

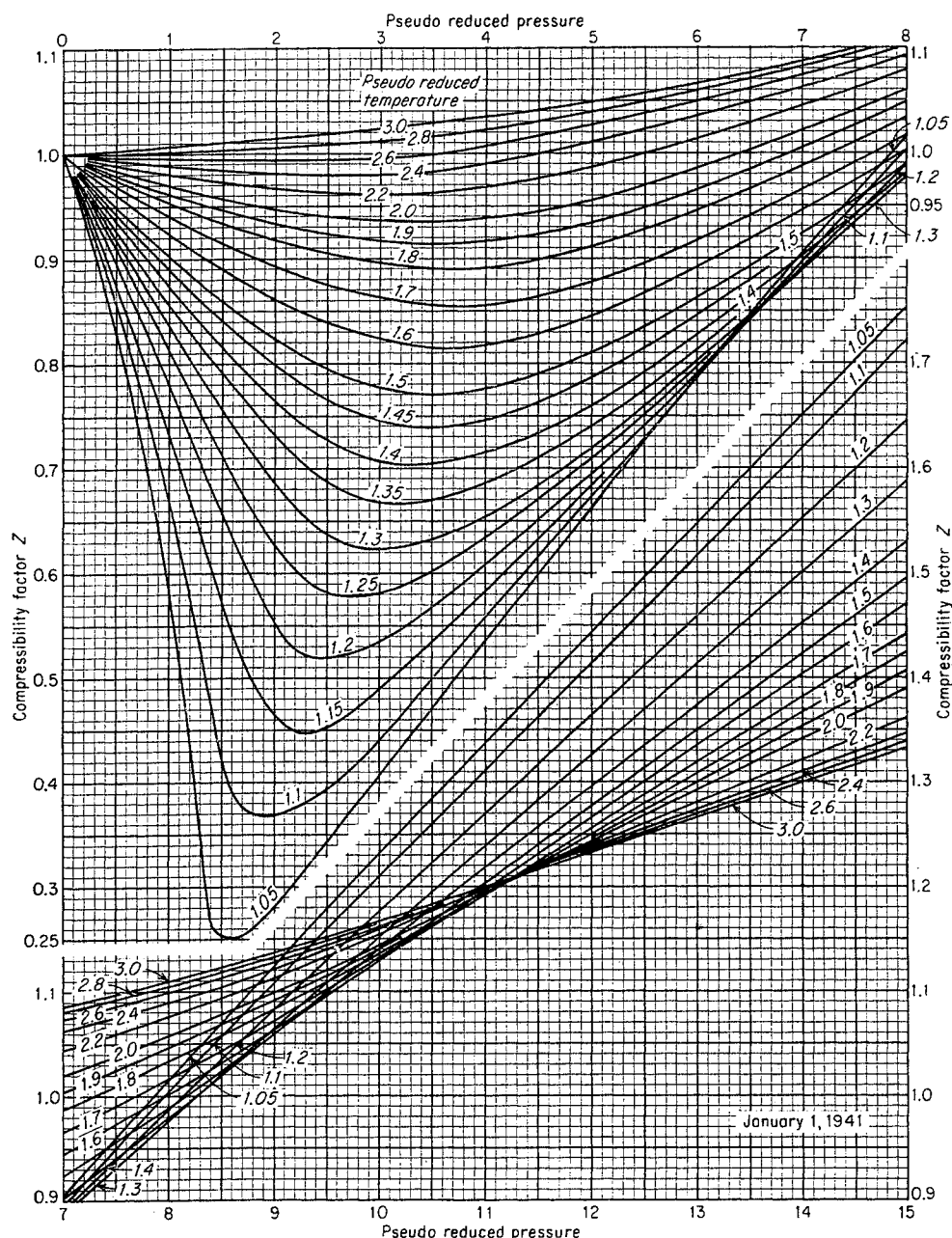


Fig. 4-16. Compressibility factor for natural gases. (Standing and Katz, 4-87. Courtesy AIME.)

degree of conformity to the theorem of corresponding states must be considered.

The P - V - T relations for methane-nitrogen mixtures were determined by Keyes and Burks (4-55) and for a natural gas containing 8.5 and 18.8 mole % nitrogen by Eilerts, Carlson, and Mullens (4-30). Table 4-10 gives the analyses of the natural gases, and Table 4-11 gives a comparison of the compressibility factors computed from Fig. 4-16 and the reduced temperature and pressure, with the experimental values for these compressibility factors. The calculated compressibility factors are lower than the measured values by about 2 per cent at the higher temperatures and intermediate

pressures. The factors for the gases with nitrogen are lower on the average over the full range of temperature.

Reamer, Olds, Sage, and Lacey (4-72) have measured the compressibility of four mixtures of methane and carbon dioxide from 100 to 460°F and up to 10,000 psia, with data at 100 and 280°F reproduced in Table 4-12. For gases with 1 or 2 mole % carbon dioxide, the pseudocritical chart is reliable but, for higher percentages, a correction may be necessary as indicated by comparing computed compressibilities with the measured compressibilities in Table 4-12.

Likewise, for methane-hydrogen sulfide mixtures,