



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0321

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Caterpillar Electric Power Division

Manufacturer's Technical Representative: Vasantha Kodukula

Mailing Address: 1720 West Kingsbury Street, Seguin, TX 78155

Telephone: (830) 386-2803

Email: Vasantha.kodukula@cat.com

Product Information

Product Name: Emergency and Standby Power Systems

Product Type: Generators

Product Model Number: C4.4, C6.6, C7.1, C9, C13, C15, C18

General Description: Diesel powered internally isolated, rigid base mounted generators
Sizes D40, D50, D60, D80, D100, D125, D150, D175, D200, C9, C13, C15, and C18

Mounting Description: Internally isolated, rigid base mounted,, on or off fuel tanks, with or without enclosures

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: The VMC Group

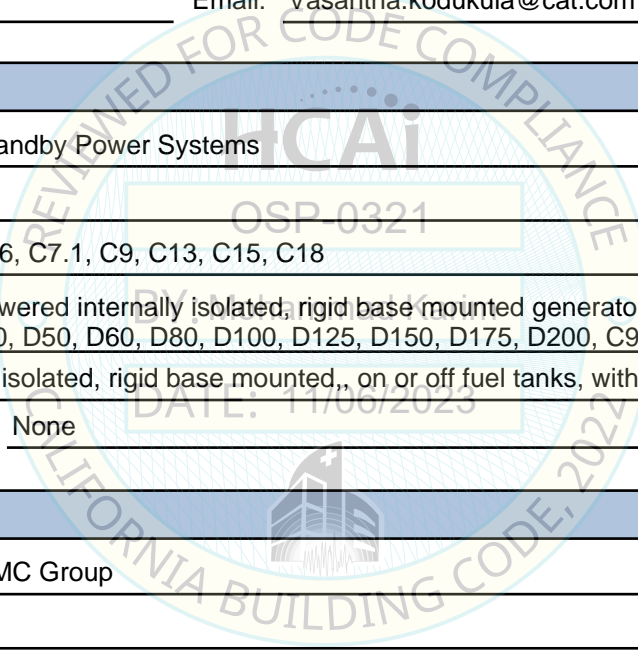
Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thevmcgroup.com

Title: President





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: THE VMC GROUP
Name: Kenneth Tarlow California License Number: S2851
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, CONSTRUCTION ENGINEERING RESEARCH LABORATORY (CERL)
Contact Person: James Wilcoski
Mailing Address: 2902 Newmark Dr., Champaign IL 61822-1076
Telephone: (217) 373-6763 Email: James.wilcoski@usace.army.mil

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)
Contact Person: Kelly Laplace
Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431
Telephone: (775) 358-5085 Email: Kelly@shaketest.com

Company Name: Pacific Earthquake Engineering Research Center (PEER)
Contact Person: Clement Barthes
Mailing Address: 1301 South 46th St., Bldg. 420, Richmond CA 94720-1729
Telephone: (510) 665-3409 Email: clementbarthes@berkeley.edu





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FACILITIES DEVELOPMENT DIVISION**

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.7

SDS (Design spectral response acceleration at short period, g) = 2.26

a_p (Amplification factor) = 2.5 (internally isolated)

R_p (Response modification factor) = 2.0 (internally isolated)

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 11/06/2029

Date: 11/6/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.26 z/h = 0

Condition of Approval (if applicable): DATE: 11/06/2023

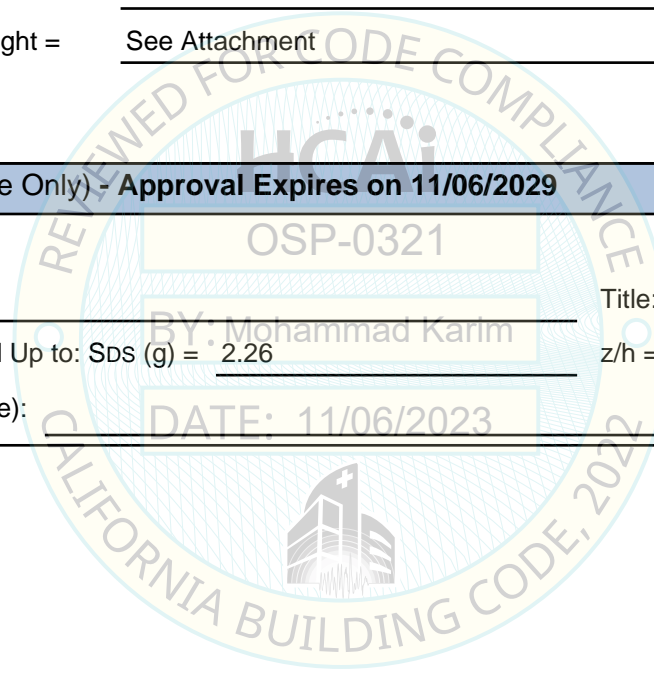


Table 1 - Certified Gensets On Tanks

Product Family	Model	Rating [kW]	EPA Rating	Max Package Dimensions [in]			Weight ¹ [lbs]	UUT
				Length	Width	Height ²		
C4.4 Enclosed	D40 / D50 / D60	60	Tier 3	108	44	84	6,310	Interpolated
C4.4 Enclosed	D50	50	Tier 3	108	41	80	6,310	UUT-01A, UUT-01B
C4.4 Open	D40 / D50 / D60	60	Tier 3	108	44	79	5,750	Extrapolated
C4.4 Open	D80 / D100	100	Tier 3	136	44	85	7,808	Interpolated
C4.4 Enclosed	D80 / D100	100	Tier 3	136	44	92	8,516	Interpolated
C6.6 Open	D125 / D150 / D175	175	Tier 3	198	44	95	11,856	Interpolated
C6.6 Enclosed	D125 / D150 / D175	175	Tier 3	198	44	96	12,830	Interpolated
C6.6 Enclosed	D175	175	Tier 3	199	44	96	12,830	UUT-02A, UUT-02B
C7.1 Open	D125/D150/D175/D200	200	Tier 3	198	44	96	12,114	Interpolated
C7.1 Enclosed	D125/D150/D175/D200	200	Tier 3	198	44	96	13,088	Interpolated
C9 Open Wide Skid	C9	300	Tier 3	219	81	108	17,450	Interpolated
C9 Enclosed	C9	300	Tier 3	219	81	114	19,850	Interpolated
C13 Open Wide Skid	C13	400	Tier 3	279	81	118	28,176	Interpolated
C13 Enclosed	C13	400	Tier 3	286	81	124	30,864	Interpolated
C15 Open Wide Skid	C15	450	Tier 3	244	81	119	25,773	Interpolated
C15 Enclosed	C15	450	Tier 3	251	81	127	28,504	Interpolated
C15 Open Wide Skid	C15	500	Tier 2	244	81	119	26,304	Interpolated
C15 Enclosed	C15	500	Tier 2	251	81	127	29,034	Interpolated
C18 Open Wide Skid	C18 Tier 4F	500	Tier 4 Final	230	90	99	19,042	Interpolated
C18 Enclosed	C18 Tier 4F	500	Tier 4 Final	247	90	111	16,900	UUT-05
C18 Open Wide Skid	500-600kW	600	Tier 2	279	81	118	29,205	Interpolated
C18 Enclosed	500-600kW	600	Tier 2	286	81	124	32,031	Interpolated
C18 Enclosed	600kW	600	Tier 2	279	81	124	32,031	UUT-03

¹Weights include genset, enclosure (where applicable), and fuel tank with operating fluid

²Does not include the height of the tank

*Underlined and/or highlighted units shake tested in accordance with AC156

Table 2 - Certified Gensets Off Tanks

Product Family	Model	Rating [kW]	EPA Rating	Max Package Dimensions [in]			Weight ¹ [lbs]	UUT
				Length	Width	Height		
C4.4 Enclosed	D40 / D50 / D60	60	Tier 3	97	44	51	3,020	Interpolated
C4.4 Enclosed	D50	50	Tier 3	102	41	96	3,020	UUT-01C
C4.4 Open	D40 / D50 / D60	60	Tier 3	97	44	51	3,253	Interpolated
C4.4 Open	D80 / D100	100	Tier 3	97	44	51	3,253	Interpolated
C4.4 Enclosed	D80 / D100	100	Tier 3	114	44	59	3,961	Interpolated
C6.6 Open	D125 / D150 / D175	175	Tier 3	123	44	58	4,184	Interpolated
C6.6 Enclosed	D125 / D150 / D175	175	Tier 3	143	44	59	5,090	Interpolated
C6.6 Enclosed	D175	175	Tier 3	144	44	60	5,090	UUT-02C
C7.1 Open	D125/D150/D175/D200	200	Tier 3	123	44	58	4,442	Interpolated
C7.1 Enclosed	D125/D150/D175/D200	200	Tier 3	143	44	59	5,348	Interpolated
C9 Open Narrow Skid	C9	300	Tier 3	122	64	80	5,423	Interpolated
C9 Open Wide Skid	C9	300	Tier 3	150	80	80	5,961	Interpolated
C9 Enclosed	C9	300	Tier 3	178	80	87	8,364	Interpolated
C13 Open Narrow Skid	C13	400	Tier 3	138	64	82	7,584	Interpolated
C13 Open Wide Skid	C13	400	Tier 3	186	80	84	8,283	Interpolated
C13 Enclosed	C13	400	Tier 3	195	80	91	11,036	Interpolated
C15 Open Narrow Skid	C15	450	Tier 3	138	64	84	8,253	Interpolated
C15 Open Wide Skid	C15	450	Tier 3	150	80	84	8,662	Interpolated
C15 Enclosed	C15	450	Tier 3	195	80	91	11,393	Interpolated
C15 Open Narrow Skid	C15	500	Tier 2	138	64	84	8,784	Interpolated
C15 Open Wide Skid	C15	500	Tier 2	150	80	84	9,193	Interpolated
C15 Enclosed	C15	500	Tier 2	195	80	91	11,923	Interpolated
C18 Open Narrow Skid	C18	600	Tier 2	132	44	83	8,800	UUT-04
C18 Open Wide Skid	C18	600	Tier 2	150	80	83	9,353	Extrapolated
C18 Enclosed	C18	600	Tier 2	204	80	89	12,179	Interpolated ²
C18 Open Wide Skid	C18 Tier 4F	500	Tier 4 Final	209	90	84	11,294	Interpolated
C18 Enclosed	C18 Tier 4F	500	Tier 4 Final	227	90	96	13,720	Interpolated ³

¹Weights include genset and enclosure (where applicable)

²Similar to UUT-05, the only difference is lack of fuel tank

³Similar to UUT-03, the only difference is lack of fuel tank

*Underlined and/or highlighted units shake tested in accordance with AC156

Table 2 - Certified Enclosures

Product Family [Caterpillar]	Model	Type	Part Number	Max Dimensions [in]			Material	Weight [lb]	UUT
				Length	Width	Height			
C4.4	D40, D50, D60	WP with Window	3943713	77	41	51	Steel	482	Extrapolated
		WP Standard	3816168	77	41	51	Steel	483	Extrapolated
		SA1 with Window	3943715	92	41	51	Steel	544	Extrapolated
		SA1 Standard	3943714	92	41	51	Steel	545	Extrapolated
		SA2 with Window	3943717	92	41	51	Steel	596	UUT-01A, UUT-01B, UUT-01C
		SA2 Standard	3943716	92	41	51	Steel	598	Interpolated
	D80, D100	WP Standard	3818667	93	41	59	Steel	611	Interpolated
		WP with Window	3943721	93	41	59	Steel	616	Interpolated
		SA1 Standard	3943722	114	41	59	Steel	690	Interpolated
		SA1 with Window	3943723	114	41	59	Steel	696	Interpolated
		SA2 Standard	3943724	114	41	59	Steel	711	Interpolated
C6.6 / C7.1	D125, D150, D175, D200	SA2 with Window	3943725	114	41	59	Steel	717	Interpolated
		WP Standard (D125-175)	3943734	120	41	59	Steel	735	Interpolated
		WP with Window (D125-175)	3943735	120	41	59	Steel	741	Interpolated
		WP Standard (D200)	3784033	120	41	59	Steel	734	Interpolated
		WP with Window (D200)	3943733	120	41	59	Steel	739	Interpolated
		SA1 Standard	3943736	144	41	59	Steel	815	Interpolated
		SA1 with Window	3943737	144	41	59	Steel	821	Interpolated
		SA2 Standard	3943738	144	41	59	Steel	895	UUT-02A, UUT-02B, UUT-02C
C9	C9	WP Standard	449-0700	159	73	71	Steel	1,392	Interpolated
			606-9742 ¹	159	73	71	Steel	1,392	Interpolated
			606-9743 ²	159	73	71	Steel	1,392	Interpolated
		SA1 Standard	453-2197	177	73	71	Steel	1,863	Interpolated
			606-9755 ¹	177	73	71	Steel	1,863	Interpolated
			606-9761 ²	177	73	71	Steel	1,863	Interpolated
		SA1 with Window	453-2198	177	73	71	Steel	1,873	Interpolated
			606-9756 ¹	177	73	71	Steel	1,873	Interpolated
			606-9762 ²	177	73	71	Steel	1,873	Interpolated
		SA2 Standard	449-0534	177	73	71	Steel	2,365	Interpolated
			606-9757 ¹	177	73	71	Steel	2,365	Interpolated
			606-9763 ²	177	73	71	Steel	2,365	Interpolated

Notes:

WP=Weatherproof, SA=Sound Attenuated, SA1=Sound Attenuated Level 1, SA2=Sound Attenuated Level 2, CW=Cold Weather

¹Yellow color enclosure

²White color enclosure

Table 2 - Certified Enclosures, Continued

Product Family [Caterpillar]	Model	Type	Part Number	Max Dimensions [in]			Material	Weight [lb]	UUT
				Length	Width	Height			
C9	C9	SA2 With Window	449-0724	178	88	74	Steel	2,373	Interpolated
			606-9758 ¹	178	88	74	Steel	2,373	Interpolated
			606-9764 ²	178	88	74	Steel	2,373	Interpolated
		WP	463-3012	195	75	71	Steel	1,375	Interpolated
			607-7000 ¹	195	75	71	Steel	1,375	Interpolated
			607-7012 ²	195	75	71	Steel	1,375	Interpolated
		SA1 Standard	463-3012	195	75	71	Steel	1,375	Interpolated
			607-7004 ¹	195	75	71	Steel	1,375	Interpolated
			607-7013 ²	195	75	71	Steel	1,375	Interpolated
		SA1 with Window	463-3012	195	75	71	Steel	1,375	Interpolated
			607-7005 ¹	195	75	71	Steel	1,375	Interpolated
			607-7014 ²	195	75	71	Steel	1,375	Interpolated
		SA2 Standard	463-3012	195	75	71	Steel	1,375	Interpolated
			607-7008 ¹	195	75	71	Steel	1,375	Interpolated
			607-7017 ²	195	75	71	Steel	1,375	Interpolated
SA2 with Window	463-3012	195	75	71	Steel	1,375	Interpolated		
	607-7009 ¹	195	75	71	Steel	1,375	Interpolated		
	607-7018 ²	195	75	71	Steel	1,375	Interpolated		
C15	C15	SA Standard	393-2460	194	73	71	Steel	2,677	Interpolated
			607-4750 ¹	194	73	71	Steel	2,677	Interpolated
			607-4759 ²	194	73	71	Steel	2,677	Interpolated
		SA with Window	422-6087	194	73	71	Steel	2,688	Interpolated
			607-4751 ¹	194	73	71	Steel	2,688	Interpolated
C18	C18	SA Standard	393-2442	204	73	71	Steel	2,654	Interpolated
			607-4774 ¹	204	73	71	Steel	2,654	Interpolated
			607-4780 ²	204	73	71	Steel	2,654	Interpolated
		SA with Window	422-6089	204	73	71	Steel	2,665	UUT-03
			607-4775 ¹	204	73	71	Steel	2,665	Interpolated
			607-4782 ²	204	73	71	Steel	2,665	Interpolated
	C18 Tier 4F	SA Standard	606-7320 ¹	226	89	83	Steel	3,136	Interpolated
			606-7321 ²	226	89	83	Steel	3,136	Interpolated
			461-6316	226	89	83	Steel	3,136	UUT-05

Notes:
 WP=Weatherproof, SA=Sound Attenuated, SA1=Sound Attenuated Level 1, SA2=Sound Attenuated Level 2, CW=Cold Weather

¹Yellow color enclosure

²White color enclosure

Table 3 - Certified Subcomponents

Component [MFR]	Part Number	Notes	Weight [lb]	UUT
UL-142 Tanks [Caterpillar]	387-7613	156 Gallons	919	Extrapolated
	392-8555	228 Gallons	1,184	Extrapolated
	387-7612	285 Gallons	1,246	UUT-01A, UUT-01B
	382-3984	376 Gallons	1,587	Interpolated
	466-9202	408 Gallons	1,552	Interpolated
	392-8565	412 Gallons	1,590	Interpolated
	449-0565	660 Gallons	2,299	Interpolated
	599-7214	660 Gallons	2,353	Interpolated
	461-6197	660 Gallons	2,875	UUT-05
	392-8524	725 Gallons	2,524	UUT-02A, UUT-02B
	466-9205	784 Gallons	2,370	Interpolated
	419-6632	1,000 Gallons	3,278	Interpolated
	463-3100	1,100 Gallons	3,408	Interpolated
	599-7141	1100 Gallons	3,501	Interpolated
	422-6066	1,855 Gallons	4,541	Interpolated
419-6634	2,160 Gallons	4,991	UUT-03	
Engine [Perkins ¹ /Caterpillar]	383-7265	D40	1,190	Extrapolated
	383-7266	D50	1,190	UUT-01A, UUT-01B, UUT-01C
	383-7267	D60	1,190	Interpolated
	383-7268	D80	1,190	Interpolated
	383-7269	D100	1,190	Interpolated
	291-0361	D125	1,543	Interpolated
	469-6214	D125	1,543	Interpolated
	291-0362	D150	1,543	Interpolated
	469-6211	D150	1,543	Interpolated
	390-3314	D175	1,709	UUT-02A, UUT-02B, UUT-02C
	469-4413	D175	1,709	Interpolated
	456-7961	D200	1,709	Interpolated
	452-9865	C9	1,841	Interpolated
	434-3726	C13	2,867	Interpolated
	506-6872	C13	2,867	Interpolated
	423-0922	C15	3,675	Interpolated
	420-6876	C15	3,675	Interpolated
420-6877	C18	3,935	UUT-03, UUT-04	
419-0904	C18 Tier 4F	3,935	UUT-05	
Alternators [Leroy Somer]	1500 Frame	C4.4	410	Extrapolated
	2000 Frame	C4.4 / C6.6	754	UUT-01A, UUT-01B, UUT-01C
	3000 Frame	C4.4 / C6.6 / C7.1	955	Interpolated
	3100 Frame	C4.4 / C6.6 / C7.1	1,213	Interpolated
	5000 Frame	C9	1,973	UUT-02A, UUT-02B, UUT-02C
	6100 Frame	C9/C13/C15/C18(500-600 kW)	2,886	UUT-05
	7000 Frame	C15/ C18(500-600 kW)	3,671	UUT-03, UUT-04
Radiators [Denso-Marston]	3174133	D40/ D50 / D60	51	UUT-01A, UUT-01B, UUT-01C
	2994051	D80/ D100	71	Interpolated
	2758174	D125 / D150	148	Interpolated
	3304835	D175 / D200	157	UUT-02A, UUT-02B, UUT-02C
	384-2246	C9 / C13	269	Interpolated
	354-6434	C13 / C15	309	Interpolated
	366-0080	C18 (500-600 kW)	584	UUT-03, UUT-04
Radiators [Bearward]	336-8518	C18 Tier 4F	584	UUT-05

¹ Perkins is a brand of Caterpillar

Table 3 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model Number	Notes	Weight [lb]	UUT
16 Gauge Steel Control Panel / Box [Caterpillar]	N/A	C4.4 / C6.6 / C7.1	33	UUT-01A, UUT-01B, UUT-01C UUT-02A, UUT-02B, UUT-02C
	374-5749	C9 / C15 / C18 (500-600 kW)	177	UUT-03, UUT-04
	461-6309	C18 Tier 4F	177	UUT-05
Controller [Caterpillar]	4311966	Controller - EMCP 4.2 (AVR Compatible)	6	UUT-01A, UUT-01B, UUT-01C UUT-02A, UUT-02B, UUT-02C
	442-7222	Controller - EMCP 4.2 (IVR Compatible)	6	UUT-03
	390-1195	Controller - EMCP 4.3	6	UUT-04
	356-0121	Controller - EMCP 4.4	7	Extrapolated
	DSE6310	GCCP 1.2	2 (screen only) 120 (with cabinet)	UUT-10
	DSE8610	GCCP 1.5	3 (screen only) 69 (with cabinet)	UUT-11
Voltage Regulators [Leroy-Somer]	R250 (AVR)	Control Panel-Mounted	2.2	UUT-01A, UUT-01B, UUT-01C
	R251 (AVR)	Control Panel-Mounted	2.2	Extrapolated
	R250 (AVR)	Alternator-Mounted	2.2	UUT-02A, UUT-02B, UUT-02C
	R450 (AVR)	Alternator-Mounted	2.2	UUT-04
	EM10 (IVR)	Alternator-Mounted	2.2	UUT-03
Main Breaker Box [Caterpillar]	449-0638	14 Gauge Carbon Steel	64	UUT-03
	390-4858	14 Gauge Carbon Steel	64	UUT-04
Auxiliary Breaker Box [Caterpillar]	449-0619	16 Gauge Carbon Steel	31	UUT-03
Molded Case Breakers [Square D]	R Frame	C9-C18 (350-750 kW)	77	UUT-03, UUT-04
Molded Case Breakers [ABB]	T Series	C9-C18 (200-750 kW)	55	UUT-01A, UUT-01B, UUT-01C UUT-02A, UUT-02B, UUT-02C
	XT5	400 A	12	UUT-07
	XT6	600/800 A	26	Interpolated
	XT7	1200 A	39	Interpolated
	XT7M	1200 A	40	UUT-08
Battery [Caterpillar]	9X-3404	12V	68	UUT-09A ² , UUT-09B ²

²Battery tested on wall mounted battery tray (PN: 423-7137) and secured to tray with strap (PN: 399-2026)



UNIT UNDER TEST (UUT) Summary Sheet

UUT-1A

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C4.4 D50	Caterpillar

Product Construction Summary

50kW Diesel Powered Electrical Generator Set, SA2 Carbon Steel Enclosure, and 285 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,260	108.0	41.0	80.0	5.3	6.8	11.8

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66	

Test Mounting Details

UUT-1A was rigidly mounted to the fuel tank using (12) 5/8" diameter Grade 8 bolts. The tank was rigidly connected to the shake table using (12) 5/8" Grade 8 bolts.



Unit tested with empty tank and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-1B

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C4.4 D50	Caterpillar

Product Construction Summary

50kW Diesel Powered Electrical Generator Set, SA2 Carbon Steel Enclosure, and 285 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
6,310	108.0	41.0	80.0	4.6	5.6	11.3

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66
		-	-	-	-	-	-	-

Test Mounting Details

UUT-1B was rigidly mounted to the fuel tank using (12) 5/8" diameter Grade 8 bolts. The tank was rigidly connected to the shake table using (12) 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

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C4.4 D50	Caterpillar

Product Construction Summary

50kW Diesel Powered Electrical Generator Set and SA2 Carbon Steel Enclosure

Options / Subcomponent Summary

Enclosure, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,020	102.0	41.0	96.0	3.9	5.4	10.3

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66
		-	-	-	-	-	-	-

Test Mounting Details

UUT-1C was rigidly mounted to the shake table using (12) 5/8" diameter 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

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C6.6 D175	Caterpillar

Product Construction Summary

175kW Diesel Powered Electrical Generator Set, SA2 Carbon Steel Enclosure, and 725 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
7,610	199.0	44.0	96.0	4.3	7.0	9.4

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66

Test Mounting Details

UUT-2A was rigidly mounted to the fuel tank using (12) 5/8" diameter Grade 8 bolts. The tank was rigidly connected to the shake table using (16) 5/8" Grade 8 bolts.



Unit tested with empty tank and maintained structural integrity and functionality after AC-156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-2B

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C6.6 D175	Caterpillar

Product Construction Summary

175kW Diesel Powered Electrical Generator Set, SA2 Carbon Steel Enclosure, and 725 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
12,830	199.0	44.0	96.0	3.7	6.1	8.8

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66

Test Mounting Details

UUT-2B was rigidly mounted to the fuel tank using (12) 5/8" diameter Grade 8 bolts. The tank was rigidly connected to the shake table using (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-2C

Test Report: PEER STI 2012-21

Model Line	Model Number	Manufacturer
Electrical Generator	C6.6 D175	Caterpillar

Product Construction Summary

175kW Diesel Powered Electrical Generator Set and SA2 Carbon Steel Enclosure

Options / Subcomponent Summary

Enclosure, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, Molded Case Breakers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
5,090	144.0	44.0	60.0	3.4	6.6	8.6

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 2022	ICC-ES AC156	2.49	0.0	1.5	2.49	1.00	1.66	0.66
		-	-	-	-	-	-	-

Test Mounting Details

UUT-2C was rigidly mounted to the shake table using (12) 5/8" diameter 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-3

Test Report: VMA-48473-01E

Model Line	Model Number	Manufacturer
Electrical Generator	C18	Caterpillar

Product Construction Summary

600kW Diesel Powered Electrical Generator Set, SA Carbon Steel Enclosure, and 2160 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, 14 Gauge Carbon Steel Main Breaker Box, 16 Gauge Carbon Steel Auxiliary Breaker Box, Molded Case Breakers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
32,031	279.0	81.0	124.0	6.2	4.8	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 2022	ICC-ES AC156	2.26	0.0	1.5	2.26	0.90	1.51	0.60
		-	-	-	-	-	-	-

Test Mounting Details

UUT-3 was rigidly mounted to the shake table using (18) M16 ISO 10.9 Grade bolts with nuts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-4

Test Report: PEER STI 2013-04; UUT-4A

Model Line	Model Number	Manufacturer
Electrical Generator	C18	Caterpillar

Product Construction Summary

600kW Diesel Powered Electrical Generator Set

Options / Subcomponent Summary

Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box, Controller, Voltage Regulator, 14 Gauge Carbon Steel Main Breaker Box, Molded Case Breakers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
8,800	132.0	44.0	83.0	4.4	5.9	11.2

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 2022	ICC-ES AC156	2.30	0.0	1.5	2.30	0.92	1.53	0.61
		-	-	-	-	-	-	-

Test Mounting Details

UUT-4 was rigidly mounted to the shake table using (6) 3/4" diameter 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-5

Test Report: PEER STI 2015-12

Model Line	Model Number	Manufacturer
Electrical Generator	C18 T4 Final	Caterpillar

Product Construction Summary

500kW Diesel Powered Electrical Genset

Options / Subcomponent Summary

Enclosure, Fuel Tank, Engine, Alternator, Radiator, 16 Gauge Steel Control Panel/Box

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
16,900	247.0	90.0	111.0	3.9	4.9	7.2

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 2022	ICC-ES AC156	2.26	0.0	1.5	2.26	0.90	1.51	0.60
		-	-	-	-	-	-	-

Test Mounting Details

UUT-5 was rigidly mounted to the fuel tank using (12) 5/8" diameter Grade 8 bolts. The tank was rigidly connected to the shake table using (12) 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-7

Test Report: 19859-2201; UUT-1

Model Line	Model Number	Manufacturer
Electrical Generator	XT 5	ABB

Product Construction Summary

Plastic Molded Case

Options / Subcomponent Summary

N/A

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
12	6.0	5.8	8.5	N/A	N/A	N/A

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 2022	ICC-ES AC156	1.55	1.0	1.5	-	1.87	-	-
		2.49	0.0	1.5	2.49	-	1.67	0.67

Test Mounting Details

UUT-7 was mounted directly to the wall fixture using (4) M5 105mm Grade 4.8 bolts, washers, nuts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-8

Test Report: 19859-2201; UUT-2

Model Line	Model Number	Manufacturer
Electrical Generator	XT7M	ABB

Product Construction Summary

Plastic Molded Case

Options / Subcomponent Summary

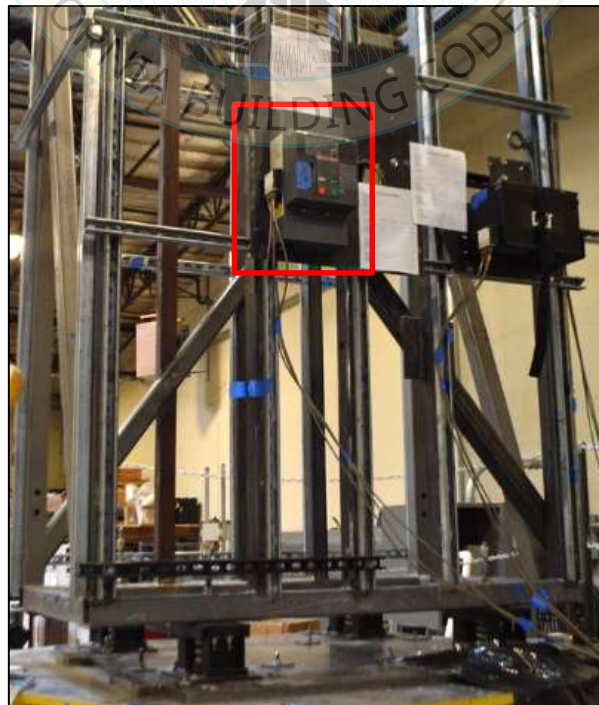
N/A

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
40	8.5	7.0	15.0	N/A	N/A	N/A

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 2022	ICC-ES AC156	1.55	1.0	1.5	-	1.87	-	-
		2.49	0.0	1.5	2.49	-	1.67	0.67

Test Mounting Details

UUT-8 was mounted directly to the wall fixture using (4) M5 105mm Grade 4.8 bolts, washers, nuts. The wall fixture was flexible mounted to the shake table with (4) VMC Group MSSH isolators.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-9A

Test Report: 19859-2201; UUT-3A

Model Line	Model Number	Manufacturer
Electrical Generator	9X-3404	Caterpillar

Product Construction Summary

Wet Cell Battery, Battery Tray, Strap

Options / Subcomponent Summary

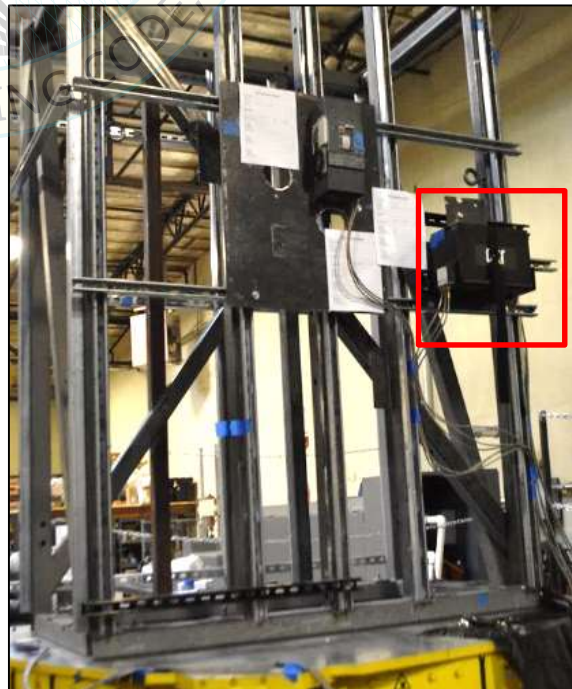
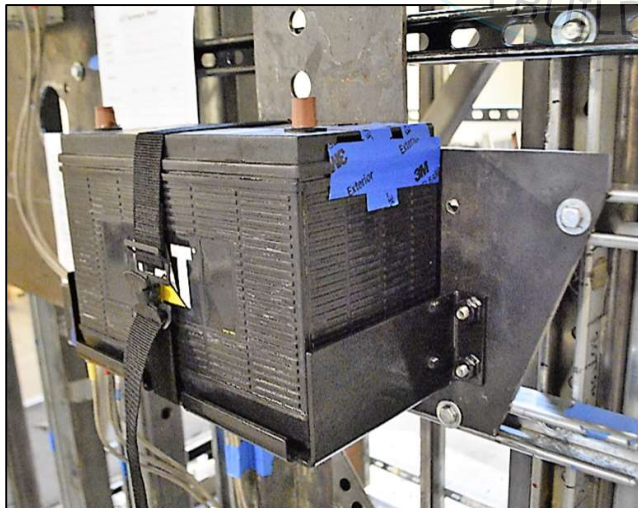
N/A

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
68	16.3	7.0	9.5	N/A	N/A	N/A

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 2022	ICC-ES AC156	1.55	1.0	1.5	-	1.87	-	-
		2.49	0.0	1.5	2.49	-	1.67	0.67

Test Mounting Details

The battery was supported by battery tray (PN: 423-7137) and secured to the tray with strap (PN: 399-2026). The battery tray was mounted directly to the wall fixture using (4) 3/8" diameter Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-9B

Test Report: 19859-2201; UUT-3B

Model Line	Model Number	Manufacturer
Electrical Generator	9X-3404	Caterpillar

Product Construction Summary

Wet Cell Battery, Battery Tray, Strap

Options / Subcomponent Summary

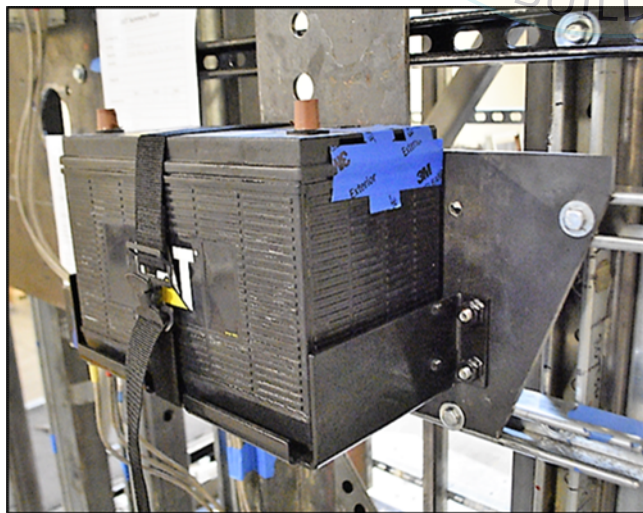
N/A

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
68	16.3	7.0	9.5	N/A	N/A	N/A

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 2022	ICC-ES AC156	1.55	1.0	1.5	-	1.87	-	-
		2.49	0.0	1.5	2.49	-	1.67	0.67

Test Mounting Details

The battery was supported by battery tray (PN: 423-7137) and secured to the tray with strap (PN: 399-2026). The battery tray was mounted directly to the wall fixture using (4) 3/8" diameter Grade 5 bolts. The wall fixture was flexible mounted to the shake table with (4) VMC Group MSSH isolators.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-10

Test Report: 18449-2201; UUT-2

Model Line	Model Number	Manufacturer
Electrical Generator	D30	Caterpillar

Product Construction Summary

Carbon Steel Enclosure, Carbon Steel Fuel Tank

Options / Subcomponent Summary

Tank: Caterpillar; Enclosure: MGK Brazil; Engine/Radiator: Perkins; Alternator: LS; Controller: Caterpillar (DSE6310)

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,650	41.0	88.5	72.0	7.0	4.5	12.0

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 2022	ICC-ES AC156	1.56	1.0	1.5	-	1.87	-	-
		2.50	0.0	1.5	2.50	-	1.68	0.68

Test Mounting Details

UUT-10 was rigidly mounted to the shake table using (8) 1/2" diameter Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-11

Test Report: 21017-2301; UUT-1

Model Line	Model Number	Manufacturer
Electrical Generator	DSE8610 (DeepSea GCCP 1.5)	Caterpillar

Product Construction Summary

Carbon Steel and Plastic

Options / Subcomponent Summary

N/A

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
69	11.5	23.8	46.3	N/A	N/A	N/A

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 2022	ICC-ES AC156	1.56	1.0	1.5	-	1.87	-	-
		2.50	0.0	1.5	2.50	-	1.68	0.68

Test Mounting Details

UUT-11 was attached to steel interface plate with (7) 3/8" Grade 5 bolts. The steel interface plate was attached to the shake table using (4) VMC MSSH-1E spring isolators.



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