APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0553

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Rolls-Royce Solutions 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: See Attached Approved Product Listing

Product Model Number(s): See Attached Approved Product Listing

Product Category: Emergency and Standby Power Systems

Product Sub-Category: Generators

General Description: Generators are on carbon steel skid with aluminum and steel enclosures approved up to 3250kW units.

Mounting Description: Rigid & External Spring Isolated Base Mounting - Location (Other) -> with or without fuel tanks.

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

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

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: Amarnath Kasalanati

Mailing Address: 1301 South 46th St., Bldg. 420, Richmond CA 94720-1729

Telephone: (510) 642-3437 Email: Amarnath1@berkeley.edu

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.13/1.875 (Rigid/Isolated – SDS = 2.50 @ z/h = 0.0); 1.44/4.5 (Rigid/Isolated – SDS = 2.00 @ z/h = 1.0)

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

a_p (Amplification factor) = 1.0 (Rigid); 2.5 (Isolated)

R_p (Response modification factor) = 2.5 (Rigid); 2.0 (Isolated)

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 08/01/2030

Date: 8/1/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.0 z/h = 1

Condition of Approval (if applicable):

Table 1 - List of Certified Gensets Off Tank

Model	Frequency	Max Rating [kW]	Configuration	EPA Rating	Max Package Dimensions [in]			Max Weight[2] [lb]	Mounting Configuration[3]	UUT
					Length	Width	Height[1]			
mtu 12V1600 DS600	60 Hz	600	Enclosed	Tier 2	273	99	113	14,780	**Isolated**	UUT-03b
mtu 12V1600 DS600	60 Hz	600	Enclosed	Tier 2	273	99	113	17,000	Isolated / Rigid	Interpolated
mtu 12V1600 DS900	60 Hz	900	Enclosed	Tier 2	280	96	102	24,000		
mtu 12V2000 DS650	60 Hz	650	Enclosed	Tier 2	333	109	140	35,000		
mtu 12V2000 DS715	50 Hz	750	Enclosed	Tier 2	333	109	140	35,000		
mtu 12V2000 DS750	60 Hz									
mtu 12V2000 DS800	60 Hz	800	Enclosed	Tier 2	333	109	140	35,000		
mtu 12V2000 DS868	50 Hz									
mtu 16V2000 DS900	60 Hz	900	Enclosed	Tier 2	347	109	140	38,000		
mtu 16V2000 DS1000	50 Hz	1000	Enclosed	Tier 2	347	109	140	38,000		
mtu 16V2000 DS1000	60 Hz									
mtu 16V2000 DS1100	50 Hz	1250	Enclosed	Tier 2	347	109	140	38,000		
mtu 16V2000 DS1250	60 Hz									
mtu 18V2000 DS1000	60 Hz	1000	Enclosed	Tier 2	347	109	140	40,000		
mtu 18V2000 DS1250	60 Hz	1250	Enclosed	Tier 2	347	109	140	40,000		
mtu 18V2000 DS1400	50 Hz									
mtu 12V4000 DS1250	60 Hz	1250	Open	Tier 2	262	122	121	60,000		
mtu 12V4000 DS1637	50 Hz									
mtu 12V4000 DS1500	60 Hz	1500	Open	Tier 2	263	122	121	60,000		
mtu 12V4000 DS1825	50 Hz									
mtu 12V4000 DS1750	60 Hz	1750	Open	Tier 2	264	122	123	60,000		
mtu 12V4000 DS2000	50 Hz									
mtu 16V4000 DS2000	60 Hz	2000	Open	Tier 2	288	122	141	66,000		
mtu 16V4000 DS2250	50 Hz									
mtu 16V4000 DS2250	60 Hz	2250	Open	Tier 2	288	122	141	66,000		
mtu 16V4000 DS2500	50 Hz									
mtu 16V4000 DS2500	60 Hz	2500	Open	Tier 2	302	122	141	66,000		
mtu 20V4000 DS2500	60 Hz	2500	Open	Tier 2	307	122	141	69,400		
mtu 20V4000 DS2800	50 Hz									
mtu 20V4000 DS2800	60 Hz	2800	Open	Tier 2	307	132	141	69,400		
mtu 20V4000 DS3100	50 Hz									
mtu 20V4000 DS3000	60 Hz	3000	Open	Tier 2	320	132	150	69,400		
mtu 20V4000 DS3250	60 Hz	3250	Open	Tier 2	300	122	141	63,150	**Isolated**	UUT-08

Notes: [1]Exhaust is not included in height dimension

[2]Max Weight includes operating genset weight and enclosure weight (where applicable)

[3]**Bolded** mounting configuration indicates tested configuration

Table 1 - List of Certified Gensets Off Tank (Continued)

Model	Frequency	Max Rating [kW]	Configuration	EPA Rating	Max Package Dimensions [in]			Max Weight[2] [lb]	Mounting Configuration[3]	UUT
					Length	Width	Height[1]			
mtu 20V4000 DS3250	60 Hz	3250	Open	Tier 2	300	122	141	64,000	Isolated / Rigid	Interpolated
mtu 20V4000 DS3300	50 Hz	3250	Open	Tier 2	300	122	141			
mtu 20V4000 DS3300	50 Hz	3250	Open	Tier 2	321	132	150	69,400		
mtu 20V4000 DS3250	60 Hz	3250	Open	Tier 2	321	132	150	68,900	Isolated / **Rigid**	UUT-20b
		3250	Open	Tier 2	321	132	150	69,400	**Isolated** / Rigid	UUT-20a

Notes: [1]Exhaust is not included in height dimension

[2]Max Weight includes genset operating weight and enclosure weight (where applicable)

[3]**Bolded** mounting configuration indicates tested configuration

Table 2 - List of Certified Gensets On Tank

Model	Frequency	Max Rating [kW]	Configuration	EPA Rating	Max Package Dimensions [in]			Max Weight[2] [lb]	Mounting Configuration[3]	UUT
					Length	Width	Height[1]			
mtu 6R1600 DS300	60 Hz	300	Enclosed	Tier 3	280	76	143	11,430	**Rigid**	UUT-02
mtu 6R1600 DS300	60 Hz	300	Enclosed	Tier 3	280	76	143	28,500	Isolated / Rigid	Interpolated
mtu 12V1600 DS900	60 Hz	900	Enclosed	Tier 2	318	102	144	37,688	**Isolated**	UUT-21A
mtu 12V 1600 DS900	60 Hz	900	Enclosed	Tier 2	318	102	144	37,688	**Rigid**	UUT-21B
mtu 12V1600 DS600	60 Hz	600	Enclosed	Tier 2	377	99	149	44,980	**Isolated**	UUT-03a
mtu 12V1600 DS600	60 Hz	600	Enclosed	Tier 2	377	99	149	47,000	Isolated / Rigid	Interpolated
mtu 12V2000 DS650	60 Hz	650	Enclosed	Tier 2	370	109	176	67,470		
mtu 12V2000 DS715	50 Hz	750	Enclosed	Tier 2	370	109	176	67,470		
mtu 12V2000 DS750	60 Hz									
mtu 12V2000 DS800	60 Hz	800	Enclosed	Tier 2	370	109	176	67,470		
mtu 12V2000 DS868	50 Hz									
mtu 16V2000 DS900	60 Hz	900	Enclosed	Tier 2	420	109	176	83,220		
mtu 16V2000 DS1000	50 Hz	1000	Enclosed	Tier 2	420	109	176	83,220		
mtu 16V2000 DS1000	60 Hz									
mtu 16V2000 DS1100	50 Hz	1250	Enclosed	Tier 2	420	109	176	83,220		
mtu 16V2000 DS1250	60 Hz	1250	Enclosed	Tier 2	420	109	176	66,050	**Isolated**	UUT-06
mtu 16V2000 DS1250	60 Hz	1250	Enclosed	Tier 2	420	109	176	83,220	Isolated / Rigid	Interpolated
mtu 18V2000 DS1000	60 Hz	1000	Enclosed	Tier 2	420	109	176	84,220		
mtu 18V2000 DS1400	50 Hz	1250	Enclosed	Tier 2	420	109	176	84,220		
mtu 18V2000 DS1250	60 Hz	1250	Enclosed	Tier 2	420	109	176	84,220	**Isolated** / Rigid	UUT-07

Notes: [1]Exhaust is not included in height dimension

[2]Max Weight includes genset operating weight, empty tank + fuel weight, and enclosure weight

[3]**Bolded** mounting configuration indicates tested configuration

Table 3a - Certified Subcomponents - Enclosures

Component [MFR]	Part Number[3]	Notes	Material	Max Package Dimensions [in]			Weight [lb]	UUT
				Length	Width	Height		
Enclosure [Rolls-Royce Solutions America Inc.]	XS572300.00060	230-300 kW Enclosure[1]	Carbon Steel	144	56	96	1,367	UUT-02
	XS575380.00014 / **XS575380.00015**	750-900 kW Enclosure - 130/190		280	96	102	2,918	UUT-21a, UUT-21b
	XS545380.00076 / XS545380.00080	650-900 kW Enclosure - Level 1-2, 130/190		271	109	140	4,315	Interpolated
	XS535380.00060 / XS535380.00062	650-900 kW Enclosure - Level 3, 130/190		333	109	140	4,970	Interpolated
	XS545380.00046 / XS545380.00050	1000-1250 kW Enclosure - Level 1-2, 130/190		285	109	140	4,551	Interpolated
	XS546380.00007 / XS546380.00011	1000-1250 kW Enclosure - Level 3, 130/190		347	109	140	5,206	Interpolated
	XS546380.00005 / XS546380.00009	1000-1250 kW Enclosure - Level 1-2, 130/190		285	109	140	4,551	Interpolated
	XS545380.00048 / XS545380.00039	1000-1250 kW Enclosure - Level 3, 130/190		347	109	140	5,206	UUT-06
	XS575300.00054	600 kW Enclosure[2]	Aluminum	170	84	104	1,088	UUT-03a, UUT-03b
	XS545380.00077 / XS545380.00081	650-900 kW Enclosure - Level 1-2, 130/190		271	109	140	1,446	Interpolated
	XS535380.00061 / XS535380.00063	650-900 kW Enclosure - Level 3, 130/190		333	109	140	1,919	Interpolated
	XS545380.00047 / XS545380.00051	1000-1250 kW Enclosure - Level 1-2, 130/190		285	109	140	1,686	Interpolated
	XS545380.00049 / XS545380.00040	1000-1250 kW Enclosure - Level 3, 130/190		347	109	140	2,159	Interpolated
	XS546380.00006 / XS546380.00010	1000-1250 kW Enclosure - Level 1-2, 130/190		285	109	140	1,686	Interpolated
	XS546380.00008 / **XS546380.00012**	1000-1250 kW Enclosure - Level 3, 130/190		347	109	140	2,159	UUT-07

Notes: [1]One scoop may be added to enclosure for a total length of 190 inches.

[2]One scoop may be added to each end of enclosure for a total length of 274 inches.

[3]**Bolded** Model indicates tested unit

Table 3b - Certified Subcomponents - Scoops

Component [MFR]	Part Number[3]	Notes	Material	Max Package Dimensions [in]			Weight [lb]	UUT
				Length	Width	Height		
Scoop [Rolls-Royce Solutions America Inc.]	XS572300.00062	230-300 kW Scoop[1]	Carbon Steel	46	56	96	435	UUT-02
	XS575300.00057	600 kW Scoop[2]	Aluminum	52	84	104	262	UUT-03a, UUT-03b

Notes: [1]One scoop may be added to enclosure for a total length of 190 inches.
[2]One scoop may be added to each end of enclosure for a total length of 274 inches.

Table 4 - Certified Subcomponents

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Engine [Rolls-Royce Solutions America Inc.]	6R1600	300 kW	Carbon Steel, Cast Iron, Aluminum, Plastic, Brass, Stainless Steel	2,680	UUT-02
	12V1600	600 kW		5,031	UUT-03a, UUT-03b
	12V1600+	750 kW - 900 kW		4,388	UUT-21a, UUT-21b
	12V2000	615 kW - 800 kW		6,018	Interpolated
	16V2000	800 kW - 1000 kW		6,395	UUT-06
	18V2000	1000 kW - 1250 kW		7,188	UUT-07
	12V4000G*4F, 12V4000G*4S	1250 kW - 1750 kW		14,167	Interpolated
	16V4000G*4F, 16V4000G*4S	2000 kW - 2500 kW		17,977	Interpolated
	20V4000G*4F, 20V4000G*4S	2500 kW - 3250 kW		22,255	UUT-08, UUT-20a, UUT-20b
Radiator [Diesel]	DR4273	650-900 kW, 50C	N/A	1,921	Extrapolated
	DR4212	900-1000 kW, 50C		2,050	UUT-06
	DR4286	1000-1250 kW, 40C		2,053	Interpolated
	DR2837	1250 kW 50C - 1500 kW 40C		4,432	UUT-17a, UUT-17b
	DR4450	1500 kW 50C		4,582	Interpolated
	DR4449	1750 kW 50C		4,582	Interpolated
	DR3091	1750 kW 40C		4,518	Interpolated
	DR4083	2000 kW-2500 kW		4,542	Interpolated
	DR3361	2250 kW 50C		5,850	Interpolated
	DR4276	2500 kW 45C		5,519	Interpolated
	DR3102	2500 kW 20V 50C		5,477	Interpolated
	DR3628	2800 kW - 3250 kW 42-48C		6,196	UUT-20a, UUT-20b
	DR3138	2800 kW - 3250 kW 50C		7,998	UUT-08
Radiator [AKG]	X57541100379	750 - 900 kW	Carbon Steel, Aluminum, Copper	1,367	UUT-21a, UUT-21b
Radiator [Nissens]	X54641100004 / X54641100005	1000-1250 kW, 50 Hz / 60 Hz		1,852	UUT-07
Alternator [Kato Engineering]	4P6 Frame	1250 kW – 2800 kW	Carbon Steel, Cast Iron, Aluminum, Copper	17,309	UUT-07
	4P9 Frame	1250 kW – 3250 kW		22,734	UUT-20a, UUT-20b
Alternators [Leroy Somer]	LSA 49.1	650 kW - 1250 kW	Carbon Steel, Cast Iron, Aluminum, Copper	4,190	Extrapolated
	LSA 49.3	650 kW - 1500 kW		4,200	UUT-21a, UUT-21b
	LSA 50.2	800 kW - 1500 kW		7,598	UUT-06
	LSA 52.3	1000 kW - 2000 kW		10,857	Interpolated
	LS 641	1250 kW - 2250 kW		11,298	Interpolated
	LS 841	2000 kW - 3000 kW		12,187	Interpolated
	LS 941	2500 kW - 3250 kW		19,347	UUT-08

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Controller [Rolls-Royce Solutions America Inc.]	MGC-1500 Series	Each controller is a depopulated version of the controller with a higher number. The boxes of the 2000 and 3000 series are the same. The 1500 series box is smaller. All boxes are carbon steel.	Carbon Steel, Aluminum, Copper, Plastic	2	UUT-02
	MGC-2000 Series			5	Interpolated
	MGC-3000 Series			6	UUT-03a, UUT-03b, UUT-06, UUT-08, UUT-20a, UUT-21a, UUT-21b
Air Filters [Donaldson]	SUA86885	300 – 600 kW	Carbon Steel, Plastic, Paper	5	UUT-02
	SUA90069	S2000-S4000		7	UUT-06, UUT-08, UUT-20a
	SUA89974	1600+ – S2000		47	UUT-21a, UUT-21b
	X00024740	S4000 – Heavy Duty		83	UUT-08
Air Filters	SUA96271	230-600kW	N/A	31	UUT-03a, UUT-03b
Battery [NAPA]	SUA120299	12V Battery Wet 925 CCA @ 0 Degrees F [56 lbs.]	Carbon Steel, Aluminum, Copper, Plastic	56	UUT-03a, UUT-03b, UUT-02
	SUA102493	12V Battery Wet 1050 CCA		100	UUT-21a, UUT-21b
	SUA75486	12V Battery Wet 1155 CCA @ 0 Degrees F [121 lbs.]		123	Interpolated
	SUA71410	12V Battery Wet 1300 CCA @0 Degrees F [126 lbs.]		128	Interpolated
	SUA102492	12V Battery Wet 1400 CCA @ 0 Degrees F [130 lbs.]		131	UUT-06, UUT-07, UUT-08, UUT-20a
Battery Charger [SENS]	MicroGenius 2	≤15A	Carbon Steel, Cast Iron, Aluminum, Copper, Plastic	6	UUT-06
	MicroGenius S2	>15A ≤30A		13	UUT-06
	MicroGenius S4	>30A ≤60A		32	UUT-20a
	NRG22	10A		23	UUT-02, UUT-06
	NRG24	10A-20a		44	UUT-03a, UUT-03b, UUT-06, UUT-21a, UUT-21b
	EnerGenius IQ	35A		131	UUT-08, UUT-10a, UUT-10b
Best Battery Selector [SENS]	BBS-4800	Best Battery Selector	Carbon Steel, Cast Iron, Aluminum, Copper, Plastic	55	UUT-11a, UUT-11b, UUT-20a
Battery Heater [Zero Start]	SUA33218	200 Watt 120V	Plastic, Copper, Aluminum	1	UUT-08, UUT-21a, UUT-21b

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Fuel Filters [Racor]	SUA101091	73/1000FH [10 Micron 360GPH] No Valves Non-Switchable 2-Bowl	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	26	UUT-07
	SUA90831	77/1000FH 30 Micron 540GPH		39	UUT-12a, UUT-12b
	SUA89332	79/1000FHV [540GPH] with Valves		52	Interpolated
	SUA102925	79/1000FHV 10 Micron [540GPH] with Valves Switchable 3-Bowl		52	UUT-06
	1000FV10	Single Filter; 180 GPH		11	UUT-22a, UUT-22b
	751000FV10	Double Filter; 360 GPH		24	Interpolated
	791000FV10	Triple Filter; 540 GPH		36	UUT-22a, UUT-22b
Fuel Monitor System [ESI]	CMS-2M-MTU	iFuel monitor and flow meter assembly	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	250	UUT-22a, UUT-22b
Fuel Filters [Separ]	X52808300057	Automatic switchable	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	92	UUT-08, UUT-20a
Fuel Filters [Hydec]	HDP	Single	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	20	UUT-21a, UUT-21b
	HDP	Single bank		26	UUT-20b
	HDPD	Dual bank with valve		65	UUT-20b
Fuel Gauge [Orange Research]	SUA106526	Differential pressure guage	Carbon Steel, Cast Iron, Stainless Steel, Brass, Plastic, Glass	2	UUT-08
Breakers [Square-D]	H Frame	150 Amp Max Rating	Carbon Steel, Aluminum, Copper, Plastic	5	UUT-20b
	J Frame	250 Amp Max Rating		5	UUT-02
	LA Frame	400 Amp Max Rating		13	Interpolated
	LD Frame	600 Amp Max Rating		14	UUT-02, UUT-06
	M Frame	800 Amp Max Rating		29	Interpolated
	P Frame	1200 Amp Max Rating		32	UUT-03a, UUT-03b, UUT-21a, UUT-21b
	R Frame	3000 Amp Max Rating		52	UUT-06, UUT-21a, UUT-21b
	MTZ Frame	6000 Amp Max Rating		363	UUT-21a, UUT-21b
	NW Frame	6000 Amp Max Rating		363	UUT-06, UUT-20a

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Breakers [Eaton]	SBN	4000 Amp Max Rating	Carbon Steel, Aluminum, Copper, Plastic	319	UUT-20a
Oil Leveler [Murphy]	SUA88183	LM30X Model	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	5	UUT-04, UUT-08
	SUA104347	L150 Model		3	UUT-06
Oil Leveler [Garzo]	X52864300002	108B-015 EX	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	5	UUT-18a, UUT-18b
Oil Tank [Rolls-Royce Solutions America Inc.]	SUA99641	30 gallon	Carbon Steel, Aluminum	26	UUT-13
	X54941400001	30 / 45 gallon		84	UUT-20b
Fuel Lift Pump [Oberdorfer]	SUA104114	Model N991-32	Carbon Steel, Cast Iron, Brass, Copper	24	UUT-08
	X52808800041	Model N991R-32		24	UUT-20a, UUT-20b
Coolant Filter [Donaldson]	SUA84207	1250 kW - 3250 kW	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass	20	UUT-08
Oil Pump [RPM Industries]	X52818100016	DC prelube pump	Carbon Steel, Cast Iron, Copper, Plastic	35	UUT-08
	X59618100027	AC small prelube pump		70	UUT-14a, UUT-14b
	X59418100009	AC large prelube pump		63	UUT-15a, UUT-15b
Pyrometer [OMEGA]	X54830900040	1250 kW - 3250 kW	Carbon Steel, Stainless Steel, Copper, Plastic	1	UUT-08
Oil Sampling Port [Rolls-Royce Solutions America Inc.]	KP Pushbutton	1250 kW - 3250 kW	Stainless Steel	1	UUT-08
Battery Disconnect [Flaming River]	SUA103773	1250 kW - 3250 kW Pad Lockable	Carbon Steel, Cast Iron, Plastic	1	UUT-08
Battery Disconnect [Blue Sea]	5510e	Pad Lockable	Carbon Steel, Cast Iron, Plastic	3	UUT-06
	HD3001	UL		1	UUT-20a, UUT-20b, UUT-21a, UUT-21b

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Enclosure Lighting [Rolls-Royce Solutions America Inc.]	XG2130900005	LED Lighting	Carbon Steel, Aluminum, Copper, Plastic, Glass	1	UUT-06, UUT-07, UUT-21a, UUT-21b
Silencer [Miratech]	SUA101916	5" Inlet, 18" Silencer	Carbon Steel	71	UUT-02
	SUA97987	5" Inlet, 18" Silencer		64	UUT-03a, UUT-03b
	SUA97988	5" Inlet, 18" Silencer		64	UUT-03a, UUT-03b
	X54441700010	8" Inlets, 12" Silencer		935	Interpolated
	X54514500013	8" Inlets, 14" Silencer		1,091	UUT-06
	X54641700006	8" Inlets, 14" Silencer		1,500	UUT-07
Diesel Particulate Filter [Johnson Matthey]	CRT(+)-6-N-CS-SITO-D8/14-LP	650-900 kW	Carbon Steel	1859	UUT-21a, UUT-21b
Space Heater [King Electric]	XG3006100004	Space Heater	Carbon Steel, Aluminum, Copper, Plastic	12	UUT-06, UUT-21a, UUT-21b
Motorized Louver [Vent Products]	SUA86672	350 kW - 600 kW	Carbon Steel, Aluminum	121	UUT-03a, UUT-03b
	X54512300031	650 kW - 1250 kW		408	UUT-07
	X57562300171	1600+ 750 kW - 900 kW		419	UUT-21a, UUT-21b
Gravity Louver [Vent Products]	X57562300173	1600+ 750 kW - 900 kW	Carbon Steel, Aluminum	62	UUT-21a, UUT-21b
	SUA88231	350 kW - 600 kW		220	UUT-03a, UUT-03b
	X54412300111	650 kW - 900 kW		277	Interpolated
	X54512300029	1000 kW - 1250 kW		300	UUT-06
	X54612300020	1250 kW		313	UUT-07
Vibration Switch [Murphy]	SUA77324	Shock/Vibration Control Switch	Carbon Steel, Cast Iron, Plastic, Glass	10	UUT-08
Jacket Water Heaters [Kim Hotstart]	CSMA / CSMB	Single / Three Phase	Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic	33	UUT-06, UUT-07, UUT-08, UUT-20a, UUT-21a, UUT-21b
Distribution Panel [Rolls-Royce Solutions America Inc.]	SUA95894	200 Amp Single Phase UL	Carbon Steel, Copper, Plastic	25	UUT-06
	XG3030100673	125 Amp Single Phase - UL		26	UUT-22a, UUT-21b
	XG3030100674	125 Amp Single Phase - CSA		26	Interpolated
	X54530900042	150 Amp – 3 Phase - CSA		28	Interpolated
	SUA98651	150 Amp – 3 Phase – UL		28	Interpolated
	X54530900024	200 Amp – Single Phase – CSA		45	Interpolated
	X54530900025	200 Amp – Single Phase – UL		45	UUT-07

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Fuel Tank [Rolls-Royce Solutions America Inc.]	XS572360.00018	525 Gallons		2,216	UUT-02
	X57541200235, X57541200236	650 Gallon Tank SB, EXT; NF, 10HR - 12V1600+		4,181	Interpolated
	X57541200231, X57541200237, **X57541200241**	1515 Gallon Tank SB, EXT; NF, 24HR - 12V1600+		5,230	UUT-21a, UUT-21b
	X57541200238	3030 Gallon Tank EXT; NF, 48HR - 12V1600+		7,468	Interpolated
	X53541200013, X53541200016, X53541200019, X53541200022, X53541200025, X53541200028, X53541200031 , X53541200034, X53541200037, X54441200001, X54441200004, X54441200007	725 Gallon Tank SB, EXT; OPU, L1/L2, L3; NF, WF, NASS/SULF, San Fran, 12HR 725 GL-12V2000		7,791	Interpolated
	X54541200003, X54541200006, X54541200009, X54541200018, X54541200021, X54541200024, X54541200027, X54541200030, X54541200033, X54541200037, X54541200040, X54541200043	1100 Gallon Tank SB, EXT; HSD L1/L2, L3; NF, WF, NASS/SULF, San Fran, 12HR 1100 GL-16V2000		8,459	Interpolated
	X53541200014, X53541200017, X53541200020, X53541200023, X53541200026, X53541200029, X53541200032, X53541200035, X53541200038, X54441200002, X54441200005, X54441200008	1450 Gallon Tank TANK SB, EXT; HSD L1/L2, L3; NF, WF, NASS/SULF, San Fran, 24HR 1450 GL-12V2000		9,017	Interpolated

Table 4 - Certified Subcomponents (Continued)

Component [MFR]	Part/Model number	Notes	Material	Weight [lb]	UUT
Fuel Tank [Rolls-Royce Solutions America Inc.]	X54541200004, X54541200007, X54541200010, **X54541200017**, X54541200019, X54541200022, X54541200025, X54541200028, X54541200031, X54541200034, X54541200038, X54541200041, X54541200044	2200 Gallon Tank SB, EXT; HSD L1/L2, L3; NF, WF, NASS/SULF, San Fran, 24HR 2200 GL-16V2000	Carbon Steel	9,977	UUT-06
	X53541200015, X53541200018, X53541200021, X53541200024, X53541200027, X53541200030, X53541200033, X53541200036, X53541200039, X54441200003, X54441200006, X54441200009	2900 Gallon Tank SB, EXT; HSD L1/L2, L3; NF, WF, NASS/SULF, San Fran, 48 HR 2900 GL-12V2000		11,422	Interpolated
	X54541200005, X54541200008, X54541200011, X54541200020, **X54541200023**, X54541200026, X54541200029, X54541200032, X54541200035, X54541200036, X54541200039, X54541200042	4400 Gallon Tank SB, EXT; OPU, L1/L2, L3; NF, WF, NASS/SULF, San Fran, 48HR 4400 GL-16V2000		13,586	UUT-07

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 2

PEER STI 2015-17; UUT 7

Model Line	Model Number	Manufacturer
1600	***mtu*** 6R1600 DS300	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid, Carbon Steel Enclosure, Carbon Steel Tank

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Marathon; Enclosure: Rolls-Royce Solutions America Inc.; Fuel Trank: Rolls-Royce Solutions America Inc.; Silencer: Miratech; Air Filter: Donaldson; Controller Rolls-Royce Solutions America Inc.; Jacket Water Heater: Kim-Hotstart; Breakers: Square D; Battery: Napa; Battery Charger: SENS; Gravity Louvers: Rolls-Royce Solutions America Inc.

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-02 was attached to fuel tank using (12) 5/8" grade 8 bolts. Fuel tank was attached to the fixture 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 3a

PEER STI 2015-17; UUT 8A

Model Line	Model Number	Manufacturer
1600	***mtu*** 12V1600 DS600	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid, Carbon Steel Enclosure, Carbon Steel Tank

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Marathon; Radiator: Bearward; Enclosure: Rolls-Royce Solutions America Inc.; Scoop: Rolls-Royce Solutions America Inc.; Fuel Tank: Rolls-Royce Solutions America Inc.; Silencer: Miratech; Air Filter: Vortox; Controller: Rolls-Royce Solutions America Inc.; Jacket Water Heater: Kim-Hotstart; Breakers: Square D; Battery: Napa; 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	150	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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-03a genset was externally isolated using (10) VMC MSSH-3C spring isolators. Isolators were connected to genset with (1) 5/8" grade 8 bolt each and were attached to the fuel tank using (4) 5/8" grade 8 bolts per isolator. Fuel tank was connected to the fixture using (20) 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 3b

PEER STI 2015-17; UUT 8B

Model Line	Model Number	Manufacturer
1600	***mtu*** 12V1600 DS600	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid, Carbon Steel Enclosure

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Marathon; Radiator: Bearward; Enclosure: Rolls-Royce Solutions America Inc.; Scoop: Rolls-Royce Solutions America Inc.; Silencer: Miratech; Air Filter: Vortox; Controller: Rolls-Royce Solutions America Inc.; Jacket Water Heater: Kim-Hotstart; Breakers: Square D; Battery: Napa; 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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-03b was externally isolated using (10) VMC MSS-3E spring isolators. Isolators were connected to the equipment using (1) 7/8" grade 8 bolt each and were connected to the fixture using (4) 3/4" grade 8 bolts per isolator.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 6

DCL 30245-1701

Model Line	Model Number	Manufacturer
2000	***mtu*** 16V2000 DS1250	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid, Carbon Steel Enclosure, Carbon Steel Tank

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer: Radiator: Diesel Radiator; Controller: Rolls-Royce Solutions America Inc.; Enclosure: Rolls-Royce Solutions America Inc.; Fuel Tank: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Fuel Filters: Racor; Breakers: Square D; Oil Leveler: Murphy; Silencer: Miratech; Enclosure Lighting: Rolls-Royce Solutions America Inc.; Space Heater: King Electric; Gravity Louver: Vent Products; Distribution Panel: Rolls-Royce Solutions America Inc.; Jacket Water Heaters: Kim-Hotstart

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
66,050	420	109	176	4	2	8

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-06 was externally isolated using (18) VMC M2SSH-1E-3200N spring isolators. Isolators were attached to the generator skid using (18) 3/4" grade 8 bolts. Isolators were attached to the tank using (72) 5/8" grade 8 bolts and tank was attached to the fixture using (20) 3/4" 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

DCL 31142-1901

Model Line	Model Number	Manufacturer
2000	***mtu*** 18V2000 DS1250	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid, Aluminum Enclosure, Carbon Steel Tank

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Kato Engineering: Radiator: Nissens; Enclosure: Rolls-Royce Solutions America Inc.; Fuel Tank: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Silencer: Miratech; Enclosure Lighting: Rolls-Royce Solutions America Inc.; Space Heater: King Electric; Gravity Louver: Vent Products; Distribution Panel: Rolls-Royce Solutions America Inc.; Jacket Water Heaters: Kim-Hotstart

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
84,220	412	111	179	4	3	8

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-07 was externally isolated using (18) VMC M2SSH-1E-3400N spring isolators. Isolators were attached to the generator skid using (18) 3/4" grade 8 bolts. Isolators were attached to the tank using (72) 5/8" grade 8 bolts and tank was attached to the fixture using (22) 7/8" 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 8

DCL 30245-1701

Model Line	Model Number	Manufacturer
4000	***mtu*** 20V4000 DS3250	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer; Radiator: Diesel Radiator; Autotensioner: Rolls-Royce Solutions America Inc.; Controller: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Battery Heater: Zero Start; Fuel Filters: Separ; Fuel Gauge: Orange Research; Oil Leveler: Murphy; Fuel Lift Pump: Oberdorfer; Coolant Filter: Donaldson; Fuel Meter: FloScan; Oil Pump: RPM Industries; Pyrometer: OMEGA; Oil Sampling Port: Rolls-Royce Solutions America Inc.; Battery Disconnect: Flaming River; Battery Disconnect: Blue Sea; Vibration Switch: Murphy; Jacket Water Heaters: Kim Hotstart

UUT Properties

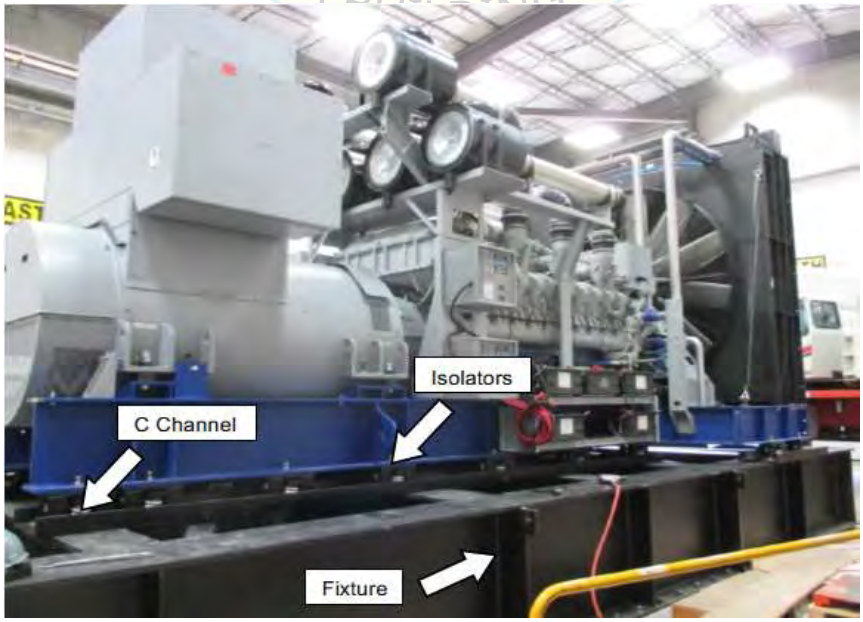
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
63,150	320	132	150	5	4	9

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-08 was externally isolated using (18) VMC M2SSHX-1E-6200N spring isolators. Isolators were attached to the generator skid using (18) 3/4" grade 8 bolts. Isolators were welded to an adaptor and the adaptor was bolted to the fixture using (32) 3/4" 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 10a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	SUA105039	SENS

Product Construction Summary

SENS Battery Charger

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
130	20	13	18	12	10	20

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-10a was mounted to manufacturer provided stand using Qty. (4) M8, class 8.8 bolts. Stand mounted to skid using Qty. (6) M12, class 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 10b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	SUA105039	SENS

Product Construction Summary

SENS Battery Charger

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
130	20	13	18	>33.3	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-10b was mounted to manufacturer provided stand using Qty. (4) M8, class 8.8 bolts. Stand mounted to skid using Qty. (6) M12, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 11a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	BBS-4800	SENS

Product Construction Summary

SENS Best Battery Selector

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
55	20	13	18	12	10	20

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-11a was mounted to manufacturer provided stand using Qty. (4) M8, class 8.8 bolts. Stand mounted to skid using Qty. (6) M12, class 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 11b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	BBS-4800	SENS

Product Construction Summary

SENS Best Battery Selector

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
55	20	13	18	>33.3	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-11b was mounted to manufacturer provided stand using Qty. (4) M8, class 8.8 bolts. Stand mounted to skid using Qty. (6) M12, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 12a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	SUA190831	Racor

Product Construction Summary

Racor Fuel Filter

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
75	22	12	22	12	10	20

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-12a was mounted to manufacturer provided stand using Qty. (8) M10, class 8.8 bolts. Stand mounted to Qty. (2) triangle supports using Qty. (2) M10, class 8.8 bolts per triangle support. The triangle support was mounted to the skid using Qty. (2) M12, class 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 12b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	SUA190831	Racor

Product Construction Summary

Racor Fuel Filter

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
75	22	12	22	>33.3	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-12b was mounted to manufacturer provided stand using Qty. (8) M10, class 8.8 bolts. Stand mounted to Qty. (2) triangle supports using (2) M10, class 8.8 bolts per triangle support. The triangle support was mounted to the skid using (2) M12, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with (16) 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 13b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	XS596300.0037	Rolls-Royce Solutions America Inc.

Product Construction Summary

Rolls-Royce Solutions America Inc. Oil Tank

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
500	30	22	92	17	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-13b was mounted to manufacturer provided stand using Qty. (2) 20 gage brackets mounted to the stand with Qty. (2) 5/16" diameter, grade 5 bolts in each bracket. Stand mounted to the skid using Qty. (4) M10, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 14a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X59618100027	RPM Industries

Product Construction Summary

RPM Industries Oil Pump

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
65	8	23	11	6.5	15	11

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-14a was mounted to the skid using Qty. (4) M10, class 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 14b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X59618100027	RPM Industries

Product Construction Summary

RPM Industries Oil Pump

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
65	8	23	11	33	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-14b was mounted to the skid using Qty. (4) M10, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 15a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X5941810009	RPM Industries

Product Construction Summary

RPM Industries Oil Pump

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
60	7	23	8	6.5	15	11

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-15a was mounted to the skid using Qty. (4) M10, class 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 15b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X5941810009	RPM Industries

Product Construction Summary

RPM Industries Oil Pump

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
60	7	23	8	33	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-15b was mounted to the skid using Qty. (4) M10, class 8.8 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 17a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	DR2837	Diesel

Product Construction Summary

Diesel Radiator

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,850	38	89	102	8	10	21

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-17a was mounted to the skid using Qty. (12) M16, grade 8.8 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 17a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	DR2837	Diesel

Product Construction Summary

Diesel Radiator

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,850	38	89	102	8	10	21

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-17a was mounted to the skid using Qty. (12) M16, grade 8.8 bolts. The skid was rigidly mounted to the shake table interface fixture with Qty. (16) 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 18a

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X52864300002	Garzo

Product Construction Summary

Garzo Oil Leveler

Options / Subcomponent Summary

UUT Properties

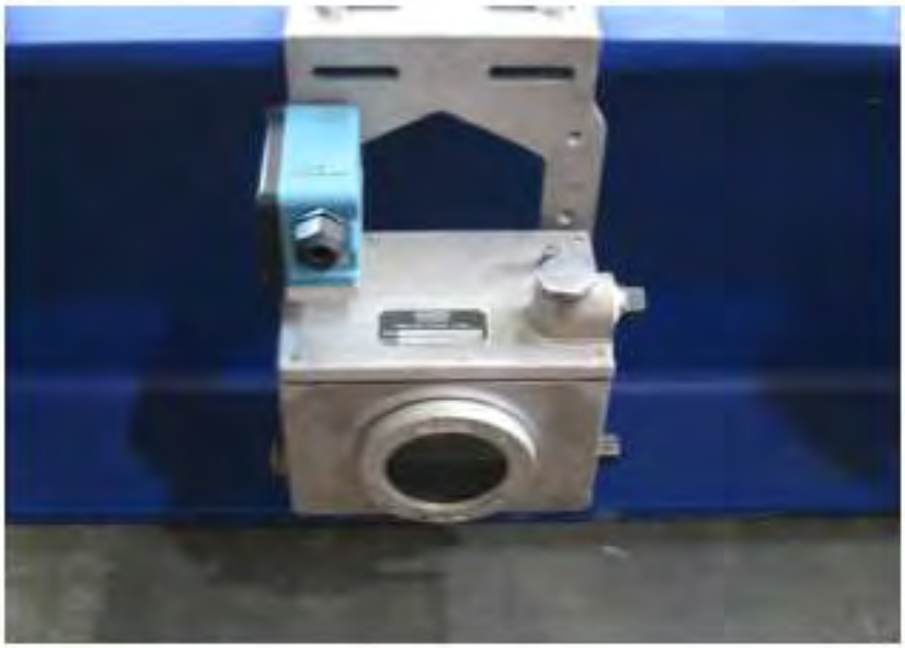
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
10	6	8	3	12	10	20

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-18a was mounted to the bracket using Qty. (2) 3/8" diameter, grade 5 bolts. The skid was isolated to the shake table interface using Qty (16) VMC M2SSH-1E-3400N isolators.



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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 18b

DCL 30673-1801

Model Line	Model Number	Manufacturer
4000	X52864300002	Garzo

Product Construction Summary

Garzo Oil Leveler

Options / Subcomponent Summary

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
10	6	8	3	>33.3	>33.3	>33.3

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-18b was mounted to the bracket using Qty. (2) 3/8" diameter, grade 5 bolts. The skid was rigidly mounted to the shake table interface with Qty. (16) 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 20a

DCL 30837-1801

Model Line	Model Number	Manufacturer
4000	***mtu*** 20V4000 DS3250	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer; Radiator: Diesel Radiator; Autotensioner: Rolls-Royce Solutions America Inc.; Controller: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Best Battery Selector: SENS; Battery Heater: Zero Start; Fuel Filters: Separ; Breakers: Eaton; Oil Tank: Rolls-Royce Solutions America Inc.; Fuel Lift Pump: Oberdorfer; Battery Disconnect: Blue Sea; Battery Disconnect: Blue Sea; Jacket Water Heaters: Kim Hotstart

UUT Properties

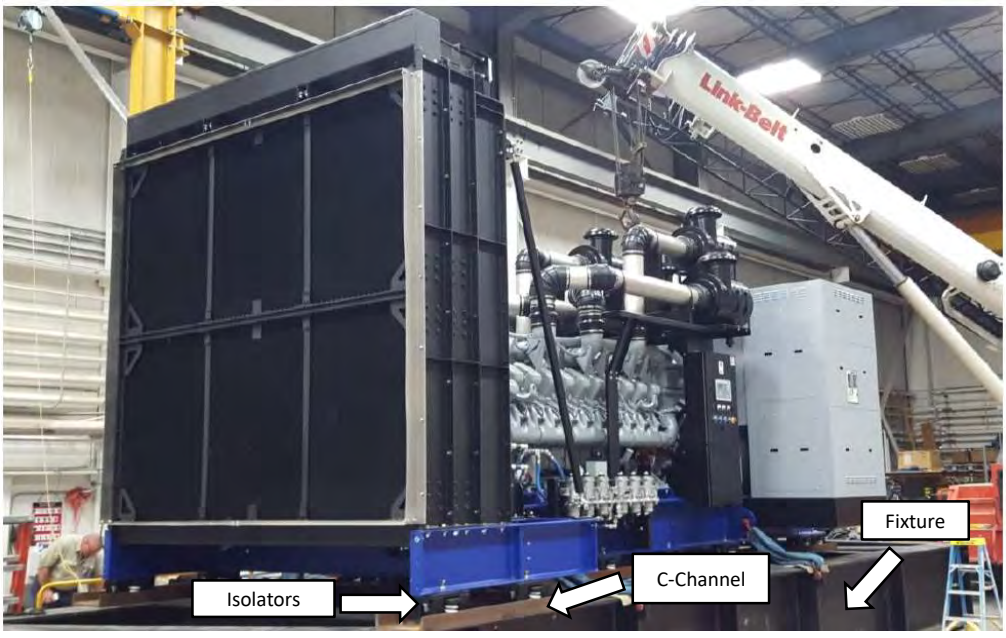
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
69,400	132	320	150	5.5	4	9.5

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-20a was externally isolated using (18) VMC M2SSHX-1E-6200N spring isolators. Isolators were attached to the generator skid using (18) 3/4" grade 8 bolts. Isolators were welded to an adaptor and the adaptor was bolted to the fixture using (32) 3/4" 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 20b

DCL 30837-1801

Model Line	Model Number	Manufacturer
4000	***mtu*** 20V4000 DS3250	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid

Options / Subcomponent Summary

Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer; Radiator: Diesel Radiator; Autotensioner: Rolls-Royce Solutions America Inc.; Controller: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Best Battery Selector: SENS; Battery Heater: Zero Start; Fuel Filters: Separ; Breakers: Square-D; Oil Tank: Rolls-Royce Solutions America Inc.; Fuel Lift Pump: Oberdorfer; Battery Disconnect: Blue Sea; Battery Disconnect: Blue Sea; Jacket Water Heaters: Kim Hotstart

UUT Properties

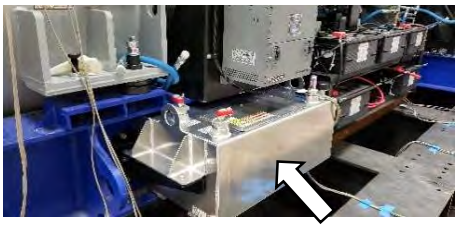
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
68,900	132	320	150	5.5	4	9.5

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 2022	ICC-ES AC156	2.50	0.00	1.50	-	-	1.67	0.67
		2.00	1.00	1.50	3.20	2.40	-	-

Test Mounting Details

UUT-20b was rigidly attached to (18) locked out (springs and dampers removed) VMC M2SSHX-1E-6200N spring isolators. Isolators were attached to the generator skid using (18) 3/4" grade 8 bolts. Isolators were welded to an adaptor and the adaptor was bolted to the fixture using (32) 3/4" 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 21a

DCL 16322-2101

Model Line	Model Number	Manufacturer
12V 1600	***mtu*** 12V1600 DS900	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid

Options / Subcomponent Summary

Enclosure: Rolls-Royce Solutions America Inc.; Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer; Radiator: AKG; Controller: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Best Battery Selector: SENS; Battery Heater: Zero Start; Fuel Filters: Hydec; Breakers: Square-D; Battery Disconnect: Blue Sea; Enclosure Lighting: Rolls-Royce Solutions America Inc.; Diesel Particulate Filter: Johnson Matthey; Fuel Tank: Rolls-Royce Solutions America Inc.; Space Heater: King Electric; Motorized Louver & Gravity Louver: Vent Products; Jacket Water Heaters: Kim Hotstart; Distribution Panel: Rolls-Royce Solutions America Inc.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
37,688	318	102	144	2.6	2.9	4.6

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 2022	ICC-ES AC156	2.50	0.00	1.50	2.50	1.00	1.68	0.68
		2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT-21a – Isolated Shake - Genset was mounted on (14) MSSH-1E-3250N Isolators using 3/4" Dia. Grade 8 bolts. The isolators were engaged to simulate isolated mounting. MSSH-1E-3250N isolators were bolted to the fuel tank with (56) 5/8" Dia. Grade 8 bolts. The fuel tank was bolted to fixture with (14) 3/4" Dia. Grade 8 bolts, flat washers and nuts.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 21b

DCL 16322-2101

Model Line	Model Number	Manufacturer
12V 1600	***mtu*** 12V1600 DS900	Rolls-Royce Solutions America Inc.

Product Construction Summary

Carbon Steel Skid

Options / Subcomponent Summary

Enclosure: Rolls-Royce Solutions America Inc.; Engine: Rolls-Royce Solutions America Inc.; Alternator: Leroy Somer; Radiator: AKG; Controller: Rolls-Royce Solutions America Inc.; Air Filters: Donaldson; Battery: NAPA; Battery Charger: SENS; Best Battery Selector: SENS; Battery Heater: Zero Start; Fuel Filters: Hydec; Breakers: Square-D; Battery Disconnect: Blue Sea; Enclosure Lighting: Rolls-Royce Solutions America Inc.; Diesel Particulate Filter: Johnson Matthey; Fuel Tank: Rolls-Royce Solutions America Inc.; Space Heater: King Electric; Motorized Louver & Gravity Louver: Vent Products; Jacket Water Heaters: Kim Hotstart; Distribution Panel: Rolls-Royce Solutions America Inc.

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
37,688	318	102	144	5.7	5.7	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 2022	ICC-ES AC156	2.50	0.00	1.50	2.50	1.00	1.68	0.68
		2.00	1.00	1.50	3.20	2.40	1.33	0.53

Test Mounting Details

UUT-21b – Rigid Shake - Genset was mounted on (14) MSSH-1E-3250N Isolators using 3/4" Dia. Grade 8 bolts. The isolators were locked out to simulate rigid mounting. MSSH-1E-3250N isolators were bolted to the fuel tank with (56) 5/8" Dia. Grade 8 bolts. The fuel tank was bolted to fixture with (14) 3/4" Dia. Grade 8 bolts, flat washers and nuts.

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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 22a

DCL 20479-2201; UUT-1a

Model Line	Model Number	Manufacturer
Fuel Water Separators/Filters and Fuel Monitor	Skid with Subcomponents	Fuel Filters: Racor Fuel Monitor: ESI

Product Construction Summary

Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass

Options / Subcomponent Summary

Fuel Filters: Racor; Fuel Monitor System: ESI

UUT Properties

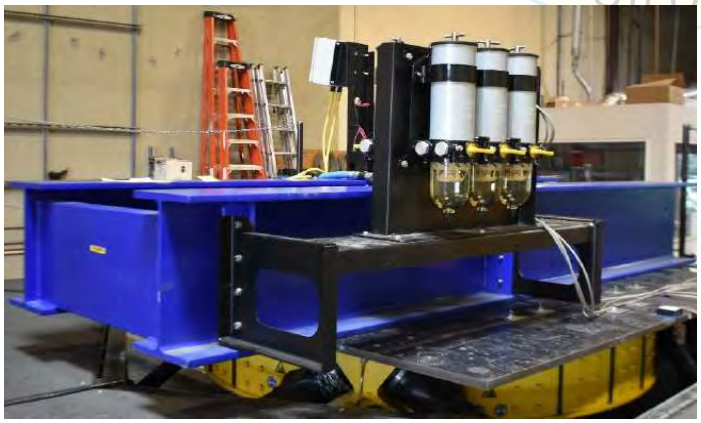
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
2,990	133.0	77.0	49.5	>33.3	9.5	20.5

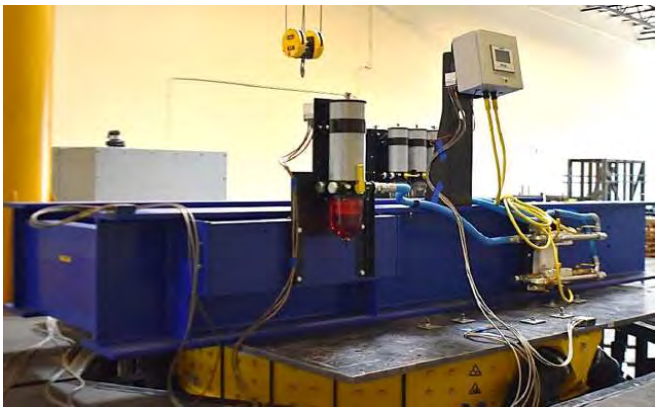
UUT Highest Passed Seismic Run Information

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 2022	ICC-ES AC156	2.50	0.00	1.50			1.68	0.68
		2.00	1.00	1.50	3.20	2.40		

Test Mounting Details

UUT-22a was rigidly mounted to the shake table using (4) 5/8" diameter Grade 8 bolts. The Triple Fuel Filter was mounted to the skid with (8) M12 Grade 8.8 bolts. The Single Fuel Filter was mounted to the skid with (6) M10 Grade 8.8 bolts. The Fuel Monitor System was mounted to the skid with (4) M12 Grade 8.8 bolts; the flow meter assembly was mounted to the skids with (3) M16 Grade 8.8 bolts.





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

UNIT UNDER TEST (UUT)
Summary Sheet

UUT 22b

DCL 20479-2201; UUT-1b

Model Line	Model Number	Manufacturer
Fuel Water Separators/Filters and Fuel Monitor	Skid with Subcomponents	Fuel Filters: Racor Fuel Monitor: ESI

Product Construction Summary

Carbon Steel, Cast Iron, Stainless Steel, Brass, Copper, Plastic, Glass

Options / Subcomponent Summary

Fuel Filters: Racor; Fuel Monitor System: ESI

UUT Properties

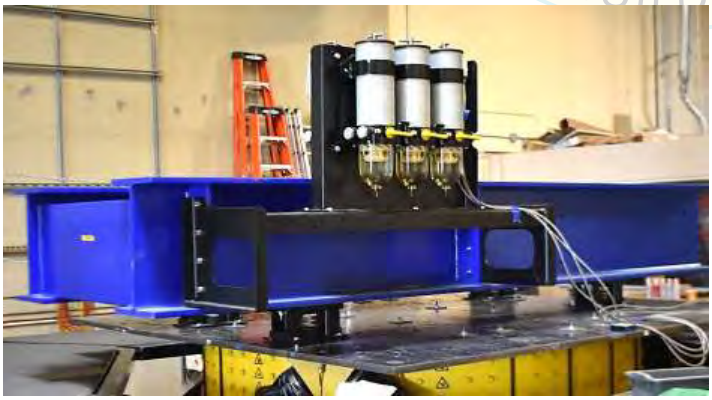
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
2,990	133.0	77.0	49.5	3.5	4.5	5.5

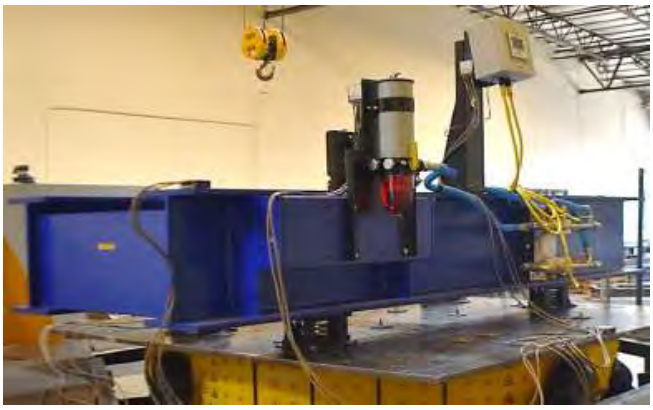
UUT Highest Passed Seismic Run Information

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 2022	ICC-ES AC156	2.50	0.00	1.50			1.68	0.68
		2.00	1.00	1.50	3.20	2.40		

Test Mounting Details

UUT-22b was isolated using (4) VMC MSSH isolators. The isolators were connected to the skid using (1) 5/8" diameter Grade 8 bolt each, and were connected to the shake table using (4) 5/8" diameter Grade 8 bolts per isolator. The Single Fuel Filter was mounted to the skid with (6) M10 Grade 8.8 bolts. The Fuel Monitor System was mounted to the skid with (4) M12 Grade 8.8 bolts; the flow meter assembly was mounted to the skids with (3) M16 Grade 8.8 bolts.





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