The relative resistance is

$$\frac{R}{R_o} = \frac{\rho}{\rho_o} \frac{L}{A} \frac{A_o}{L_o} = \frac{\rho}{\rho_o} \left(\frac{L}{L_o}\right)^2 .$$

Consider a uniform stretch $L = L_o + u_y(t - t_o)$ where u_y is the relative lateral particle velocity of the slab ends; then R/R_o has a quadratic dependence on time. Let $u_y = \alpha u_x$ where $\alpha = 10$ milliradians, $u_x = 0.5$ mm/μsec, $L_o = 1$ mm, $\frac{\rho}{\rho_o} = 1$. Then $R/R_o = (1.005)^2 = 1.01$ in 1 microsecond of stretch. This is not enough to account for observed effects in 73-051 and 73-056.

Stretching will also cause plastic deformation and hence additional resistance changes due to defect generation. Suppose $\Delta\rho/\rho_o$ is proportional to work of plastic deformation according to Saada's relation (Sec. IV.E); and that tensile stress is linearly related to strain ϵ. Then $\rho \propto W_{PD} = a\epsilon + b\epsilon^2$; for tensile deformation $\epsilon = (1-2\nu)\Delta L/L$ where ν is Poisson's ratio. This implies that again the resistance would have quadratic time dependence. Since magnitude of resistivity change generated by deformation at these strain rates is not known, the mechanism proposed here represents only a possible source of the anomalous signals in shots 73-051 and 73-056.

APPENDIX C

DETAILS OF VARIATIONS IN EXPERIMENTAL PROCEDURE