



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

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

OFFICE USE ONLY

APPLICATION #: OSP-0054-10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Electronic Systems Support

Manufacturer's Technical Representative: Greg Griffin

Mailing Address: 3233 W Kingsley Rd. Suite 200, Garland, TX 75041

Telephone: (972) 272-2468 Email: greg@ess.to

Product Information

Product Name: Battery Cabinets

Product Type: Electrical equipment

Product Model Number: See Attachment

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

General Description: General Description: Light gage steel cabinets with rigid frame elements along all edges. The units are welded and screwed together to form the cabinets. The cabinets contain batteries and breakers.

Mounting Description: Cabinets are rigid base mounted.

Applicant Information

Applicant Company Name: DYNAMIC CERTIFICATION LABORATORIES

Contact Person: JOSEPH L. LABRIE, S.E., MANAGING PARTNER

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

Telephone: (775) 358-5085 Email: LABRIE@MAKEITRIGHT.NET

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

Signature of Applicant: _____ Date: 3/11/14

Title: MANAGING PARTNER _____ Company Name: DYNAMIC CERTIFICATION LABORATORIES





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

Company Name: DYNAMIC CERTIFICATION LABORATORIES

Name: DR. AHMAD ITANI, S.E. California License Number: SE-5220

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

Telephone: (775) 358-5085 Email: ITANI@SHAKETEST.COM

Supports and Attachments Preapproval

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

Certification Method

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

Testing Laboratory #1

Company Name: ETL DALLAS

Contact Name: BRADY RICHARDS

Mailing Address: 11034 INDIAN TRAIL, DALLAS, TX 75229-3513

Telephone: (972) 247-9657 Email: INFO@ETLDALLAS.COM

Testing Laboratory #2

Company Name: DYNAMIC CERTIFICATION LABORATORIES

Contact Name: AUSTIN BROWN, P.E., LABORATORY MANAGER

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

Telephone: (775) 358-5085 Email: AUSTIN@SHAKETEST.COM

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Seismic Parameters

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

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.5

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, 2010: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): _____

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature: Date: 4/2/2014

Print Name: M. R. Karim Title: SHFR

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

Condition of Approval (if applicable): _____



Special Seismic Certification Certified Components - 16V Battery Cabinets



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Certified Construction: Powder-coated carbon steel frame

Certified Options: Enclosures, batteries and breakers

Certified Mounting Description: Rigid base mounted

Model Number	Horizontally- arrayed batteries ¹	Vertically stacked batteries	Unit Battery Size	Battery Size Tested	Construction Material	NEMA Rating	Unit Dimensions (in)			Max. Weight (lb)	Unit
							Width ¹	Depth	Height		
Sx33800144BLxxxx	3	3	800	n/a	Powder-coated carbon steel	1	25	31.5	72	2420	Extrapolated ³
Sx33925144BLxxxx	3	3	925	800, 925	Powder-coated carbon steel	1	25	31.5	72 ²	2600	UUT4
Sx34800192BLxxxx	3	4	800	n/a	Powder-coated carbon steel	1	25	31.5	72	3290	Interpolated
Sx34925192BLxxxx	3	4	925	n/a	Powder-coated carbon steel	1	25	31.5	72	3350	Interpolated
Sx35800240BLxxxx	3	5	800	n/a	Powder-coated carbon steel	1	25	31.5	84	4030	Interpolated
Sx35925240BLxxxx	3	5	925	925	Powder-coated carbon steel	1	25	31.5	84	4092	UUT2
Sx63550288BLxxxx	6	3	550	550	Powder-coated carbon steel	1	32	31.5	72 ²	3300	UUT3
Sx64550384BLxxxx	6	4	550	n/a	Powder-coated carbon steel	1	32	31.5	72	4400	Interpolated
Sx65550480BLxxxx	6	5	550	550	Powder-coated carbon steel	1	32	31.5	84	5185	UUT1
Sx63800288BLxxxx	6 (3,3)	3	800	n/a	Powder-coated carbon steel	1	50	31.5	72	4820	Extrapolated
Sx63925288BLxxxx	6 (3,3)	3	925	n/a	Powder-coated carbon steel	1	50	31.5	72	5180	Extrapolated ⁴
Sx64800384BLxxxx	6 (3,3)	4	800	n/a	Powder-coated carbon steel	1	50	31.5	72	6200	Extrapolated
Sx64925384BLxxxx	6 (3,3)	4	925	n/a	Powder-coated carbon steel	1	50	31.5	72	6680	Extrapolated
Sx65800480BLxxxx	6 (3,3)	5	800	n/a	Powder-coated carbon steel	1	50	31.5	84	7580	Extrapolated
Sx65925480BLxxxx	6 (3,3)	5	925	n/a	Powder-coated carbon steel	1	50	31.5	84	8180	Extrapolated ⁵

Notes:

1. For systems containing 800 or 925 batteries, a 6-battery horizontal array is two structurally-independent cabinets installed side-by-side, each containing a 3-battery horizontal array.
2. Tested unit used a full height enclosure (84"). However, a 3- and 4- vertically stacked unit uses a 72" tall enclosure
3. Unit is extrapolated based on UUT4 test (UUT4 contained both 800 and 925 batteries).
4. Unit is extrapolated based on UUT4 test (extrapolated unit is two structurally-independent 25-inch wide enclosures installed side-by-side, as tested in UUT4).
5. Unit is extrapolated based on UUT2 test (extrapolated unit is two structurally-independent 25-inch wide enclosures installed side-by-side, as tested in UUT2).

Options (designated as "x" in certified model numbers):

Digit 2: Cabinet color (T, A, C, E)

Digit 13-15: Breaker size in Amps (250 - A00 for 250Amp - 1000Amp breakers); reference certified breakers subcomponent table

Digit 16: Breaker option (A, B, C, D, E, F, G, H, K); reference breaker option subcomponent table

16V Battery Cabinet Nomenclature Chart

16V Cabinet w/Breaker System Part Numbers

S T 6 5 925 480 B 0 600 A

	Cabinet	Number of	Number of	Type of	System			Breaker Size	Breaker Options:
System	Type	Blocs Wide	Blocs High	Cell	Voltage	Breaker	Options	(in Amps)	UVR or Shunt Trip
Digit 1	Digit 2	Digit 3	Digit 4	Digits 5-7	Digits 8-10	Digit 11	Digit 12	Digit 13-15	Digit 16
One Character in Length	One Character in Length	One Character in Length	One Character in Length	Three Characters in Length	Three Characters in Length	One Character in Length	One Character in Length	Three Characters in Length	One Character in Length
S System	T Top Breaker, Gray	3*	3	550 16HX550F	240 240 Volts	B Breaker	L Locked	250 250 Amp	A 24 VDC Shunt Trip/Dual Aux
		6	4	800 16HX800F	288 288 Volts			300 300 Amp	B 48 VDC Shunt Trip/Dual Aux
	A Top Breaker, Black		5	925 16HX925F	384 384 Volts			400 400 Amp	C 24 UVR/Dual Aux
					480 480 Volts			600 600 Amp	D 48 UVR/Dual Aux
	C Top Option, White							800 800 Amp	E 250VDC Shunt Trip/Dual Aux
								A00 1000 Amp	F Aux. Contact (only)
	E Top Breaker, Liebert Black								G 250 UVR/Dual Aux
									H 120 VDC Shunt Trip/Dual Aux
									K 120 UVR/Dual Aux.

* Only available for 800/925 with a system voltage up to 240.

Special Seismic Certification

Certified Components - 12V Battery Cabinets



Manufacturer: Electronic Systems Support
Product Line: Battery Cabinets
Certified Product Construction: Powder-coated carbon steel frame
Certified Options: Enclosures, batteries and breakers
Certified Mounting Description: Rigid base mounted

Model Number	Construction Material	NEMA Rating	Battery Qty.	Battery Mfr.	Breaker	Amps	Dimensions (in)			Weight	Unit
							Width	Height	Length		
ETC40AE04xxxxxxxx	Powder-Coated Carbon Steel	1	4	Energys, C&D, East Penn, CSB, GNB, Fiamm	Square D	100	40.0	78.7	29.5	820	UUT6
ETC40xx04xxxxxxxx	Powder-Coated Carbon Steel	1	4	Energys, C&D, East Penn, CSB, GNB, Fiamm	Square D	100 - 600	40.0	76.8 - 80.0	29.5	820 - 4,710	Interpolated
ETC40xx05xxxxxxxx		1	5								Interpolated
ETC40xx06xxxxxxxx		1	6								Interpolated
ETC40xx08xxxxxxxx		1	8								Interpolated
ETC40xx10xxxxxxxx		1	10								Interpolated
ETC40xx12xxxxxxxx		1	12								Interpolated
ETC40xx15xxxxxxxx		1	15								Interpolated
ETC40xx18xxxxxxxx		1	18								Interpolated
ETC40xx20xxxxxxxx		1	20								Interpolated
ETC40xx24xxxxxxxx		1	24								Interpolated
ETC40xx27xxxxxxxx		1	27								Interpolated
ETC40xx29xxxxxxxx		1	29								Interpolated
ETC40xx30xxxxxxxx		1	30								Interpolated
ETC40xx32xxxxxxxx		1	32								Interpolated
ETC40xx40xxxxxxxx		1	40								Interpolated
ETC40AE40xxxxxxxx	Powder-Coated Carbon Steel	1	40	Energys, C&D, East Penn, CSB, GNB, Fiamm	Square D	600	40.0	78.7	29.5	4,710	UUT5

Options (designated as "x" in certified model numbers):
 Digit 6: Cabinet color (A, B, C, D, E, F, G, H, I)
 Digit 6: Cabinet height, 76.8" to 80" (C, D, E, F, G, H, J)
 Digit 10-14: Battery model per manufacturer; reference certified batteries subcomponent table
 Digit 15: B or H, for breaker or breaker with handle; reference certified breakers subcomponent table
 Digit 16-17: 04 to 16 for 600 to 100 Amp breaker; reference certified breakers subcomponent table
 Digit 18: Breaker option (A, B, C, D, E, F, G, H, K); reference breaker option subcomponent table for explanation of designation in certified component nomenclature

12V Battery Cabinet Nomenclature Chart

ESS ETC40 TOP TERMINAL CABINET SYSTEM MATRIX											
ESS CABINET WITH BREAKER SYSTEM PART NUMBERS											
DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4-5	DIGIT 6	DIGIT 7	DIGIT 8-9	DIGIT 10-14		DIGIT 15	DIGIT 16-17	DIGIT 18
	TYPE OF BATTERY	TYPE OF CABINET OR RACK	CABINET MODEL	COLOR	HEIGHT (INCHES)	BATTERY QUANTITY	BATTERY MODEL PER MANUFACTURER		BREAKER (W/BRAND)	AMPS	BREAKER OPTION
ESS	T = TOP TERMINAL	C = CABINET	40	**A = BLACK	C = 80.0	40	ENERSYS	CSB	B = BREAKER	04 = 600 AMPS	A = 24 VDC SHUNT TRIP / DUAL AUX
				B = BEIGE	D = 79.0	32	HX205 = 12HX205	HL200 = HRL12200W		05 = 500 AMPS	B = 48 VDC SHUNT TRIP / DUAL AUX
				C = LIEBERT GRAY	**E = 78.7	30	HX300 = 12HX300	HL280 = HRL12280W	H = BREAKER W/HANDLE OPTION	06 = 450 AMPS	C = 24 UVR/DUAL AUX
				D = MITSUBISH BEIGE	F = 78.4	29	HX330 = 12HX330	HL330 = HRL12330W		07 = 400 AMPS	D = 48 UVR/DUAL AUX
				E = MGE WHITE	G = 78.00	27	HX400 = 12HX400	HL390 = HRL12390W		08 = 350 AMPS	E = 120 VDC SHUNT TRIP/DUAL AUX
				F = TOSHIBA BLACK	H = 77.3	24	HX505 = 12HX505	HL500 = HRL12500W		09 = 300 AMPS	F = 250 VDC SHUNT TRIP / DUAL AUX
				G = GE WHITE	J = 76.8	20	HX540 = 12HX540	HL540 = HR12540W		10 = 250 AMPS	G = 120 UVR / DUAL AUX
				H = LIEBERT BLACK		18	C & D	XL360 = XHRL12360W		11 = 225 AMPS	H = 250 VDC UVR / DUAL AUX
				I = EATON BLACK		15	210MR = UPS12-210MR	XL410 = XHRL12410W		12 = 200 AMPS	K = AUX CONTACT (ONLY)
						12	300MR = UPS12-300MR	XL475 = XHRL12475W		13 = 175 AMPS	
						10	350MR = UPS12-350MR	XL620 = XHRL12620W		14 = 150 AMPS	
						8	400MR = UPS12-400MR	GNB		15 = 125 AMPS	
						6	490ML = UPS12-490MLP	SV120 = S12V120		16 = 100 AMPS	
						5	490MR = UPS12-490MR	SV170 = S12V170			
						4	540MR = UPS12-540MR	SV285 = S12V285			
								SV300 = S12V300			
							EAST PENN	SV370 = S12V370			
							HR200 = 45HR2000	SV500 = S12V500			
							HR300 = 24HR3000	SV550 = S12V550			
							HR350 = 27HR3500	FIAMM			
							HR400 = 31HR4000	FL200 = 12FLX200			
							HR500 = 31HR5000	FL250 = 12FLX250			
							HR550 = 31HR5500	FL300 = 12FLX300			
								FL350 = 12FLX350			
								FL400 = 12FLX400			
								FL500 = 12FLX500			
								FL540 = 12FLX540			

**REPRESENTS STANDARD COLOR FOR ALL ESS CABINETS (DIGIT 6)

**REPRESENTS ESS STANDARD HEIGHT OF TOP TERMINAL BATTERY CABINETS (DIGIT 7)

Special Seismic Certification Certified Subcomponents



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Certified Subcomponents: Enclosures

Enclosures									
Cabinet Type	Manufacturer	Construction	Material	Dimensions (in)			NEMA Rating	Weight (lb)	Unit
				Width	Depth	Height			
16V Battery Cabinets	ESS	Welded	Powder-coated carbon steel	25	31.5	72	1	360	Extrapolated
	ESS	Welded	Powder-coated carbon steel	25	31.5	84	1	422	UUT2, UUT4
	ESS	Welded	Powder-coated carbon steel	32	31.5	72	1	490	Extrapolated
	ESS	Welded	Powder-coated carbon steel	32	31.5	84	1	550	UUT1, UUT3
	ESS	Welded	Powder-coated carbon steel	50	31.5	72	1	640	Extrapolated ¹
	ESS	Welded	Powder-coated carbon steel	50	31.5	84	1	750	Extrapolated ²
12V Battery Cabinets	ESS	Welded	Powder-coated carbon steel	29.5	40	76.8 - 78.4	1	538 - 543	Extrapolated
	ESS	Welded	Powder-coated carbon steel	29.5	40	78.7	1	545	UUT5, UUT6
	ESS	Welded	Powder-coated carbon steel	29.5	40	79 - 80	1	547 - 550	Extrapolated

- Notes:
1. Extrapolated cabinet is two structurally-independent 25"-wide cabinets, installed side-by-side. Cabinets were tested in UUT2 and UUT4. These cabinets are the same footprint as the tested units, but 12 inches shorter and house one horizontal tier less (up to four horizontal tiers instead of five).
 2. Extrapolated cabinet is two structurally-independent 25"-wide cabinets, installed side-by-side. Cabinets were tested in UUT2 and UUT4.

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

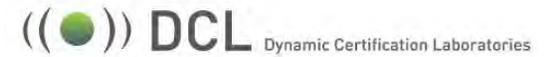
Certified Subcomponents: Batteries

Batteries: 16V Battery Cabinets

Model No.	Designation in Certified Component Nomenclature (Digits 5-7)	Manufacturer	Case Material	Type	Voltage	Approx. Dimensions (in)			Approx. Weight (lb)	Unit
						Depth	Width	Height		
16HX550F-FR	550	Energys	Thick-wall plastic	Lead-Acid	16	27.2	4.6	12.3	151	UUT1, UUT3
16HX800F-FR	800					27.2	7.0	12.3	232	UUT4
16HX925F-FR	925					27.2	7.0	12.3	248	UUT2, UUT4

Special Seismic Certification

Certified Subcomponents



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Certified Subcomponents: Batteries

Batteries: 12V Battery Cabinets

Model No.	Designation in Certified Component Nomenclature (Digits 10-14)	Manufacturer	Case Material	Type	Voltage	Approx. Dimensions (in)			Approx. Weight (lb)	Unit
						Depth	Width	Height		
12HX205	HX205	Energys	Thick-wall plastic	Lead-Acid	12	8.9	5.5	8.1	43	UUT6
12HX300	HX300					10.2	6.9	8.2	60	Interpolated
12HX330	HX330					11.8	6.8	8.4	71	Interpolated
12HX400	HX400					13.3	6.8	8.3	80	Interpolated
6HX800	HX800					13.4	6.8	8.3	80	Interpolated
12HX505	XH505					13.3	6.8	10.7	103	Interpolated
12HX540	XH540					13.3	6.8	10.7	106	UUT5
UPS12-210MR	210MR	C & D	Polypropylene	Lead-Acid	12	9.0	5.5	8.1	40	UUT6
UPS12-300MR	300MR					10.3	6.8	8.0	58	Interpolated
UPS12-350MR	350MR					12.0	6.8	8.1	67	Interpolated
UPS6-620MR	620MR					12.6	7.0	8.9	72	Interpolated
UPS12-400MR	400MR					13.4	6.8	8.5	76	Interpolated
UPS12-490MRLP	490ML					13.4	6.8	8.5	83	Interpolated
UPS12-490MR	490MR					13.6	6.8	10.9	100	Interpolated
UPS12-540MR	540MR	13.6	6.8	10.9	100	UUT5				
45HR2000	HR200	East Penn	Polypropylene	Lead-Acid	12	9.0	5.5	8.3	40	UUT6
24HR3000	HR300					10.2	6.6	8.2	56	Interpolated
27HR3500	HR350					12.0	6.6	8.2	66	Interpolated
31HR4000	HR400					12.9	6.7	8.7	74	Interpolated
31HR5000	HR500					13.5	6.8	11.2	98	Interpolated
31HR5500	HR550					13.5	6.8	11.2	98	UUT5

Special Seismic Certification Certified Subcomponents



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Certified Subcomponents: Batteries (continued)

Batteries: 12V Battery Cabinets

Model No.	Designation in Certified Component Nomenclature	Manufacturer	Material	Type	Voltage	Approx. Dimensions (in)			Approx. Weight (lb)	Unit
						Depth	Width	Height		
HRL12200W	HL200	CSB	PPE	Lead-Acid	12	9.0	5.5	8.2	38	UUT6
HRL12280W	HL280					10.3	6.6	8.4	57	Interpolated
HRL12330W	HL330					12.2	6.7	8.4	65	Interpolated
HRL12390W	HL390					13.5	6.7	8.6	73	Interpolated
HRL12500W	HL500					13.5	6.7	10.9	101	Interpolated
HRL12540W	HL540					13.5	6.7	10.8	97	UUT5
S12V120	SV120	GNB	Reinforced polypropylene container and cover	Lead-Acid	12	6.8	6.5	5.9	27	Extrapolated
S12V170	SV170					7.8	6.6	7.0	36	Extrapolated
S12V285	SV285					10.3	6.9	8.8	61	UUT6
S12V300	SV300					10.3	6.9	8.8	63	Interpolated
S12V370	SV370					12.1	6.9	8.8	74	Interpolated
S12V500	SV500					13.6	6.8	10.9	106	Interpolated
S12V550	SV550					13.6	6.8	10.9	106	UUT5
12FLX200	FL200	Fiamm	Thick-wall ABS case	Lead-Acid	12	9.0	5.4	8.4	41	UUT6
12FLX250	FL250					10.7	6.5	7.7	52	Interpolated
12FLX300	FL300					10.3	6.9	8.6	60	Interpolated
12FLX350	FL350					11.9	6.9	8.6	68	Interpolated
12FLX400	FL400					13.3	6.9	8.5	76	Interpolated
12FLX500	FL500					13.3	6.9	10.9	102	Interpolated
12FLX540	FL540					13.3	6.9	10.9	106	UUT5

Special Seismic Certification Certified Subcomponents



Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Certified Subcomponents: Breakers

Breakers											
Model No.	Manufacturer	Material	Approx. Dimensions (in)			Weight (lb)	Number of Poles	Ampere Rating	System VDC	Handle Option	Unit
			Depth	Width	Height						
PowerPact J	Square D	Thermal-magnetic, molded case	3.4	4.1	7.5	5.3	2, 3	100-250	500	Handle Extension	UUT6
PowerPact J										No Handle Extension	UUT3, UUT4
LH-DC			3.9	6	11	16	2, 3	300-400		Handle Extension	Interpolated
LH-DC										No Handle Extension	Interpolated
MH-DC			4.5	9	14	38	3	450-1000		Handle Extension	UUT1, UUT2, UUT5
MH-DC										No Handle Extension	Interpolated

Breaker Options					
Options	Digit 16, 16V Battery Cabinet Nomenclature	Digit 18, 12V Battery Cabinet Nomenclature	Manufacturer	Material	Unit
24 VDC Shunt Trip / Dual Auxiliary Contact	A	A	Square D	Thermal-magnetic, molded case	UUT2
48 VDC Shunt Trip / Dual Auxiliary Contact	B	B			UUT1
24 Under Voltage Release/Dual Auxiliary Contact	C	C			UUT3
48 Under Voltage Release/Dual Auxiliary Contact	D	D			UUT4
120 VDC Shunt Trip / Dual Auxiliary Contact	H	E			UUT5
250 VDC Shunt Trip / Dual Auxiliary Contact	E	F			UUT6
120 VDC Under Voltage Release / Dual Auxiliary Contact	K	G			Extrapolated*
250 VDC Under Voltage Release/ Dual Auxiliary Contact	G	H			Extrapolated*
Auxiliary Contact (Only)	F	K			UUT1-UUT6

Note:
*Under voltage release option features a coil that requires power to allow a breaker to turn on. The shunt option features the same coil, that when energized pushes a lever to trip a breaker and turn it off. Extrapolated units similar in construction to options tested in UUT5 and UUT6.

Special Seismic Certification



Tested Units

Manufacturer: Electronic Systems Support

Product Line: Battery Cabinets

Tested Product Construction: Powder-coated carbon steel frame

Tested Options: Enclosures, batteries and breakers

Tested Mounting Description: Rigid base mounted

Model Number*	Construction Material	NEMA Rating	Dimensions (in)			Weight	Sds (g), z/h=1	Unit
			Depth	Length	Height			
ST65550480BLA00B	Powder-coated carbon steel	1	31.5	32.0	84.0	5,185	2.00	UUT1
ST35925240BLA00A	Powder-coated carbon steel	1	31.5	25.0	84.0	4,092	2.00	UUT2
ST65550288BL250C	Powder-coated carbon steel	1	31.5	32.0	84.0	3,300	2.00	UUT3
ST35xxx144BL250D	Powder-coated carbon steel	1	31.5	25.0	84.0	2,600	2.00	UUT4
ETC40AE40xxxxxH04E	Powder-coated carbon steel	1	29.5	40.0	78.7	4,710	2.00	UUT5
ETC40AE04xxxxxB16F	Powder-coated carbon steel	1	29.5	40.0	78.7	820	2.00	UUT6

*UUT4 shows "xxx" because the tested unit included 2 different types of batteries. UUT5 and UUT6 show "xxxxx" because each unit contained 6 different types of batteries.

UUT1



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ST65550480BLA00B

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 16HX550F-FR lead acid batteries, Square D 450-1000 Amp breaker with handle extension and 48 VDC shunt trip / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Length	Height	Front-Back	Side-Side	Vertical
5,185	UUT1	31.5	32.0	84.0	4.8	5.8	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT1 was rigid base-mounted to the shake table interface plate using six 1/2-inch diameter Grade 5 bolts.

UUT2



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ST35925240BLA00A

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 16HX925F-FR lead acid batteries, Square D 450-1000 Amp breaker with handle extension and 24 VDC shunt trip / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Length	Height	Front-Back	Side-Side	Vertical
4,092	UUT2	31.5	32.0	84.0	6.6	3.6	17.7

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT2 was rigid base-mounted to the shake table interface plate using six 1/2-inch diameter Grade 5 bolts.

UUT3



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ST65550288BL250C

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 16HX550F-FR lead acid batteries, Square D 100-250 Amp breaker with no handle extension and 24V undervoltage release / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
	UUT3	Depth	Length	Height	Front-Back	Side-Side	Vertical
3,300	UUT3	31.5	32.0	84.0	10.8	13.8	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT3 was rigid base-mounted to the shake table interface plate using six 1/2-inch diameter Grade 5 bolts.

UUT4



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ST35xxx144BL250D

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 16HX800F-FR and 16HX925F-FR lead acid batteries, Square D 100-250 Amp breaker with no handle extension and 48V undervoltage release / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Length	Height	Front-Back	Side-Side	Vertical
2,600	UUT4	31.5	32.0	84.0	10.8	8.0	19.0

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT4 was rigid base-mounted to the shake table interface plate using six 1/2-inch diameter Grade 5 bolts.

UUT5



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ETC40AE40xxxxxH04E

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 12HX540, C&D UPS12-540MR, East Penn 31HR5500, CSB HRL12540W, GNB S12V550 and Fiamm 12FLX540 lead acid batteries, Square D 450-1000 Amp breaker with handle extension and 120VDC shunt trip / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Length	Height	Front-Back	Side-Side	Vertical
4,710	UUT5	29.5	40.0	78.7	8.3	7.8	19.8

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT5 was rigid base-mounted to the shake table interface plate using six 5/8-inch diameter Grade 5 bolts.

UUT6



UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: ESS

Product Line: Battery Cabinets

Model Number: ETC40AE04xxxxxB16F

Product Construction Summary:

Powder coated carbon steel enclosure, NEMA 1.

Options / Component Summary:

Rigid base mounted. Enersys 12HX205, C&D UPS12-210MR, East Penn 45HR2000, CSB HRL12200W, GNB S12V285 and Fiamm 12FLX200 lead acid batteries, Square D 100-250 Amp breaker with handle extension and 240VDC shunt trip / dual auxiliary.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Depth	Length	Height	Front-Back	Side-Side	Vertical
820	UUT6	29.5	40.0	78.7	18.8	13.8	30.5

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT6 was rigid base-mounted to the shake table interface plate using six 5/8-inch diameter Grade 5 bolts.