



Guam Memorial Hospital Authority Aturidåt Espetåt Mimuriåt Guåhan



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OKA, TAMUNING, GUAM 96913
TEL: 647-2444 or 647-2330
FAX: (671) 649-0145

April 12, 2019

AMENDMENT #1

FOR

GMHA IFB 012-2019

REMOVAL AND REPLACEMENT OF THE 1.6 MEGAWAT GENERATOR UNIT #2

This amendment is being issued to respond on a clarification submitted by Hawthorne & Harty Pacific.

Section 1 – Questions from Hawthorne:

1. **Question:** Please advise if an additional site visit will be allowed to further inspect the existing generator set and generator room.

Response: Yes, additional scheduled site visit is allowed. Contractors are all encouraged to be present. Next site visit is scheduled for Monday, April 15, 2019 at 9:00 am, in the Materials Management Department

2. **Question:** The lead-time for a new generator set from production to delivery to GMH is about 190 days. It will then take another 30-60 days to complete the related construction work. Please advise if the Time of Completion can be extended up to 250 days beginning from the time of award.

Response: 190 days (Production to delivery) + 30 days (for removal and installation and commissioning, etc.

3. **Question:** Please advise if bid submission can be extended (current due date is April 15) so that bonding and related documentation can be completed.

Response: Submission date can be extended to another 10 days bringing submission day to April 25, 2019.

4. **Question.** Please advise how this project is funded.

Response: This project is federally funded by DOI.

Section II – Questions from Harty Pacific

- A. **Question:** Is it possible to break the existing double wall wherein the existing generator exhaust/radiator is attached which shall be used as an access point for the removal of the existing 1.6 Megawatt Generator set?

Response: Yes, it is. But reconstruction and restoration needs to be inspected and certified by a licensed civil engineer.

- B. **Question:** Can you provide us the existing capacity of the Generator Set in terms of weight, for us to determine the capacity of the Telehandler (Heavy Equipment) to be used in pulling out the said generator set?

Response: The weight is 13,235 kilos or 29,120 pounds. See attachment for further review.

- C. **Question:** Are we to intercept existing generator feeders and to provide pull box or gutter box as the splicing point to fit the new Generator terminal point of connection. Or we will replace the existing generator feeders to fit the new generator terminal point of connection?

Response: The purpose of the site visit is to familiarize with the existing unit and its connectivity to the ATS and other salient points for a complete working emergency power source system. If the new generator does not fit the existing point of connection the contractor needs to provide a pull box as the splicing point to fit new generator terminal point of connection. Be reminded that all works needs are to be certified by a licensed Electrical Engineer or Master Electrician. The existing feeders needs to be tested for adequacy and replace as necessary.

- D. **Question:** Please confirm that the following items are not included on this bid package which follows:

1. Automation System (ATS) and Synchronization.
2. External or Day Tank Monitoring System and/or Fuel Leak Detection.

Response:

1. ATS not included.
2. External or Day tank Monitoring system and/or Fuel Leak Detection is not included.

E. **Question:** Is it possible that the bid due date (April 15, 2019) will be extended into two (2) more weeks to allow us to have more time in securing our Bonding Requirement?

Response: Two more weeks extension is acceptable.

F. **Question:** On item 1-25 NTP & 1-32 Time of Completion and Liquated Damages. The project shall be completed within 180 calendar days. Can we extend this duration period of project completion to allow more time in the factory to comply per specification and the shipping and handling of the products which will take 8-10 weeks via ocean freight to arrive Guam?

Response: 190 days (Production to delivery) + 30 days (for removal and installation and commissioning, etc. total 210 days.

Section III – Extension of bid submission:

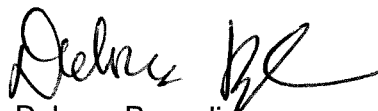
Bid submission date as reads: 9:00 am, April 15, 2019 – Change to read as: 9:00 am, April 29, 2019

Bid opening date as reads: 9:30 am, April 15, 2019 – Change to read as: 9:30 am, April 29, 2019

Section IV – Time of Completion 1-32

Time of Completion as reads 180 days from time of award – Please change to read as: Time of Completion to read 210 from time of award.

Sincerely yours,



Dolores Pangelinan
Hospital Materials Management Administrator,

Acknowledgment of Receipt: Return acknowledgment to fax number 649-3640

Company

Print Name

Signature

Date

CATERPILLAR

Interoffice Memorandum

Facility: ENGINE DIVISION
 Date: February 7, 1992
 Plant/Office: Lafayette
 Department: 3500 Product Group
 Attention: H. V. Whittall

Plant or Office	Department	Attention

CC: D. C. Dowdall, P. S. & E. C. - AB6480

Request # 92023

The requested emissions data* presented below is based on tests conducted at Caterpillar Inc. using instrumentation and procedures equivalent to those outlined in SAE 177a & 215.

Engine Model: 3516 DITA running at 100% load, 2307 Hp at 1800 RPM, with dry manifolds. Set at standard production timing. Arr#: 2W-8404 FL#: PA-2943
 Application: A 60HZ prime power generator set rated at 1500KW.

	Lb/Hr	g/Hr	g/HP-Hr	PPM (Wet)	% BY Vol.	% BY Wt.		g/Hr	g/HP-Hr	g/n cu.ft.
CO2	2541.3	1152704	499.75	69403	6.94	10.99	NOx	23215	10.06	4.073
N2	17104.3	7758359	3363.61	763170	76.32	73.96	CO	4279	1.86	0.781
O2	2426.2	1100480	477.11	97883	9.79	10.49	HC	813	0.35	0.143
H2O	1908.6	456121	197.75	67498	6.75	4.35	SMOKE (Cat Number)			0.053
NO	9.4	4279	1.86	422	0.04	0.04	FUEL RATE			807.77 Lb/Hr
NO2	33.4	15193	6.59		0.14	0.14	INLET AIR FLOW			22317 Lb/Hr
NC	51.2	23215	10.06	1398	0.00	0.00	EXHAUST FLOW:			
HC	1.8	813	0.35	161	0.02	0.01	Rate			23125 Lb/Hr
SO2	3.2	1464	0.63	63	0.01	0.01	at 60 deg F and 760mm Hg.			5073 SCFM
DPH+	0.8	344	0.15				at 932 deg F stack temp.			13586 CFM

Notes: * This data is based on steady-state engine operating conditions of 85 deg. F and 29.38 in. Hg. and No. 2 diesel fuel. This data is also subject to instrumentation, measurement and engine-to-engine variations.

The NOx shown is not actually present in the exhaust. It is based on the assumption that the NO present in the exhaust is converted to NOx in the atmosphere. NO and NOx are corrected to 7% grains humidity.

SO2 is proportional to a sulfur content of 0.20% by weight of the fuel.

DPH (Dry Particulate Matter) is an approximation based on a correlation to smoke density, and is not included in the total exhaust flow rate.

Grains per normal cubic meter values are corrected to 5% oxygen.

This report provides the best information available at this time. It should not be used as a future data without verification as to its validity for the current engine.

CATERPILLAR

3516

Generator Set Diesel Powered 60 Hz Standby Power

1400 - 2000 kW 60 Hz

FEATURES

CAT DIESEL GENERATOR SETS

Factory Designed, Certified Prototype Tested with Torsional Analysis... Production Tested and delivered to you in a package that is ready to be connected to your fuel and power lines... EPG Designer (Computer sizing) available... Supported 100% by your Caterpillar Dealer with Warranty — Parts and Labor... Extended Warranty available in some areas... Generator Set and Components meet or exceed the following specifications: AS1359, AS2789, ABQSM-TM3, BS4899, DIN8271, DIN8280, EGSA101F, JEM1959, IEC 34/1, ISO3048/1, ISO DIS 8528, NEMA MG1-22

RELIABLE, FUEL EFFICIENT DIESEL

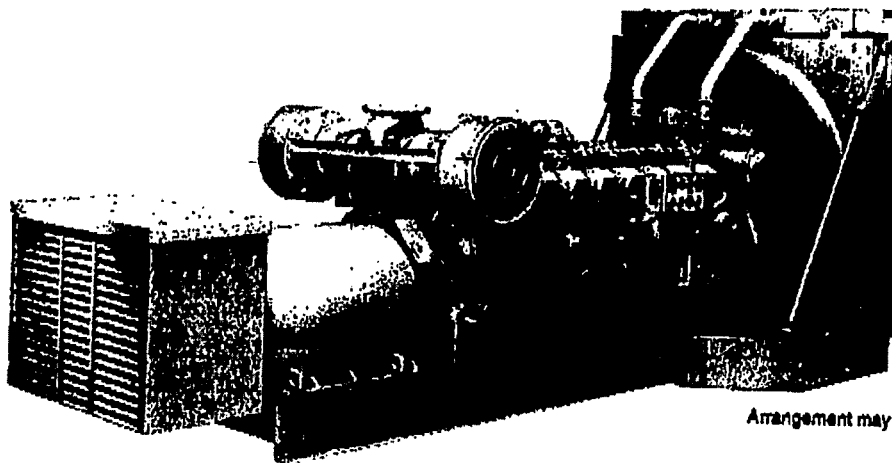
The compact four-stroke-cycle diesel engine combines durability with minimum weight while providing dependability and economy. The fuel system operates on a variety of fuels.

THE CATERPILLAR SR4 GENERATOR

Single bearing, VVFC connected, static regulated, brushless excited generator, designed to match the performance and output characteristics of the Caterpillar Diesel Engine that drives it.

EXCLUSIVE CAT VOLTAGE REGULATOR

Three phase sensing and Volts Per Hertz regulation give precise control, excellent Block Loading, and constant voltage in the normal operating range.



Arrangement may be shown with optional equipment.

STANDARD PACKAGE ARRANGEMENT

ENGINE

- Aftercooler
- Air Cleaner, Regular Duty on Dual Turbo
- Light Duty on Quad Turbo
- Breather, Crankcase Cooler, Lubricating Oil
- Exhaust Fitting and Flange
- Filters, right hand
- Fuel, & Lubricating Oil Flywheel Housing SAE 00
- Standard Rotation Governor,
- 2301A, Speed Control
- Manifold, Exhaust, Dry on Dual Turbo

- Manifold, Exhaust, Dry on Quad Turbo
- Oil Pan, Shallow
- Pumps,
- Fuel Transfer, Lubricating Oil, gear driven
- Jacket Water, gear driven
- Radiator
- Rails, Mounting
- Shutoff, Manual
- Starting, Electric, 24 volt DC
- Turbochargers, Dual or Quad
- Vibration Damper

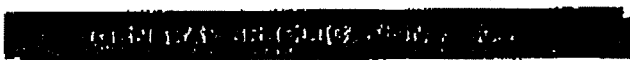
GENERATOR

- SR4 Brushless
- with VR3 Voltage Regulator
- Vibration Isolators (808 Frame)

ELECTRONIC MODULAR CONTROL PANEL (EMCP) Mounted on generator terminal

- Standard Generator Controls and Monitoring:
 - Digital Ammeter, Voltmeter and Frequency Meter
 - Ammeter/Voltmeter Phase Selector Switch
 - Voltage Adjust Rheostat
- Standard Engine Controls and Monitoring:
 - Automatic/Manual Start-Stop Control
 - Engine Control Switch for:
 - Off/Reset, Auto Start,
 - Manual Start, Stop
 - Cycle Cranking
 - Cool Down Timer
 - Emergency Stop Pushbutton

- Safety Shutoff Protection and LED Indicators for:
 - High Coolant Temperature
 - Low Oil Pressure
 - Overcrank
 - Overspeed
 - Emergency Stop Pushbutton



3516 ENGINE
 Type — Watercooled Diesel
 Displacement —
 liter (4210 cu in)
 Compression Ratio — 13.5:1

Cycle — Four Stroke
 No of Cylinders — V-16
 Bore — 170 mm (6.7 in)
 Stroke — 190 mm (7.5 in)

CATERPILLAR SR4 GENERATOR
 Type — Brushless, Revolving Field, Solid-State Exciter
 Construction — Single Bearing, Close Coupled
 Three Phase — Wye Connected
 Insulation — Class H with Tropicalization and Antilabration
 Enclosure — Drip Proof IP 22
 Alignment — Pilot Shaft
 Overspeed Capability — 150%
 Wave Form — Less than 5% Deviation
 Paralleling Capability — Standard with adjustable Voltage Droop
 Voltage Regulator — 3 Phase Sensing with Volts per Hertz
 Voltage Regulation — Less than $\pm 1/2\%$
 Voltage Gain — Adjustable to compensate for engine speed droop and line loss
 TIF — Less than 50
 THF — Less than 3%

CATERPILLAR CONTROL PANEL
24 VOLT DC CONTROL
 Terminal Box Mounted
 Vibration Isolated
 NEMA 1, IP 22 Enclosure
 Dead Front
 Lockable Hinged Door
 Generator Instruments meet ANSI C-39-1

VOLTAGES AVAILABLE — 60 Hz
 480, 346/600, 380, 4160

(stable a minimum of $\pm 10\%$)
 Other Voltages available — Consult your Caterpillar Dealer
 Some voltages require derating

ENGINE
 Air Cleaners
 Charging Systems
 Cooling Systems
 Fan Drives, Radiators,
 Fans, Expansion Tanks
 Control Systems
 Governor, Woodward 3161,
 2301A Load Share
 Exhaust System
 Fittings, Elbows,
 Flanges, Muffler
 Fuel System
 Lube System
 Mounting Systems
 Protection Devices
 Starting System
 Torsional Vibration Damper

GENERATORS
 Installation Arrangements
 Manual Voltage Controls
 RFI Filters -
 N Level (VDE 875), BS800
 MIL Std 461B
 Space Heater Kits

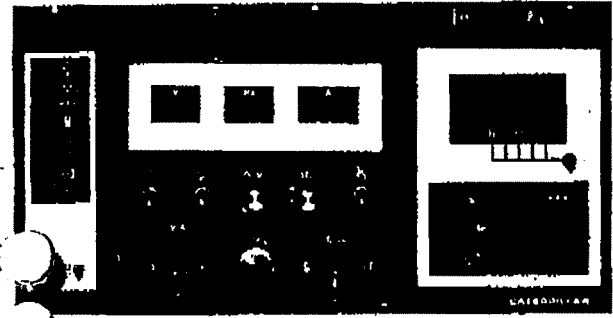
CONTROL PANEL
 Attachments for EMCP:
 Enclosure, Dust Proof
 NEMA 12 / IP 44
 Gauges and Instrument Panels
 Governor Raise/Lower Switch
 Prime Power Alarm Module
 Customer Interface Module
 Illumination Lights & Switch
 Switchgear Conversion
 The following attachments meet
 NFPA 99 or NFPA 110:
 Alarm Module
 Remote Annunciator Panel
 Battery Charger

Caterpillar® EMCP
Electronic Modular Control Panel

The Electronic Modular Control Panel (EMCP) is a generator-mounted control panel, available on all Caterpillar packaged generator sets. It utilizes environmentally sealed, solid-state, microprocessor-based modules for engine control and AC metering. This new application of mature, high-tech electronics to generator monitoring provides more features, accuracy and reliability than present electro-mechanical and many competitive panel systems.

The EMCP provides these standard control and monitoring features, many of which are options on other panels:

- Automatic/manual start-stop engine control with programmable safety shutdowns and associated flashing LED indicators for low oil pressure, high coolant temperature, overspeed, overcrank and emergency stop.
- Cycle cranking . . . adjustable 1-60 second crank/rest periods.
- Cooldown timer . . . adjustable 0-30 minutes.
- Energized to run or shut down fuel control systems.
- LCD digital readout for: Engine Oil Pressure; Coolant Temperature; Engine RPM; System DC Volts; Engine Running Hours; Eight System Diagnostic Codes; Generator AC Volts; Generator AC Amps; and Generator Frequency.
- Engine Control Switch.
- Ammeter-Voltmeter Phase Selector Switch.
- Emergency Stop Pushbutton.
- Indicator/Display Test Switch.
- Voltage Adjust Potentiometer.
- Rugged NEMA 1/IP 22 Cabinet.



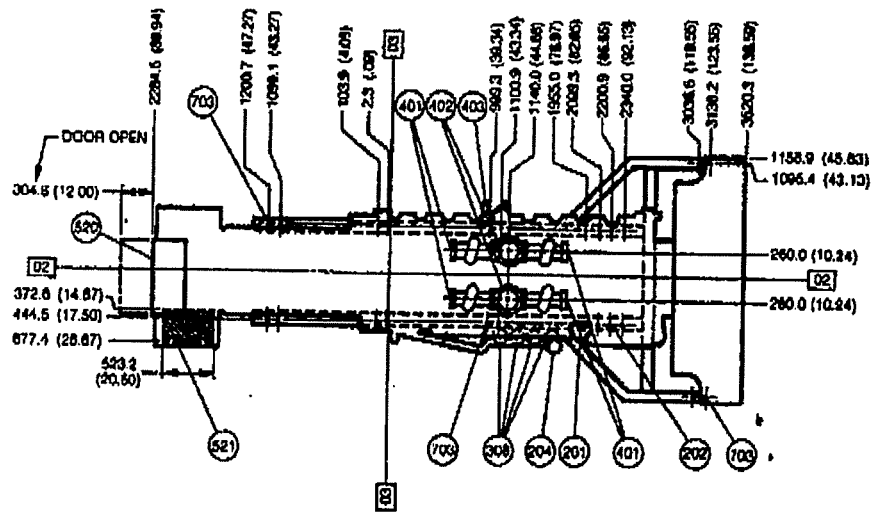
TECHNICAL DATA

3516 Standby Power Generator Set

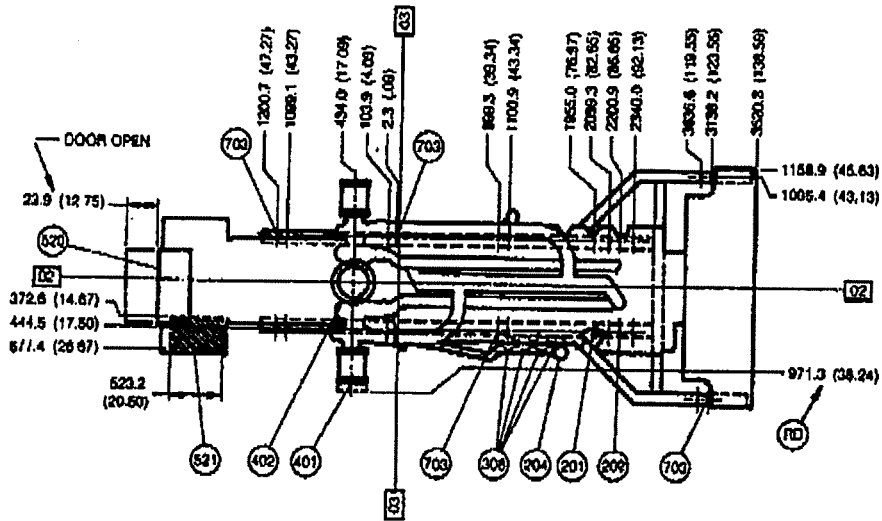
40 Hz, 1800 RPM

		1400	1500	1750	2000
Power Rating @ 0.8 PF with Fan	KW	1400	1500	1750	2000
Power Rating @ 0.8 PF with Fan	KV•A	1750	1875	2188	2500
Engine hp with Fan		2018	2151	2518	2847
Aspiration		Quad TA	Quad TA	Quad TA	Dual TA
Length	mm	5726	5743	5819	5926
	In	225	228	229	233
Width	mm	2319	2319	2319	2319
	In	91.3	91.3	91.3	91.3
Height	mm	2646	2646	2646	2663
	In	100.2	100.2	100.2	104.8
Shipping Weight	kg	12 485	12 850	13 235	13 695
	lb	27,525	28,330	29,120	30,130
Generator Frame Size		805	806	807	808
Engine Lubricating Oil Capacity	L	470	470	470	470
	qts	497	497	497	497
Engine Coolant Capacity with Radiator	L	440	440	440	440
	gal	116	116	116	116
Standard Radiator Arrangement Data:					
Air Flow (Max @ Rated Speed)	m³/min	2295	2295	2295	2295
	cfm	81,000	81,000	81,000	81,000
Air Flow Restriction (after radiator)	kPa	0.12	0.12	0.12	0.12
	In H2O	0.5	0.5	0.5	0.5
Ambient Temperature Capability(TMI)	Deg. C	52	50	41	41
	Deg. F	125	122	106	106
Radiator Size		48/CV	48/CV	48/CV	48/CV
System Backpressure (Max Allowable)	kPa	6.7	6.7	6.7	6.7
	In H2O	27	27	27	27
Exhaust Flange Size (Internal Diameter)	mm	203	203	203	292
Dual for 203 mm (8 in)	In	8.0	8.0	8.0	11.5
Fuel Consumption (100% load) with Fan	L/Hr	357.7	399.5	456.2	504.7
Per ISO3046/1: +5%, -0% tolerance	gph	94.5	105.5	120.5	133.4
Fuel Consumption (75% load) with Fan	L/Hr	275.6	299.4	348.1	378.1
	gph	72.8	79.1	91.2	99.9
Fuel Consumption (50% load) with Fan	L/Hr	192.3	213.0	240.1	264.6
	gph	50.7	56.3	63.4	69.9
Combustion Air Inlet Flow Rate	m³/min	115	125	147	163
	cfm	4064	4415	5184	5759
Exhaust Gas Flow Rate	m³/min	319	360	416	454
	cfm	11,271	12,708	14,700	16,057
Heat Rejection to Coolant (total)	KW	784	891	1029	1138
	BTU/min	44,568	50,671	59,519	64,718
Heat Rejection to Exhaust (total)	KW	1517	1702	1988	2131
	BTU/min	86,272	96,793	113,067	121,190
Heat Rejection to Atmosphere from Engine	KW	137	139	142	145
	BTU/min	7791	7906	8076	8246
Heat Rejection to Atmosphere from Generator	KW	68.0	65.8	74.8	81.2
	BTU/min	3755	3745	4255	4620
Exhaust Gas Stack Temperature	Deg. C	482	505	567	553
	Deg. F	900	941	1053	1027
Deration for Engine:					
Altitude-3% per 305m (1000 ft) above	m	950	840	800	1375
	ft	3120	2755	2625	4510
Temperature-1.9% per 5.5 C (10 F) above	Deg. C	55	55	55	55
at sea level or per degree above standard ambient at altitude above 760 m (2500 ft).	Deg. F	131	131	131	131

- 03 CENTERLINE OF ENGINE
- 03 REAR FACE OF CYLINDER BLOCK
- FUEL INLET
- 202 EXCESS FUEL RETURN
- 204 FUEL FILTER
- 306 OIL FILTER
- 401 AIR INLET
- 402 EXHAUST
- 403 BREATHER OUTLET
- 520 CONTROL PANEL
- 521 CONDUIT ENTRANCE
- 703 CUSTOMER MOUNTING HOLES



Top View of Quad Turbo Configuration with 46/CV Radiator (1400 kW, 1500 kW, 1750 kW)



Top View of Dual Turbo Configuration with 48/CV Radiator (2000 kW)

For overall length of generator sets see technical data section.

Note: General configuration not to be used for installation. See general dimension drawings for detail.

CONDITIONS & DEFINITIONS

Standby - Output available with varying load for the duration of the interruption of the normal power source. Fuel stop power in accordance with ISO3046/1, AS2789, DIN6271, and BS5514.

Rating are based on SAE J1349 standard conditions. These ratings also apply at ISO 3046/1, DIN 6271 and BS 5514 standard conditions. Fuel rates are based on fuel oil of 35° API (18°C or 60°F) gravity having an LHV of 42780 kJ/kg (18,390 Btu/lb) when used at 28°C (85°F) and weighing 0.838 g/l (7.001 lbs/U.S. gal).

Generator set derating required below 35° C (131° F) at sea level.

Materials and specifications are subject to change without notice. The International System of Units (SI) is used in this publication.

LEHX2088 (2-92)
Supersedes LEHX1150

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