SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING AND COMPLIANCE DIVISION

APPLICATION PROCESSING AND CALCULATIONS

Date: 9-30-09
Appl#:See Below
Processor: KKM
Reviewer: AO

EVALUATION FOR PERMIT TO CONSTRUCT

COMPANY NAME
COMPANY NAME

AEIS NUMBERS:
AEIS NUMBER

PERMITEE/OPERATOR
SAME AS FORM 400A

EQUIPMENT LOCATION
SAME AS FORM 400A

Applications(s):

See Below

EQUIPMENT DESCRIPTION

APPLICATION NO. 496806

APPLICATION FOR SIGNIFICANT TITLE V FACILITY PERMIT REVISION

APPLICATION NO. 496805

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL P9390GSI, NATURAL GAS FIRED, 16 CYLINDER, TURBOCHARGED AND AFTERCOOLED, 2117 BHP, WITH A CATALYTIC CONVERTER, MIRATECH, MODEL IQ, AND AIR-TO-FUEL RATIO CONTROLLER, DRIVING AN EMERGENCY ELECTRIC GENERATOR.

CONDITIONS (See Sample Permit)

BACKGROUND

EMWD, Perris, id#7417, is an existing Title V facility. The applicant filed applications No. 496805, and 496806, on March 3, 2009, for permits to construct an internal combustion engine which will be used to an emergency electric generator, and to revise the Title V facility Permit.

PROCESS DESCRIPTION

EMWD provides essential public services to the general population. The proposed engine is used to drive an emergency electric generator at the sewage treatment plant. The proposed operating schedule is 1.0 hr/day, 1 day/wk, 50 wk/yr, and 50 hr/yr for testing and maintenance.

The exhaust from the natural gas fired engine will be equipped with an air-to-fuel ratio controller, and non-selective catalytic converter. The catalyst is manufactured by Miratech, and the time of writing this evaluation the air-to-fuel ratio controller has not been specified.

EMISSIONS

The following VOC, NOx, CO, SOx and PM10 emission rates were estimated based on the current BACT limits and an operating schedule 1.0 hr/day, 1 day/wk, 50 wk/yr, and 50 hr/yr.

Data

Variable		Units	Reference
Engine rating	2117	bHP	
Conversion Factor	454	g/lb	
BTU Rating	1050	btu/scf	Natural Gas
Emission Factor			
Nox	1.50	g/bhp-hr	Current BACT
CO	2.00	g/bhp-hr	Current BACT
VOC	1.00	g/bhp-hr	Subpart JJJJ
PM10	10.00	lb/mmscf	AQMD AER
SOX Emiss. Rate	0.60	lb/mmscf	AQMD AER
Schedule	1	hr/day	
	1	day/wk	
	50	wk/yr	
	50	day/yr	
	50	hr/yr	

Calculations:

NOx Emissions

=[Emission Factor]x[Engine rating]/[Conversion Factor}

=[1.50 g/bhp-hr]x [2117 bHP] / [454 g/lb]

=[6.99 lb/hr]

=[6.9945 lb/day] (@ 1.0 hr/day)

=[29.14 lb/month] (@1.0 day/wk x 50.0 wk/yr/12 mn/yr)

Applications: 496805, and 496806.

=[0.97 lb/day] (30 day average)

CO Emissions

=[Emission Factor]x[Engine rating]/[Conversion Factor}
=[2.00 g/bhp-hr]x [2117 bHP] / [454 g/lb]
=[9.33 lb/hr]
=[9.33 lb/day] (@1.0 day/wk x 50.0 wk/yr/12 mn/yr)
=[38.86 lb/month] (@ 0.0)
=[1.30 lb/day] (30 day average)

VOC Emissions

=[Emission Factor]x[Engine rating]/[Conversion Factor}
=[1.00 g/bhp-hr]x [2117 bHP] / [454 g/lb]
=[4.66 lb/hr]
=[4.66 lb/day] (@ 1.0 hr/day)
=[19.43 lb/month] (@1.0 day/wk x 50.0 wk/yr/12 mn/yr)
=[0.65 lb/day] (30 day average)

pm10 Emissions

=[Emission Factor]x[Fuel flow rate]
=[10.00 lb/mmscf]x [0.0131 mmscf/hr]
=[0.13 lb/hr]
=[0.13 lb/day] (@ 1.0 hr/day)
=[0.55 lb/month] (@1.0 day/wk x 50.0 wk/yr/12 mn/yr)
=[0.02 lb/day] (30 day average)

SOX Emissions

=[Emission Factor]x[Fuel flow rate]
=[0.60 lb/mmscf]x [0.0131 mmscf/hr]
=[0.0079 lb/hr]
=[0.0079 lb/day] (@ 1.0 hr/day)
=[0.03 lb/month] (@1.0 day/wk x 50.0 wk/yr/12 mn/yr)
=[0.0010 lb/day] (30 day average)

EVALUATION

Rule 212

No public notice is required because there is no school located within 1000 feet of this facility, and the increase in criteria pollutants is less than the limits in section (g). Therefore, the proposed project complies with Rule 212.

Rule 401

Based on experience with similar equipment, each engine is expected to comply with the visible emission limits.

Rule 402

Based on experience with similar equipment, nuisance complaints are not expected.

Rule 404

Based on experience with similar equipment, compliance with this Rule is expected.

Rule 431.1

Since this engine will be fired with natural gas which is supplied from a public utility, compliance with the sulfur limits is expected.

Rule 1110.2

This equipment is exempt from subsection (d) by subsection (h)(2). Permit conditions are required to ensure compliance with subsection (h)(2), and to provide the final specification for the air-to-fuel ratio controller.

REGULATION XIII - New Source Review

The proposed engine meets Rule 1303(a) BACT because the manufacturer of the catalyst has guaranteed that the NOX, VOC, and CO limits are less than 1.5 g/bhp-hr for Nox , 2.0 g/bhp-hr for CO, and 1.5 g/bhp-hr for VOC. The engine is also exempt from offset and modeling requirements per 1304(a)(4).

Rule 1401

No risk assessment is required because each engine is exempt from this Rule by section (g)(1)(F).

Rule 1470

Not applicable to natural gas fired engines.

Regulation XXX

Since the proposed installation of new equipment is subject NSPS, and NESHAP, the proposed revised facility permit is a "Significant Permit Revision."

Therefore, a public notice is required.

40 CFR 60 Subpart JJJJ

§60.4233(e) Compliance can be expected.
§60.4237 Compliance can be expected.

40 CFR 63 Subpart ZZZZ

§63.6590(c)
This equipment must comply with the requirements of 40 CFR Subpart JJJJ. Compliance can be expected.

RECOMMENDATION

Since the proposed new engine is equipped with a Miratech Catalytic converter, it is expected to comply with Rules 1303, and the proposed permit limits.

Therefore, application No. 496805, is recommended for approval to issue permits to construct with the proposed permit descriptions and conditions, and a revision to the Title V Facility Permit is proposed under 496806, subject to completion of the public notice.

APPENDIXES

A. NSR Transaction Report