

26 January 1999

Pond Engineering, Inc.
Attn.: Stanley Pond
2401 South County Road 21
Berthoud, CO 80513

Subject: Quality evaluation of Hg TP cell (s/n 98048)
Purchase Order No.: K18-290

Dear Mr. Pond:

A direct comparison of your mercury triple-point cell (Model K18C, s/n 98048) was made against our laboratory standard mercury triple-point cell (Hg SS-1). The measurement system included an ASL Model F18 operating at a frequency of 30 Hz with a 100 Ω Tinsley Model 5685 reference resistor, temperature controlled to within ± 8 mK, and a 25.5 Ω SPRT. The depth from the inside bottom of the reentrant well to the liquid surface of your fixed-point cell is stated to be 18.2 cm; the depth of our cell is 17.5 cm. Corrections were made for the difference in hydrostatic head effects due to the different immersion depths. As shown in figure 1, the triple-point temperature of your cell is 0.09 mK lower than that of the NIST reference cell Hg SS-1 cell. We assign an expanded uncertainty ($k=2$) of 0.15 mK on the realized value of our cell to account for impurities and measurement errors.

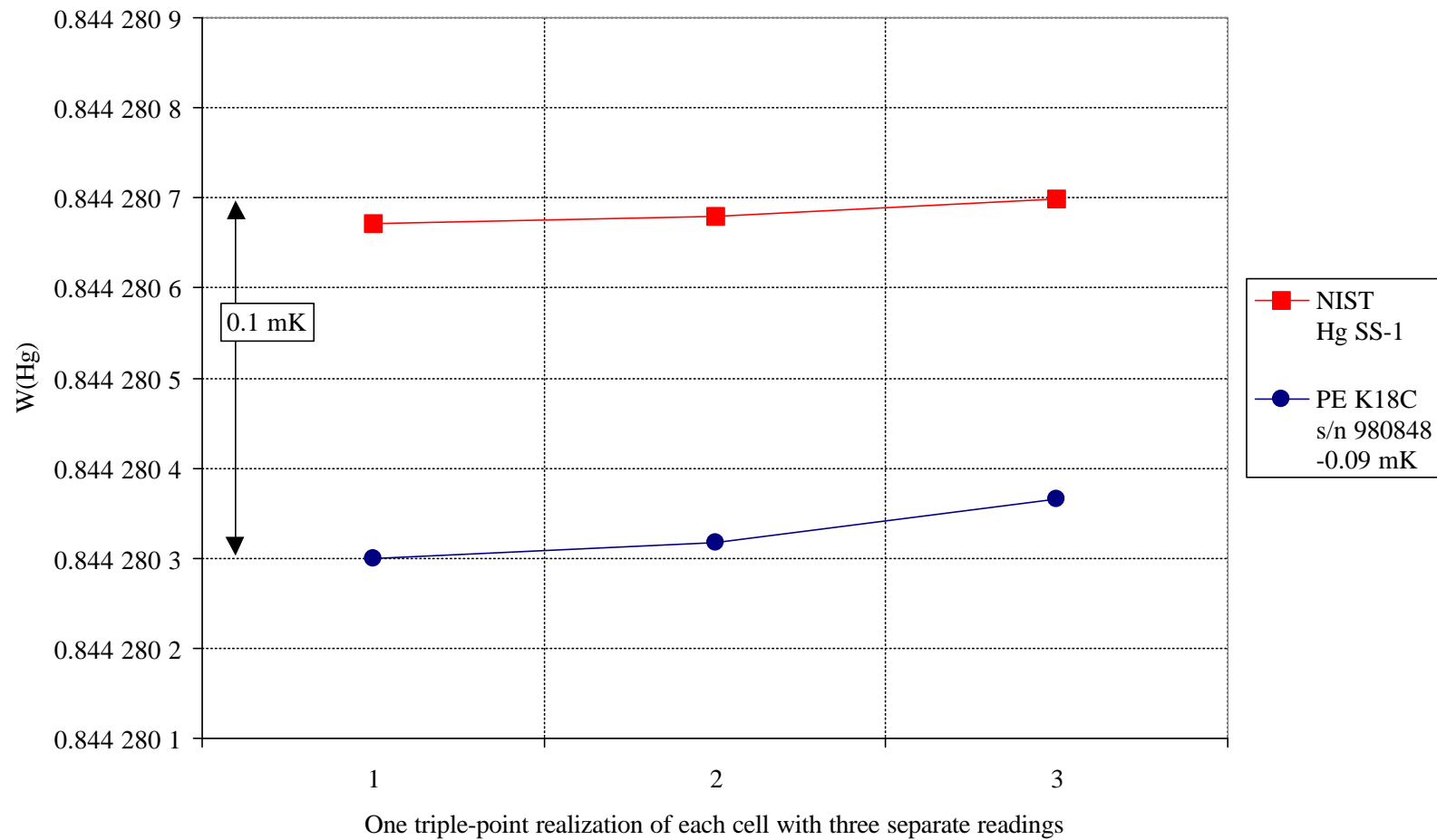
Figure 2 gives an example of a melting curve for your cell. Figure 3 gives an example of the immersion characteristics an L&N 8167 SPRT in your cell relative to the ITS-90 assigned hydrostatic-head effect for mercury. A thermometer must track the hydrostatic-head effect over the bottommost 3 cm of the reentrant well to exhibit proper immersion in a fixed-point cell.

Sincerely,

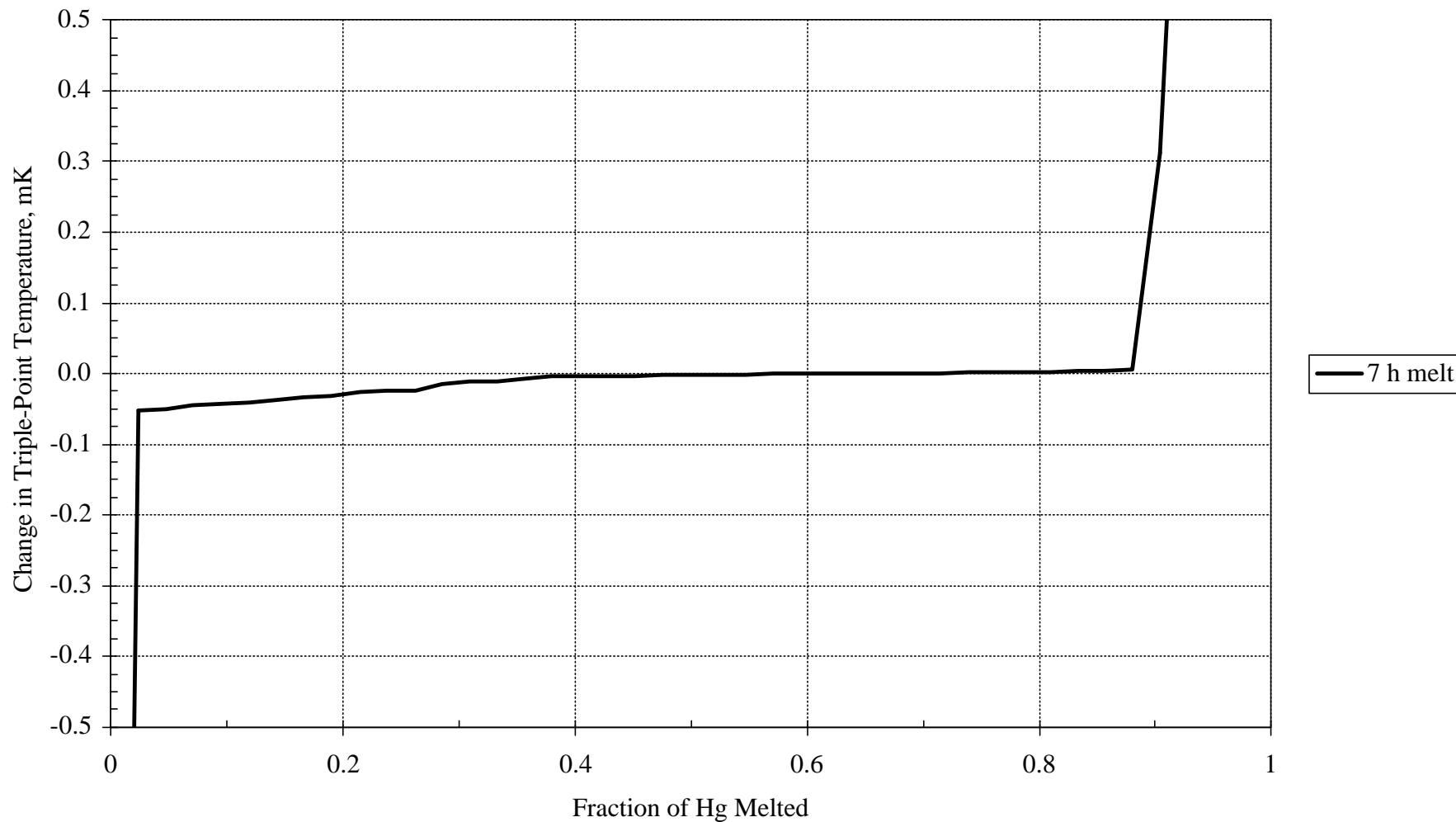
Dr. B. W. Mangum
Leader, Thermometry Group
Process Measurements Division

Test No. 836/261070-99
Purchase Order No. K18-290

Figure 1. Mercury Triple-Point Cell Direct Comparison of Pond Engineering Model K18C s/n 98048 with NIST SPRT Lab Standard Hg SS-1



**Figure 2. Melting Curve for Pond Engineering Hg Triple-Point Cell
Model K18C, s/n 98048**



**Figure 3. Immersion Test of Pond Engineering Hg Triple-Point Cell
Model K18C, s/n 98048**

