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: 015393
Asset Number: 015393
Procedure: TEMPERATURE PROBES - 5 JUN 06

Work Order: 303085310
Date Issued: 9-Jan-2009
Date Calibrated: 9-Jan-2009
***Date Due :** 9-Jan-2010
****Results:** FOUND-LEFT
Temperature: 74°F
Humidity: 40 %

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	18-Nov-2008	18-May-2009
013908	HART SCIENTIFIC	5628	SPRT	20-Feb-2008	20-Feb-2010
015240	HART SCIENTIFIC	2566	TC SCANNER, 12-CHANNEL MODULE	10-Dec-2008	10-Dec-2009

Reviewed By: ( ) srk (✓) mar ( ) wgh
Laboratory Quality Manager
m:\A2LA OCT_08.rpt

Calibrated By: Bob Trollinger
Metrology Technician

Southwest Research Institute
Calibration Laboratory
Measurement Report

Work Order:	303085310	Mfr:	Duro-Sense	Technician:	blt
Asset No:	015393	Model:	Type K		
Serial No:	015393	Type:	Thermocouple	Cal Date:	09-Jan-09
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
	20.11	20.0	-0.11	2.2	0.47	Pass
	40.09	40.0	-0.09	2.2	0.47	Pass
	60.06	60.1	0.04	2.2	0.47	Pass
	80.05	80.3	0.25	2.2	0.47	Pass
	100.04	100.4	0.36	2.2	0.47	Pass

END OF REPORT