All the liquid nitrogen pressure-relative volume ($P\text{-}V/V_0$) Hugoniot data in Fig. 23 were fit to a single concave upward curve. Due to inadequate precision, the $P\text{-}V/V_0$ curve does not reflect the observed breaks in the lines which characterize the $U_s\text{-}U_p$ data. The curve is expressed by

$$P = 16V/V_0 + 7(V/V_0)^2 + 111(V/V_0)^3.$$

When comparing the two sources of data, the general impression is that the present data indicates a stiffer material than does the Russian data. Since the Russian's starting point was 77°K and a density of 0.808 g/cc instead of 75°K and a density of 0.820 g/cc for the present data, some of the observed deviation may originate from these differences. Also, it is not clear from the Russian paper whether the aluminum standard was pure aluminum or an alloy. If the standards were not identical this would contribute to the difference in the two Hugoniot curves.

The $U_s\text{-}U_p$ plot of several materials such as sodium chloride[46] and bismuth[28] are similar to that of liquid nitrogen. A possible phase system[28] which could produce the observed $U_s\text{-}U_p$ diagram is presented in Fig. 24. The Hugoniot is hypothesized to pass through three phases near a triple point. For the liquid nitrogen case, the Hugoniot starts out in the liquid phase and crosses into phase I at a pressure of 240 kbar. Then the Hugoniot crosses into phase II at a pressure of 330 kbar. The temperature associated with the 240 kbar Hugoniot pressure is about 7200°K and is even higher for 330 kbar. Hence the two phases may be atomic nitrogen ordered in some compact form.