



SOUTHWEST RESEARCH INSTITUTE™

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Institute Quality Systems
Institute Calibration Laboratory
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Certificate of Calibration

Submitted By: DIV20
Address: B57
Contact: DARRELL DUNN
Manufacturer Model: CONTROL COMPANY UNKNOWN
Description: HYGRO-THERMOMETER
Serial No: 21318178
Asset No: 009808
Procedure: CL-13, 5/99

Work Order: 444051026
Date Issued: Nov 14, 2002
Calibration Date: Nov 13, 2002
****Calibration Due:**
Calibration Location: N/A
Environment: Temp. 75.0°F Hum. 30 %RH
***As Found:** SEE ATTACHED DATA
***As Left:** SEE ATTACHED DATA

This certificate documents traceability to the National Institute of Standards and Technology (NIST) and the International System of Units (SI). The Laboratory quality system conforms to ISO/IEC 17025, 1999 and ANSI/NCCL Z540-1-1994 which are equivalent to relevant requirements of the ISO 9000-1994 series of standards. This certificate may not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. The results of this calibration relate only to the individual instrument described above. This certificate shall not be used to claim product endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government.

Uncertainty evaluation includes the item under test and is calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM). The uncertainty represents an expanded uncertainty using a coverage factor of k=2 to approximate a 95% confidence level. The calibration process provides a Test Uncertainty Ratio (TUR) of less than or equal to 25% (4:1) of the test limit unless otherwise stated in remarks or an attachment.

*The client has sole responsibility for determination of in/out of tolerance or compliance/noncompliance. An in/out of tolerance opinion is provided for your convenience based only on the Test Instrument (TI) reading(s) and limits as reported. The reported uncertainty relates only to the results at the time of calibration and does not imply any short or long term stability of the TI.

**Calibration interval is determined by the client and does not assure the instrument will remain within tolerance until this date. Any number of factors may cause the instrument to be out of tolerance before the next calibration date.

Remarks: None

Standards Used

Asset	Manufacturer	Model	Description	Cal Due
006404	THUNDER SCIENTIFIC	2500	HUMIDITY GENERATOR	Jun 10, 03

Approved by: Walt Hill
Metrology Group Leader

Measurements by: Vince Morales
Metrology Technician

Southwest Research Institute
 Calibration Laboratory
 Calibration Data sheet.

Work Order	444051026	Mfr	Control Company	Tech:	Vmorales
Asset No.	9808	Model	Unknown	Procedure:	CL-13, May99
Serial No.	21318178	Type	Thermohygrometer	Cal Date:	13-Nov-02

Remarks:

Function/Range	Test Point	TI Reading	Difference	Uncertainty	Found/Left
HUMIDITY at 50 deg. C	%RH	%RH	%RH	%RH	
	30.0	35	4.9	0.5	
	50.0	60	9.7	0.5	
	70.0	83	13.1	0.5	
	85.0	100	15.0	0.5	
	95.0	100	5.0	0.5	

**CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
NONCONFORMANCE REPORT**

Project No. 20.06002.01.071

NCR No. 2003-13

PART 1: DESCRIPTION OF NONCONFORMANCE

Thermohygrometers were found out-of-tolerance upon recalibration.

S/N 21330180 (AN 9502), S/N 21189381 (AN 8788), S/N 21334995 (AN 9503), S/N 21318178 (AN 9808)

Initiated by: L. Yang

Date: 6/25/03

Action Required by: L. Yang

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

Response Due Date: July 9, 2003

Response Person: L. Yang

Disposition:

Accept as is.

Basis of Disposition:

No data are affected by the out-of-tolerance conditions. Readings from the hygrometers were not reliable, so they were not used since the previous calibration.

Action to Correct Nonconformance:

A new humidity chamber from Thunder Scientific has been purchased and will be used in future measurements

New thermohygrometers from Vaisala are being purchased.

Target date for completion: June 25, 2003

Proposed by: Lietai Yang

Date: June 25, 2003

PART 3: APPROVAL

Element Manager: *[Signature]* Date: 7/1/03

Director of QA: *[Signature]* Date: 7/1/03

Comments/Instructions:

PART 4: CLOSE OUT

Comments:

Action complete.

Verified by: *[Signature]* Date: 7/1/03

Distribution:

Original-CNWRA QA DIRECTOR/QA Records

ORIGINATOR - *L. Yang*

~~PRINCIPAL INVESTIGATOR(S)~~ *[Signature]*

ELEMENT MANAGERS

B. Sagar, and P. Mackin

L. Yang *[Signature]*