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

$$\frac{B_{s}}{B_{T}} = 1 + \frac{TV\beta^{2}B_{s}}{C_{p}}$$
(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:

$$C'_{ll} = C_{ll} - 4 \left(\ell^2 m^2 + m^2 n^2 + n^2 \ell^2 \right) (C' - C), \qquad (2)$$

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

and

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

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