



Fig. 2.3.--Streak camera record.

averaged. In order to preclude points of the curved portion from the linear fits, the entire trace was graphed and limits of the linear portion were determined by inspection. This judgment was reviewed and proper adjustments were made after least-squares fitting of the straight line sections was completed. The time span of the curved portion was determined from the record and interpreted as a measure of rise time in the plastic II shock front. The equation relating free surface velocity u_{f2} , produced by the plastic I shock, to measured parameters is³⁹

$$u_{f2} = \frac{u_c \tan \alpha}{M_f (\tan \gamma_1 - \tan \omega)} \quad (2.14)$$

where u_c is camera writing speed, M_f is camera magnification (image/object), α is angle between tilted mirror and the sample surface, γ_1 is the angle made by the first linear trace on the film, and ω is tilt of the shock wave measured on the film. These are indicated in Fig. 2.2. The small correction due to slight rotation of the surface by the elastic shock has been ignored in Eq. (2.14).

The equation relating free surface velocity, u_{f3} , produced by the plastic II shock to measured parameters is³⁹

$$u_{f3} = \frac{u_c \tan \alpha_1}{M_f \tan \gamma_2} \left(\frac{1 - \frac{\tan \omega}{\tan \gamma_1} \left[\frac{U_2 - u_{f2}}{U_3 - u_{f3}} \right]}{1 - \frac{\tan \omega}{\tan \gamma_2} \left[\frac{U_2 - u_{f2}}{U_3 - u_{f2}} \right]} \right) \quad (2.15)$$