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| ENGINEERING EVALUATION REPORT |
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| PLANT NAME | Aspect Communications |
| APPLICATION NUMBER | 12727 |
| PLANT NUMBER | 17075 |
| DATE | 17 October 2005 |

1. BACKGROUND

This application is for a fixed-location diesel genset to supply power in emergency situations for Aspect Communications facility located at 1310 Ridder Park Drive in San Jose. A description of the source is as follows:

S-1 Emergency Backup Generator, Diesel Fired, 1500 KW, 1124 BHP, 1860 cu in, Komatsu Model SA12V140-1, 2004 Model Year

This engine generator set is a new unit and therefore is subject to NSR as well as the CARB Stationary Diesel ATCM. The engine will be subject to the more stringent of the limitations of BACT, and the Diesel ATCM. The certified diesel PM emission factor 0.1 g/bhp-hr. Since the permit application was submitted on June 7, 2005 the toxic risk will be evaluated based on District toxic risk management policy rather than Reg 2-5 (Toxic NSR, adopted June 15, 2005). Therefore the engine will be permitted to operate for maintenance and testing at the lesser of either of the following:

- a) 50 hours per year, or
- b) At the number of hours per year producing a maximum risk of 10 in a million.

The engine will be permitted to operate for an unlimited number of hours during emergency conditions. The Orchard School at 921 Fox Lane is within 1000 ft of the proposed genset, therefore a Water's Bill public notice will be required..

2. TOXIC EVALUATION

S-1 Backup Generator, Diesel Fired, 1124 BHP: Toxic emissions from this source is PM-10 which is used as a surrogate for all other emitted toxic air contaminants. According to the applicable District Toxic Risk Management Policy prior to the formal adoption of Regulation 2 Rule 5 (Toxic NSR), the engine met TBACT with an emission factor less than 0.15 g/bhp-hr. Therefore the maximum allowable risk is 10 in a million. Carcinogenic risks were estimated for the maximally exposed residential and industrial receptors. The engine will be permitted for reliability and maintenance to the lesser of either 50 hours/year (as allowed by the CARB ATCM) or as allowed up to a risk of 10 in a million.

Our toxic analysis used the following parameters in the development of the risk estimates for this engine:

TABLE 1 RISK MODELING PARAMETERS

| PARAMETER | S-25 GENSET |
|-------------------------------|--------------------------------------|
| Met Data | ALV003RA.asc |
| Exhaust Flow | 6,250 cfm |
| Stack Height | 12' (total height) |
| Operating Hours | 50 hr/yr |
| Nearest Residence | See aerial layout |
| Distance to Prop Line | See aerial layout |
| PM10 Emission Factor (>TBACT) | 0.1 g/hp-hr (TBACT is 0.15 g/bhp-hr) |

TABLE 2 TOXIC RISK SUMMARY

| RISK TYPE | RESIDENT | INDUSTRIALE | ORCHARD ELEMENTARY |
|---------------|-------------------|------------------|--------------------|
| Cancer Risk | 0.95 in a million | 7.7 in a million | 0.1 |
| Non-Cancer HQ | 0.0006 | 0.005 | 0.003 |

The residential risk is less than 1 in a million-an insignificant risk level. The hazard quotient is less than 1.0, which is acceptable according to District Toxic Risk Management Policy. The maximum industrial risk is less than 10 in a million. Since the engine meets TBACT, this risk level is acceptable. This engine will be permitted to operate for 50 hours/year for reliability related operation. This engine generator S-1 complies with District Toxic Risk Management Policy, which was applicable at the time the application was submitted.

3. EMISSION CALCULATIONS

The proposed engine is CARB Certified (Executive Order U-R-5-45).

TABLE 3 DIESEL ENGINE EMISSION FACTORS

| POLLUTANT | ENGINE, per CARB Exec U-R-5-45 (g/bhp-hr) | EPA Tier I Standards (g/bhp-hr) | BACT Standards (g/bhp-hr) |
|-----------|---|---------------------------------|---------------------------|
| Diesel PM | 0.1 | 0.4 | 0.15 (TBACT) |
| CO | 0.7 | 8.5 | 2.75 (BACT2) |
| NMHC | 0.7 | 1.0 | 1.5 (BACT2) |
| NOx | 6.2 | 6.9 | 6.9 (BACT2) |

Note: Factors used shown in **bold**

S-1 Backup Generator, 1124 BHP: The following data was derived from the diesel exhaust emissions per ISO 8178 D-2 (five) Cycle testing.

Operating Hours: 50 hr/yr
 Engine HP: 1124 bhp

PM-10 Emissions: [1124 bhp][50 hr/yr][0.1* g/bhp-hr][lb/454 g] = 12.4 lb/yr (0.034 lb/day annual average)
 Highest day emissions = [[12.4 lb/yr]/[50 hr/yr]]*24 hr/day= 5.9 lb/day

NOx Emissions: [1124 bhp][50 hr/yr][6.2* g/bhp-hr][lb/454 g] = 767.5 lb/yr (2.1 lb/day annual average)
 Highest day emissions = [[767.5 lb/yr]/[50 hr/yr]]*24 hr/day= 368.4lb/day

CO Emissions: [1124 bhp][50 hr/yr][0.7* g/bhp-hr][lb/454 g] = 86.7 lb/yr (0.24 lb/day annual average)
 Highest day emissions = [[86.7 lb/yr]/[50 hr/yr]]*24 hr/day= 41.6 lb/day

TOC Emissions: [1124 bhp][50 hr/yr][0.7* g/bhp-hr][lb/454 g] = 86.7 lb/yr (0.24 lb/day annual average)
 Highest day emissions = [[86.7 lb/yr]/[50 hr/yr]]*24 hr/day= 41.6 lb/day

SO₂ Emissions: Basis: Diesel S Content: 500 ppm S (wt)
 Diesel Usage = [50 hr/yr][47.6 gal/hr] = 2380 gal/yr
 Annual SO₂ = [2,380 gal/yr][6.11 lb/gal][500 # S/1E6 # diesel]
 [mole S/32.06 # S][mole SO₂/mole S][64.1 lb SO₂/mole] = 14.5 lb/yr SO₂
 Daily average: 0.04 lb/day
 Highest Day Emission: [[14.5 lb/yr]/[50 hr/yr]]*24 hr/day= 7 lb/day

*Factors taken from CARB Executive Order U-R-5-45 Diesel Generator specifications.

4. EMISSIONS SUMMARY

The emissions calculated in Section 3, above are tabulated as follows.

TABLE 4 ANNUAL EMISSIONS SUMMARY

| POLLUTANT | Annual Emissions (lb/yr) | Annual Average (lb/day) | Tons/Yr | Highest Day (lb/day) |
|------------------|-------------------------------------|------------------------------------|----------------|---------------------------------|
| PM10 | 12.4 | 0.034 | 0.006 | 5.9 |
| NOx | 768 | 2.1 | 0.4 | 368 |
| CO | 86.7 | 0.24 | 0.043 | 41.6 |
| TOC | 86.7 | 0.24 | 0.043 | 41.6 |
| SO ₂ | 14.5 | 0.04 | 0.007 | 7 |

5. PERMIT REQUIREMENTS/DISCUSSION OF EXEMPTION

None.

6. DETERMINATION OF COMPLIANCE

A. Regulation 1 – General Provisions and Definitions

§1-301: Prohibits discharging emissions in quantities that cause injury, detriment, nuisance, or annoyance. The toxic evaluation addresses these issues.

B. Permits – General Requirements, Regulation 2 Rule 1

The source is located within 1000 feet of the nearest school (Orchard Elementary School), and is therefore subject to the public notification requirements of 2-1-412.

C. Permits – New Source Review, Regulation 2 Rule 2 (dated 10/7/98)

1. **BACT:** BACT is required if the highest daily emissions (reliability related operations) exceeds 10 lb. The 10 lb/day threshold is exceeded for NOx, CO, and POC. The engine meets BACT2 for these pollutants. Hence the engine complies with BACT requirements for NOx, Co and POC. A comparison of BACT against the abated emission factors is shown on Table 3, above.

The engine also meets TBACT for diesel particulate.

2. **Offset Requirements:** §2-2-303: Since emission levels are far below offset trigger levels (50 tpy), offsetting thresholds are not triggered and therefore offsets are not applicable for this project.

3. **Prevention of Significant Deterioration:** §2-2-304: District PSD requirements apply to emissions of SO₂, NO₂, CO, and PM₁₀. Since this facility is not a major facility and the facility's cumulative increase does not exceed 15 ton/yr, the PSD requirements do not apply.

D. Regulation 3 – Fees

Aspect Communications has complied with fee requirements for this project.

E. Particulate Matter and Visible Emissions, Regulation 6

1. Section 301 prohibits for more than 3 minutes per hour, visible emissions as dark or darker than Ringelmann 1 or equivalent opacity. S-1 is expected to comply with this requirement.

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2. Section 305 prohibits emissions of visible particles from causing a nuisance on property other than the operators. S-1 is expected to easily comply with this standard.
3. Section 310 limits the particulate concentration in exhaust gases to 0.15 gr/dscf. At the exhaust rate of 6,250 cfm, on a highest day emissions basis, the resulting concentration in the exhaust would be 0.005 grain/scf. Hence this engine complies with this requirement.

F. NSPS/NESHAPS

At this time there is no New Source Performance Standard or NESHAP for stationary emergency backup diesel engines.

G. CEQA

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA.

H. Statewide Stationary Diesel Engine ATCM

This engine complies with all applicable sections of the ATCM, including (e)(1) Fuel Requirements, (e)(2)(F) Emission Requirements, (e)(4) Recordkeeping, Reporting and Monitoring. The engine also complies with EPA Tier I requirements for engines over 750 hp of model year (MY) 2004. The applicable requirements will be written into the permit conditions.

7. CONDITIONS

Recommend the following conditions for S-1 Emergency Backup Generator, Diesel Fired, 1124 BHP, Komatsu SA12V140-1.

1. The owner or operator shall operate this emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits does not have an annual hourly limit. Operating for reliability-related activities is limited to 50 hours per year per emergency standby engine.

(Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3))

2. The owner/operator shall operate this emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed and properly maintained.

(Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1))

3. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry. For Title V facilities, the following monthly records shall be maintained for 5 years. Log entries shall be retained on-site, either at a central location or at the engine's

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locations, and made immediately available to the District staff upon request.

- a. Hours of operation for reliability-related activities (maintenance and testing).
- b. Hours of operation for emission testing to show compliance with emission limits.
- c. Hours of operation (emergency).
- d. For each emergency, the nature of the emergency condition.
- e. Fuel usage for engine(s).

(Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, Regulation 1-441)

4. The owner or operator shall not operate this stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
 - a. Whenever there is a school sponsored activity (if the engine is located on school grounds)
 - b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session (if the engine is located within 500 feet of school grounds).

(Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1))

8. RECOMMENDATIONS

Issue permit to operate for S-1 subject to Condition # 22581

by: _____
Randy E. Frazier, P.E.
17 October 2005