

The cell was contained in a specially constructed high pressure bomb which had an i.d. of 2-1/2 inches. Pressures were generated with a Harwood 200,000 psi intensifier system. Separation of the hydraulic fluid and the sample gas was accomplished with a mercury U-tube arrangement consisting of two 1-1/2 liter, 47,500 psi reaction vessels connected with 1/16 inch i.d. tubing at their bottom outlets.

Three Heise gages with the ranges 0-5000 psi, with 5 psi subdivisions, 0-10,000 psi, with 10 psi subdivisions, and 0-50,000 psi, with 50 psi subdivisions were used. The gages were calibrated against a Harwood controlled clearance precision dead weight tester and corrections of the gage pressure were made where necessary. The corrected pressures were accurate to 0.1% of the full scale value.

Electrical measurements were made with a Leeds and Northrup Type K-3 potentiometer. The bomb was mounted in an agitated hot oil bath, the temperature control of which was sufficiently sensitive that variations could not be detected within the bomb.

EXPERIMENTAL ERRORS

The errors introduced by convection within the gap have been discussed by numerous authors (7). In a horizontal cylindrical cell convection is present as long as there is a temperature difference; however, below a critical value of the