



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OSP – 0375-10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Cummins Power Generation

Manufacturer's Technical Representative: Bart Bashynski

Mailing Address: 1400 73rd Avenue NE, Minneapolis, MN 55432

Telephone: (763) 574-5361

Email: bart.a.bashynski@cummins.com

Product Information

Product Name: Diesel Generator Sets

Product Type: Generator Sets

Product Model Number: See Attachments

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

General Description: Diesel generators consisting of various fuel tanks, engines, alternators, enclosures, chassis/skids and controllers. Seismic enhancements made to the test units and required to address anomalies observed

during the tests shall be incorporated into the production units.

Mounting Description: Diesel generators are rigid base mounted, on or off tank.

Applicant Information

Applicant Company Name: The VMC Group

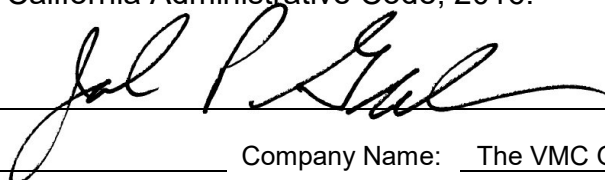
Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

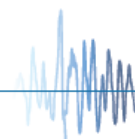
Email: john.giuliano@thevcmgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 08/20/2019

Title: President Company Name: The VMC Group

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





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: The VMC Group

Name: Ken Tarlow California License Number: SE2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: ken.tarlow@thvmcgroup.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): OSP-0375-10
- BY: Ali Sumer
- DATE: 09/05/2019

Testing Laboratory

Company Name: Dynamic Certification Laboratories

Contact Name: Kelly Laplace, Lab Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: Kelly@shaketest.com

Company Name: UC Berkley, PEER Lab

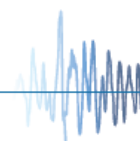
Contact Name: Amarnath Kasalanati

Mailing Address: 1301 S. 46th Street, Building 420, Richmond, CA 94804

Telephone: (510) 643-6475 Email: amarnath1@berkley.edu

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STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 12/16/15)



OSHPD

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Seismic Parameters



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

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

Design Basis of Equipment or Components (F_p/W_p) = 1.44

S_{DS} (Design spectral response acceleration at short period, g) = 2.0

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachments

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

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, 2015: ☐ 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: [Signature] Date: September 4, 2019

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.0 z/h = 1.0

Condition of Approval (if applicable): _____

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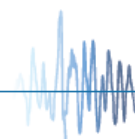


Table 1 - Certified Product Table - Diesel Generator Sets

Model	Power Rating [kW]	Mounted Off Tank				Mounted On Tank				UUT
		Maximum Dimensions [in]			Maximum Weight [lbs] ²	Maximum Dimensions [in]			Maximum Weight [lbs] ²	
		Length ²	Width	Height		Length ²	Width	Height ¹		
C10D6	10	82	34	46	1,040	98	34	88	4,300	UUT 1a, UUT 1c
C15D6	15	82	34	46	1,080	98	34	88	4,400	Interpolated
C20D6	20	82	34	46	1,200	98	34	88	4,470	UUT 2a, UUT 2c
C25D6	25	104	34	46	1,380	131	34	88	5,890	UUT 3a, UUT 3c
C30D6	30	104	34	46	1,420	131	34	88	5,930	Interpolated
C35D6	35	104	34	46	1,450	131	34	88	5,960	Interpolated
C40D6	40	104	34	46	1,630	131	34	88	6,140	Interpolated
C50D6	50	104	34	46	1,820	131	34	88	6,260	Interpolated
C60D6	60	104	34	46	1,820	131	34	88	6,260	UUT 4a, UUT 4c
C50D6C	50	136	40	58	2,523	170	40	104	8,943	Interpolated
C60D6C	60	136	40	58	2,570	170	40	104	8,990	Interpolated
C80D6C	80	136	40	58	2,620	170	40	104	9,040	UUT 9
C100D6C	100	136	40	58	2,796	170	40	104	9,216	Interpolated
C125D6C	125	136	40	58	2,880	170	40	104	9,300	UUT 10
C125D6D	125	136	40	58	3,922	180	71	111	16,020	Interpolated
C150D6D	150	136	40	58	3,922	180	71	111	16,020	Interpolated
C175D6D	175	136	40	58	3,922	180	71	111	16,020	Interpolated
C200D6D	200	136	40	58	3,922	180	71	111	16,020	UUT 13a, UUT 13b

Notes:

1. Maximum height for all possible combinations of generator set and tanks not including vent extensions.
2. Maximum length and weight assumes a Sound Level 2 (SL2) enclosure.
3. Certification includes the open, enclosed, on tank, and off tank configurations for the generator set

Table 2 - Certified Subcomponents - Enclosures

Model Number	Sound Level Type	MFR	Material	Dimensions [in]			Weight [lbs]	UUT
				Length	Width	Height		
GD02-P1-ENCL	SL1	Cummins	12 Gauge 5052-0 Aluminum and Plastic	72	34	46	125	Extrapolated
GG02-P1-ENCL	SL2			82	34	46	132	Extrapolated
GD03C-P2-ENCL	SL1			94	34	46	145	Extrapolated
GG02-P2-ENCL	SL2			104	34	46	152	Extrapolated
GG03-P1-ENCL	SL1			94	40	46	150	Extrapolated
GG06-P1-ENCL-SND	SL2			104	40	46	160	UUT 9
GG06-P1-ENCL-WTHR	Weather			94	40	46	120	UUT10
GG09-P1-ENCL-WTHR	Weather		12 Gauge 5052-H32 Aluminum	113	40	72	244	Interpolated ¹
GG09-P1-ENCL-S1	SL1			142	40	72	319	Interpolated ¹
GG09-P1-ENCL-S2	SL2			166	40	72	352	UUT 13a

Notes:

1. SL1 enclosure type is identical to SL2 type, except SL1 deletes a sound attenuation baffle on the air inlet end. Weather type enclosure is similar to SL1 and SL2 types, but without sound insulation and without inlet and outlet attenuation ducts.

Table 3 - Certified Subcomponents - Diesel Engines

Model Number	MFR	Size	kW Range	Material	UUT
D1703 (3cyl)	Kubota	1.7L	10-15	Cast Iron	UUT 1a, UUT 1c
V2203 (4cyl)		2.2L	20		UUT 2a, UUT 2c
4BT3.3-G5	Cummins	3.3L	25-40		UUT 3a, UUT 3c
4BTAA3.3-G7		3.3L	50-60		UUT 4a, UUT 4c
QSB5 G5		4.5L	50-100		UUT 9
QSB5 G6		4.5L	125		UUT 10
QSB7 G5		6.7L	125-200		UUT 13a, UUT13b

Table 4 - Certified Subcomponents - Controls

Model Number	MFR	Material	Applicable kW Range	UUT
PCC1.1	Cummins	Carbon	10-100	Extrapolated
PCC2.3		Steel and Plastic	50-150	UUT 9, UUT 10
PCC3.3			125-200	UUT 13a, UUT13b

Table 5a - Certified Subcomponents - Tanks

Model Number	Applicable Generator kW	Dimensions [in]			Tank Capacity [gal]	Regional Features		Material	Weight [lbs]			UUT	
		Height	Length	Width		Vent Pipe Dia. [in]	Max Added Weight [lbs]		Henning	UPP	Max Operating	Henning	UPP
A045T328	10-20	13	68	34	46	N/A	40	A36 Steel	N/A	304	633	N/A	UUT 1c ¹
A045T334		23			91	N/A			N/A	577	1,228	N/A	Interpolated
A045T330	10-60	15	88		74	3	170		501	399	1,030	UUT 2c	Interpolated
A045T332		23			132				741	585	1,685	Interpolated	Interpolated
A045T336		32			195				1,010	794	2,404	Interpolated	Interpolated
A045D209		42			263				1,259	975	3,139	Interpolated	Interpolated
A045T340		11			74				458	399	987	Interpolated	Interpolated
A045T342	25-60	16	121		132	4	180		668	533	1,612	Interpolated	Interpolated
A045T344		22			195				886	701	2,280	Interpolated	Interpolated
A046U786		30			263				1,159	910	3,039	Interpolated	Interpolated
A046U828		42			389				1,550	1,200	4,331	UUT 4c ¹	UUT 3c
A053L909		50-125			18			154	40	250	4	1,129	N/A
A053L911	30		425		1,499	N/A	4,538		Extrapolated	N/A			
A053L912	46		625		1,987	N/A	6,456		UUT 9, UUT 10	N/A			
A056Y392	125-250	21	180		38	351	5	1,477	N/A	3,987	Interpolated	N/A	
A056Y394		42				737		2,302	N/A	7,572	Interpolated	N/A	
A055S002		35				1,055		3,552	N/A	11,095	UUT 13a, UUT 13c, UUT 13b ¹	N/A	

Notes:
 1. UUT 1, UUT 4, UUT 13a, and UUT 13b test with optional undertank inspection risers under tank mounting pads.

Table 5b - Certified Subcomponents - Optional Tank Features

Model Number	MFR	Feature	Material(s)	Dimensions [in]			Weight [lbs]	UUT
				Length	Width	Height		
9095DS0200 AV	Morrison Bros	Overfill Protection Valve	Carbon Steel w/ Brass and Aluminum	24	4	4	17	UUT 2c, UUT 4c
516D-0200 ACPW		Spill Containment Box		17	13	13	17	UUT 2c, UUT 4c
A046K280	Cummins	Vent Extension (1 or 2 Normal & 2 Emergency) *NOTE: Brackets Add 15 lb	Carbon Steel	2.5	2.5	123	15	UUT 9, UUT 10
A046K282				3.5	3.5	123	24	Interpolated
A046U902				4.5	4.5	123	37	UUT 9, UUT 10
A046K278				2.5	2.5	147	18	UUT 2c
A046K281				3.5	3.5	147	29	UUT 2c
A057B403				5.5	5.5	147	45	UUT 13a, UUT 13b, UUT
A046V178		Riser Blocks/Barrier	Aluminum w/ Carbon Steel	2	2	6	19	UUT 1c
A046V483				2	2	6	24	UUT 4c, UUT 9, UUT 10
A057X133				2	2	6	24	UUT 13a, UUT 13b, UUT
A046K278		2' Vent Extension Pipes (Normal & 2 Emergency)	Carbon Steel	2.5	2.5	27	4	UUT 2c, UUT 4c
A046K281				3.5	3.5	27	6	UUT 2c
A046U900				4.5	4.5	27	10	UUT 4c
A057B403				5.5	5.5	27	11	UUT 13a, UUT 13b, UUT
A057R717		Mechanical Fuel Gauge	Stainless Steel	0.4	0.4	18	4	Extrapolated ¹
A054G163				0.4	0.4	20	4	
A054G164				0.4	0.4	32	4	
A057S038				0.4	0.4	34	4	
A057R719				0.4	0.4	40	4	
A054G165				0.4	0.4	44	4	UUT 9, UUT 10
4025	OEM	Normal Vent	Carbon Steel	4	4	15	2	UUT1c, UUT3c, UUT9, UUT10

Table 5b - Certified Subcomponents - Optional Tank Features Continued

Model Number	MFR	Feature	Material(s)	Dimensions [in]			Weight [lbs]	UUT
				Length	Width	Height		
0367-03-30HF	Clay & Bailey	Emergency Vent	Aluminum	6	6	3	3	UUT 1c, UUT 3c, UUT 9, UUT 10
0367-03-40HF				4.5	4.5	2.5	4	UUT 1c, UUT 3c
0366-03-50HF				7	7	3.6	5	UUT 13a, UUT 13b, UUT 13c
1780100AC	Morrison Bros	Sealed Locking Fuel Cap	Cast Iron	4	4	2	6	UUT 9, UUT 10
A046T244	Cummins	Low Fuel Switch	Stainless Steel	5	1.5	1.5	3	Extrapolated
A046T246				7	1.5	1.5	3	UUT 2c
A046T248				14	1.5	1.5	3.5	Interpolated
A046T250				20	1.5	1.5	4	UUT 4c
A054J422				14	1.5	1.5	3.5	Extrapolated ¹
A054J424				19	1.5	1.5	4	
A054J425				28	1.5	1.5	4	UUT 9, UUT 10
A057T420				12	1.5	1.5	3.5	UUT 13a, UUT 13b, UUT 13c
A057T422				24	1.5	1.5	4	UUT 13a, UUT 13b, UUT 13c
A057T423				20	1.5	1.5	4	UUT 13a, UUT 13b, UUT 13c
A046T700		Rupture Switch	Polymer	5	1.5	1.5	0.25	UUT 2c, UUT 4c
A054D642			Stainless Steel	20	0.4	0.4	3	Extrapolated ²
A054D639				30	0.4	0.4	3	
A054D638				44	0.4	0.4	3	UUT 9, UUT 10
A057W697				18	0.4	0.4	3	UUT 13a, UUT 13b, UUT 13c
A057W698				39	0.4	0.4	3	
A057W699				33	0.4	0.4	3	UUT 2c, UUT 4c
A046U484		High Fuel Level Switch	Stainless Steel	3	1.5	1.5	3	
A046U486				4.5	1.5	1.5	3	UUT 9, UUT 10, UUT 13a, UUT 13b
A054J324				5.5	1.5	1.5	3	UUT 13a, UUT 13b, UUT 13c
A057R146				6.5	1.5	1.5	3	
A057R148				6	1.5	1.5	3	UUT 2c, UUT 4c
144TA-0100-KO	OPW	High Fuel Alarm Panel	Polymer	5	5	3	2	
A046U808	Cummins	Fill Drop Tube	Carbon Steel	6	2.5	2.5	3.5	Extrapolated
A046U799				10	2.5	2.5	4	UUT 2c
A046U790				10	2.5	2.5	4	Interpolated
A046U810				10	2.5	2.5	4	
A046U793				18	2.5	2.5	7	
A046U801				18	2.5	2.5	7	
A046U812				18	2.5	2.5	7	

Table 5b - Certified Subcomponents - Optional Tank Features Continued

Model Number	MFR	Feature	Material(s)	Dimensions [in]			Weight [lbs]	UUT
				Length	Width	Height		
A046U795	Cummins	Fill Drop Tube	Carbon Steel	26	2.5	2.5	10	Interpolated
A046U803				26	2.5	2.5	10	
A046U814				26	2.5	2.5	10	
A046U797				36	2.5	2.5	14	
A046U816				36	2.5	2.5	14	UUT 4c
A054E925				19	2.5	2.5	7	Extrapolated
A054E924				29	2.5	2.5	10	
A054E921				43	2.5	2.5	15	UUT 9, UUT 10
A057S740				19.5	2.5	2.5	7	UUT 13a, UUT 13b, UUT 13c
A057S741				41	2.5	2.5	15	
A057S742				34	2.5	2.5	14	

Notes:

1. Two identical low fuel switches were tested, of the least seismic withstand capacity. Two smaller low fuel switches are extrapolated.
2. Two identical stainless steel rupture switches were tested, of the least seismic withstand capacity. The two smaller rupture switches are extrapolated.
3. Two identical tallest mechanical fuel gauges were tested, of the least seismic withstand capacity. The shorter gauges are extrapolated.

Table 6 - Certified Subcomponents - Alternators

Model Number	MFR	Material	Alternator Phase		Max Weight	UUT
			Certified	Tested		
CA115-D14	Cummins	Copper Windings w/ Steel Lamination; Steel and Aluminum Frame	Single or Three	Single	203	UUT 1a, UUT 1c
CA115-H14				Three	254	Interpolated
CA115-J12				N/A	276	
CA115-J14				N/A	276	
CA115-M12				N/A	309	
CA115-L14				Single	315	UUT 2a, UUT 2c, UUT 3a, UUT 3c
CA115-P12				N/A	331	Interpolated
CA115-P14				N/A	331	
CA115-R12				N/A	340	
CA115-R14				N/A	353	
CA115-S14				N/A	353	
CA115-T12				N/A	386	
CA115-V14				N/A	401	
CA125-G14				N/A	463	
CA125-J14				N/A	485	
CA125-L14				N/A	522	
CA135-E12				Three	536	
CA125-P14				Single	639	UUT 4a, UUT 4c

Table 6 - Certified Subcomponents - Alternators Continued

Model Number	MFR	Material	Alternator Phase		Max Weight	UUT
			Certified	Tested		
UC224D	Cummins	Copper Windings w/ Steel Lamination; Steel Frame	Single or Three	N/A	627	Extrapolated
UC224E				Single	684	UUT 9
UC224F				N/A	741	Interpolated
UC224G				N/A	843	
UC274C				N/A	893	
UC274D				N/A	948	
UC274E				Three	1,082	
UC274F				Three	1,166	UUT 10
UC274G				N/A	1,276	Interpolated
UC274H				N/A	1,378	
UC274J				Single	1,603	
UC274K				Three	1,603	UUT 13a, UUT13b

Table 7 - Certified Subcomponents - Radiators

Model Number	MFR	Material	Dimensions [in]			Weight [lbs]	UUT
			Height	Width	Depth		
A045S776	Enterex	Tank: Nylon 6 Core: Aluminum	25.9	21.3	2.6	20	UUT 1a, UUT 1c, UUT2a, UUT 2c
A044G912			29.3	28.2	3.3	22	UUT 3a, UUT 3c, UUT4a, UUT 4c
A044D176			25.9	21.3	2.6	20	Interpolated
A042V597			29.3	28.2	3.3	18	
A042V593			29.3	28.2	3.3	22	
A048U087			42	30.4	3	36	UUT 9, UUT 10
A058F021			42	30.4	3	36	UUT 13a, UUT13b

Table 8 - Certified Subcomponents - Mufflers

Model Number	MFR	Location	Material	Dimensions [in]			Weight [lbs]	UUT
				Height	Width	Depth		
A014T136	Nelson	Above Engine	18 Gauge Aluminized Carbon Steel	20.5	7.9	5.1	35.3	UUT 1a, UUT 1c
A053P721		Above Engine	19 Gauge Aluminized Carbon Steel	20.5	7.9	5.1	35.3	UUT 10
A050B660		In Front of Radiator	22 Gauge Dual Wall Aluminized Carbon Steel	32.8	13.7	7.4	27.6	UUT 9
A053S158		Above Engine	14 Gauge Aluminized Carbon Steel	26.5	14.6	12	60	Interpolated
A056H923		Above Engine	14 Gauge Aluminized Carbon Steel	26.9	20.1	12.2	60	Interpolated
A053S148		In Front of Radiator	22 Gauge Dual Wall Aluminized Carbon Steel	31.1	20.5	16.1	70	UUT 13a, UUT13b
A043T869	Cummins	In Front of Radiator	20 Gauge Aluminized Carbon Steel	32.8	13.7	7.4	27.6	Interpolated
A044J810				32.8	13.7	7.4	27.6	UUT 2a, UUT 2c
A043V771				32.8	13	10	35.3	UUT 3a, UUT 3c, UUT4a, UUT 4c

Table 9 - Certified Subcomponents - Chassis

Model Number	MFR	Material	Dimensions [in]			UUT
			Height	Width	Depth	
GD02-P1-SKID	Cummins	10 Gauge Carbon Steel; Self Piercing Rivet Joints	65.7	32.6	4.5	UUT1a, UUT 1c, UUT2a, UUT 2c
GG02-P1-SKID			65.7	32.6	4.5	Interpolated
GD03C-P2-SKID			87.6	32.6	4.5	UUT3a, UUT 3c, UUT4a, UUT 4c
GG02-P2-SKID			87.6	32.6	4.5	Interpolated
GG06-P1-SKID			98	40	6.7	UUT 9, UUT 10
GG09-P1-SKID			113	40	6.7	UUT 13a, UUT13b



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-1a

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C10 D6	Cummins

Product Construction Summary

10 Gauge Carbon Steel Skid with Self Piercing Rivets

Options / Subcomponent Summary

Engine: Kubota; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Nelson

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
900	66.0	34.0	45.0	8.0	7.5	19.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-1c

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C10 D6	Cummins

Product Construction Summary

10 Gauge Carbon Steel Skid with Self Piercing Rivets

Options / Subcomponent Summary

Engine: Kubota; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Nelson; Tank: UPP;
Normal Vent: OEM; Emergency Vent: Clay & Bailey; Riser Blocks/Barrier: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,510	66.0	34.0	58.0	7.5	5.6	17.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fuel tank using four (4) 5/8" grade 8 bolts. The fuel tank was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-2a

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C20 D6	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Kubota; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins; Enclosure: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,190	82.0	34.0	46.0	7.8	6.5	17.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-2c

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C20 D6	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Kubota; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins; Enclosure: Cummins; Tank: Henning; Overfill Protection Valve: Morrison Bros; Spill Containment Box: Morrison Bros; Vent Extension: Cummins; 2' Vent Extension Pipes: Cummins; Low Fuel Switch: Cummins; High Fuel Level Switch: Cummins; Fill Drop Tube: Cummins; High Fuel Alarm Panel: OPW

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
2,390	88.0	34.0	61.0	7.8	6.5	16.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fuel tank using four (4) 5/8" grade 8 bolts. The fuel tank was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-3a

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C25 D6	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins; Enclosure: Cummins;

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,370	94.0	34.0	46.0	6.5	5.3	15.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-3c

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C25 D6	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins; Enclosure: Cummins; Tank: UPP; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Mechanical Fuel Gauge: Cummins;

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
5,544	121.0	34.0	88.0	5.3	4.0	14.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fuel tank using four (4) 5/8" grade 8 bolts. Fuel tank was mounted to the fixture using six (6) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-4a

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C60 D6	Cummins

Product Construction Summary

10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,660	88.0	34.0	45.0	6.5	5.5	12.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fixture using four (4) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-4c

DCL 77789-1302

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C60 D6	Cummins

Product Construction Summary

10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Cummins; Tank: Henning; Overfill Protection Valve: Morrison Bros; Spill Containment Box: Morrison Bros; Riser Blocks/Barrier: Cummins; 2' Vent Extension Pipes: Cummins; Low Fuel Switch: Cummins; Rupture Switch: Cummins; High Level Fuel Switch: Cummins; High Fuel Alarm Panel: Cummins; Fill Drop Tube: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
6,052	121.0	34.0	87.0	5.5	3.8	12.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT was mounted to the fuel tank using four (4) 5/8" grade 8 bolts. Fuel tank was mounted to the fixture using six (6) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-9

33817-1501

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C80 D6C	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Nelson; Enclosure: Cummins; Tank: Henning; Controller: Cummins; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Low Level Fuel Switch: Cummins; Rupture Switch: Cummins; Overfill Protection Valve: Cummins; Vent Extensions: Cummins; Riser Blocks/Barrier: Cummins; Mechanical Fuel Gauge: Cummins; Sealed Locking Fuel Cap: Morrison Bros

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
9,040	170.0	40.0	104.0	8.3	4.5	9.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	3.00	1.67	0.67

Test Mounting Details

UUT was mounted to the fuel tank using six (6) M16 grade 8.8 bolts. The fuel tank was mounted to the fixture using ten (10) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-10

33817-1501

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C125 D6C	Cummins

Product Construction Summary

12 Gauge 5052-0 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Nelson; Enclosure: Cummins; Controller: Cummins; Tank: Henning; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Low Fuel Switch: Cummins; Rupture Switch: Cummins; Fill Drop Tube: Cummins; Overfill Protection Valve: Cummins; Vent Extension: Cummins; Riser Blocks/Barrier: Cummins; Sealed Locking Fuel Cap: Morrison Bros

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
9,300	154.0	40.0	104.0	9.0	6.0	10.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	3.00	1.67	0.67

Test Mounting Details

UUT was mounted to the fuel tank using six (6) M16 grade 8.8 bolts. The fuel tank was mounted to the fixture using ten (10) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-13a

DCL 38323-1701

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C200 D6	Cummins

Product Construction Summary

12 Gauge 5052-H32 Aluminum and Plastic Enclosure, 10 Gauge Carbon Steel Skid with Self Piercing Rivet Joints

Options / Subcomponent Summary

Engine: Cummins; Radiator: Enterex; Chassis: Cummins; Alternator: Cummins; Muffler: Nelson; Enclosure: Cummins; Controller: Cummins; Tank: Henning; 10' Vent Extensions: Cummins; Riser Blocks/Barrier: Cummins; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Low Fuel Switch: Cummins; Rupture Switch: Cummins; High Fuel Level Switch: Cummins; Fill Drop Tube: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
16,020	196.0	71.0	110.0	3.5	9.0	11.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	3.00	1.67	0.67

Test Mounting Details

UUT was mounted to the fuel tank using six (6) M16 grade 8.8 bolts. The fuel tank was mounted to the fixture using sixteen (16) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-13b

DCL 38323-1701

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C200 D6	Cummins

Product Construction Summary

UL142 Rectangular Double Wall Tank with A569 Carbon Steel

Options / Subcomponent Summary

Tank: Henning; 4' Vent Extensions: Cummins; Riser Blocks/Barrier: Cummins; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Low Fuel Switch: Cummins; Rupture Switch: Cummins; High Fuel Level Switch: Cummins; Fill Drop Tube: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
11,890	180.0	71.0	37.0	>33.3	>33.3	22.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	3.00	1.67	0.67

Test Mounting Details

The fuel tank was mounted to the fixture using sixteen (16) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) SUMMARY SHEET

UUT-13c

DCL 38323-1701

Model Line	Model Number	Manufacturer
Diesel Generator Sets	C200 D6	Cummins

Product Construction Summary

UL142 Rectangular Double Wall Tank with A569 Carbon Steel

Options / Subcomponent Summary

Tank: Henning; 3' Baffled Vent Extensions: Cummins; Riser Blocks/Barrier: Cummins; Normal Vent: OEM; Emergency Vent: Clay & Bailey; Low Fuel Switch: Cummins; Rupture Switch: Cummins; High Fuel Level Switch: Cummins; Fill Drop Tube: Cummins

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
11,880	180.0	71.0	37.0	>33.3	>33.3	22.0

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S_{DS}	z/h	I_p	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	3.00	1.67	0.67

Test Mounting Details

The fuel tank was mounted to the fixture using sixteen (16) 5/8" grade 8 bolts.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.