shock data smoothly together in the lower pressure region and probably should not be there. Both the data alone and calculations of a u_s-u_p curve from a Born-Mayer form for the interaction potential indicate a linear behavior in this region. Accordingly we have listed in Table IV the isotherm above 200 kb that obtains from the best linear fit to our data. In this calculation we have again used constant $(\partial E/\partial P)_V$. From 200 to 230 kb this is essentially identical to the isotherm resulting from the quadratic fit. Above 230 kb it becomes stiffer.

A clear indication of a phase transition is exhibited by the higher pressure data points plotted in Fig. 1. Although (111) and (100) oriented crystals have indistinguishable Hugoniots at lower pressures, they clearly separate in the region where the phase transition occurs. Since a uniaxial compression of 50% in the (111) direction produces the B2 structure from the B1 structure, one can expect that a shock wave in this direction will see a lower energy barrier in the way of this transition. Indeed, the (111) data are lower. If a shock wave is not complicated by relaxation effects and deviatoric stresses, a phase transition with a sufficient ΔV and an appropriate slope in the P-T plane appears as a horizontal plateau in the u_s-u_p plane. This is because the flash gaps measure the shock velocity of the first wave in a two-wave structure, which remains constant as we increase the driving pressure, and the particle velocity, measured indirectly by measuring the shock velocity of the standard, is increasing with the

driving pressure. Time dependent effects clearly influence the NaCl data in this region, but the onset of a phase transition is beyond question. At these pressures, even though a considerable time may be required for a phase transition to go to completion, any part of the ΔV of the reaction manifests itself immediately as a shock velocity less than would be expected from a smooth continuation of the initial phase. A plateau has been drawn somewhat arbitrarily through the (111) data. Although the data scatter upwards from this line, the clustering toward the bottom is sufficiently sharp to give some credence to the plateau as drawn.

The behavior of the (100) data is different; it tends to drift slowly upward in a manner which one might expect from a reaction whose relaxation time is comparable to the time it takes a shock wave to traverse the sample. The (111) plateau intersects both the linear and quadratic fits to the B1 phase at u_s = 5.94 and u_p = 1.80 km/sec. The pressure on the Hugoniot is 231 kb, the density is 3.105 g/cm^3 and the temperature is between 1120 and 1130 ^{O}K. This number should provide an upper bound to the actual transition pressure.

Basset, et. al.[11], have observed the B1-B2 transition at a V/V_0 = 0.643 ± .002. Using our isotherm from the extrapolated linear Hugoniot, we find the pressure of this transition as 307 ± 5kb. The extrapolation of the quadratic fit would have yielded 295 ± 5 kb. This should set the upper limit of pressure for the use of NaCl in the B1 phase as an internal pressure standard at room temperature.