Table I-Directions and Elastic Constants

(The notation of Zener for the fundamental shear constants $C = C_{44}$ and $C' = \frac{1}{2}(C_{11} - C_{12})$ has been used here and throughout this report. The choice of C_{11} for the third independent constant gives the simplest set of expressions for the quantity ρv^2).

	[100]	[110]	[111]
longitudinal	C_{11}	$C_{11} - C' + C$	$\frac{1}{3}(3C_{11} - 4C' + 4C)$
shear	C	C'	$\frac{1}{3}(2C' + C)$
shear	C	C	$\frac{1}{3}(2C' + C)$

Inspection of Table I shows that the shear modes are degenerate in the [100] and [111] directions, thus there are four internal checks available with this choice of directions.

The expressions in Table I may be differentiated with respect to pressure to obtain similar relationships between the pressure derivatives associated with wave propagation in these directions. These pressure derivatives were also measured providing four internal checks of the application of the ultrasonic pulse-echo technique to pressure measurements.