

Temporary Covered Source Permit (CSP) No. 0633-02-CT Review
Initial Application No. 0633-02

Applicant: Semtex Systems dba Seacon Technologies

Equipment Description:

1. 340 tph Extec C-12 mobile crusher (serial no. 9967);
 - a. 350 HP Caterpillar diesel engine (model no. C-9, serial no. MDB01330, 18.3 gal/hr fuel rate);
 - b. Jaw crusher;
 - c. Two conveyors;
 - d. Water sprays.

2. 250 tph Extec IC-13 mobile crusher (serial no. TBD);
 - a. 440 HP Caterpillar diesel engine (model no. C-13, serial no. TBD, 22.7 gal/hr fuel rate);
 - b. Impact crusher;
 - c. One conveyor;
 - d. Water sprays.

3. 559 tph Extec E-7 power screen (serial no. 10006, with three conveyors, and powered by an exempt diesel engine); and

4. Water sprays.

Air Pollution Controls:

The water sprays were proposed to control fugitive dust near the equipment and work site. The efficiency factor for water suppression is generally 70%. However, emission factors that included controls were used if provided by EPA AP-42.

Initial Equipment Location:

UTM coordinates: Zone 4, 766,241m E; 2,291,477m N (NAD-83)
Kihei (Maui)

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Proposed Project:

This is an initial CSP application for the same equipments that were permitted under NSP No. 0633-01-NT plus a new 250 tph Extec IC-13 mobile crusher. The only other change is to remove the weld that restricted the closed side setting of the Extec C-12 mobile crusher to 3" (the maximum production rate will increase from 140 tph to 340 tph). Therefore, the equipment's capacity will be greater than 150 tph and thus be subject to NSPS Subpart OOO. All other operations will remain the same, including the 6,000 hr/yr limitation for the existing equipment. The new 250 tph mobile crusher will have a 2,912 hr/yr limitation. The equipments will operate at various locations. The applicant confirmed that only large material would be processed (they will not screen for top soil). Therefore, the emission factor for screening soil (fine screening in AP-42 was not used). The Standard Industrial Classification Code (SICC) for this facility is 1429 - Crushed and Broken Stone, Not Elsewhere Classified.

This permit review is based on the application dated November 30, 2006 and revisions dated March 13, 2007, May 2, 10, 16, 2007. The check for the application fee of \$1,000.00 for an initial non-air toxic temporary covered source permit will be processed and the receipt will be enclosed with the issued permit. NSP No. 0633-01-NT will be closed upon issuance of this CSP.

Applicable Requirements:

- Hawaii Administrative Rules (HAR) Title 11 Chapter 59
- Hawaii Administrative Rules (HAR) Title 11 Chapter 60.1
 - Subchapter 1 - General Requirements
 - Subchapter 2 - General Prohibitions
 - 11-60.1-31 Applicability
 - 11-60.1-32 Visible Emissions
 - 11-60.1-33 Fugitive Dust
 - 11-60.1-38 Sulfur Oxides from Fuel Combustion
 - Subchapter 5 - Covered Sources
 - Subchapter 6 - Fees for Covered Sources, Sections 111 -115
 - Subchapter 8 - Standards of Performance for Stationary Sources
 - 11-60.1-161 New Source Performance Standards
 - Subchapter 10 - Field Citations

40 CFR Part 60 - New Source Performance Standard (NSPS) Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants is applicable since the manufacture date of the equipments are after August 1983 and each portable crusher has a maximum capacity greater than 150 tph.

Non-Applicable Requirements:

40 CFR Part 60 - New Source Performance Standard (NSPS) Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines does not apply since the portable diesel engine is considered a 'non-road' engine as defined in 40 CFR 1068.30.

40 CFR Part 61 - National Emission Standard for Hazardous Air Pollutants (NESHAPS) does not apply since there is no standard for diesel engines or stone processing equipment.

40 CFR Part 63 - Maximum Achievable Control Technology (MACT) does not apply 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) and there is no standard for stone processing equipment.

Prevention of Significant Deterioration (PSD) does not apply 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 item 1 does not apply.

Consolidated Emissions Reporting Rule (CERR) is not applicable because emissions from the facility are less than reporting levels pursuant to 40 CFR 51, Subpart A (see **Table 1**).

Table 1 - CERR

| Pollutant | Facility Emissions (tpy) | CERR Triggering Levels (tpy) | | Internal Reporting Threshold (tpy) |
|-------------------------------------|--------------------------|---------------------------------------|---------------------------------------|------------------------------------|
| | | 1-yr Reporting Cycle (Type A Sources) | 3-yr Reporting Cycle (Type B Sources) | |
| VOC | 0.69 | ≥ 250 | ≥ 100 | ≥ 25 |
| PM | 17.99 | n/a | n/a | ≥ 25 |
| PM ₁₀ /PM _{2.5} | 11.34 | ≥ 250 | ≥ 100 | ≥ 25 |
| NO _x | 11.54 | $\geq 2,500$ | ≥ 100 | ≥ 25 |
| SO _x | 6.15 | $\geq 2,500$ | ≥ 100 | ≥ 25 |
| CO | 8.97 | $\geq 2,500$ | $\geq 1,000$ | ≥ 250 |
| HAPs (total) | 0.048 | n/a | n/a | ≥ 5 |

Also, the internal reporting requirement is to sum the individual emissions sources and if the sum of an individual pollutant exceeds the threshold limits, then annual emissions reporting is required. However, since this is a covered source, internal reporting does apply.

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 significant increase in emissions. Therefore, a BACT analysis is not required (see **Table 2**). In any event, this stone processing facility uses water sprays to control fugitive dust. Water sprays are considered BACT for other sources that have similar activities.

Synthetic Minor requirements do not apply because this facility would not be a major source (>100 tpy) if the facility operated continuously (8,760 hr/yr) at maximum capacity (see **Table 2**). The previous NSP review for application no. 0633-01 incorrectly determined that synthetic minor requirements would apply (it should have included control efficiencies).

Insignificant Activities/Exemptions:

Pursuant to HAR 11-60.1-62-(d)(4), the 99 HP Deutz diesel engine (serial no. LGK02531) that powers the Extec E-7 screen is exempt since the maximum heat input is less than 1 MMBtu/hr.

Alternative Operating Scenarios:

None proposed.

Project Emissions:

The project emissions were calculated by the consultant and checked by the Department of Health (DOH) using the diesel engine's manufacturer's data and current AP-42 emission factors for the diesel engine, stone processing, and handling/storage piles. Note that the Extec IC-13 manufacturer's emission factor for PM was not found in the application, therefore the AP-42 emission factor was used instead. Emissions from unpaved roads were not calculated since the processed material will be used on site (not imported or exported). The DOH's policy is to not include fugitive emissions from unpaved roads if the trucks are owned by another business. In **Table 2**, the maximum potential annual emissions for the facility, as permitted, were calculated using the proposed limitations with controls (6,000 hrs/yr for the existing equipment and 2,912 hrs/yr for the new Extec IC-13). The maximum production rates of the mobile crushers and power screen were provided by the manufacturer's data.

For detailed emission factors, hourly emission rates, and calculations see Appendix A of the application.

Table 2 – Potential Facility Emissions

| | Extec C-12 Crusher (tpy) ¹ | | Extec IC-13 Crusher (tpy) ² | | Extec E-7 Power Screen Fugitive ^{1,3} (tpy) | Handling / Storage Piles Fugitive ¹ (tpy) | Total w/ Limits ³ (tpy) | Signif Level (tpy) | Total 8,760 hr/yr ³ (tpy) |
|---|---------------------------------------|-----------------------|--|-----------------------|--|--|------------------------------------|--------------------|--------------------------------------|
| | DEG | Fugitive ³ | DEG | Fugitive ³ | | | | | |
| SO₂ | 3.84 | 0 | 2.31 | 0 | 0 | 0 | 6.15 | ≥40 | 12.56 |
| NO_x | 7.11 | 0 | 4.43 | 0 | 0 | 0 | 11.54 | ≥40 | 23.71 |
| CO | 5.37 | 0 | 3.60 | 0 | 0 | 0 | 8.97 | ≥100 | 18.67 |
| PM | 0.27 | 1.65 | 1.44 | 0.59 | 6.77 | 7.27 | 17.99 | ≥25 | 29.41 |
| PM₁₀/PM_{2.5} | 0.27 | 1.65 | 1.44 | 0.59 | 3.95 | 3.44 | 11.34 | ≥15 | 19.70 |
| VOC | 0.54 | 0 | 0.15 | 0 | 0 | 0 | 0.69 | ≥40 | 1.24 |
| HAPs | 0.030 | 0 | 0.018 | 0 | 0 | 0 | 0.048 | n/a | 0.098 |

Note:

1. The C-12 and E-7 emissions were based on operating 6,000 hr/yr at maximum capacity.
2. The IC-13 emissions were based on operating 2,912 hr/yr at maximum capacity.
3. All fugitive emissions include controlled emission factors (if available in AP-42) for water sprays except for handling/storage piles.

Ambient Air Quality Analysis:

An ambient air quality analysis (AAQA) was conducted for the new Extec IC-13's diesel engine (point source) to ensure compliance with state and national ambient air quality standards (SAAQS and NAAQS). The concentrations from the existing Extec C-12's diesel engine were considered to be part of background concentrations. The existing Extec E-7's diesel engine was considered exempt from permitting requirements and therefore not modeled either. The DOH made changes to the applicant's model by excluding the existing Extec C-12's diesel concentrations and used the AP-42 emission factor for PM for the Extec IC-13's diesel engine concentrations (explained in the **Project Emissions** section). The model (ISCST3 version 02035), methodology and assumptions employed in the AAQA have been determined to be consistent with State and Federal guidelines and are discussed below.

The model included regulatory default options and rural dispersion parameters.

Receptors were placed in a Cartesian grid spaced 30 meters apart. However, the highest concentration was automatically determined by ISCST3. The model in the application used the corresponding digital elevation map (DEM) with ISCST3.

The SCREEN2.ASC meteorological data is conservative and was used in the model. Since the data is incomplete, annual concentrations were calculated using the 1-hr concentrations and then multiplying the 0.2 factor. Annual concentrations also include the hourly operating restrictions.

The mobile crushers that house the diesel engines were considered for downwash effects. The dimensions of the equipment were used in the model.

Table 3 presents the proposed potential to emit emission rates and stack parameters of the diesel engine used in the AAQA. The derivation of SO₂, NO_x, CO, and PM₁₀ emission rates were mentioned in the **Project Emissions** section.

The predicted concentrations presented in **Table 4** include operating 2,912 hr/yr at maximum potential for annual concentrations. Also, using Tier 2 guidelines, a factor of 0.75 (ratio of NO_x converted to NO₂) was used. Due to high background concentrations for PM₁₀ in Kihei, Maui, 40 CFR 50, Appendix K was used to demonstrate compliance. Air Quality Data Summary: Maui showed two (2) exceedances when the background concentrations from 2003 to 2005 were added to the model's highest concentration (in µg/m³) $155 + 56 = 211$ and $119 + 56 = 175$ for the 24-hr average. Since the 155 µg/m³ background concentration was flagged as an exceptional event due to agricultural tilling, it was excluded. Therefore, there was only one (1) exceedance for 3 years. Since Appendix K allows one (1) exceedance per year, this facility is in compliance for the 24-hr average for PM₁₀. The highest background average that showed compliance (80 µg/m³) was used in **Table 4**.

Based on these assumptions, the facility shows compliance with SAAQS and NAAQS for SO₂, NO₂, CO, and PM₁₀. No results were provided for Pb and H₂S because they were assumed to be negligible. For details, see **ENCLOSURE 1**.

Table 3
Source Emission Rates and Stack Parameters for Air Modeling

| SOURCE | | EMISSION RATES | | | | | STACK PARAMETERS | | | | |
|-----------|-----------|--------------------------|--------------------------|-------------|---------------------------|-------------|------------------|-------------|-------------------|-------------|------|
| Equipment | Stack No. | SO ₂ (g/s) | NO _x (g/s) | CO (g/s) | PM ₁₀ (g/s) | Pb (g/s) | Height (m) | Temp (K) | Velocity (m/s) | Diam (m) | |
| C-13 DE | short | 1 | 0.200 | | 0.311 | 0.125 | 0.000 | 9 | 769 | 71 | 0.15 |
| | annual | 1 | 0.067 | 0.096 | | 0.041 | 0.000 | | | | |

**Table 5
Predicted Ambient Air Quality Impacts**

| AIR POLLUTANT | AVERAGING TIME | IMPACT ($\mu\text{g}/\text{m}^3$) | BACKGROUND ¹ ($\mu\text{g}/\text{m}^3$) | TOTAL IMPACT ($\mu\text{g}/\text{m}^3$) | AIR STANDARD ($\mu\text{g}/\text{m}^3$) | PERCENT STANDARD | IMPACT LOCATION (x,y,z) ² |
|------------------|-----------------------|--|---|--|--|---------------------|---|
| SO ₂ | 3-Hour | 239 | 64 | 303 | 1300 | 23% | 766282, 2291489, 11 |
| | 24-Hour | 89 | 21 | 110 | 365 | 30% | 766282, 2291489, 11 |
| | Annual ³ | 22 | 2 | 24 | 80 | 30% | 766282, 2291489, 11 |
| NO ₂ | Annual ^{3,4} | 32 | 9 | 41 | 70 | 59% | 766282, 2291489, 11 |
| CO | 1-Hour | 523 | 1710 | 2233 | 10000 | 22% | 766282, 2291489, 11 |
| | 8-Hour | 182 | 1055 | 1237 | 5000 | 25% | 766312, 2291489, 12 |
| PM ₁₀ | 24-Hour | 56 | 80 | 136 | 150 | 91% | 766282, 2291489, 11 |
| | Annual ³ | 14 | 25 | 39 | 50 | 78% | 766282, 2291489, 11 |
| Pb | Calendar Quarter | 0 | -- | 0 | 1.5 | 0% | -- |
| H ₂ S | 1-Hour | 0 | -- | 0 | 35 | 0% | -- |

Note:

1. The background concentrations are taken from the 2005 Hawaii Air Quality Data, Kihei for PM₁₀ and Kapolei monitoring station for all others.
2. The impact locations are at the UTM coordinates and elevation in meters, respectively.
3. The Annual concentrations are based on the permitted operating limitations.
4. Using EPA Tier 2 factor, 0.75 NO_x is assumed to convert to NO₂. The factor was included with the emission rate.

Averaging factors are: 0.9, 0.7, 0.4, and 0.2 for 3hr, 8hr, 24hr, and annual averaging periods respectively.

Other Issues:

None.

Significant Permit Conditions:

1. Standard DE conditions;
2. Standard stone processing conditions;
3. 6,000 hr/yr limit for the Extec C-12 and E-7 (to meet SAAQS);

Changes since NSP No. 0633-01-NT:

4. Remove the condition to weld the Extec C-12 jaw to 3" closed side setting;
5. Change the production capacity from 140 tph to 340 tph;
6. Add Extec C-13 with a 2,912 hr/yr limit (to meet SAAQS);
7. Add NSPS OOO requirements; and
8. Change from a noncovered source permit to a covered source permit.

Conclusion and Recommendation:

In conclusion, it is the Department of Health's preliminary determination that the facility will comply with all State and Federal laws, rules, regulations, and standards with regards to air pollution. This determination is based on the application submitted by Semtex Systems. Therefore, an initial temporary covered source permit for Semtex Systems is recommended subject to the following:

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