**UNITED STATES DEPARTMENT OF COMMERCE**
**National Institute of Standards and Technology**
Gaithersburg, Maryland 20899.

# REPORT OF TEST
Platinum Resistance Thermometer
Hart Scientific Model 5682
S/N 1035

Submitted by

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A platinum resistance thermometer (Model 5682, S/N 1035), was calibrated by comparison with a standard platinum resistance thermometer (SPRT) in stirred liquid calibration baths at four temperatures. The sensor and SPRT were immersed to a depth of 30 cm. A triple point of water (TPW) was measured by immersing the probe 26.5 cm in a TPW cell. A continuous measuring current of 1 mA was used in the measurements. The results obtained are:

| Bath Temperature °C | Resistance Ω |
|---|---|
| 0.01 | 100.8367 |
| −195.826 | 19.2915 |
| −38.833 | 85.1265 |
| 231.899 | 190.8183 |
| 419.506 | 258.9672 |
| 0.01 | 100.8367 |

The expanded uncertainty ($k$=2) in the bath temperature measurement of −195.8 °C does not exceed 2.3 m °C, of −38.8 °C does not exceed 2.3 m °C, for the range of 95 °C to 300 °C does not exceed 4.8 m °C, for the range of 300 °C to 550 °C does not exceed 7.5 m °C ; and for the TPW, 0.04 m °C. For a discussion of the uncertainty, see NIST TN 1297, "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST TN 1411 "Reproducibility of the Temperature of the Ice Point in Routine Measurements," and NISTIR 6225, "A New NIST Automated Calibration System for Industrial-Grade Platinum Resistance Thermometers."

All temperatures in this report are on the International Temperature Scale of 1990 (ITS-90). This temperature scale was adopted by the International Committee of Weights and Measures at its meeting in September, 1989, and is described in "The International Temperature Scale of 1990", Metrologia **27**, No. 1, 3-10 (1990); Metrologia **27**, 107 (1990).

For the Director
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