

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE

APPLICATION PROCESSING AND CALCULATION

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PERMIT TO OPERATE EVALUATION

Applicant name: Aerocraft Heat Treating Co. Inc. (FACILITY ID# 23752)

Mailing address: 15701 Minnesota Ave.
Paramount, Ca 90723

Equipment Location: 15701 Minnesota Ave.
Paramount, Ca 90723

EQUIPMENT DESCRIPTIONS:

APPLICATION NO. 531176

INTERNAL COMBUSTION ENGINE, GENERAC POWER SYSTEMS, MODEL 4.3GN, NATURAL GAS FIRED, SIX CYLINDERS, NATURALLY ASPIRATED, RATED AT 56 B.H.P WITH A THREE WAY CATALYTIC CONVERTER, DCL AMERICA, MINE-X MODEL DC44-2 AND AN AIR FUEL RATIO CONTROLLER, DRIVING AN EMERGENCY ELECTRICAL GENERATOR

APPLICATION NO. 531175

RECLAIM/TITLE V De MINIMIS SIGNIFICANT REVISION

PERMIT CONDITIONS: (SEE SAMPLE PERMIT)

BACKGROUND:

Aerocraft Heat Treating Co. Inc. operates a metal heat treating facility in Paramount. It is a Title V and Reclaim Facility (Facility ID# 23752).

This application was filed on December 20, 2011 as directed by Notice to Comply #D28684 dated November 4, 2011. The engine will be used as a natural gas fired emergency stand-by ICE driving an electrical generator.

This Title V/Reclaim modification is considered as a "de minimis significant revision" to their Title V Permit.

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PROCESS DESCRIPTION:

The Generac Power Systems ICE will be powering an electrical generator.

EMISSIONS CALCULATIONS:

ASSUMPTIONS:

1. Operating Schedule: 50 hours/yr max (Maintenance and Testing)
2. Max Fuel Consumption = 603.00 cu. ft./hr
3. Emission Controls: Catalytic Converter and Air/Fuel Ratio Controller
4. Emission Factors (Uncontrolled): NO_x = 8.6 g/bhp-hr
CO = 11.31 g/bhp-hr
VOC = 1.17 g/bhp-hr
5. Emission Factors (Controlled) Manufacturer Guarantee: NO_x <1.5 g/bhp-hr
CO <2.0 g/bhp-hr
VOC <1.5 g/bhp-hr
6. SO_x Emission Factor (SCAQMD fee form B2): 0.6 (lb/unit)
7. PM Emission Factor (SCAQMD fee form B2): 10 (lb/unit)

EMISSIONS FORMULAS

NO_x, ROG, CO, PM

A. Emissions as a function of gr/bhp-hr

$$\text{Emissions} = \text{gr/bhp-hr} * 1 \text{ lb}/454 \text{ gr} * \text{hp rating}$$

SO_x

B. Emissions as a function of lb/MMCF

$$\text{Emissions} = \text{fuel rate} * \text{lb}/\text{mmcf} * (1 \text{ mmcf}/1000000 \text{ ft}^3)$$

C. NSR 30 Day Average

$$30 \text{ day average} = \text{lb}/\text{hr} * \text{hr}/\text{dy} * 4.33 \text{ wk}/\text{mon} * \text{dy}/\text{wk} * (1 \text{ mon}/30 \text{ day})$$

$$\text{Lb}/\text{yr} = \text{lb}/\text{hr} * \text{dy}/\text{wk} * \text{wk}/\text{yr}$$

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UNCONTROLLED EMISSIONS

Criteria Pollutant	lb/hr	lb/day	30 day average (based on 50 hrs/year)	lb/yr (based on 200 hrs/year)
NOx	1.06	1.06	0.15	212.16
ROG	0.19	0.19	0.03	37.00
CO	1.40	1.40	0.20	279.01
SOx	0.00	0.00	0.00	0.07
PM10	0.01	0.01	0.00	1.21

CONTROLLED EMISSIONS

Criteria Pollutant	lb/hr	lb/day	30 day average (based on 50 hrs/year)	lb/yr (based on 200 hrs/year)
NOx	0.19	0.19	0.03	37.00
ROG	0.19	0.19	0.03	37.00
CO	0.25	0.25	0.04	49.34
SOx	0.00	0.00	0.00	0.07
PM10	0.01	0.01	0.00	1.21

RULES EVALUATION:**Rule 212 - Standard for Approving Permits**

Paragraph 212(c)(1) 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. According to the website geodistance.com the nearest school, Westle Gaines Elementary, is approximately 1,750 feet from Aerocraft's property line. A 30-Day Public Notice is not required under this paragraph.

Paragraph 212(c) (2) The equipment will not result in on-site emission increasing exceeding the daily maximum emissions as specified in the table in Rule 212(g). Therefore, a 30-day public notice period will not be required under this paragraph.

Paragraph 212(c)(3) Public notice will not be required under this paragraph. See Rule 1401 evaluation section.

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Rule 401- Visible Emission: No visible emission is expected if the equipment is well maintained and properly operated. Therefore, compliance is expected.

Rule 402- Nuisance: The equipment is not expected to emit odorous emissions.

Rule 404 – Grain loading from the engine expected to comply.

Rule 1110.2 – Exempt per section (h)(2).

Rule 1303(a)-BACT: BACT for an I.C Engine, Stationary, Spark Ignition is shown below:

Subcategory/	Rating/Size	NMHC or VOC	NOx	NOx + NMHC ₂	SOx	CO	PM
Spark Ignition 6)	All	VOC: 1.5 grams/bhphr (10-20- 2000)	1.5 grams/bhphr (10-20- 2000)		Natural Gas. See Clean Fuels Policy in Part C of the BACT Guidelines (10-20- 2000)	2.0 grams/bhp- hr (10-20- 2000)	Natural Gas. See Clean Fuels Policy in Part C of the BACT Guidelines (10-20- 2000)

The Engine is equipped with a 3-way catalytic converter and an air/fuel ratio controller. The facility has received a guarantee from the catalyst manufacturer that these add-on emission controls will bring the engine's emissions below current BACT limits.

Rule XIII -Modeling: The engine is exempt from modeling for being emergency equipment, per 1304 (a)(4).

Rule XIII -Offsets: The engine are exempt from offsets for being emergency equipment, per 1304 (a)(4).

Rule 1401- New Source Review of Toxic Air Contaminants: No risk assessment is required because Emergency IC Engines operated less than or equal to 200 hours per year are exempt under section 1401(g)(1)(F).

Rule 2005 - New Source Review for Reclaim: Facility has enough allocation credits. Exempt from modeling.

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Rule 2012 – Engine is a process unit. The equipment is allowed to use an emission factor based on BACT NOx limit. See below:

Conversion Factors For Natural Gas I.C Engines:

$$\text{g/bhp-hr} * 77.60 = \text{ppmv@15\% O}_2$$

$$\text{lb/mmscft} * 0.26 = \text{ppmv@15\% O}_2$$

$$1.5 \text{ g/bhp-hr} * 77.60 / 0.26 = 447.7 \text{ lb/mmscft}$$

$$\text{EF} = 448 \text{ lb/mmscft}$$

Reg XXX - Title V Permits: Aerocraft has applied for a “de Minimis Significant Permit Revision.” Therefore, EPA 45-day review is required.

CONCLUSIONS AND RECOMMENDATIONS:

Based on the evaluation contained herein, the subject equipment will comply with all of the District’s rules and regulations; therefore, I recommend the permit to operate be issued to this equipment.