PROPOSED

Covered Source Permit (NSP) No. 0442-02-C Review
Application for Renewal No. 0442-08

Applicant: United Laundry Services, Inc.

Equipment Description:

Two (2) 500 HP (20.9 MMBtu/hr input) synthetic natural gas (SNG) / fuel oil no. 2 fired Cleaver-Brooks steam-generating boilers (model nos. CB-LE-200-500-250)

Boiler No. 1 - serial no. OLO98602; and
Boiler No. 2 - serial no. OLO98601

One (1) 250 HP (9.6 MMBtu/hr input) synthetic natural gas (SNG) / fuel oil no.2 fired Miura steam-generating boiler (model no. EX-250-SGO)

Equipment Location/Mailing Address: 2291 Alahao Place
Honolulu, Hawaii 96819 (Oahu)

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Proposed Project:

This renewal application is for the continuing operation of two (2) 500 HP and one (1) 250 HP boilers. The purpose of the boilers is to provide steam for the operations of the laundry business (predominantly the cleaning of linen and towels from hospitals and hotels). The steam will be used for the washers as well as the dryers. When sufficient steam is produced and stored, the boilers will switch to low-fire mode. The individual boiler heat input for low-fire mode is 5.23 MMBtu/hr and the high-fire mode is 20.916 MMBtu/hr (500 HP). Since the Cleaver-Brooks boilers are between 10 and 100 MMBtu/hr, they are considered industrial boilers. Fuel oil no. 2 is the primary fuel with SNG being the back-up. With the usage of fuel oil no. 2, the two (2) 500 hp boilers became subject to NSPS Subpart Dc and Covered Source Permitting. The **Project Emissions** section will show the total emissions due to the use of fuel oil no. 2 and the worst case total potential emissions that is the two (2) 500 HP boilers operating at once. No change is proposed for the operational limits of this permit renewal. For reference, the modeling of the 250 HP boiler was done under 0442-06.

The Standard Industrial Classification Code (SICC) is 7218 - Industrial Launderers.

This review for a Renewal to a Non-Toxic Covered Source Permit is based on the application dated 08/14/13. CSP No. 0442-02-C dated 8/31/09 will be superseded upon issuance of this permit.

Applicable Requirements:

Hawaii Administrative Rules (HAR) Title 11 Chapter 59, Ambient Air Quality Standards
Hawaii Administrative Rules (HAR) Title 11 Chapter 60.1, Air Pollution Control
- Subchapter 1 - General Requirements
- Subchapter 2 - General Prohibitions
  - 11-60.1.31 Applicability
  - 11-60.1-32 Visible Emissions
  - 11-60.1-38 Sulfur Oxides from Fuel Combustion
  - 11-60.1-39 Storage of Volatile Organic Compounds
  - 11-60.1-38 Sulfur Oxides From Fuel Combustion
- Subchapter 5 - Covered Sources
- Subchapter 6 - Fees for Covered Sources, Sections 111-115
- Subchapter 8 - New Source Performance Standards
- Subchapter 9, Hazardous Air Pollutants
  - 11-60.1-171, Definitions
  - 11-60.1-172, List of Hazardous Air Pollutants
  - 11-60.1-173, Applicability
  - 11-60.1-179, Ambient Air Concentrations of Hazardous Air Pollutants

40 Code of Federal Regulations (CFR), Part 60 New Source Performance Standard (NSPS), Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units because the two (2) 500 hp boilers were constructed after June 9, 1989, are greater than 10 MMBtu/hr, and will be fired on fuel oil no. 2. The 250 hp boiler is not applicable since it has a heat input value of 9.6 MMBtu/hr.

40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart JJJJJJ, NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources is applicable to the boilers because the units are located at an area source of HAP emissions and do not meet the exemption criteria specified in 40 CFR §63.11195. Pursuant to §63.11194, the boilers are "existing" sources because the units commenced construction prior to June 4, 2010.

Non-Applicable Requirements:

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) and Maximum Achievable Control Technology (MACT) since the facility is not a major source of hazardous air pollutants (HAPS) emissions (10 tpy of individual or 25 tpy of a combination of HAPs).

Prevention of Significant Deterioration (PSD) since this is not a major stationary source.

Compliance Assurance Monitoring (CAM) is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR, Part 64, for CAM to be applicable, the emissions unit must: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential precontrol emissions that are greater than the major source level [>100 tpy]; and (5) not otherwise be exempt from CAM. CAM is not applicable to the plant since items 1, 3, 4, and 5 do not apply.

Air Emissions Reporting Rule (AERR) since the potential individual criteria pollutant emissions from the facility is less than 100 tpy each when restricted to the operational limits. However, internal annual emissions reporting is required since potential NO_X and SO_2 emissions is greater than 25 tpy.

TABLE 1
Triggering Levels

Pollutant	AERR Triggering Levels (tpy)	In-house Total Facility Triggering Levels (tpy)	Potential Emissions (tpy)
NO_x	≥ 100	≥ 25	25.37
SO_x	≥ 100	≥ 25	35.61
CO	≥ 1000	≥ 250	10.51
$PM_{10}/PM_{2.5}$	≥ 100/100	≥ 25/25	1.97 / 1.83
VOC	≥ 100	≥ 25	3.56
HAP'S		≥ 5	0.34

A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net significant emissions increase as defined in HAR, Section 11-60.1-1. This is an existing source with no change in emissions. Therefore, a BACT analysis was not performed.

A Synthetic Minor source is a facility that without limiting conditions, physical or operational, emits above the major source triggering levels as defined by HAR §11-60.1-1 for either criteria pollutants or HAPs. This facility will not exceed major source thresholds for 8,760 hr/yr operation. As such, this facility is not a synthetic minor source.

Insignificant Activities/Exemptions:

The 3,000 gallon fuel no. 2 storage tank is exempt pursuant to HAR §11-60.1-82(f)(1) for fuel storage tanks less than 40,000 gallons capacity.

The 7,000 gallon NaOH tank and related tanks storing cleaning solutions and hot water are exempt pursuant to HAR §11-60.1-82(f)(7) for insignificant air pollutant emissions.

Alternative Operating Scenarios:

None proposed.

Project Emissions:

There were no changes in emissions due to there being no proposed changes in equipment or operations. **TABLE 1** shows the total worst case emissions for this facility using fuel oil no. 2 and SNG. Depending on the pollutant, the worst case scenario of operating both 500 hp boilers simultaneously includes using 1 million gallons of fuel oil no. 2 for a portion of the year and SNG for the remainder of the year or SNG for the entire year.

Fuel Oil No. 2 Emission Factors

Manufacturer's data was used for criteria pollutants except for SO_2 and $PM_{2.5}$. AP-42 emission factors section 1.3, 9/98 was used for SO_2, $PM_{2.5}$, and HAPs. The emission factor from Table No. 1.3-6 was used to calculate PM_{10} and $PM_{2.5}$ for industrial boilers. Therefore: 0.25 lb/1,000 gal x 1,000,000 gal/yr x 1 ton/2,000 lbs = 0.13 tpy $PM_{2.5}$

SNG Emission Factors

Manufacturer's data was used for criteria pollutants except for PM_{10} and $PM_{2.5}$. AP-42 Emission Factors Section 1.4, 7/98 was used for HAPs. PM_{10} and $PM_{2.5}$ were assumed to equal PM since there are no emission factors available.

TABLE 2
POTENTIAL FACILITY EMISSIONS

Pollutant	Fuel Oil No. 2 [1] (tpy)	SNG [2] (tpy)	SNG Equivalent to Fuel Oil No. 2 [3] (tpy)	Worst Case [4] (tpy)	Significant Levels (tpy)
SO_2	35.50	0.18	0.007	**35.61**	40
NO_x	17.36	12.96	4.95	**25.37**	40
CO	4.89	27.51	10.51	**27.51**	100
PM	1.68	1.83	0.70	**2.81**	25
PM_{10}	0.84	1.83	0.70	**1.97**	15
$PM_{2.5}$	0.13	1.83	0.70	**1.83**	n/a
VOC	1.75	2.93	1.12	**3.56**	40
Total HAPs:	0.02	0.34	0.13	**0.34**	n/a

Note:

1. Includes using 1,000,000 gal/yr of fuel oil no. 2 by any of the 3 boilers.
2. Includes using SNG continuously all year for 2 boilers at max capacity.
3. Includes using the amount of SNG that would have been used in lieu of 1,000,000 gal/yr of fuel oil no. 2. Factor used is 0.382 of column 3 (continuous SNG).

   Sample calc: 0.18 x 0.382 = 0.07 tpy of SO_2
   where 0.382 is the ratio of 1,000,000 gallons of fuel oil no. 2 over the maximum potential for two 500 HP boilers.

4. This includes the worst case scenario of using 1,000,000 gallons of fuel oil no. 2 and SNG for both boilers. If col. 2 is greater than col. 4, then col. 2 + col. 3 - col. 4, otherwise col. 3.

   Sample calc: 17.36 tpy is greater than 4.95 tpy, therefore 17.36 tpy + 12.96 tpy – 4.95 tpy = 25.4 tpy NO_x.

   As shown in **TABLE 1**, the CO, $PM_{2.5}$, and HAPs emissions for SNG were the worst case scenarios.

   Sample calc: 4.89 tpy is less than 10.51 tpy, therefore 27.51 tpy CO.

Title V or PSD permitting for greenhouse gas (GHG) emissions is not applicable to this facility because the potential to emit of CO2 equivalent (CO2e) emissions is less than 100,000 tons per year. Maximum potential GHG emissions were estimated using AP-42 emission factors from Section 1.3 (5/10), External combustion sources, fuel oil combustion and AP-42, Section 1.4 "Natural Gas Combustion" (7/98). The total emissions are based on burning the permitted 1,000,000 gallons of fuel oil and remaining year burning SNG.Total GHG emissions on a CO2e basis using the global warming potential (GWP) of each GHG are determined in the table below.

Table 3
Greenhouse Gas Mass & Equivalent Emissions

GHG	Fuel Oil Emissions for 1,000,000 (gal/yr) Permit Limit (ton/yr)	SNG Emissions For Remainder of Year (ton/yr)	Combined GHG Emissions (ton/yr)	GWP	CO_2e (ton/yr)
CO_2	11,150	2,992	14,142	1	14,142
N_2O	0.13	0.05	0.18	298	53.6
CH_4	0.11	0.06	0.17	25	4.5
Total	-	-	-	-	14,200

Ambient Air Quality Assessment (AAQA):

An ambient air quality analysis (AAQA) was not conducted for this renewal. No modifications where made to the equipment or operational limits for this review. See previous review for ambient air assessment results.

Significant Permit Conditions:

1. The total fuel oil no. 2 consumption by the three (3) boilers shall not exceed 1,000,000 gallons in any rolling twelve (12) month period.
2. No more than two (2) boilers may operate simultaneously.
3. Incorporate 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart JJJJJJ, requirements for the boilers that include:

    a. Initial tune-ups
    b. Subsequent biennial tune-ups after initial tune-up; and
    c. One time Energy Assessment for the two (2) 500 hp boilers
    d. Submit data electronically to the EPA's Central Data Exchange

Conclusion and Recommendation:

In conclusion, it is the Department of Health's determination that the facility will comply with all State and Federal laws, rules, regulations, and standards with regards to air pollution. Therefore, a renewal for CSP No. 0442-02-C for United Laundry Services, Inc. is recommended based on the information provided in the air permit application and subject to the following:

1. Above special permit conditions;
2. 30-day public review period; and
3. 45-day EPA review period.

Other Issues:

None.

Joseph Baumgartner 04/02/14