RESULTS

The physical quantities needed in the data reduction are listed in Table 1. The isothermal bulk modulus, B_T, was computed from the measured adiabatic bulk modulus, B_s, by the relation

$$\frac{B_s}{B_T} = 1 + \frac{TV\beta^2 B_s}{C_p} \tag{1}$$

where β is the volume coefficient of thermal expansion, T the absolute temperature, and C_p and V are the heat capacity and volume per mole.

In the case of cubic crystals a detailed treatment for determining the elastic constants, C'_{11}, C'_{55} and C'_{66}, corresponding to any direction of propagation is given by Neighbours[7,8]. Briefly, the expressions in terms of the fundamental elastic constants, C_{11}, C', and C, are:

$$C'_{11} = C_{11} - 4\,(\ell^2 m^2 + m^2 n^2 + n^2 \ell^2)(C' - C), \tag{2}$$

$$C'_{55} = C + 4n^2\,(\ell^4 + \ell^2 m^2 + m^4)(\ell^2 + m^2)^{-1}\,(C' - C), \tag{3}$$

and

$$C'_{66} = C + 4\ell^2 m^2\,(\ell^2 + m^2)^{-1}\,(C' - C) \tag{4}$$

where $C = C_{44}$ and $C' = (C_{11} - C_{12})/2$.

Table 2 lists the observed transit times and off-orientation stiffnesses as computed from the zero pressure elastic constants of Featherston and Neighbours[2]. The stiffnesses were found to be about 1 per cent uncertain due chiefly to the uncertainty in the published values. The observed transit times were found to be systematically