.

	Rule 1146 Limit	Manufacturer Data	Compliance Status
NO _x (ppmv)	9	9	Yes
CO (ppmv)	400	50	Yes

Rule 1401: Since this project will not result in any emission increases of TACs, continuance of compliance with Rule 1401 is expected.

Reg XIII: The proposed project will not result in any emission increases of criteria pollutants. Therefore, compliance with this regulation is expected.

Reg XXX: The proposed project is considered as a Minor Title V Permit Revision pursuant to Rule 3000(b)(12) (A)(vi) since this project does not result in any increases in criteria pollutant emissions that are subject to Regulation XIII - New Source Review or a hazardous air pollutant (HAP).

Recommendation

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a "minor permit revision", it is exempt from the public participation requirements under Rule 3006(b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V permit will be issued to this facility with the following proposed conditions



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Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE 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 BOILER SHALL BE FIRED WITH NATURAL GAS ONLY.
[RULE 1303(a)(1)-BACT]

4. EMISSIONS FROM THIS BOILER SHALL NOT EXCEED MORE THAN 9 PPM OF OXIDES OF NITROGEN (NOX), CALCULATED AS NO₂, AND NO MORE THAN 50 PPM OF CARBON MONOXIDE (CO), ALL MEASURED BY VOLUME ON A DRY BASIS AT 3% O₂.
[RULE 1146, 1303(a)(1)-BACT]

5. THE BURNER'S AUTOMATIC CONTROL SYSTEM TO REGULATE COMBUSTION AIR, FUEL, AND RECIRCULATED FLUE GAS SHALL BE ADJUSTED AND TUNED AT LEAST TWICE A YEAR ACCORDING TO MANUFACTURER'S SPECIFICATIONS TO ASSURE ITS ABILITY TO REPEAT THE SAME PERFORMANCE AT THE SAME FIRING RANGE.
[RULE 1146, 1303(a)(1)-BACT]

6. RECORDS OF SUCH ADJUSTMENTS, TUNE-UP, AND CALIBRATION AS STATED ABOVE SHALL BE KEPT FOR AT LEAST FIVE YEARS AND BE MADE AVAILABLE TO THE DISTRICT PERSONNEL UPON REQUEST.
[RULE 1146, 1303(a)(1)-BACT]

7. A MECHANICAL GAUGE SHALL BE MAINTAINED TO INDICATE THE AMOUNT OF FLUE GAS RECIRCULATED FROM THE EXHAUST GAS STACK TO THE BURNER.
[RULE 1146, 1303(a)(1)-BACT]



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8. THE AMOUNT OF FLUE GAS RECIRCULATED BACK TO THE BURNER SHALL BE AUTOMATICALLY REGULATED IN CONJUNCTION WITH THE COMBUSTION AIR AND FUEL.
[RULE 1146, 1303(a)(1)-BACT]

9. THE FLUE GAS RECIRCULATION SYSTEM SHALL BE IN FULL USE WHENEVER THE BOILER IS IN OPERATION.
[RULE 1146, 1303(a)(1)-BACT]

10. THE OPERATOR SHALL INSTALL AND MAINTAIN A NON-RESETTING TOTALIZING FUEL METER TO ACCURATELY INDICATE THE FUEL USAGE IN THE BOILER.
[RULE 1303(b)(2)-OFFSET]

11. THE OPERATOR SHALL TEST THIS EQUIPMENT IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:
 - A. THE SOURCE TEST SHALL BE CONDUCTED NO LATER THAN 180 DAYS AFTER THE INITIAL START-UP OF THIS EQUIPMENT UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT.
 - B. A SOURCE TEST PROTOCOL SHALL BE SUBMITTED TO THE DISTRICT NO LATER THAN 60 DAYS AFTER THE INITIAL START-UP OF THIS EQUIPMENT UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT. THE TEST PROTOCOL SHALL BE APPROVED IN WRITING BY THE DISTRICT BEFORE THE TEST COMMENCES.
 - C. THE TEST PROTOCOL SHALL INCLUDE THE PROPOSED OPERATING CONDITIONS OF THE EQUIPMENT DURING THE TEST, THE IDENTITY OF THE TESTING LABORATORY, A STATEMENT FROM THE TESTING LABORATORY CERTIFYING THAT IT MEETS THE CRITERIA IN DISTRICT RULE 304(K), AND A DESCRIPTION OF THE SAMPLING AND ANALYTICAL PROCEDURES TO BE USED.
 - D. THE SOURCE TESTS SHALL CONSIST OF, BUT MAY NOT BE LIMITED TO, TESTING OF THE BOILER FOR NOX AND CO EMISSIONS, REFERENCED AT 3 PERCENT VOLUME STACK GAS OXYGEN ON A DRY BASIS, DURING AS-FOUND OPERATING CONDITIONS.
 - E. THE SOURCE TESTS SHALL CONSIST OF, BUT MAY NOT BE LIMITED TO, TESTING OF THE BOILER FOR NOX AND CO EMISSIONS, REFERENCED AT 3 PERCENT VOLUME STACK GAS OXYGEN ON A DRY BASIS, WHILE THE BOILER IS OPERATED BELOW 25% OF THE MAXIMUM RATED INPUT HEAT CAPACITY.



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- F. NOX AND CO EMISSION DETERMINATION SHALL BE AVERAGED OVER A PERIOD OF 15 CONSECUTIVE MINUTES, AND AT LEAST 15 MINUTES AFTER UNIT START-UP.
- G. A WRITTEN NOTICE OF THE SOURCE TESTS SHALL BE SUBMITTED TO THE DISTRICT AT LEAST 14 DAYS PRIOR TO THE SOURCE TESTING DATE SO THAT AN OBSERVER FROM THE DISTRICT MAY BE PRESENT.
- H. TWO COMPLETE COPIES OF THE SOURCE TEST REPORT SHALL BE SUBMITTED TO THE DISTRICT WITHIN 45 DAYS AFTER SOURCE TESTING DATE UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT. THE SOURCE TEST REPORT SHALL INCLUDE, BUT MAY NOT BE LIMITED TO, ALL TESTING DATA REQUIRED BY THIS CONDITION.
- I. A TESTING LABORATORY CERTIFIED BY THE CALIFORNIA AIR RESOURCES BOARD IN THE REQUIRED TEST METHODS FOR THE CRITERIA POLLUTANTS TO BE MEASURED, AND IN COMPLIANCE WITH DISTRICT RULE 304 (NO CONFLICT OF INTEREST) SHALL CONDUCT THE TEST.
- J. SAMPLING FACILITIES SHALL COMPLY WITH THE DISTRICT GUIDELINES FOR CONSTRUCTION OF SAMPLING AND TESTING FACILITIES, PURSUANT TO RULE 217.
- K. THE RESULTS OF ALL TESTS (INCLUDING PRELIMINARY TESTS) THAT ARE CONDUCTED ON THIS EQUIPMENT FOR INFORMATIONAL PURPOSES SHALL BE SUBMITTED TO THE DISTRICT WITHIN 45 DAYS AFTER THE TESTING DATE UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT.

Periodic Monitoring:

- 12. THE OPERATOR SHALL DETERMINE COMPLIANCE WITH THE CO EMISSION LIMIT(S) BY CONDUCTING A TEST AT LEAST ONCE EVERY FIVE YEARS USING A PORTABLE ANALYZER AND AQMD-APPROVED TEST METHOD OR, IF NOT AVAILABLE, A NON-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)]

Emissions and Requirements:



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

CO: 400 PPMV, RULE 1146
CO: 2000 PPMV, RULE 407
NOx: 9 PPMV, RULE 1146, 1303(a)(1)-BACT
PM: 0.1 GR/SCF, RULE 409
CO: 50 PPMV, 1303(a)(1)-BACT

Ted Levine Drum Co (ID No. 71797)

Boiler (A/N 521334)

	maximum	normal
hr/dy	24	16
dy/wk	7	7
wk/yr	52	52
load	100%	50%

max heat input	6.30E+06	(BTU/hr)
gross heating value	1050	(BTU/scf)
maximum gas usage per day	144000	(scf/dy)
average gas usage per day	48000	(scf/dy)

	Emission Factors	MAX (lb/hr)	AVE (lb/hr)	MAX (lb/dy)	30-DAY (lb/dy)	MAX (lb/yr)	MAX (ton/yr)
SO _x (R1)	0.83	0.005	0.002	0.12	NA	44	0.022
SO _x (R2)	0.83	0.005	0.002	0.12	0.12	44	0.022
NO _x (R1)	38.88	0.233	0.117	5.5987	NA	2,038	1.019
NO _x (R2)	11.7	0.070	0.035	1.6848	1.68	613	0.307
CO (R1)	315.5	1.893	0.947	45.43	NA	16,537	8.269
CO (R2)	39.77	0.239	0.119	5.73	5.73	2,085	1.042
PM, PM ₁₀ (R1=R2)	7.5	0.045	0.023	1.08	1.08	393	0.197
ROG(R1=R2)	7	0.042	0.021	1.01	1.01	367	0.183

Acetaldehyde	0.0043	2.6E-05	1.3E-05	6.2E-04	NA	2.25E-1	1.13E-4
Acrolein	0.0027	1.6E-05	8.1E-06	3.9E-04	NA	1.42E-1	7.08E-5
Amonia	3.2000	1.9E-02	9.6E-03	4.6E-01	NA	1.68E+2	8.39E-2
Benzene	0.0080	4.8E-05	2.4E-05	1.2E-03	NA	4.19E-1	2.10E-4
Ethyl Benzene	0.0095	5.7E-05	2.9E-05	1.4E-03	NA	4.98E-1	2.49E-4
Formaldehyde	0.0170	1.0E-04	5.1E-05	2.4E-03	NA	8.91E-1	4.46E-4
Hexane	0.0063	3.8E-05	1.9E-05	9.1E-04	NA	3.30E-1	1.65E-4
Napthalene	0.0003	1.8E-06	9.0E-07	4.3E-05	NA	1.57E-2	7.86E-6
PAH's	0.0001	6.0E-07	3.0E-07	1.4E-05	NA	5.24E-3	2.62E-6
Propylene	0.7310	4.4E-03	2.2E-03	1.1E-01	NA	3.83E+1	1.92E-2
Toluene	0.0366	2.2E-04	1.1E-04	5.3E-03	NA	1.92E+0	9.59E-4
Xylenes	0.0272	1.6E-04	8.2E-05	3.9E-03	NA	1.43E+0	7.13E-4

NO₂ @ 3% excess O₂.....>>>

9

 (ppmv)
 CO @ 3% excess O₂.....>>>

50

 (ppmv)

SO₂ @ 3% excess O₂.....>>>

0.5

 (ppmv)
 PM @ 12% CO₂.....>>>

5.5E-09

 (grain/ft³)