velocity (U_p), pressure (P), and relative volume (V/V_0) is about 2% for the organic liquids and slightly larger for liquid nitrogen.

A computer program was written to calculate isentropes, isotherms, and the sound speed and temperature on the Hugoniot. Essentially, the program computes the series solution to the differential equations for the pressure along an isentrope and an isotherm expressed by Eqs. (43) and (54) respectively. It also includes the necessary supporting equations. The code, as written, follows closely the sequence developed in Section F of Chapter II. The temperature on the Hugoniot is calculated from Eq. (59) and the sound speed of the compressed material is determined from Eq. (67). The input data necessary for the program to calculate these thermodynamic quantities are (1) C (intercept from the relation $U_s = C + MU_p$ determined from the experimental data), (2) M (slope of the above linear relationship), (3) Γ_0/V_0 calculated from Eq. (29), (4) thermal expansion coefficient β defined in Eq. (28), (5) $C_P = A + BT + CT^2$, and (6) the initial temperature at the time the experiment was conducted. The initial data required for the computer to perform the calculations are listed in Table IV for all the liquids.

D. Benzene

The Hugoniot data for benzene are listed in Table V. Such data are usually presented graphically on a shock velocity versus particle velocity plot (called a U_s-U_p plot) and pressure versus relative volume (V/V_0) plot (called a P-V/V_0 plot); Figs. 15 and 16 are these plots for benzene.

An examination of the U_s-U_p plot reveals a region of shock velocities from 2.3 to 5.7 km/sec which can be represented by a