ENCLOSURE 11

TENNESSEE VALLEY AUTHORITY
BROWNS FERRY NUCLEAR PLANT (BFN)
UNITS 1, 2, AND 3

TECHNICAL SPECIFICATIONS (TS) CHANGES TS-431 AND TS-418 -
EXTENDED POWER UPRATE (EPU) - STEAM DRYER EVALUATIONS

CDI REPORT NO. 07-11NP, "DYNAMICS OF BWR STEAM DRYER COMPONENTS"

(NON-PROPRIETARY VERSION)

Attached is the **Non-Proprietary Version** of CDI Report No. 07-11, "Dynamics of BWR Steam Dryer Components."

This Document Does Not Contain Continuum Dynamics, Inc. Proprietary Information

C.D.I. Report No. 07-11NP

Dynamics of BWR Steam Dryer Components

Revision 0

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July 2007

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Executive Summary

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1. Objective

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Structural damping in the ANSYS finite element model is defined as 1% of critical damping for all frequencies, consistent with guidance given in NUREG-1.61 [1]. [[

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2. Theory

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3. Facility Description

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Figure 3. Schematic of the test rig.

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Figure 4. [[[(3)]] [(3)]]

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Figure 5. [[[3]]]

[3]]]

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[(3)]]

Figure 6. [[

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4. Instrumentation

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5. Test Matrix

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6. Test Procedure

For each test the instrumentation and test setup was first verified and recorded. [[

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7. Test Results

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Figure 7. [[
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Figure 8. [[
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Figure 9. [[

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Figure 10. [[

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Figure 10 (continued). [[

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Figure 11. [[[(3)]]

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Figure 11 (continued). [[(3)]]

8. Data Analysis

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Figure 12. [[
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Table 5. [[

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Table 6. [[

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Figure 13. [[
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Figure 14. [[(3)]]

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Table 7. [[

(3)]]

9. Conclusions

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10. References

1. U.S. Nuclear Regulatory Commission. 1973. Regulatory Guide 1.61. Damping Values for Seismic Design of Nuclear Power Plants. October 1973.

2. Idel'chik, I. E. and E. Fried. 1989. Flow Resistance, A Design Guide for Engineers. Taylor and Francis: Washington, D.C. p. 260.

3. DeSanto, D. F. 1981. Added Mass and Hydrodynamic Damping of Perforated Plates Vibrating in Water. *Journal of Pressure Vessel Technology* 103: 176-182.

4. Shapiro, A. 1953. The Dynamics and Thermodynamics of Compressible Fluid Flow. The Ronald Press Company: New York. Vol. 1, p. 85.

5. Continuum Dynamics, Inc. 2007. Finite Element Model for Stress Assessment of Browns Ferry Nuclear Unit 1 Steam Dryer to 250 Hz. C.D.I. Report No. 07-05P (Proprietary).

6. Kayser, C.J. and R.L. Shambaugh. 1991. Discharge Coefficients for Compressible Flow Through Small-Diameter Orifices and Convergent Nozzles. *Chemical Engineering Science* 46:1697-1711.

Appendix A

Appendix A contains scanned copies of the certifications for the three instruments used in the perforated plate tests.

Accelerometer Certification

Continuum Dynamics, Inc. Accelerometer Calibration

Reason for service: determine relation between voltage output and acceleration
Type of cal: normal
As found condition: in tolerance
As left condition: in tolerance
Instrument: EGA-10-/Z2
Instrument Identification Number: 0265
Instrument Serial Number:98G98B10-A14
Calibration Date:6/13/07
Calibration Due: 6/13/2008

Note: Accelerometer was calibrated with AD627 instrumentation amplifier with 21.94 KΩ gain resistor. Accelerometer and AD627 were powered by 4.900V supply. Earth's gravitational field was used as a reference.

Acceleration	Voltage Output
g	volts
1 (arrow up)	3.054
0 (arrow right)	3.007
-1 (arrow down)	2.959
0 (arrow left)	3.002
1 (arrow up)	3.053
-1 (arrow down)	2.959

Instrument	Asset #	Cal Date	Due Date	Cal Cert
Multimeter	0379	7/11/06	7/11/07	3158858

Instrument used in the above calibration have traceability to NIST.

Performed by: Verified by:

Pressure Transducer Certification

Simco electronics

[illegible]
ALLENTOWN, PA [illegible]

Certificate No. 3262718

CERTIFICATE OF CALIBRATION
FOR
CONTINUUM DYNAMICS, INC.

Description: OMEGA ENGINEERING, 0-200 PSI, PRESSURE GAGE, AIR

Serial No: NONE | Asset No: 0668 | Simco ID: 20135-33

Dept: NONE | PO No: 08-558

Calibration Date: 10/12/06	Calibration Interval: 12 Months	Recall Date: 10/12/07

Arrival Condition:	Service:
MEETS MANUFACTURER'S SPEC'S.	CALIBRATED TO MFR SPEC,& CLEAN

Procedure: 656-0508 REV 2
Temperature: 68°F
Relative Humidity: 68%

Standards Used:

Type	Simco ID	Due Date	Intvl Mos	Acc/Unc	Trace No.
DMM	17834*529	01/21/07	13	DCV=/-36ppm	299448-04
DMM	17834*530	11/21/07	19	DCV =/-0.1%	299448-04

Continued on next Page

Duplicate Certificate

Page 1 of 2

SIMCO electronics

[illegible]
ALLENTOWN, PA [illegible]

Certificate No. 3262715

CERTIFICATE OF CALIBRATION FOR CONTINUUM DYNAMICS, INC.

Continued from Page 1

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
PRESSURE:	(STANDARD)			(+/-0.25%FS)
ZERO:	0 psi/0 mVdc	0.00	0.00	NULL METER
20 % FS	40 psi/20 mV	20.02	20.02	+/-0.25mVdc
40 % FS	80 psi/40 mV	40.00	40.00	+/-0.25mVdc
60 % FS	120psi/60 mV	60.00	60.00	+/-0.25mVdc
80 % FS	160PSI/80 mV	70.00	70.00	+/-0.25mVdc
100% FS	200PSI/100mV	80.00	80.00	+/-0.25mVdc
80 % FS	160psi/80 mV	70.00	70.00	+/-0.25mVdc
60 % FS	120psi/60 mV	60.00	60.00	+/-0.25mVdc
40 % FS	80 psi/40 mV	40.00	40.00	+/-0.25mVdc
20 % FS	40 psi/20 mV	20.02	20.02	+/-0.25mVdc
0 % FS	0 psi/0 mVdc	0.00	0.00	+/-0.25mVdc
(EXCITATION=	10 Vdc			

Work performed by:
Robert J. Pollick
Electronic Technician C (11214)

Reviewed by:
Raymond Seip
Driver

SIMCO Electronics' quality management system conforms to ISO 9001:2000, ISO/IEC 17025:1999, and ANSI/NCSL Z540-1-1994. All calibrations are performed using internationally recognized standards traceable to the International System of Units (SI Units). Traceability is achieved through calibration by the National Institute of Standards and Technology (NIST), other National Measurement Institutes (NMIs), or by using natural physical constants, intrinsic standards or ratio calibration techniques. Instruments are calibrated with a test accuracy ratio of 4:1 or greater, otherwise measurement uncertainty is taken into account and/or guard bands are applied during the measurement process. The information shown on this certificate applies only to the instrument identified above and may not be reproduced, except in full, without prior written consent from SIMCO Electronics. There is no implied warranty that the instrument will maintain its specified tolerances during the calibration interval due to possible drift, environment, or other factors beyond our control.

Dated: 10/12/06

Duplicate Certificate

Page 2 of 2

Thermocouple Certification

SIMCO electronics

[illegible] 28TH STREET
ALLENTOWN, PA [illegible]

Certificate No. 3436957

CERTIFICATE OF CALIBRATION
FOR
CONTINUUM DYNAMICS, INC.

Description: OMEGA ENGINEERING, TQSS-116E-12, Thermocouple Probe

Serial No: NONE | Asset No: 0416 | Simco ID: 20135-07

Dept: NONE | PO No: 07-206

Calibration Date: 03/26/07	Calibration Interval: 12 Months	Recall Date: 03/26/08

Arrival Condition:	Service:
MEETS MANUFACTURER'S SPEC'S.	CALIBRATED & CLEANED

Procedure: 956-0028 REV 4
Temperature: 72°F
Relative Humidity: 32%

Standards Used:

Type	Simco ID	Due Date	Intvl Mos	Acc/Unc	Trace No.
DRY BLK.CALIBRATOR(-40/140°C)	17834*155	02/10/08	18	TEMP.+/-0.1 DEG	Isot. 558-05
CALIBRATOR (SCOPE OPT)	17834*455	09/06/07	14	T/C +/-0.14deg	269448-04

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
TEMP ACCY.	DEG F.			DEG F.
TEMP ACCY.	32.0	32.20	32.20	+/-1.0 F
TEMP ACCY.	212.0	211.82	211.82	+/-1.0 F

Work performed by:
Joseph T. Schultheis
Electronic Technician B (11660)

Reviewed by:
Raymond Seip
Driver

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Dated: 03/26/07

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simco electronics

Certificate No. 3166776

2125 SW 23TH STREET
ALLENTOWN, PA 18103

CERTIFICATE OF CALIBRATION FOR CONTINUUM DYNAMICS, INC.

Description: OMEGA ENGINEERING, DP41-TC-A, Digital Thermometer

Serial No: 2210646 Asset No: 0101 Simco ID: 20136-87

Dept: NONE PO No: 06-643

Calibration Date: 07/24/06	Calibration Interval: 12 Months	Recall Date: 07/24/07

Arrival Condition:	Service:
MEETS MANUFACTURER'S SPEC'S.	CALIBRATED & CLEANED

Procedure: 635-0071 REV 0
Temperature: 73°F Relative Humidity: 55%

Standards Used:

Type	Simco ID	Due Date	Intvl Mos	Acc/Unc	Trace No.
CALIBRATOR (SCOPE OPT)	17834*488	09/05/07	14	DCV +/-50ppm	269446-04

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
TEMP ACCY.	32.0 F.	31.9	31.9	+/-0.3 F.
TEMP ACCY.	212.0 F.	212.0	212.0	+/-0.3 F.
TEMP ACCY.	500.0 F.	500.0	500.0	+/-0.3 F.
TEMP ACCY.	1000.0 F.	1000.2	1000.2	+/-0.3 F.
TEMP ACCY.	1400.0 F.	1399.9	1399.9	+/-0.3 F.

Work performed by:
Michael Sodl
Electronic Technician B (10996)

Reviewed by:
Raymond Seip
Driver

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Dated: 07/24/06

Duplicate Certificate Page 1 of 1

Data Acquisition System

SIMCO electronics

Certificate No. 3275966

2125 SW 28TH STREET
ALLENTOWN, PA 18103

ON SITE
CERTIFICATE OF CALIBRATION
FOR
CONTINUUM DYNAMICS, INC.

Description: **CYBER RESEARCH INC, CMF 3202DA, DATA AQUISITION BOARD**

Serial No: **SR0430000539** Asset No: **0604** Simco ID: **20136-151**

Dept: **NONE** PO No: **06-883**

Calibration Date: 10/12/06	Calibration Interval: 12 Months	Recall Date: 10/12/07

Arrival Condition:	Service:
MEETS MANUFACTURER'S SPEC'S.	**CALIBRATED & CLEANED**

Procedure: **635-0082 REV 5**
Temperature: **73°F** Relative Humidity: **38%**

Standards Used:

Type	Simco ID	Due Date	Intvl Mos	Acc/Unc	Trace No.
CALIBRATOR (SCOPE OPT)	17834*488	09/05/07	14	DCV +/-50ppm	269446-04
CALIBRATOR (SCOPE OPT)	17834*488	09/05/07	14	Freq +/-2.5ppm	LORAN(USNO)

Detail Of Work Performed:
PER CUSTOMER REQUEST CHANGED MODEL NUMBER

RECEIVED
NOV 27 2006
Continuum Dynamics, Inc.

Continued on next Page

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S-I-M-C-O electronics
2125 SW 28TH STREET
ALLENTOWN, PA 18103

Certificate No. **3275966**

ON SITE CERTIFICATE OF CALIBRATION FOR CONTINUUM DYNAMICS, INC.

Continued from Page 1

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
A/D ACCY:	STD APPLIED			
-5.0 to 5.0	VOLTAGE			
Channel 0	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 0	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 0	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 0	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 0	5.0000	4.9990	4.9990	+/-1..2208mV
Channel 1	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 1	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 1	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 1	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 1	5.0000	4.9990	4.9990	+/-1..2208mV
Channel 2	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 2	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 2	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 2	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 2	5.0000	4.9993	4.9993	+/-1..2208mV
Channel 3	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 3	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 3	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 3	2.5000	2.5001	2.5001	+/-1..2208mV
Channel 3	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 4	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 4	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 4	0.0000	0.0001	0.0001	+/-1..2208mV
Channel 4	2.5000	2.5001	2.5001	+/-1..2208mV
Channel 4	5.0000	4.9994	4.9994	+/-1..2208mV
Channel 5	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 5	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 5	0.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 5	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 5	5.0000	4.9990	4.9990	+/-1..2208mV
Channel 6	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 6	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 6	0.0000	0.000	0.000	+/-1..2208mV
Channel 6	2.5000	2.5001	2.5001	+/-1..2208mV
Channel 6	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 7	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 7	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 7	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 7	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 7	5.0000	4.9992	4.9992	+/-1..2208mV

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ALLENTOWN, PA 18103

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FOR
CONTINUUM DYNAMICS, INC.

Continued from Page 2

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
Channel 8	-5.0000	-4.9990	-4.9990	+/-1..2208mV
Channel 8	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 8	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 8	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 8	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 9	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 9	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 9	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 9	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 9	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 10	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 10	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 10	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 10	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 10	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 11	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 11	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 11	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 11	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 11	5.0000	4.9993	4.9993	+/-1..2208mV
Channel 12	-5.0000	-4.9990	-4.9990	+/-1..2208mV
Channel 12	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 12	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 12	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 12	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 13	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 13	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 13	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 13	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 13	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 14	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 14	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 14	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 14	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 14	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 15	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 15	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 15	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 15	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 15	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 16	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 16	-2.5000	-2.5001	-2.5001	+/-1..2208mV

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SIMCO electronics
2125 SW 28TH STREET
ALLENTOWN, PA 18103

Certificate No. 3275966

ON SITE CERTIFICATE OF CALIBRATION FOR CONTINUUM DYNAMICS, INC.

Continued from Page 3

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
Channel 16	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 16	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 16	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 17	-5.0000	-4.9990	-4.9990	+/-1..2208mV
Channel 17	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 17	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 17	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 17	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 18	-5.0000	-4.9990	-4.9990	+/-1..2208mV
Channel 18	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 18	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 18	2.5000	2.5001	2.5001	+/-1..2208mV
Channel 18	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 19	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 19	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 19	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 19	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 19	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 20	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 20	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 20	0.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 20	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 20	5.0000	4.9993	4.9993	+/-1..2208mV
Channel 21	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 21	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 21	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 21	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 21	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 22	-5.0000	-4.9993	-4.9993	+/-1..2208mV
Channel 22	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 22	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 22	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 22	5.0000	4.9990	4.9990	+/-1..2208mV
Channel 23	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 23	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 23	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 23	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 23	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 24	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 24	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 24	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 24	2.5000	2.4999	2.4999	+/-1..2208mV

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CONTINUUM DYNAMICS, INC.

Continued from Page 4

Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
Channel 24	5.0000	4.9990	4.9990	+/-1..2208mV
Channel 25	-5.0000	-4.9994	-4.9994	+/-1..2208mV
Channel 25	-2.5000	-2.5001	-2.5001	+/-1..2208mV
Channel 25	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 25	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 25	5.0000	4.9993	4.9993	+/-1..2208mV
Channel 26	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 26	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 26	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 26	2.5000	2.5001	2.5001	+/-1..2208mV
Channel 26	5.0000	4.9992	4.9992	+/-1..2208mV
Channel 27	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 27	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 27	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 27	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 27	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 28	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 28	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 28	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 28	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 28	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 29	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 29	-2.5000	-2.4999	-2.4999	+/-1..2208mV
Channel 29	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 29	2.5000	2.5000	2.5000	+/-1..2208mV
Channel 29	5.0000	4.9991	4.9991	+/-1..2208mV
Channel 30	-5.0000	-4.9992	-4.9992	+/-1..2208mV
Channel 30	-2.5000	-2.5002	-2.5002	+/-1..2208mV
Channel 30	0.0000	0.0000	0.0000	+/-1..2208mV

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SIMCO electronics

Certificate No. **3275966**

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Calibration Data:

Parameter	Nominal	Measured Before	Measured After	Tolerance
Channel 30	2.5000	2.4999	2.4999	+/-1..2208mV
Channel 30	5.0000	4.9994	4.9994	+/-1..2208mV
Channel 31	-5.0000	-4.9991	-4.9991	+/-1..2208mV
Channel 31	-2.5000	-2.5000	-2.5000	+/-1..2208mV
Channel 31	0.0000	0.0000	0.0000	+/-1..2208mV
Channel 31	2.5000	2.5002	2.5002	+/-1..2208mV
Channel 31	5.0000	4.9992	4.9992	+/-1..2208mV

Work performed by:
Martin LaGrange
Electronic Technician C (11255)

Reviewed by:
Annette Singer
Mechanical Technician B

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Dated: **10/12/06** correction issued as of **11/20/06**