



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP – 0451 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: MTU America, Inc.

Manufacturer's Technical Representative: Ben Stratton

Mailing Address: 100 Power Drive, Mankato, MN 56001

Telephone: 507-625-7973 Email: ben.stratton@ps.rolls-royce.com

Product Information

Product Name: 1600 Model Diesel Generator Sets

Product Type: Electrical Power Generator

Product Model Number: See Attached

(List all unique product identification numbers and/or part numbers)

General Description: Diesel Powered Electrical Generators

Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid Base Mounted Enclosure/Genset/Tank or Externally Isolated Enclosure/Genset

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: Mr. John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: 973-838-1780 Email: john.giuliano@thvmcgroup.com

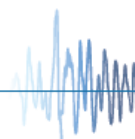
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 11/5/2015

Title: President Company Name: The VMC Group

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 03/24/15)



OSHPD

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**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: The VMC Group
Name: Mr. Ken Tarlow California License Number: SE2851
Mailing Address: 113 Main Street, Bloomingdale, NJ 07403
Telephone: 973-838-1780 Email: ken.tarlow@thevmcgroup.com

Supports and Attachments Preapproval

- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
☒ Supports and attachments are not preapproved

Certification Method

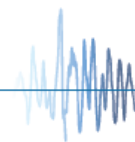
- ☒ Testing in accordance with: ☒ ICC-ES AC156
☐ Other (Please Specify): _____

Testing Laboratory 1

Company Name: Pacific Earthquake Engineering Research Center UC Berkeley (PEER)
Contact Name: Clément Barthès
Mailing Address: 1301 S. 46th Street, Building 420, Richmond, CA 94804
Telephone: 510-665-3409 Email: clementbarthes@berkeley.edu

Testing Laboratory 2

Company Name: _____
Contact Name: _____
Mailing Address: _____
Telephone: _____ Email: _____





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = Isolated [4.50 (z/h = 1) & 1.88 (z/h = 0)]
Rigid [1.44 (z/h = 1) & 1.13 (z/h = 0)]

S_{DS} (Design spectral response acceleration at short period, g) = 2.00 (z/h = 1) & 2.50 (z/h = 0)

a_p (In-structure equipment or component amplification factor) : 2.5 (Isolated) & 1.0 (Rigid)

R_p (Equipment or component response modification factor) 2.0 (Isolated) & 2.5 (Rigid)

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0 (S_{DS} = 2.00) & 0.0 (S_{DS} = 2.50)

Equipment or Component Natural Frequencies (Hz) See attached

Overall dimensions and weight (or range thereof) = See attached

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = _____

S_{DS} (Design spectral response acceleration at short period, g) = _____

S_{D1} (Design spectral response acceleration at 1 second period, g) _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base : _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2010: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☒ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☐ Other(s) (Please Specify): _____

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: Timothy J. Piland Date: January 4, 2016

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable): _____

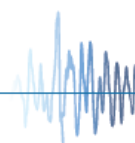


Table 1 - Certified Gensets

Model	Max Rating (kW)	Configuration [1]	Nominal Dimensional Data [2]				Tested / Interpolated / Extrapolated
			Length (in)	Width (in)	Height (w/o Isolator) (in)	Max Weight (Largest Tank) (lbs)	
MTU6R1600DS300	300	Enclosed Rigid On Tank	230.0	84.0	135.0	11,430	UUT-7
MTU6R1600DS230 MTU6R1600DS250 MTU6R1600DS275 MTU6R1600DS300 MTU6R1600DS330	300	Open Off Tank	144.0	76.0	73.0	7,500	Interpolated
		Enclosed Off Tank	190.0	76.0	100.0	11,000	Interpolated
		Open On Tank	280.0	84.0	108.0	25,000	Interpolated
		Enclosed On Tank	280.0	84.0	143.0	28,500	Interpolated
MTU 8V1600 DS350 MTU 8V1600 DS400 MTU 8V1600 DS440	400	Open Off Tank	131.0	73.0	78.0	9,000	Interpolated
		Enclosed Off Tank	246.0	99.0	113.0	13,000	Interpolated
		Open On Tank	235.0	99.0	115.0	30,000	Interpolated
		Enclosed On Tank	286.0	99.0	149.0	34,000	Interpolated
MTU 10V1600 DS450 MTU 10V1600 DS500 MTU 10V1600 DS550 MTU 10V1600 DS560	500	Open Off Tank	139.0	73.0	84.0	11,000	Interpolated
		Enclosed Off Tank	273.0	99.0	113.0	16,000	Interpolated
		Open On Tank	326.0	99.0	125.0	41,000	Interpolated
		Enclosed On Tank	377.0	99.0	149.0	46,000	Interpolated
MTU 12V1600 DS550 MTU 12V1600 DS650 MTU 12V1600 DS660 MTU 12V1600 DS715 MTU 12V1600 DS730	600	Open Off Tank	157.0	73.0	84.0	12,000	Interpolated
		Enclosed Off Tank	273.0	99.0	113.0	17,000	Interpolated
		Open On Tank	326.0	99.0	125.0	42,000	Interpolated
		Enclosed On Tank	377.0	99.0	149.0	47,000	Interpolated
<u>MTU 12V1600 DS600</u>	600	Enclosed Isolated Off Tank	270.0	84.0	100.0	14,780	UUT-8B
		Enclosed Rigid On Tank	330.0	84.0	135.0	44,980	UUT-8A

1) Gensets are Certified as follows:

- a) Rigid base mounted w/ or w/o enclosures, & w/ or w/o fuel tanks.
- b) External spring isolated, w/ or w/o enclosures, & w/o fuel tanks.

2) Dimensional Data is Nominal and actual data may vary.

Table 3 - Certified Subcomponents

Component (MFR)	MTU Part Number	Notes	Tested / Interpolated / Extrapolated
Enclosures (MTU)	XS572300.00060 (Tested) / XS572300.00065 (Interpolated)	230-300 kW Carbon Steel Enclosure (130 mph Tested/ 190 mph Interpolated)	UUT-7
	XS572300.00062	230-300 kW Carbon Steel Scoop	UUT-7
	XS572300.00066 / XS572300.00068	230-300 kW Aluminum Enclosure (130 mph / 190 mph)	Interpolated
	XS572300.00061	230-300 kW Aluminum Scoop	Interpolated
	XS573300.00001 / XS573300.00002	350-400 kW Steel Enclosure (130 mph / 190 mph)	Interpolated
	XS573300.00006 / XS573300.00007	350-400 kW Aluminum Enclosure (130 mph / 190 mph)	Interpolated
	XS575300.00047 / XS575300.00055	450-600 kW Steel Enclosure (130 mph / 190 mph)	Interpolated
	XS575300.00049	350-600 kW Steel Scoop	Interpolated
	XS575300.00053 (Interpolated)/ XS575300.00054 (Tested)	450-600 kW Aluminum Enclosure (130 mph Interpolated/ 190 mph Tested)	UUT-8A/-8B
	XS575300.00057	350-600 kW Aluminum Scoop	UUT-8A/-8B
	XS572500.00268	Lighting Kit (AC / DC)	UUT-7
	XS575340.00209 / XS575340.00226	Lighting Kit (AC / DC)	UUT-8A/-8B
Carbon Steel Silencer (Phillips & Temro)	SUA101916	5" Space Saver 18" Dia.	UUT-7
	SUA99120 / SUA99121	4" Space Saver 18" Dia.	Interpolated
	SUA97987 / SUA97988	5" Space Saver 18" Dia.	UUT-8A/-8B
UL142 Fuel Tank (MTU)	XS572360.00017	265 Gallon Tank	Extrapolated
	XS573360.00002	340 Gallon Tank	Extrapolated
	XS575360.00034	500 Gallon Tank	Extrapolated
	XS572360.00018	525 Gallon Tank	UUT-7
	XS573360.00003	675 Gallon Tank	Interpolated
	XS575360.00035	1000 Gallon Tank	Interpolated
	XS572360.00019	1050 Gallon Tank	Interpolated
	XS573360.00004	1350 Gallon Tank	Interpolated
	XS572360.00020	1575 Gallon Tank	Interpolated
	XS575360.00036	2000 Gallon Tank	Interpolated
	XS573360.00005	2020 Gallon Tank	Interpolated
	XS575360.00040	3000 Gallon Tank	UUT-8A

Table 3 - Certified Subcomponents (Continued)

Component (MFR)	MTU Part Number	Notes	Tested / Interpolated / Extrapolated
Engine (MTU)	SUA100171	200-300 kW	UUT-7
	SUA96384	325-400 kW	Interpolated
	SUA100149	400-500 kW	Interpolated
	SUA100139	500-600 kW	UUT-8A/-8B
Alternators (Marathon)	430 Frame	75-600 kW	UUT-7
	570 Frame	300-600 kW	UUT-8A/-8B
Radiators (Bearward)	SUA91969	230-300 kW	UUT-7
	SUA98975	350-400 kW	Interpolated
	SUA98809	450-500 kW	Interpolated
	SUA98581	550-600 kW	UUT-8A/-8B
Component (MFR)	MTU Part Number	Notes	Tested / Interpolated / Extrapolated
Air Filters (Donaldson)	SUA86885	230-600 kW	UUT-7
Air Filters (Vortex)	SUA96271	230-600 kW	UUT-8A/-8B
Controller (MTU)	MGC-1500 Model	Each controller is a depopulated version of the controller with a higher number. The boxes of the 2000 and 3000 Models are the same. The 1500 Model box is smaller. All boxes are carbon steel.	UUT-7
	MGC-2000 Model		Interpolated
	MGC-3000 Model		UUT-8A/-8B
Jacket Water Heaters (Kim Hotstart)	SUA90334	2500 W	UUT-7
	SUA98951	5000 W	UUT-8A/-8B
Breakers (Square-D)	H Frame	150 Amp Max Rating	Extrapolated
	J Frame	250 Amp Max Rating	UUT-7
	LA Frame	400 Amp Max Rating	Interpolated
	LD Frame	600 Amp Max Rating	UUT-7
	M Frame	800 Amp Max Rating	Interpolated
	P Frame	1200 Amp Max Rating	UUT-8A/-8B
Component (MFR)	MTU Part Number	Notes	Tested / Interpolated / Extrapolated
Battery (Exide)	SUA120299	12V	UUT-7 /-8A/-8B
Battery Charger (SENS)	SUA89983	10 A	UUT-7
	SUA87576	20 A	UUT-8A/-8B

Notes

4) All skids are carbon steel



UNIT UNDER TEST (UUT) Summary Sheet

UUT-7

VMA-49723-01

Model Line	Model Number	Manufacturer
1600-Model	MTU6R1600DS300	MTU

Product Construction Summary

Carbon Steel Skid, Carbon Steel Enclosure, Carbon Steel Fuel Tank

Options / Subcomponent Summary

Engine: MTU ; Alternator: Marathon ; Radiator: Bearward ; Enclosure: MTU ; Fuel Tank: MTU ; Silencer: Phillips & Temro ; Air Filter: Donaldson ; Controller: MTU ; Jacket Water Heater: Kim-Hotstart ; Breakers: Square-D ; Battery: Exide ; Battery Charger: SENS

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
11,430	230	84	135	5.1	4.9	13

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	0	1.5	2.50	1.00	1.67	0.67
		2.0	1	1.5	3.20	2.40	1.33	0.53

Test Mounting Details

Qty (13) 5/8" dia SAE Grade 8 Bolts



All units were filled with contents and maintained structural integrity and functionality



UNIT UNDER TEST (UUT) Summary Sheet

UUT-8A

VMA-49723-01

Model Line	Model Number	Manufacturer
1600-Model	MTU12V1600DS600	MTU

Product Construction Summary

Carbon Steel Skid, Aluminum Enclosure, Carbon Steel Fuel Tank

Options / Subcomponent Summary

Engine: MTU ; Alternator: Marathon ; Radiator: Bearward ; Enclosure: MTU ; Fuel Tank: MTU ; Silencer: Phillips & Temro ; Air Filter: Vortex ; Controller: MTU ; Jacket Water Heater: Kim-Hotstart ; Breakers: Square-D ; Battery: Exide ; Battery Charger: SENS

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
44,980	330	84	135	3.3	3.7	5.1

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	0	1.5	2.50	1.00	1.67	0.67
		2.0	1	1.5	3.20	2.40	1.33	0.53

Test Mounting Details

Qty (20) 5/8" dia SAE Grade 8 Bolts



All units were filled with contents and maintained structural integrity and functionality



UNIT UNDER TEST (UUT) Summary Sheet

UUT-8B

VMA-49723-01

Model Line	Model Number	Manufacturer
1600-Model	MTU12V1600DS600	MTU

Product Construction Summary

Carbon Steel Skid, Aluminum Enclosure

Options / Subcomponent Summary

Engine: MTU ; Alternator: Marathon ; Radiator: Bearward ; Enclosure: MTU ; Silencer: Phillips & Temro ; Air Filter: Vortex ; Controller: MTU ; Jacket Water Heater: Kim-Hotstart ; Breakers: Square-D ; Battery: Exide ; Battery Charger: SENS

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
14,780	270	84	100	2.9	3.7	4.9

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2013	ICC-ES AC156	2.5	0	1.5	2.50	1.00	1.67	0.67
		2.0	1	1.5	3.20	2.40	1.33	0.53

Test Mounting Details

Qty (10) VMC MSS-3E-1600 spring vibration isolators, Qty (40) 5/8" dia SAE Grade 8 Bolts to fixture



All units were filled with contents and maintained structural integrity and functionality