



SOUTHWEST RESEARCH INSTITUTE®

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Institute Calibration Laboratory
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Certificate #

Certificate of Calibration

0972-01

Submitted By: DIV20

Address: B57

Contact: DON BANNON

Manufacturer Model: DURO-SENSE TYPE K

Description: THERMOCOUPLE

Serial No: 12162

Asset No: 012162

Procedure: THERMOCOUPLES, AUG/04

Work Order: 303068703

Date Issued: May 5, 2006

Calibration Date: May 5, 2006

*Calibration Due: May 4, 2007

Calibration Location: Bldg. 64

Environment: Temp. 73.0°F Hum. 40 %RH

**Data Type: FOUND-LEFT

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, 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: Cal at 0.0 and 150°C

Standards Used

| Asset No. | Serial No. | Manufacturer | Model | Description | Cal Due |
|-----------|------------|-----------------|-------|---------------------------------|------------|
| 009137 | A21208 | HART SCIENTIFIC | 1575 | THERMOMETER | Jun 19, 06 |
| 010281 | 0421 | HART SCIENTIFIC | 5628 | SPRT | Jun 24, 08 |
| 010329 | 7949003 | FLUKE | 525A | TEMPERATURE/PRESSURE CALIBRATOR | Oct 06, 06 |

Reviewed by: blt () jrg () pwc () wgh ()

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: | 303068703 | Mfr. | DURE-SENSE | Technician | blt |
| Asset No: | 012162 | Model | Type K | | |
| Serial No: | 12162 | Type | Thermocouple | Cal Date | 5-May-06 |
| Remarks: Limits taken from ASTM E230-02 and are based on brand new unused thermocouples. | | | | | |
| Limited Cal - tested at 0.0 and 150 C | | | | | |

| Function/Range | Test Point | TI Read | Difference | +/-Limit | +/-Uncertainty | Found/Left |
|----------------|------------|---------|------------|----------|----------------|------------|
| Temperature | ° C | ° C | ° C | ° C | ° C | Result |
| | 0.040 | 0.37 | -0.33 | 2.2 | 0.19 | Pass |
| | 150.001 | 152.05 | -2.05 | 2.2 | 0.30 | Pass |
| END OF REPORT | | | | | | |