

DISCUSSIONSource of Sample

The subsurface fluid sample was taken from the Pelican No. 1 Well in a segregator chamber of a Schlumberger FIT tool during a test of the 8367 ft. K.B. interval on April 6, 1970.

Sampling and final shut-in pressure was 3637 psig. Estimated reservoir temperature is 225°F. The contents of the sample chamber were transferred, at 2450 psig and ambient temperature, into three sample cylinders for shipment to the laboratory.

Objective of Laboratory Work

To obtain a compositional analysis and determine the dew point pressure of the subsurface fluid at the estimated reservoir temperature of 225°F.

Laboratory Determinations

The contents of the three sample containers were transferred into one container which was heated to 225°F and pressured to 4500 psig. A portion of the single phase sample was charged to a low temperature fractional distillation column for analysis. The composition from methane through hexane-plus was extended through decane-plus by chromatographic analysis of the hexane-plus fraction. Values of molecular weight and density for each fraction from hexane through decane were estimated from the properties of the hexane-plus fraction and the component distribution. The resulting composition is given in Table I.

A second portion of the single phase sample was transferred to a windowed cell. A pressure scan of the cell's contents were made at 84°F to determine the single phase pressure at ambient temperature. Measurements of equilibrium liquid volumes versus pressure were extrapolated to a dew point at 2705 psig and 84°F. These data are given in Table II. The cell temperature was increased to 225°F, the estimated reservoir temperature, and measurements of equilibrium liquid volumes versus pressure were made as the pressure was incrementally adjusted. A dew point was found to exist at 3850 psig and 225°F. Results of this test are given in Table III. Next, at 225°F, the pressure on the cell's contents was lowered from the dew point pressure of 3850 psig by slowly bleeding off a portion of the gas phase in simulating the reservoir depletion process. Measurements