

PROPOSED

Review of Application for a Significant Modification Covered Source Permit (CSP) No. 0085-02-C Application No. 0085-04

Applicant: Ameron International Corporation, dba Ameron Hawaii

Facility: 600 TPH Stone Processing and Concrete Plant

SIC Codes: 1429 (stone processing), 3272 (concrete batching), 3273 (concrete recycling)

Location : Puunene, Maui, 96784

UTM Coordinates: 768,500 m East, 2,309,300 m North

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I. Background

Ameron Hawaii (Ameron) operates an existing facility in the Camp 10 Quarry in Puunene, Maui. The facility is permitted as a covered source because it encompasses a 600 tph stone processing plant which is a major source of PM and subject to NSPS. The stone processing plant includes three crushers, five screening towers, and one diesel engine generator (DEG) used to power the 600 tph primary crusher.

The facility also includes a concrete plant where concrete batching and waste concrete crushing occur. Although the concrete plant is a separate noncovered source, it is included in the same permit as the stone processing plant to consolidate administrative records for the entire Ameron Camp 10 facility. Ameron's newly constructed 120 cy/hr concrete batch plant is currently in the testing phase, and its existing 100 cy/hr batch plant is still operated while issues with the new plant are worked out. A 300 tph crusher processes the plant's waste concrete.

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An application for a significant modification dated 6/25/04, along with a \$1,000 processing fee, was submitted to the Department of Health (DOH) to request replacement of the 475 HP DEG with a 536 HP unit, while maintaining the same operational limit of 3,744 hours per rolling 12-month period. No other changes to the facility were proposed.

After its initial review of the application, the DOH requested (via a 7/10/04 letter, 10/6/04 email, and 2/23/05 letter) Ameron submit an ambient air quality impact assessment for the 536 HP DEG. The assessment was received by DOH on 4/11/05.

Actual Operating Hours

Actual operating hours for the stone processing plant are below the 3,744 hr/yr DEG operating limit since the primary crusher is currently powered only by the DEG. Although the other equipment is powered by commercial electricity, plant hours are generally determined by the primary crusher.

Concrete batching hours are 6:30 am - 3:00 pm Monday through Friday and Saturday 6:30 am - 12 noon, amounting to 48 hours per week or approximately 2,500 hours per year.

Waste concrete crushing hours are estimated at 480 hours per year. The crusher is not operated on a regular basis but only after a sizable amount of waste concrete has accumulated at the facility.

II. Equipment Description

Table 1 lists information on the new 536 HP DEG. Table 2 lists information on all plant equipment.

Table 1: Diesel Engine Generator	
Manufacturer	Caterpillar
Model No.	3406C
Serial No.	1LS01202
Power Capacity	536 HP
Fuel	Fuel oil no. 2 w/ maximum of 0.5% sulfur by weight
Maximum Fuel Feed Rate	26 gallons per hour
Stack Height	8.2 meters per 4/6/05 submittal
Stack Diameter	6" = 0.15 meter
Stack Exhaust Flow	2981 cfm per spec sheet
Stack Exhaust Temperature	1029 F per spec sheet

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Table 2: Facility Equipment					
Description	Manufacturer	Model No.	Serial No.	Capacity	Date Manuf. or Set in Place
Quarry Operation and Aggregate Production					
Primary jaw crusher 42"x48"	Kue Ken	160X	160X16958R	600 tph	1991
Horizontal impact crusher	Hazemag	APS1620K	HU1380	500 tph	1991
Vertical impact crusher	Canica	100	EE-10020891	600 tph	1991
3 - 3 deck screening towers	Hewitt-Robins	V-16 8 x 20	C706101	-	1992
2 - 2 deck screening towers	Hewitt-Robins	V-14 6 x 16	C706101	-	1992
Diesel engine generator:	Caterpillar	3406C	1LS01202	536 hp	-
Concrete Batch Plant - Existing (to be replaced)					
Concrete batch plant	Erie Strayer	V-4436	-	100 cy/hr	-
Baghouse	Dusty Dustless	36J	FV-36-4X	-	-
Baghouse	Dusty Dustless	72B	FV-72-4X	-	-
Concrete Batch Plant - New					
Concrete batch plant	Rexcon	Rex HD-12	2033	120 cy/hr	2002
2 silo dust collector w/ 8 cartridge filters and pulse jet cleaning system	C&W Manufacturing & Sales Co.	CP-305-839	-	-	2002
Batcher dust collector	C&W Manufacturing & Sales Co.	CP-35-219	-	-	2002
Cement slurry batcher	Matrix Master	-	-	-	1994
Concrete Crusher					
300 tph jaw crusher - used to process left-over concrete	Kue Ken	150	15016453	300 tph	1968

III. Air Pollution Controls

Sulfur dioxide emissions are controlled using fuel containing no more than 0.5% sulfur by weight. A water spray system is used to control fugitive dust emissions. Water sprays are located at the primary crusher, screening towers, conveyor transfer points, stockpiles, and concrete crusher. A baghouse is used for the concrete batch plant and a water truck is used as necessary to control emissions from travel on unpaved roads.

IV. Applicable Requirements

1. Hawaii Administrative Rules (HAR), Title 11

Chapter 59, Ambient Air Quality Standards

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 New Source Performance Standards

Subchapter 10 - Field Citations

2. PSD Requirements

PSD requirements do not apply because the facility is not considered a major stationary source and is not proposing any modifications to trigger a major modification as defined in 40 CFR 52.21 and HAR Title 11, Chapter 60.1, Subchapter 7.

3. NSPS Requirements

40 CFR 60 - Standards of Performance for New Stationary Sources:

Subpart A - General Provisions

Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart OOO and A apply to fixed crushed stone plants with capacities greater than 25 tph which commence construction, reconstruction, or modification after August 31, 1983. The following equipment is subject to Subpart OOO and A requirements:

Kue Ken 600 tph primary jaw crusher, Model 160X

Hazemag 500 tph horizontal impact crusher, Model APS1620K

Canica 600 tph vertical impact crusher, Model 100

3 three-deck screening towers

2 two-deck screening towers

various conveyors

Since the Kue Ken 300 tph jaw crusher was manufactured in 1968, it is not subject to NSPS. The concrete batch plant is not subject to NSPS requirements because no standard for this type of operation has been promulgated under 40 CFR 60.

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4. NESHAP Requirements

These requirements do not apply because no standard covering the facility's operation or equipment has been promulgated under 40 CFR 61.

5. MACT Requirements

These requirements do not apply because the facility is not a major source of hazardous air pollutants and the facility does not belong to a source category or subcategory for which a standard has been promulgated under 40 CFR 63.

6. BACT Requirements

A BACT review is required for new or modified sources which generate a "significant" net emissions increase as defined in HAR 11-60.1-1. Since the only change to the facility is replacement of a 475 HP DEG with a 536 HP unit, potential emissions from the two DEGs were compared. A BACT review is not required because the net emissions increase is not at the significant level as shown in the following table.

	536 HP	475 HP DEG	Net	Significant	Stone Proc.	CER Reporting
	Emissions	Emissions	Emissions	Level	Plant Emis.	Level
Pollutant	(tpy)	(tpy)	Increase (tpy)	(tpy)	(tpy)	(tpy)
CO	6.5	5.9	0.6	100	6.5	1000
NOx	30.1	27.4	2.7	40	30.1	100
PM	2.1	2.0	0.1	25	274.7	N/A
PM10	2.1	1.9	0.2	15	95.5	100
SO2	3.4	3.2	0.2	40	35.7	100
TOC/VOC	2.4	2.2	0.1	40	3.4	100
Pb	0.0	0.0	0.0	0.6	0.0	5

7. CAM Requirements (40 CFR 64)

The purpose of Compliance Assurance Monitoring (CAM) is to provide reasonable assurance that compliance is being achieved with large emission units that rely on air pollution control devices to meet an emissions limit or standard. CAM applies if the emissions unit:

1. is located at a major source;
2. is subject to an emissions limit or standard;
3. uses a control device to achieve compliance;
4. has potential pre-control emissions that are 100% of the major source level; and
5. is not otherwise exempt from CAM.

Although the stone processing plant is a major source, CAM does not apply to any emission unit because no unit uses a control device, as defined in 40 CFR 64, 64.1 to achieve compliance with any emission limit or standard. Water sprays or enclosures used to minimize fugitive emissions are not considered control devices, as defined, because they do not destroy or remove air pollutants prior to discharge to the atmosphere.

CAM does not apply to the concrete plant because it is not a major source.

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8. CER Requirements

Consolidated Emissions Reporting (CER) Requirements apply if facility emissions equal or exceed levels provided in 40 CFR 51, Subpart A, Appendix A, shown in the previous table. CER requirements do not apply because facility emissions do not equal or exceed the CER levels.

9. Major Source Applicability

Emissions from the stone processing and concrete plants are totaled separately rather than combined since the two plants have different two-digit SIC codes and since neither plant is a support activity of the other. An activity is considered a support activity if at least 50% of its production output is used by the main activity. Since only 20% of the total aggregate produced by the stone processing plant is used by the concrete plant, the stone processing plant is not considered a support activity of the concrete plant.

Fugitive emissions are accounted for if a plant belongs to one of the source categories listed under the “major source” definition provided in HAR 11-60.1-1. Since this is true of the stone processing plant, fugitive emissions are counted. The stone processing plant is a major source because it has the potential to emit, considering fugitive emissions and air pollution controls, more than 100 tpy of PM.

Fugitive emissions are not counted in determining whether the concrete plant is a major source because the concrete plant does not belong to one of the listed source categories. Since potential emissions are below the major source level, the concrete plant is a not a major source.

10. Synthetic Minor Applicability

A synthetic minor is a facility that is potentially major (as defined in HAR 11-60.1-1) but is made non-major through federally enforceable permit conditions. Both the stone processing and concrete plants are not synthetic minors.

V. Insignificant Activities / Exemptions

Table 4: Insignificant Activities	
Description	HAR Reference
10,000 gallon diesel fuel UST	11-60.1-82(f)(1) Any storage tank, reservoir, or other container of capacity equal to or less than 40,000 gallons storing volatile organic compounds, except those storage tanks, reservoirs, or other containers subject to any standard or other requirement pursuant to Sections 111 and 112 of the Act.

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VI. Alternate Operating Scenarios

If the 536 HP DEG is inoperable, a unit of the same or smaller size will be used as a temporary replacement until the original DEG is repaired and again operable.

VII. Project Emissions

Stone processing plant emissions include emissions from the DEG point source, crushing operations, travel on unpaved roads, and aggregate handling. Emissions are based on the DEG operating at its permitted limit of 3,744 hr/yr and the rest of the plant operating continuously at 8,760 hr/yr. Although the primary crusher is currently powered only by the DEG, Ameron intends to pursue the use of commercial electricity to power the primary crusher in the future.

Concrete plant emissions include PM emissions from concrete batching and waste concrete crushing. Emissions are based on continuous operation of 8,760 hr/yr.

Although no other change besides the DEG replacement is proposed, emissions from stone processing operations, waste concrete crushing, and travel on unpaved roads were recalculated in accordance with the following revised AP-42 sections:

- §11.19.2 Crushed Stone Processing and Pulverized Mineral Processing, revised 8/04.
- §13.2.2 Unpaved Roads, revised 12/03.

Calculations are contained in the appendix and results are shown in the following table.

Pollutant	DEG	Crushing Operations	Unpaved Roads	Aggregate Handling	Total for Stone Proc. Plant	Concrete Batching	Waste Conc. Crushing	Total for Conc. Plant	Total for both Plants
CO	6.5				6.5				6.5
NO _x	30.1				30.1				30.1
PM	2.1	171.9	94.6	6.1	274.7	10.2	17.7	27.9	302.6
PM-10	2.1	62.5	28.0	2.9	95.5	3.2	15.7	18.9	114.4
PM-2.5	2.1	28.4	4.3	0.9	35.7	1.5	7.0	8.5	44.2
SO ₂	3.4				3.4				3.4
TOC	2.4				2.4				2.4
Pb						0.004			0.0
HAPs	0.04				0.04	0.141		0.141	0.18

VIII. Air Quality Assessment

An Ambient Air Quality Impact Assessment (AAQIA) is generally performed for new or modified sources. Since the facility proposes to replace its 475 HP DEG with a 536 HP unit, an AAQIA was performed on the DEG point source using a Screen3 model. The following assumptions were used:

- 536 HP DEG operated a maximum of 3,744 hours per year.
- Rural area.
- Terrain slope of 10% estimated from topography map.
- Default meteorology.
- Ambient temperature of 76° F.
- 1 g/sec of pollutant.
- Critical building for potential downwash is the DEG housing with length 3.66 m, width 2.44 m, and height 2.74 m, per 4/6/05 submittal.
- Stack parameters and emission rates as shown:

Table 6: Stack Parameters and Emissions Rates			
Stack Parameters		Emission Rates (g/sec)	
Stack Height (meters)	8.19	CO	0.436
Stack Diameter (inches)	6	NOx	2.023
Exhaust Flow (cfm)	2981	PM-10	0.142
Exhaust Temperature (F)	1029	SO ₂	0.231

- Background concentrations based on 2003 Kihei data for PM-10 and 2003 Kapolei data for all other pollutants. Kihei data was used because Kihei is the monitoring station closest to the facility. Since the other pollutants are not monitored at Kihei, Kapolei data was used. This provides a conservative analysis since Kapolei is considered more populated and industrialized than Puunene.

Predicted ambient concentrations shown in the following table meet the National Ambient Air Quality Standards (NAAQS) and the State Ambient Air Quality Standards (SAAQS).

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Table 7: Predicted Pollutant Concentrations													
Pollutant	Avg. Time	Max 1-hr Conc.	Emis-sions	Time Factor	Pred. Conc.	Adjust for Annual Limit	OLM NOx Adjust	Adjusted Conc.	Bkgr d. Conc.	Total Impact	SAAQS	NAAQS	% SAAQS/NAAQS
		(ug/m3)	(g/sec)		(ug/m3)	(3,744 hr/yr)		(ug/m3)	(ug/m3)	(ug/m3)			
CO	1 hr	567	0.436	1	247.2			247.2	2166	2413	10000	40000	24
CO	8 hr	567	0.436	0.7	173.0			173.0	841	1014	5000	10000	20
NO2	annual	567	2.023	0.2	229.4	98.0	40.5	40.5	9	50	70	100	71
PM-10	24 hr	567	0.142	0.4	32.2			32.2	78	110	150	150	73
PM-10	annual	567	0.142	0.2	16.1	6.9		6.9	12	19	50	50	38
SO2	3 hr	567	0.231	0.9	117.9			117.9	26	144	1300	-	11
SO2	24 hr	567	0.231	0.4	52.4			52.4	9	61	365	365	17
SO2	annual	567	0.231	0.2	26.2	11.2		11.2	1	12	80	80	15

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IX. Significant Permit Conditions

1. The 600 tph primary crusher, 500 tph horizontal impact crusher, 600 tph vertical impact crusher, screening towers, and various conveyors are subject to NSPS Subparts A and OOO requirements.

Purpose: The above federal standards apply to fixed crushed stone plants with capacities greater than 25 tph which commence construction, reconstruction or modification after August 31, 1983.

2. Operating hours for the DEG shall not exceed 3,744 hours in any rolling 12-month period.

Purpose: Emission calculations and the AAQIA are based on this limit proposed by the applicant.

3. The diesel engine generator shall operate on diesel oil no. 2 with a sulfur content not exceeding 0.5% by weight.

Purpose: Per HAR §11-60.1-38(a), no person shall burn any fuel containing an excess of 2% sulfur by weight, except for fuel used in ocean-going vessels. Emission calculations and the AAQIA are based on the DEG firing diesel oil no. 2 with a maximum sulfur content of 0.5% by weight.

4. Reasonable efforts shall be taken to control fugitive emissions from the stone processing and concrete plants.

Purpose: Control PM and PM₁₀ emissions.

5. Under no circumstances shall the 100 cy/hr existing concrete batch plant and the new 120 cy/hr batch plant be operated simultaneously.

Purpose: Calculations in this review are based on the assumption that only one plant is operating at any time.

6. The baghouse for the cement silo shall be operated at all times during cement loading and shall be maintained in good operating condition.

Purpose: Control PM and PM₁₀ emissions.

X. Conclusion

The Ameron Camp 10 facility encompasses a 600 tph stone processing plant, a major source of PM, as well as a non-major concrete plant. Actual emissions are expected to be less than indicated in this review for the following reasons:

- Emission calculations for the stone processing plant (with the exception of the DEG) are based on continuous operation of 8,760 hr/yr although in actuality, plant operation is generally limited by the 3,744 hr/yr limit on the DEG which powers the primary crusher. In order to maintain flexibility in the event that commercial electricity becomes available to power the primary crusher, Ameron opted not to restrict its power source to the DEG. However, since commercial electricity is currently not available to power the primary crusher, actual plant operation is currently restricted to the 3,744 hr/yr limit which amounts to 43% of the 8,760 hr/yr value used in emission calculations.
- Emission calculations for concrete batching are based on continuous operation of 8,760 hr/yr. However, typical operation is estimated at 2,500 hr/yr which amounts to 29% of the 8,760 hr/yr value used in emission calculations.
- Emission calculations for the waste concrete crusher are based on continuous operation of 8,760 hr/yr. However, typical operation is estimated at 480 hr/yr which amounts to 5% of the 8,760 hr/yr value used in emission calculations.

Issuance of a covered source permit to incorporate the proposed modification is recommended based on the review of information provided by the applicant and subject to the significant permit conditions, public comments, and EPA review.

April Matsumura
May 2005