



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

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

OFFICE USE ONLY

APPLICATION #: OSP-0786

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Siemens Energy, S. de R.L. de C.V.

Manufacturer's Technical Representative: Joaquin Gonzalez

Mailing Address: Carretera Guanajuato-Silao Km. 8, 36250 Guanajuato, Gto, Mexico

Telephone: 052 473 735 1700

Email: martinez.joaquin@siemens-energy.com

Product Information

Product Name: Transformers

Product Type: Transformers – Dry Type

Product Model Number: GEAFOL - CARECO Cast Resin Transformers

General Description: Dry type cast-resin distribution transformers with aluminum and copper windings.

Mounting Description: Rigid, Floor Mounted

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: WE Gundy & Associates, Inc

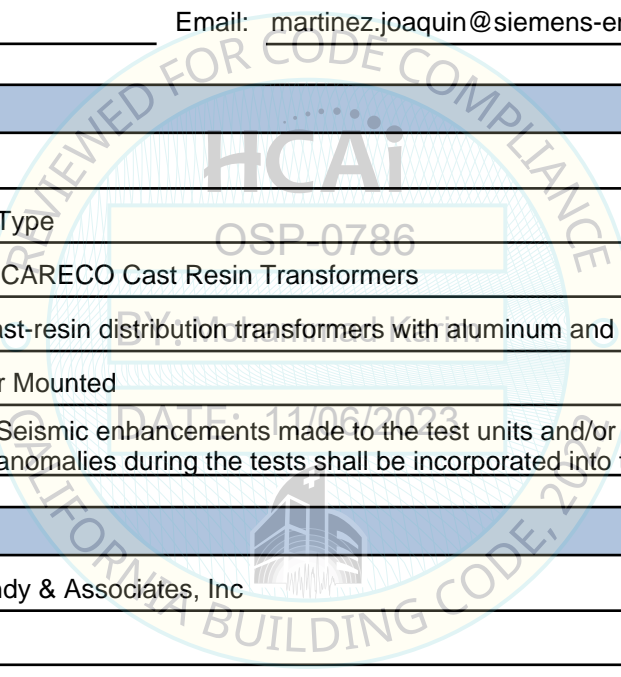
Contact Person: Travis Soppe

Mailing Address: PO Box 9121, Boise, ID 83707

Telephone: (208) 342-5989

Email: tsoppe@wegai.com

Title: President





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

Company Name: W.E. GUNDY & ASSOCIATES INC.
Name: Travis Soppe California License Number: S6115
Mailing Address: P.O. Box 9121, Boise, ID 83707
Telephone: (208) 342-5989 Email: tsoppe@wegai.com

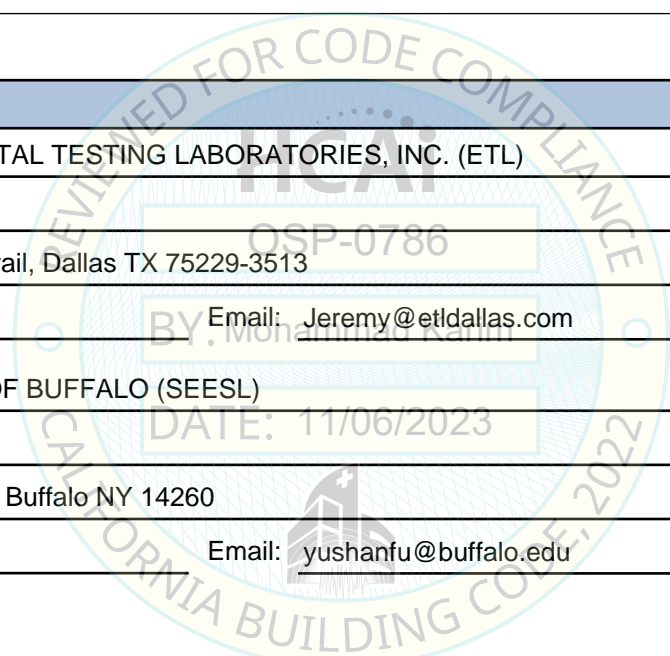
Certification Method

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

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)
Contact Person: Jeremy Lange
Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513
Telephone: (972) 247-9657 Email: Jeremy@etldallas.com

Company Name: UNIVERSITY OF BUFFALO (SEESL)
Contact Person: Yushan Yu
Mailing Address: 212 Ketter Hall, Buffalo NY 14260
Telephone: (716) 645-4377 Email: yushanfu@buffalo.edu





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FACILITIES DEVELOPMENT DIVISION**

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.13 for SDS = 2.5 at z/h = 0 and 0.45 for SDS = 1.0 at z/h = 0

SDS (Design spectral response acceleration at short period, g) = 2.50 (with CNC Bracing) and 1.0 (without CNC Bracing)

a_p (Amplification factor) = 1.0

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.5

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) = See Above z/h = 0

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

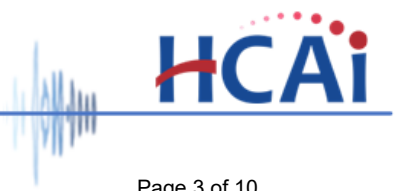
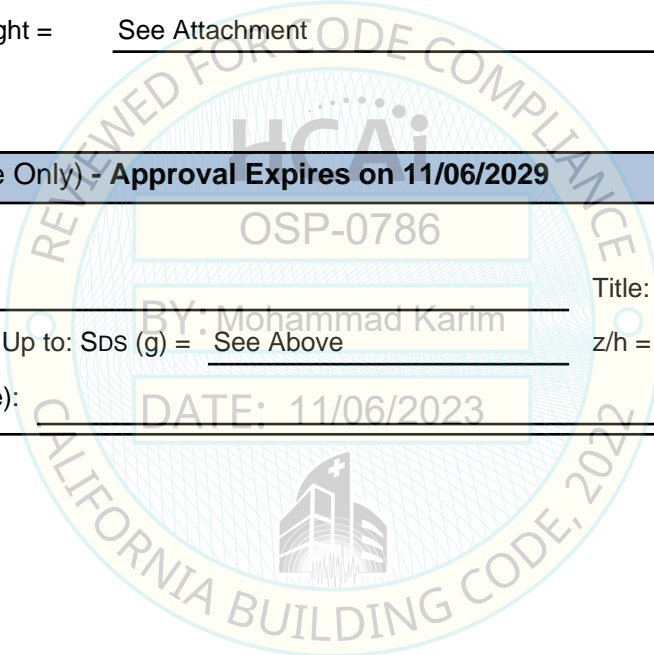



TABLE 1	SIEMENS ENERGY GEAFOL / CARECO CAST-RESIN TRANSFORMERS CERTIFIED PRODUCT LINE MATRIX							 WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small>	
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Identification Number	kVA Rating	HV / BIL kV	NEMA ¹	Enclosure Dimensions ² (in)			Max Weight (lb)		Representative UUT ³
				Width	Depth	Height	NEMA1	NEMA3R	
4GB5722 9DZ	500	4.16 / 60	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	5,291	5,732	extrapolated
4GB5922 9DZ	750	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	5,952	6,173	extrapolated
4GB5761 9DZ	500	13.8 / 110	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	5,732	6,173	extrapolated
4GB5961 9DZ	750	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	6,173	6,614	extrapolated
4GB6022 9DZ	1000	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	6,393	6,834	extrapolated
4GB6061 9DZ	1000	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	6,834	7,275	extrapolated
4GB5781 9DZ	500	23.0 / 125	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	7,055	7,496	extrapolated
4GB5981 9DZ	750	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	7,716	8,157	extrapolated
4GB6222 9DZ	1500	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	8,157	8,598	extrapolated
4GB6081 9DZ	1000	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	8,598	9,039	extrapolated
4GB6261 9DZ	1500	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	8,598	9,480	extrapolated
4GB5781 9DZ	500	34.5 / 150	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	9,921	10,582	extrapolated
4GB6361 9DZ	2000	13.8 / 110	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	10,582	11,243	extrapolated
4GB6322 9DZ	2000	4.16 / 60	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	10,803	11,464	extrapolated
4GB6281 9DZ	1500	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	10,803	11,464	extrapolated
4GB5981 9DZ	750	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	10,803	11,464	extrapolated
4GB6381 9DZ	2000	23.0 / 125	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	11,684	12,346	extrapolated
4GB6081 9DZ	1000	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	11,464	12,346	extrapolated
4GB6422 9DZ	2500	4.16 / 60	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	13,007	13,889	extrapolated
4GB6461 9DZ	2500	13.8 / 110	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	13,669	14,550	extrapolated
4GB6522 9DZ	3000	4.16 / 60	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	14,109	14,771	extrapolated
4GB6561 9DZ	3000	13.8 / 110	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	14,109	14,991	extrapolated


GEAFOL - Aluminum Coils

Notes:

¹ NEMA 1 / 3R enclosures are constructed of carbon steel. Enclosures are mounted to the base frame and do not connect to the internal core and coil assembly.

² Enclosure dimensions listed are the width and length of the base frame and the overall height of the enclosure.

³ The units were tested at different times and the subscripts on the UUT's reference the following lab test reports: x - 13380 Rev.1 / y - 2023-15

TABLE 1	SIEMENS ENERGY								
	GAEFOL / CARECO CAST-RESIN TRANSFORMERS							W.E. GUNDY & ASSOCIATES, INC. <small>STRUCTURAL & EARTHQUAKE ENGINEERING</small>	
CERTIFIED PRODUCT LINE MATRIX									

Identification Number	kVA Rating	HV / BIL kV	NEMA ¹	Enclosure Dimensions ² (in)			Max Weight (lb)		Representative UUT ³
				Width	Depth	Height	NEMA1	NEMA3R	
4GB6281 9DZ	1500	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	14,991	15,432	extrapolated
4GB6381 9DZ	2000	34.5 / 150	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	16,755	17,637	extrapolated
4GB6522 9DZ	3500	4.16 / 60	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	16,755	17,857	extrapolated
4GB6561 9DZ	3500	13.8 / 110	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	16,755	17,857	extrapolated
4GB6481 9DZ	2500	23.0 / 125	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	17,196	18,078	extrapolated
4GB6581 9DZ	3000	23.0 / 125	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	17,857	18,960	extrapolated
4GB6481 9DZ	2500	34.5 / 150	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	19,400	19,841	extrapolated
4GB6576 9DZ	3500	23.0 / 125	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	19,180	20,282	extrapolated
4GB6581 9DZ	3000	34.5 / 150	1 / 3R	66.1 - 74.8	126 - 131.9	102.4 - 118.1	19,621	20,503	extrapolated
4GB6581 9DZ	3000	34.5 / 150	1	60.0	131.9	118.1	18,290		UUT_x-1A/B
4GB5722 9DZ	500	4.16 / 60	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	5,732	5,952	extrapolated
4GB5761 9DZ	500	13.8 / 110	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	5,952	6,393	extrapolated
4GB5922 9DZ	750	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	6,393	6,834	extrapolated
4GB5961 9DZ	750	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	6,614	7,055	extrapolated
4GB6022 9DZ	1000	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	7,055	7,275	extrapolated
4GB6061 9DZ	1000	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	7,496	7,937	extrapolated
4GB5776 9DZ	500	23.0 / 125	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	8,157	8,818	extrapolated
4GB6222 9DZ	1500	4.16 / 60	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	9,039	9,700	extrapolated
4GB5976 9DZ	750	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	9,039	9,700	extrapolated
4GB6076 9DZ	1000	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	9,480	9,921	extrapolated
4GB6261 9DZ	1500	13.8 / 110	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	9,921	10,582	extrapolated
4GB5781 9DZ	500	34.5 / 150	1 / 3R	51.2 - 55.1	74.8 - 78.7	59.1 - 66.9	10,141	10,803	extrapolated

Notes:

¹ NEMA 1 / 3R enclosures are constructed of carbon steel. Enclosures are mounted to the base frame and do not connect to the internal core and coil assembly.

² Enclosure dimensions listed are the width and length of the base frame and the overall height of the enclosure.

³ The units were tested at different times and the subscripts on the UUT's reference the following lab test reports: x - 13380 Rev.1 / y - 2023-15

TABLE 1	SIEMENS ENERGY GEAFOL / CARECO CAST-RESIN TRANSFORMERS CERTIFIED PRODUCT LINE MATRIX	 WEGAI <small>W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING</small>
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Identification Number	kVA Rating	HV / BIL kV	NEMA ¹	Enclosure Dimensions ² (in)			Max Weight (lb)		Representative UUT ³
				Width	Depth	Height	NEMA1	NEMA3R	
4GB5981 9DZ	750	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	70.9 - 78.7	11,023	11,684	extrapolated
4GB6276 9DZ	1500	23.0 / 125	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	11,464	12,125	extrapolated
4GB6322 9DZ	2000	4.16 / 60	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	11,684	12,346	extrapolated
4GB6361 9DZ	2000	13.8 / 110	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	12,125	12,787	extrapolated
4GB6081 9DZ	1000	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	12,125	12,787	extrapolated
4GB6422 9DZ	2500	4.16 / 60	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	13,889	14,771	extrapolated
4GB6376 9DZ	2000	23.0 / 125	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	14,109	14,991	extrapolated
4GB6281 9DZ	1500	34.5 / 150	1 / 3R	63.0 - 66.9	86.6 - 90.6	82.7 - 90.6	14,550	15,212	extrapolated
4GB6461 9DZ	2500	13.8 / 110	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	14,550	15,432	extrapolated
4GB6522 9DZ	3000	4.16 / 60	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	14,991	15,873	extrapolated
4GB6561 9DZ	3000	13.8 / 110	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	15,212	16,094	extrapolated
4GB6381 9DZ	2000	34.5 / 150	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	16,975	17,857	extrapolated
4GB6476 9DZ	2500	23.0 / 125	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	17,857	18,739	extrapolated
4GB6522 9DZ	3500	4.16 / 60	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	18,078	19,180	extrapolated
4GB6576 9DZ	3000	23.0 / 125	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	18,078	19,180	extrapolated
4GB6561 9DZ	3500	13.8 / 110	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	18,298	19,400	extrapolated
4GB6481 9DZ	2500	34.5 / 150	1 / 3R	70.9 - 74.8	114.2 - 118.1	94.5 - 102.4	19,621	20,723	extrapolated
4GB6576 9DZ	3500	23.0 / 125	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	19,621	20,944	extrapolated
4GB6581 9DZ	3000	34.5 / 150	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	19,841	20,944	extrapolated
4GB6581 9DZ	3500	34.5 / 150	1 / 3R	70.9 - 74.8	126 - 129.9	102.4 - 110.2	22,046	22,928	extrapolated
4GB6581 9DC	3500	34.5 / 150	3R	75	118	104		23,310	UUT_y-1A/B

CARECO - Copper Coils
Notes:
¹ NEMA 1 / 3R enclosures are constructed of carbon steel. Enclosures are mounted to the base frame and do not connect to the internal core and coil assembly.

² Enclosure dimensions listed are the width and length of the base frame and the overall height of the enclosure.

³ The units were tested at different times and the subscripts on the UUT's reference the following lab test reports: x - 13380 Rev.1 / y - 2023-15

UUT_x-1A	UNIT UNDER TEST (UUT) SUMMARY SHEET	
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Mounting Details: Rigid floor mounted with (16) 3/4" Grade 8 bolts

Configuration: Configuration A – tested without core and coil restraint brace, see picture below



Config. A: Tested without bolts in CNC Brace

Manufacturer: Siemens	Test Location: ETL Dallas, TX
Product: GEAFOL / CARECO Transformers	Test Date: September 2014
Transformer ID: 4GB6581 9DZ	Report Number: 13380 Rev.1

UUT Function: Distribution transformer, steps down the electrical voltage from distribution to service

UUT Description: NEMA 1 carbon steel enclosure with cast resin core and coil assembly, aluminum windings.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
18,290	60.0	132.0	118.0	2.9	4.5	16.3

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S _{Ds} (g)	z / h	I _p	A _{FLEX-H} (g)	A _{RIG-H} (g)	A _{FLEX-V} (g)	A _{RIG-V} (g)
CBC 2022 / ICC-ES AC156	1.00	0	1.5	1.00	0.40	0.67	0.27

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_x-1B	UNIT UNDER TEST (UUT) SUMMARY SHEET	
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Mounting Details: Rigid floor mounted with (16) 3/4" Grade 8 bolts

Configuration: Configuration B – tested with core and coil restraint brace, see figure below



Config. B: Tested with bolts in CNC Brace

Manufacturer: Siemens	Test Location: ETL Dallas, TX
Product: GEAFOL / CARECO Transformers	Test Date: September 2014
Transformer ID: 4GB6581 9DZ	Report Number: 13380 Rev.1

UUT Function: Distribution transformer, steps down the electrical voltage from distribution to service

UUT Description: NEMA 1 carbon steel enclosure with cast resin core and coil assembly, aluminum windings.

UUT PROPERTIES						
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
18,290	60.0	132.0	118.0	3.1	4.8	18.2

SEISMIC TEST PARAMETERS							
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	1.5	2.50	1.0	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-1A

**UNIT UNDER TEST (UUT)
SUMMARY SHEET**



Mounting Details: Rigid floor mounted with (12) 3/4" and (4) 1.0" Grade 5 bolts

Configuration: Configuration A – tested without core and coil restraint brace, see picture below



Config. A: Tested without bolts in CNC Brace

Manufacturer: Siemens **Test Location:** SEESL – Buffalo, NY

Product: GEAFOL / CARECO Transformers **Test Date:** August 2023

Transformer ID: 4GB6581 9DC **Report Number:** 2023-15

UUT Function: Distribution transformer, steps down the electrical voltage from distribution to service

UUT Description: NEMA 3R carbon steel enclosure with cast resin core and coil assembly, copper windings.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
23,310	75.0	118.0	104.0	3.6	8.1	19.8

SEISMIC TEST PARAMETERS

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	1.00	0	1.5	1.00	0.40	0.67	0.27

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.

UUT_y-1B	UNIT UNDER TEST (UUT) SUMMARY SHEET	
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Mounting Details: Rigid floor mounted with (12) 3/4" and (4) 1.0" Grade 5 bolts

Configuration: Configuration B – tested with core and coil restraint brace, see figure below



Config. A: Tested with bolts in CNC Brace

Manufacturer: Siemens	Test Location: SEESL – Buffalo, NY
Product: GEA FOL / CARECO Transformers	Test Date: August 2023
Transformer ID: 4GB6581 9DC	Report Number: 2023-15
UUT Function: Distribution transformer, steps down the electrical voltage from distribution to service	
UUT Description: NEMA 3R carbon steel enclosure with cast resin core and coil assembly, copper windings.	

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Width	Depth	Height	FB	SS	V
23,310	75.0	118.0	104.0	4.1	11.25	19.8

SEISMIC TEST PARAMETERS

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	1.5	2.50	1.0	1.67	0.67

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 test.