

CSP 0219-01-CT

TEMPORARY COVERED SOURCE AIR PERMIT (CSP) ENGINEERING REVIEW
 MINOR MODIFICATION APPLICATION NO. 0219-06

REVIEWER PR; PREVIOUS REVIEW BY MR.
DATE 09.25.2008

FACILITY Isemoto Contracting Co., Ltd.
 Two (2) 357 TPH Portable Stone Processing Plants with One (1) 250 HP Diesel Engine, One (1) 125 TPH Stone Processing Plant, and One (1) 400 kW Diesel Engine Generator, One (1) 500 kW Diesel Engine Generator, and One (1) 725 kW Diesel Engine Generator

LOCATION Various Temporary Sites, State of Hawaii
 Initial Location for proposed 125 TPH Plant and 725 kW DEG
 Kukio Project, North Kona, Big Island
 UTM: 2,192,850 m North and 813,900 m East

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EQUIPMENT 357 Stone Processing Plant
 One (1) 357 TPH Jaw Crusher, Pioneer, model 3042, ID no. UH-3942;
 One (1) 430 TPH Grizzly Feeder, Minyu, model 46" x 16", ID no. 40-016;
 One (1) 415 TPH Cone Crusher with Triple Deck Screen (70 ½" x 48"), Pioneer, model PH44S, ID no. 401605;
 One (1) 357 TPH Jaw Crusher with Grizzly Feeder, Pioneer, model 3042 JVDH-D2853, ID no. 2046-00 with One (1) 250 HP Caterpillar Diesel Engine, model 3306, ID no. 64Z30601;
 One (1) 415 TPH Cone Crusher with Triple Deck Screen (75" x 48"), Pioneer, model 44616F3CC-D3198, ID no. 10169;

125 TPH Stone Processing Plant
 One (1) Thunderbird II Portable Belt Feeder, model 3613BFHP-D3946, ID no. 2201-03;
 One (1) 384 TPH Thunderbird II Triple Deck Screen, 5' x 16', model 5163-F3-O-D1917, ID no. 2203-03;
 One (1) 125 TPH Vertical Shaft Impact Crusher, model 65 VSI, ID no. 06514603;

Diesel Engine Generators
 One (1) 400 kW Detroit Diesel Engine Generator, model 8V92T, ID no. 80837416;
 One (1) 500 kW Caterpillar Diesel Engine Generator, model 3412-DITT, ID no. 81Z05409;
 One (1) 725 kW Caterpillar Diesel Engine Generator, model 3412, ID no. 7AJ01655;

PROPOSAL MODIFICATION

The applicant proposes a minor modification of covered source permit.

The permitted 500 kW Caterpillar diesel engine developed a serious oil leak and will be replaced immediately with an identical diesel engine with a different serial number.

This modification concerns the permitted 1983 500 kW Caterpillar diesel engine model 3412-DITT, serial number 81Z4731.

The broken engine will be replaced with an identical engine: 1986 500 kW Caterpillar diesel engine, model 3412-DITT, serial number 81Z05409.

Exhaust temperature, flow, direction, diameter, and height are identical to the existing permitted engine. Fuel consumption is identical to the existing permitted engine.

Emissions are identical to the existing permitted engine, and there are no new emissions.

PROCESS BACKGROUND

The operation of the proposed 125 TPH stone processing plant would consist of feeding the portable belt feeder by wheel loader. Raw material (rock) dumped by the wheel loader enters the feeder which moves rocks to the Thunderbird II 3 deck screen. The Thunderbird screen is fitted with various sizes of screens, most typically 3/4" (top deck), 3/8" (middle deck), and no. 4 or 1/16" (bottom deck). Rocks larger than 3/4" (or those screened by the top deck) will proceed to the Canica Vertical Shaft Impact crusher. Rocks discharging from the Canica VSI crusher will fall on an under crusher conveyor which will then transfer to a return conveyor. The return conveyor goes back to the screen feed conveyor which feeds this recirculating material back to the screen again.

Rocks smaller than 3/4", but larger than 3/8" (rocks falling between the top and second decks of the screen) may also be directed to the Canica crusher or proceed to a finished product conveyor and then to stockpile. Rocks smaller than no. 4 will drop on to an underscreen conveyor and then be transferred to a radial stacker conveyor to stockpile. Rocks between 3/8" to no. 4 will also be discharged to conveyor and stockpile.

The operation of either (one or the other, i.e., cannot operate together) existing 357 TPH stone processing plants consists of rocks being dumped into the grizzly feeder by wheel loader. From the feeder, the material is moved directly into the primary Pioneer jaw crusher. From the jaw crusher, the rocks are transported via conveyor to a 3 deck screen. The screens most commonly will be fitted with a 3" screen on the top deck (largest sized screen opening to be used), 1 1/2" screen on the middle deck, and a 1 1/2" screen on the bottom deck (only two decks are utilized). Rocks larger than 3" will proceed to the cone crusher. Rocks discharging from the cone crusher will fall on an under crusher conveyor which will then transfer to a return conveyor. The return conveyor goes back to the screen feed conveyor which feeds this recirculating material back to the screen again.

Rocks smaller than 3" but larger than 1 1/2" (rocks falling between the top and second decks of the screen) may also be directed to the cone crusher or proceed to a finished product conveyor and then to stockpile. Rocks smaller than 1 1/2" drop onto an under screen conveyor, and then are transferred to a finish product stockpile.

On some jobs, the material crushed by the jaw crusher will be transported directly onto a stockpile via conveyor without going through the secondary cone crusher and screen.

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

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, Noncovered Sources, and Agricultural Burning

11-60.1-111 Definitions

11-60.1-112 General fee provisions for covered sources

11-60.1-113 Application fees for covered sources

11-60.1-114 Annual fees for covered sources

Subchapter 8, Standards of Performance for Stationary Sources

11-60.1-161(27) Subpart OOO, Standards of Performance for Non-metallic Mineral Processing Plants

Subchapter 10, Field Citations

PROPOSED

This source is **subject to NSPS** (New Source Performance Standards).

40 CFR Part 60, Subpart OOO - Standards of Performance for Non-metallic Mineral Processing Plants is applicable to portable crushed stone plants with capacities greater than 150 TPH that commence construction, reconstruction, or modification after August 31, 1983. The proposed unit meets these conditions and **is subject to Subpart OOO**. At the initial location of the plant, new equipment shall be operated in combination with one of the existing 357 TPH plants, and thus is subject to NSPS OOO also.

This source is **not subject to NESHAPS** (National Emission Standards for Hazardous Air Pollutants for Source Categories) as no hazardous air pollutants are emitted at significant levels (≥ 10 TPY HAP or ≥ 25 TPY for total HAPs) and this source is not listed under 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants) or 40 CFR 63 applicable to this facility.

This source is **not subject to MACT** (Maximum Achievable Control Technology) since the source is not a major source of hazardous air pollutants (HAPS) emissions (>10 TPY single hap or >25 TPY for total haps).

This source is **not subject to PSD** (Prevention of Significant Deterioration) requirements because it is not a major stationary source as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7; (criteria air pollutant > 100 or 250 TPY as applicable).

This source is **not subject to CAM** (compliance assurance monitoring) since the proposed equipment is not classified as a major source (criteria pollutant > 100 TPY); has no pre-control device potential emissions exceeding applicable major source thresholds; nor fitted with an "active" air pollution control device; and not or not part of a facility with total emissions exceeding major source threshold.

This source is **not subject to CERR** (Consolidated Emissions Reporting Requirements) since 40 CFR Part 51, Subpart A – Emissions Inventory Reporting Requirements, determines CERR based on facility wide emissions of each air pollutant at the CERR triggering levels. The emissions do not exceed respective CERR threshold levels. As such, emissions data will not be required to be inputted into the National Emissions Inventory (NEI) database.

The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding the DOH reporting level(s). Based on current emissions, the facility **is subject to annual emissions reporting** due to *PM* and *PM10* exceeding the DOH reporting thresholds.

This modification is **not subject to BACT** (Best Available Control Technology) analysis because there are no emission increases. The applicant previously addressed BACT by proposing water sprays to be maintained and operated at the proposed plant's feeder and material drop off to stockpiles, in addition to maintaining the water truck already utilized at the facility. The applicant also previously addressed BACT for the existing plants as part of previous permit evaluations with the use of water sprays located throughout the plants and a water truck that is operated on site for spraying stockpiles and roadways during operation of the plant. The facility is maintaining use of water sprays on the existing plants and the water truck as originally proposed. BACT analysis is required for new noncovered sources and significant modifications to noncovered sources that have the potential to emit or increase emissions above significant levels.

INSIGNIFICANT ACTIVITIES (CSP) / EXEMPTIONS (NSP)

Small storage tanks will be used to store diesel no. 2. The storage tanks are exempt from the air permit requirements per HAR, Section 11-60.1-82(f)(1) because the tanks each have a capacity of less than 40,000 gallons and are not subject to any standard or other requirement pursuant to Section 111 or 112 of the CAA.

ALTERNATIVE OPERATING SCENERIOS

None proposed.

TOTAL EMISSIONS

Proposed minor modification does not alter previous emissions review.

The emissions calculations provided on Form S-1 were checked and modified using the most current AP-42 Factors (Tables 3.3-1, 3.3-2, 10/96; 11.12-2, and 11.19.2-2, 1/95; and Sections 13.2.2, 12/03; and 13.2.4, 1/95). The proposed replacement of the DEG will not result in any emission increase and therefore do not affect the previous emission calculations. The emissions from the facility, based on the previous review, are presented below.

The data below summarizes the Department of Health's emission calculations, performed in Enclosures (1) through (11). Worst case emissions using the maximum capacities of the plants from the crushed stone processing were calculated and are shown in Enclosures (1), (2), and (3) for the existing and proposed plants. Operations are based on 999,600 tons per site. Worst case emissions from aggregate handling and storage piles were calculated and are shown in Enclosures (4) and (5). Worst case emissions from unpaved road traffic (truck travel) are shown in Enclosures (6) and (7). Worst case emissions from the diesel engine and diesel engine generators were calculated assuming 2,800 hours of operation per rolling 12-month period firing diesel No. 2. All emission calculations were based on a heating value for diesel No. 2 of 137,000 Btu/gal. Calculated emissions from the existing 250 HP diesel engine is shown in Enclosure (8). Calculated emissions from the existing 400 kW and 500 kW diesel engine generators and for the proposed 750 kW diesel engine generator are shown in Enclosures (9), (10), and (11), respectively.

Emission calculations are included for unpaved roadways and stockpiles with a 70% control efficiency for fugitive dust due to water suppression. Emission control efficiencies are applied at stone processing operations and transfer points based on a 70% control efficiency at the point of water spray application. At each subsequent transfer point, a 35% control efficiency was utilized.

The Emissions for the existing plants and are summarized below.

Table 3: Emissions Summary
Worst Case Total Emission Estimates for the Entire Facility Operating in Combination
(Proposed 125 TPH Plant and a 357 TPH Existing Plant)

Pollutant	Existing 125 TPH Stone Processing (TPY)	Existing 357 TPH Stone Processing Plant (TPY)	TOTAL Emissions including fugitive (TPY)	CER Levels (TPY)	In House / CDS Levels (TPY)
CO	8.56	9.18	17.74	1000	250/1000
NOx	32.22	36.80	69.02	100	25/100
PM-30(TSP)	38.37	35.65	74.02	1000	250/1000
PM-10	18.38	13.99	32.37	100	25/100
PM-2.5	--	--	--	--	--
SOx	5.18	5.39	10.57	100	25/100
TOC/VOC	0.91	1.66	2.57	100	25/100
Pb	--	--	0	5	5/5

TPY are calculated for a production limit of 999,600 tons per site and 2,800 hours per rolling 12-month for the diesel engine and diesel engine generators. Combined operation of an 357 TPH plant with the 125 TPH plant would not result in additional emissions from unpaved roads or aggregate handling and storage piles, as the facility would still be limited to 999,600 tons of production. The emissions from aggregate handling and storage piles and unpaved roads for the combined facility are reflected in the existing 357 TPH plants emissions above.

Table 4: Worst Case Emissions Summary for Hazardous Air Pollutants (HAPS)
for Entire Facility Operating in Combination

POLLUTANT	Caterpillar 3306 250 HP Diesel Engine Emissions (TPY)	Proposed Caterpillar 3412-DITT 500 kW DEG Emissions (TPY)	Proposed Caterpillar 3412 725 kW DEG Emissions (TPY)	TOTAL EMISSIONS, All Diesel Engines (TPY)
Benzene*	2.49e-03	6.07e-03	7.81e-03	1.64e-02
Toluene*	1.09e-03	2.20e-03	2.83e-03	6.12e-03
Xylenes*	7.60e-04	1.51e-03	1.94e-03	4.21e-03
Propylene*	6.88e-03	2.18e-02	2.81e-02	5.68e-02
1,3-Butadiene*	1.04e-04	--	--	1.04e-04
Formaldehyde*	3.15e-03	6.17e-04	7.95e-04	4.56e-03
Acetaldehyde*	2.05e-03	1.97e-04	2.54e-04	2.50e-03
Acrolein*	2.47e-04	6.17e-05	7.94e-05	3.88e-04
Naphthalene*	2.26e-04	1.02e-03	1.31e-03	2.56e-03
PAH (Polycyclic Aromatic HC's)*	4.48e-04	1.66e-03	2.14e-03	4.25e-03

PROPOSED

TOTAL HAPS* (TPY)	1.72e-02	3.41e-02	4.39e-02	9.53e-02
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* hazardous air pollutants listed in the Clean Air Act and HAR 11-60.1 Subchapter 9.

TPY are calculated for 2,800 hours per rolling 12-month of operation.

Diesel Engine Emission factors from AP-42 Table 3.3-2, 3.4-3, and 3.4-4 (10/96).

Emissions are reflective of the worst combination of diesel engine and generators. This would be where the 250 HP diesel engine operates with both the 750 kW and 500 kW diesel engine generators.

A major source as defined in Section 11-60.1-1 of HAR Title 11, has the potential to emit any HAP of 10 TPY or more, or 25 TPY or more of any combination of HAPs, or 100 TPY or more of any air pollutant. Calculated emissions do not meet these limits and thus, this facility is not classified as a major source

Synthetic Minor Applicability: A synthetic minor source is a facility that is potentially major (as defined in HAR 11-60.1-1), but is made nonmajor through federally enforceable permit conditions (e.g., limiting the facility's hours of operation and limiting the facility's production rate). This facility is a synthetic minor based on potential emissions of PM, PM₁₀, and NOx greater than "major" levels when the stone processing plant and diesel engine are operated at 8,760 hr/yr. See enclosures for detailed calculations.

AIR QUALITY ASSESSMENT

Proposed minor modification does not alter previous air quality assessment.

An ambient air quality analysis (AAQA) was previously conducted for the facility to demonstrate compliance with state and national ambient air quality standards. EPA approved SCREEN3 method was used. The results of this assessment are presented below.

The predicted concentrations assumes operation at proposed limited hours of operation, and using fuel oil no. 2 with 0.5% sulfur content. Based on these assumptions, the facility should comply with State and Federal AAQS for CO, SO₂, NO₂, and PM₁₀ as shown below (Pb and H₂S assumed to be negligible).

Table 5: Predicted Ambient Air Quality Impacts

Air Pollutant	Averaging Time	Impact * (µg/m ³)	Background ** (µg/m ³) OAHU	Total Impact (µg/m ³)	SAAQs (µg/m ³)	NAAQS (µg/m ³)	Compared to SAAQS
CO	1-hr	782	969 (Huehue)	1751	10000	40000	17.51%
	8-hr	536	736 (Huehue)	1272	5000	10000	25.44%
NO ₂	Annual	61	2 (Puna)	63	70	100	90.00%
SO ₂	3-hr	417	588 (Puna)	1005	1300	1300	77.31%
	24-hr	185	119 (Puna)	304	365	365	83.29%
	Annual	30	8 (Kona)	38	80	80	47.50%
PM ₁₀	24-hr	26	32 (Kona)	58	150	150	38.67%
	Annual	2	18 (Kona)	20	50	50	40.00%
PM _{2.5}	24-hr	0	10	10	N/A	35	N/A
	Annual	0	3	3	N/A	15	N/A

Notes for Table 5:

(Model conc) x (Potential emissions) x (Time factor) = Potential Ambient Air Impact

EPA time factors of 0.9, 0.7, and 0.4 for the 3 hour, 8 hour, and 24 hour concentrations respectively, and State of Hawaii time factor of 0.2 for the annual concentrations were applied.

*Annual hour limitation factor of 0.32 applied.

Hour limitation factor = (2,800 hr/year) / (8,760 hr/year) = 0.32

** Assumes 75% conversion NO_x to NO₂ per Tier 2 Ambient Ration Method (ARM).

The DOH applied the highest background concentrations to the source considering data from Kona, Huehue, and Puna. The background air quality data shown in Tables 7a and b was obtained from Site 063, Huehue, Kona, Big Island (only 1999 available), Kona (highest of 2000 - 2002) and Puna (only 1993 available), Hawaii. Because of the lack of current background ambient air data for Puna, 1993 Puna Hawaii Air Quality Data (DOH/CAB) background data was used. Being that background concentrations for lead were not available from the Kona, Puna, or Huehue areas, lead background concentrations were taken from Liliha. The highest data from each site was compared and the highest value was utilized.

State Ambient Standards are stricter than National; therefore, only State Standards are listed. Although background concentrations were taken from areas other than the proposed location, these areas are considered representative or more conservative than the initial location due to their population and industrial development.

Analysis of the stone processing plant is based on operation of its diesel engine generators at 2,800 hours/year.

The combined effect of 1) maximum concentrations generated by the proposed 725 kW Caterpillar 3412 diesel engine generator and 2) ambient background concentrations, demonstrate compliance with the State Ambient Air Quality Standards and Federal Ambient Air Quality Standards.

The combined effect of 1) maximum concentrations generated by the existing 500 kW Caterpillar 3412-DITT diesel engine generator and 2) ambient background concentrations, demonstrate compliance with the State Ambient Air Quality Standards and Federal Ambient Air Quality Standards.

FACILITY IDENTIFICATION

A major source as defined in Section 11-60.1-1 of HAR Title 11, has the potential to emit any HAP of 10 TPY or more, or 25 TPY or more of any combination of HAPs, or 100 TPY or more of any air pollutant. Calculated emission(s) exceed these limits and thus, this facility is not classified as a major source.

A synthetic minor source is a facility that is potentially major (as defined in HAR 11-60.1-1), but is made nonmajor through federally enforceable permit conditions. This facility is a synthetic minor source because potential emissions do exceed the major source threshold when the facility is operated at its maximum capacity continuously for 8,760 hours per year.

CONCLUSION

Based on the information submitted by Isemoto Contracting Co. Ltd., it is the determination of the Department of Health (DOH) that the proposed facility will be in compliance with the Hawaii Administrative Rules (HAR), Chapter 11-60.1 and State and Federal ambient air quality standards.

Issuance of an amendment to temporary CSP No. 0219-01-CT is recommended subject to a 45-day review by EPA.