

Twenty-one liquid nitrogen shots were performed and the experimental description of each is presented in Table II. The lens size was 30.48 cm diameter on all shots except as noted. The dural thickness under the shock pins is indicated in the fourth column of the table. In four of the shots (numbers 7, 12, 13, and 14), a 0.16 cm air gap was left between the explosive charge and the polyethylene sheet for additional smoothing of the shock wave sent into the flying plate. The measured dural shock velocities recorded in column five have been corrected for thermal contraction of the dural plate and the coaxial pins to 75°K. Also, listed are the standard deviations of the velocity measurements.

Each organic liquid shot was equipped with an alumel-chromel thermocouple for determining the temperature at shot time. This temperature is required in order to determine accurately the initial density of the liquids from volume expansion data. To accomplish this, let V' be the volume at 0°C then the volume V_0 at a temperature T is given by the expansion formula

$$V_0 = V'(1 + AT + BT^2 + CT^3)$$

where Table III gives values of A , B , and C for the temperature range ΔT . The initial densities recorded in Tables IV, V, and VI are corrected for volume expansion using the above formula and the data of Table III.

C. Precision of the Hugoniot Parameters

The pin setbacks and hole depths are measured to an accuracy of 0.0007 cm and the pin pulse times on the film plates are read to 5 nsec. These measuring tolerances provide a fairly