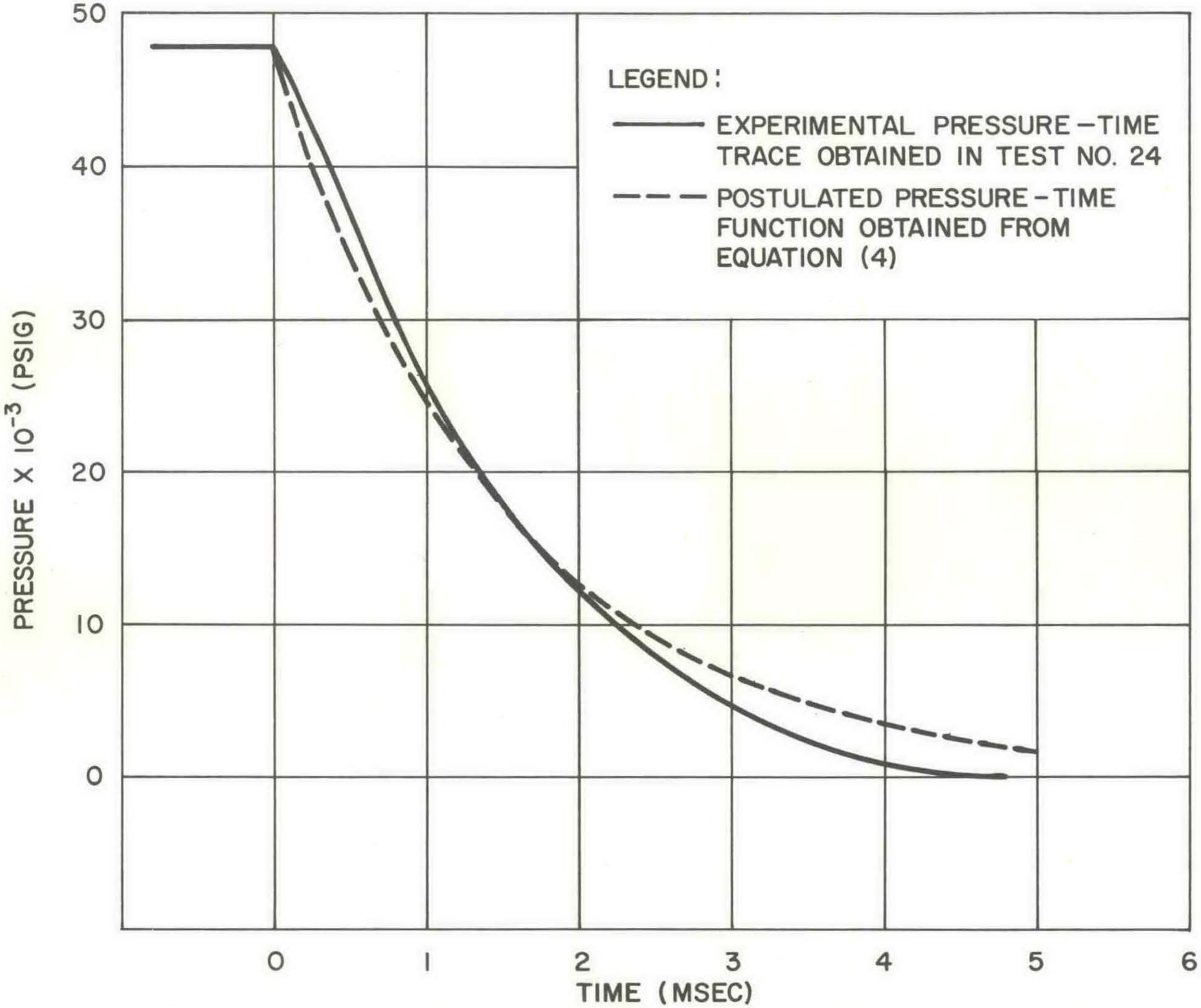

FIG. 7 CORRELATION BETWEEN POSTULATED AND EXPERIMENTIAL PRESSURE-TIME RELATIONS FOR 3/16" I.D. TUBE

$$P = P_g e^{-t/\Theta_1} \qquad (4)$$

where the nomenclature is

P_g . . . maximum hydrostatic pressure in compression chamber prior to release, psig

t . . . event time, msec

Θ_1 . . . time constant of pressure release, (i.e., time at which pressure becomes equal to P_g/e), msec

A correlation between the postulated pressure-time function as given in equation (4) and the experimental pressure-time traces obtained from tests numbers (4-A), (51), and (24), shown in the aforementioned figures, yields positive evidence as to the validity of the postulated pressure-time function. It is seen that maximum deviation occurs when $t = T_R$, where T_R is the pressure-release time or the time required for the pressure in the compression chamber to decay from P_g to ambient conditions. From these experimental curves, the pressure-release time can be expressed in terms of the postulated time constant Θ_1 as

$$T_R \approx 3\Theta_1 \qquad (5)$$

Then from equation (4), it is seen that postulated pressure at time T_R becomes

$$P = P_g e^{-\frac{3\theta_1}{\theta_1}} \approx 0.05 \, P_g \qquad (6)$$

that is, after a time duration of magnitude $3\Theta_1$, the pressure in the compression chamber is less than 5 percent of its original value P_g.

From the above statements it appears that the postulated pressure-time function is a good one, and now it is necessary to determine only the time constant Θ_1, either analytically or