SOUTHWEST RESEARCH INSTITUTE®

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

ACCREDITED
Calibration Laboratory
Certificate #0972-01

Certificate of Calibration

Cost Center: DIV20
Mail Stop: B51
Customer: DON BANNON
Manufacturer/Model: DURO-SENSE / TYPE K
Description: THERMOCOUPLE
Serial Number: 15119
Asset Number: 015119
Procedure: TEMPERATURE PROBES - 5 JUN 06

Work Order: 303084253
Date Issued: 6-Nov-2008
Date Calibrated: 6-Nov-2008
***Date Due :** 6-Nov-2009
****Results:** FOUND-LEFT
Temperature: 81°F
Humidity: 28 %

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 customer 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 Cal at (20°, 40°, 60°, 80°,100°C)

Standards Used

Asset #	Manufacturer	Model	Description	Cal Date	Due Date
009137	HART SCIENTIFIC	1575	SUPER THERMOMETER	16-Jun-2008	16-Dec-2008
010281	HART SCIENTIFIC	5628	SPRT	21-Dec-2007	21-Dec-2009
010814	HART SCIENTIFIC	1529	THERMOCOUPLE THERMOMETER	16-Oct-2007	16-Nov-2008
013908	HART SCIENTIFIC	5628	SPRT	20-Feb-2008	20-Feb-2010

Reviewed By: (√) srk ( ) mar ( ) wgh
Laboratory Quality Manager

Calibrated By: Thomas Wallace
Metrology Technician

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Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303084253	Mfr:	Duro-Sense	Technician:	tew
Asset No:	015119	Model:	Type K		
Serial No:	15119	Type:	Thermocouple	Cal Date:	06-Nov-08
Remarks:	Limits taken from ASTM E230-02 and are based on brand new unused thermocouples.				

Function/Range	Test Point	TI Read	Difference	+/-Limit	+/-Uncertainty	Found/Left
Temperature	° C	° C	° C	° C	° C	Result
	19.89	19.83	0.06	2.2	0.19	Pass
	39.86	39.83	0.03	2.2	0.30	Pass
	60.05	59.93	0.12	2.2	0.30	Pass
	80.02	79.93	0.09	2.2	0.30	Pass
	100.01	100.00	0.01	2.2	0.30	Pass

END OF REPORT