

# GEOSCIENCES AND ENGINEERING DIVISION NONCONFORMANCE REPORT

Project No. OHD20.131

NCR No. 2007-24

## PART 1: DESCRIPTION OF NONCONFORMANCE

Vaisala HMP77B Humidity/Temperature Meter, s/n B3140005, AN012390 is out of tolerance per SwRI Cal. Lab. Unit failed at test points of 75% and 95% relative humidity at temperature of 23 °C.

Initiated by: Don Bannon

Date: 03Aug07

Action Required by: Xihua He

Response Due Date: 17Aug07

## PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION

**Disposition:** No measurements were affected by this out of tolerance condition.

**Basis of Disposition:** The Vaisala Humidity/Temperature Meter is used to measure the humidity in a humidity chamber at controlled temperatures. The meter was found to be out of tolerance at test points of 75% and 95% relative humidity at temperature of 23 °C. At 75% and 95% the probe had measurement errors of -2.0% and -2.4%, respectively. The meter was not used to collect data for Geosciences and Engineering Division projects since the last calibration.

**Action to Correct Nonconformance:** The Instrument was adjusted by SwRI Cal. Lab., rechecked, and is now in tolerance. The Humidity/Temperature Meter will continue to be included on the calibration recall list.

Target date for completion: 8/8/07

Proposed by: Xihua He

Date: 8/3/07

## PART 3: APPROVAL

Manager: K. Allen

Date: Aug 13, 07

Director of QA: Al Smith

Date: 8/13/07

Comments/Instructions:

## PART 4: CLOSE OUT

Comments: No additional verification needed.

Verified by: Al Smith

Date: 8/13/07

### Distribution:

Original-CENTER QA Records

ORIGINATOR Bannon

PRINCIPAL INVESTIGATOR He

MANAGER Allen

ASSISTANT DIRECTOR moderly

Simpson

# **SOUTHWEST RESEARCH INSTITUTE**

6220 CULEBRA ROAD • POST OFFICE DRAWER 28510 • SAN ANTONIO, TEXAS, 78228-0510 • TEL (210) 522-5215 • FAX (210) 522-3692

**To:** Don Bannon, Div 20, Ext 5118

**From:** Walt Hill, Metrology Group Leader  
Institute Calibration Laboratory

**Date:** Jul. 27, 2007

**Subject:** Out-of-tolerance Notice

The purpose of this notice is to alert you of a condition, which may have caused erroneous measurements affecting safety or the quality of products or services your organization provides. The attached as-found readings are provided for your evaluation to determine if the instrument listed below had an impact and if further action is required.

When the as-found results are near the specification limit, +/- a margin less than the measurement uncertainty, it is not possible to state in-tolerance or out-of-tolerance with a 95% level of confidence. It is the Institute Calibration Laboratory policy that the client is made aware of this situation because the end-user is taking some of the risk that the instrument listed below may not meet the end-user measurement requirements.

Your review/evaluation should be conducted in accordance with your organizational quality policy and procedural requirements. If we can be of further assistance, please contact the Calibration Laboratory at 522-5215.

**Manufacturer:** Vaisala

**Model:** HMP77B

**Description:** Humidity/Temp Meter

**Serial Number:** B3140005

**Asset Number:** 12390

**User ID Number:**

**Last Calibration:** Aug 31, 2006

**Date Received for Service:** Jul. 25, 2007 **Work Order Number:** 303075623

**Service Requested:** Scheduled calibration

**Remarks:** Out of tol at high %RH. See Measurement Report.

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303075623	Mfr:	Vaisala	Technician:	blt
Asset No:	012390	Model:	HMP77B w- MI70 Meter		
Serial No:	B3140005	Type:	Temp/Humidity Meter	Cal Date:	27-Jul-07
Remarks:	Calibrated with Vaisala MI70 SN B3050048- Temperature Calibrated at +/- 3°C				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Found
Humidity	%RH	%RH	%RH	%RH	%RH	Result
at 23 °C	25.03	24.57	-0.5	1.2	0.58	Pass
	49.24	49.22	0.0	1.4	0.58	Pass
	75.01	73.02	-2.0	1.6	0.58	Fail
	94.99	92.54	-2.4	1.8	0.58	Fail
Temperature	° C	° C	° C	° C	° C	
	39.365	38.79	-0.58	3.00	0.58	Pass
	58.775	57.92	-0.85	3.00	0.58	Pass
	75.270	74.59	-0.68	3.00	0.58	Pass
	118.032	116.91	-1.12	3.00	0.58	Pass
END OF REPORT						



# SOUTHWEST RESEARCH INSTITUTE®

6220 Culebra Road, P.O. Drawer 28510  
Institute Quality Systems  
Institute Calibration Laboratory  
Phone: 210-522-5215 Fax 210-522-4834



Calibration Laboratory  
Certificate #0972-01

## Certificate of Calibration

Submitted By: DIV20

Address: B51

Contact: DON BANNON

Manufacturer / Model: VAISALA / HMP77B

Description: HUMIDITY/TEMPERATURE PROBE

Serial No: B3140005

Asset No: 012390

Procedure: HUMIDITY-DEW POINT - 19 MAY 06

Work Order: 303075623

Date Issued: Jul 31, 2007

Calibration Date: Jul 31, 2007

\*Calibration Due: Jul 31, 2008

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 40 %RH

\*\*Data Type: AS-LEFT

DivID/Location: N/A

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, 2005, ANSI/NCSL Z540-1-1994 and relevant requirements of the ISO 9000-2000 standard. This certificate shall not be reproduced, except in full, without the written approval of the Southwest Research Institute Calibration Laboratory. This certificate shall not be used to claim product endorsement by Southwest Research Institute, American Association for Laboratory Accreditation (A2LA) or any agency of the U. S. Government. Results of this calibration relate only to the instrument described above at the time of calibration and does not imply any long term stability of the instrument.

\*Determined by the customer, does not imply the instrument will remain within tolerance as any number of factors may cause an out-of-tolerance condition before this date. \*\*Found/Left = adjustment and/or repair was not required, As Left = adjusted and/or repaired was required. The client has sole responsibility for determination of in-/out-of-tolerance or compliance/noncompliance. See Remarks or attached Measurement Report with the same Work Order number for data.

Reported uncertainty calculated in accordance with the ISO "Guide to the Expression of Uncertainty in Measurement" (GUM) and represents an expanded uncertainty with a coverage factor of k=2 to approximate a 95% confidence level.

Remarks: Calibrated with Display M170 Sn. B3050048. Temperature Calibrated to within +/- 3°C. 40° to 120°C

### Standards Used

Asset No.	Serial No.	Manufacturer	Model	Description	Cal Due
009137	A21208	HART SCIENTIFIC	1575	SUPER THERMOMETER	Dec 22, 07
009414	A25788	HART SCIENTIFIC	1502A	TEMPERATURE READOUT	Oct 05, 07
010281	0421	HART SCIENTIFIC	5628	SPRT	Nov 30, 08
010692	632656	HART SCIENTIFIC	5618	RTD (385)	Oct 05, 07
006404	9806123	THUNDER SCIENTIFIC	2500	HUMIDITY GENERATOR	May 30, 08

Reviewed by: ( ) wgh ( ) jrg ( ) pwe  
Metrology Technician

m:\a2la1.rpt Rev date August 15, 2005

Measurements by: Bob Trollinger  
Metrology Technician

Southwest Research Institute  
Calibration Laboratory  
Measurement Report

Work Order:	303075623	Mfr:	Vaisala	Technician:	blt
Asset No:	012390	Model:	HMP77B w- MI70 Meter		
Serial No:	B3140005	Type:	Temp/Humidity Meter	Cal Date:	31-Jul-07
Remarks:	Calibrated with Vaisala MI70 SN B3050048- Temperature Calibrated at +/- 3°C				

Function/Range	Test Point	TI Reading	Difference	+/-Limit	+/-Uncertainty	Left
Humidity	%RH	%RH	%RH	%RH	%RH	Result
at 23 °C	25.02	25.40	0.4	1.2	0.58	Pass
	50.00	50.60	0.6	1.4	0.58	Pass
	75.56	75.44	-0.1	1.6	0.58	Pass
	95.00	94.80	-0.2	1.8	0.58	Pass
Temperature	° C	° C	° C	° C	° C	
	39.114	38.51	-0.60	3.00	0.58	Pass
	58.505	57.45	-1.06	3.00	0.58	Pass
	75.414	74.65	-0.76	3.00	0.58	Pass
	121.238	119.97	-1.27	3.00	0.58	Pass
END OF REPORT						