APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0172 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Caterpillar (CAT)

Manufacturer's Technical Representative: Paul Clark

Mailing Address: 4955 Marconi Drive, Alpharetta, GA 30005

Telephone: (678) 746-5077 Email: Clark_Paul@cat.com

Product Information

Product Name: Automatic and Bypass Transfer Switches

Product Type: CT and CBT-Horizontal – Brand Label of GE ZT, ZBT-Vertical, ZBT-Horizontal

Product Model Number: See certified product line matrices
(List all unique product identification numbers and/or part numbers)

General Description: Automatic and By-pass Transfer Switches, which are manual, automatic, or a combination of both. Seismic enhancements made to the test units and modifications required to address anomalies observed during tests shall be incorporated into the production units.

Mounting Description: Rigid floor mounted

Applicant Information

Applicant Company Name: W.E. Gundy & Associates, Inc.

Contact Person: Travis Soppe, SE

Mailing Address: 1199 Shoreline Drive, Suite 310, Boise, Idaho 83702

Telephone: (208) 342-5989 Ext 115 Email: tsoppe@wegai.com

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

Signature of Applicant: Travis Soppe Date: 05-31-2018

Title: President Company Name: W.E. Gundy & Associates, Inc.

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

Company Name: W.E. Gundy & Associates, Inc.

Name: Travis Soppe, SE California License Number: S6115

Mailing Address: 1199 Shoreline Drive, Suite 310, Boise, Idaho 83702

Telephone: (208) 342-5989 Ext. 115 Email: tsoppe@wegai.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

Company Name: Clark Dynamic Testing Laboratory

Contact Name: Pat Wetherill

Mailing Address: 1801 Route 51, Jefferson Hills, PA 15025

Telephone: 412-387-1676 Email: PWetherill@ClarkTesting.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = ATS = 1.5 and Horizontal Bypass = 1.00

S_{DS} (Design spectral response acceleration at short period, g) = ATS = 2.0 and Horizontal Bypass = 1.33

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See attachment

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

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) =

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

S_{D1} (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Ω_0 (System overstrength factor) =

C_d (Deflection amplification factor) =

I_p (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component Natural Frequencies (Hz) =

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☐ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☒ Manufacturer's Catalog

☒ Other(s) (Please Specify): Seismic Certification Letter, Certified System Matrix, UUT Summary Sheets

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: Date: March 3, 2019

Print Name: Ali Sumer Title: DSE

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

Condition of Approval (if applicable):

CATERPILLAR CTG, CTGD, CTS, CTSD, CTSCT, C10, C1D, AND C1C AUTOMATIC TRANSFER SWITCH CERTIFIED PRODUCT LINE MATRIX

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W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

TABLE 1 - AUTOMATIC TRANSFER SWITCH PRODUCT LINE - Max S_{DS} = 2.0 at z/h = 1.0

ID Number	Ampre Rating	Frame Size	Pole	NEMA Rating	Enclosure Dimensions (in)			Service Weight (lbs)	Representative UUT
					Width	Depth	Height		
CTG/CTGD-600	600	F14	2 / 3 / 4	1	24	20	69	214 - 265	extrpolated
CTG-600	600	F14	3	1	24	20	69	265	UUT-1
CTS/CTSD/CTSCT/C10/C1D/C1C-600	600	63L	2 / 3 / 4	1	40	20	74	380 - 430	interpolated
CTG/CTGD-800	800	63L	2 / 3 / 4	1	40	20	74	460 - 490	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-800	800	63L	2 / 3 / 4	1	40	20	74	455 - 560	interpolated
CTG/CTGD-1000	1000	63L	2 / 3 / 4	1	40	20	74	475 - 560	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-1000	1000	63L	2 / 3 / 4	1	40	20	74	455 - 560	interpolated
CTG/CTGD-1200	1200	63L	2 / 3 / 4	1	40	20	74	475 - 560	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-1200	1200	63L	2 / 3 / 4	1	40	20	74	455 - 560	interpolated
CTG/CTGD-1600	1600	65L	2 / 3 / 4	1	36	48	90	1030 - 1180	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-1600	1600	65L	2 / 3 / 4	1	36	48	90	1010 - 1190	interpolated
CTG/CTGD-2000	2000	65L	2 / 3 / 4	1	36	48	90	1030 - 1180	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-2000	2000	65L	2 / 3 / 4	1	36	48	90	1010 - 1190	interpolated
CTG/CTGD-2600	2600	65L	2 / 3 / 4	1	36	48	90	1150 - 1400	interpolated
CTG/CTGD-3000	3000	65L	2 / 3 / 4	1	36	48	90	1150 - 1400	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-3000	3000	65L	2 / 3 / 4	1	36	48	90	1130 - 1415	interpolated
CTS/CTSD/CTSCT/C10/C1D/C1C-4000	4000	65L	2 / 3 / 4	1	46	60	90	1595 - 2100	interpolated
CTS-4000	4000	65L	4	1	46	60	90	2100	UUT-2

Notes:

[1)] All components are Brand Labeled by Caterpiller and manufactured by GE unless otherwise noted. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component within the tested units. Note that the GE part numbers are identical to the brand labeled Caterpiller with the exception of the first letter for GE being "Z" instead of "C" (example: ZTG-600 instead of CTG-600).

[2)] Enclosures are constructed of bolted carbon steel.

[3)] The CTG/CTGD/CTS/CTSD/CTSCT/C10/C1D/C1C Transfer switches are of nearly identical construction (minor control differences listed to right).

CT and C1 - Transfer Switch Models

-CTG - Open Transition with MX150 Controler
-CTGD - Delay Transition with MX150 Controler
-CTS - Open Transition with MX250 Controler
-CTSD - Delay Transition with MX250 Controler
-CTSCT - Closed Transition with MX250 Controler
-C10 - Open Transition with MX350 Controler
-C1D - Delay Transition with MX350 Controler
-C1C - Closed Transition with MX350 Controler

CATERPILLAR CTG, CTGD, CTS, CTSD, CTSCT, C10, C1D, AND C1C AUTOMATIC TRANSFER SWITCH CERTIFIED SUBCOMPONENT MATRIX

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TABLE 2 - AUTOMATIC TRANSFER SWITCH SUBCOMPONENTS - Max S_{DS} = 2.00 at z/h = 1.0

Subcomponent ID Number	Description	Manufacturer	General Dimensions (in)			Weight (lbs)	Representative UUT
			Width	Depth	Height		
Automatic Transfer Switch Power Panel Assembly							
50C-2034-600	600A CTG	GE	25.2	12.0	36.3	80	UUT-1
50C-2003-600/1200	600-1200A CTG/CTGD/CTS/CTSD/CTSCT 600-1200A C10/C1D/C1C	GE	21.6-27.4	12.0	36.3	210-230	interpolated
50C-2005-1600/3000	1600-3000A CTG/CTGD/CTS/CTSD/CTSCT 1600-3000A C10/C1D/C1C	GE	24.8-30.3	28.6	30.5	365-690	interpolated
50C-2030-4000	4000A CTS/CTSD/CTSCT/C10/C1D/C1C	GE	32.3-38.8	31.6	30.5	820-1045	interpolated
50C-2030-4000	4000A CTS	GE	38.8	31.6	30.5	1045	UUT-2
Electrical Panel / Controler Components							
MX150	Controller and CPU	GE	11.0	4.0	14.0	12.0	UUT-1
MX250	Controller and CPU	GE	11.0	4.0	14.0	12.0	UUT-2
MX350	Controller and CPU	GE	12.0	4.0	10.0	10.0	extrapolated
Carbon Steel Enclosures							
FRAME - F14	NEMA1 bolted carbon steel	GE	24.0	20.0	69.0	na	UUT-1
FRAME - 63L	NEMA1 bolted carbon steel	GE	40.0	20.0	74.0	na	interpolated
FRAME - 65L	NEMA1 bolted carbon steel	GE	36.0-46.0	48.0-60.0	90.0	na	interpolated
FRAME - 65L	NEMA1 bolted carbon steel	GE	46.0	60.0	90.0	na	UUT-2

CATERPILLER CBTS-B1, CBTSD-B1, CBTSCT-B1, C30-B1, C3D-B1, AND C3C-B1 HORIZONTAL BYPASS TRANSFER SWITCH CERTIFIED PRODUCT LINE MATRIX

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TABLE 3 - HORIZONTAL BYPASS TRANSFER SWITCH PRODUCT LINE - Max S_{DS} = 1.33 at z/h = 1.0

ID Number	Ampre Rating	Frame Size	Pole	NEMA Rating	Enclosure Dimensions (in)			Service Weight (lbs)	Representative UUT
					Width	Depth	Height		
CBTS-B1-1200	1200	64B	3	1	40.0	36.0	81.0	1334	UUT-5
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-600	600	64B	3 / 4	1	39.0 - 42.0	36.0	81.0	1335 - 1640	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-800	800	64B	3 / 4	1	39.0 - 42.0	36.0	81.0	1335 - 1640	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-1000	1000	64B	3 / 4	1	39.0 - 42.0	36.0	81.0	1335 - 1640	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-1200	1200	64B	3 / 4	1	39.0 - 42.0	36.0	81.0	1335 - 1640	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-1600	1600	65B	3 / 4	1	40.0 - 46.1	64.6	80.0	4453 - 5750	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-2000	2000	65B	3 / 4	1	40.0 - 46.1	64.6	80.0	4454 - 5750	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-2600	2600	65B	3 / 4	1	40.0 - 46.1	64.6	80.0	4455 - 5750	interpolated
CBTS/CBTSD/CBTSCT/C30/C3D/C3C-B1-3000	3000	65B	3 / 4	1	40.0 - 46.1	64.6	80.0	4456 - 5750	interpolated
CBTS-B1-3000	3000	65B	4	1	46.1	64.6	80.0	5747	UUT-6

Notes:

1) All components are Brand Labeled by Caterpiller and manufactured by GE unless otherwise noted. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component within the tested units. Note that the GE part numbers are identical to the brand labeled Caterpiller with the exception of the first letter for GE being "Z" instead of "C" (example: ZBTS-B1-600 instead of CBTS-B1-600).

2) Enclosures are constructed of bolted carbon steel.

3) The CBTS/CBTSD/CBTSCT/C30/C3D/C3C Horizontal Bypass transfer switches are of nearly identical construction (minor control differences listed below).

CBT AND C - Horizontal Bypass Switch Models

-CBTS-B1 - Open Transition with MX250 Controler
-CBTSD-B1 - Delay Transition with MX250 Controler
-CBTSCT-B1 - Closed Transition with MX250 Controler
-C30-B1 - Open Transition with MX350 Controler
-C3D-B1 - Delay Transition with MX350 Controler
-C3C-B1 - Closed Transition with MX350 Controler

CATERPILLER CBTS-B1, CBTSD-B1, CBTSCT-B1, C30-B1, C3D-B1, AND C3C-B1 HORIZONTAL BYPASS TRANSFER SWITCH CERTIFIED SUBCOMPONENT MATRIX

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TABLE 4 - HORIZONTAL BYPASS TRANSFER SWITCH SUBCOMPONENTS - Max S_{DS} = 1.33 at z/h = 1.0

Subcomponent ID Number	Description	Manufacturer	General Dimensions (in)			Weight (lbs)	Representative UUT
			Width	Depth	Height		
Horizontal Bypass Power Panel Assembly							
50C-2048-600-1200	600-1200A CBTS-B1/CBTSD-B1/CBTSCT-B1 600-1200A C30-B1/C3D-B1/C3C-B1	GE	32.5-37.5	41.2	38.6	660-738	extrapolated
50C-2048-1200	1200A CBTS-B1	GE	37.5	41.2	38.6	738	UUT-5
50C-2042-1600-3000	1600-3000A CBTS-B1/CBTSD-B1/CBTSCT-B1 600-1200A C30-B1/C3D-B1/C3C-B1	GE	40.0-45.5	63.0	79.5	2870-3225	interpolated
50C-2042-3000	3000A CBTS-B1	GE	45.5	63.0	79.5	3225	UUT-6
Electrical Panel / Controler Components							
MX150	Controller and CPU	GE	11.0	4.0	14.0	12.0	UUT-1
MX250	Controller and CPU	GE	11.0	4.0	14.0	12.0	UUT-2 UUT-5 UUT-6
MX350	Controller and CPU	GE	12.0	4.0	10.0	10.0	extrapolated
Carbon Steel Enclosures							
FRAME - 64B	NEMA1 bolted carbon steel	GE	40.0	36.0	81.0	na	UUT-5
FRAME - 64B	NEMA1 bolted carbon steel	GE	39.0-42.0	36.0	81.0	na	interpolated
FRAME - 65B	NEMA1 bolted carbon steel	GE	40.0-46.1	64.6	80.0	na	interpolated
FRAME - 65B	NEMA1 bolted carbon steel	GE	46.1	64.6	80.0	na	UUT-6

UUT-1 (F14 600A)	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Rigid floor mounted with 4 - 1/2" grade 5 bolts

Manufacturer: Caterpillar (brand label of GE product)

Product Line: CTG, CTGD, CTS, CTSD, CTSCT, C10, C1D, and C1C Automatic Transfer Switch

Component: CTG-600

UUT Function: Manual/Automatic power switching from utility power to emergency power.

UUT Description: 600A 3-Pole Automatic Transfer Switch with 600A CTG Power Panel, MX150 Controller, and NEMA 1 Frame Size F14 enclosure.

Test Location: Clark Dynamics Testing Labs, Jefferson Hills, | **Test Date:** December 2006

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Width	Depth	Height	FB	SS	V
265	24.0	20.0	69.0	29.7	10.9	>33.3

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 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54

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

UUT-2 (65L-4000A)	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Rigid floor mounted with 8 - 1/2" grade 5 bolts

Manufacturer: Caterpillar (brand label of GE product)

Product Line: CTG, CTGD, CTS, CTSD, CTSCT, C10, C1D, and C1C Automatic Transfer Switch

Component: CTS-4000

UUT Function: Manual/Automatic power switching from utility power to emergency power.

UUT Description: 4000A 4-Pole Automatic Transfer Switch with 4000A CTS Power Panel, MX250 Controller, and NEMA 1 Frame Size 65L enclosure.

Test Location: Clark Dynamics Testing Labs, Jefferson Hills, | **Test Date:** December 2006

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Width	Depth	Height	FB	SS	V
2,100	46.0	60.0	90.0	19.5	10.9	>33.3

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 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54

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

UUT-5 (64B-1200A)	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Rigid floor mounted with 4 - 1/2" grade 5 bolts and 5/8" x 2" washers

Manufacturer: Caterpillar (brand label of GE product)

Product Line: CBTS-B1, CBTSD-B1, CBTSCT-B1, C30-B0, C3D-B0, C3C-B0 Horizontal Bypass Switch

Component: CBTS-B1-1200

UUT Function: Manual/Automatic power switching from utility power to emergency power.

UUT Description: 1200A 3-Pole Horizontal Bypass Switch with 1200A CBTS-B1 Power Panel, MX250 Controller, and NEMA 1 Frame Size 64B enclosure.

Test Location: Clark Dynamics Testing Labs, Jefferson Hills, | **Test Date:** May 2010

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Width	Depth	Height	FB	SS	V
1,334	46.1	64.6	80.0	9.0	8.9	>33.3

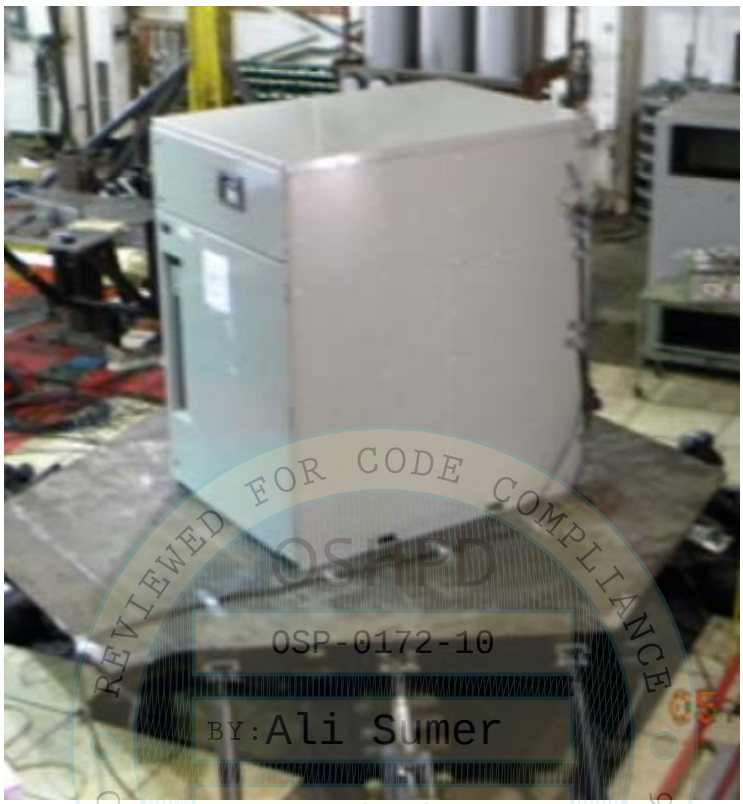
SEISMIC TEST PARAMETERS

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 2016 / ICC-ES AC156	1.33	1.0	1.5	3.20	2.40	1.34	0.54

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

UUT-6 (65B-3000A)	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Rigid floor mounted with 4 - 1/2" grade 5 bolts and 3"x7"x0.5" plate washers



Manufacturer: Caterpillar (brand label of GE product)

Product Line: CBTS-B1, CBTSD-B1, CBTSCT-B1, C30-B0, C3D-B0, C3C-B0 Horizontal Bypass Switch

Component: CBTS-B1-3000

UUT Function: Manual/Automatic power switching from utility power to emergency power.

UUT Description: 3000A 4-Pole Horizontal Bypass Switch with 3000A CBTS-B1 Power Panel, MX250 Controller, and NEMA 1 Frame Size 65B enclosure.

Test Location: Clark Dynamics Testing Labs, Jefferson Hills, | **Test Date:** May 2010

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Width	Depth	Height	FB	SS	V
5,747	46.1	64.6	80.0	17.2	15.5	24.1

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 2016 / ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54

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