PROPOSED

Initial Covered Source Permit Review Summary

Application File No. 0024-09

Permit No.: 0024-04-C

Facility Title: Alsco – American Linen Division
Two (2) 400 hp boilers
2771 Wai Wai Loop
Honolulu, Hawaii 96819

Mailing Address: Alsco – American Linen Division
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General Manager
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Plant Manager: Mr. Romel Marcelino
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Application Date: Received on November 23, 2011

Proposed Project:

SICC 7211 (Power Laundries, Family and Commercial)

The applicant previously applied for a modification to their Noncovered Source Permit No. 0024-03-N (application no. 0024-08). The modification consisted of the removal of the three (3) existing 250 hp boilers and replacing them with one (1) 400 hp boiler. The three (3) existing 250 hp boilers are inefficient and costly to maintain. The 400 hp boiler (2011) will be more efficient and have newer controls that allow better burning while using less fuel oil no. 2/SNG. The boiler will also be equipped with an economizer/scrubber. The economizer/scrubber will capture waste heat while also reducing pollutants. The existing 400 hp boiler (1978) will remain on the plant premises, but will be used as a primary back-up boiler only. Both boilers will be maintained in good working condition. An application fee of $100.00 for the modification of a noncovered source was submitted and processed.

The Department then completed the initial review of the permit application and sent the applicant a letter dated June 9, 2011 explaining that the application had been incorrectly submitted as a noncovered source modification. The proposed new 400 hp boiler would be subject to the following federal regulations: 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), Subpart Dc – Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and

Institutional Boilers. Therefore, because the boiler is subject to an NSPS standard, this boiler is now considered to be a new covered source and an initial covered source permit application must be submitted per Hawaii Administrative Rules (HAR) §11-60.1-83, including the submittal of an initial covered source application fee of $1000.00 for a non-toxic nonmajor covered source. The applicant subsequently submitted an initial covered source permit (application no. 0024-09) on November 23, 2011 with a fee of $1000.00 which was processed.

Equipment Description:

Unit No.	Description	Fuel Used
1	(existing – used as backup only) 400 HP Cleaver Brooks steam boiler, model no. CB-400, serial no. L-65130, state ID no. HAW 3383-78, 16.8 MMBtu/hr, manufactured in 1978.	Fuel oil no. 2 = 122.26 gal/hr SNG = 16,738 scf/hr
2	(new) 400 HP Superior steam boiler, model no. 7-5-2000-S150-PF-GA2, 16.8 MMBtu/hr, manufactured in 2011. Maximum design capacity = 13,800 lb/hr of steam	Fuel oil no. 2 = 119.6 gal/hr SNG = 16,409 scf/hr

Air Pollution Controls:

1. SO_2 – low sulfur fuel oil or SNG
2. NO_x – burner design, maintenance and proper operating conditions
3. PM – low ash(metal) content of low sulfur fuel oil and SNG. Also proper combustion to assure maximum oxidation of fuels to CO_2 and H_2O.
4. CO – proper combustion to assure maximum oxidation of carbon to CO_2.
5. VOC – proper combustion to assure maximum oxidation of carbon and hydrogen to CO_2 and H_2O.

Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11 Chapter 59 - Ambient Air Quality Standards
Title 11 Chapter 60.1 - Air Pollution Control
- Subchapter 1 - General Requirements
- Subchapter 2 - General Prohibitions
  - HAR 11-60.1-31 Applicability
  - HAR 11-60.1-32 Visible Emissions
  - HAR 11-60.1-38 Sulfur Oxides From Fuel Combustion
- Subchapter 5 – Covered Sources
- Subchapter 6 - Fees for Covered Sources, Noncovered Sources & Agricultural Burning
  - HAR 11-60.1-111 Definitions
  - HAR §11-60.1-112 General Fee Provisions for Covered Sources
  - HAR §11-60.1-113 Application Fees for Covered Sources
  - HAR §11-60.1-114 Annual Fees for Covered Sources
  - HAR §11-60.1-115 Basis of Annual Fees for Covered Sources

Subchapter 8 – Standards of Performance for Stationary Sources
Subchapter 9 – Hazardous Air Pollutant Sources

40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), Subpart Dc – Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units

40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers.
PM standard = 0.03 lb/MMBtu

Non-Applicable Requirements:

Hawaii Administrative Rules (HAR)

Title 11 Chapter 60.1 - Air Pollution Control
Subchapter 7 – Prevention of Significant Deterioration

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS)

40 CFR Part 52.21 - Prevention of Significant Deterioration of Air Quality

Prevention of Significant Deterioration (PSD):

This source is not a major stationary source nor are there modifications proposed that by itself constitute a major stationary source that is subject to PSD review. Therefore, a PSD review is not applicable.

Best Available Control Technology (BACT):

A Best Available Control Technology (BACT) analysis is applicable only to new covered sources or modifications to covered sources that have the potential to emit or a net emissions increase above significant levels as defined in HAR, Section 11-60.1-1. The project emissions for the new boiler are below the significant levels. Therefore, a BACT analysis is not applicable.

Pollutant	Potential Emissions (tpy)	Significant Level (tpy)	Significant ?
NO_x	5.63	40	no
SO_x	23.785	40	no
CO	1.83	100	no
TSP	0.67	25	no
PM_{10}	0.53	10	no
VOC	1.76	40	no
Lead	4.22E-04	0.6	no

Compliance Assurance Monitoring (CAM):

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.

Consolidated Emissions Reporting Rule (CERR):

40 CFR Part 51, Subpart A – Emissions Inventory Reporting Requirements, determines CER based on the emissions of criteria air pollutants from Type B point sources (as defined in 40 CFR Part 51, Subpart A), that emit at the CER triggering levels as shown in the table below.

Pollutant	Type B CER Triggering Levels [1] (tpy)	Pollutant	In-house Total Facility Triggering Levels [2] (tpy)	Potential Emissions (tpy)
NO_x	≥ 100	NO_x	≥ 25	5.63
SO_x	≥ 100	SO_x	≥ 25	23.785
CO	≥ 1000	CO	≥ 250	1.83
$PM_{10}/PM_{2.5}$	≥ 100/100	$PM_{10}/PM_{2.5}$	≥ 25/25	0.53/0.268
VOC	≥ 100	VOC	≥ 25	1.76
		HAPs	≥ 5	0.73

[1] Based on actual emissions
[2] Based on potential emissions

This facility does not emit at the CER triggering levels. Therefore, CER requirements are not applicable.

Although CER for the facility is not triggered, the Clean Air Branch requests annual emissions reporting from those facilities that have facility-wide emissions of a single air pollutant exceeding in-house triggering levels. Since there are no emissions that exceed the in-house triggering levels, annual emissions reporting for the facility will not be required for in-house recordkeeping purposes.

Synthetic Minor:

This source is not a synthetic minor source since individual air pollutant emissions are less than 100 tpy (major source trigger) if this source was to operate 8,760 hr/yr.

Insignificant Activities:

One 10,000 gallon above ground fuel oil storage tank, since it is less than 40,000 gallons in capacity (HAR §11-60.1-82(f)(1))

Alternative Operating Scenarios:

None proposed in the application.

Project Emissions:

Emissions for New Boiler

Pollutant	Emission Factor (lb/1000 gal)	Fuel Consumption (gal/hr)	Emissions (lb/hr)	Hours of Operation (hrs/yr)	Annual Fuel Consumption (gal/yr)	Annual Emissions (tons/yr)
NO_x	16.80	119.6	2.009	5,604	670,000	5.63
CO	5.46	119.6	0.653	5,604	670,000	1.83
SO_2	71	119.6	8.488	5,604	670,000	23.785
VOC	5.25	119.6	0.628	5,604	670,000	1.760
PM_{10}	1.58	119.6	0.189	5,604	670,000	0.53
$PM_{2.5}$	0.80	119.6	0.096	5,604	670,000	0.268
TSP	2.00	119.6	0.239	5,604	670,000	0.67
Formaldehyde	6.10E-02	119.6	7.29E-03	5,604	670,000	2.04E-02
Arsenic	5.60E-04	119.6	6.69E-05	5,604	670,000	1.88E-04
Beryllium	4.20E-04	119.6	5.02E-05	5,604	670,000	1.41E-04
Cadmium	4.20E-04	119.6	5.02E-05	5,604	670,000	1.41E-04
Chromium	4.20E-04	119.6	5.02E-05	5,604	670,000	1.41E-04
Mercury	4.20E-04	119.6	5.02E-05	5,604	670,000	1.41E-04
Manganese	8.40E-04	119.6	1.00E-04	5,604	670,000	2.81E-04
Nickel	4.20E-04	119.6	5.02E-05	5,604	670,000	1.41E-04
Lead	1.26E-03	119.6	1.51E-04	5,604	670,000	4.22E-04
Selenium	2.10E-03	119.6	2.51E-01	5,604	670,000	7.04E-01
HAPS		119.6		5,604	670,000	0.73

Greenhouse Gas Mass & Equivalent Emissions

GHG	Emission Factor Oil (lb/1000 gal)	Fuel Consumption (gal/hr)	GHG Emissions (lb/hr)	GHG Emissions (ton/yr)	GWP	CO_2e (ton/yr)
CO_2	22,300	119.55	2,666	11,677	1	11,677
N_2O	0.26	119.55	0.031	0.14	310	42
CH_4	0.052	119.55	0.0062	0.027	21	0.57
Total				11,677		11,720

Ambient Air Quality Assessment (AAQA):

A modeling analysis was performed for the proposed new boiler using EPA's AERMOD model (ver. 11103), AERMET (ver. 11059 with Honolulu International Airport data, and AERMAP (ver. 11103) with USGS NED data. The BPIP model was used to generate appropriate building dimensions for input into AERMOD. Five (5) years (2005 – 2009) of meteorological data from Honolulu Airport were used in the 1-hour NO_2 and SO_2 analyses. One year (2009) of Honolulu meteorological data were used for the other criteria pollutants and averaging times. The 1-hour NO_2 and SO_2 model outputs were divided by 1.88 and 2.616, respectively, to convert from $\mu g/m^3$ to parts per billion (ppb). The results were combined with CY 2010 DOH monitoring data to produce final estimates for comparison with the ambient air quality standards. Also note that the proposed stack will be equipped with a rain cap, thus, an exit velocity of 0.001 m/s was used in the modeling in accordance with EPA guidelines.

Pollutant	Averaging Period	Model Result	Background Concentration	Total Concentration	SAAQS	Percent of SAAQS
SO_2	1-hr	34.0	17	51.0	75	68.00
	3-hr	67.7	31.4	99.1	1,300	7.62
	24-hr	28.9	10.5	39.4	375	10.51
	Annual	18.2	2.6	20.8	80	26.00
NO_2	1-hr	65.0	26	91.0	100	91.00
	Annual	35.5	5.6	41.1	70	58.71
PM_{10}	24-hr	6.43	59	65.4	150	43.60
	Annual	4.04	15.5	19.5	50	39.00
$PM_{2.5}$	24-hr	3.26	11.8	15.1	35	43.14
	Annual	2.05	4.3	6.4	15	42.67
CO	1-hr	75.3	1,832	1,907	10,000	19.07
	8-hr	41.5	1,145	1,197	5,000	23.94

Notes:
1. All concentrations are in $\mu g/m^3$ except for the 1-hr SO_2 and 1-hr NO_2, which are in ppb.
2. Background data from Kapolei monitoring station (CY 2010).

Significant New Permit Conditions:

1. The 400 HP Superior boiler is subject to the provisions of the following federal regulations:

   a. 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), Subpart A, General Provisions;
   b. 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), Subpart Dc, Standards of Performance for Small Industrial – Commercial – Institutional Steam Generating Units;
   c. 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart A, General Provisions; and
   d. 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories, Subpart JJJJJJ, National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers.

2. The permittee shall not discharge or cause the discharge into the atmosphere from the 400 HP Superior boiler in excess of the following emission rate:

Pollutant	Emission Limit (3-hr Avg.)
PM	0.03 lb/MMBtu

3. The two (2) 400 HP boilers may not be operated simultaneously at any given time.

4. The boilers shall be fired on either fuel oil no. 2 with a maximum sulfur content not to exceed 0.05% by weight, or synthetic natural gas. The fuel oil sulfur limit shall apply at all times, including periods of startup, shutdown and malfunction.

5. The combined fuel oil no. 2 usage for the two (2) boilers shall not exceed 670,000 gallons in any rolling twelve (12) month period.

Conclusion and Recommendation:

Recommend issuing an Initial Covered Source Permit (CSP) No. 0024-04-C since this facility should continue to comply with all State and Federal laws, rules, regulations, and standards with regards to air pollution, subject to the significant permit conditions shown above. A 30-day public comment period and 45-day EPA review period is also required. Noncovered Source Permit (NSP) No. 0024-03-N issued on September 17, 2009 will be closed upon issuance of CSP No. 0024-04-C.

Reviewer : Darin Lum
Date: 4/2012