

measured by the uncorrected emf generated in the 2-wire circuit. This temperature is the uncorrected temperature, but for purposes of determining the amount of the correction, it is accurate enough. The seal temperature must be determined independently and in the case of certain belt and piston cylinder cell designs, this temperature can be considerably higher than ambient. Thus, having established the temperature interval from seal to high-temperature region (it is the temperature interval which is needed, not just the difference) and having established the pressure, one can determine the amount of additional emf induced in the thermocouple circuit from an isobaric plot of pressure emf vs. temperature interval, such as figures (10-11) or Table 1. The total emf induced in the thermocouple pair is just the difference between the two pressure emf's. The sign convention here is important. The pressure emf is positive if the high-pressure seal at the low temperature side of the single wire circuit is positive. This is the case for all materials we measured. The pressure emf for the wire of the pair which is negative (constantan, alumel, platinum) is subtracted from the pressure emf of the wire which is positive (copper, chromel, platinum, 10 percent rhodium). The resulting emf is subtracted from (or added to if it is negative) the measured emf of the circuit to arrive at the zero pressure emf which can be converted to temperature from a standard table. By adopting this convention, no ambiguity will result when applying the pressure correction. By leaving the corrections in terms of emf values instead of temperature values, one can easily apply the correction needed for his particular high pressure cell with its own particular seal temperature, reference temperature, and thermocouple materials.