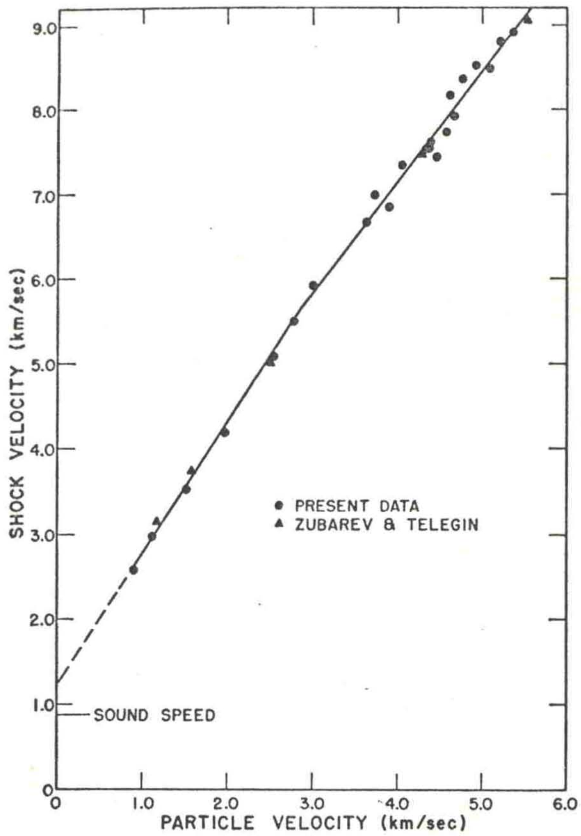

FIG. 10. Shock velocity-versus-particle velocity plot for liquid nitrogen.

line and remains in the liquid state. This particular explanation, however, does not explain the opacity and electrical conductivity changes observed at high pressures.

Temperatures for carbon tetrachloride shocked into the 70–170-kbar range were calculated to be between 1350 and 3500°K using the Mie–Gruneisen equation of state. Ramsey[32] of this laboratory has measured a brightness temperature of 2400°K at 170 kbar. Recently, Voskoboinikov and Bogomolov[33] have reported measuring the brightness temperature of the shock front in carbon tetrachloride over a pressure range of 80–200 kbar. At 170 kbar they measured 2600°K.

A Hugoniot curve computed by Salzman, Collings, and Pings[22] from a Lennard-Jones and Devonshire intermolecular potential is located slightly above the experimental Hugoniot curve when plotted in the

TABLE V. Potential parameters used for computing Hugoniots for liquid nitrogen.

Potential form (References)	r^* (Å)	T^*(°K)	n	α
LJD (present work)	4.17	97.5	9	···
LJD (Ref. 10)	4.19	91.5	12	···
LJD (Ref. 36)	4.16	95.9	7	···
LJD (Ref. 37)[a]	4.13	91.5	12	···
LJD (Ref. 35)	4.15	95.0	12	···
exp-6 (present work)	4.00	110.0	···	13.6
exp-6 (Ref. 34)	4.05	120.0	···	13.0

[a] Gaseous nitrogen data.

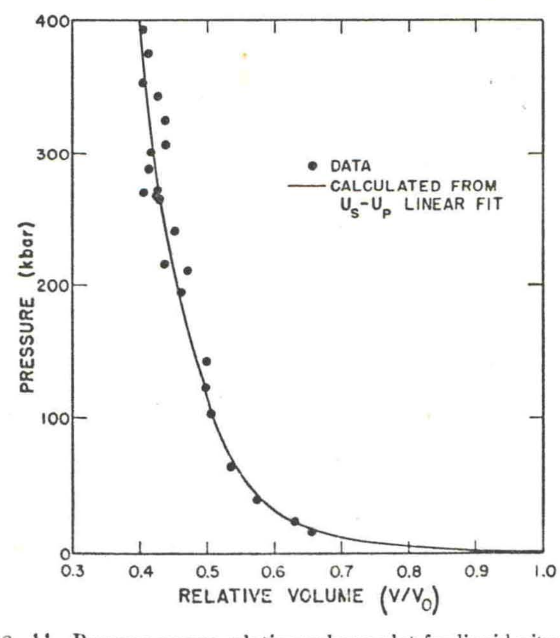

FIG. 11. Pressure-versus-relative volume plot for liquid nitrogen.

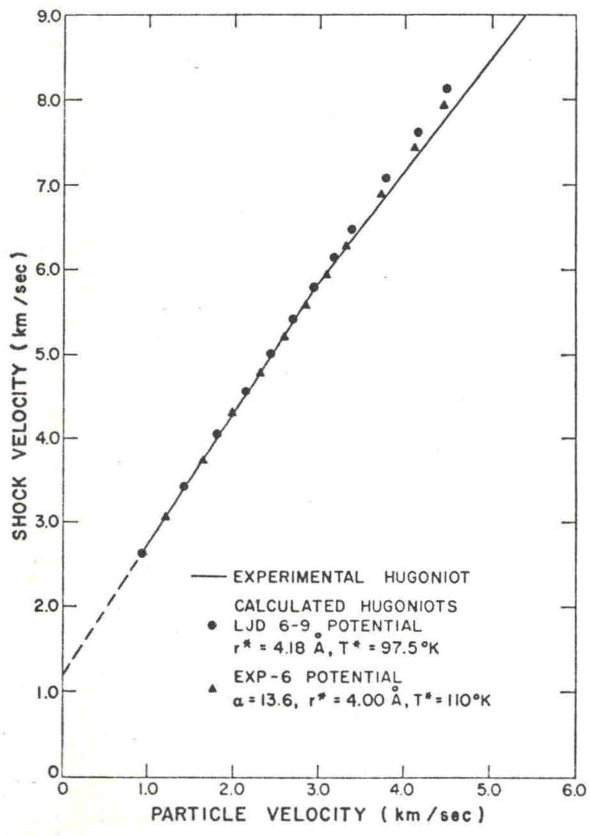

FIG. 12. Experimental and calculated Hugoniots for liquid nitrogen.