



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY	
APPLICATION #:	OSP – 0266 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Caterpillar, Inc.

Manufacturer's Technical Representative: Tony Goyer

Mailing Address: 3701 South Street, Lafayette, IN 47905

Telephone: 765-448-2380 Email: Goyer_Anthony_G@cat.com

Product Information

Product Name: Diesel Generator Set

Product Type: Electrical Power Generator

Product Model Number: Clean Emissions Module (CEM) - 3516C-HD/C175-16 – see Attachment for specific models
(List all unique product identification numbers and/or part numbers)

General Description: After treatment module which reduces exhaust emissions.

Mounting Description: Rigid base mounted on or off frame.

Applicant Information

Applicant Company Name: TRU Compliance, LLC - A Tobolski Watkins Affiliate

Contact Person: Matthew J Tobolski, PhD, SE

Mailing Address: 960 SW Disk Drive, Suite 104, Bend, OR 97702

Telephone: 844-878-0200 Email: mtobolski@trucompliance.com

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: 07/17/2015

Title: President & CEO Company Name: TRU Compliance, LLC

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 10/21/14)





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: TRU Compliance, LLC - A Tobolski Watkins Affiliate

Name: Matthew J Tobolski, PhD, SE California License Number: S5648

Mailing Address: 960 SW Disk Drive, Suite 104, Bend, OR 97702

Telephone: 844-878-0200 Email: mtobolski@trucompliance.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: PEER, UC Berkeley

Contact Name: Wesley Neighbour

Mailing Address: 1302 South 46th St., Richmond, CA 94804

Telephone: 510-665-3409 Email: wdn@berkeley.edu





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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) = 1.03 ($S_{DS} = 2.28, z/h = 0$), 2.74 ($S_{DS} = 2.28, z/h = 1.0$)

S_{DS} (Design spectral response acceleration at short period, g) = 2.28g

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 1.5

Ω_0 (System overstrength factor) = 1.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 0.0 (when installed on frame), 1.0 (for direct mounting)

Equipment or Component Natural Frequencies (Hz) = See Attachment A

Overall dimensions and weight (or range thereof) = See Attachment A

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): Attachment A

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

Signature:  Date: September 24, 2015

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.28 z/h = See Above

Condition of Approval (if applicable): _____



UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 15010

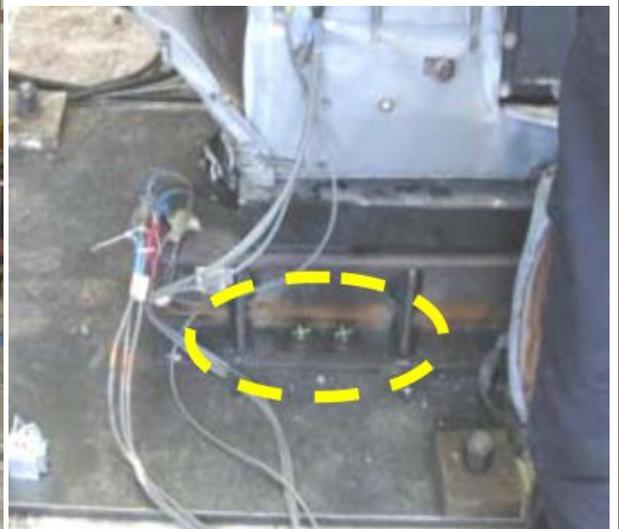
Manufacturer: Caterpillar Electric Power Division	UUT 1A
Model Line: Clean Emissions Module (CEM)	
Model Number: 3516C-HD Serial Number: N/A	

Product Construction Summary:
Carbon steel frame structure with stainless steel cabinet.

Options/Subcomponent Summary:
Support Frame: Helgesen; **DOC Substrates:** (4) Emitec/BASF; **SCR Substrates:** (20) Emitec/BASF; **AMOX Substrates:** (8) Emitec/BASF; **Urea Injection Mixing Tube:** Spraying Systems Helgesen; **Flow Diffuser:** Helgesen; **Divergent/Convergent Mixer:** Helgesen; **Flow Straightner:** Helgesen; **"Cool Box":** Helgesen.

<i>UUT Properties</i>										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
3,600	133	89	35	10.6	8.4	8.2				
<i>UUT Highest Passed Seismic Run Information</i>										
Building Code		Test Criteria		S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013		ICC-ES AC156		2.28	1.0	1.5	3.65	2.74	1.52	0.61

Test Mounting Details:



Rigid base mounted to fixture plates with (16) 3/4" A490 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET



TRU PROJECT NO. 15010

Manufacturer: Caterpillar Electric Power Division	UUT 1B
Model Line: Clean Emissions Module (CEM)	
Model Number: 3516C-HD Serial Number: N/A	

Product Construction Summary:
Carbon steel frame structure with stainless steel cabinet.

Options/Subcomponent Summary:
Support Frame: Helgesen; **CEM Frame:** Caterpillar - 381-3285 (Short Position); **DOC Substrates:** (4) Emitec/BASF; **SCR Substrates:** (20) Emitec/BASF; **AMOX Substrates:** (8) Emitec/BASF; **Urea Injection Mixing Tube:** Spraying Systems Helgesen; **Flow Diffuser:** Helgesen; **Divergent/Convergent Mixer:** Helgesen; **Flow Straightner:** Helgesen; **"Cool Box":** Helgesen.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
4,860	133	89	124	5.9	6.5	8.2

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013	ICC-ES AC156	2.28	0.0	1.5	2.28	0.91	1.52	0.61

Test Mounting Details:



CEM rigid base mounted to frame with (16) 3/4" A490 bolts. Frame rigid mounted to fixture plates with (16) 7/8" A490 bolts. Unit maintained structural integrity and remained functional per manufacturer requirement. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 15010



Manufacturer: Caterpillar Electric Power Division	UUT 1C
Model Line: Clean Emissions Module (CEM)	
Model Number: 3516C-HD Serial Number: N/A	

Product Construction Summary:
Carbon steel frame structure with stainless steel cabinet.

Options/Subcomponent Summary:
Support Frame: Helgesen; **CEM Frame:** Caterpillar - 416-5188 (Tall Position); **DOC Substrates:** (4) Emitec/BASF; **SCR Substrates:** (20) Emitec/BASF; **AMOX Substrates:** (8) Emitec/BASF; **Urea Injection Mixing Tube:** Spraying Systems Helgesen; **Flow Diffuser:** Helgesen; **Divergent/Convergent Mixer:** Helgesen; **Flow Straightner:** Helgesen; **"Cool Box":** Helgesen.

<i>UUT Properties</i>										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
5,100	133	89	148	4.9	5.3	8.2				
<i>UUT Highest Passed Seismic Run Information</i>										
Building Code		Test Criteria		S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013		ICC-ES AC156		2.28	0.0	1.5	2.28	0.91	1.52	0.61

Test Mounting Details:



CEM rigid base mounted to frame with (16) 3/4" A490 bolts. Frame rigid mounted to fixture plates with (16) 7/8" A490 bolts. Unit maintained structural integrity and remained functional per manufacturer requirement. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 15010



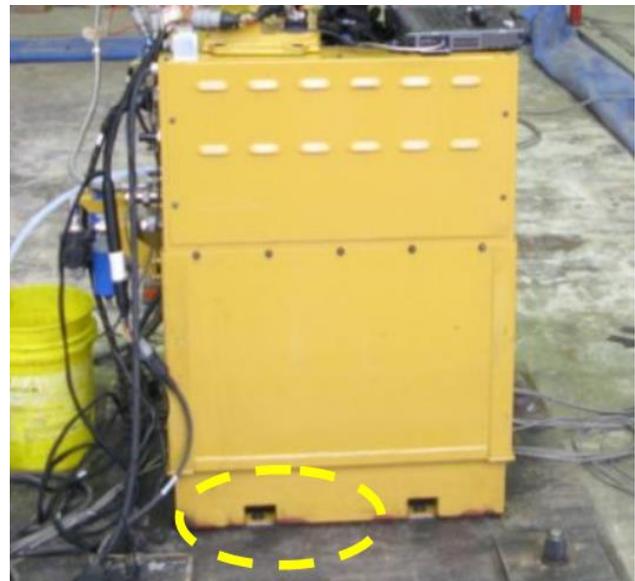
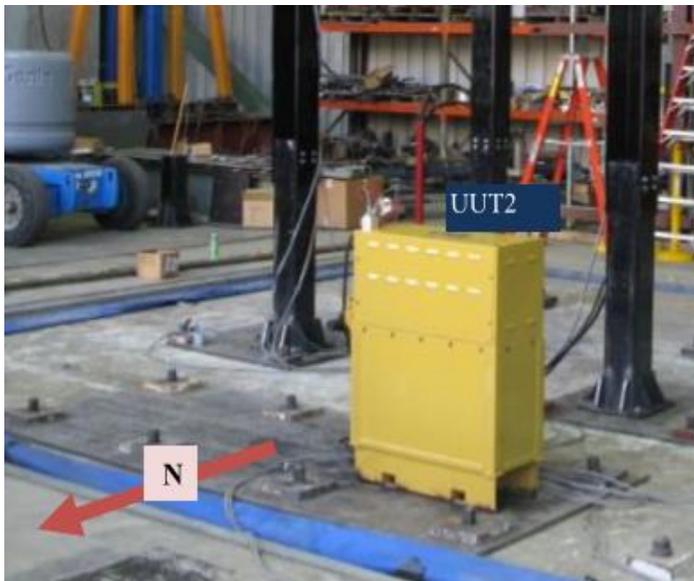
Manufacturer: Caterpillar Electric Power Division	UUT 2
Model Line: Clean Emissions Module (CEM)	
Model Number: Dosing Cabinet - 374-2499	
Serial Number: N/A	

Product Construction Summary:
Stainless steel cabinet, plastic buffer tank.

Options/Subcomponent Summary:
Enclosure: Helgesen; **Pump:** Grundfos; **Pump Motor:** 0.082 HP, 100-240V; **Buffer Tank:** Shaw Development; **ECM:** Continental; **Electric Heaters:** Chromalox; **Dosing/Purge Manifold:** Impro.

<i>UUT Properties</i>										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
265	31	14	41	15.1	5.6	6.6				
<i>UUT Highest Passed Seismic Run Information</i>										
Building Code		Test Criteria		S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013		ICC-ES AC156		2.28	0.0	1.5	2.28	0.91	1.52	0.61

Test Mounting Details:



Rigid base mounted to fixture plate with (8) 3/8" A490 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement.
Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 15010



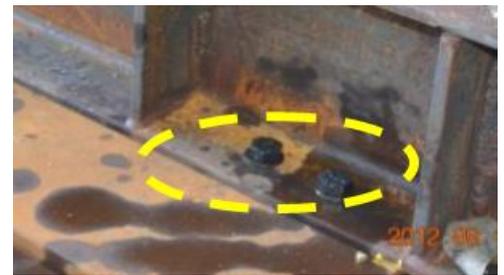
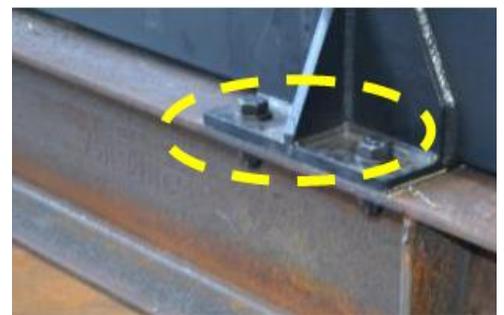
Manufacturer: Caterpillar Electric Power Division	UUT 3A
Model Line: Clean Emissions Module (CEM)	
Model Number: C175-16 Serial Number: N/A	

Product Construction Summary:
Carbon steel frame structure with stainless steel cabinet.

Options/Subcomponent Summary:
Support Frame: Helgesen; **DOC Sub-Strates:** (6) Emitec/BASF; **SCR Sub-Strates:** (24) Emitec/BASF; **AMOX Sub-Strates:** Emitec/BASF; **Urea Injection Mixing Tube:** Spraying Systems Helgesen; **Flow Diffuser:** Helgesen; **Divergent/Convergent Mixer:** Helgesen; **Flow Straightner:** Helgesen; **"Cool Box":** Helgesen.

<i>UUT Properties</i>										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
6,400	180	89	78	11.0	15.3	21.8				
<i>UUT Highest Passed Seismic Run Information</i>										
Building Code		Test Criteria		S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013		ICC-ES AC156		2.28	1.0	1.5	3.65	2.74	1.52	0.61

Test Mounting Details:



CEM rigid base mounted to beams with (16) 7/8" Grade 8 bolts. Beams rigid mounted to fixture plates with (8) 3/4" Grade 8 bolts. Unit maintained structural integrity and remained functional per manufacturer requirement. Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 15010



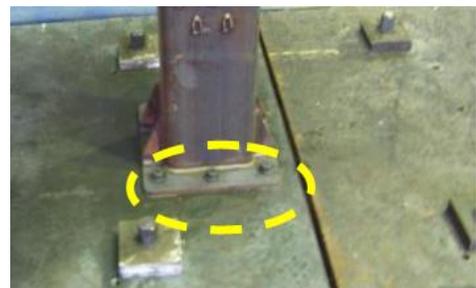
Manufacturer:	Caterpillar Electric Power Division	UUT 3B
Model Line:	Clean Emissions Module (CEM)	
Model Number:	C175-16	
Serial Number:		N/A

Product Construction Summary:
Carbon steel frame structure with stainless steel cabinet.

Options/Subcomponent Summary:
Support Frame: Helgesen; **CEM Frame:** Caterpillar - 363-2739; **DOC Sub-Strates:** (6) Emitec/BASF; **SCR Sub-Strates:** (24) Emitec/BASF; **AMOX Sub-Strates:** Emitec/BASF; **Urea Injection Mixing Tube:** Spraying Systems Helgesen; **Flow Diffuser:** Helgesen; **Divergent/Convergent Mixer:** Helgesen; **Flow Straightner:** Helgesen; **"Cool Box":** Helgesen.

<i>UUT Properties</i>										
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)						
	Depth	Width	Height	Front-Back	Side-Side	Vertical				
9,300	180	89	242	6.0	3.7	18.3				
<i>UUT Highest Passed Seismic Run Information</i>										
Building Code		Test Criteria		S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2013		ICC-ES AC156		2.28	0.0	1.5	2.28	0.91	1.52	0.61

Test Mounting Details:



CEM rigid base mounted to frame with (16) 7/8" Grade 8 bolts. Frame rigid mounted to fixture plates with (24) 3/4" Grade 8 bolts. Unit maintained structural integrity and remained functional per manufacturer requirement. Contents were included in testing per operating conditions.