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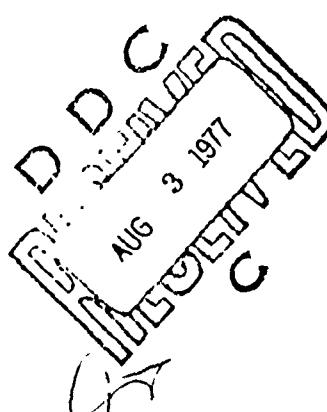
**ASSESSMENT OF A DYNAMICAL GYROSCOPE
MODEL UTILIZING DIGITAL SIMULATION TECHNIQUES**

Guidance and Control Directorate
Technology Laboratory

3 June 1977

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therefore,

$$\theta(t) = \frac{H}{J} \int_0^t \psi(t) dt .$$

A similar derivation holds for the other axis; i.e., a transfer function relating θ and ψ can be interchanged so that

$$\frac{\Psi(s)}{\theta(s)} .$$

The "ideal" model (Section III.A), behaves like a perfect gyroscope. The "dynamic" gyroscope is far more complicated with realistic inertia and damping terms being considered. A 2-DOF dynamic gyro is represented by two second order differential equations as given in Section III.B.

III. MATHEMATICAL GYRO MODELS

The mathematical formulation of the two gyroscope models is given in the following paragraphs.

A. Ideal 2-DOF Gimbaled Gyroscope

Figure 1 describes the orientation of the seeker gyro coordinate system (x_s , y_s , z_s) by using the seeker Euler angles θ and then ψ with respect to the body coordinate system (X_B , Y_B , Z_B). The gyro coordinate system is chosen so that the origin is at the center of mass of the gyro and the x_s -axis is the axis of symmetry of the gyro. Also let ω' be the absolute angular velocity or rate of the seeker gyro. Then the general expression for components of angular momentum H of the gyro is

$$H_x = I_{xx} \omega'_x$$

$$H_y = I_{yy} \omega'_y$$

$$H_z = I_{zz} \omega'_z .$$

(1)

Let ω be the absolute angular velocity of the x_s , y_s , z_s system and s be the angular velocity or spin rate of the gyro as measured relative to the x_s , y_s , z_s system. Then the angular velocity terms (ω'_x , ω'_y , ω'_z) are

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I. INTRODUCTION

A gimballed two-degree-of-freedom (DOF) attitude gyro whose spin axis is torqued to a point along the line-of-sight (LOS) is a primary guidance device used in today's missile technology. LOS rate for proportional navigation guidance (PNG) is derived from this type of gyro. The guidance law for this scheme is PNG. The missile used here is tail controlled with proportional vane deflection and roll rate controlled. When the missile is near enough to the target to be seen by the guidance device (seeker) which is mounted on the gyroscope, an LOS error (the difference as measured in both yaw and pitch plane of where the seeker is presently pointing and where it should be pointing) is computed. This LOS error torques the gyroscope and eventually drives the missile body vanes which turn the body into line with the pointing seeker. Missile targeting accuracy is described for two types of 2-DOF gimballed gyros (idealized and dynamic) models when implemented in a 6-DOF digital missile simulation with no changes in airframe, aero, autopilot, and guidance law.

II. PROBLEM DEFINITION

For many studies using digital simulation, it is desirable to model a gyro which has no second order (inertia) and damping terms in the mathematical formulation. This model is one represented by a perfect integrator, $1/s$, in the Laplace notation. The following paragraphs display the rationale in developing such a model.

The differential equation relating output axis motion to input torque or rate is

$$J\ddot{\theta} + B\dot{\theta} + K\theta = H\dot{\psi}$$

Laplace transformation with zero initial conditions is applied

$$\frac{\theta(s)}{\Psi(s)} = \frac{Hs}{Js^2 + Bs + K}$$

and it is assumed that $J \gg B$ and $J \gg K$

$$\frac{\theta(s)}{\Psi(s)} = \frac{Hs}{Js^2} = \left(\frac{H}{J}\right)\frac{1}{s} ;$$

therefore,

$$\theta(t) = \frac{K}{J} \int_0^t \psi(t) dt .$$

A similar derivation holds for the other axis; i.e., a transfer function relating θ and ψ can be interchanged so that

$$\frac{\Psi(s)}{\theta(s)} .$$

The "ideal" model (Section III.A), behaves like a perfect gyroscope. The "dynamic" gyroscope is far more complicated with realistic inertia and damping terms being considered. A 2-DOF dynamic gyro is represented by two second order differential equations as given in Section III.B.

III. MATHEMATICAL GYRO MODELS

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$$H_x = I_{xx} \omega'_x$$

$$H_y = I_{yy} \omega'_y$$

$$H_z = I_{zz} \omega'_z .$$

(1)

Let ω be the absolute angular velocity of the x_s , y_s , z_s system and s be the angular velocity or spin rate of the gyro as measured relative to the x_s , y_s , z_s system. Then the angular velocity terms (ω'_x , ω'_y , ω'_z) are

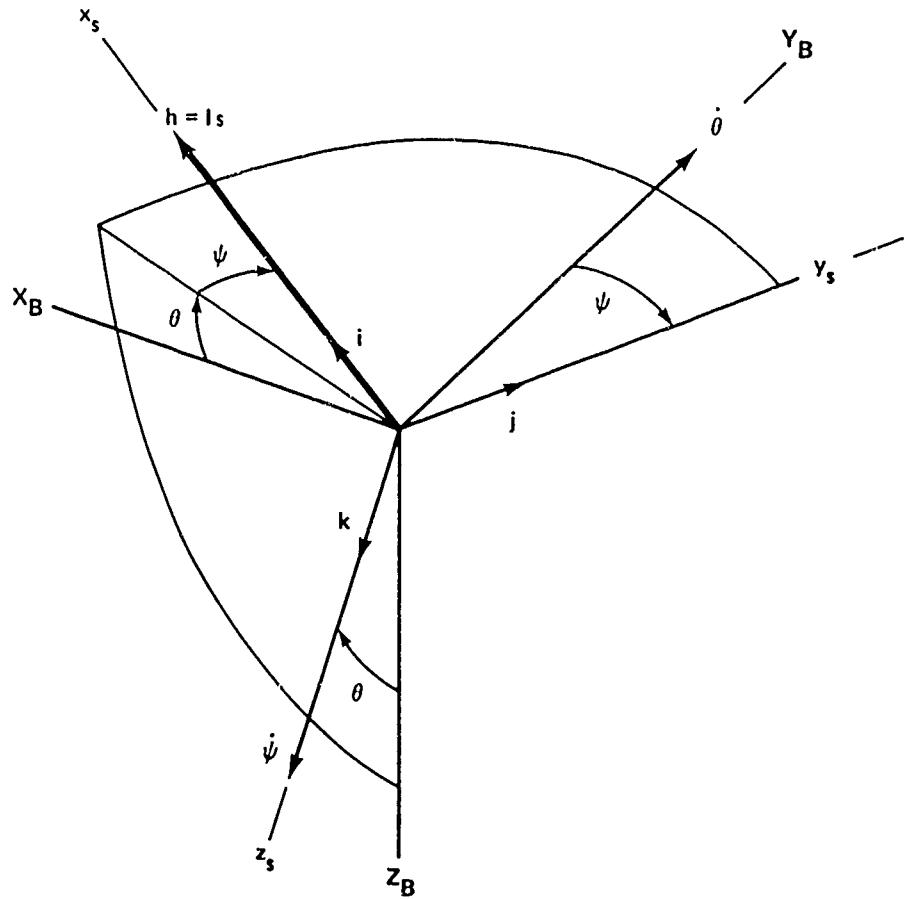


Figure 1. Seeker gyro coordinate system.

$$\omega_x' = \omega_x + s$$

$$\omega_y' = \omega_y$$

$$\omega_z' = \omega_z \quad (2)$$

and Equation (1) becomes

$$H_x = I_{xx} (\omega_x + s)$$

$$H_y = I_{yy} \omega_y$$

$$H_z = I_{zz} \omega_z$$

(3)

The general vector equation of motion is $\dot{M} = \dot{H}$. Recalling that the rate of change of H is

$$\dot{H} = (\dot{H})_r + \underline{\omega} \times \underline{H}$$

where $(\dot{H})_r$ is the rate of change of the absolute angular momentum as measured in the seeker gyro basis, i.e.,

$$(\dot{H})_r = I_{xx} (\dot{\omega}_x + s) \underline{i} + (I_{yy} \dot{\omega}_y) \underline{j} + (I_{zz} \dot{\omega}_z) \underline{k} .$$

From Figure 1,

$$\underline{\omega} = \dot{\theta} \sin \psi \underline{i} + \dot{\theta} \cos \psi \underline{j} - \dot{\psi} \underline{k} .$$

Because of the gyro symmetry and actual specification values, a special case is treated here, i.e.,

$$I = I_{xx} = I_{yy} = I_{zz} .$$

In Figure 1, s is a constant spin rate and $s \gg \omega_y$ and ω_z ; therefore,

$$\dot{H} = I s \underline{i} = \underline{h} .$$

For an ideal gyro, the rotor gimballed terms ($\dot{\omega}_y$ and $\dot{\omega}_z$) are small when compared to the $\omega_y s$ and $\omega_z s$ terms; also, no $\dot{\omega}_x$ term is possible due to the physical system constraints. Therefore, $(\dot{H})_r$ can be neglected in comparison with $\underline{\omega} \times \underline{H}$.

Evaluating $\underline{\omega} \times \underline{H}$ using the determinant form of the cross product gives

$$\underline{\omega} \times \underline{h} = \begin{vmatrix} \underline{i} & \underline{j} & \underline{k} \\ \dot{\theta} \sin \psi & \dot{\theta} \cos \psi & \dot{\psi} \\ I_s & 0 & 0 \end{vmatrix} . \quad (9)$$

Then

$$M_x = 0$$

$$M_y = I_s \dot{\psi}$$

$$M_z = -I_s \dot{\theta} \cos \psi , \quad (10)$$

where I_s is angular momentum and is considered a constant gain value in the model.

B. Dynamic (Realistic) 2-DOF Gimballed Gyroscope Model

Figure 2 shows the system in a configuration (with respect to body fixed reference X_I , Y_I , Z_I) and orientation of the gyro system by using the seeker Euler angles ψ and then θ . The system has 2-DOF (the speed n of the rotor with respect to gimbal G prescribed as constant). Angle θ defines the angular position of the inner gimbal G with respect to the outer gimbal O . The angle ψ defines the angular position of the outer gimbal with respect to the vehicle I . Using the general vector equation of motion $\{M\} = \{\dot{H}\}$ and rewriting in matrix expressions gives

$$\{M_0\} = \{\dot{H}_{TS}\}_I \quad (11)$$

$$\{H_{TS}\} = \{H_0\} + \{H_G\} + \{H_R\} \quad (12)$$

but

$$\{H_0\} = [I_0] \{\omega_{0-I}\} \quad (13)$$

$$\{H_G\} = [I_G] \{\omega_{G-I}\} \quad (14)$$

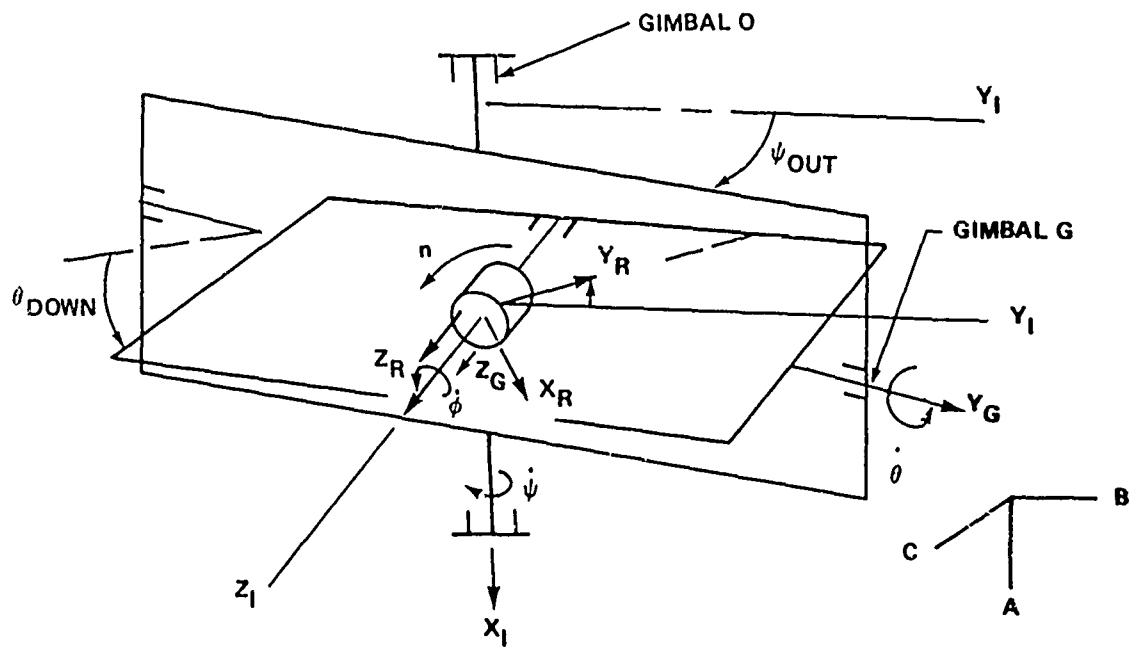


Figure 2. Dynamic seeker gyro coordinate system.

and

$$\{H_R\} = [I_R] \{\omega_{R-I}\} = [I_R] \{\omega_{R-G}\} + \{\omega_{G-I}\} \quad (15)$$

but $\{\omega_{R-G}\} \doteq \{\dot{\phi}\}$. Therefore,

$$H_R = [I_R] \{\dot{\phi}\} + [I_R] \{\omega_{G-I}\} \quad (16)$$

but $[I_R] \{\dot{\phi}\} \doteq \{h\}$. Then

$$\{H_R\} = \{h\} + [I_R] \{\omega_{G-I}\} \quad (17)$$

where

$\{M_O\}$ = moment or torque (column matrix) about outer gimbal

$\{H_{TS}\}_I$ = angular momentum of total system (column matrix) in vehicle frame

$\{H_0\}$ = angular momentum (column matrix) of outer gimbal

$\{H_G\}$ = angular momentum (column matrix) of inner gimbal

$\{h\}$ = angular momentum (column matrix) of rotor

$\{H_R\}$ = total angular momentum (column matrix) of rotor

$[I_0]$ = inertia tensor of outer gimbal

$[I_G]$ = inertia tensor of inner gimbal

$[I_R]$ = inertia tensor of rotor

$\{\omega_{0-I}\}$ = angular velocity (column matrix) of outer wrt vehicle

$\{\omega_{G-I}\}$ = angular velocity (column matrix) of inner wrt vehicle

$\{\omega_{R-I}\}$ = angular velocity (column matrix) of rotor wrt vehicle .

$$\{\dot{\phi}\} = \begin{Bmatrix} 0 \\ 0 \\ \dot{\phi} \end{Bmatrix}$$

Rearranging Equation (12) and taking derivatives of Equations (11) and (12) gives

$$\begin{aligned} \{M_0\} &= \{\dot{H}_{TS}\}_G + [\omega_{G-I}] \{H_{TS}\} = \frac{d}{dt} \left[\{h\} + [I_R] \{\omega_{G-I}\} \right. \\ &\quad \left. + [I_G] \{\omega_{G-I}\} + [I_0] \{\omega_{0-I}\} \right]_G + [\omega_{G-I}] \\ &\quad \left[\{h\} + [I_R] \{\omega_{G-I}\} + [I_C] \{\omega_{G-I}\} + [I_0] \{\omega_{0-I}\} \right] \end{aligned} \quad (18)$$

where

$$[\omega_{G-I}] = \begin{bmatrix} 0 & -\omega_z & \omega_y \\ \omega_z & 0 & -\omega_x \\ -\omega_y & \omega_x & 0 \end{bmatrix} .$$

Therefore,

$$\begin{aligned}
 \{\dot{H}_{TS}\}_I &= \{\dot{h}\}_G + [I_R]_G \{\omega_{G-I}\} + [I_R]_G \{\dot{\omega}_{G-I}\}_G + [I_G]_G \{\omega_{G-I}\} \\
 &\quad + [I_G] \{\dot{\omega}_{G-I}\}_G + [I_0]_0 \{\omega_{0-I}\} + [I_0] \{\dot{\omega}_{0-I}\}_0 \\
 &\quad + [\omega_{G-I}] \{h\} + [\omega_{G-I}] ([I_R] + [I_G]) \{\omega_{G-I}\} \\
 &\quad + [\omega_{G-I}] [I_0] \{\omega_{0-I}\} \dots
 \end{aligned} \tag{19}$$

Collecting terms gives

$$\begin{aligned}
 \{M_0\} = \{\dot{H}_{TS}\}_I &= \{\dot{h}\}_G + ([I_R] + [I_G]) \{\dot{\omega}_{G-I}\}_G + [I_0] \{\dot{\omega}_{0-I}\}_0 \\
 &\quad + [\omega_{G-I}] \{h\} + [\omega_{G-I}] ([I_R] + [I_G]) \{\omega_{G-I}\} \dots
 \end{aligned} \tag{20}$$

Consider that for a constant speed motor

$$\{\dot{h}\}_G = 0, \tag{21}$$

and neglecting the second order terms,

$$[\omega_{G-I}] ([I_R] + [I_G]) \{\omega_{G-I}\}$$

then,

$$\{M_0\} = ([I_R] + [I_G]) \{\dot{\omega}_{G-I}\}_G + [I_0] \{\dot{\omega}_{G-I}\}_0 + [\omega_{G-I}] \{h\}. \tag{22}$$

Thus, Equation (22) is the simplified moment equation, but the moment equation for a complete gyro is Equation (20).

Coordinating the equation to get scalar components in the inner gimbal frame G, then

$$\{h\} = [I_R] \{\omega_{R-G}\} \dots \tag{23}$$

Therefore,

$$\{\dot{h}\}_G = \frac{d}{dt} \left([I_R] \{\omega_{R-G}\}_G \right) = [I_R]_G \{\omega_{R-I}\}_G + [I_R] \{\omega_{R-G}\}_G . \quad (24)$$

Then

$$\{\dot{h}\}_G = [I_R] \{\dot{\phi}\} . \quad (25)$$

$\{\dot{h}\}_G$ would be zero if spin rotor rotated at a constant speed as with a hysteresis motor. In some application, "h-modulation" may be desirable, so retain the term $\{\dot{h}\}_G$, i.e., $\{\dot{h}\}_G \neq 0$

Using the matrix properties of the inertia tensor to find an orientation of a given rigid body so that all products of inertia are zero simultaneously, i.e., the inertia matrix is diagonal. Substituting A, B, C for I_{xx} , I_{yy} , I_{zz} , respectively, then Equation (25) becomes

$$\{\dot{h}\}_G = [I]_R \{\dot{\phi}\}_G = \begin{bmatrix} A_R & 0 & 0 \\ 0 & B_R & 0 \\ 0 & 0 & C_R \end{bmatrix} \begin{bmatrix} 0 \\ 0 \\ \ddot{\phi} \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ C_R \ddot{\phi} \end{bmatrix} \quad (26)$$

$$\left([I_R]_G + [I_G]_G \right) = \begin{bmatrix} A_R + A_G & 0 & 0 \\ 0 & B_R + B_G & 0 \\ 0 & 0 & C_R + C_G \end{bmatrix} . \quad (27)$$

Knowing

$$\{\omega_{G-I}\}_G = \{\omega_{G-O}\}_G + T_{OG} \{\omega_{O-I}\}_O ; \quad (28)$$

then

$$\{\omega_{G-O}\}_G = \begin{bmatrix} 0 \\ \dot{\theta} \\ 0 \end{bmatrix} ; \quad \{\omega_{O-I}\}_O = \begin{bmatrix} \dot{\psi} \\ 0 \\ 0 \end{bmatrix} \quad (29)$$

and

$$T_{OG} = \begin{bmatrix} c\theta & 0 & -s\theta \\ 0 & 1 & 0 \\ s\theta & 0 & c\theta \end{bmatrix} \quad (30)$$

where $c\theta = \cos \theta$, $s\theta = \sin \theta$. Therefore,

$$\{\dot{\omega}_{G-I}\}_G = \begin{bmatrix} 0 \\ \dot{\theta} \\ 0 \end{bmatrix} + \begin{bmatrix} c\theta & 0 & -s\theta \\ 0 & 1 & 0 \\ s\theta & 0 & c\theta \end{bmatrix} \begin{bmatrix} \dot{\psi} \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} \dot{\psi}c\theta \\ \dot{\theta} \\ \dot{\psi}s\theta \end{bmatrix} \quad (31)$$

Thus

$$\{\ddot{\omega}_{G-I}\}_G = \begin{bmatrix} \ddot{\psi}c\theta - \dot{\psi} s\theta \dot{\theta} \\ \ddot{\theta} \\ \ddot{\psi}s\theta + \dot{\psi} c\theta \dot{\theta} \end{bmatrix} \quad (32)$$

and

$$[I_0] \{\dot{\omega}_{0-I}\}_0 = \{\dot{h}_0\} = [I_0]_I \{\dot{\omega}_{0-I}\}_0 = \begin{bmatrix} A_0 & \ddot{\psi} \\ 0 & 0 \\ 0 & 0 \end{bmatrix} \quad (33)$$

Therefore, the derivative of h_0 in I frame coordinatized in the G frame is

$$\begin{aligned} \{\dot{h}_0\}_G &= T_{OG} T_{IO} \{\dot{h}_0\}_I \\ &= \begin{bmatrix} c\theta & 0 & -s\theta \\ 0 & 1 & 0 \\ s\theta & 0 & s\theta \end{bmatrix} \begin{bmatrix} 1 & 0 & 0 \\ 0 & -s\psi & c\psi \\ 0 & c\psi & s\psi \end{bmatrix} \begin{bmatrix} A_0 & \ddot{\psi} \\ 0 & 0 \\ 0 & 0 \end{bmatrix} = \begin{bmatrix} A_0 & \ddot{\psi} c\theta \\ 0 & 0 \\ A_0 & \ddot{\psi} s\theta \end{bmatrix} \end{aligned} \quad (34)$$

and

$$[\omega_{G-I}]_G \{h\}_G = \begin{bmatrix} \dot{\theta}h \\ -h \dot{\psi} c\theta \\ 0 \end{bmatrix} \quad (35)$$

where

$$[\omega_{G-I}]_G = \begin{bmatrix} 0 & -\dot{\psi}s\theta & \dot{\theta} \\ \dot{\psi}s\theta & 0 & -\dot{\psi}c\theta \\ -\dot{\theta} & \dot{\psi}c\theta & 0 \end{bmatrix}$$

and

$$[\omega_{G-I}] [I_R] + [I_G] \{\omega_{G-I}\} = \begin{bmatrix} (C' - B') \ddot{\theta}\psi s\theta \\ (A' - C') \dot{\psi}^2 c\theta s\theta \\ (B' - A') \dot{\theta}\dot{\psi} c\theta \end{bmatrix} \quad (36)$$

where

$$A' = A_R + A_G$$

$$B' = B_R + B_G$$

$$C' = C_R + C_G$$

$$\{M_0\}_G = \begin{bmatrix} M_{OXG} \\ M_{OYG} \\ M_{OZG} \end{bmatrix} \quad (37)$$

Collect all terms in Equations (26) through (37) to get matrix formulation:

$$\begin{bmatrix} M_{OXG} \\ M_{OYG} \\ M_{OZG} \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ C_R \ddot{\phi} \end{bmatrix} + \begin{bmatrix} A' & 0 & 0 \\ 0 & B' & 0 \\ 0 & 0 & C' \end{bmatrix} \begin{bmatrix} \ddot{\psi}c\theta - \dot{\psi}s\theta\dot{\theta} \\ \ddot{\theta} \\ \ddot{\psi}s\theta + \dot{\theta}c\theta\dot{\phi} \end{bmatrix} + \begin{bmatrix} A_0 \ddot{\psi}c\theta \\ 0 \\ A_0 \ddot{\psi}s\theta \end{bmatrix} + \begin{bmatrix} \dot{\theta}h \\ -h\dot{\psi}c\theta \\ 0 \end{bmatrix} + \begin{bmatrix} (C' - B') \ddot{\theta}\psi s\theta \\ (A' - C') \dot{\psi}^2 c\theta s\theta \\ (B' - A') \dot{\theta}\dot{\psi} c\theta \end{bmatrix} \quad (38)$$

Add all matrices as indicated and break out individual components as follows to get complete nonlinear equations with no restraints on motor:

$$\begin{aligned}
 M_{OXG} &= (A_R + A_G + A_O) \ddot{\psi} c\theta \\
 &\quad + (-A_R - A_G - B_R - B_G + C_R + C_G) \dot{\theta} \dot{\psi} s\theta + h \dot{\theta} \\
 M_{OYG} &= (B_R + B_G) \ddot{\theta} + (A_R + A_G - C_R - C_G) \dot{\psi}^2 c\theta s\theta - h \dot{\psi} c\theta \\
 M_{OZG} &= C_R \ddot{\phi} + (C_R + C_G + B_R + B_G - A_R - A_G) \dot{\theta} \dot{\psi} c\theta \\
 &\quad + (C_R + C_G + A_O) \ddot{\psi} s\theta
 \end{aligned} \tag{39}$$

where

$$\begin{aligned}
 M_{OXG} &= M_\psi c\psi - r \dot{\psi} \\
 M_{OYG} &= M_\theta c\theta - b \dot{\theta} \\
 M_{OZG} &= 0
 \end{aligned} \tag{40}$$

and

$r \dot{\psi}$ \triangleq gimbal bearing friction between the outer gimbal and base

$b \dot{\theta}$ \triangleq bearing friction between outer and inner gimbal .

For a general linear solution of Equation (39), linearize about an equilibrium position by letting:

$$\begin{aligned}
 \theta &= \theta_0 + \delta\theta \\
 \dot{\theta} &= \dot{\theta}_0 + \delta\dot{\theta} \\
 \psi &= \psi_0 + \delta\psi \\
 \dot{\psi} &= \dot{\psi}_0 + \delta\dot{\psi} , \quad \text{etc.}
 \end{aligned}$$

Substitute into the nonlinear Equation (39); i.e., about $\theta = 0$ for small θ about equilibrium, e.g.,

$$c\theta = c(\theta + \delta\theta) = c_0 c\delta\theta - s_0 s\delta\theta = 1$$

$$s\theta = s(\theta + \delta\theta) = s_0 c\delta\theta + c_0 s\delta\theta = \delta\theta \quad . \quad (41)$$

Using the first of Equation (39) and substituting the preceding gives

$$M_{OXG} \text{ (linearized)} = A\ddot{\psi} + A'\dot{\theta}\dot{\psi}\delta\theta + h\dot{\theta} \quad (42)$$

where

$$A = A_R + A_G + A_0$$

$$B = -A_R - A_G - B_R - B_G + C_R + C_G$$

$$M_{OXG} + \delta M_{OXG} = A\ddot{\psi} + A\delta\ddot{\psi} + B(\dot{\theta} + \delta\dot{\theta})(\dot{\psi} + \delta\dot{\psi})\delta\psi + h\dot{\theta} + h\delta\dot{\theta} \quad . \quad (43)$$

Subtracting Equation (42) from Equation (43) gives

$$\delta M_{OXG} = A\delta\ddot{\psi} + B\dot{\theta}\delta\dot{\psi}\delta\theta + B\delta\dot{\theta}\dot{\psi}\delta\theta + B\delta\dot{\theta}\delta\dot{\psi}\delta\theta + h\delta\dot{\theta} \quad . \quad (44)$$

All small second terms can be removed in Equation (45), therefore,

$$\delta M_{OXG} = A\delta\ddot{\psi} + h\delta\dot{\theta} \quad . \quad (45)$$

A similar method can be applied to the M_{OYG} equation in Equation (39) to give

$$\delta M_{OYG} = B\delta\ddot{\theta} - h\dot{\psi} \quad , \quad (46)$$

dropping the δ_i terms for small angle approximation to get

$$M_{OXG} = A\ddot{\psi} + h\dot{\theta}$$

$$M_{OYG} = B\ddot{\theta} - h\dot{\psi} \quad . \quad (47)$$

Substituting values from Equation (40) for M_{OXG} and M_{OYG} with small angle approximation into Equation (47) to get

$$A\ddot{\psi} + r\dot{\psi} + h\dot{\theta} = M_{\psi}$$

$$B\ddot{\theta} + b\dot{\theta} - h\dot{\psi} = M_{\theta} \quad . \quad (48)$$

IV. SYSTEM SIMULATION

The guidance and control system block diagram pitch/yaw channels for the 6-DOF digital simulation is presented in Figure 3. Figure 3 shows how the signal generated by the seeker is used to drive the vanes. The seeker signal is routed to the gyroscope and damping network before going to the guidance filter. It also goes directly to the guidance filter. The output from the guidance filter is then sent to the actuator which in turn drives the vanes. The only change between evaluation of the two types of gyro models would be in the torque gain terms and the block marked "Gyro Model" as shown in Figure 3. The 6-DOF computer program listings are given in Appendices A and C. A Continuous System Simulation Language (CSSL) program is given in Appendix B. The CSSL program was utilized to analyze only the motion of the dynamic gyro prior to implementation in the 6-DOF simulation.

In this section, the CSSL program results are given for the dynamic gyro model. The 6-DOF digital missile trajectory results are given for both the idealized and the dynamic gyro models. In addition, comparison analyses of the two trajectory simulation results are made.

A. 6-DOF Digital Simulation with Ideal 2-DOF Gimbaled Gyro Model

A detailed block diagram of the ideal gyro model is shown in Figure 4; of the dynamic gyro model in Figure 5. The gyro system equations of motion are presented for pitch/yaw channels as follows:

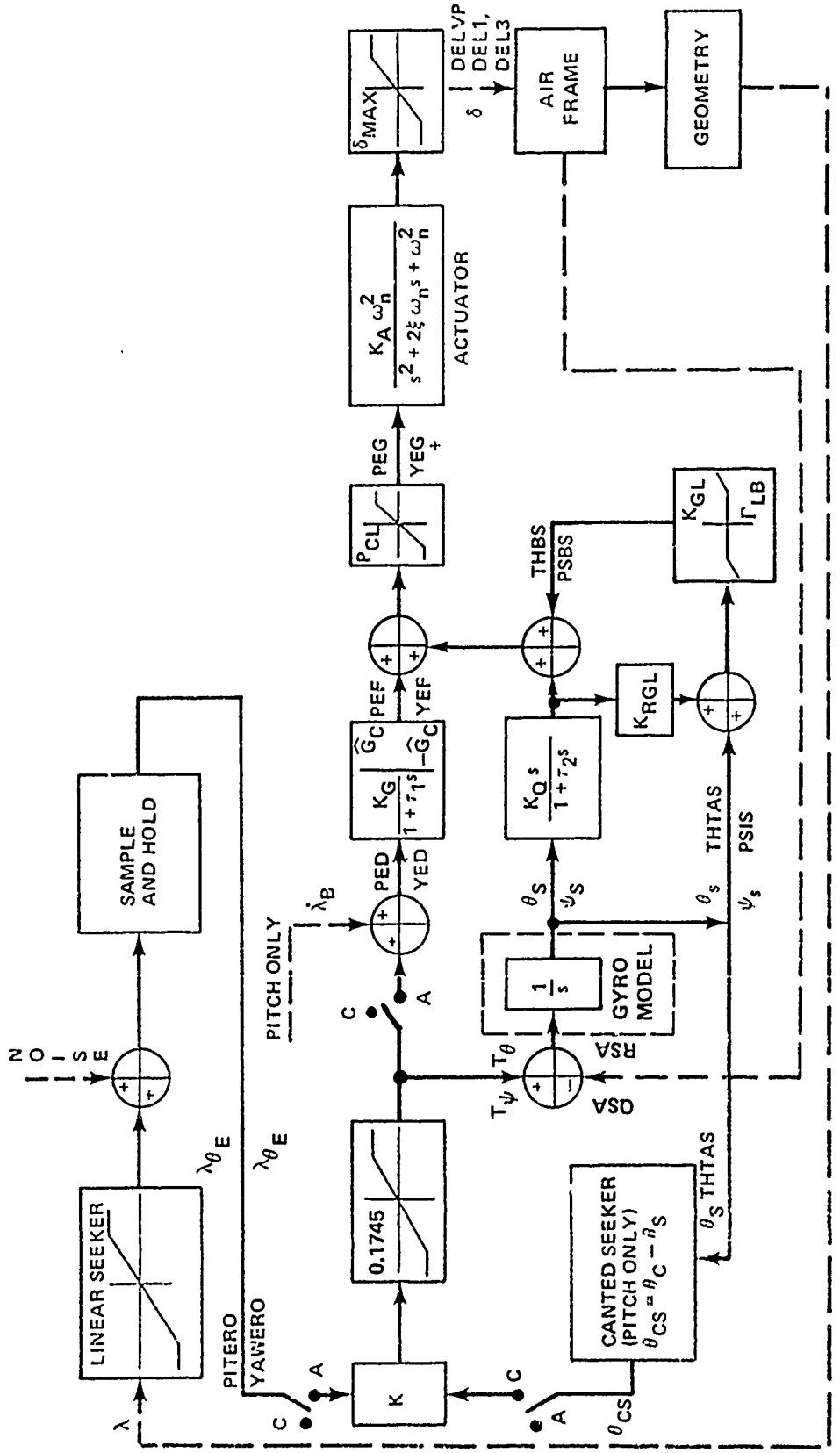


Figure 3. Guidance and control system block diagram pitch/yaw channels.

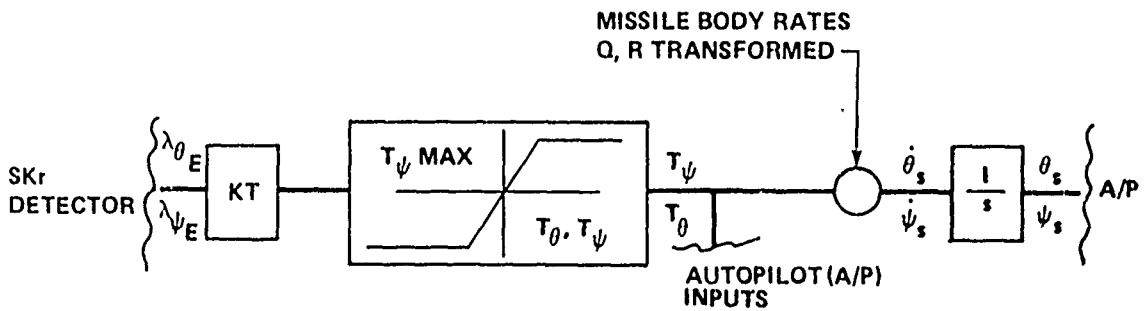


Figure 4. Ideal gyro model.

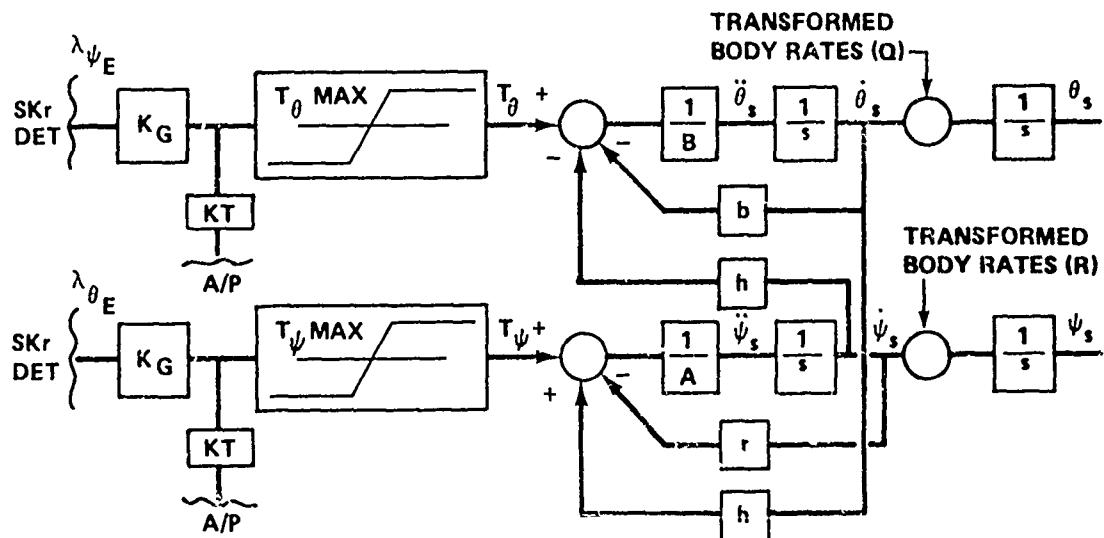


Figure 5. Gyro model in the 6-DOF simulation.

$$T_\psi = \dot{\theta}_s \cos \psi_s + QSA$$

$$T_\theta = \dot{\psi}_s + RSA \quad (49)$$

where QSA and RSA are transformed of missile body rates, Q, R; respectively, and $\dot{\theta}_s \cos \psi_s$ and $\dot{\psi}_s$ are M_z and M_y , respectively, as taken from Equation (9). Table 1 gives the units, symbols, and names of the missile parameters used for all plots with respect to the time presented in this report. The 6-DOF digital trajectory simulation program and tabulated results are presented in Appendix A. Plots of

the missile parameters are given in Figures 6 through 55. Figures 6 through 14 represent the results of the missile (translational and angular velocities) and body Euler angles. Figures 15 through 20 show the missile position and missile to target displacements. Figures 21 through 35 represent the autopilot and actuator parameters during flight. Figures 36 through 39 show the seeker input-output values in flight. Gyro parameters are given in Figures 40 through 55. Results indicated that when an ideal gyro is utilized, the missile to target RSS accuracy is 0.215 ft at impact for a 4-km (13,120-ft) target in 14.922 sec. X, Y, Z missile error components at impact are 0, -0.0183, and -0.2, respectively. The signs on the error components mean the missile hit to the left and above the target.

B. Dynamic (Realistic) 2-DOF Gimballed Gyro

In order to obtain a more realistic assessment of a 2-DOF gimballed gyro performance, efforts were made to model the dynamics of the gyro more accurately. The equations of this model are given in Section III.B.

When considering Equation (48) for the 6-DOF digital simulation, the signs on the precession rates ($\dot{h}\theta$, $\dot{h}\psi$) will change because of different coordinate systems, i.e., a positive T_ψ will give a negative $\dot{h}\theta$ precession rate and positive T_θ will give a positive $\dot{h}\psi$ precession rate.

Thus,

$$A\ddot{\psi} + r\dot{\psi} - h\dot{\theta} = T_\psi$$

$$B\ddot{\theta} + b\dot{\theta} + h\dot{\psi} = T_\theta$$

where

A and B = moments of inertia

r, b = gimbal bearing friction

h = angular momentum

T_ψ , T_θ = moments or torques

The preceding typical parameter values of this gyro, which has to exhibit a 10-deg/sec tracking rate and 160-Hz nutation frequency, is given in Table 2.

TABLE 1. PROGRAM VARIABLES AND DEFINITIONS

| | | |
|-------|----------|--|
| Time | | Time of missile trajectory (sec) |
| U | | Missile velocity in body coordinate system (BCS) (X-comp) (ft/sec) |
| V | | Missile velocity in BCS (Y-comp) (ft/sec) |
| W | | Missile velocity in BCS (Z-comp) (ft/sec) |
| P | | Angular velocity of missile (about X-axis, roll rate) (rad/sec) |
| Q | | Angular velocity of missile (about Y-axis, pitch rate) (rad/sec) |
| R | | Angular velocity of missile (about Z-axis, yaw rate) (rad/sec) |
| PHI | ϕ | Euler angle transforming earth coordinate system (ECS) to BCS (rad) |
| THTA | θ | Euler angle transforming ECS to BCS (rad) |
| PSI | ψ | Euler angle transforming ECS to BCS (rad) |
| X | | Position of missile in ECS (X-component) (ft) |
| Y | | Position of missile in ECS (Y-component) (ft) |
| Z | | Position of missile in ECS (Z-component) (ft) |
| DELXS | | Missile to target displacement in seeker coordinate system (SCS) (X-direction) (ft) |
| DELYS | | Missile to target displacement in SCS (Y-direction) (ft) |
| DELZS | | Missile to target displacement in SCS (Z-direction) (ft) |
| THRBS | | Output of the differentiator (rate damping) of pitch autopilot (A/P) (rad) |
| PSRBS | | Output of the differentiator (rate damping) of yaw A/P (rad) |
| THBS | | Output of the dead band zone limiter pitch A/P (rad) |
| PSBS | | Output of the dead band zone limiter pitch A/P (rad) |
| PED | | Input to guidance filter (pitch plane) (rad/sec) |
| YED | | Input to guidance filter (yaw plane) (rad/sec) |
| PEF | | Output of guidance filter (pitch plane) (rad/sec) |
| YEF | | Output of guidance filter (yaw plane) (rad/sec) |

TABLE 1. (CONCLUDED)

| | | |
|--------|-------------------|---|
| PEG | | Output of pitch A/P (rad) |
| YEG | | Output of yaw A/P (rad) |
| PHIG | | Input to shaping filter of roll A/P |
| REG | | Output of roll A/P (rad) |
| DELVP | | Equivalent vane deflection (pitch plane) (rad) |
| DELL | | Deflection of Vane 1 (rad) |
| DEL3 | | Deflection of Vane 3 (rad) |
| PITERR | | Seeker input - LOS error in pitch plane (rad) |
| PITERO | | Seeker output - LOS error in pitch plane (rad) |
| YAWERR | | Seeker input - LOS error in yaw plane (rad) |
| YAWERO | | Seeker output - LOS error (rad) |
| DTHTAS | $\dot{\theta}_s$ | Time derivative of THTAS (rad/sec) |
| THTAS | θ_s | THETA angle of gyro seeker (rad) - pitch angle between the body and seeker axis |
| DPSIS | $\dot{\psi}_s$ | Time derivative of PSIS (rad/sec) |
| PSIS | ψ_s | PSI angle of gyro seeker (rad) - yaw angle between the body and seeker axis |
| OMEGZ | | Gyro torque input from seeker (rad/sec) |
| OMEGY | | Gyro torque input from seeker (rad/sec) |
| QSA | | Transformation of P, Q, R into the SCS for gyro (pitch plane) |
| RSA | | Transformation of P, Q, R into the SCS for gyro (yaw plane) |
| DTHASD | $\ddot{\theta}_s$ | Time derivative of THASD [(rad/sec)/sec] |
| THASD | $\dot{\theta}_s$ | State variable - time derivative of THATS (rad/sec) |
| DPS1SD | $\ddot{\psi}_s$ | Time derivative of PSISD [(rad/sec)/sec] |
| PS1SD | $\dot{\psi}_s$ | State variable time derivation of PSIS (rad/sec) |

1. CSSL Program

The gyro model with parameters (Table 2) was incorporated into the CSSL simulation. The results, presented in Figure 56 with use of the typical CSSL program listing given in Appendix B, indicated the gyro behaved as expected with step inputs, that is, it exhibited the 10-deg/sec tracking rate and the 160-Hz nutation frequency. At this point, the gyro model was incorporated into the 6-DOF digital missile trajectory simulation. Section IV.B.2 gives the results of implementing the dynamic gyro model in the 6-DOF simulation.

2. 6-DOF Digital Simulation with Dynamic 2-DOF Gimballed Gyro Model

The idealized gyro model was replaced by the dynamic gyro model and successfully implemented in the 6-DOF simulation. A detailed block diagram of the dynamic gyro model is described in Figure 5 and the second order differential equations of motions for the gyro are shown for the pitch/yaw channels.

$$A\ddot{\psi}_s + r\dot{\psi}_s - h\dot{\theta}_s = T_\psi$$

$$B\ddot{\theta}_s + b\dot{\theta}_s + h\dot{\psi}_s = T_\theta$$

The 6-DOF digital trajectory simulation program and tabulated results are shown in Appendix B. Again plots of the missile parameters are presented in Figures 57 through 120. Figures 57 through 65 give the results of the missile translational and angular velocities and body Euler angles in flight. Plots of the missile position and target displacements are shown in Figures 66 through 73. Figures 74 through 88 give autopilots and actuator parameters plots. Plots of seeker input-output values are shown in Figures 89 through 92. Gyro parameters are given in Figures 93 through 120. The missile to target RSS accuracy is 1.68 ft at impact for the 4-km target in 14.936 sec. X, Y, Z missile error components at impact are 2.00, -0.154, and 0.1, respectively. The signs on the error components mean the missile hit in front, to the left, and above the target.

TABLE 2. DYNAMIC SEEKER - GYRO SPECIFICATIONS

| Description | Notation | Eng. Units | Simulation Units | |
|------------------------------------|---------------------------------|----------------------------|------------------------------|---------------------------------|
| | | | CSSL | 6-DOF |
| Pitch Inertia | B | 0.462 lb in. ² | 0.0032083 lb-ft ² | 0.00009972 slug ft ² |
| Yaw Inertia | A | 0.390 lb in. ² | 0.0027083 lb-ft ² | 0.00008414 slug ft ² |
| Spin Momentum | h,H | 17.7 in. oz-sec | 0.0921875 ft lb-sec | 0.0921875 ft lb-sec |
| Gimbal Axis Friction 1 per axis | r,b | 0.033 oz-in. | 0.00017192 lb-ft | 0.00017192 lb-ft |
| Moments or Torques | T _ψ , T _θ | 3.0 in.-oz 3.18 in.-oz* | 0.015625 ft-lb | 0.016562 ft-lb |

*An updated gyro specification.

C. Comparative Analyses

When considering the dynamic gyro model without the damping terms ($r\dot{\psi}$, $b\dot{\theta}$), the gyro equations of motion become

$$\begin{aligned} B\ddot{\theta} + h\dot{\psi} &= T_\theta \\ -h\dot{\theta} + A\ddot{\psi} &= T_\psi \end{aligned} \quad . \quad (50)$$

The Laplace transform is used for the equation of motion:

$$\begin{bmatrix} s^2 + \frac{h}{B}s \\ -\frac{h}{A}s + s^2 \end{bmatrix} \begin{bmatrix} \theta \\ \psi \end{bmatrix} = \begin{bmatrix} \frac{T_\theta(s)}{B} + s\theta(0^+) + \dot{\theta}(0^+) + \frac{h\psi}{B}(0^+) \\ \frac{T_\psi(s)}{A} - \frac{h}{A}\theta(0^+) + s\psi(0^+) + \dot{\psi}(0^+) \end{bmatrix} . \quad (51)$$

Therefore, the characteristic equation is given from the left-hand side of the preceding equation by

$$s^2 \left(s^2 + \frac{h^2}{AB} \right) = 0 \quad (52)$$

the roots of which are $s = 0, 0$ and $s = \pm jh\sqrt{AB}$. The zero roots give "constant" motion. The imaginary roots give an oscillation at frequency $\omega = h/\sqrt{AB}$. To obtain a magnitude of ω , the gimbals are massless and B , A are diametral moments of inertia of the rotor. They are equal to one-half its polar moment of inertia, $B = A = I_r/2$. Since $h = I_r n$ where n = rotor speed, then

$$\omega = \frac{I_r n}{\sqrt{\frac{I_r^2}{4}}} = 2n \quad . \quad (53)$$

Therefore, the oscillation frequency is twice the spin speed. However, because real gimbals are not massless, the real gyro has an oscillation frequency somewhat less than $2n$ as is true in the dynamic gyro model. From the preceding characteristic equation, the oscillatory motion is undamped. Therefore, the rate-dependent terms ($h\dot{\theta}$, $h\dot{\psi}$) act only as the gyroscopic coupling terms and do not produce energy dissipation for damping. Therefore, all damping occurs from the $r\dot{\psi}$ and $b\dot{\theta}$ terms.

Figures 93 through 100 and Figures 105 through 112 demonstrate the oscillatory frequency with damping and precession of the dynamic gyro. Figures 96 and 108 exhibit the 160-Hz nutation frequency of the gyro and 10-deg/sec tracking rate. The ideal gyro model reflects only the 1/s characteristics as seen in Figures 40 through 49.

The velocity and rotational components (V, W, Q, and R) of a missile in flight with the dynamic gyro model (given in Figures 58, 59, 61, and 62) show a definite increase and oscillatory effect with damping in the velocity components as compared to the ideal gyro. The body Euler angles θ and ψ reflect this motion. The autopilot parameters also show the influence of the dynamic gyro response. Actuator output to the vanes (DELVP, DEL1, and DEL3) also reflect the differences between the ideal and dynamic gyro models.

Impact accuracy of the missile to target when utilizing an ideal gyro model or a dynamic gyro model in a 6-DOF digital simulation is shown in Table 3.

TABLE 3. IMPACT ACCURACY

| | Time | X | Y Error | Z | RSS Miss Distance |
|--------------|--------|-------|----------|---------|-------------------------|
| Ideal Gyro | 14.922 | 13120 | -0.01832 | -4000.2 | 0.2146 |
| Dynamic Gyro | 14.936 | 13118 | -0.15455 | -4000.1 | 1.6799 |

NOTES: X indicates range of target at 13,120 (4 km).
 Y indicates crossrange error (minus left of target).
 Z indicates vertical error (launched at -4000 ft above sea level).

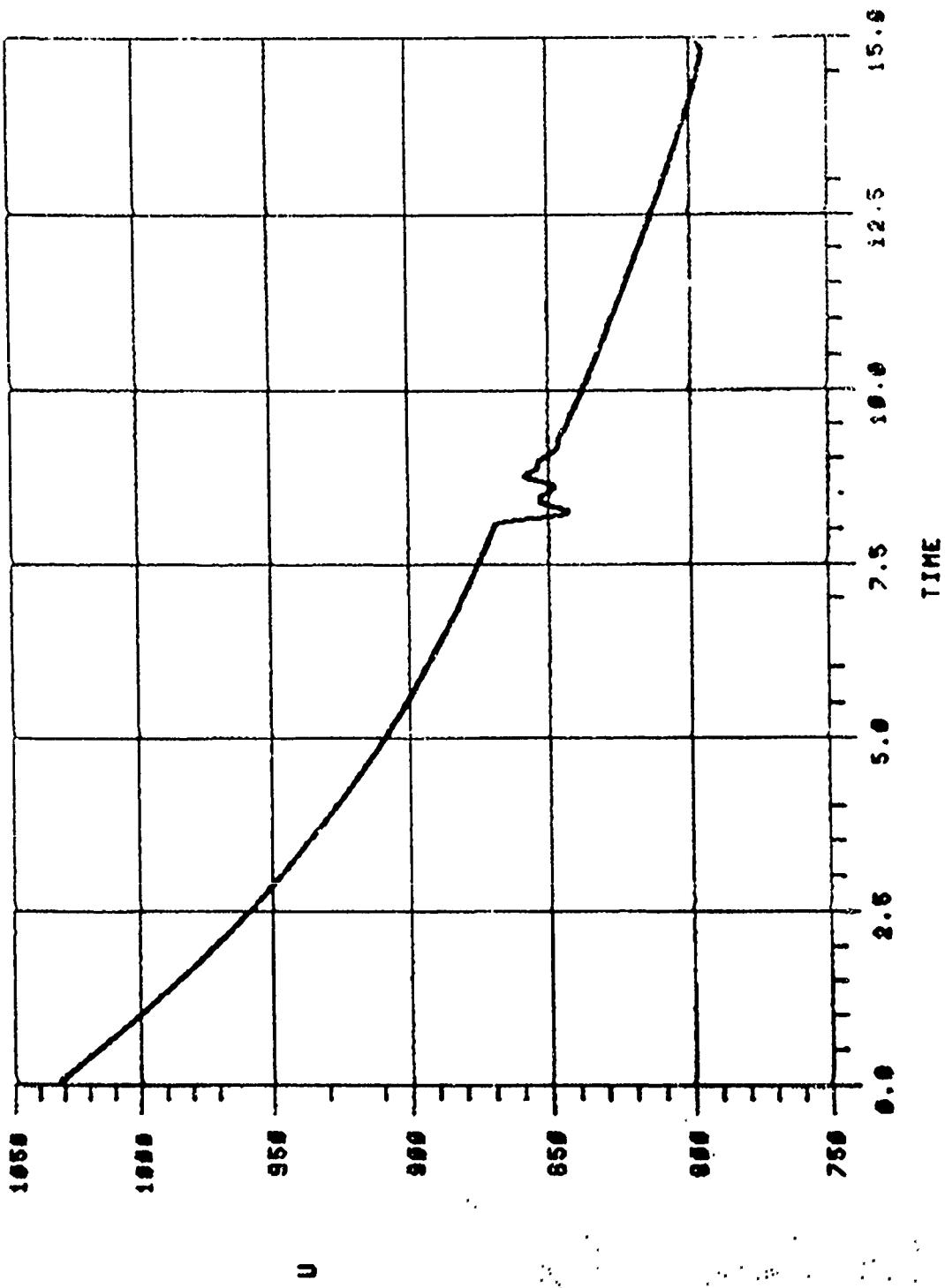
As can be seen in Table 3, the dynamic model will produce a better assessment of the missile accuracy at impact because a more realistic gyro model is used in the simulation.

The primary 6-DOF programming difference between the ideal and dynamic gyro models as seen in Appendices A and C, respectively, is in the subroutine EDSKRGYRO. This subroutine reflects the change in gyro models.

V. CONCLUSION

This report has demonstrated that a dynamic gyro model, when utilized in a 6-DOF digital missile trajectory simulation, will give a more realistic assessment of a seeker gyro than an ideal gyro model. Most 6-DOF digital simulations in the past have used primarily the 2-DOF ideal gyro model. No efforts were made to change the autopilot or seeker characteristic in this study to accommodate the dynamic model. Reasonable results were obtained without change. However, considerations should be given to the use of the 2-DOF dynamic model based on results of this report. More accurate autopilot design and seeker interface design would probably result in the use of the dynamic gyro model for digital simulations.

Figure 6.



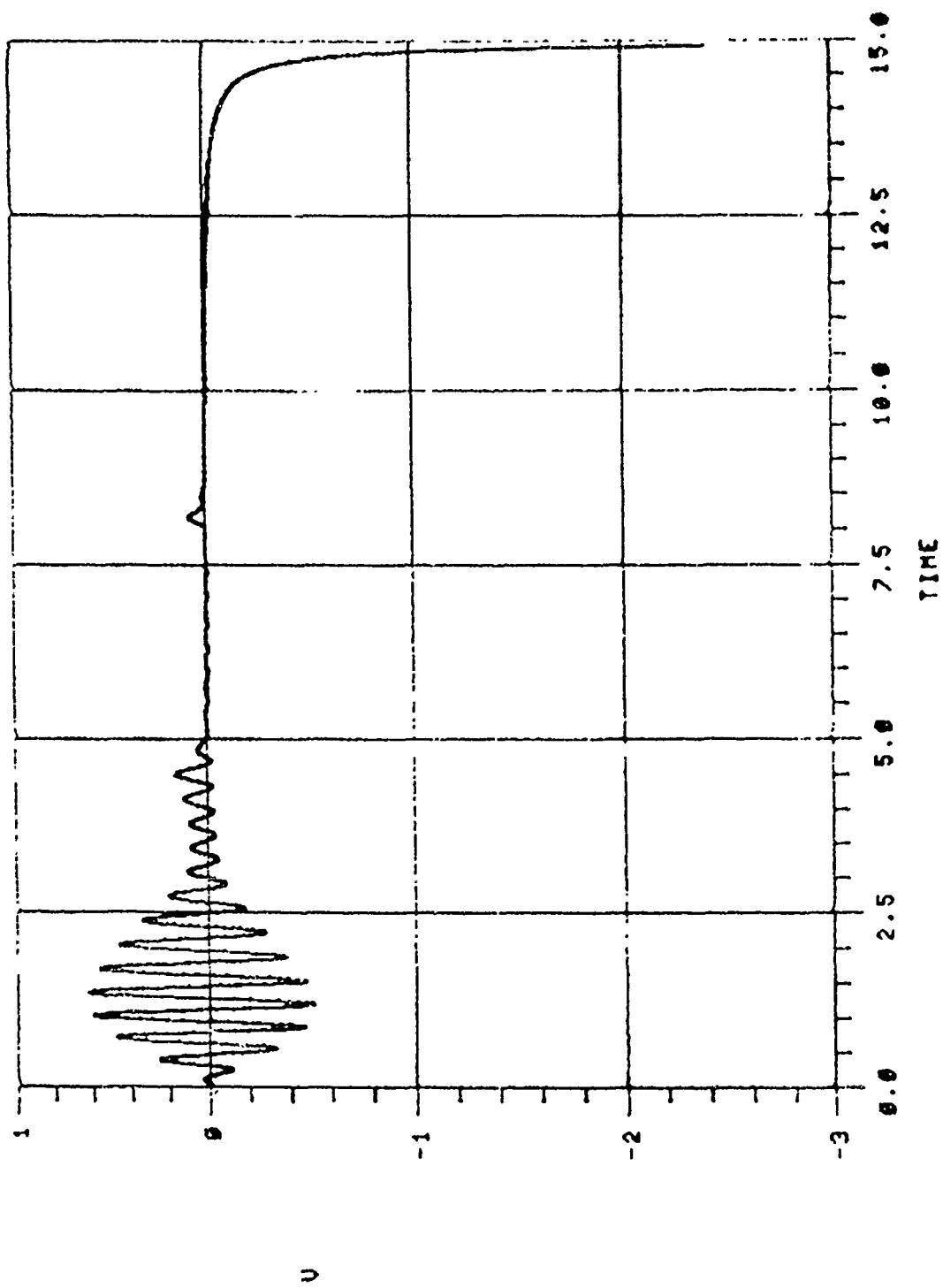


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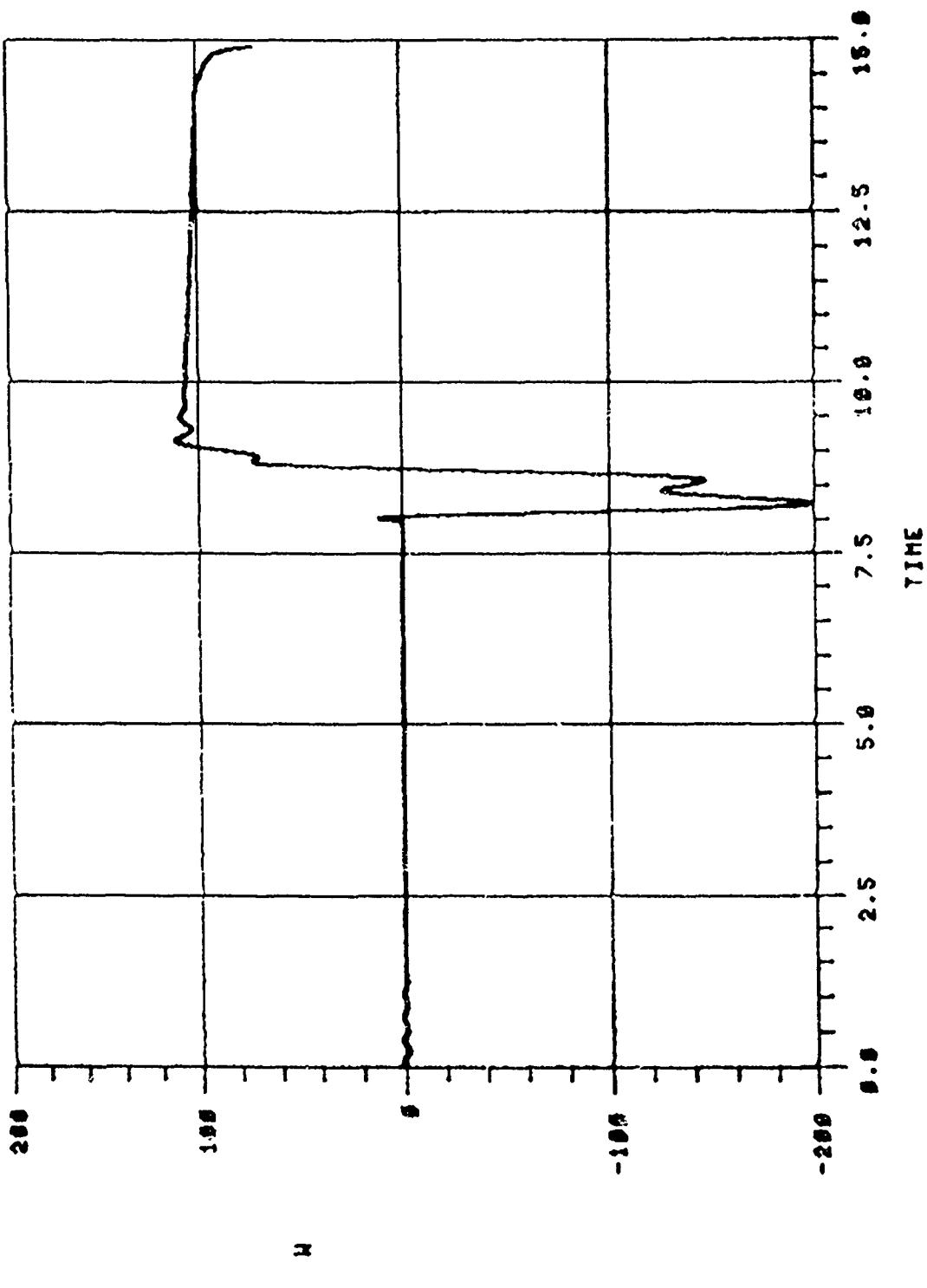


Figure 8.

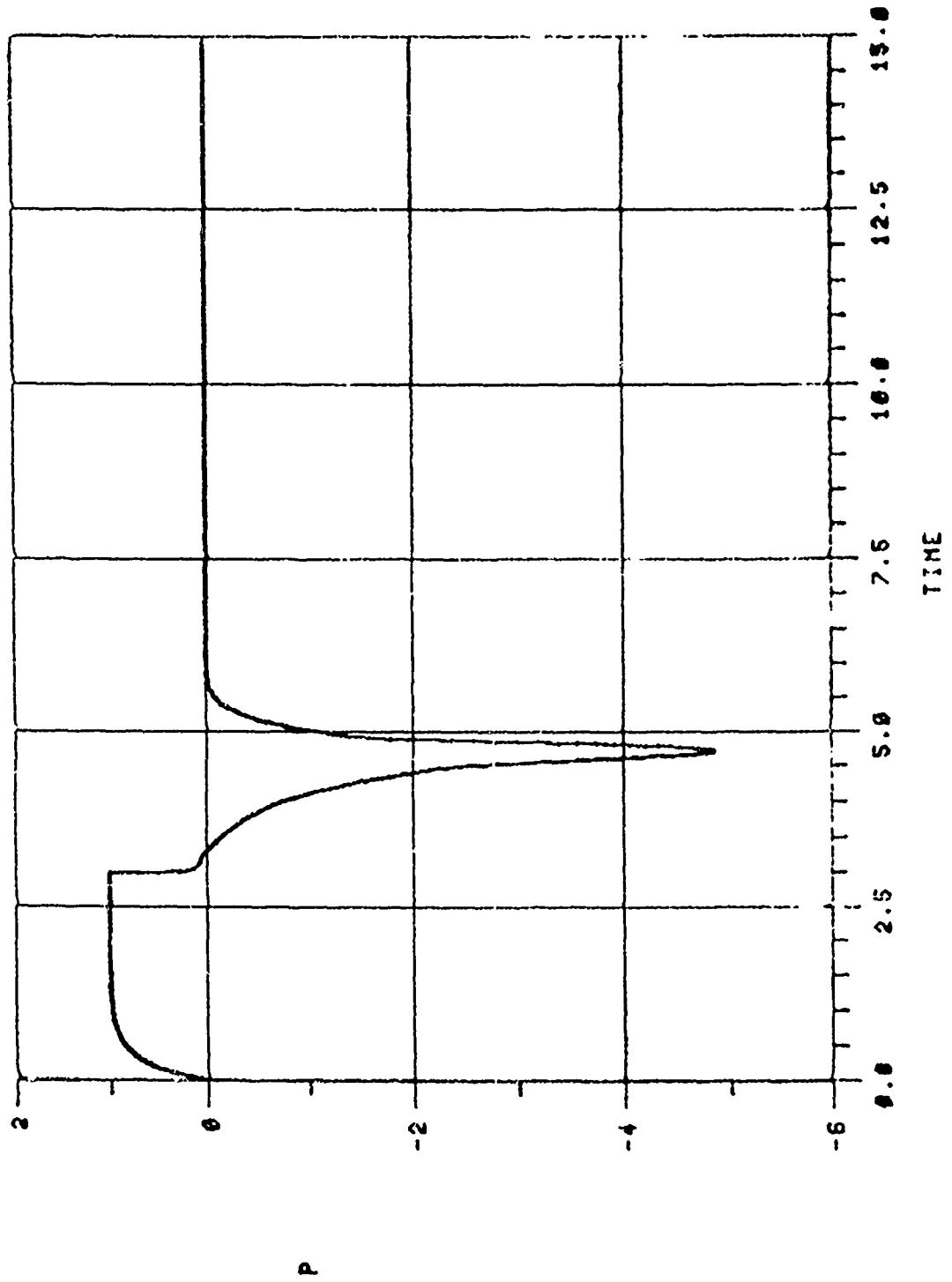


Figure 9.

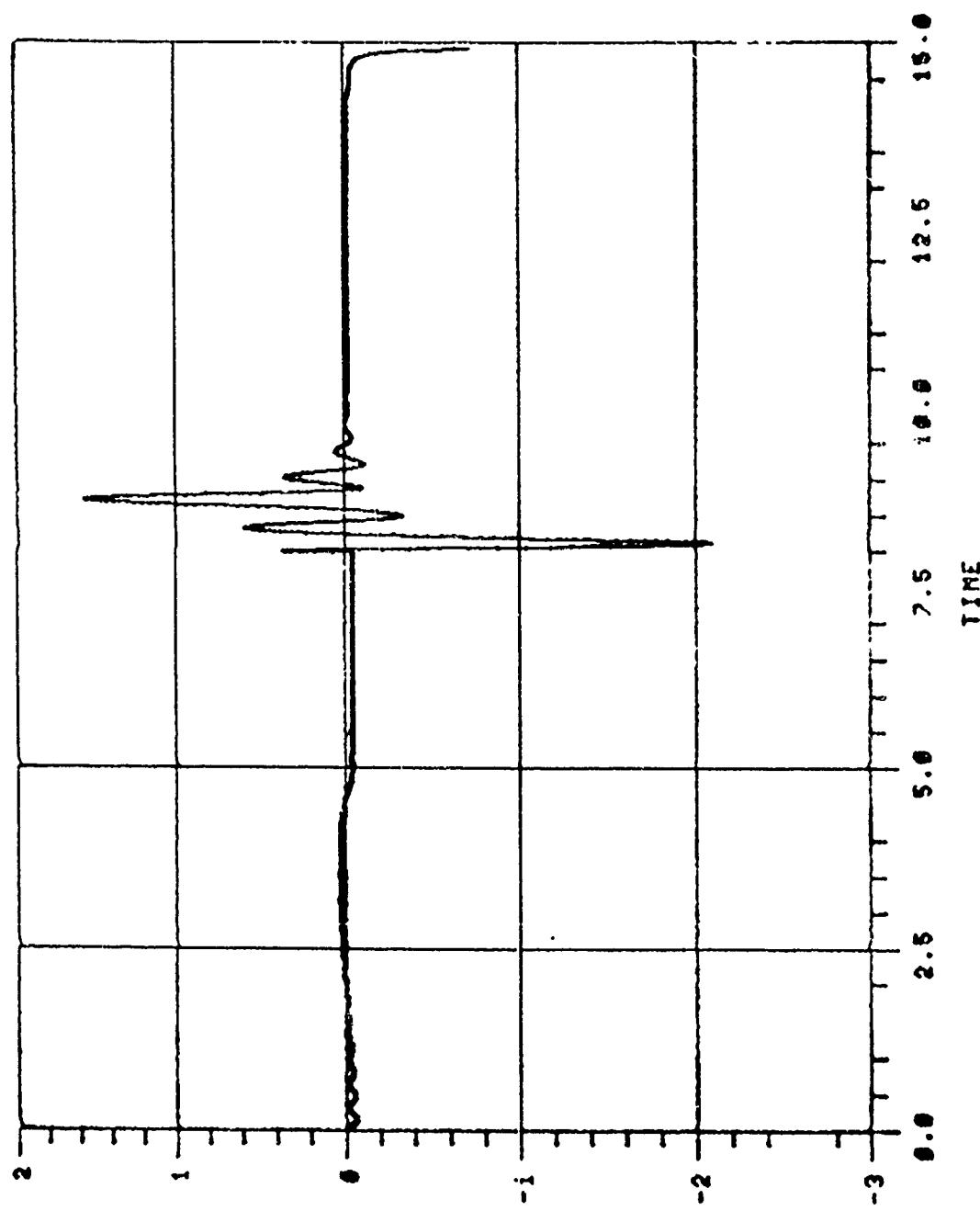


Figure 10.

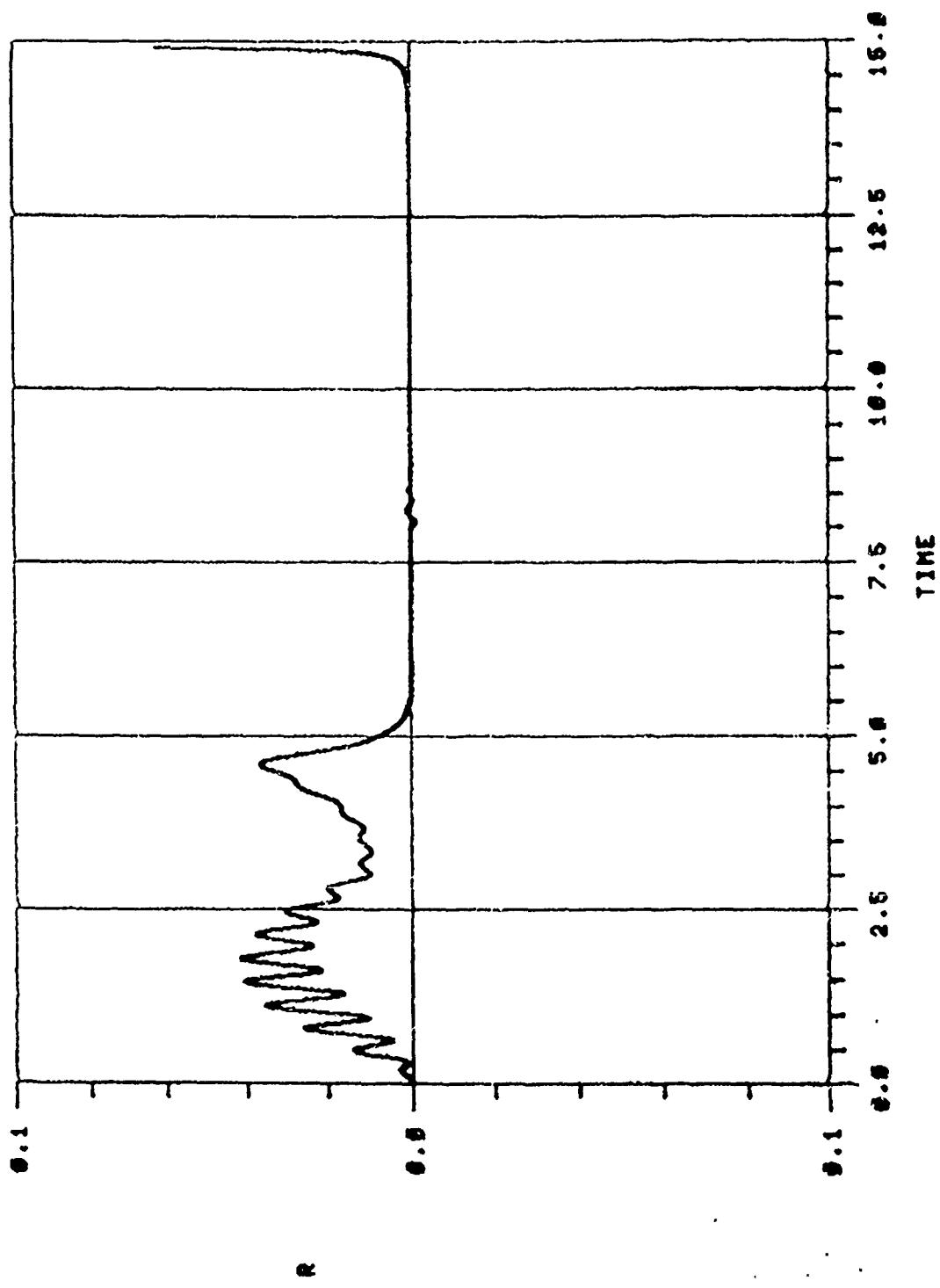


Figure 11.

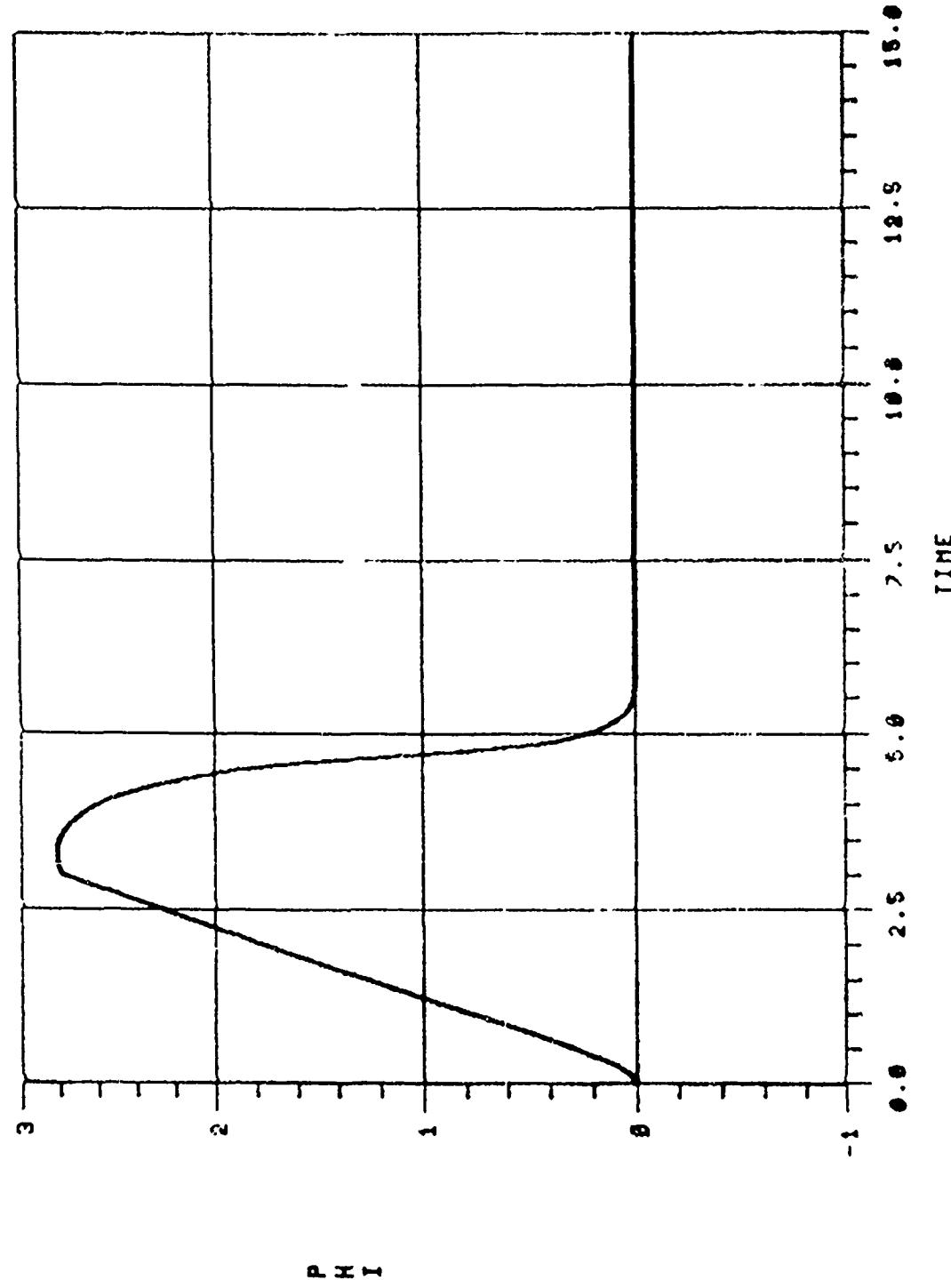


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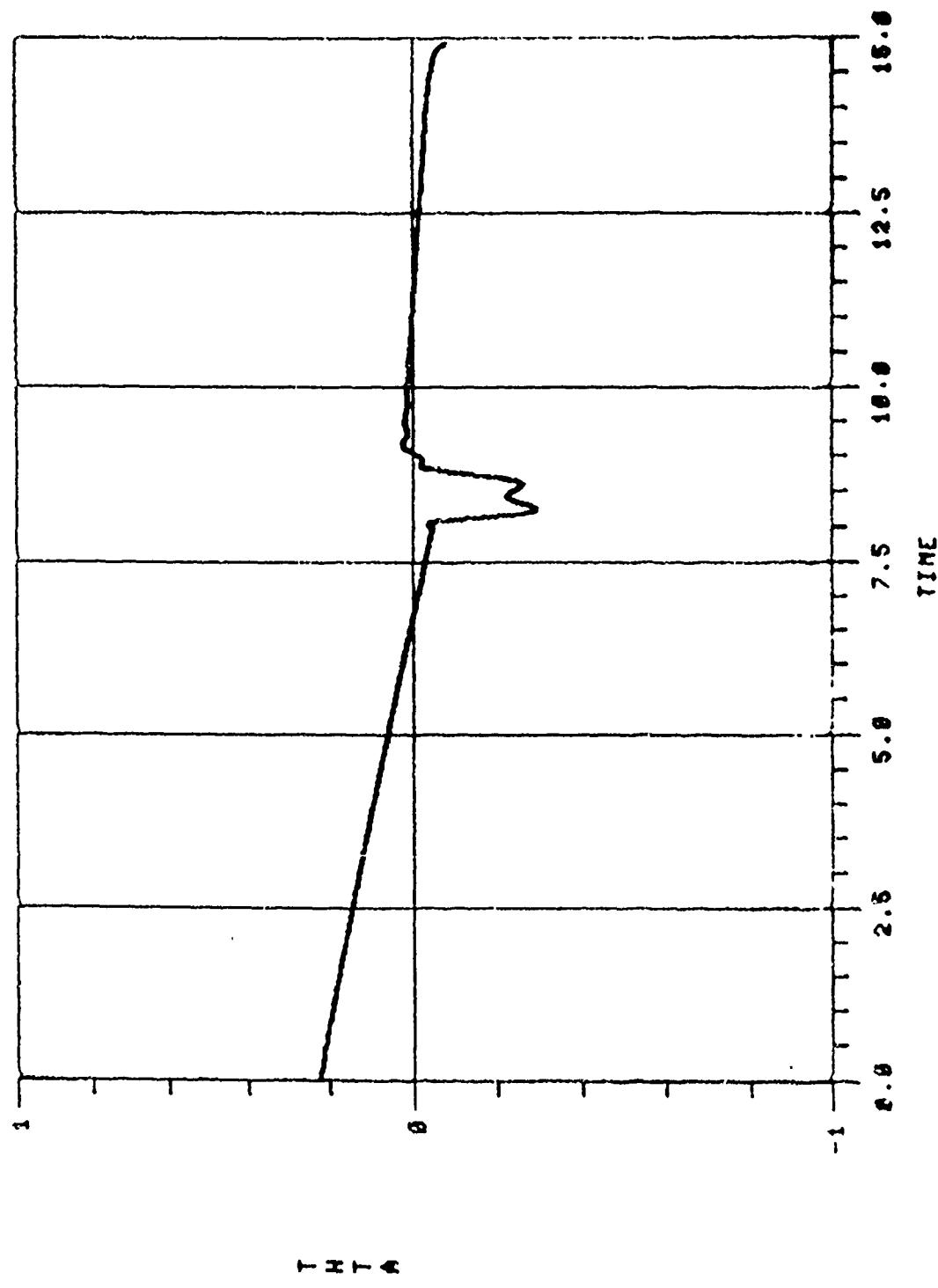


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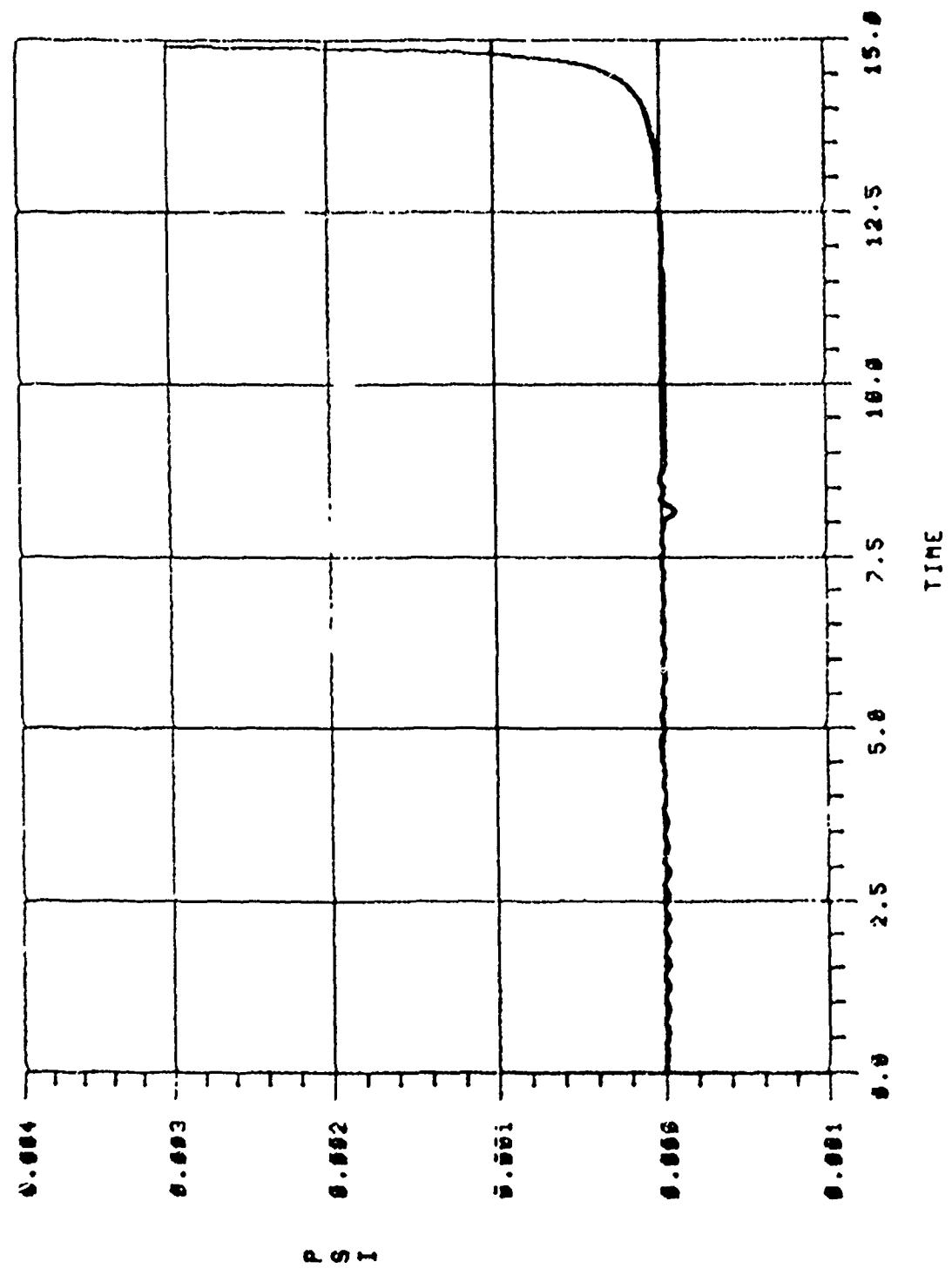


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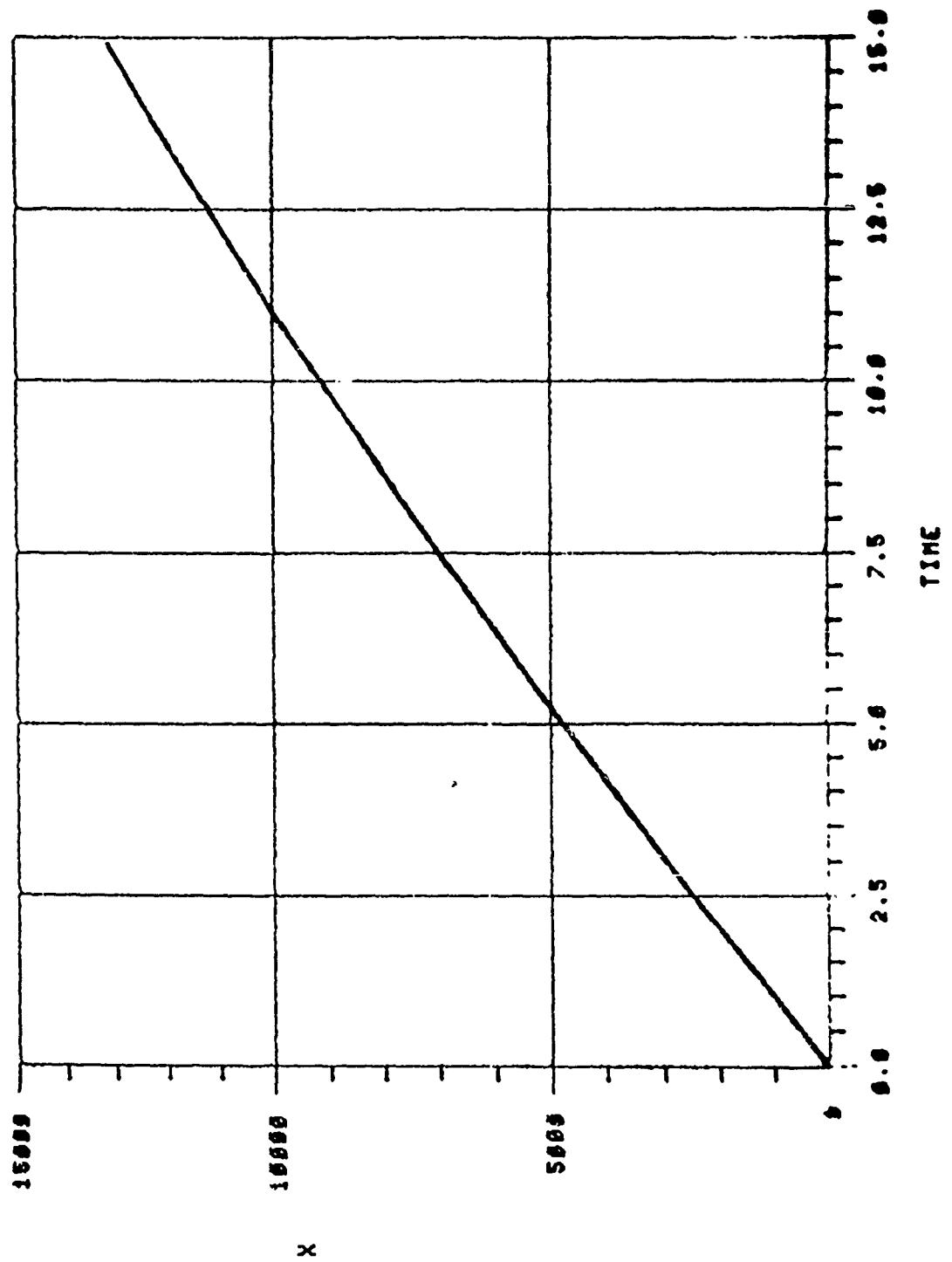


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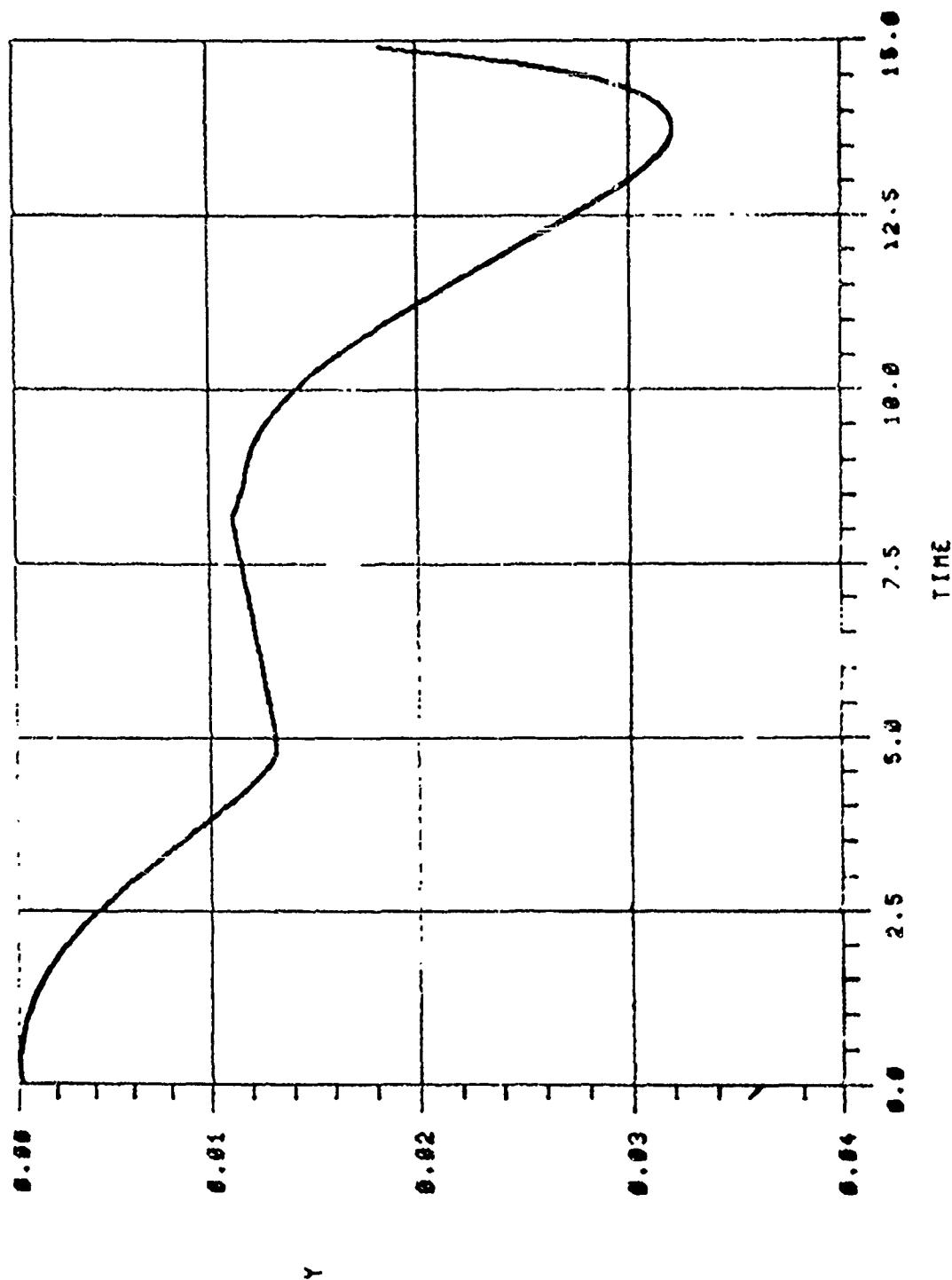


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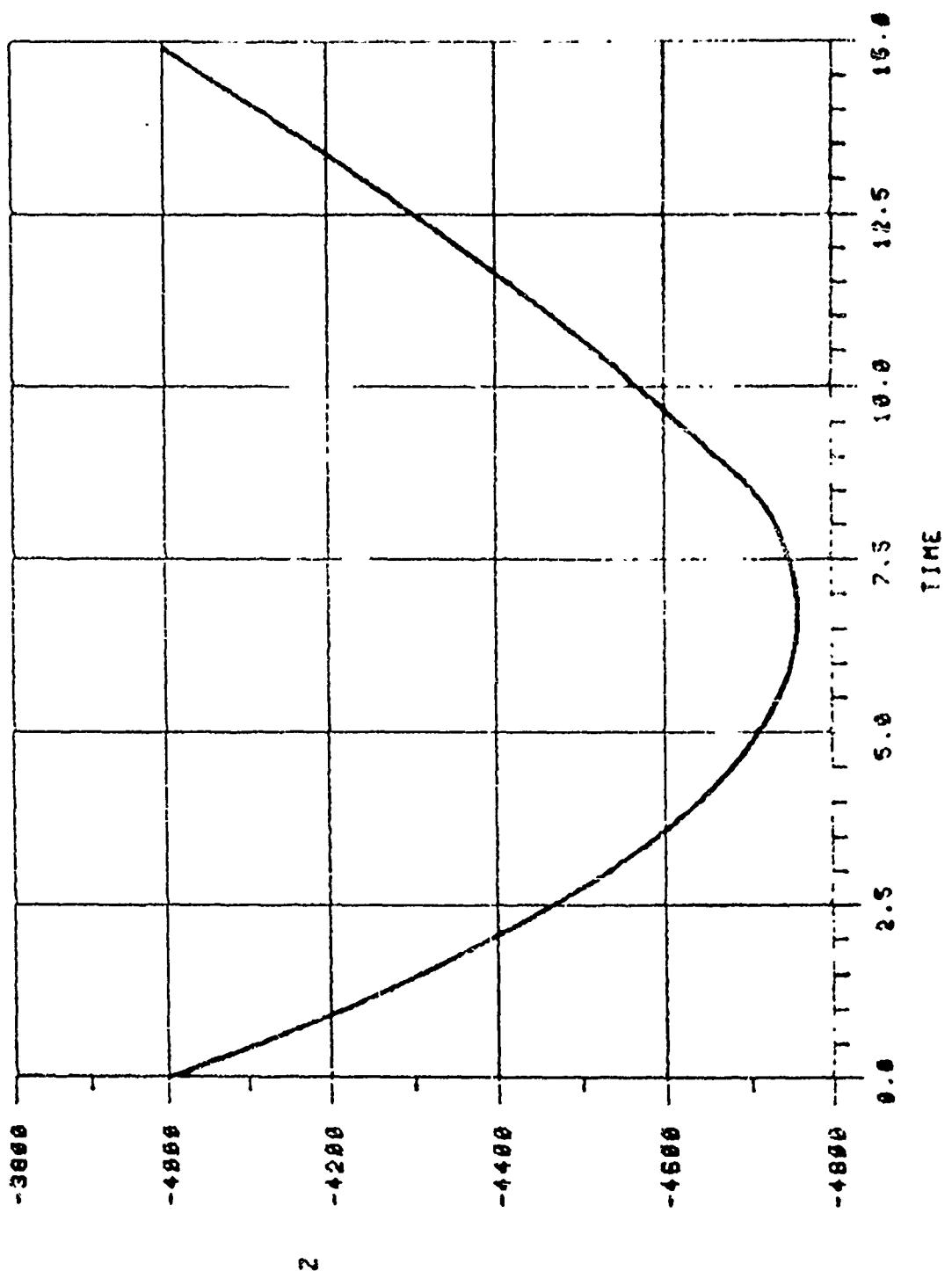


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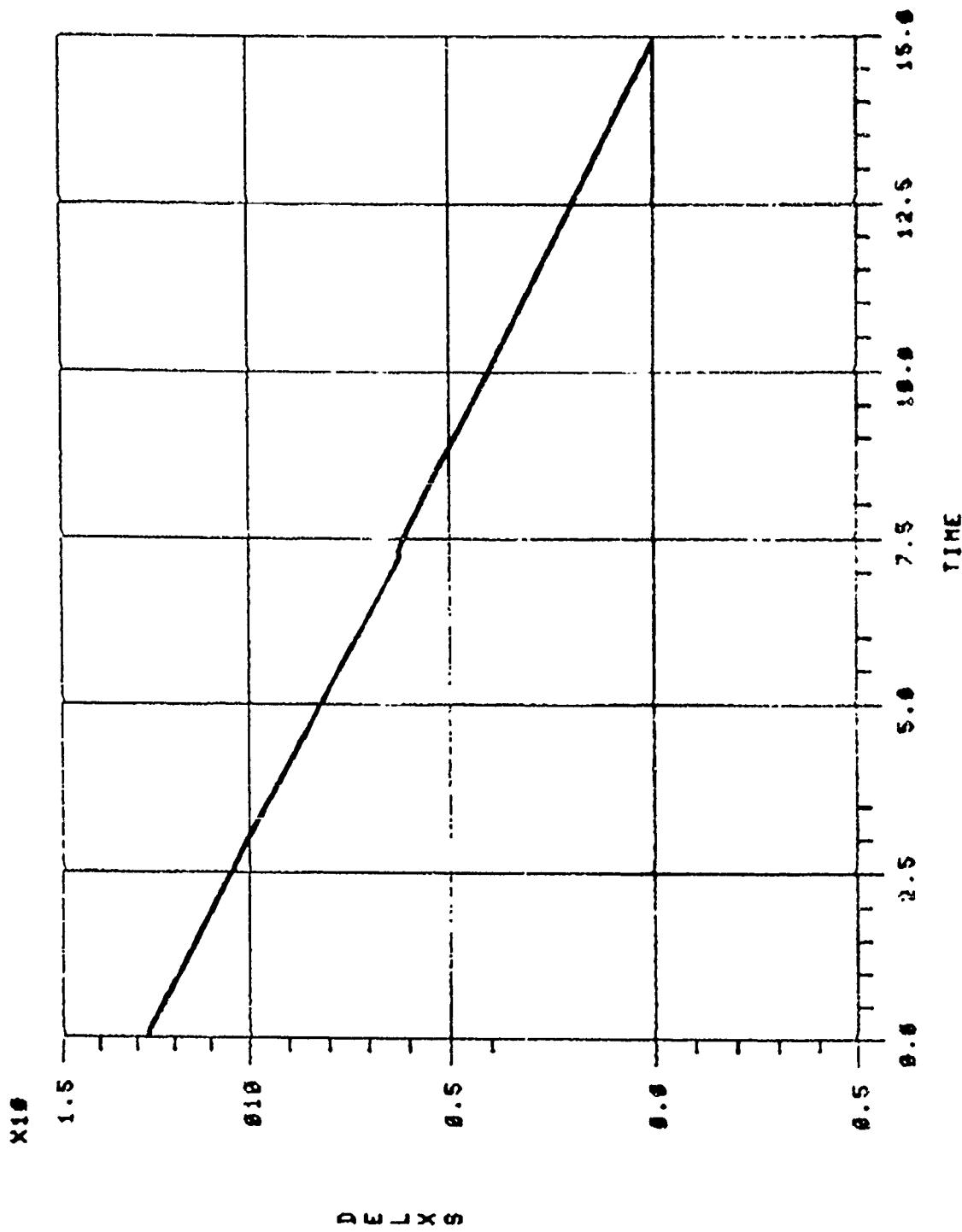


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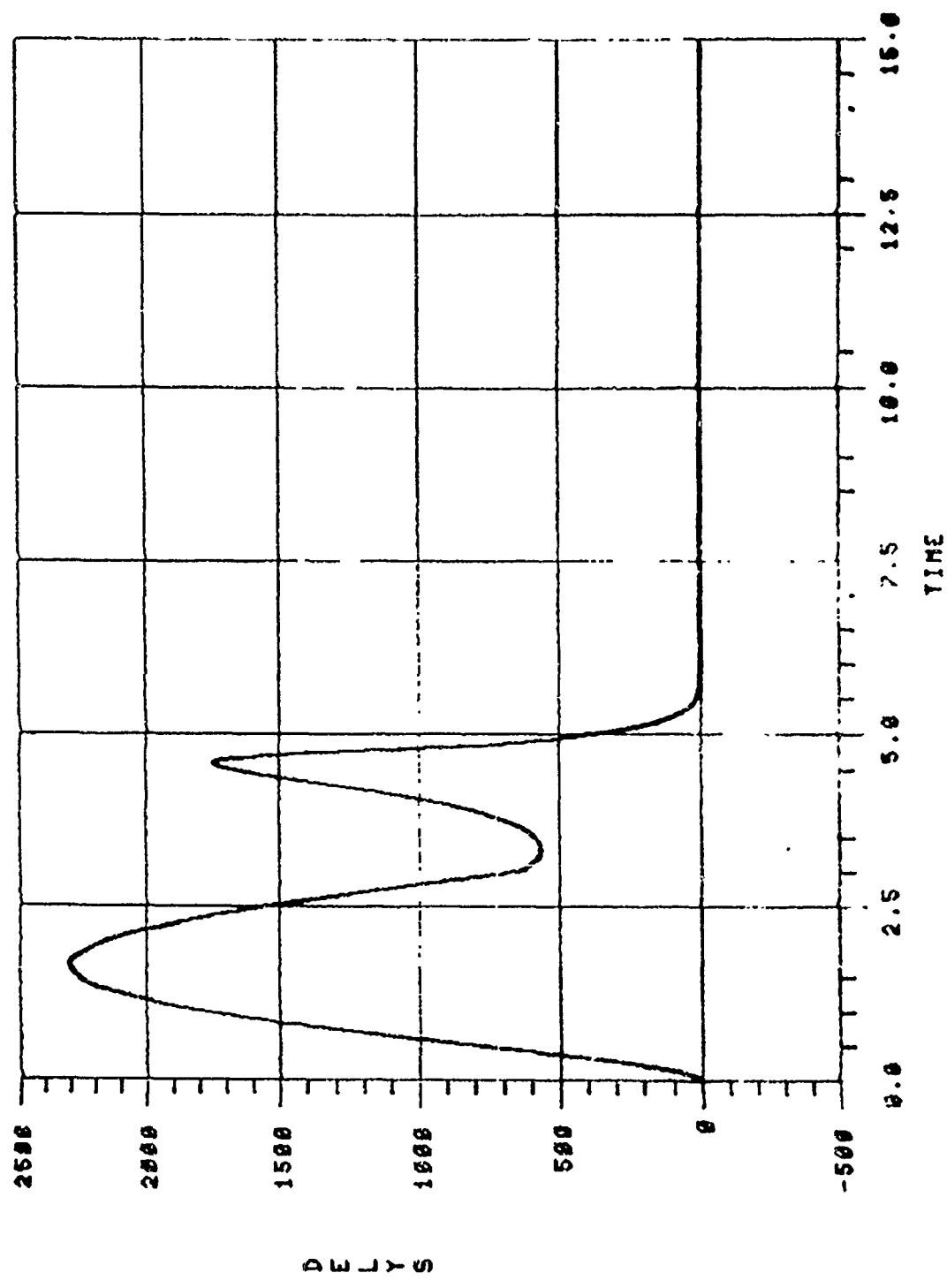


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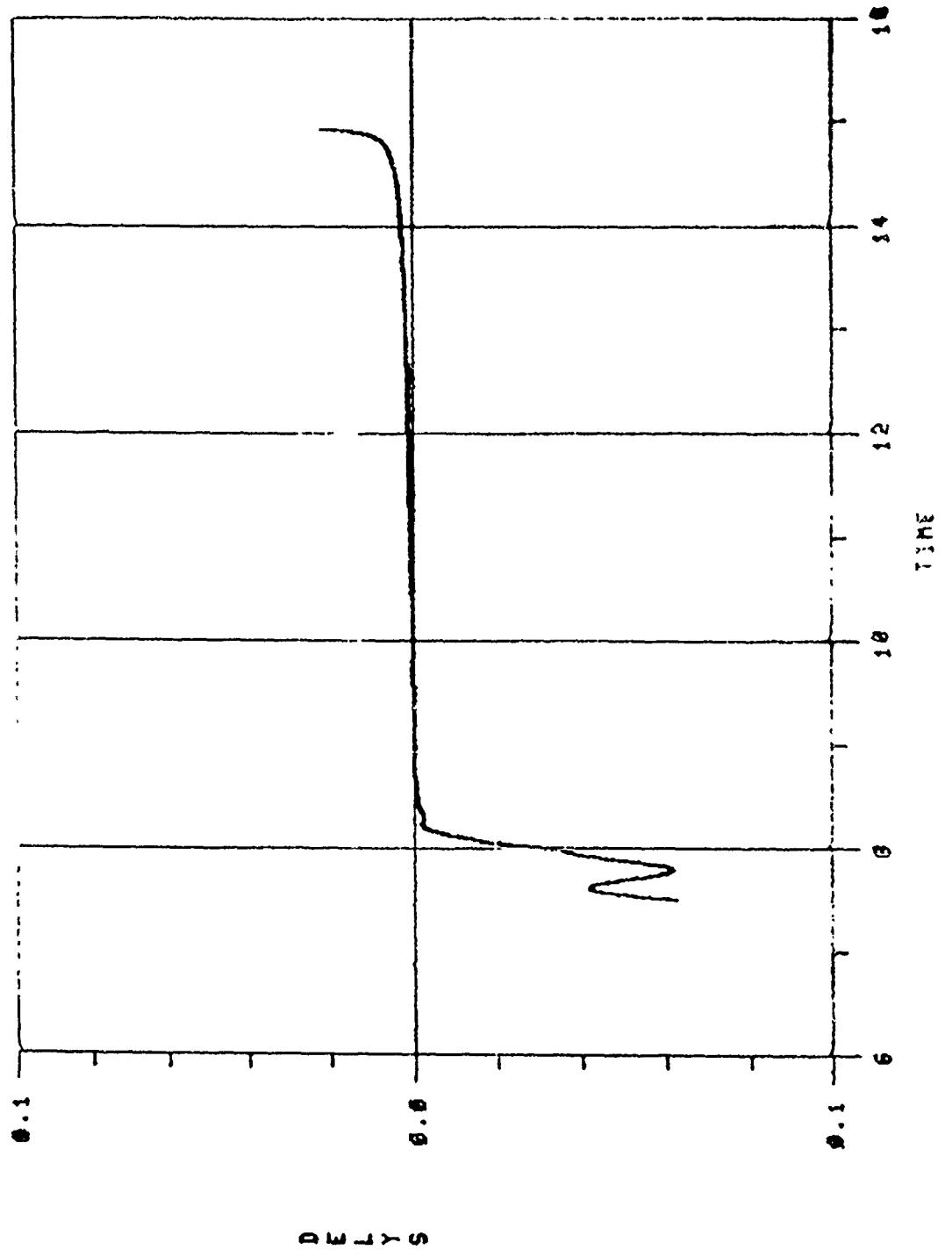


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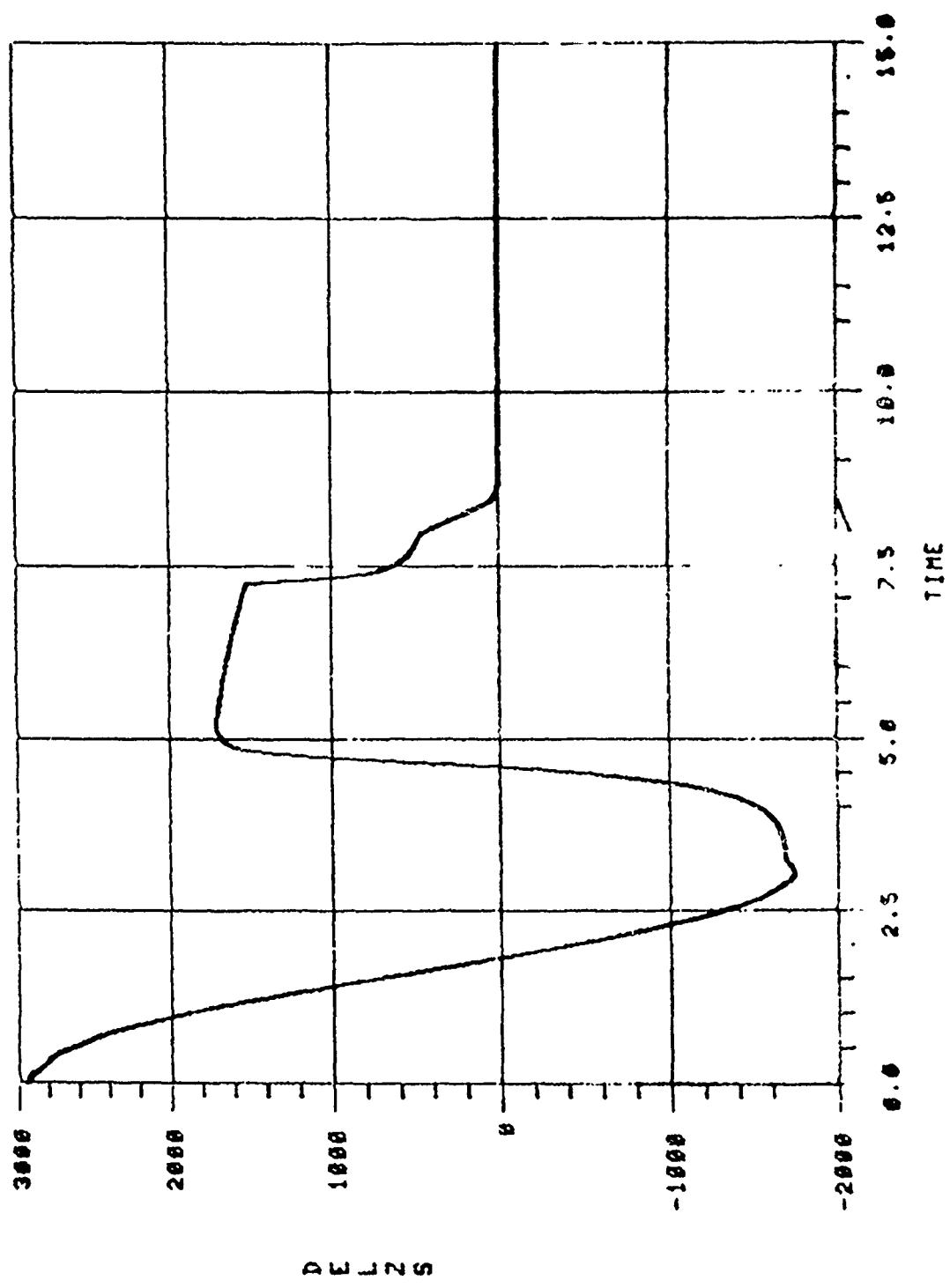


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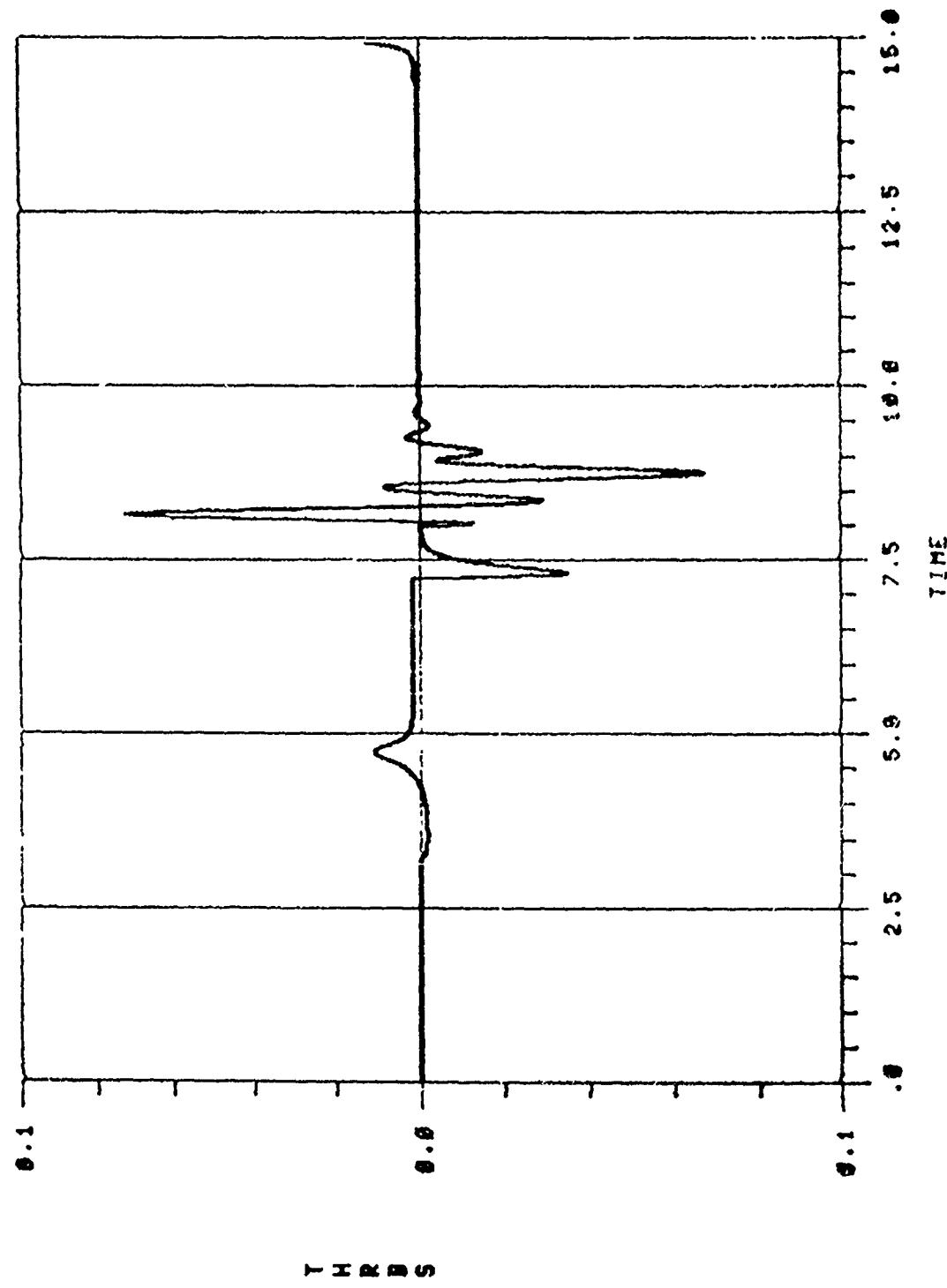
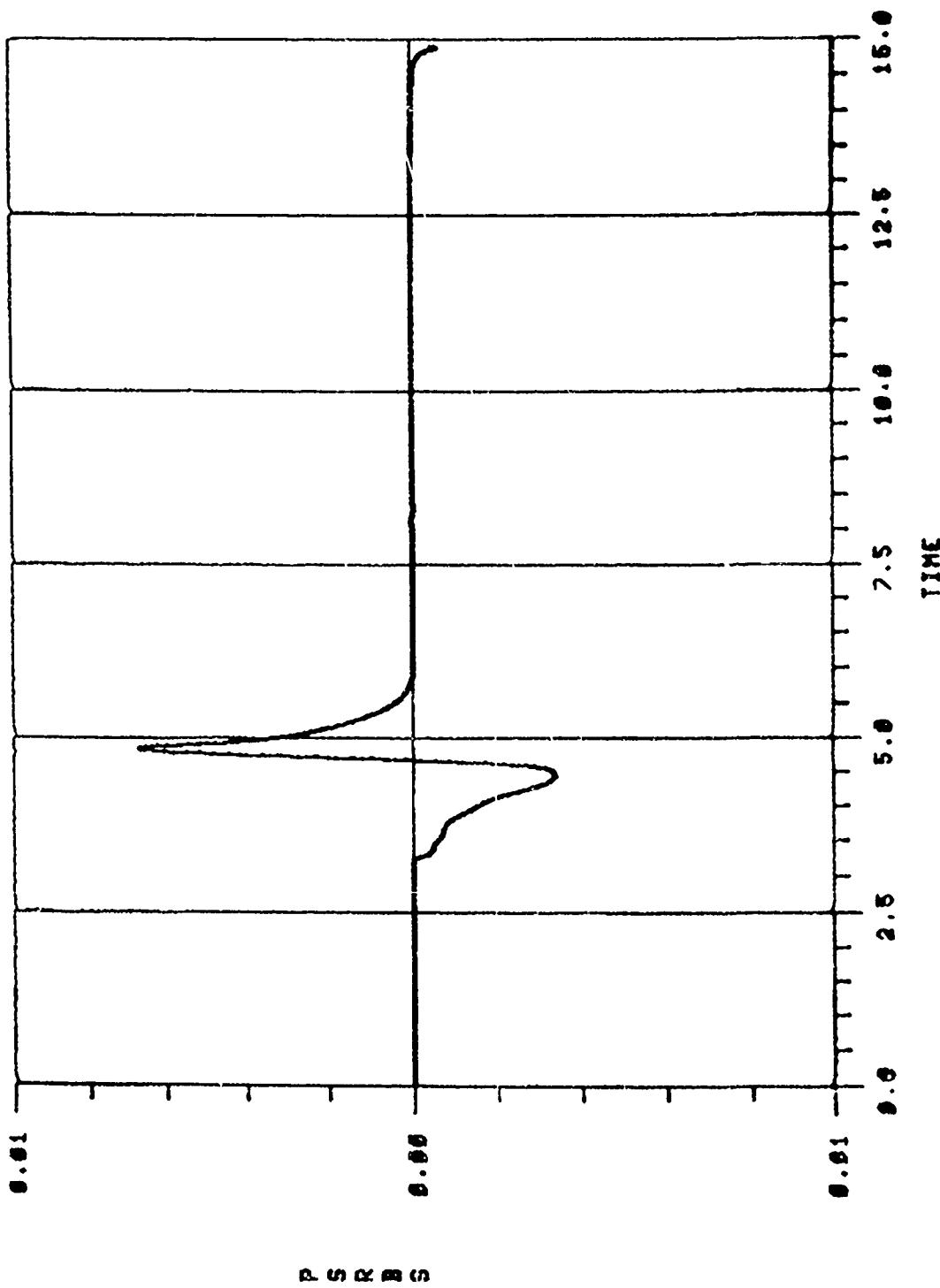


Figure 21.



D. S. K. M. G.

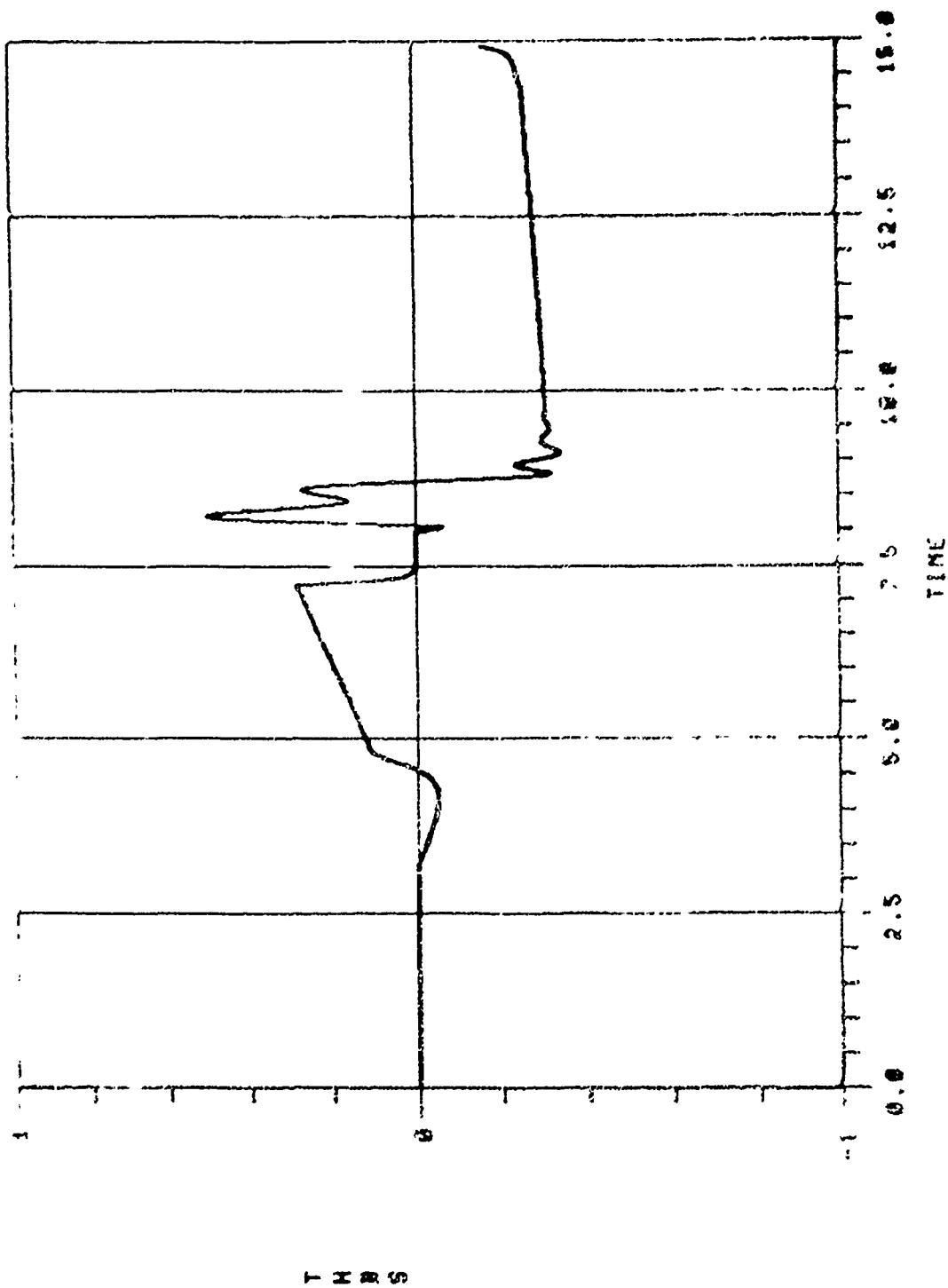


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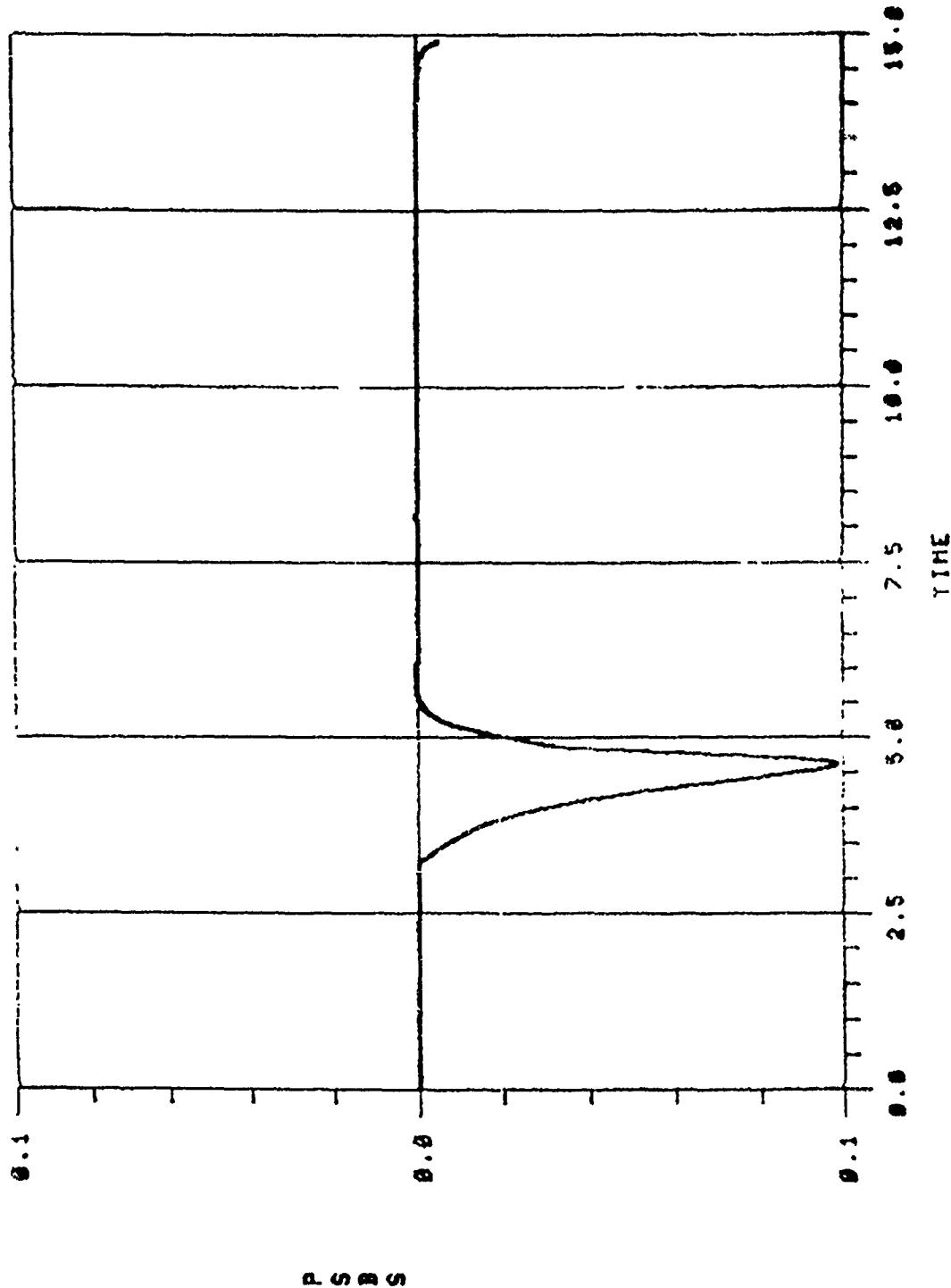


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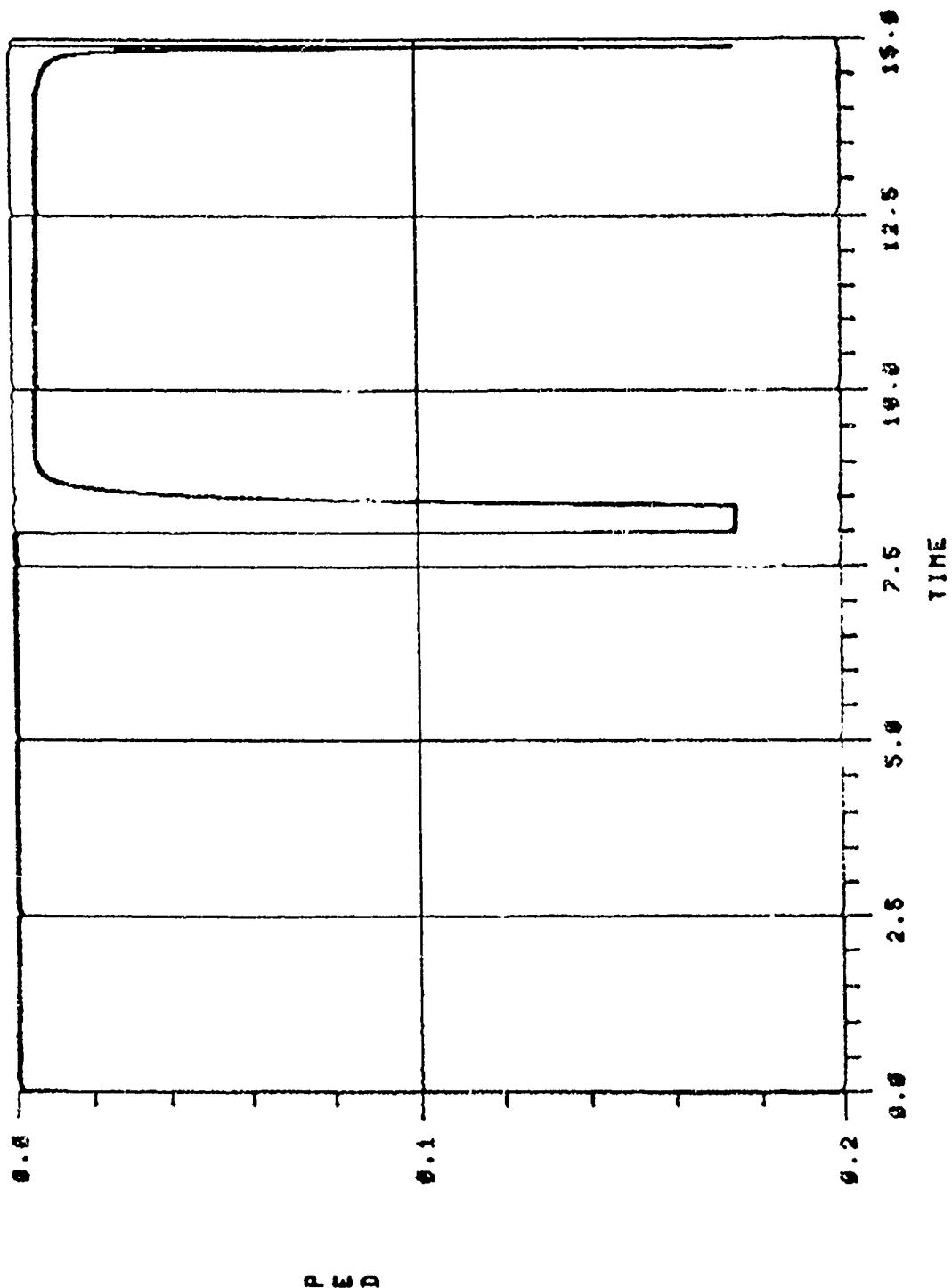


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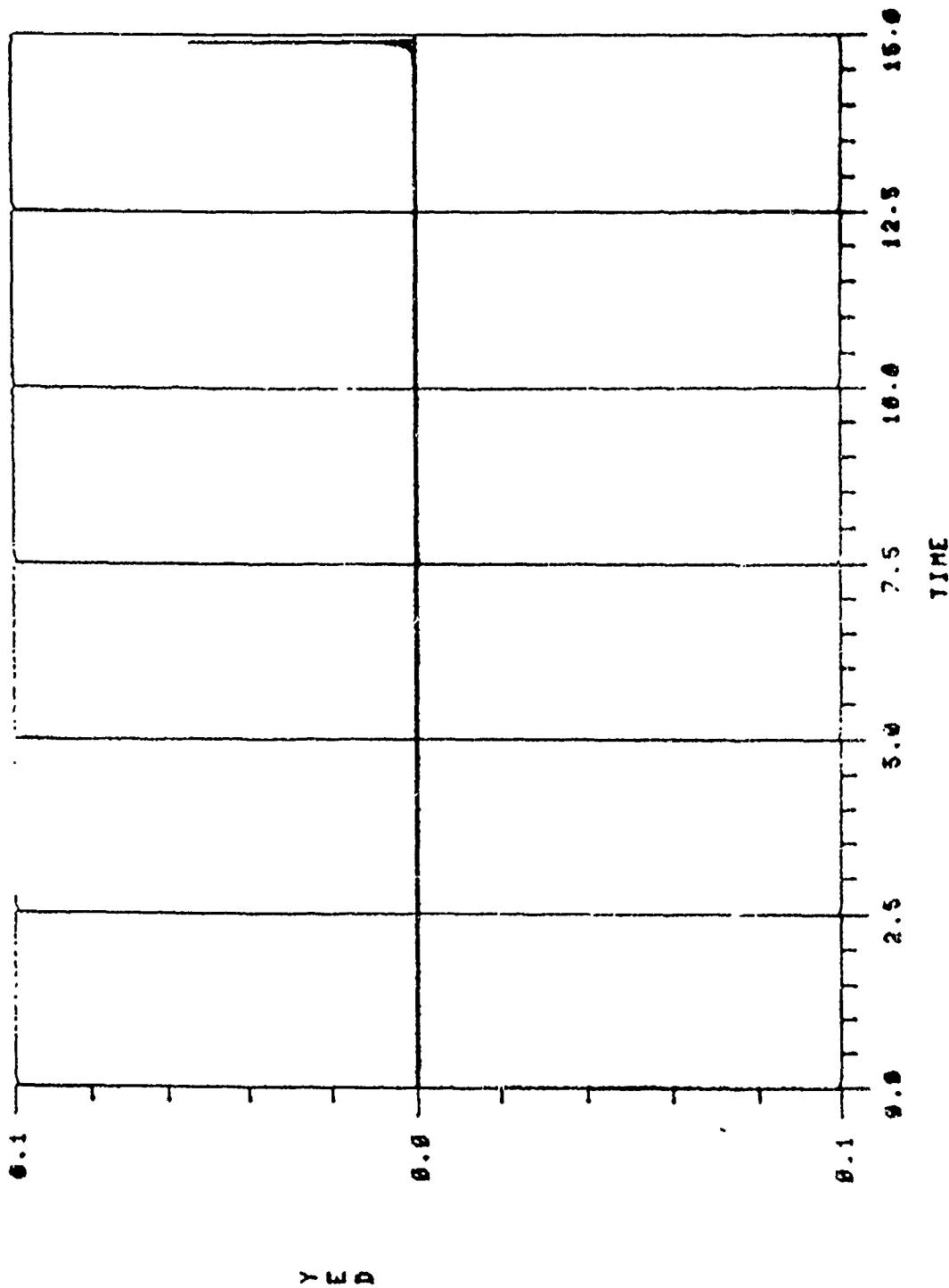


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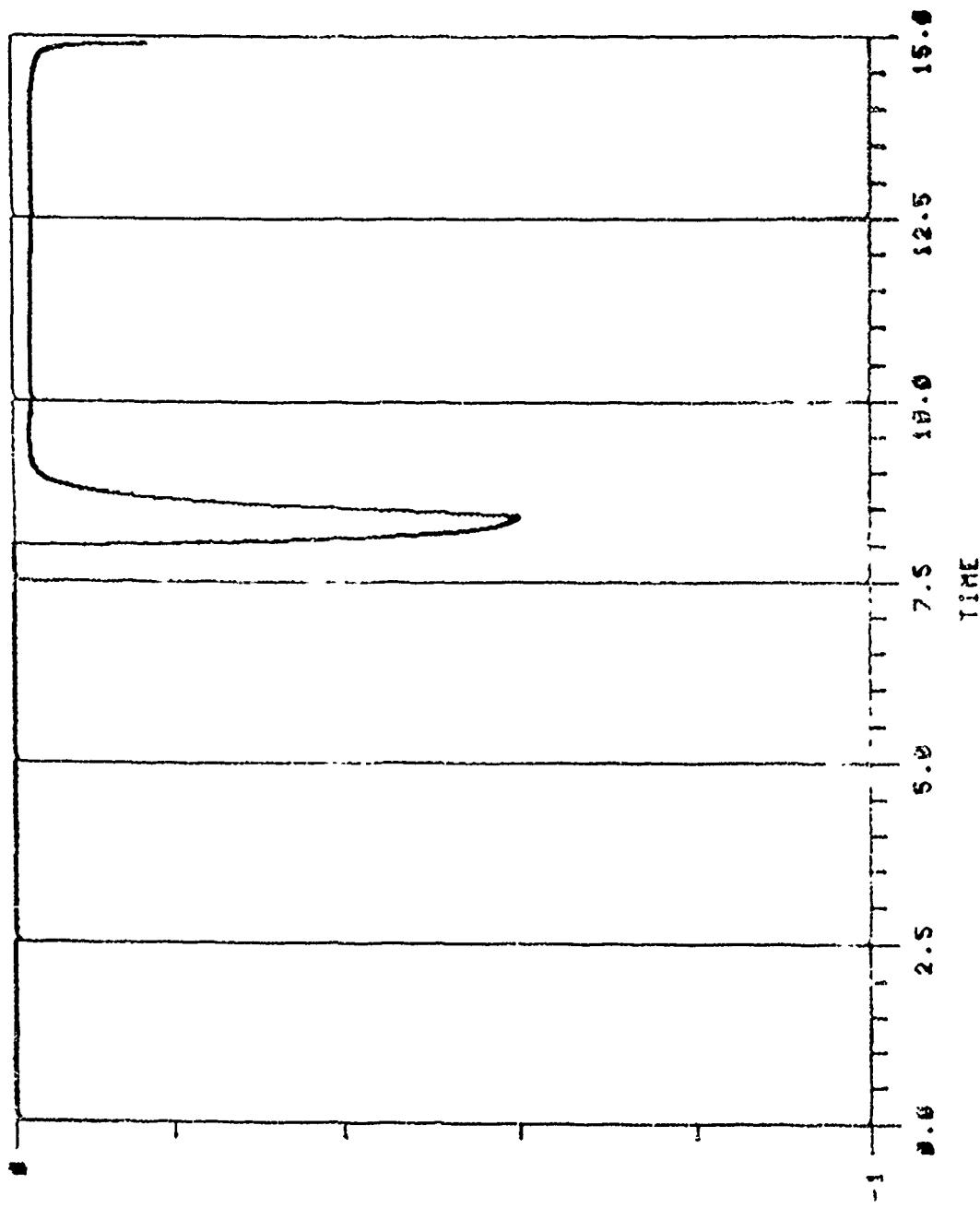


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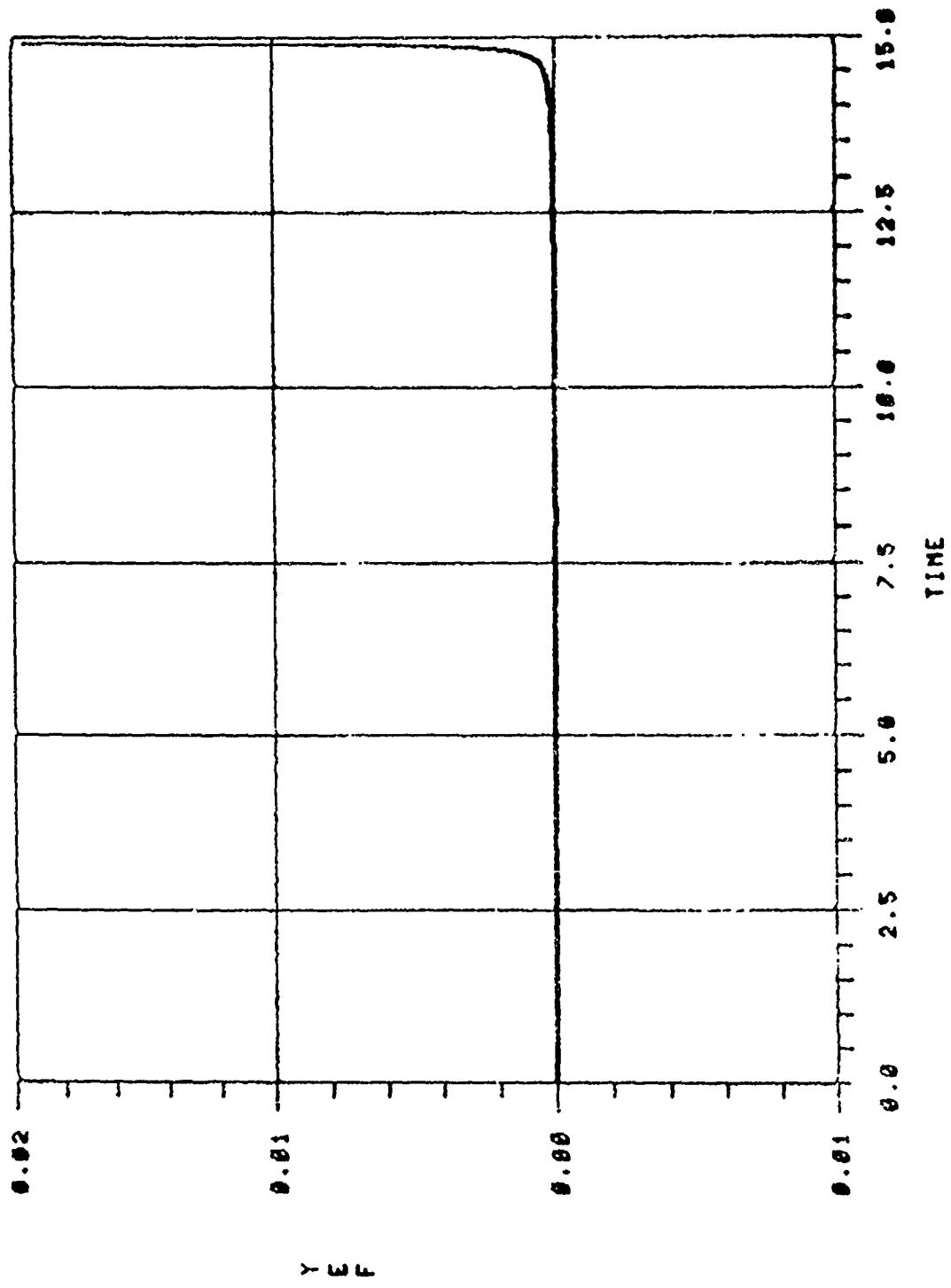


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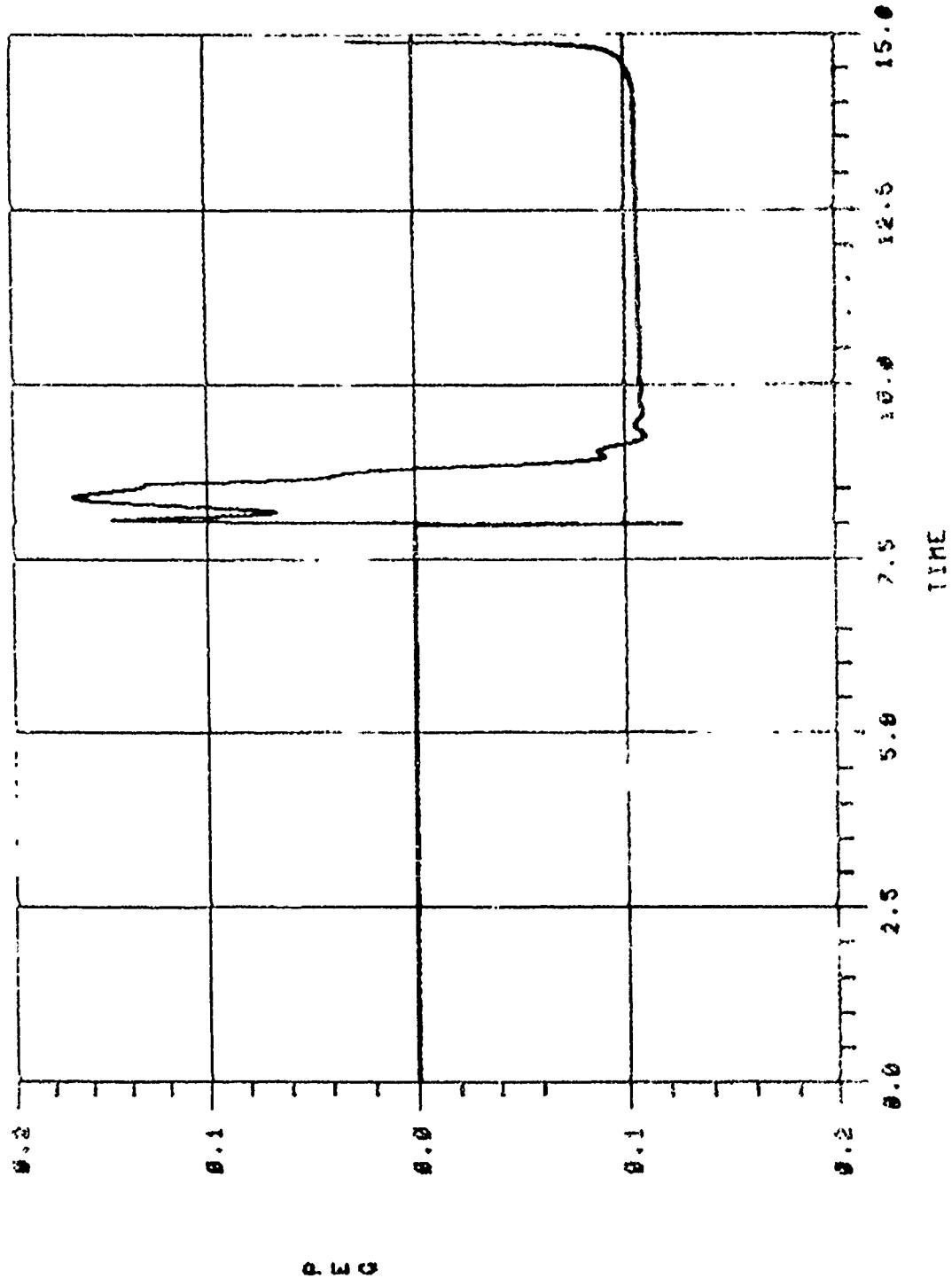


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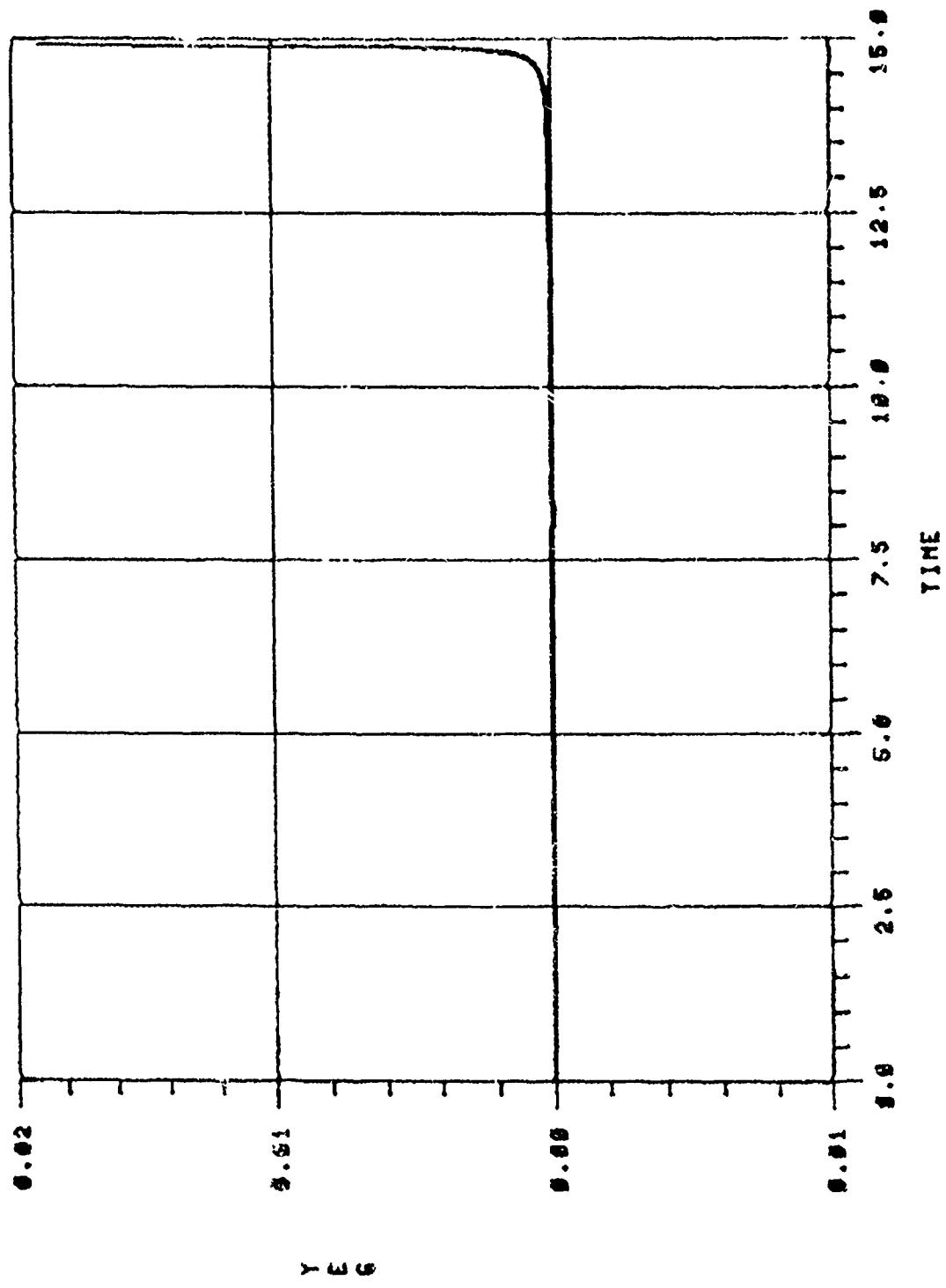
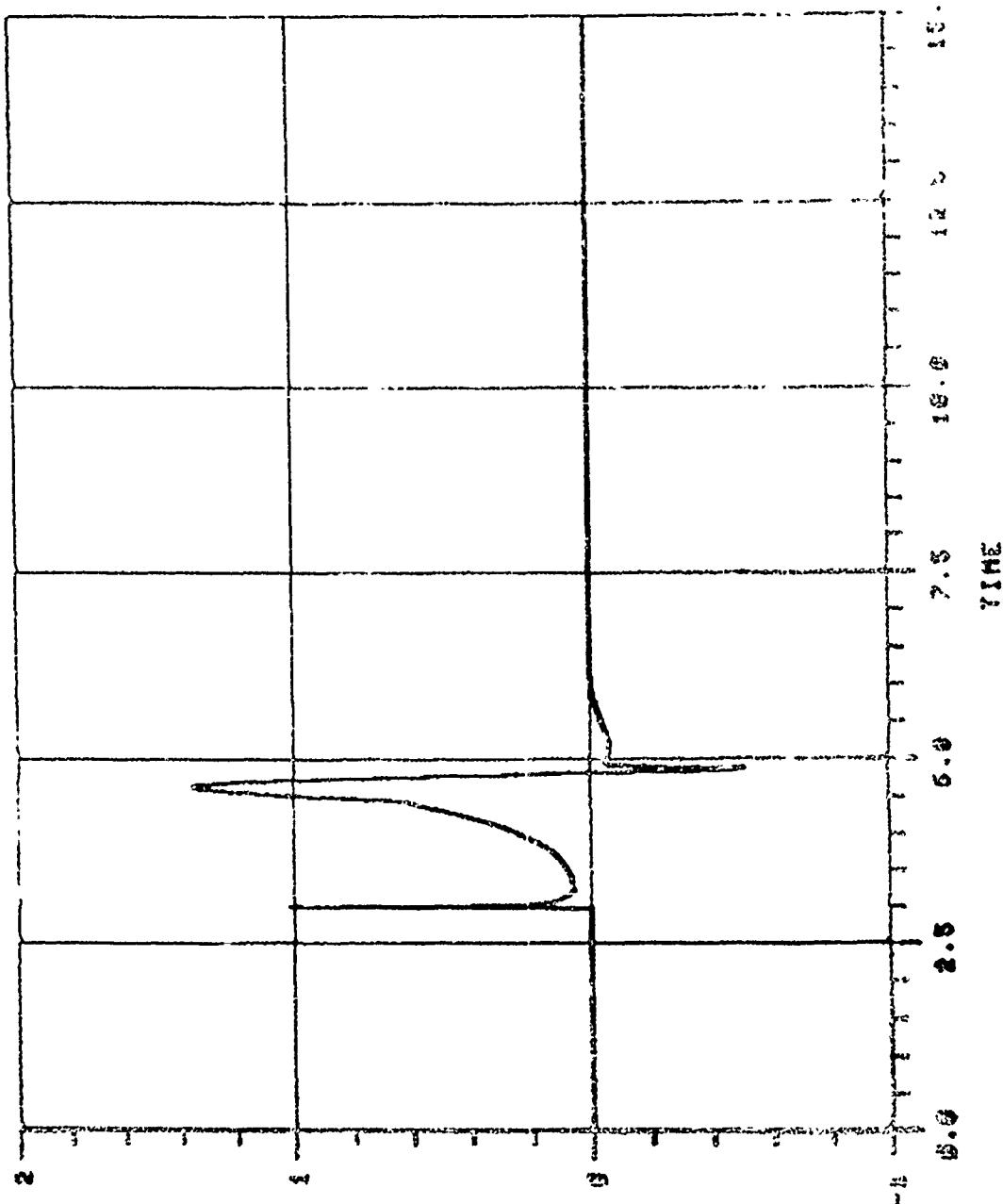


Figure 30.



2 3 4 5 6 7 8 9

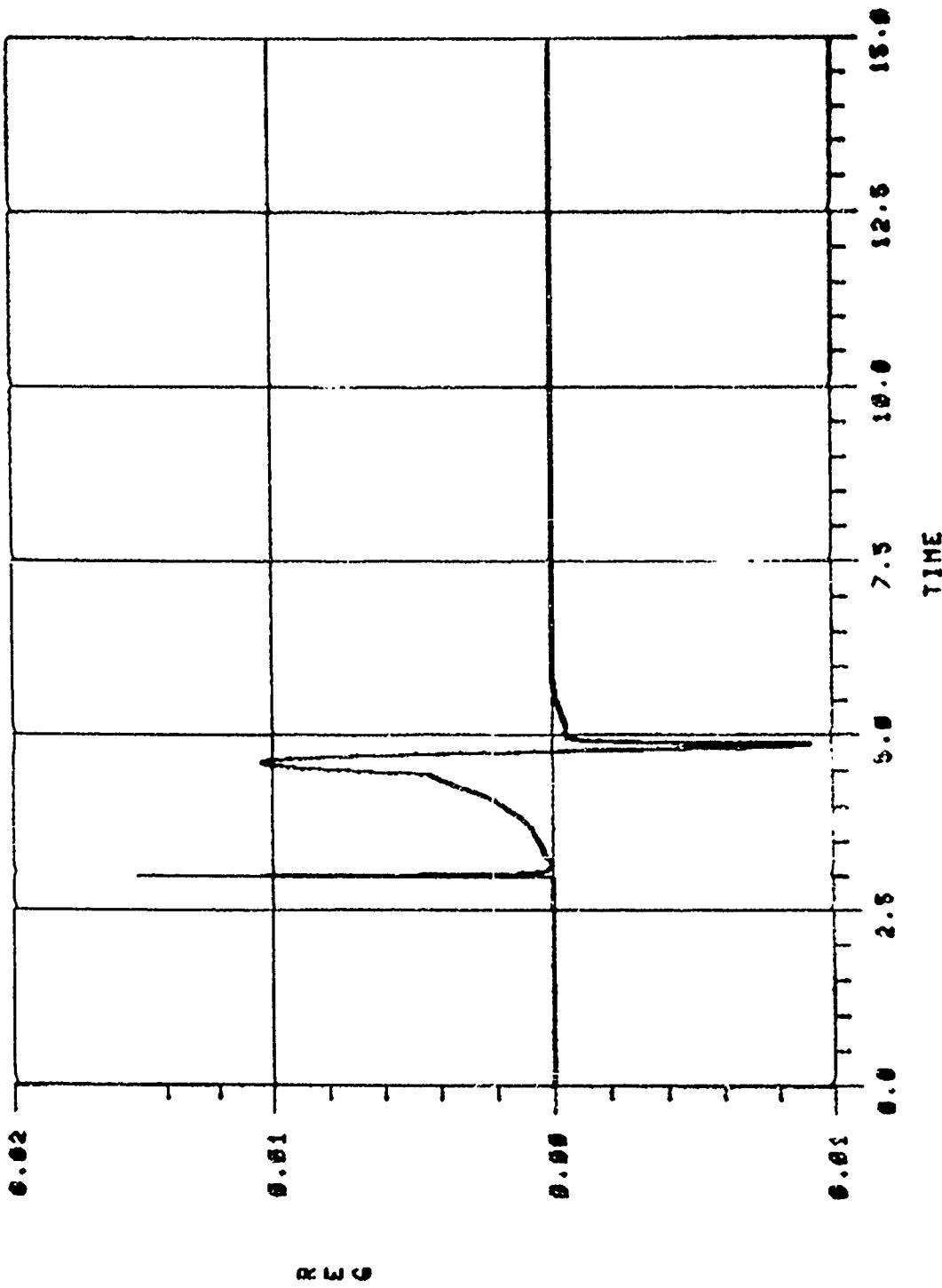


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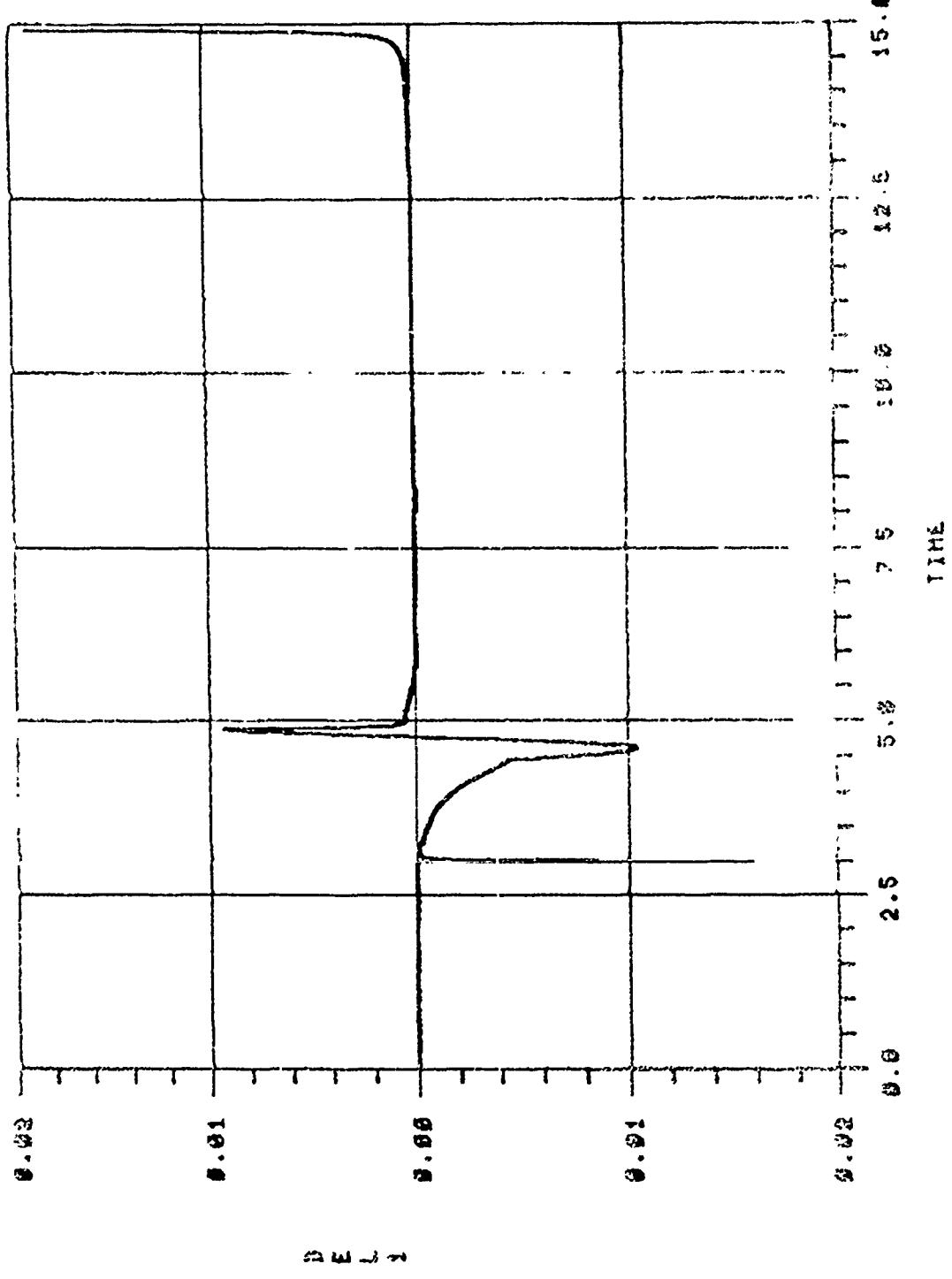


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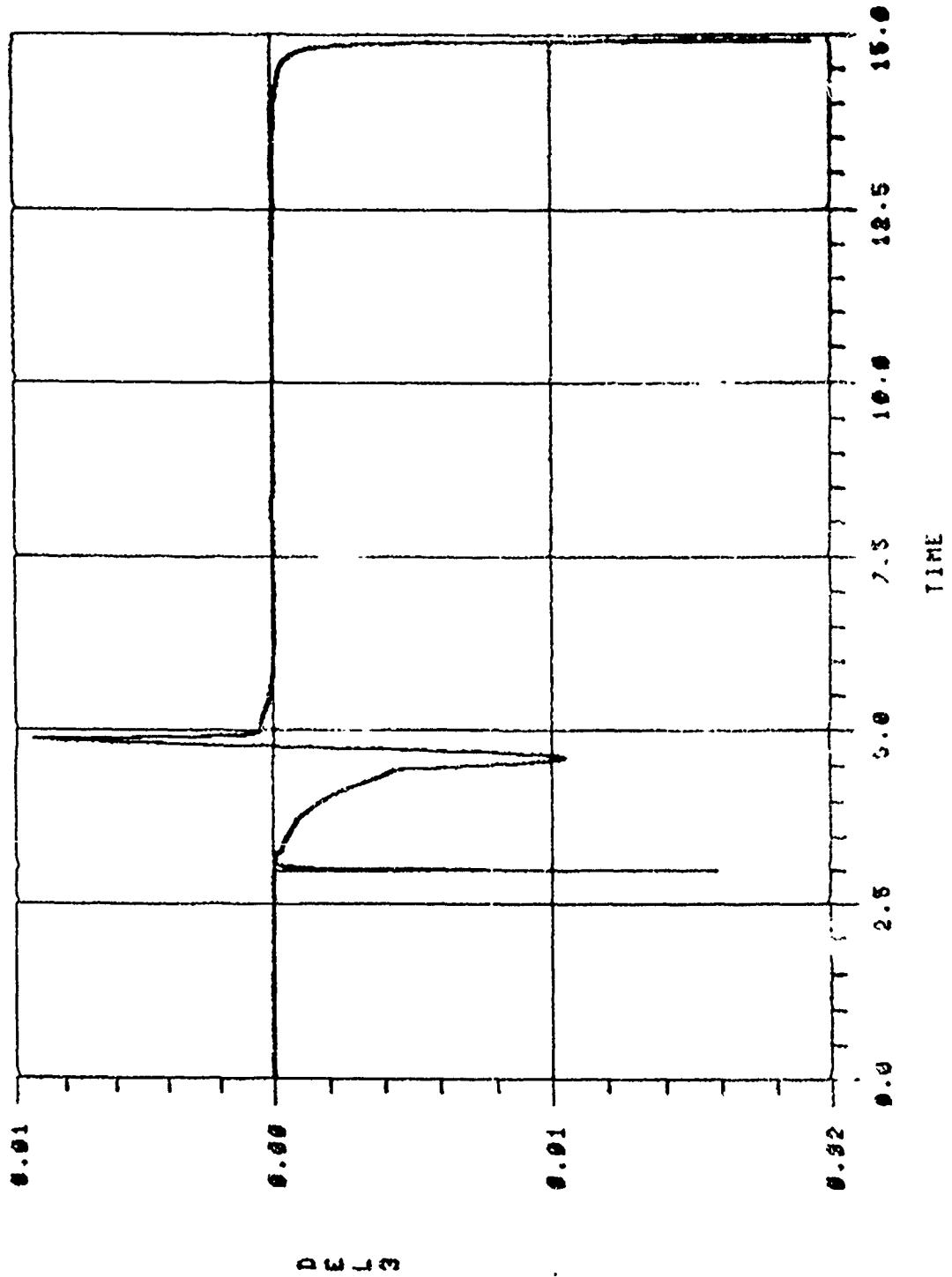


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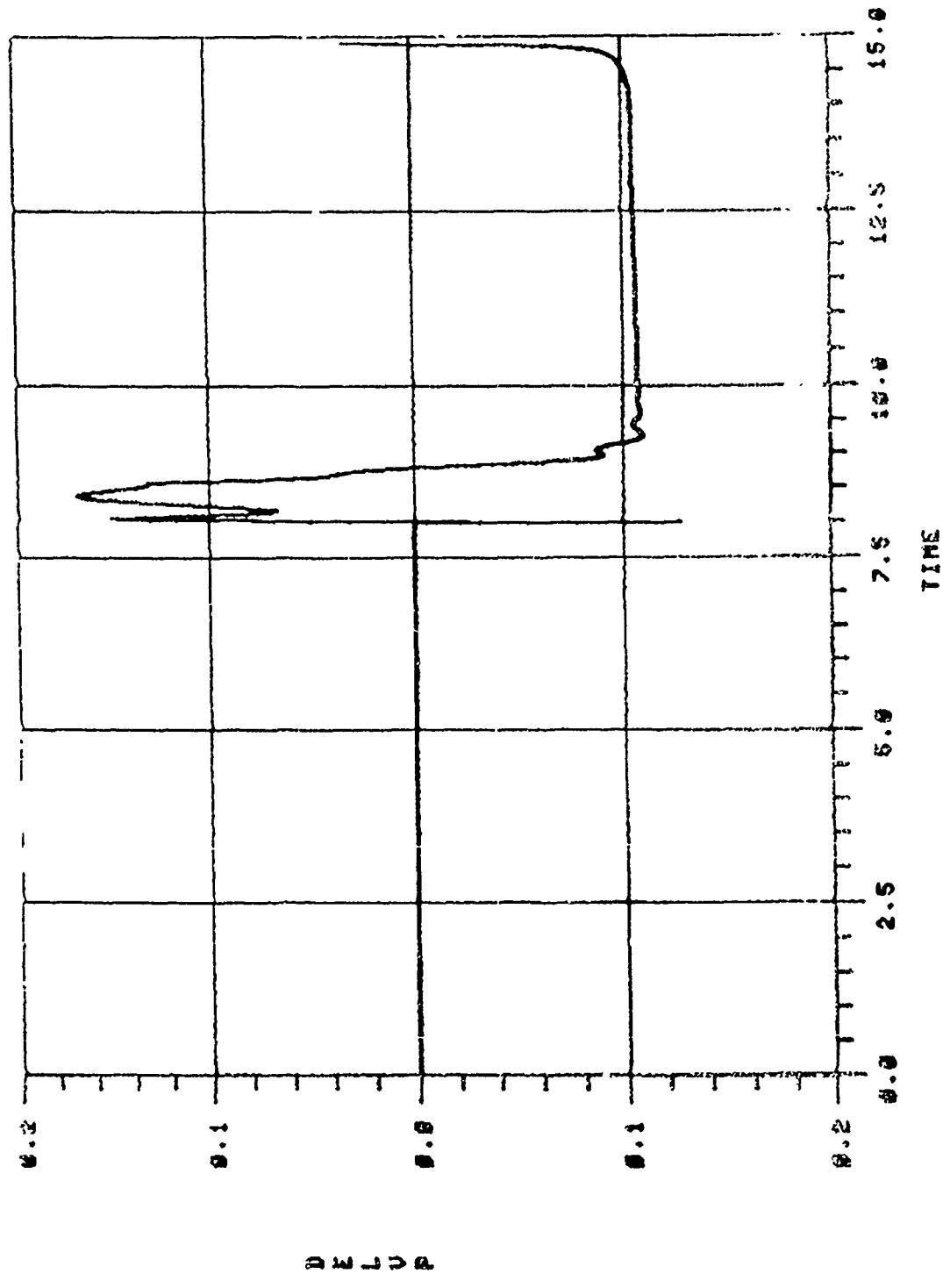


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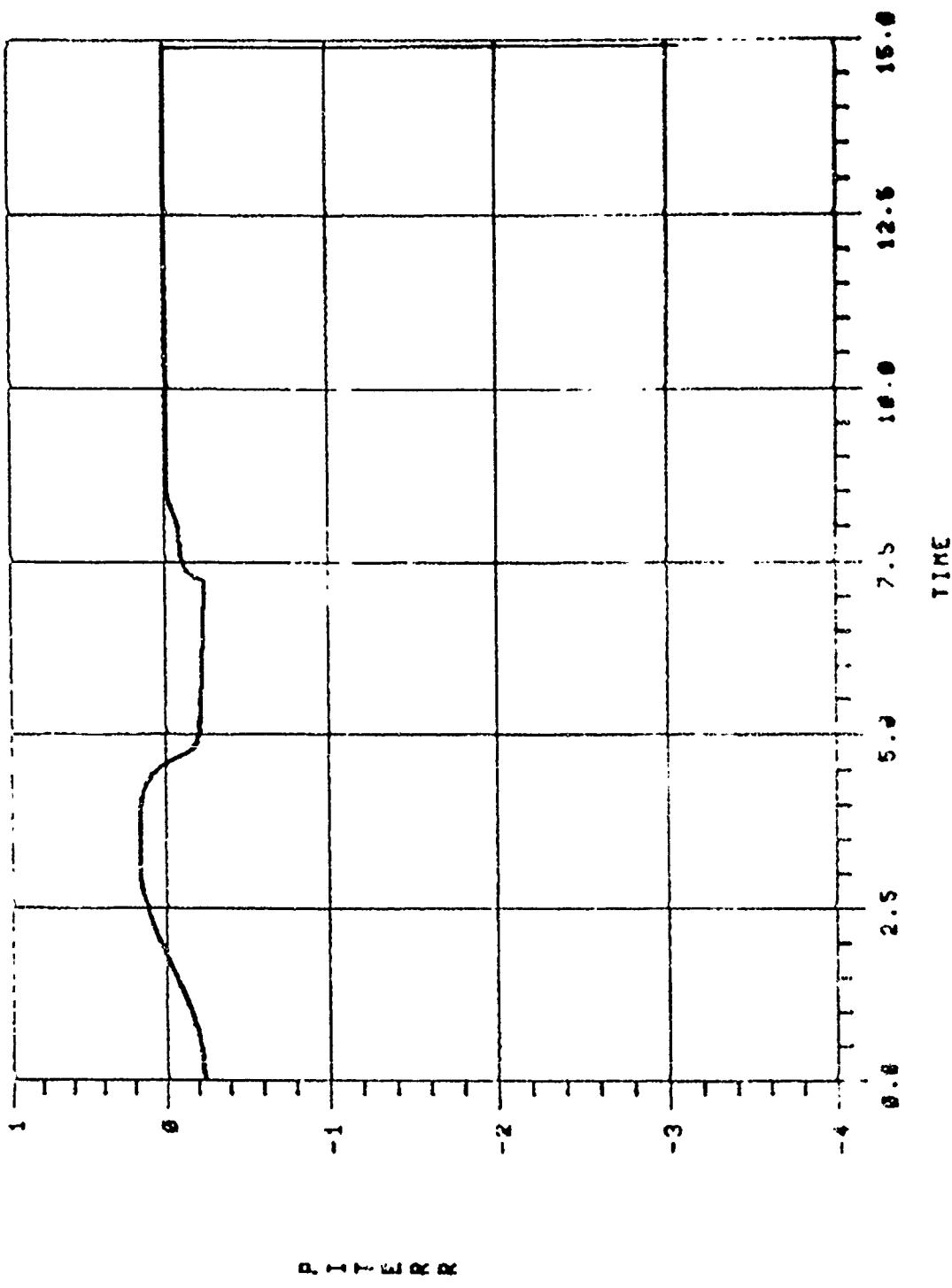


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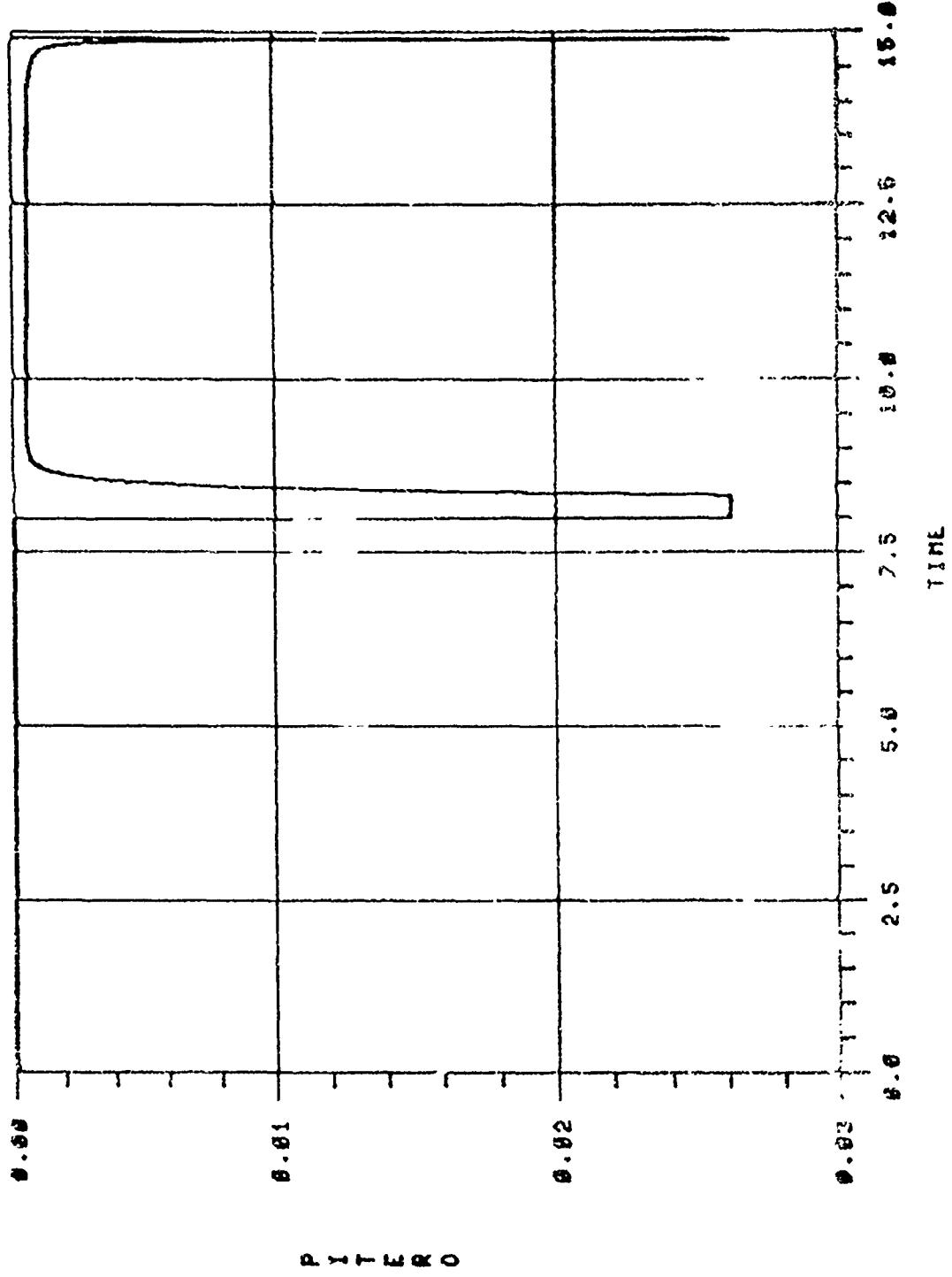


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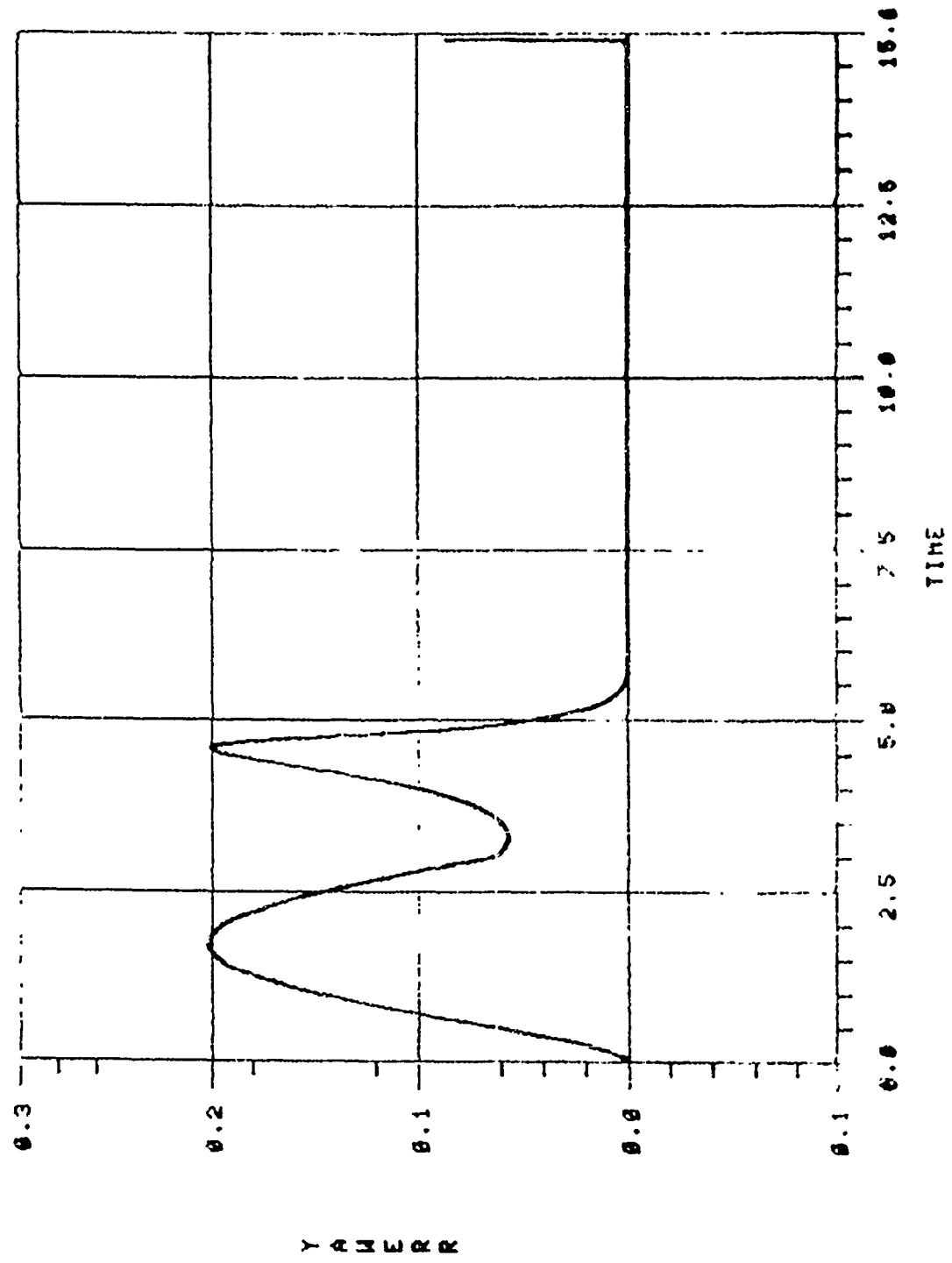


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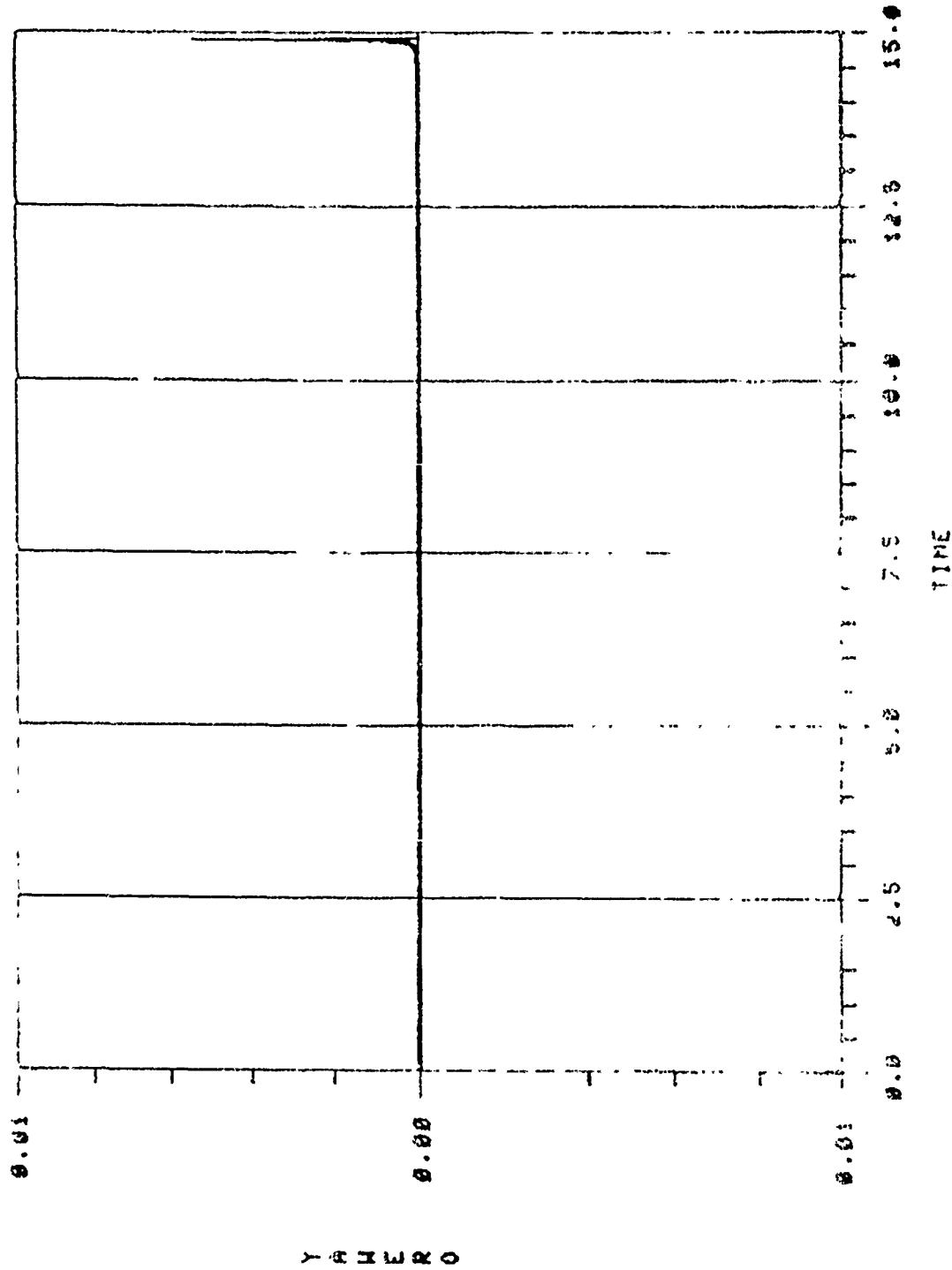


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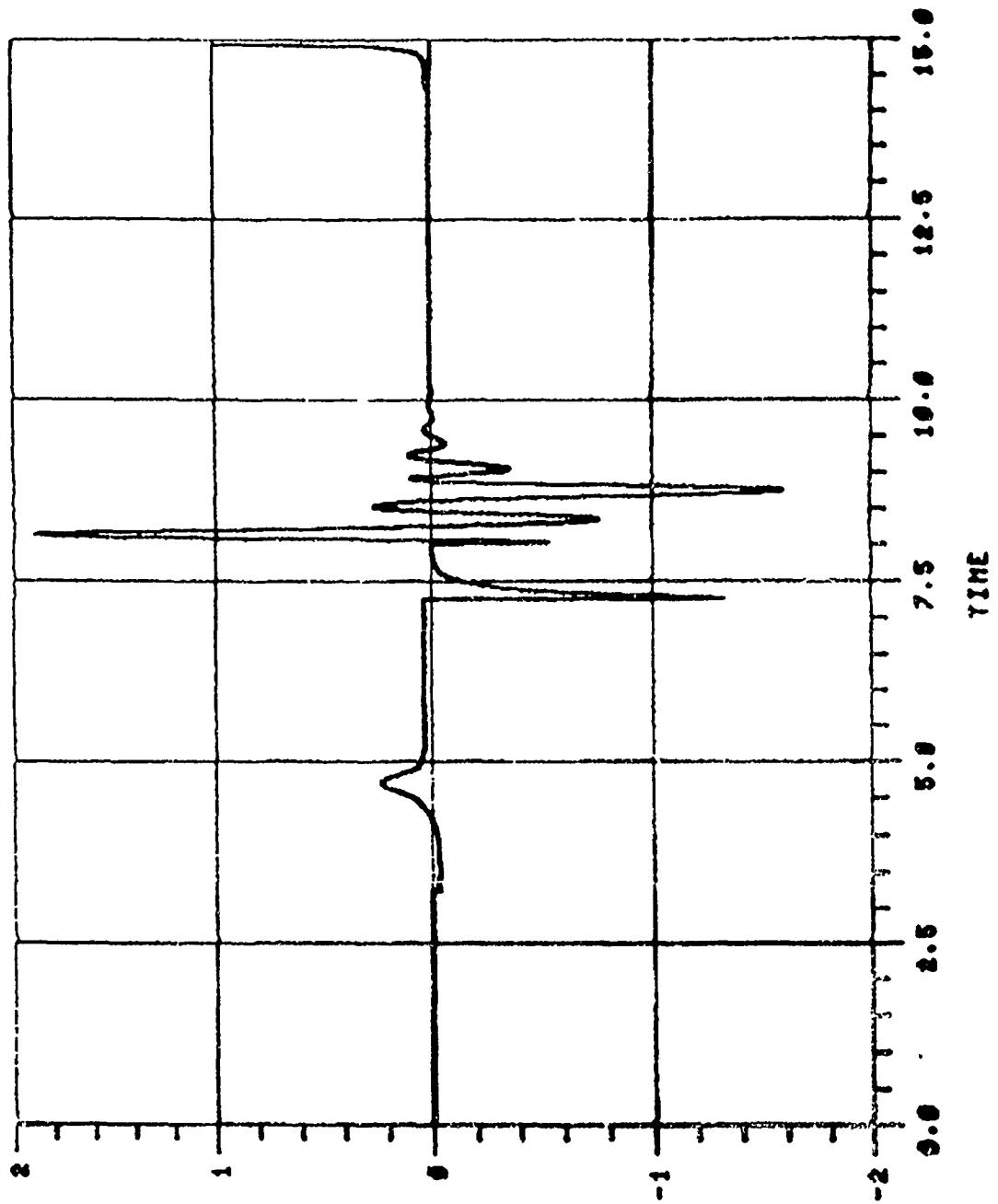


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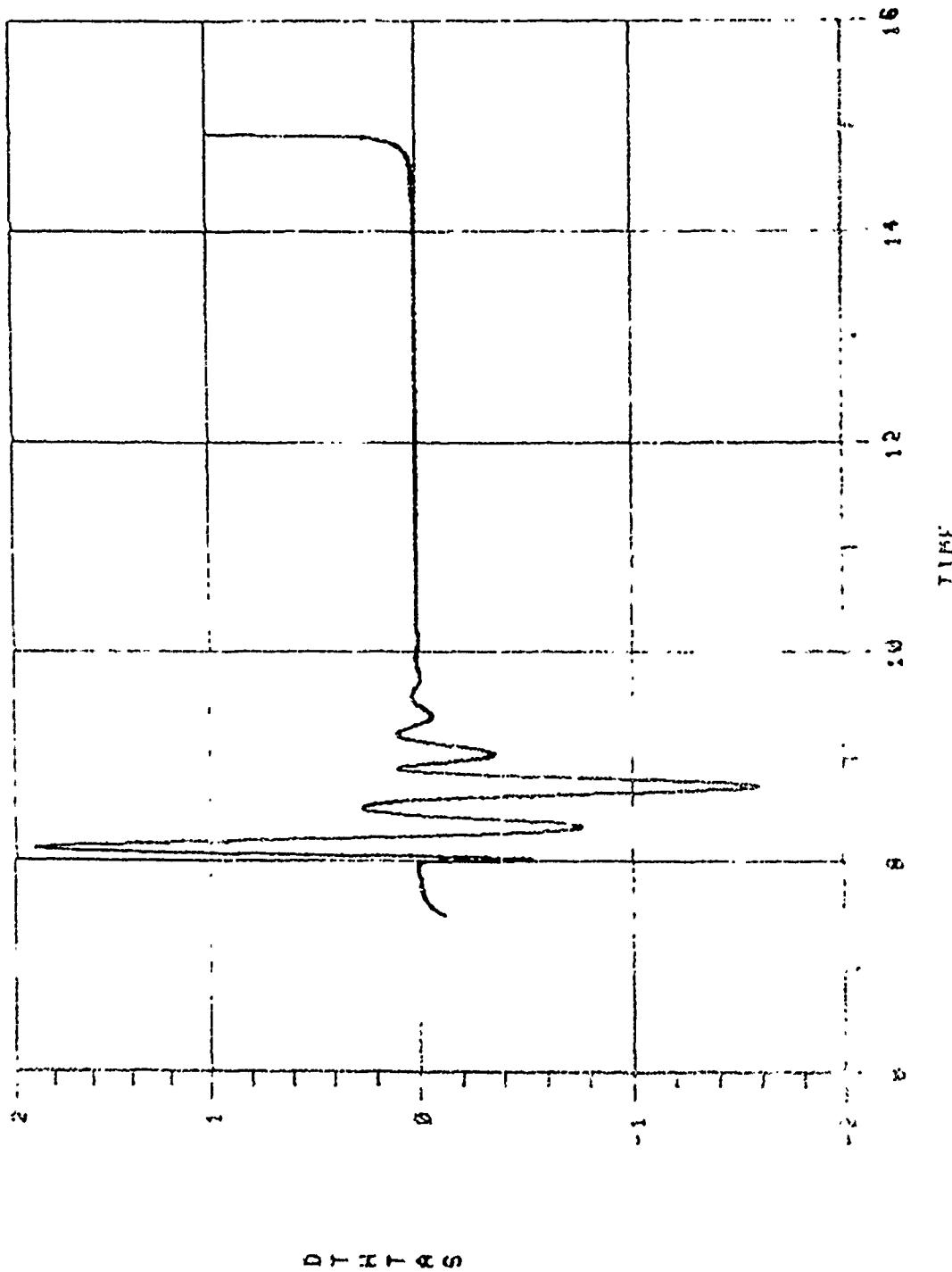


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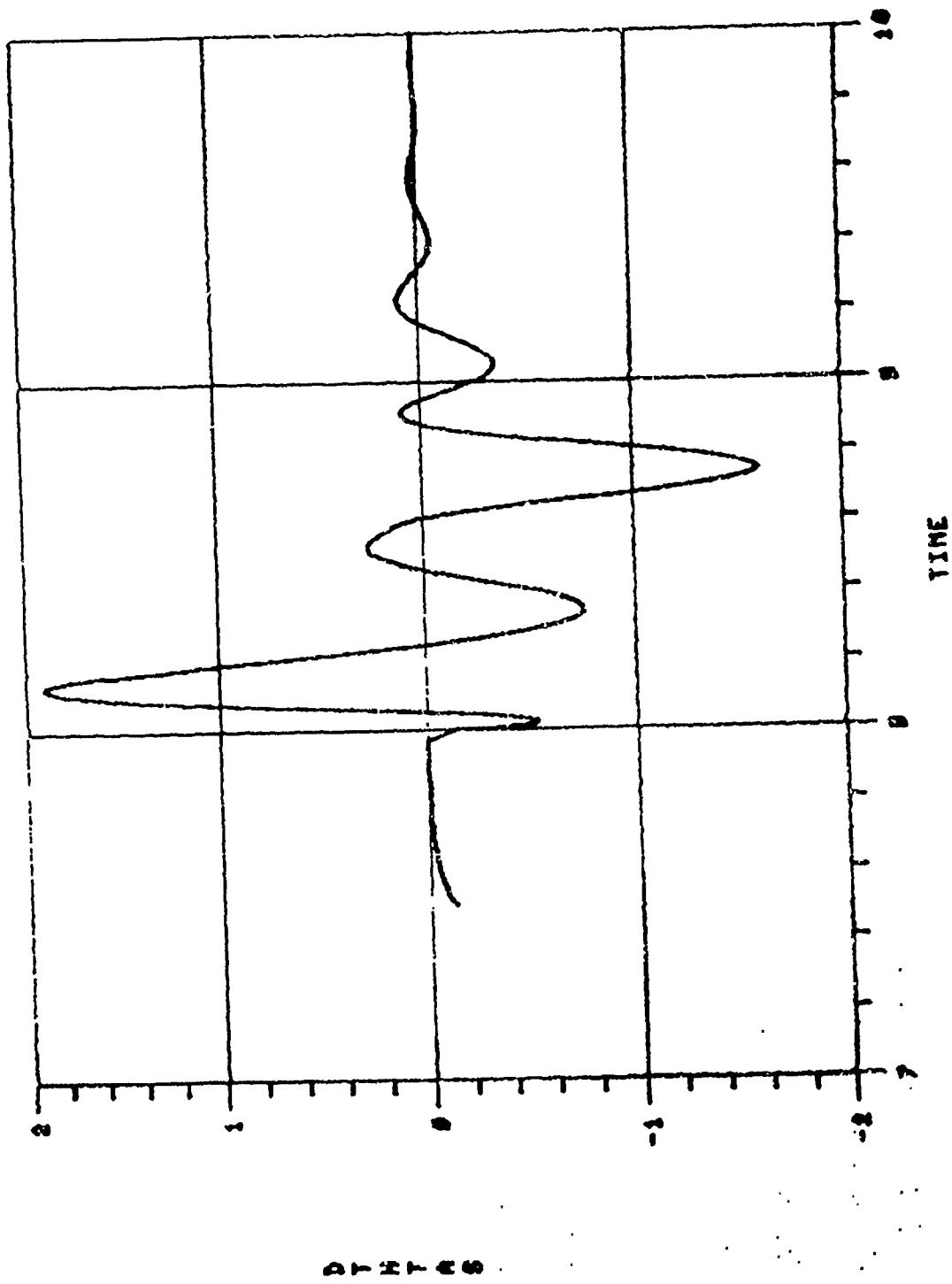


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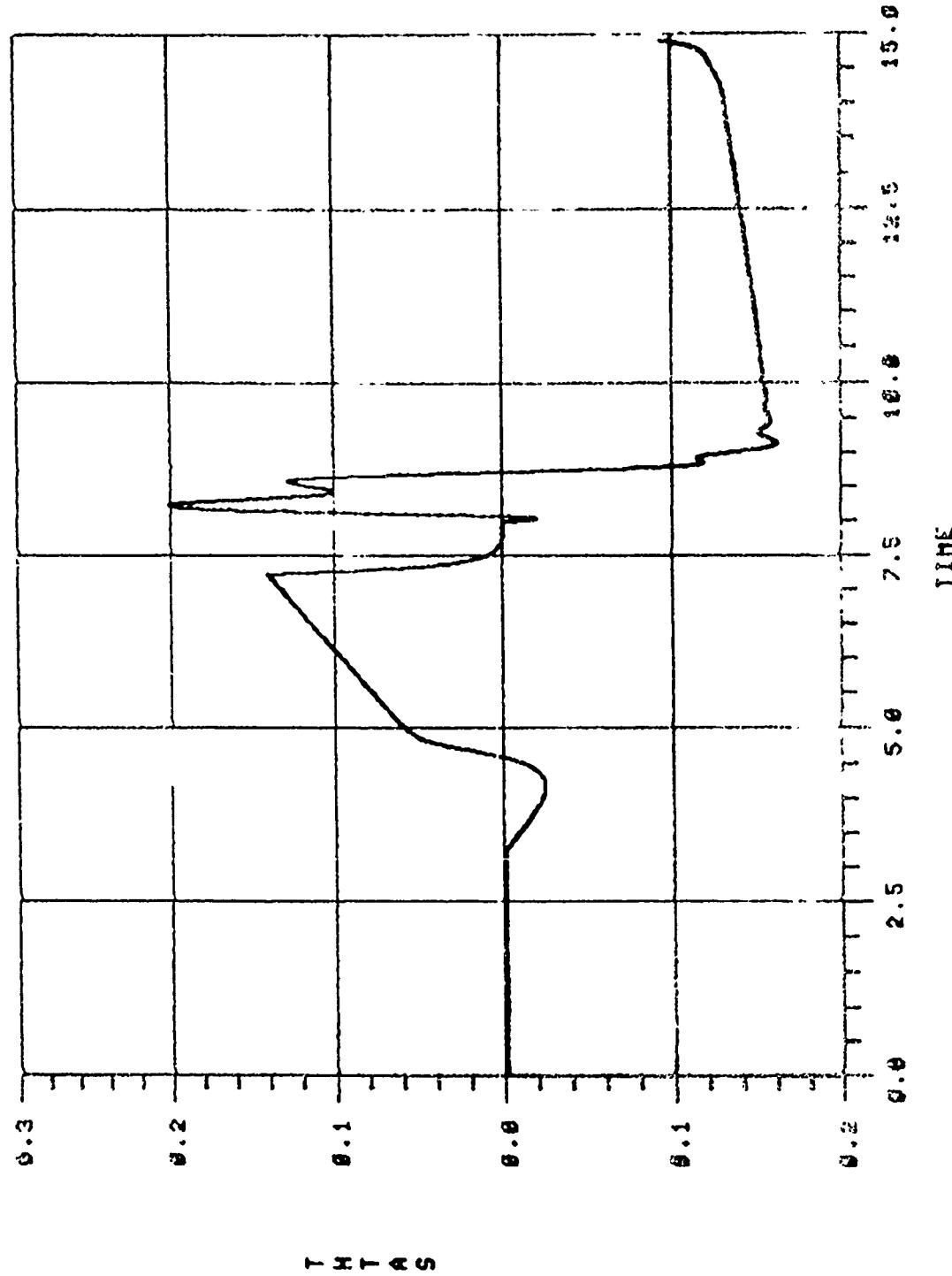


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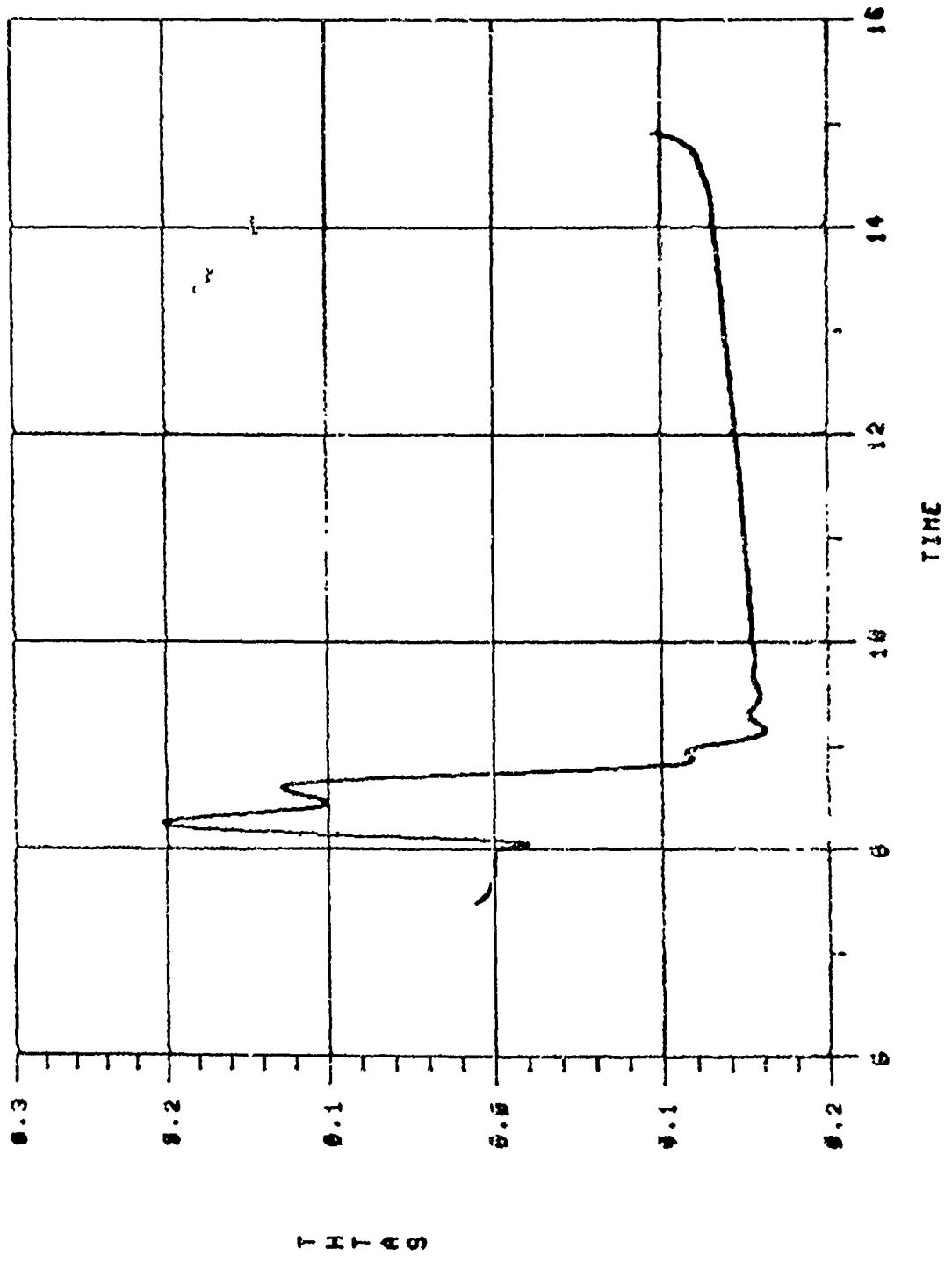


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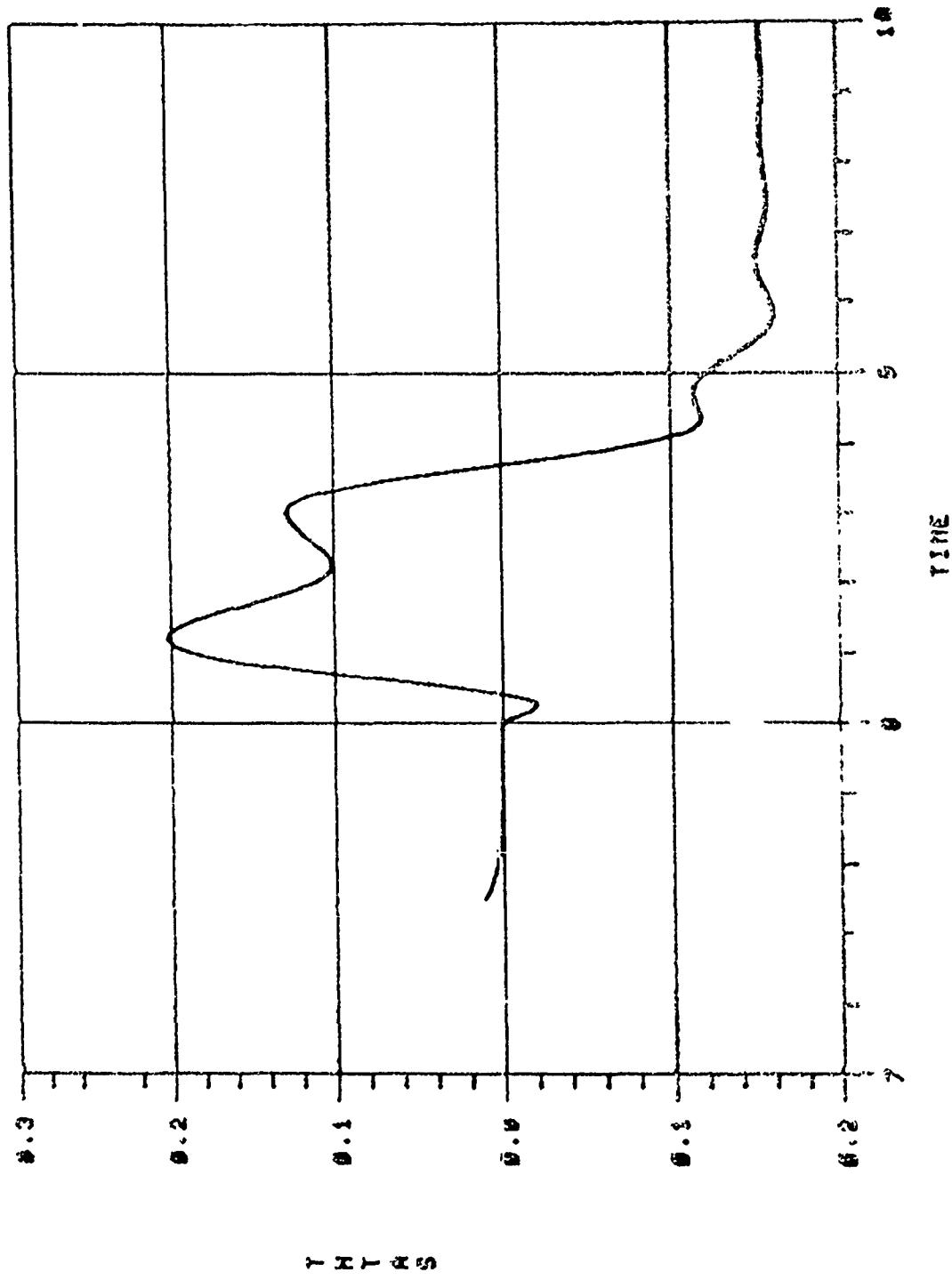


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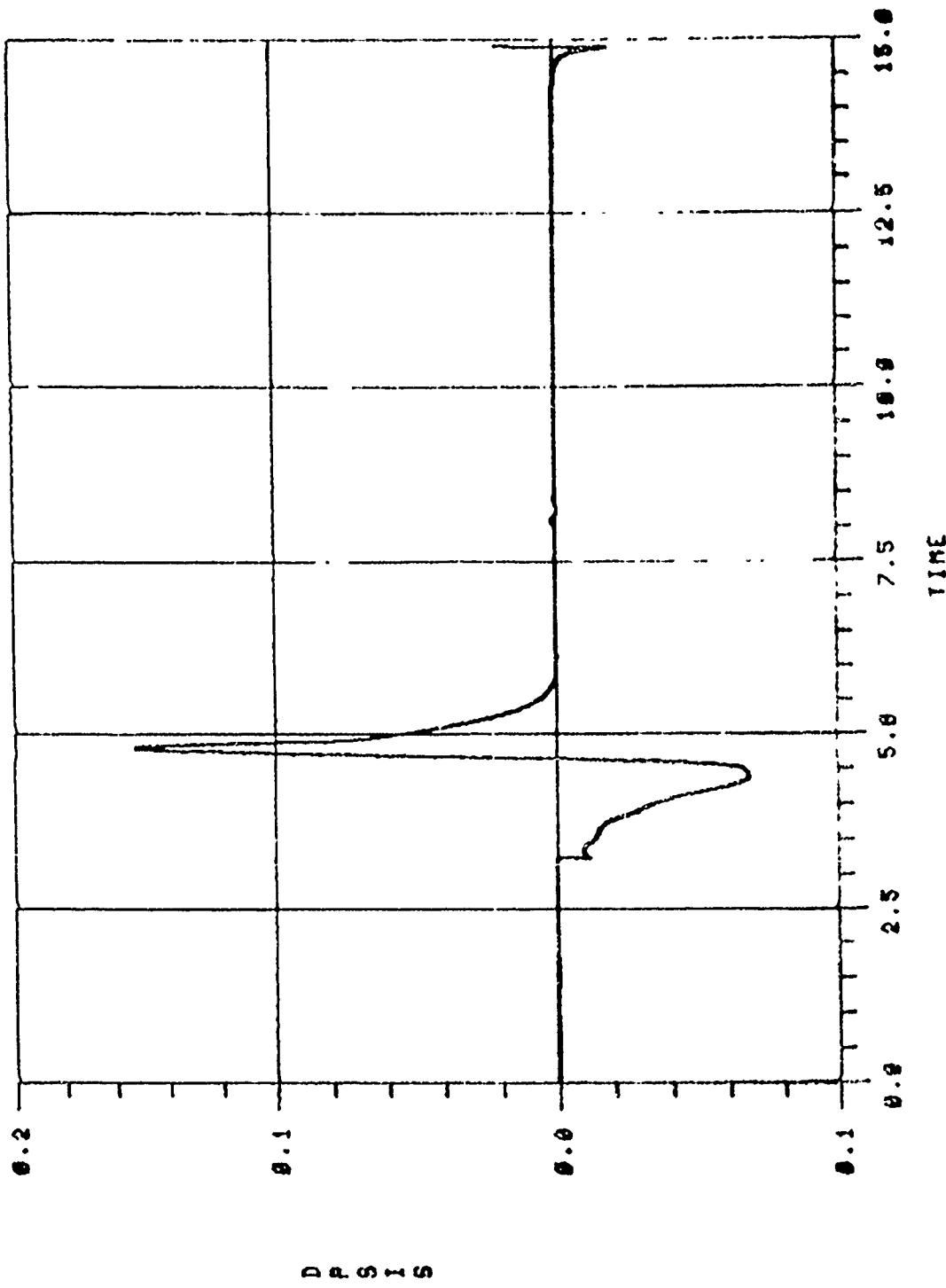


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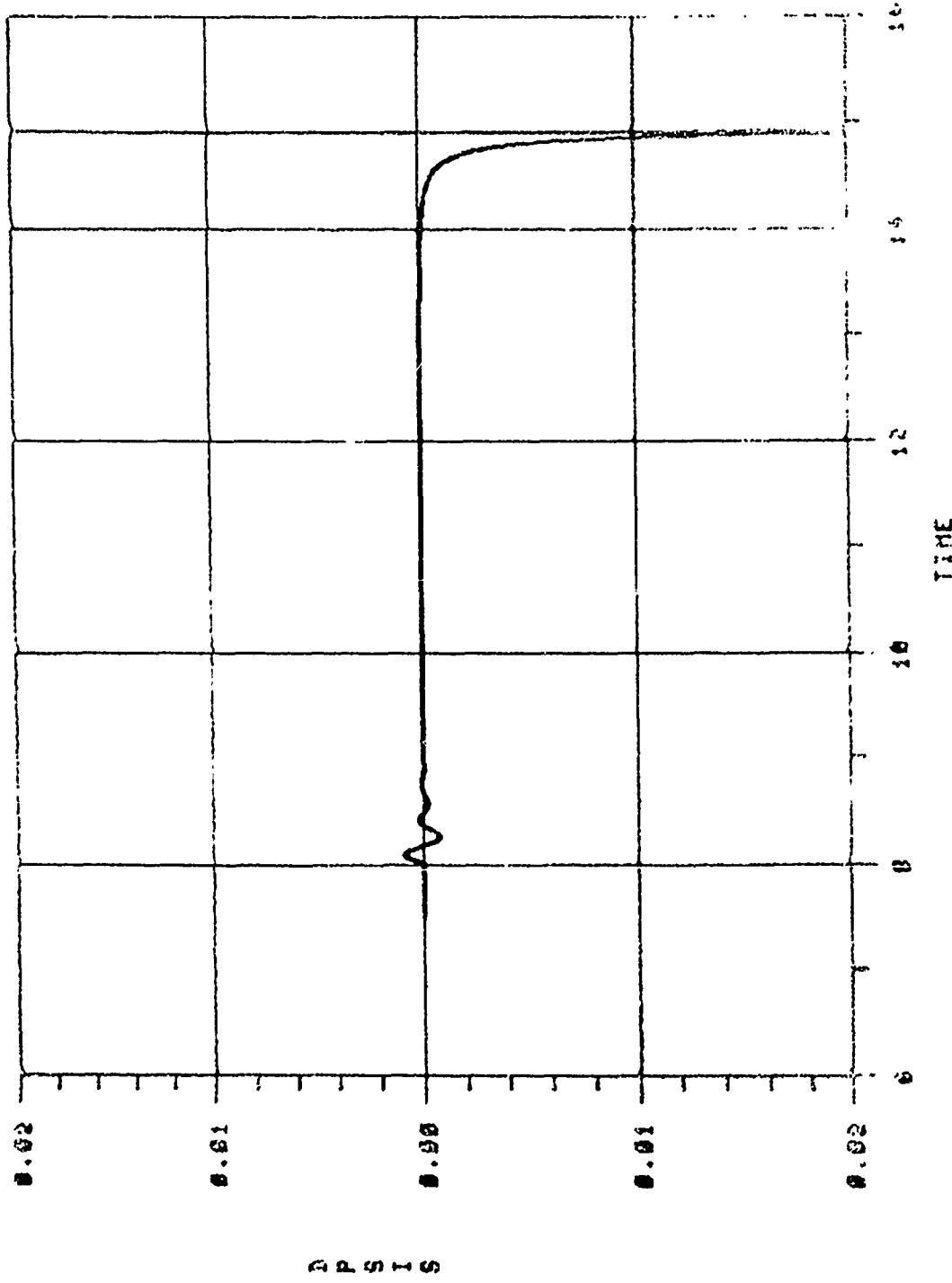


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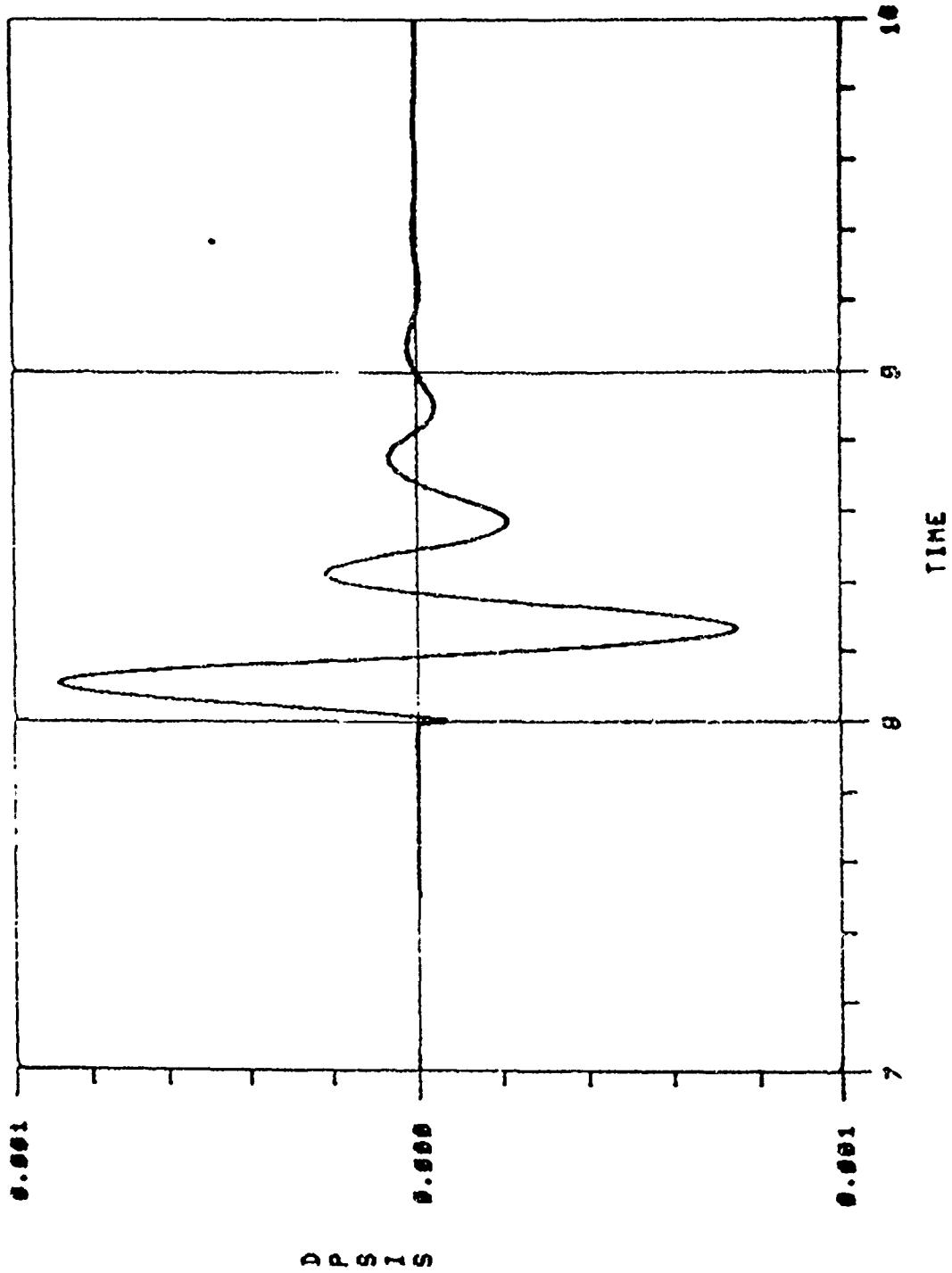


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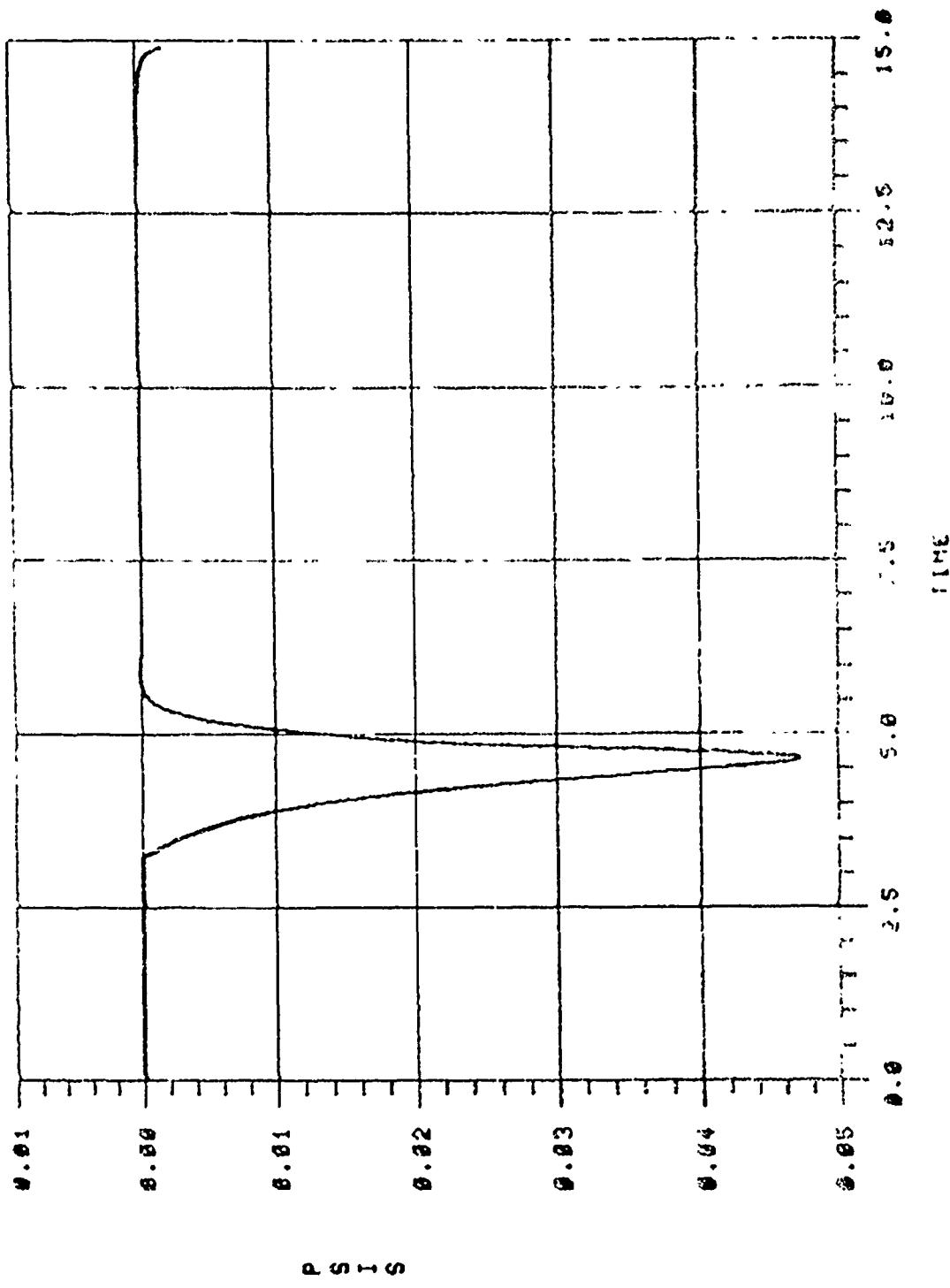


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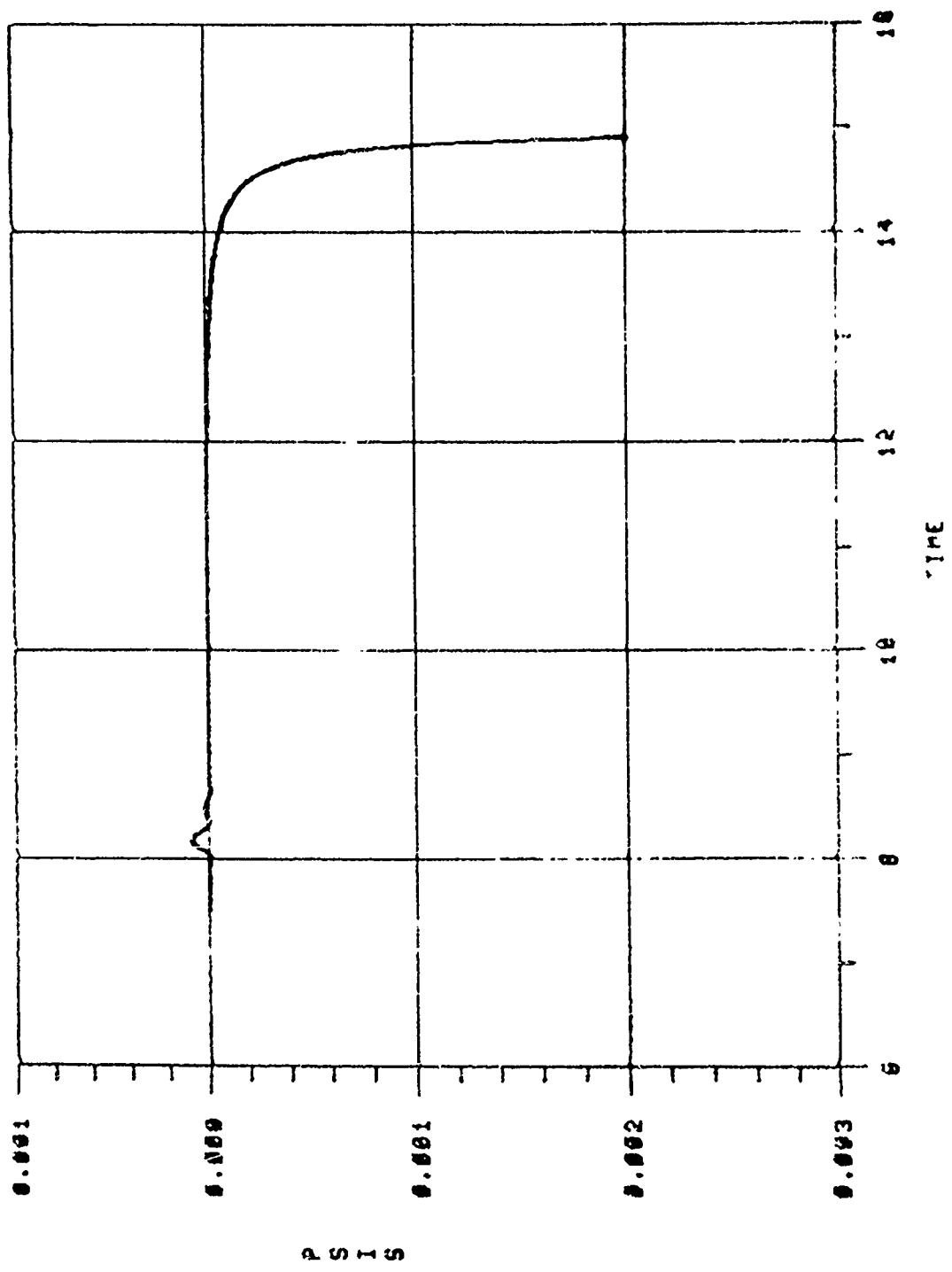


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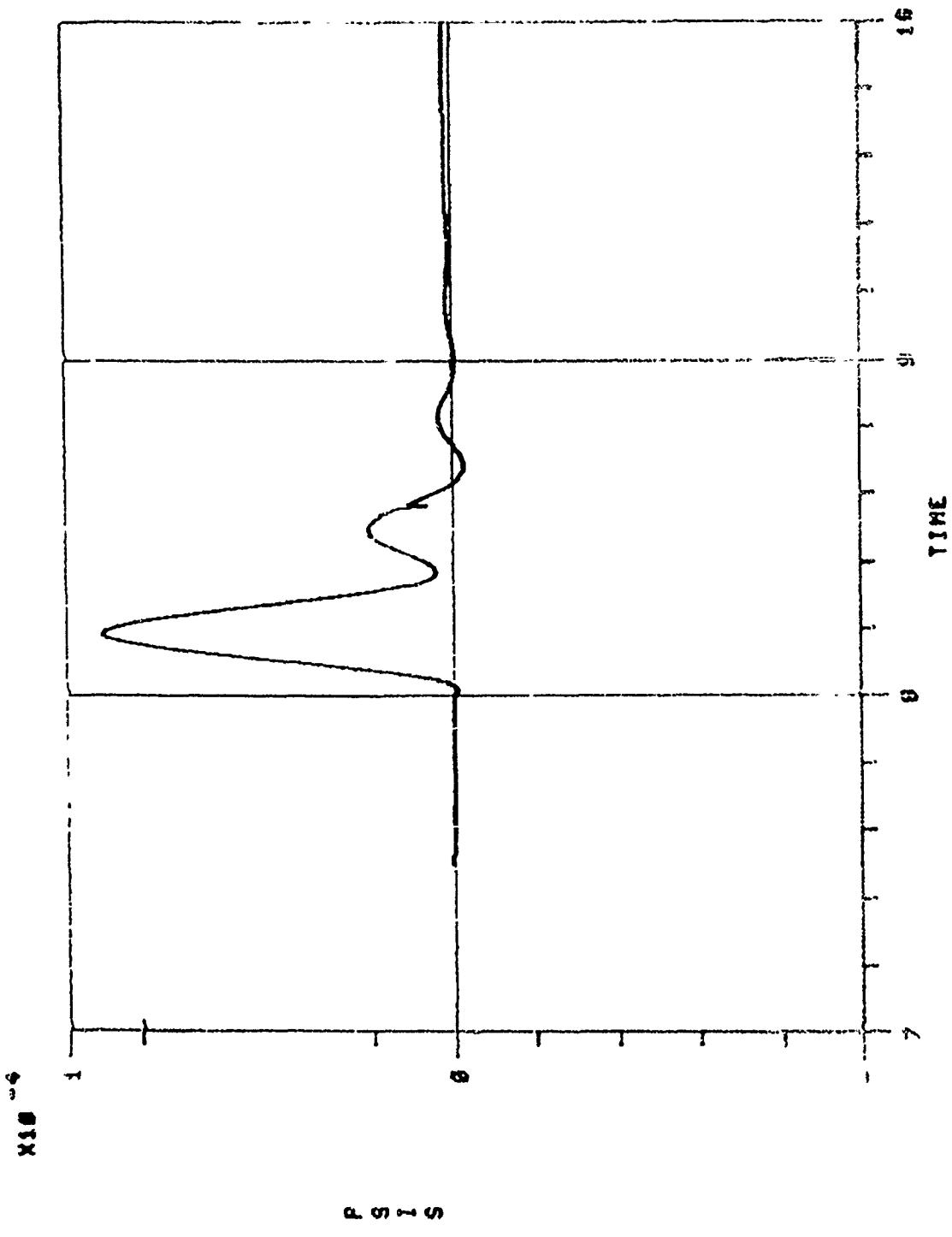


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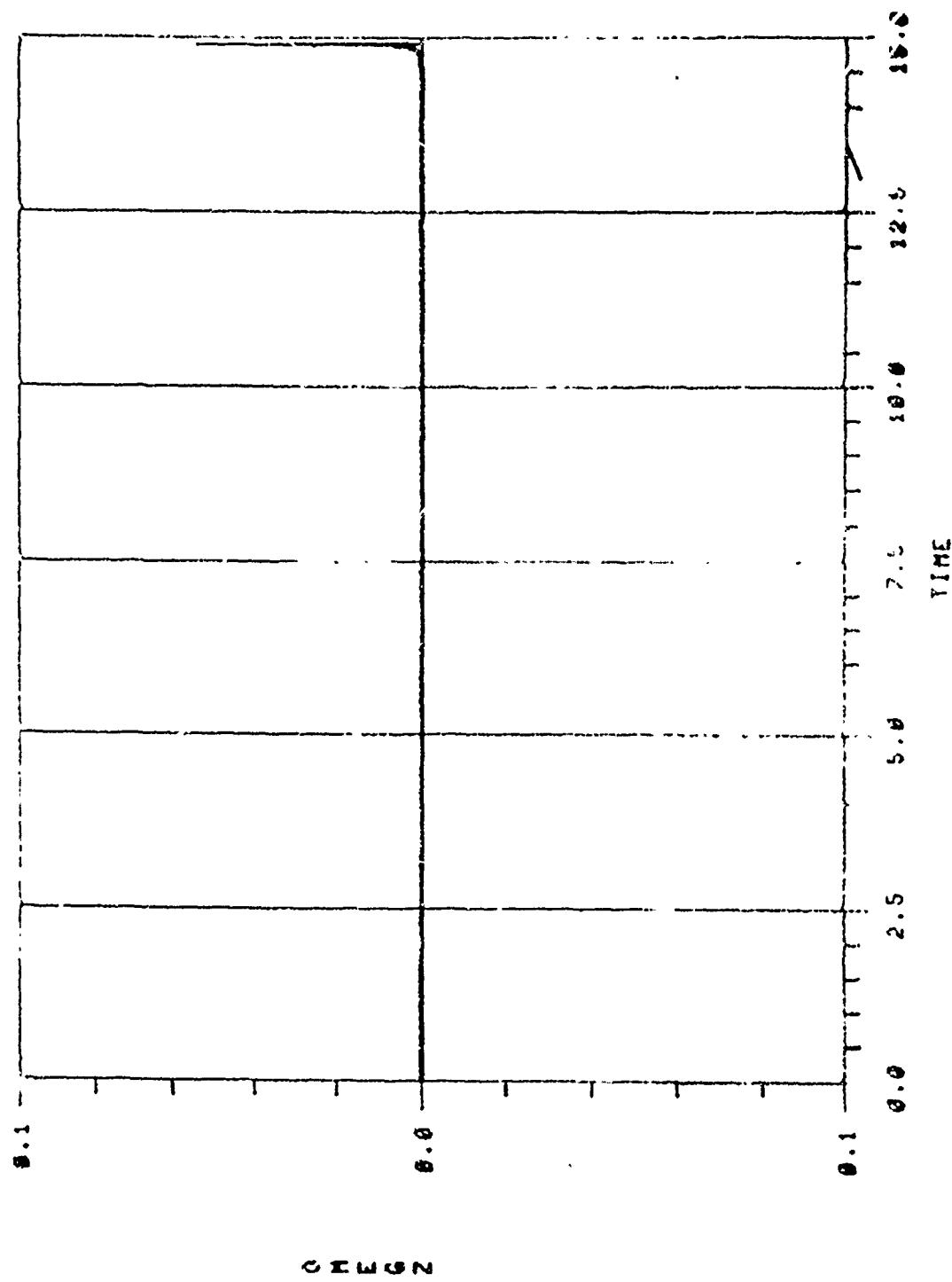


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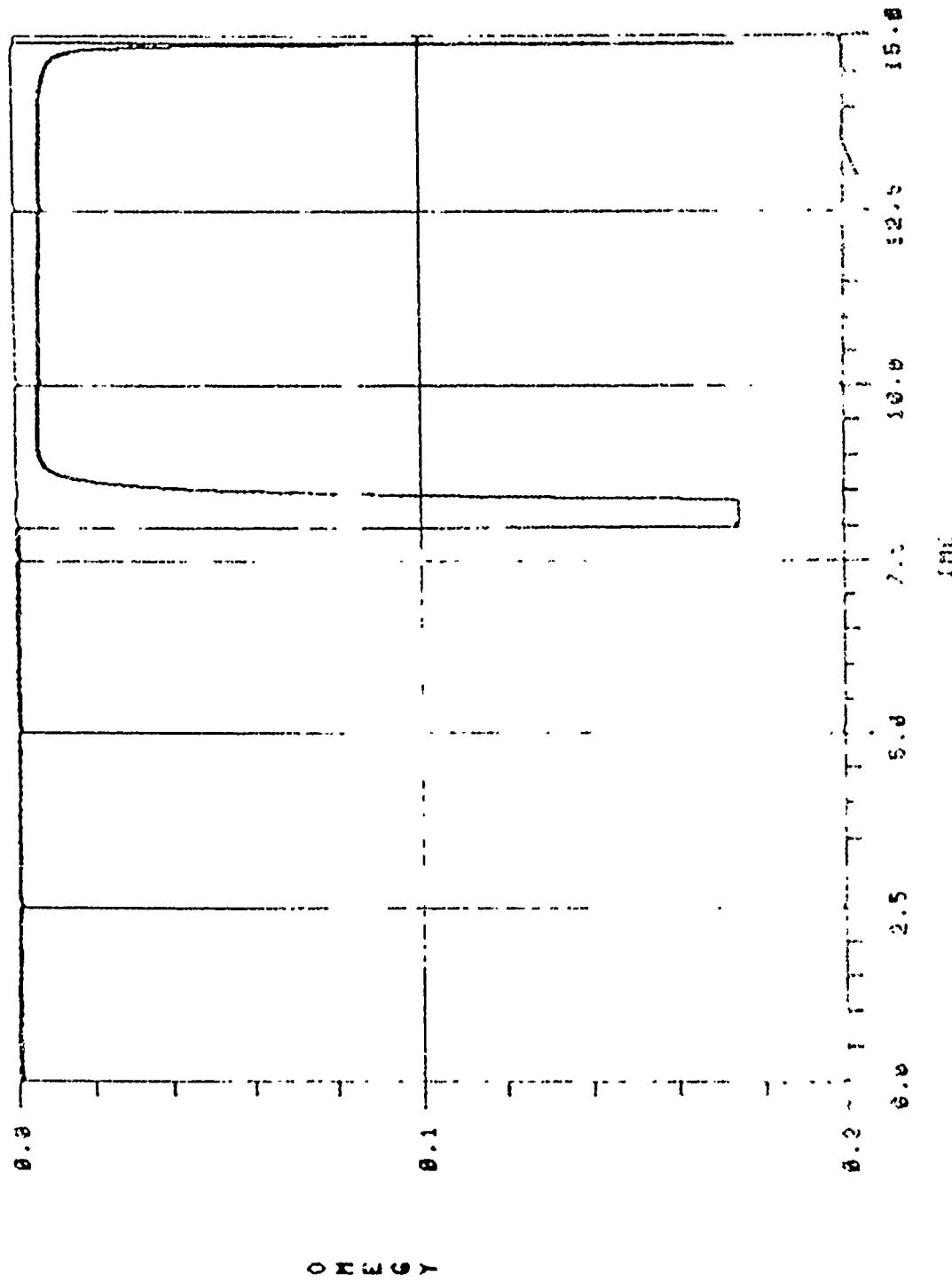


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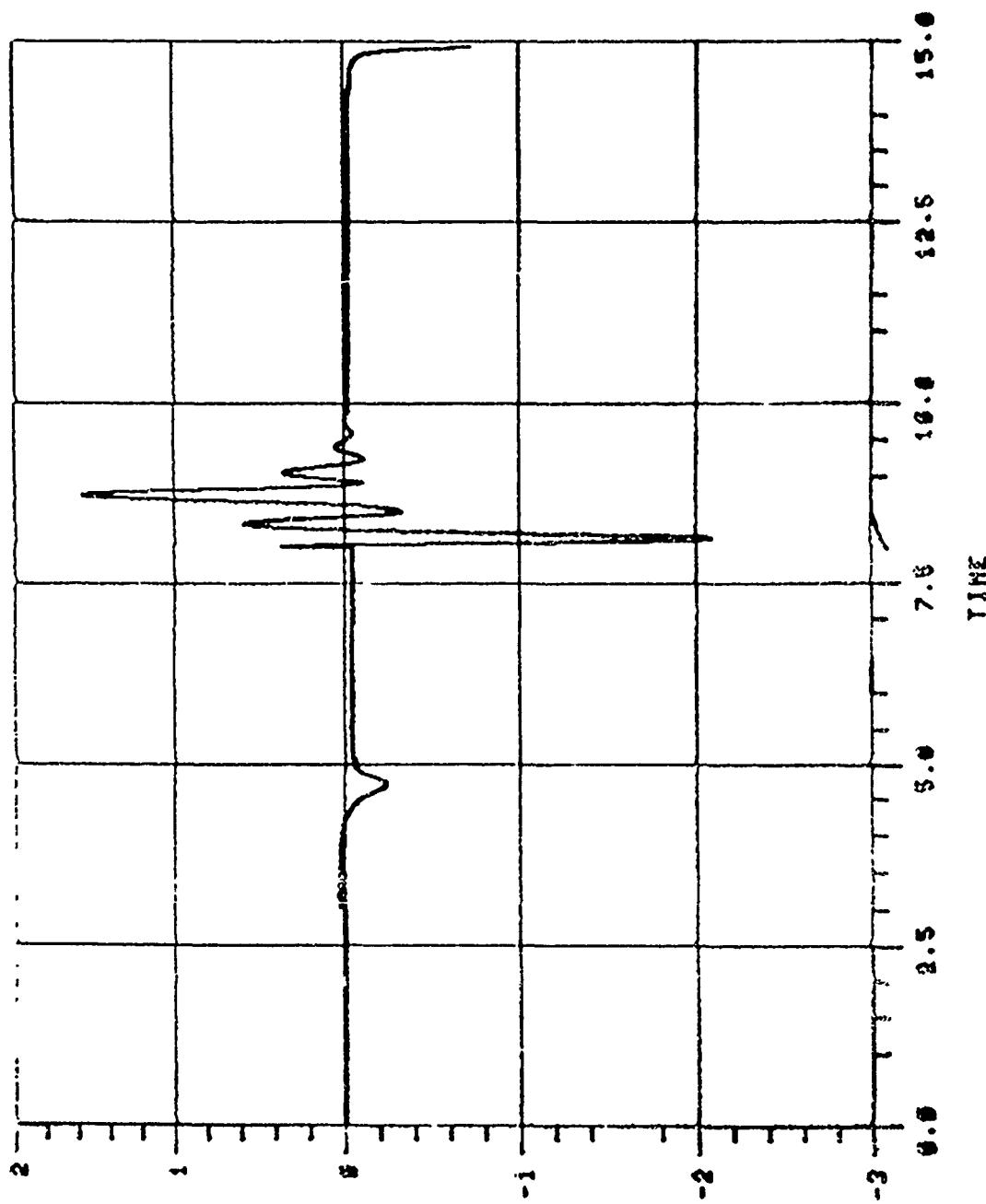


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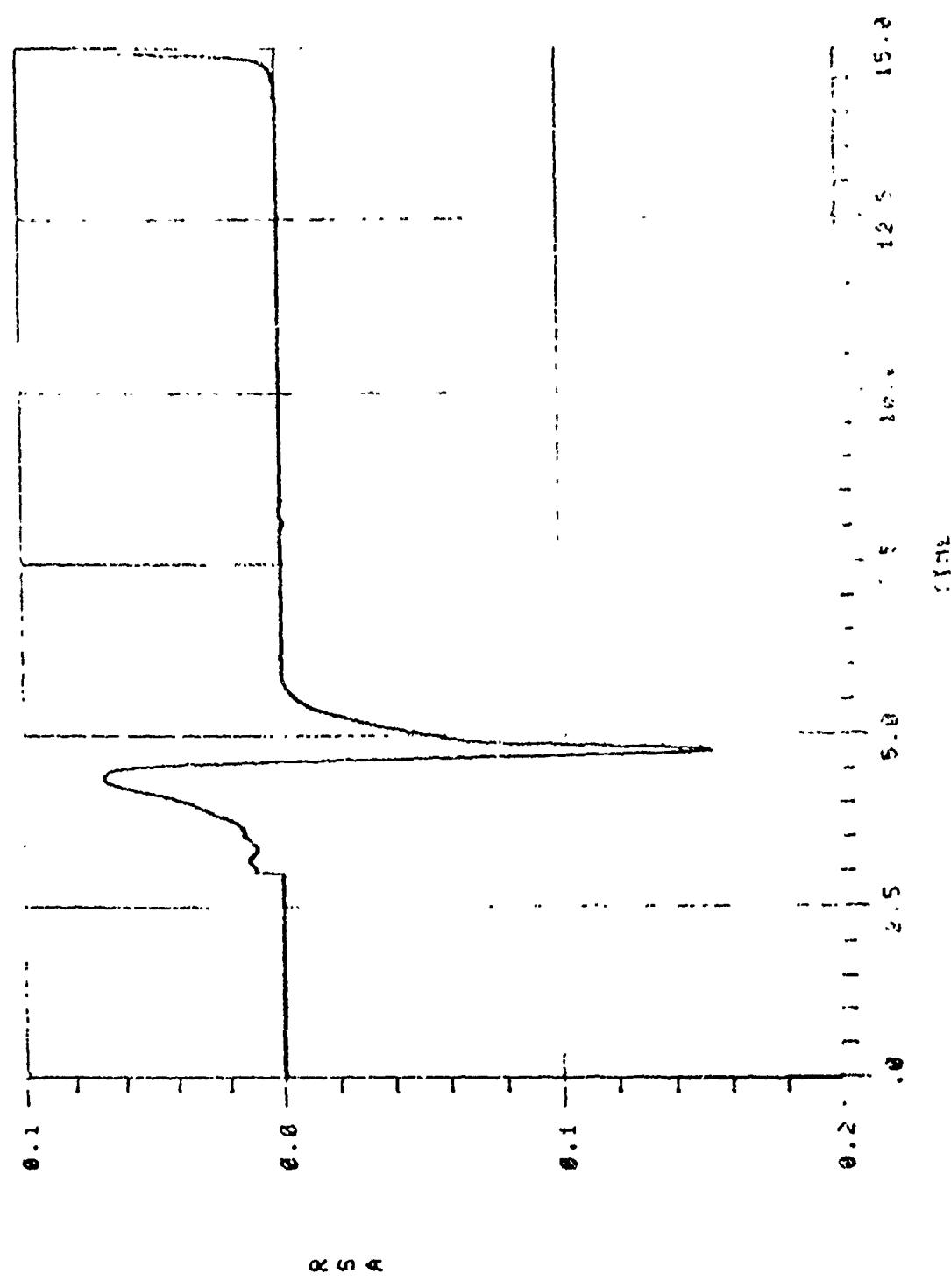


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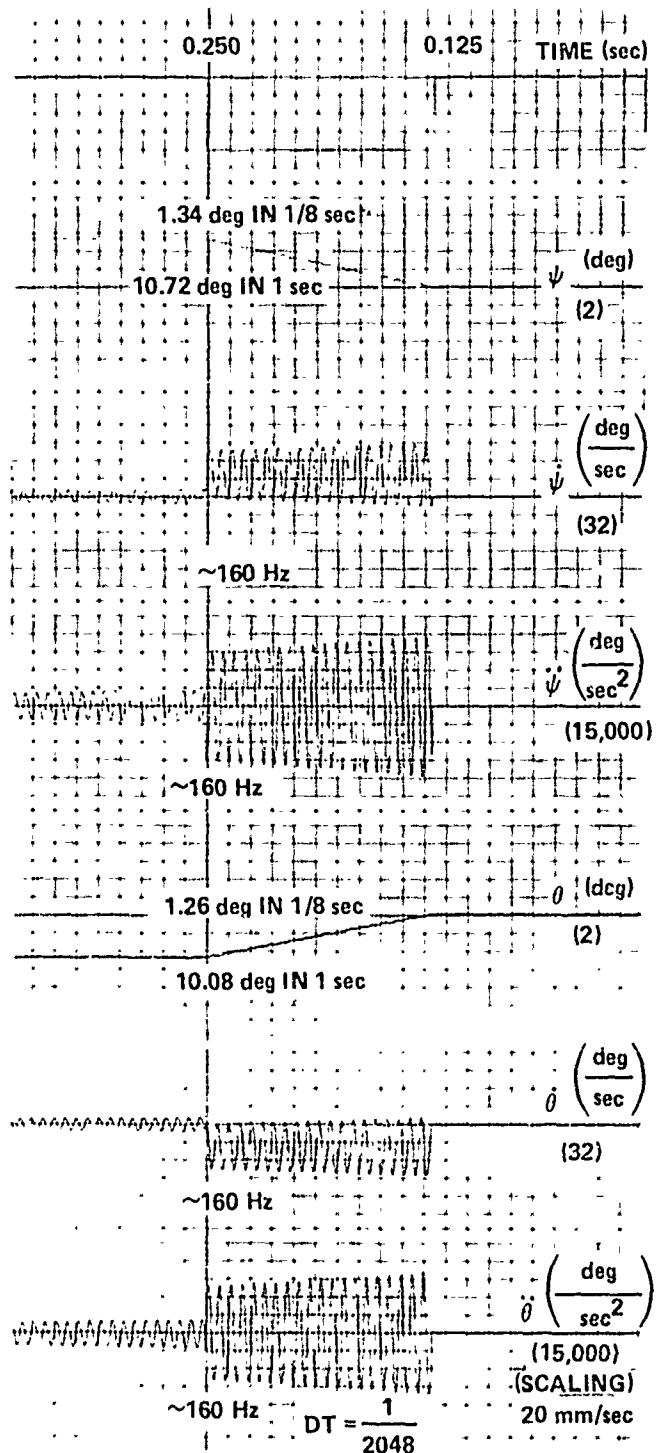


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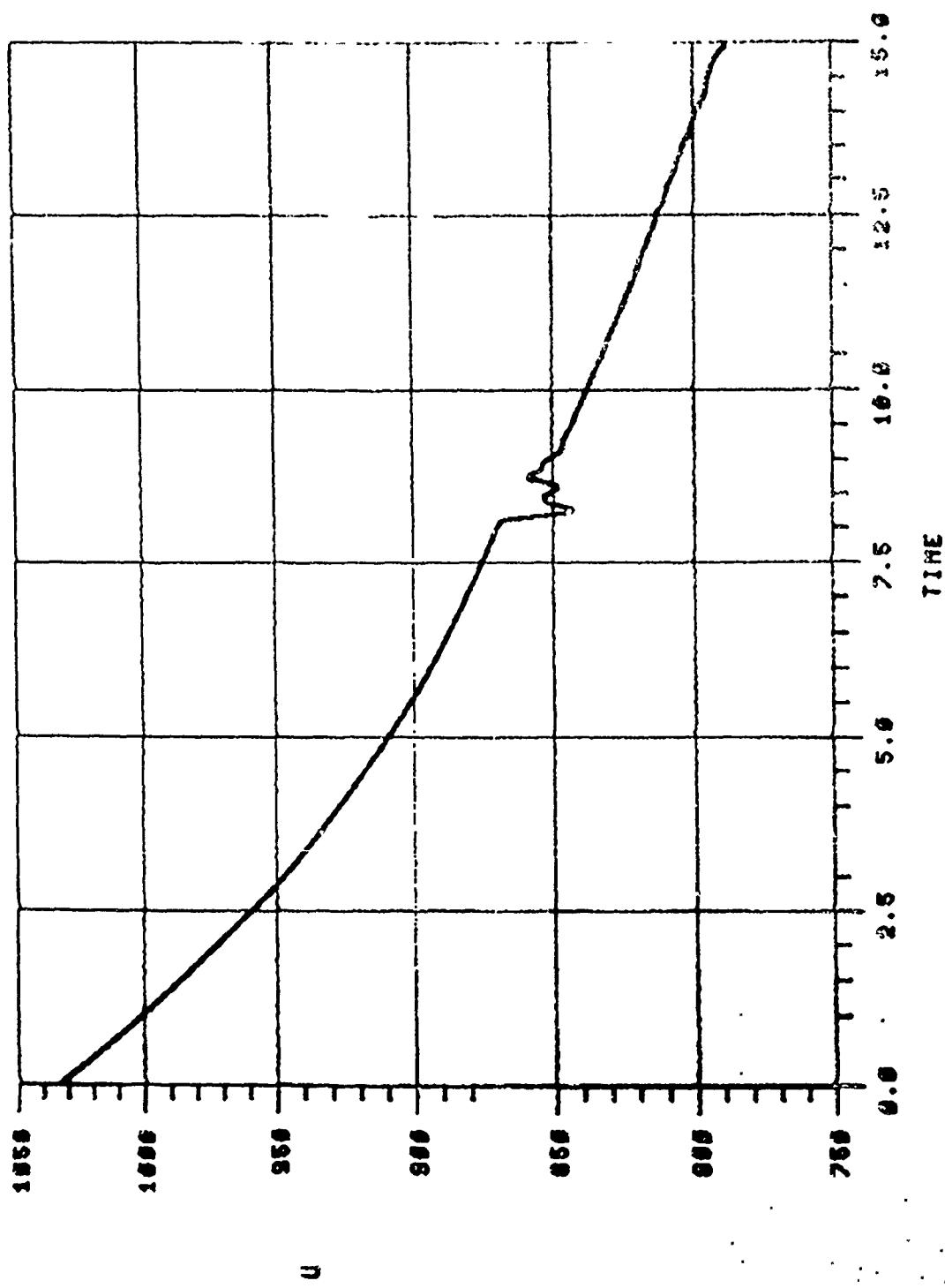


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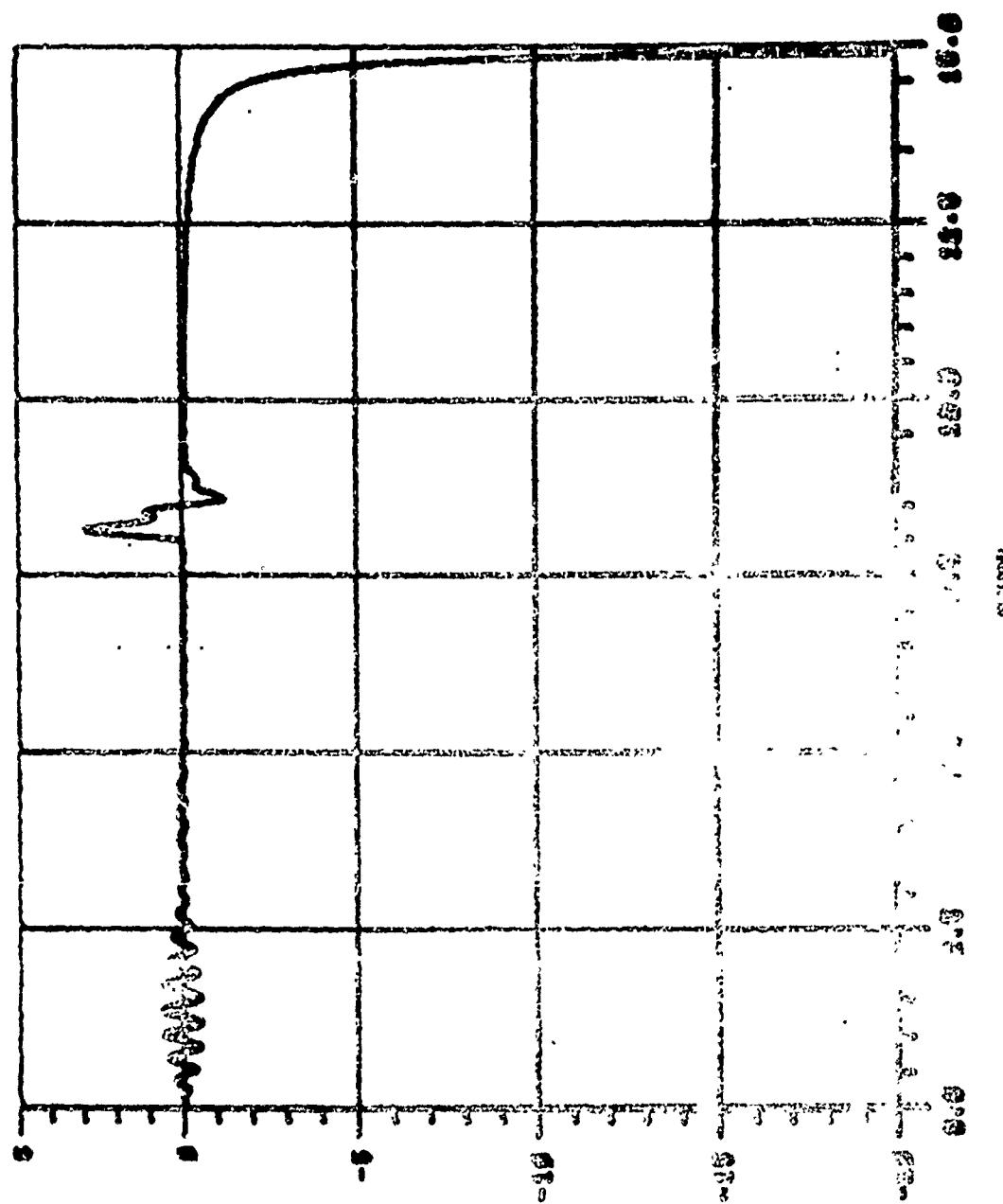


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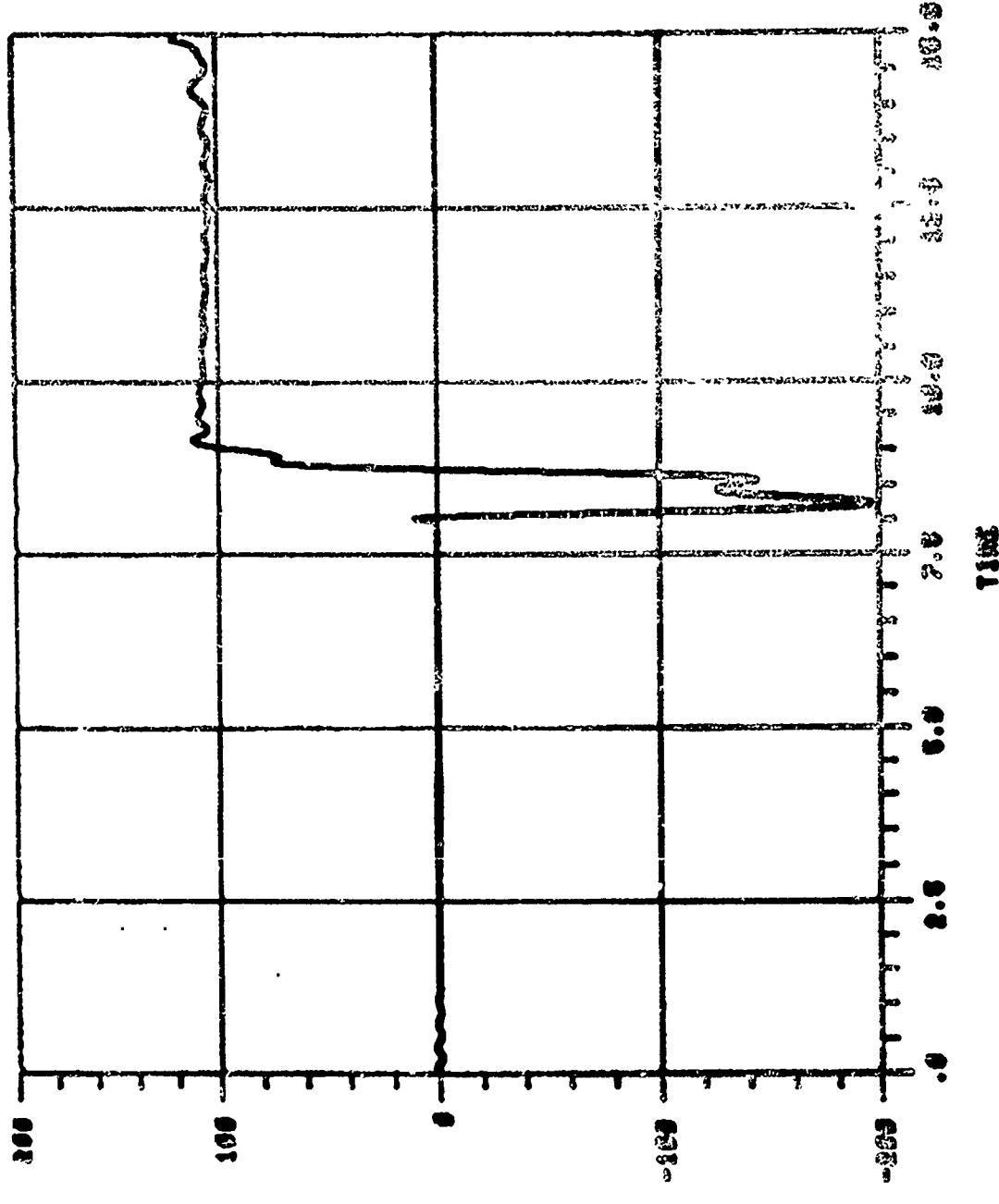


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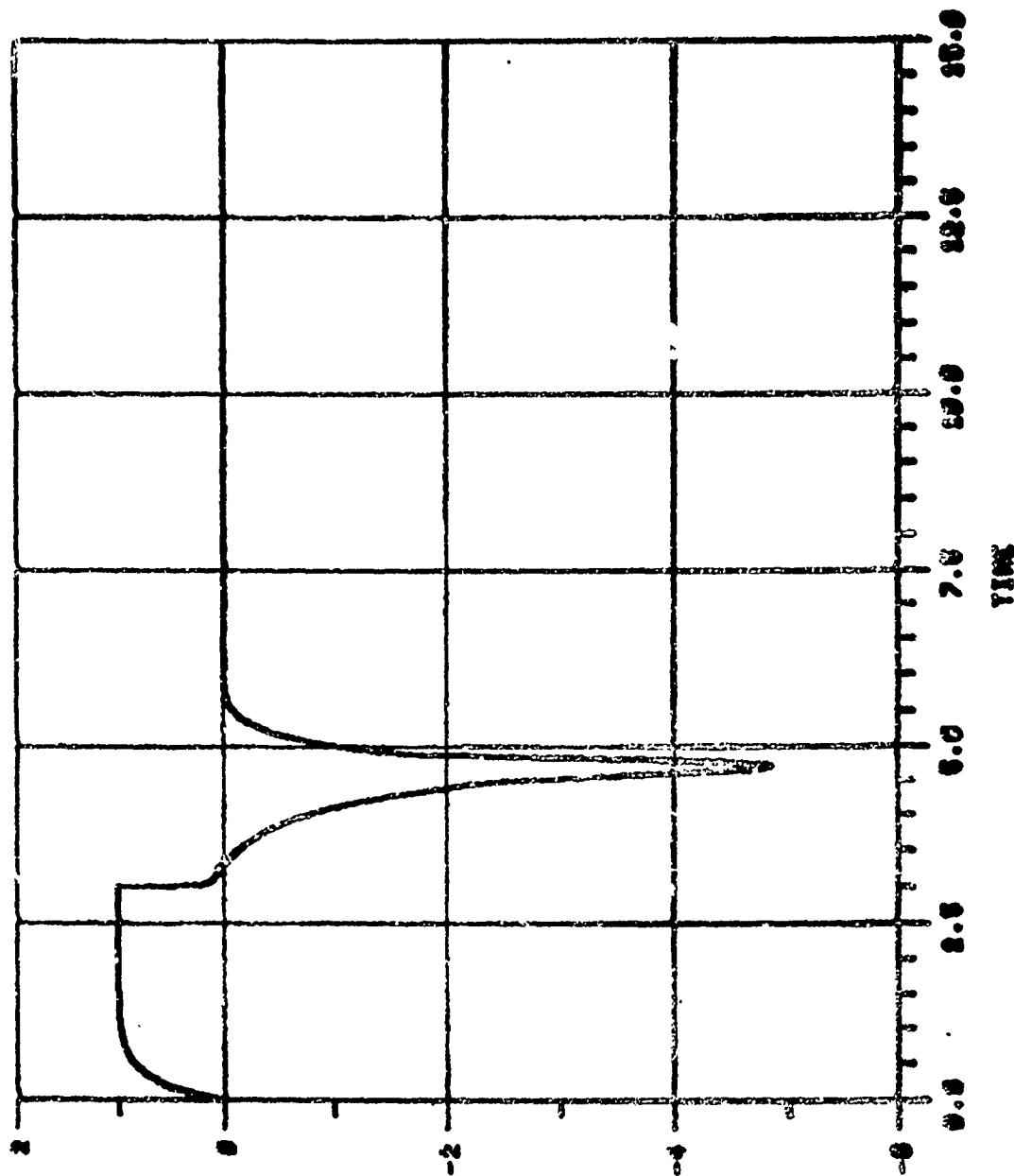


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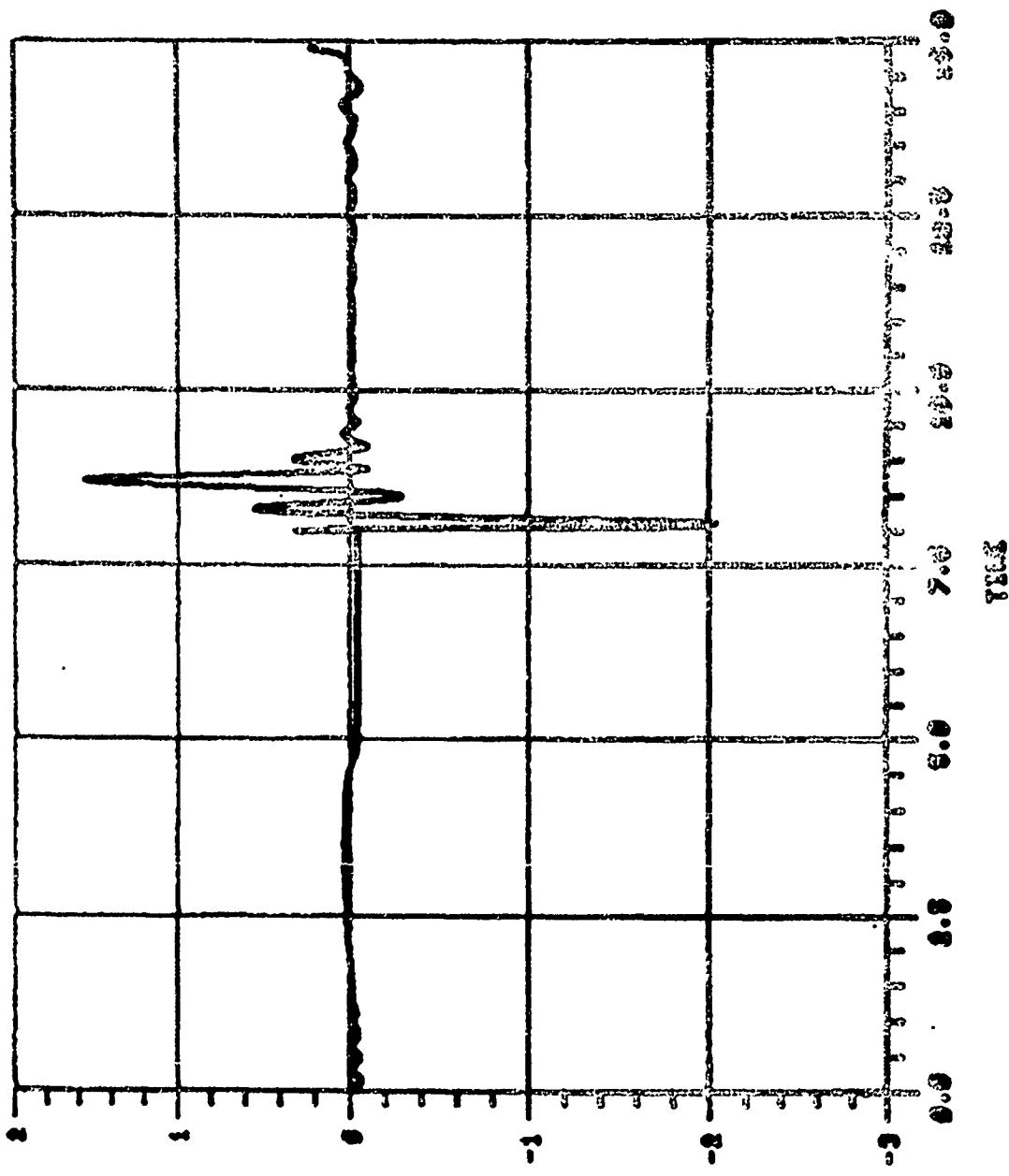


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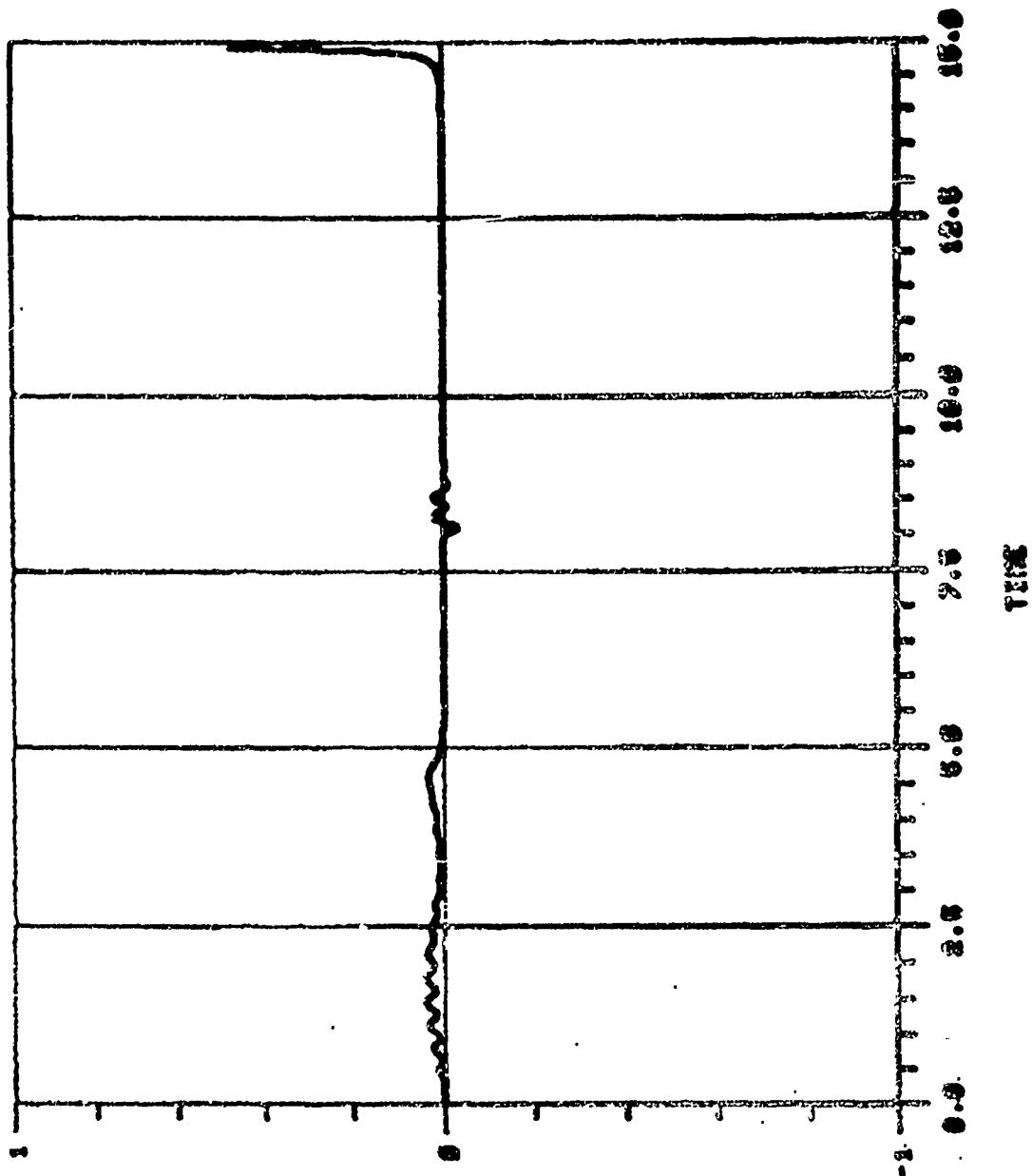


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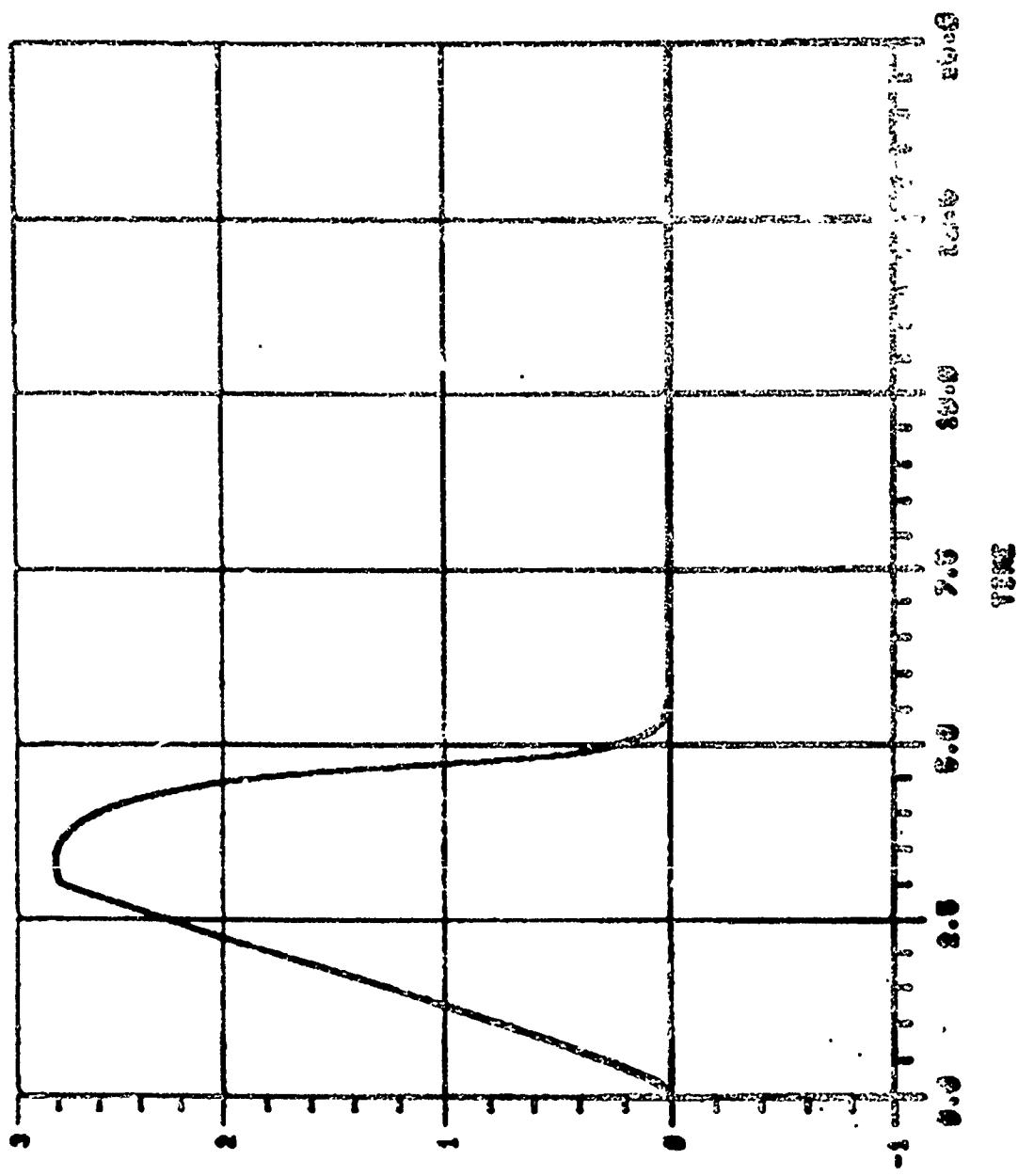


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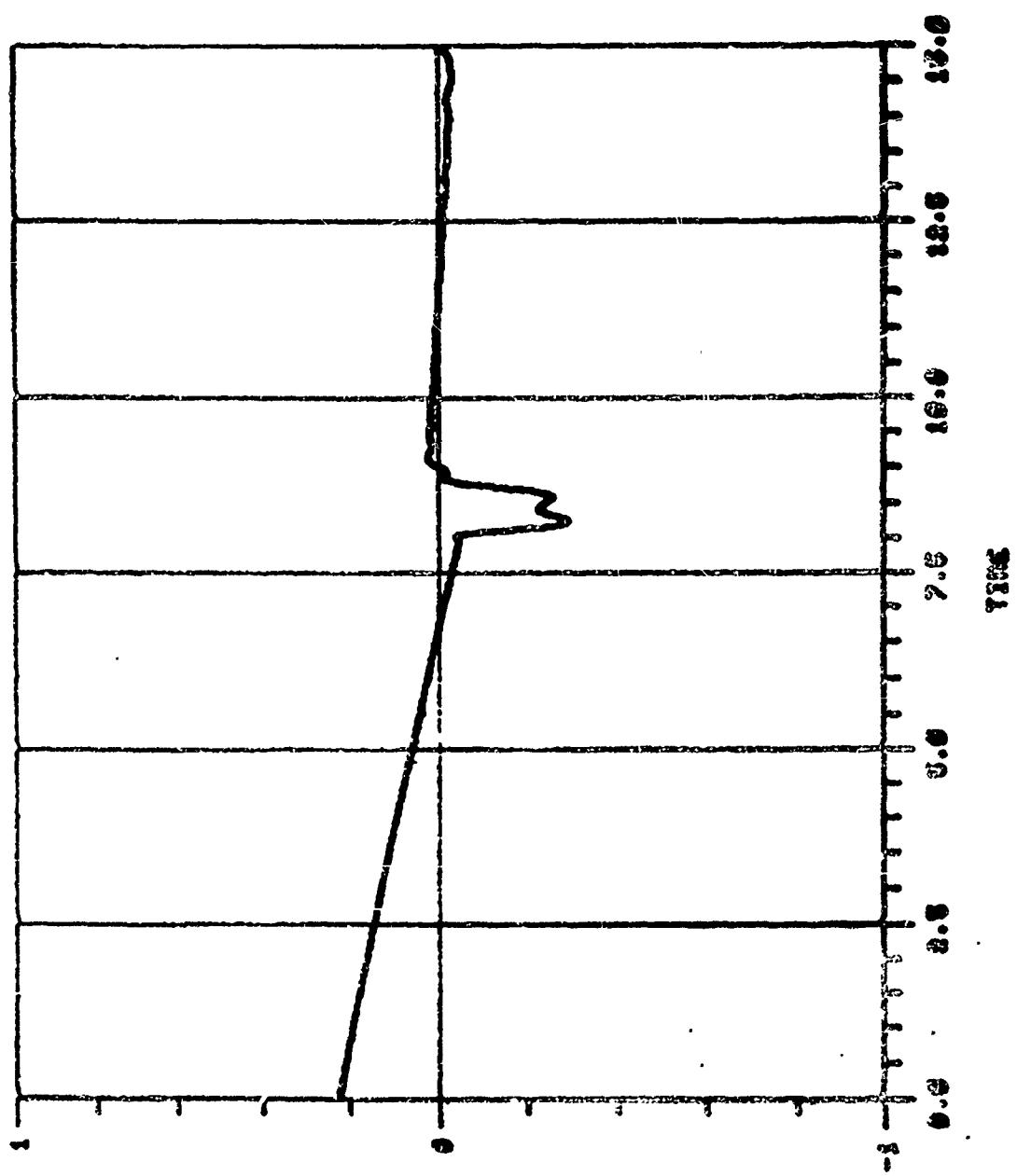


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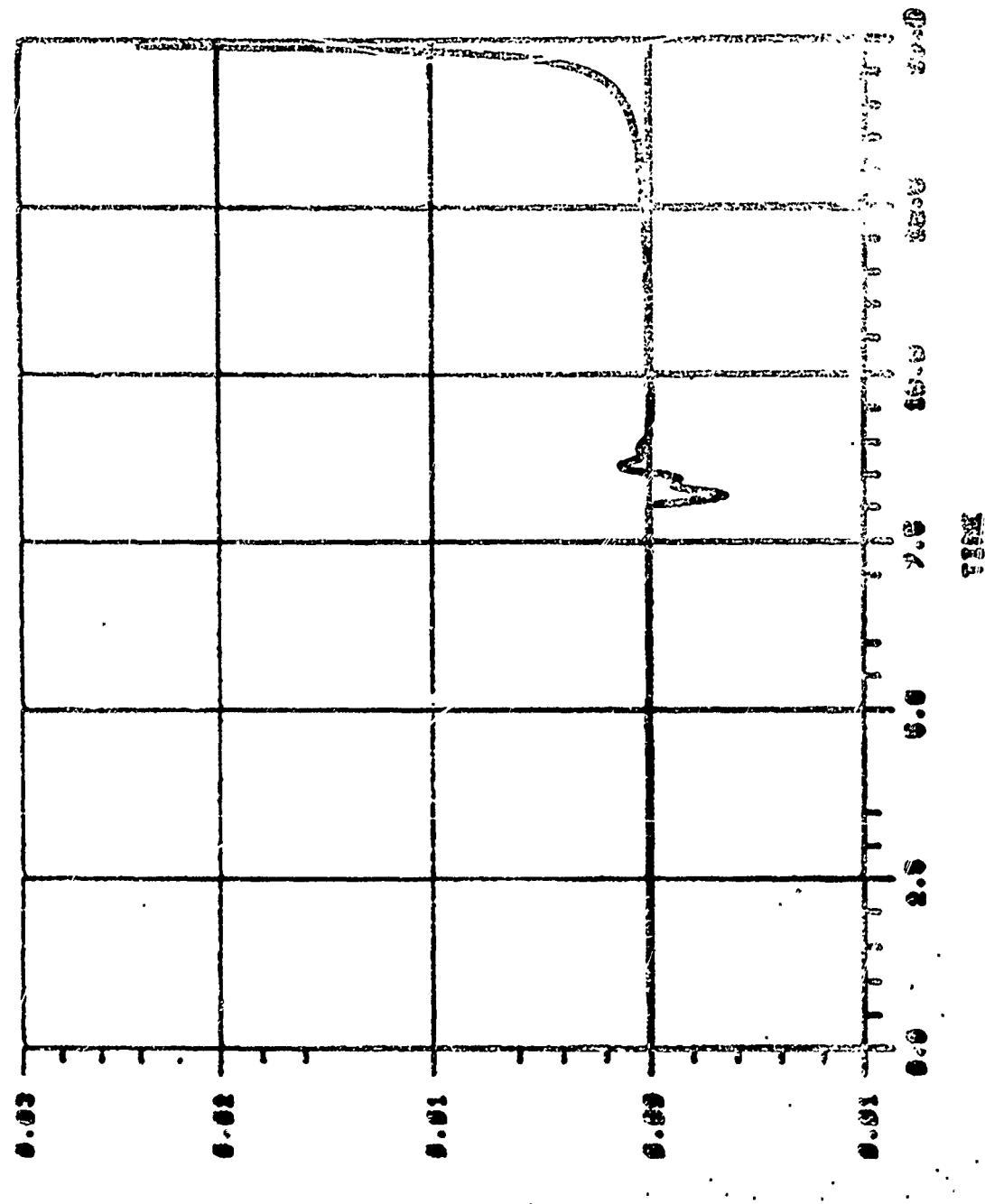


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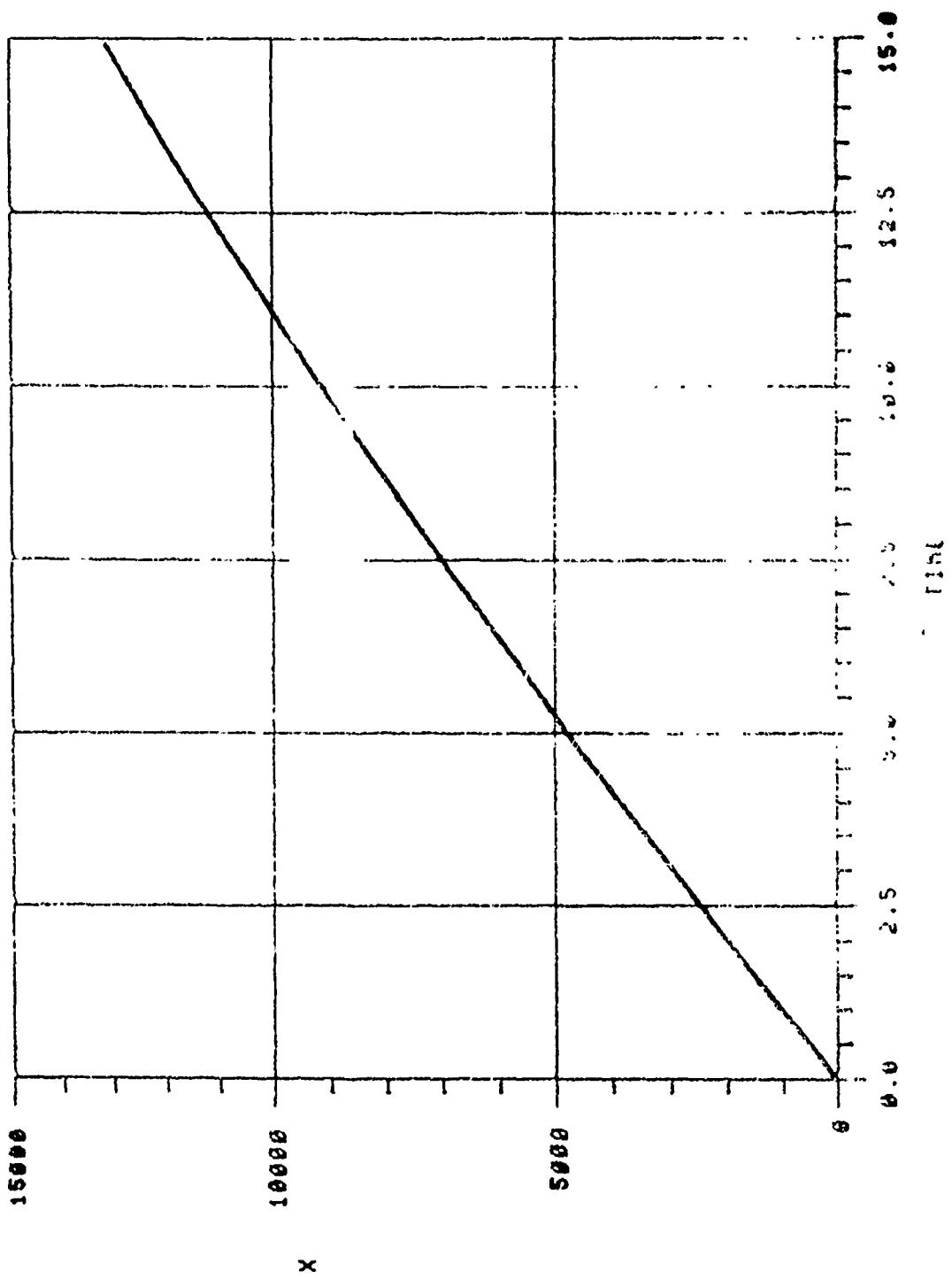


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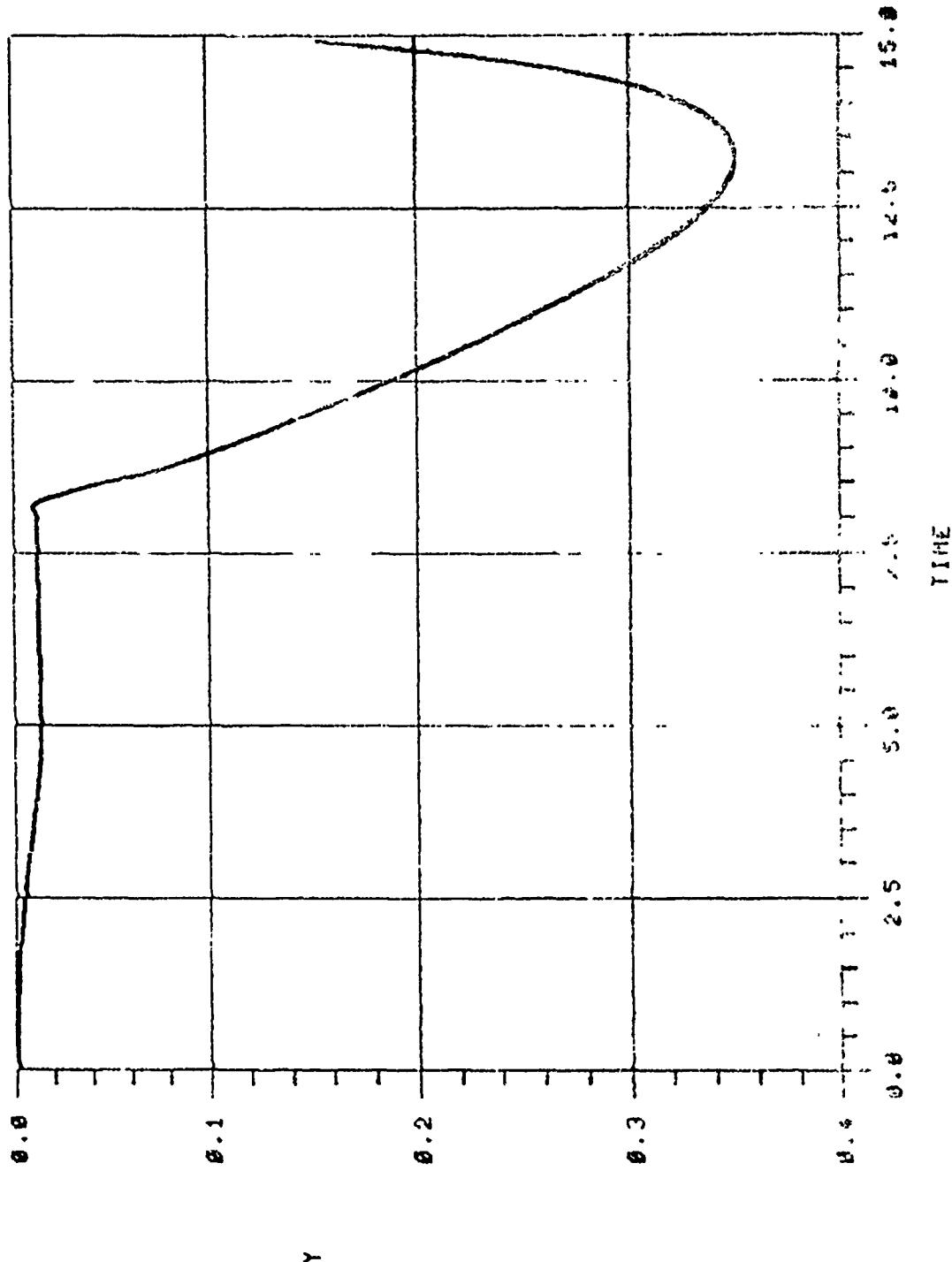


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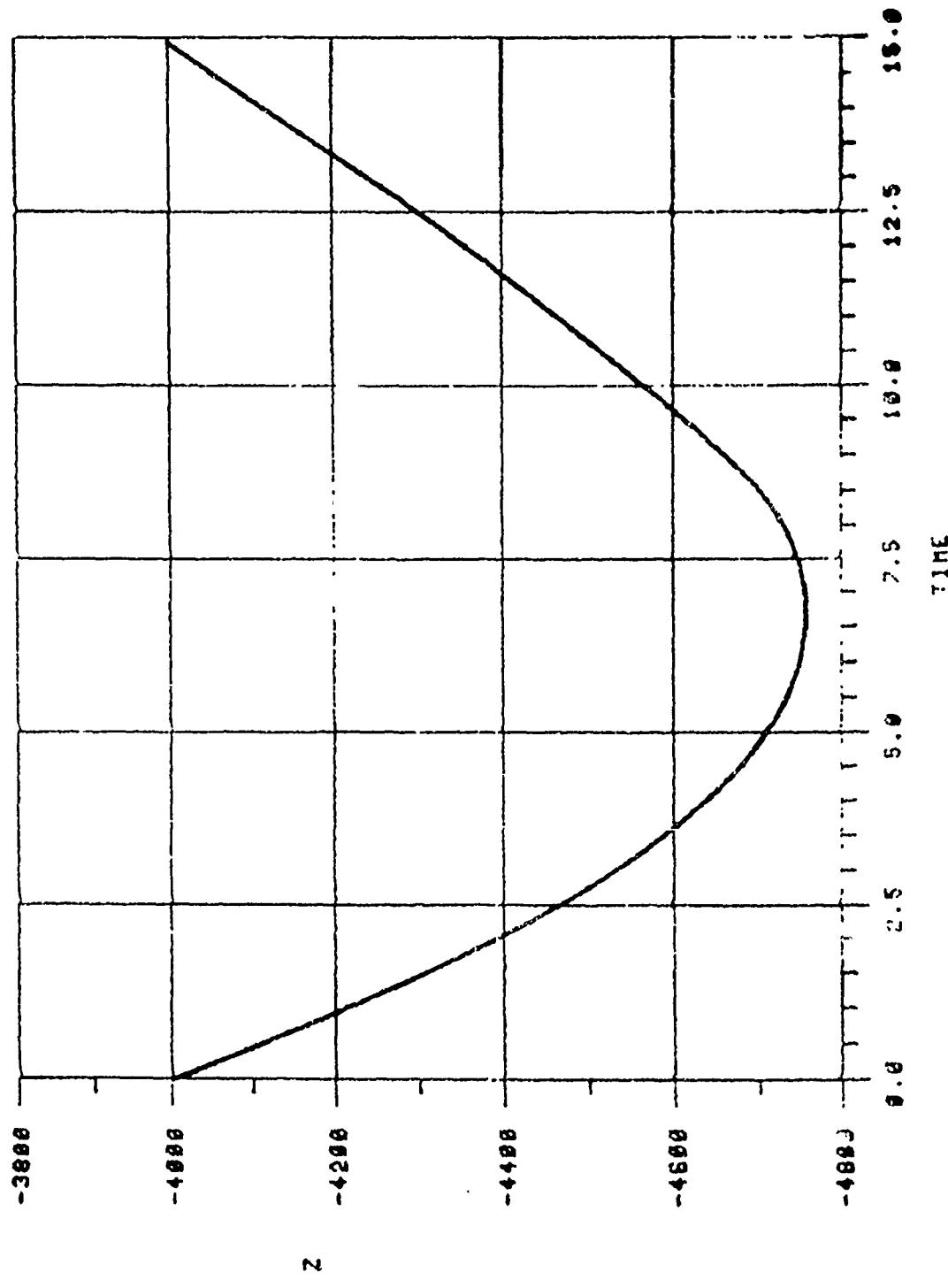


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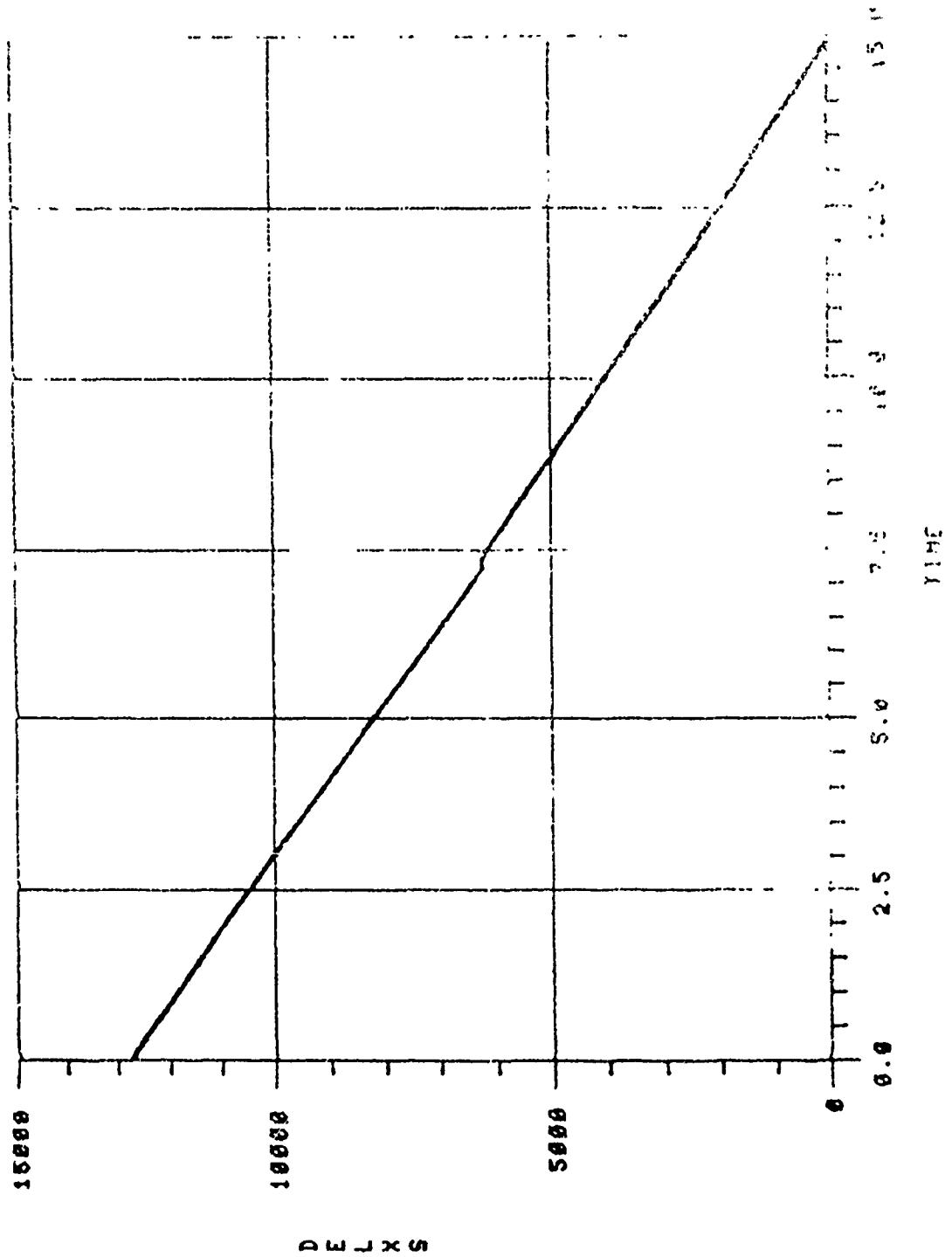


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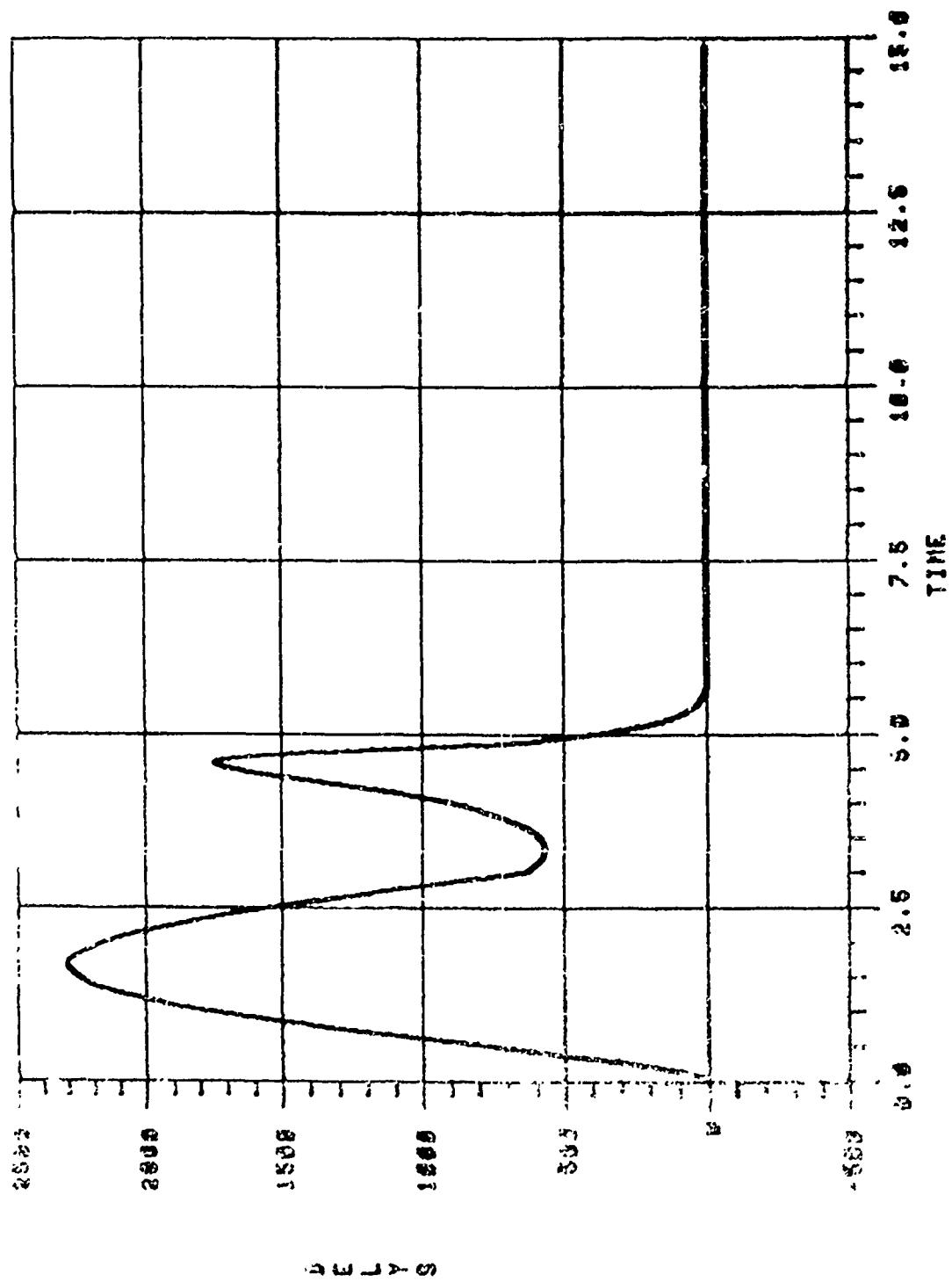


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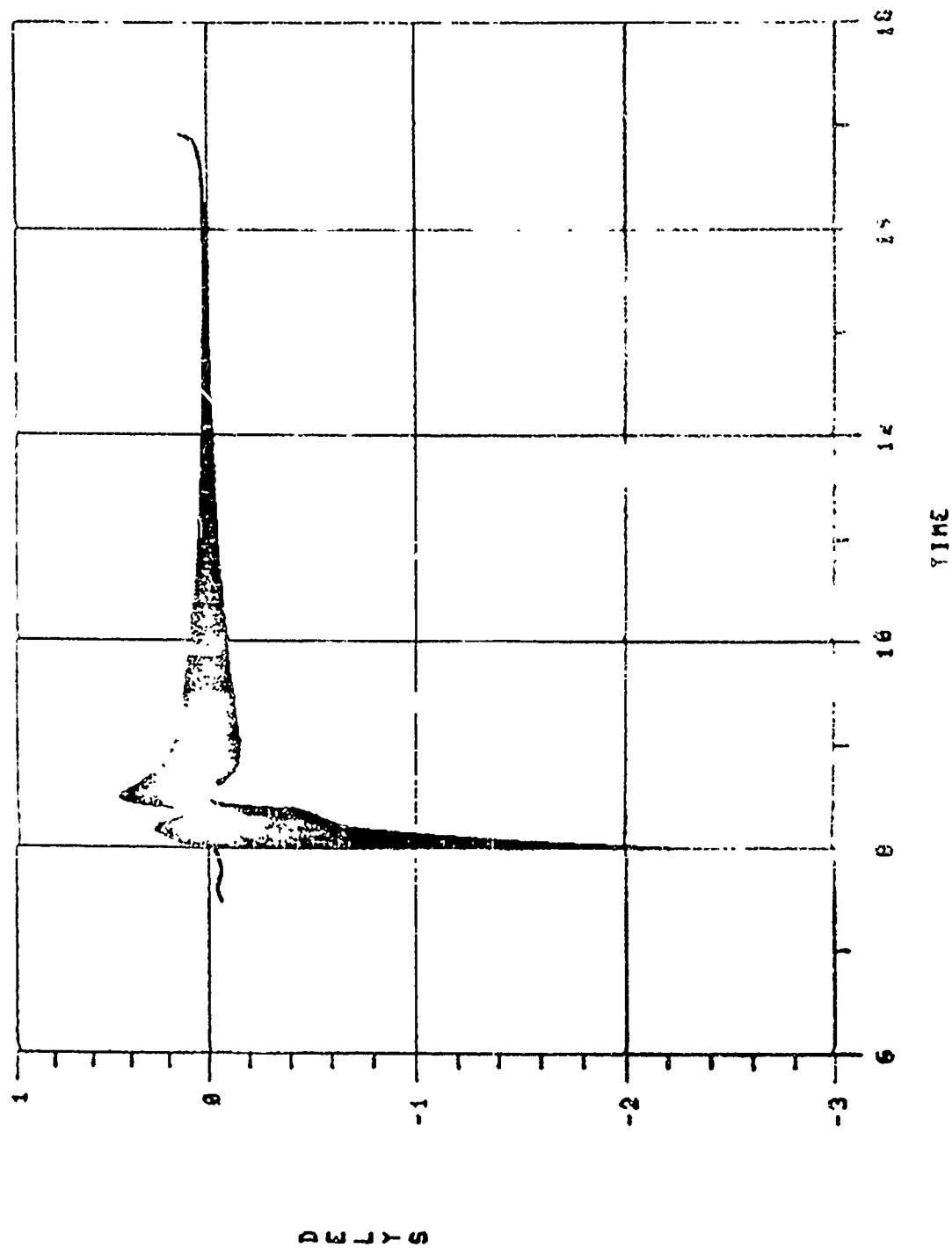


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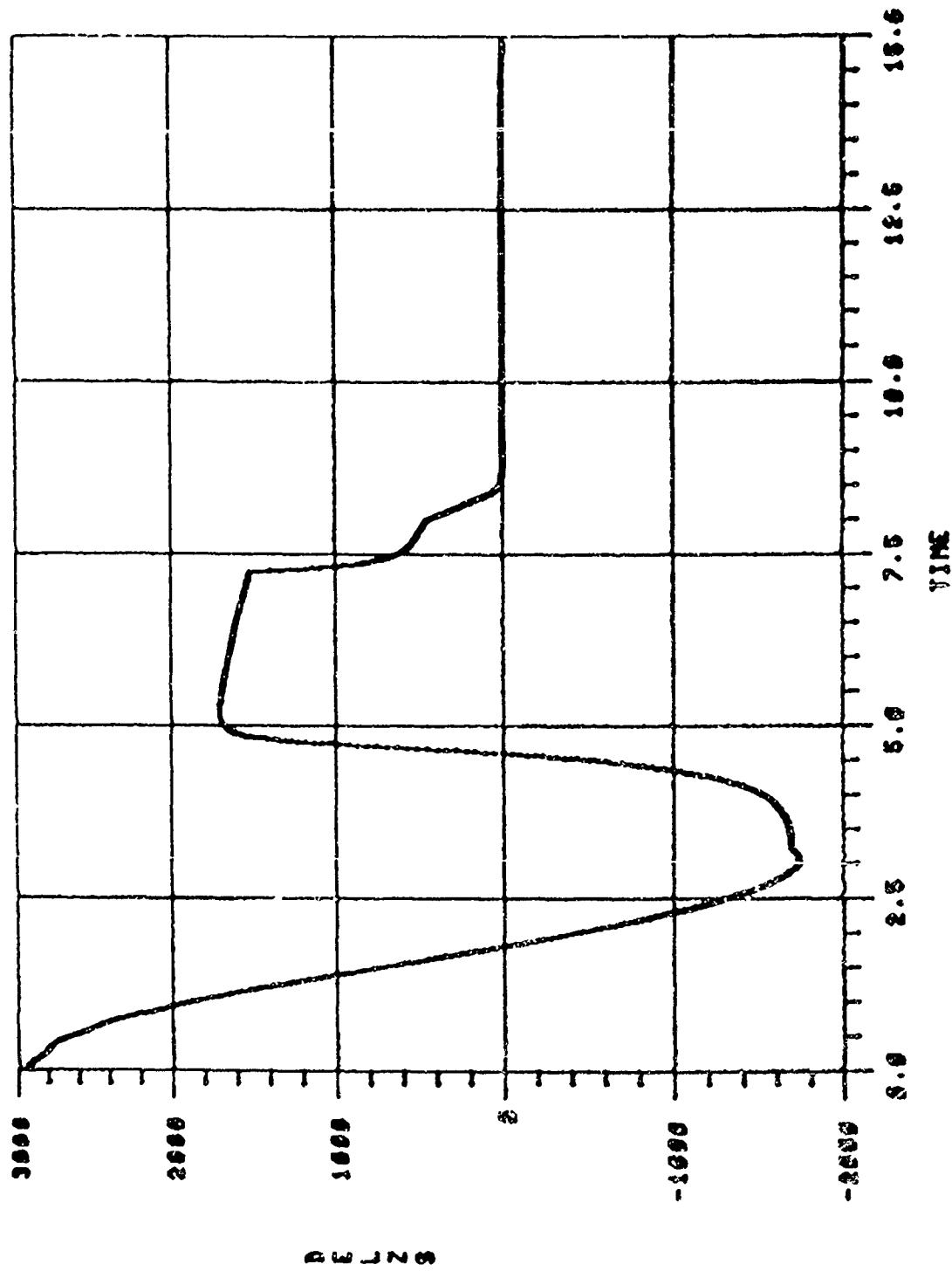


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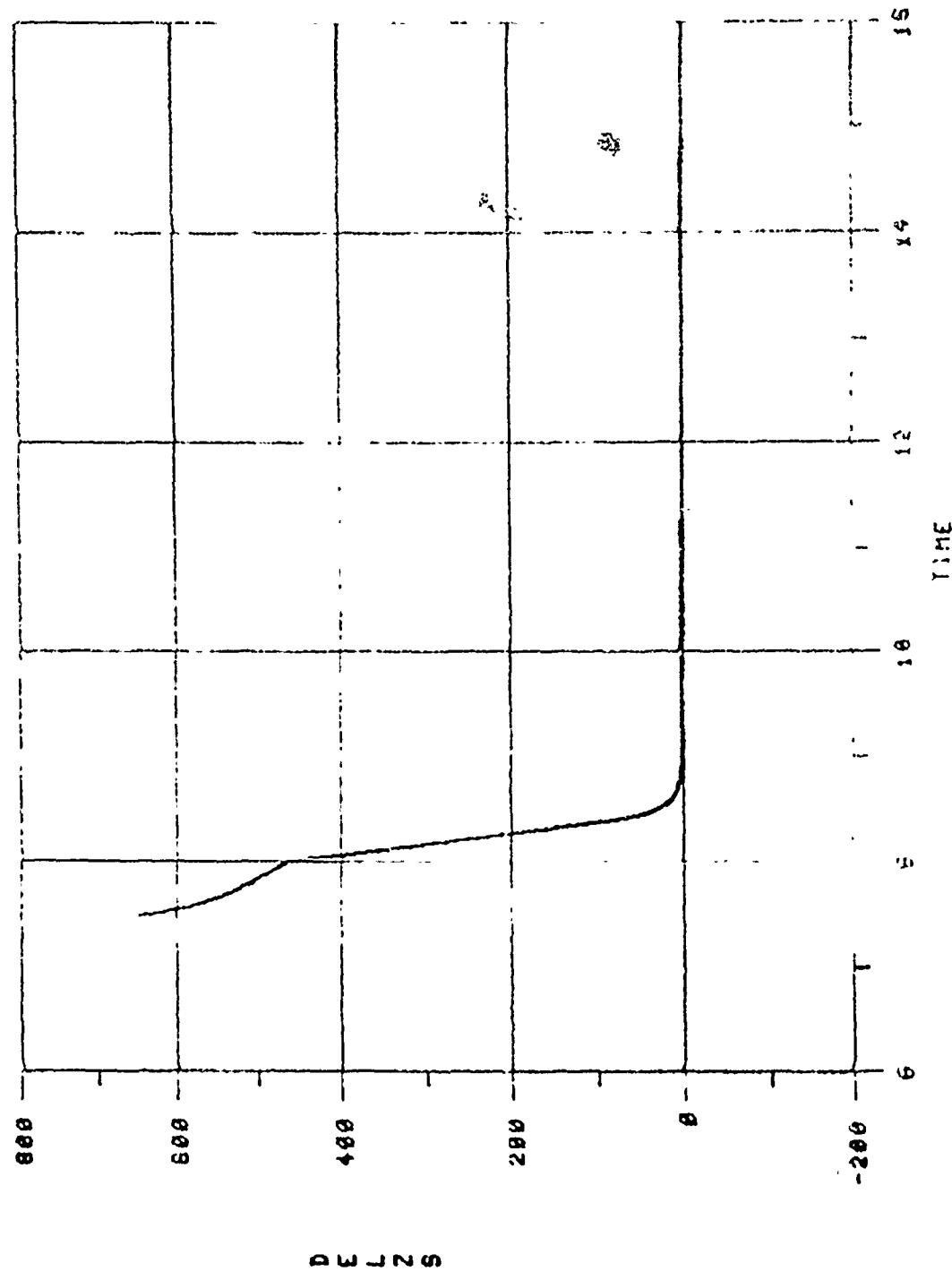


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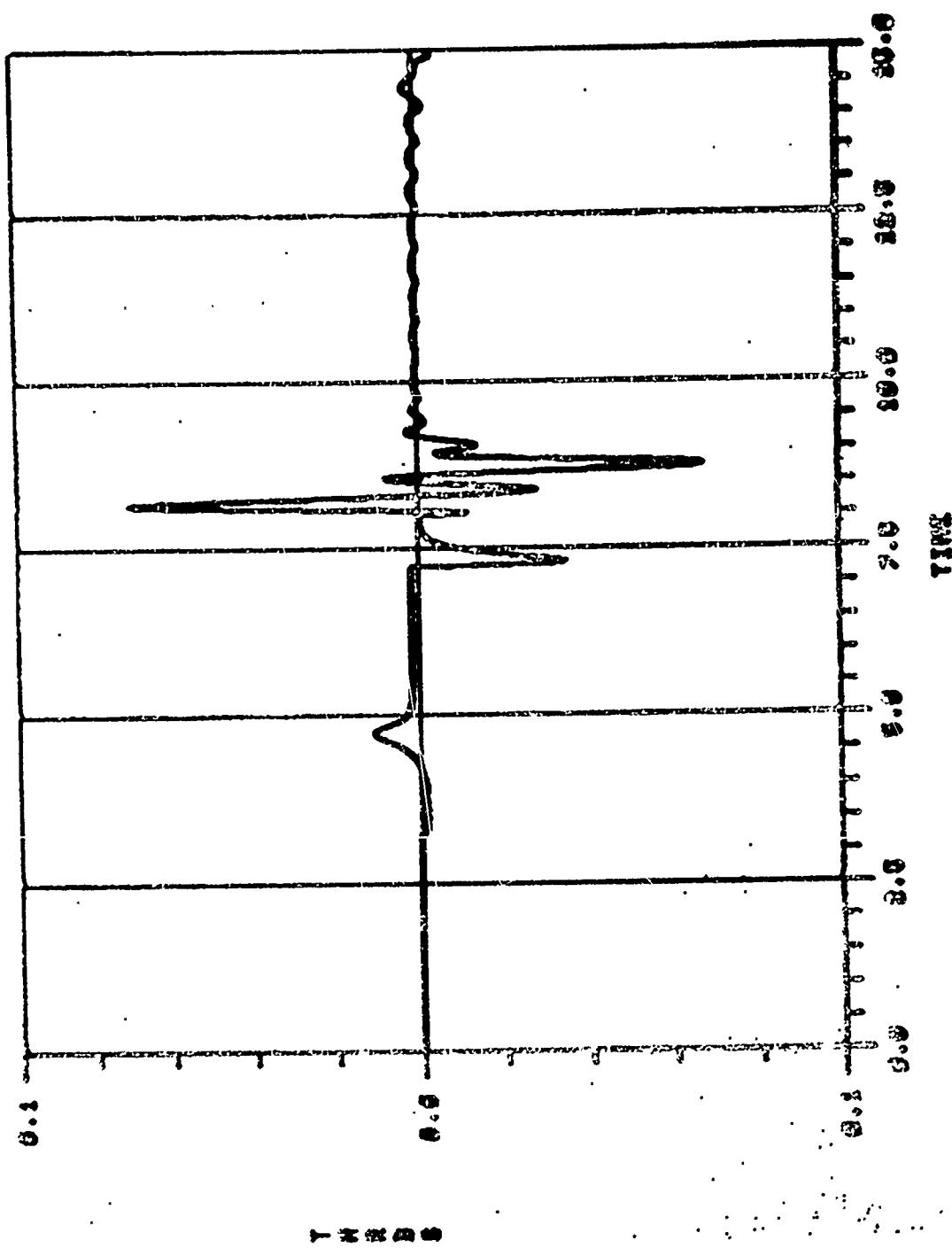


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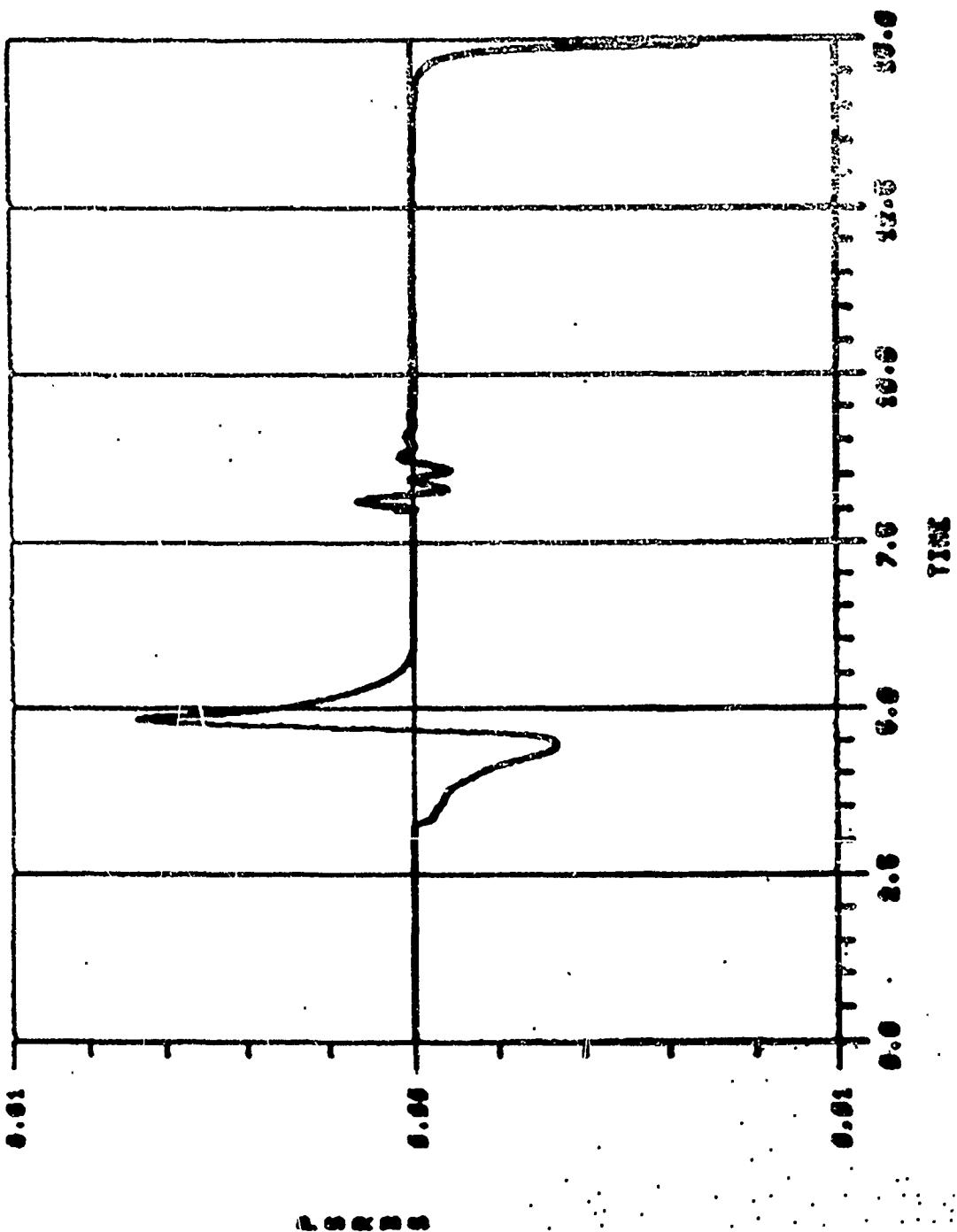


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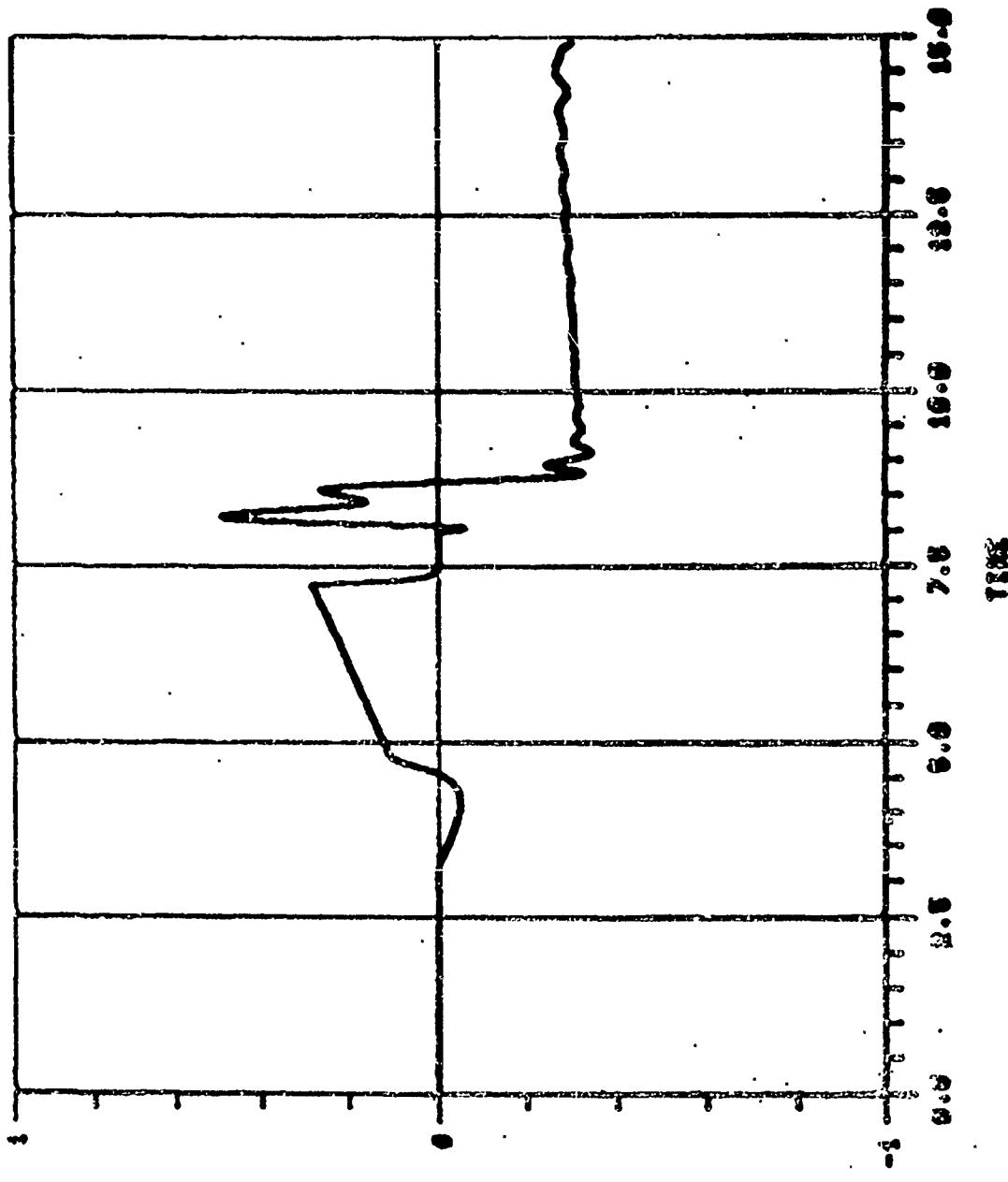


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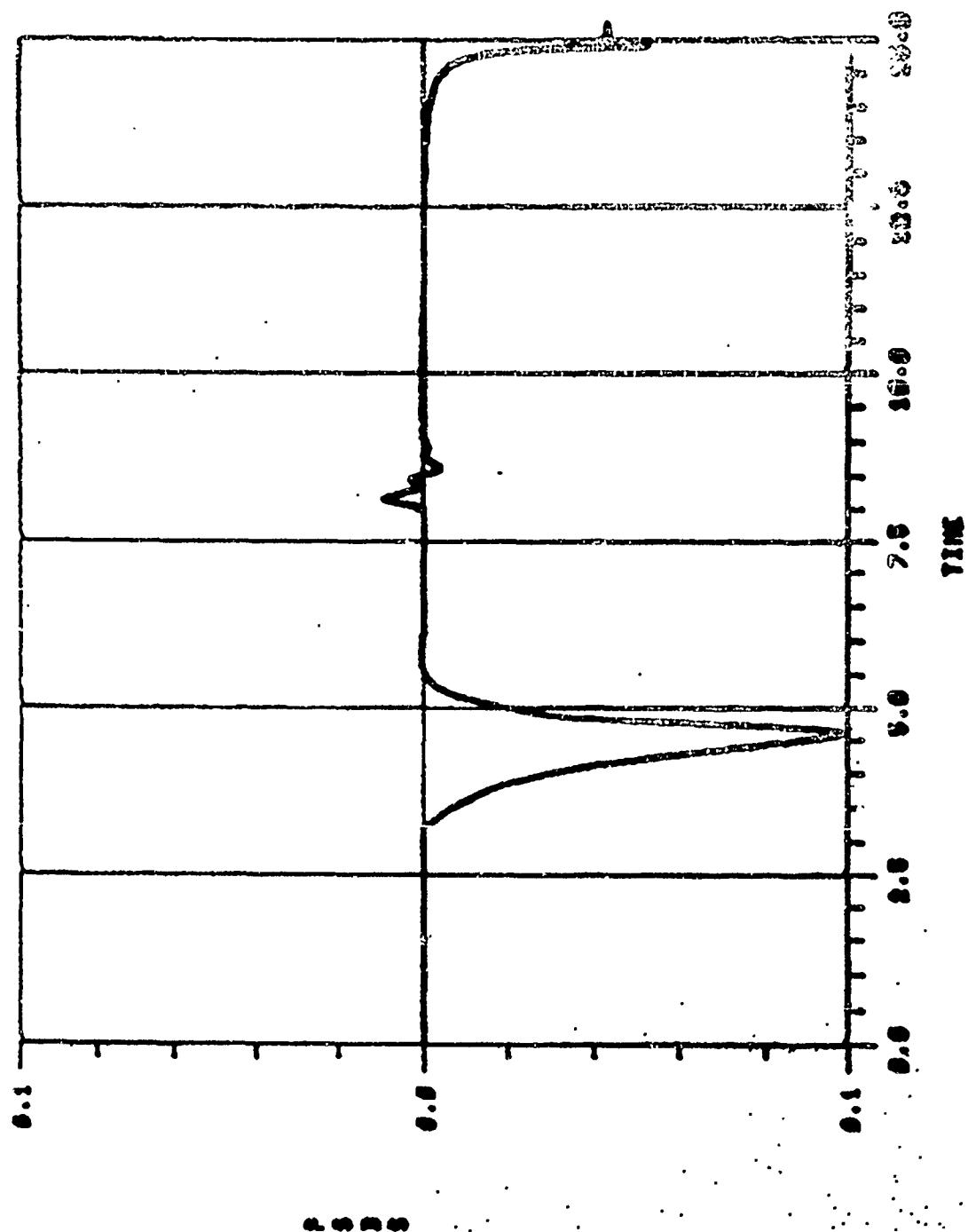


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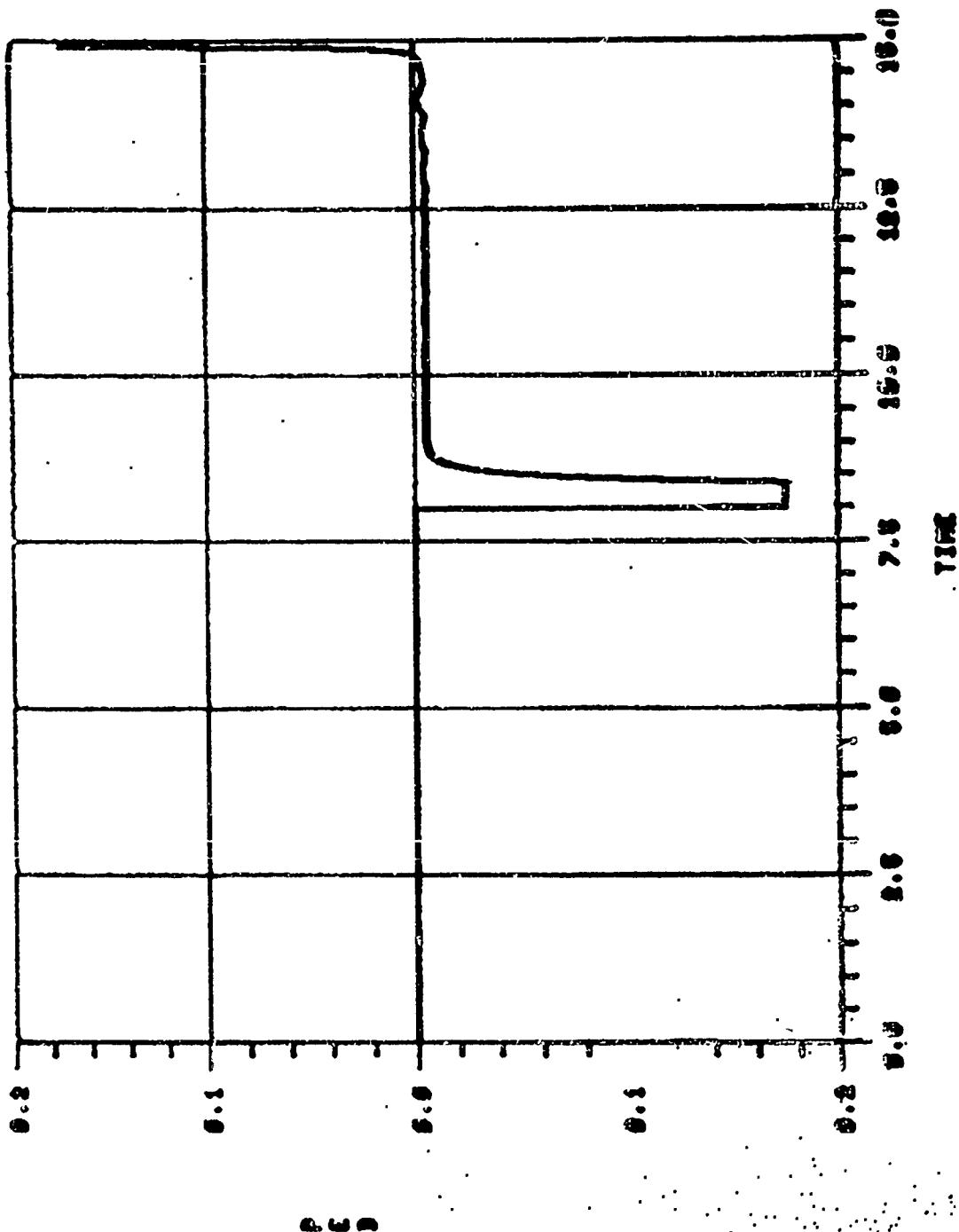


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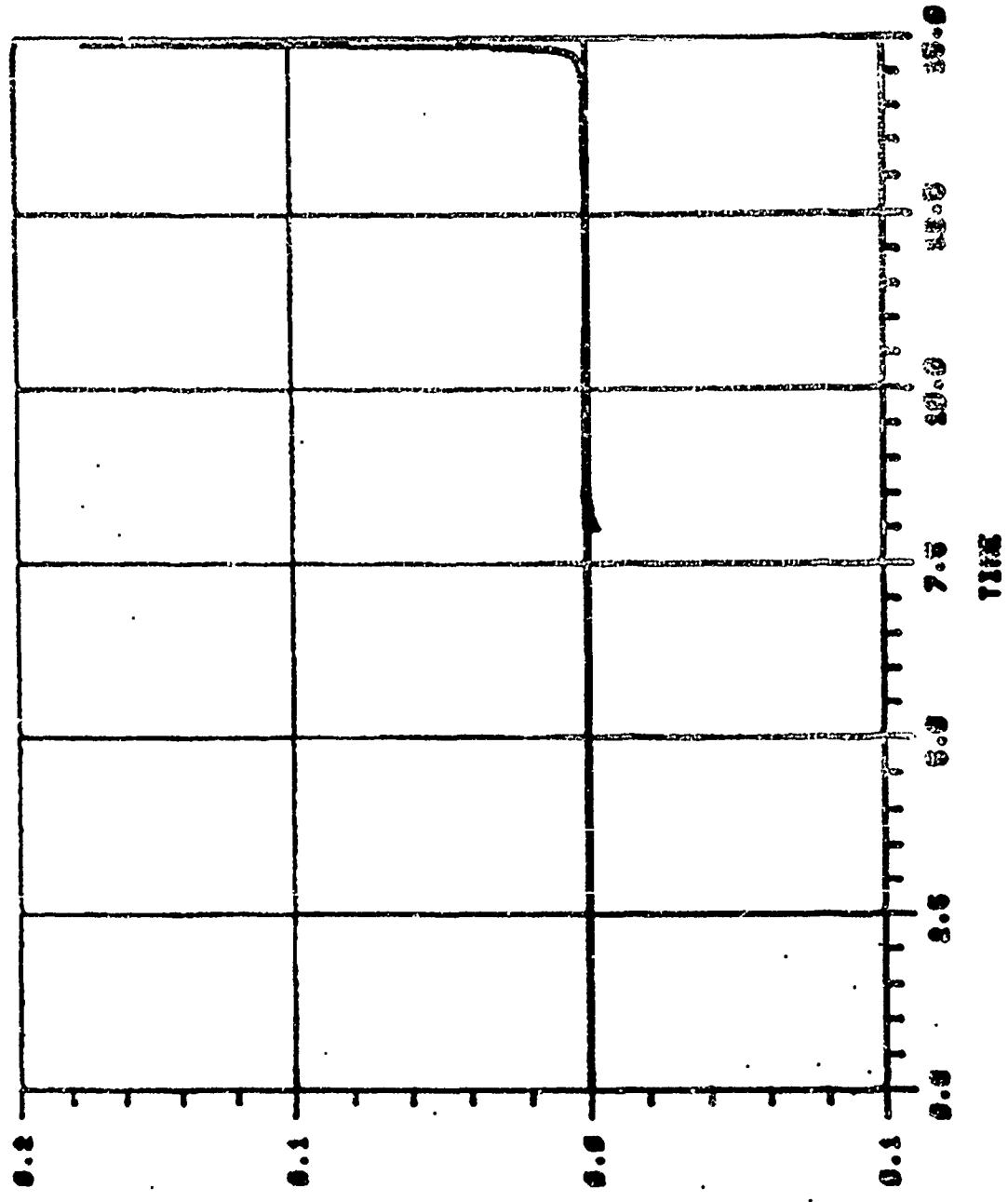


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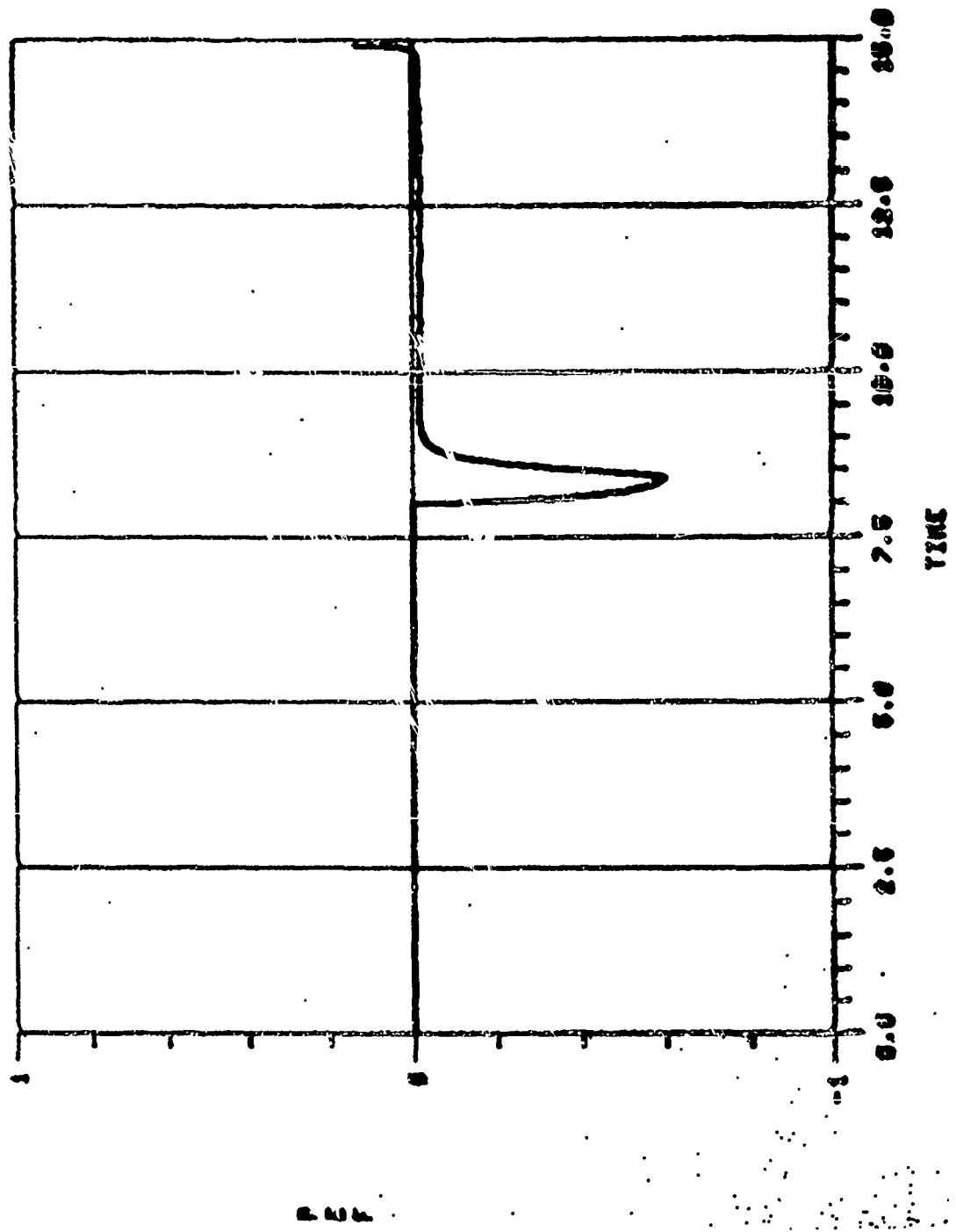


Figure 80.

TIME

Figure 81.

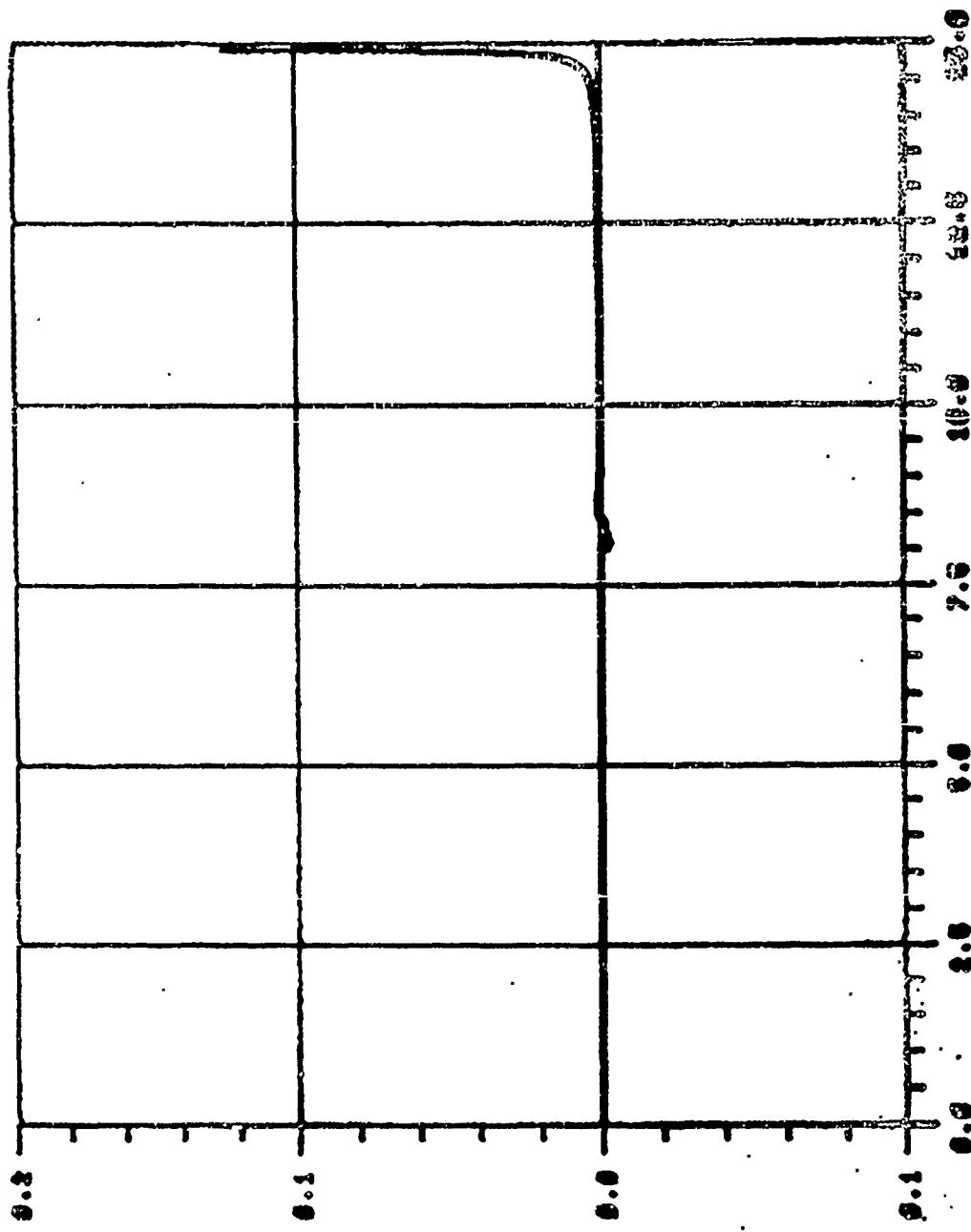
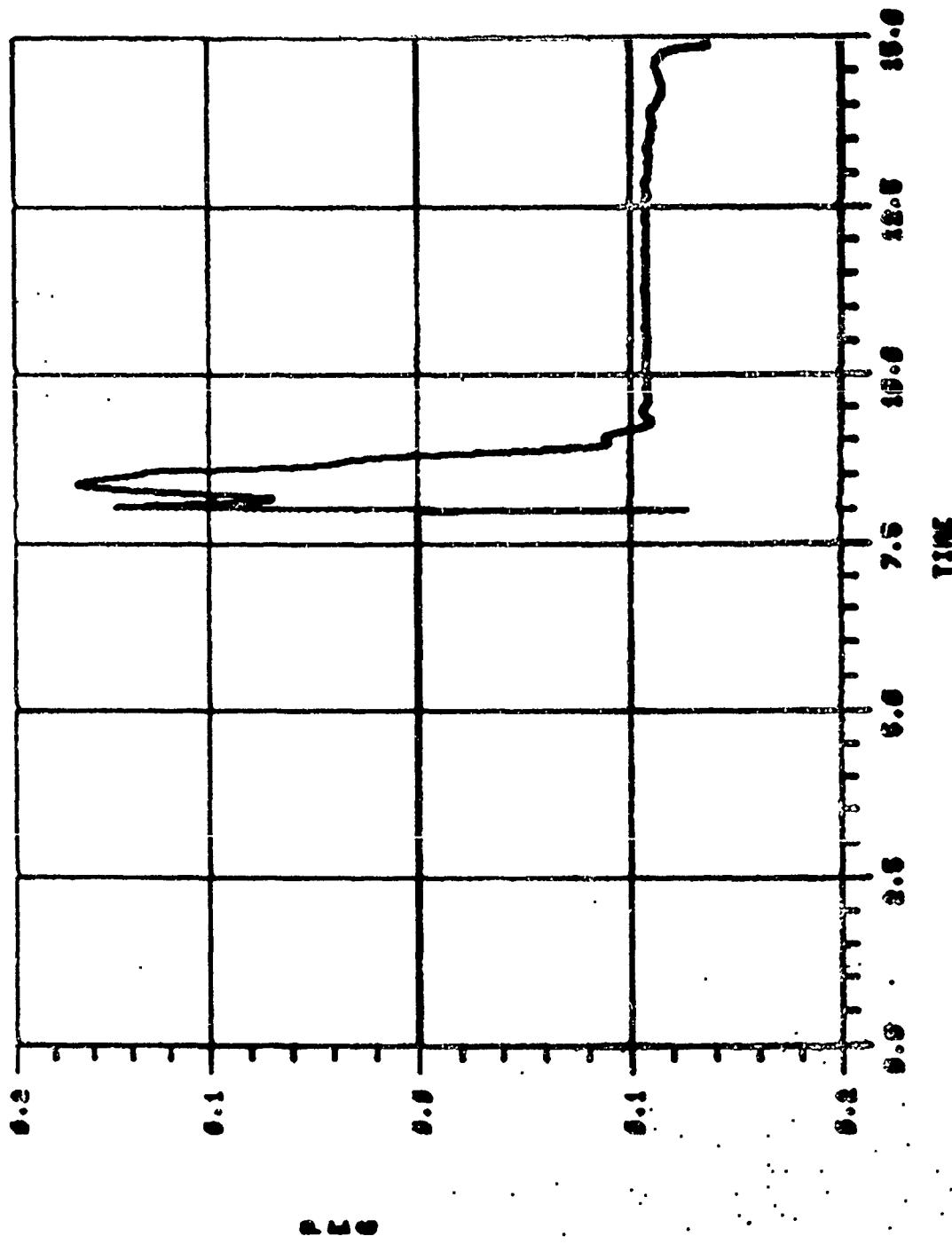


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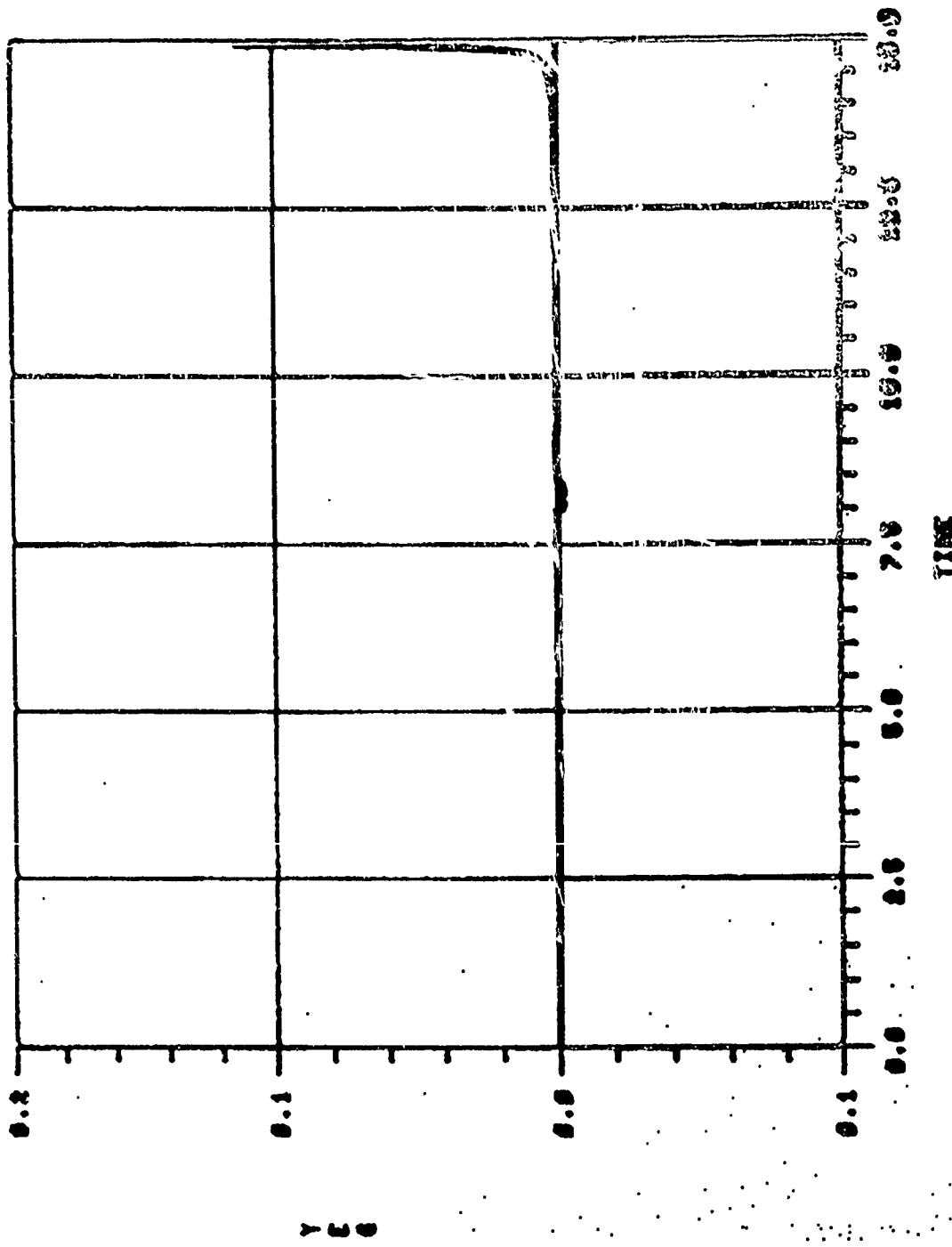


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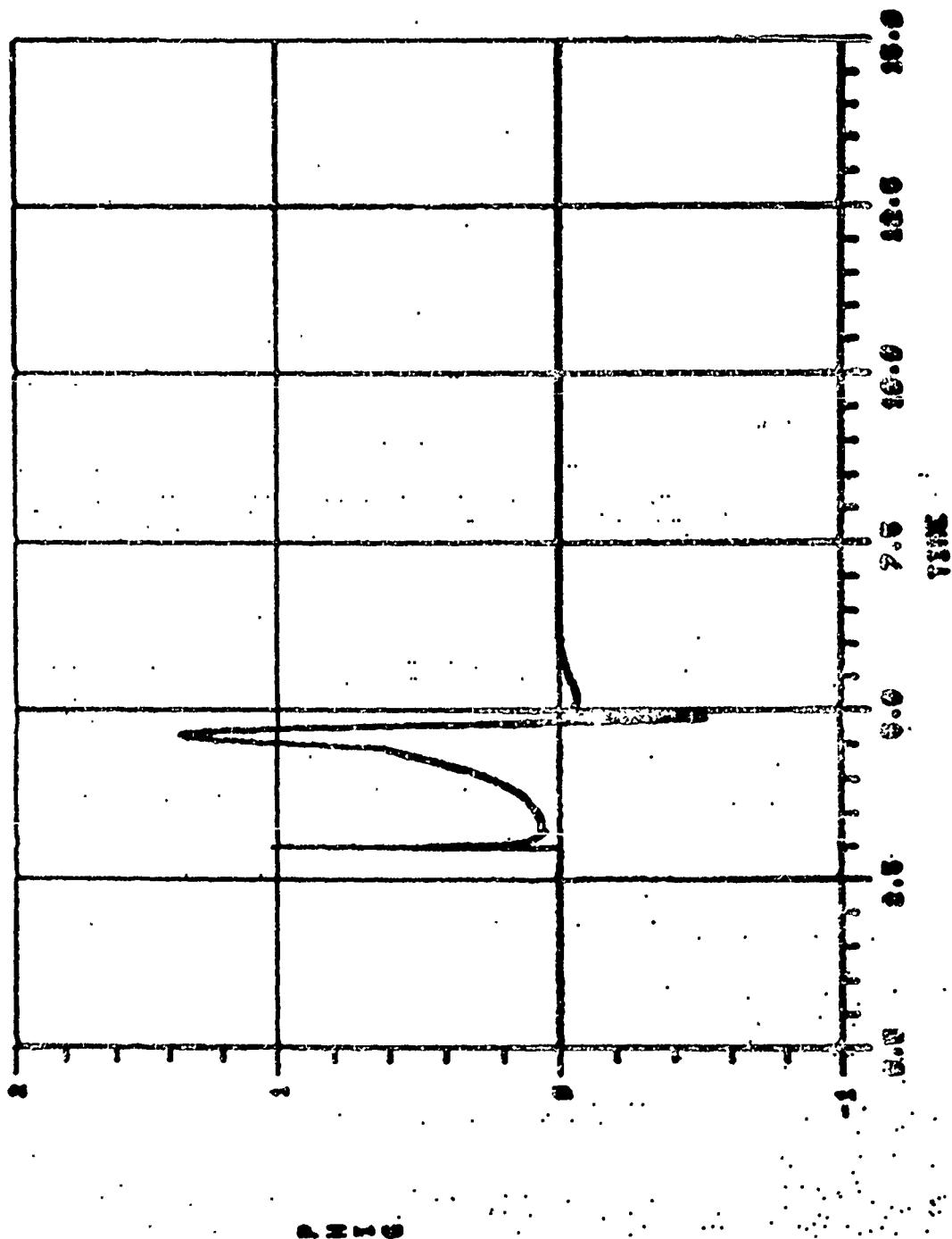


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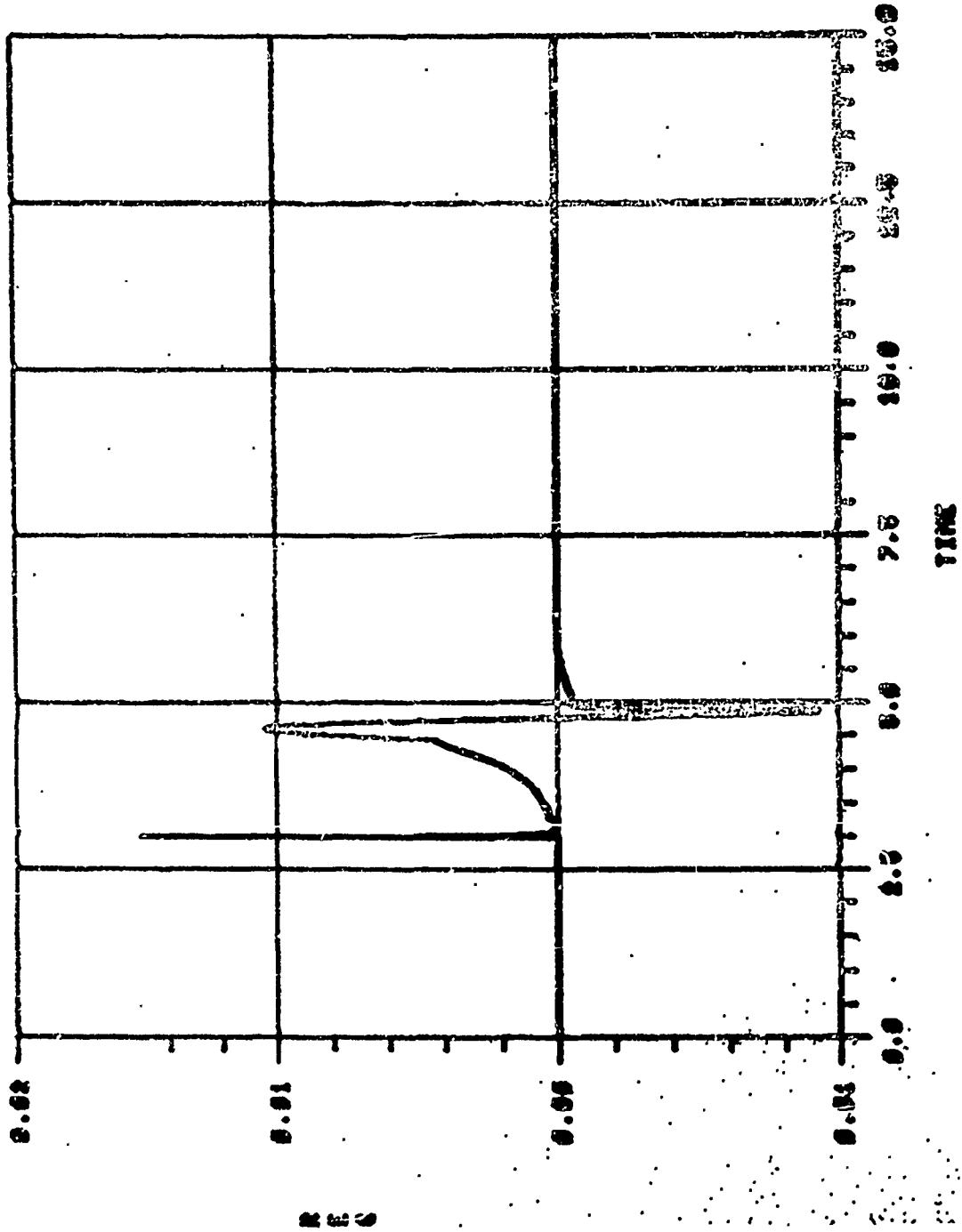


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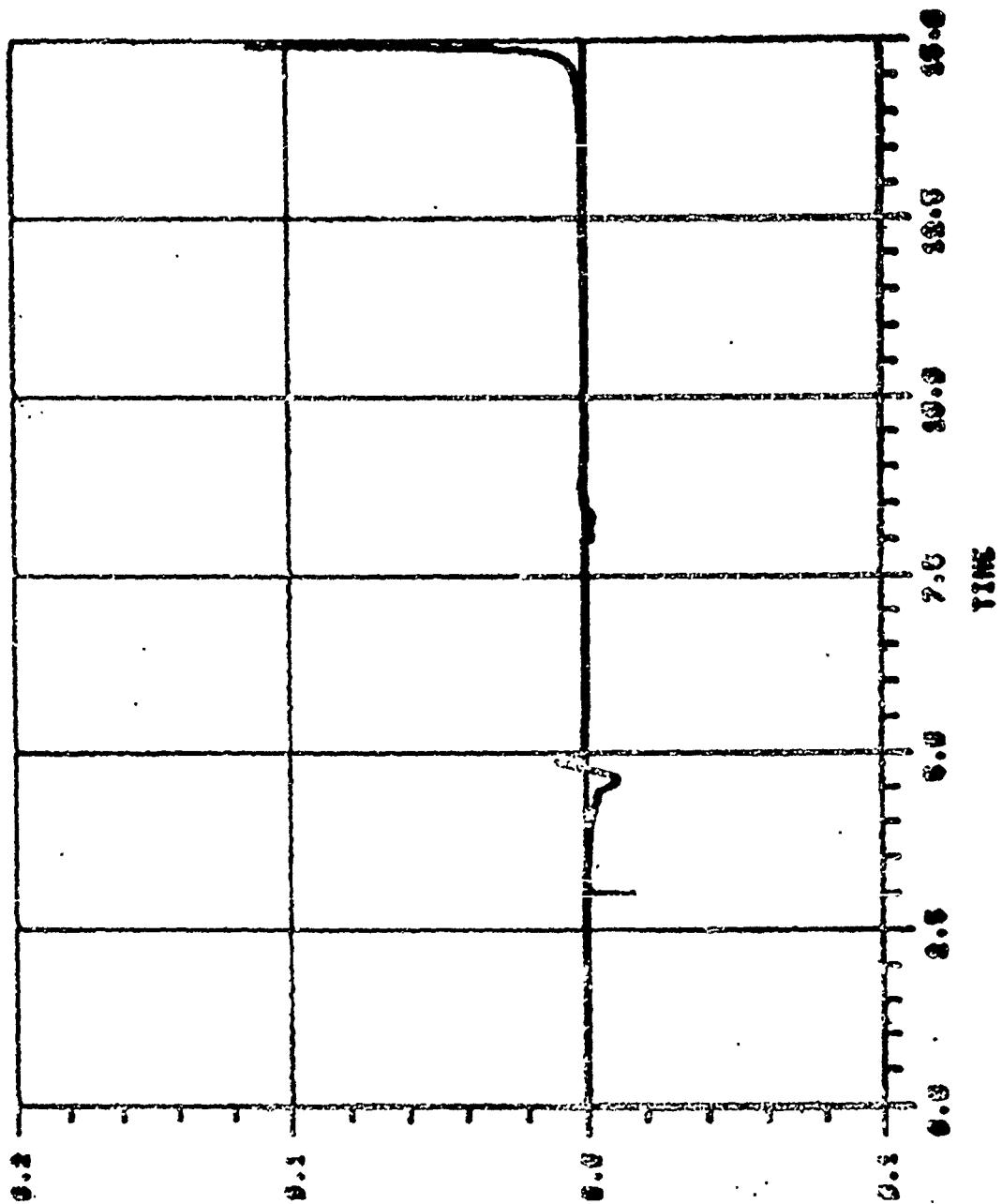


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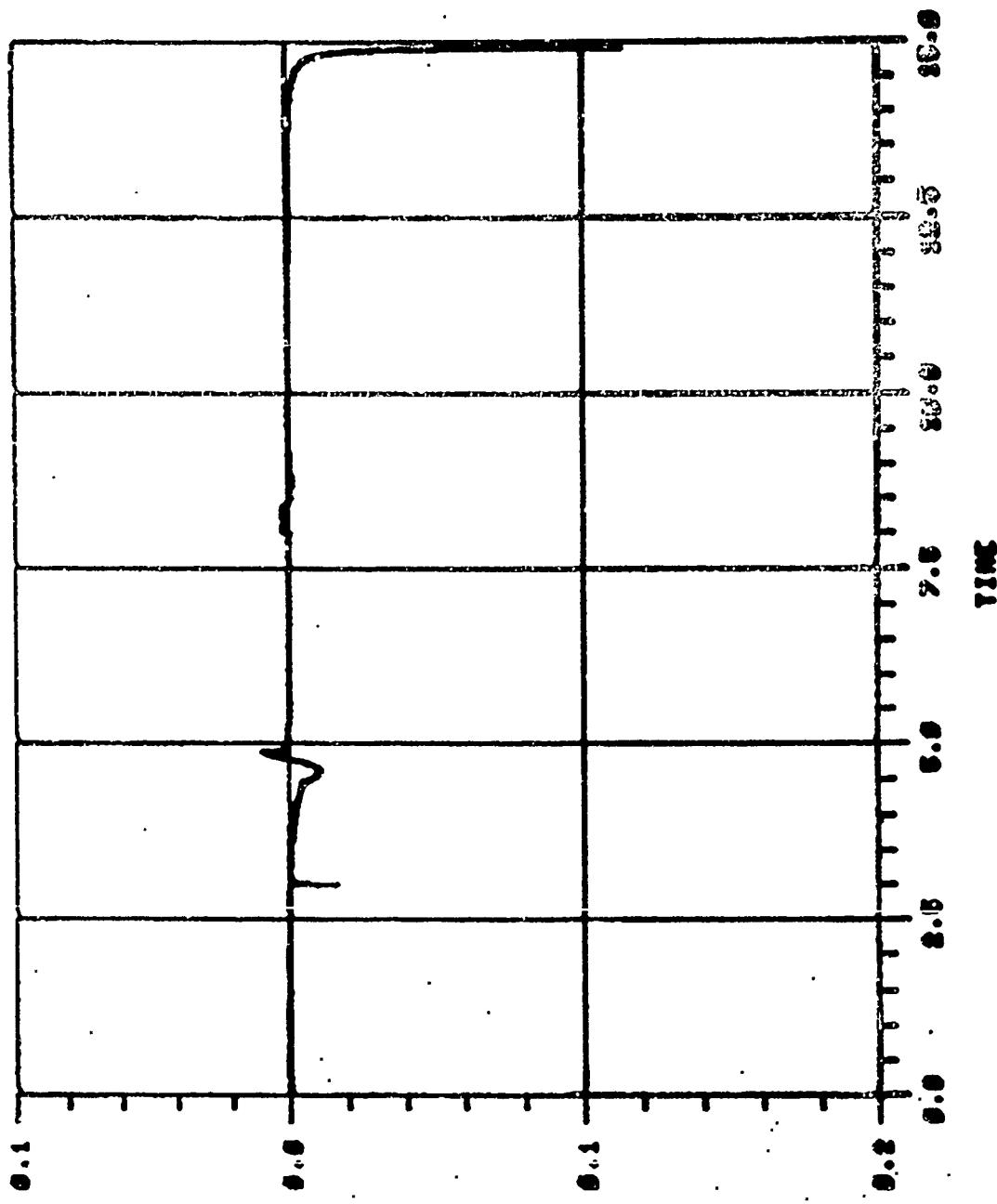


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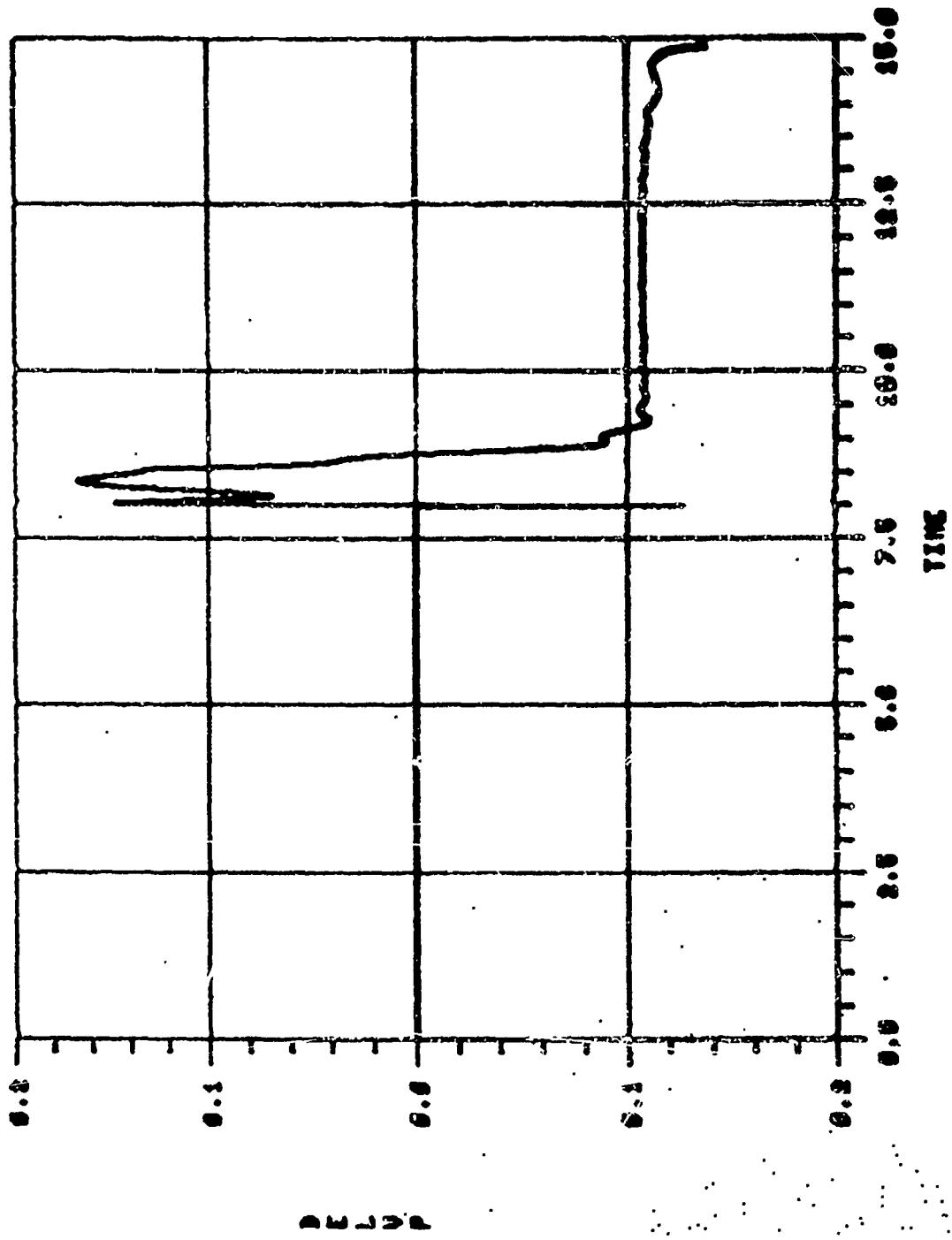


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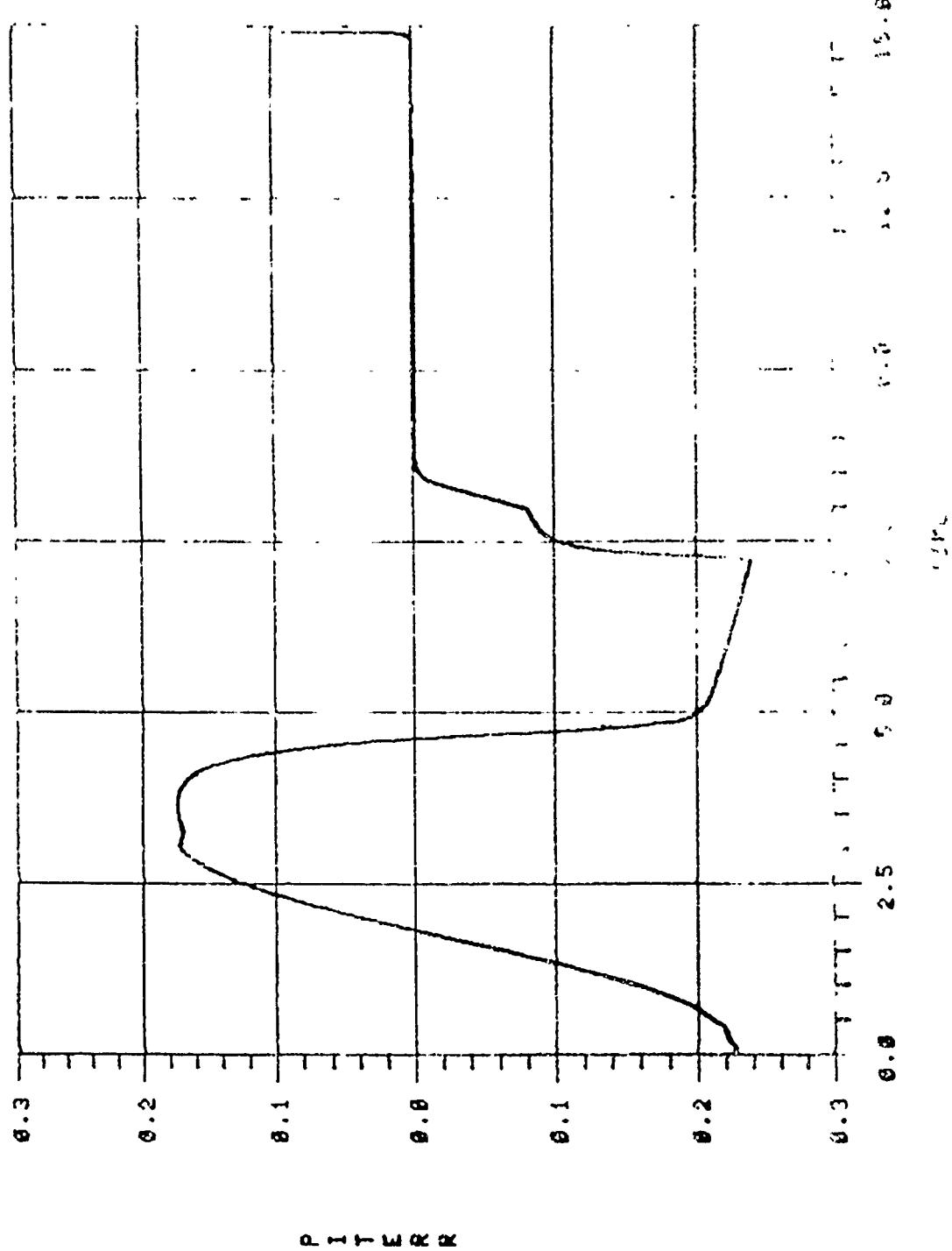
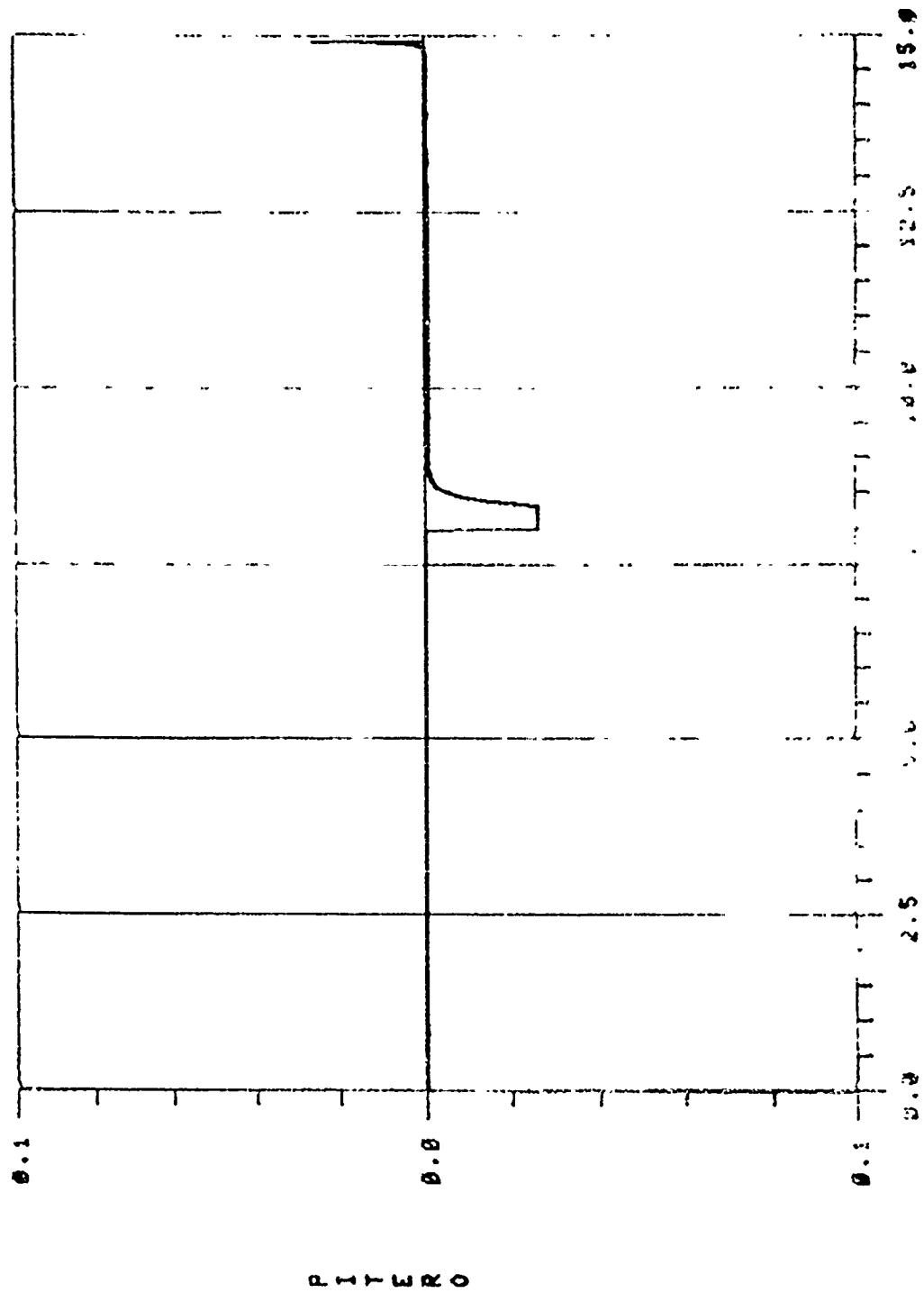


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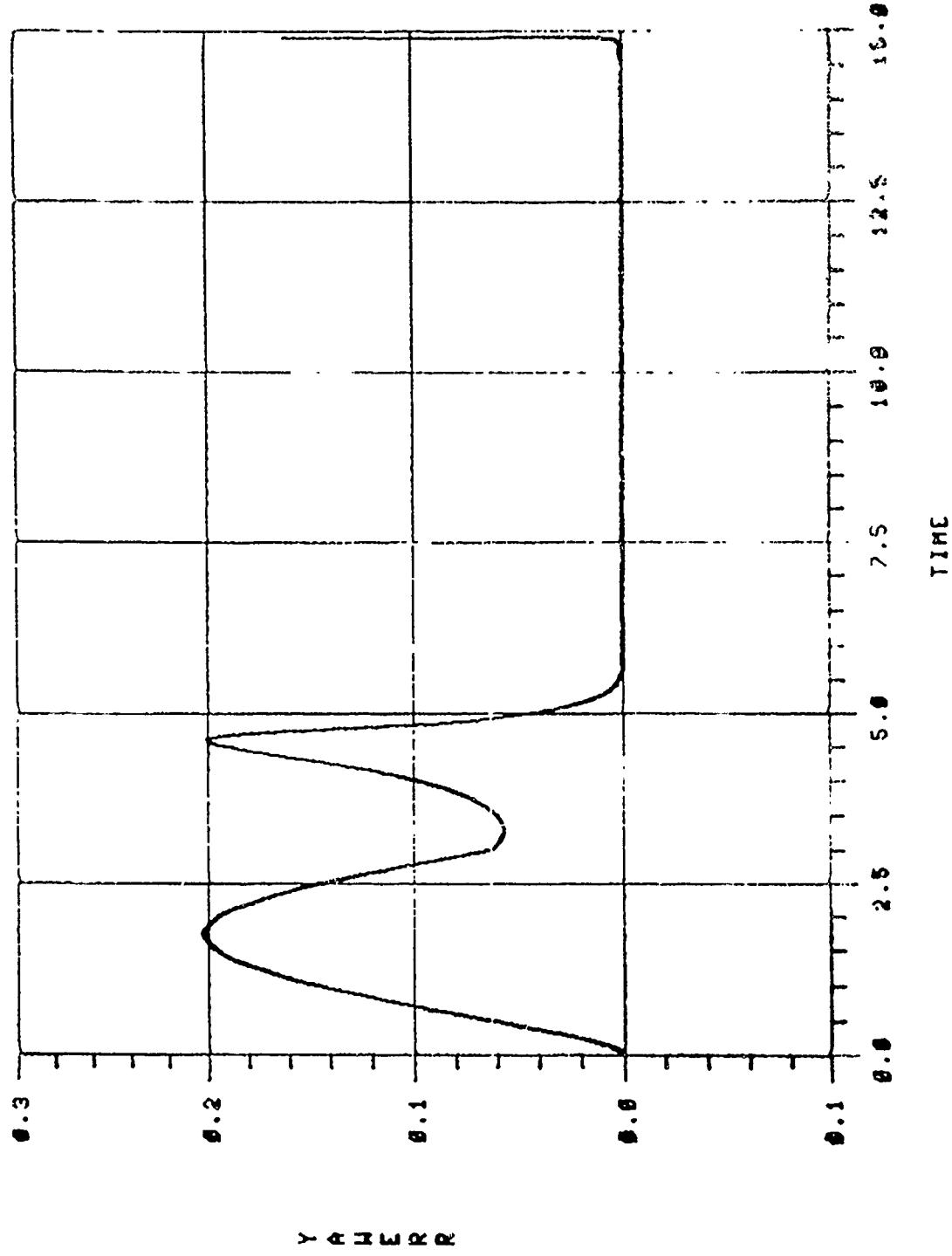


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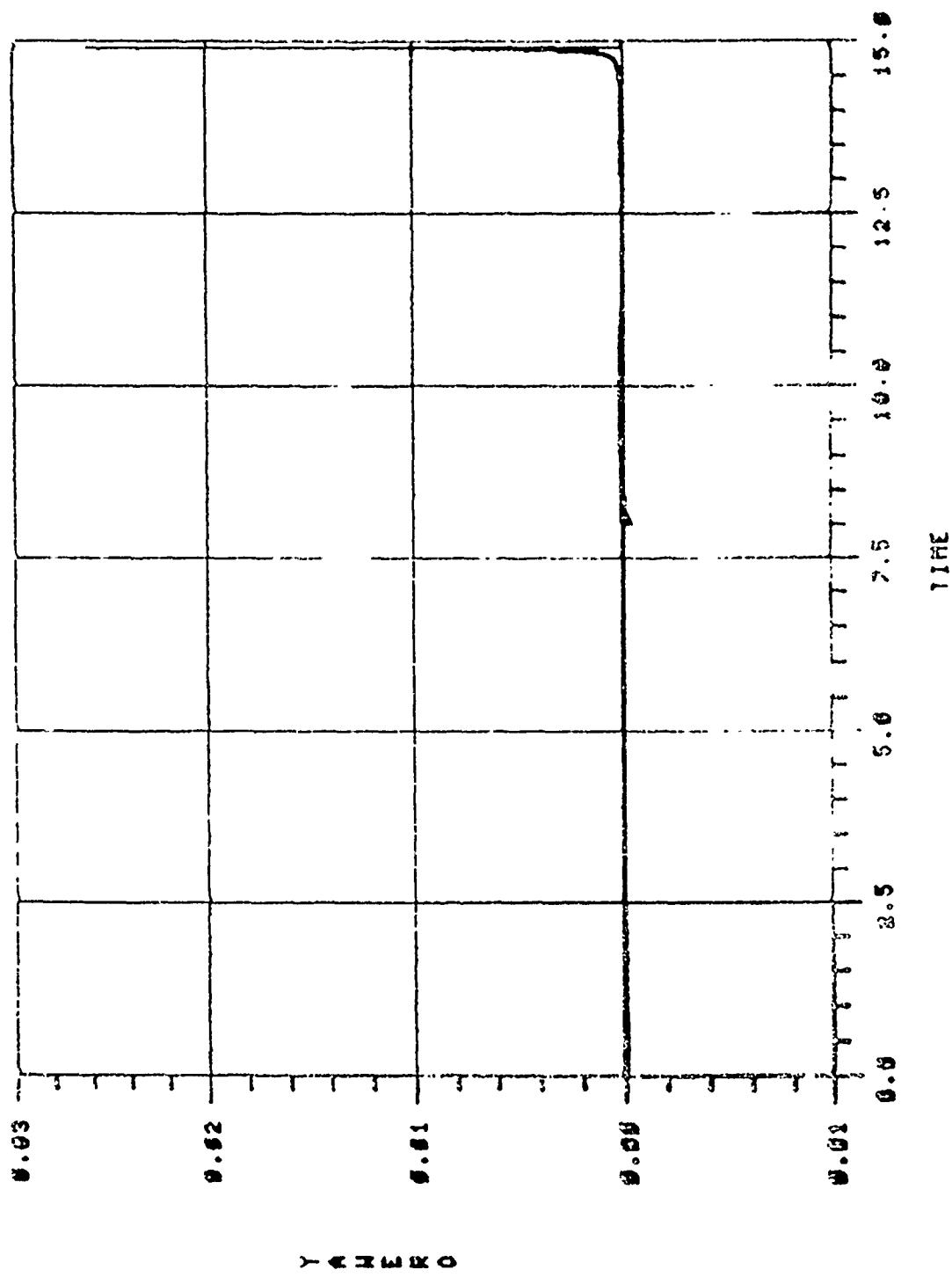


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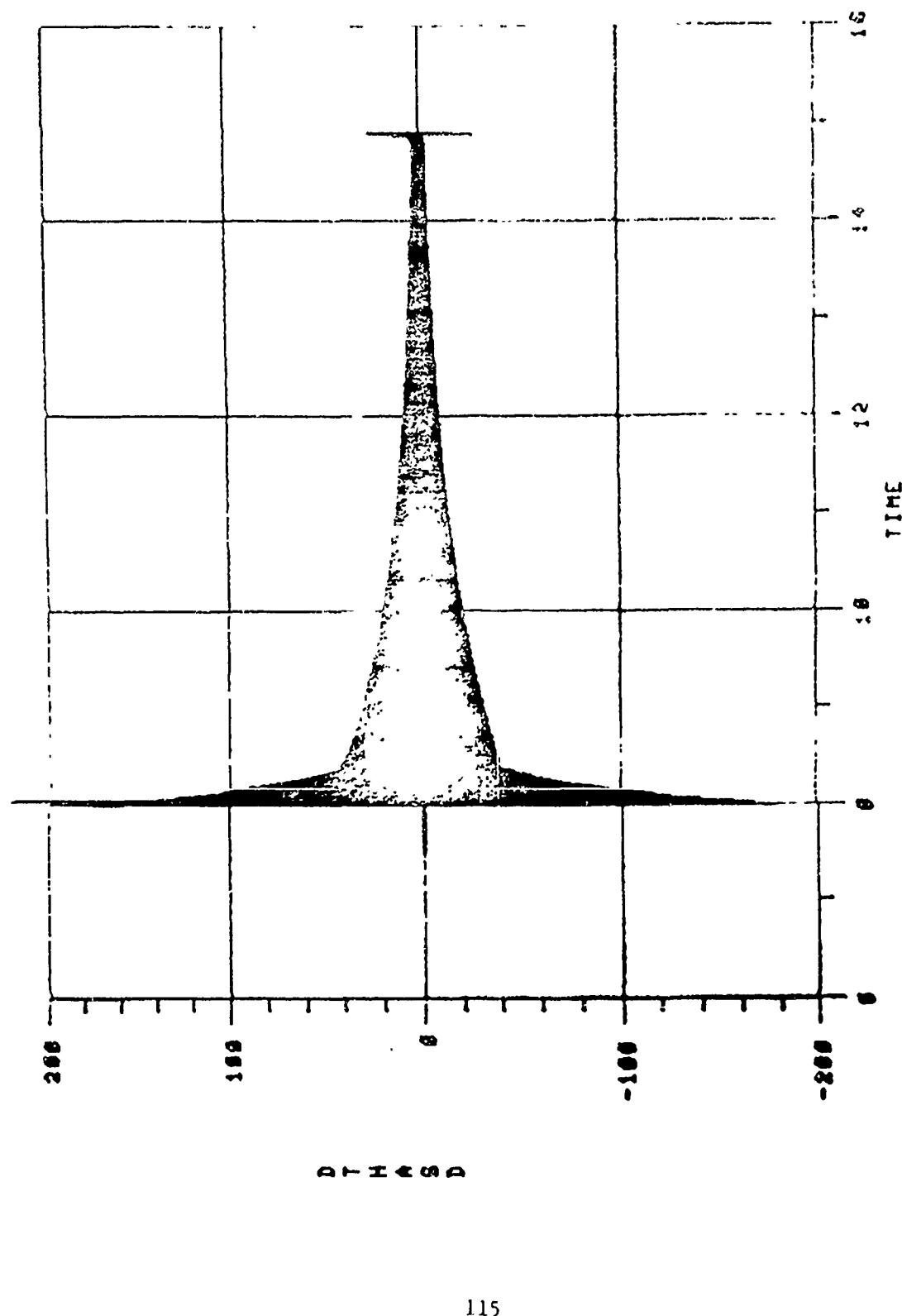


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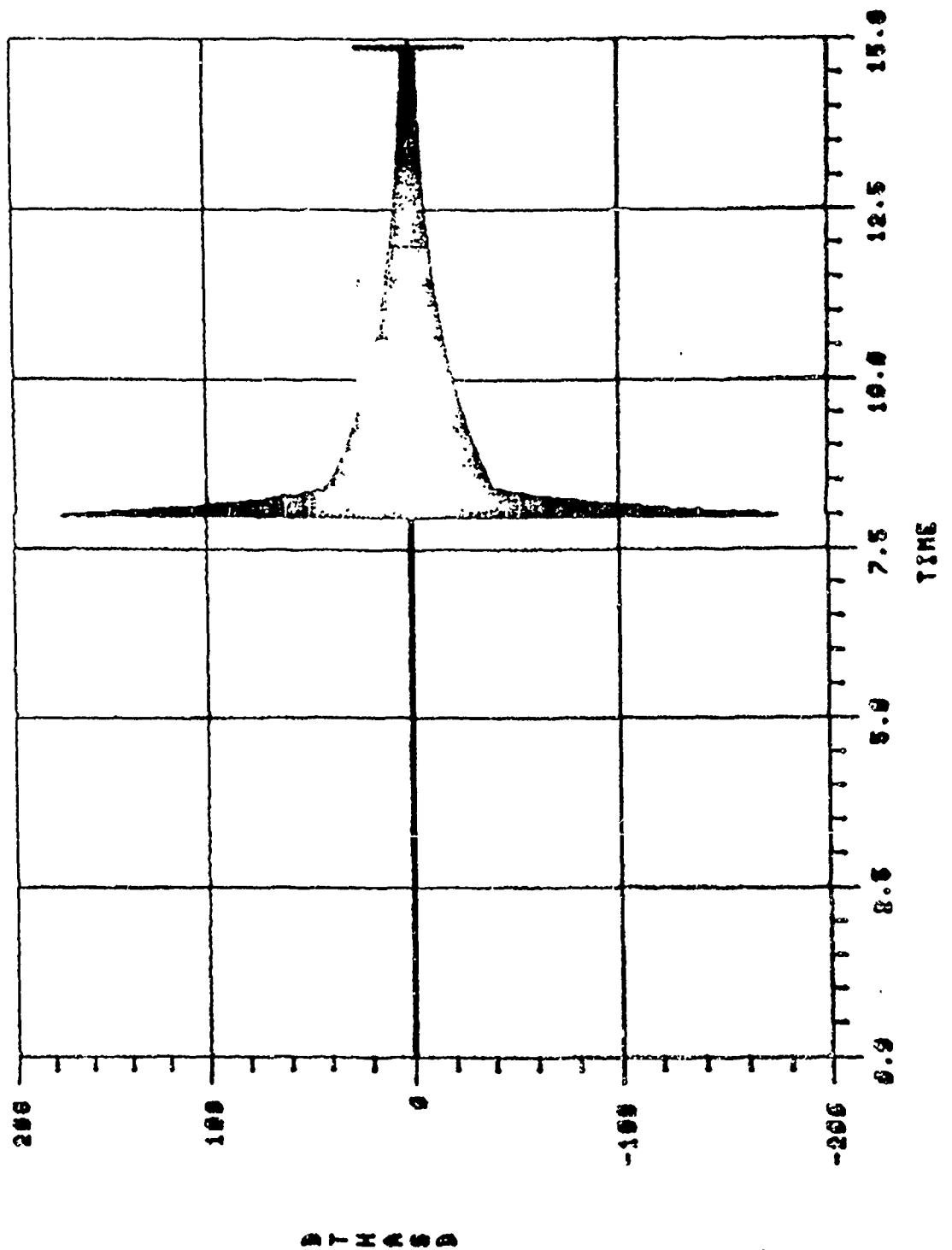


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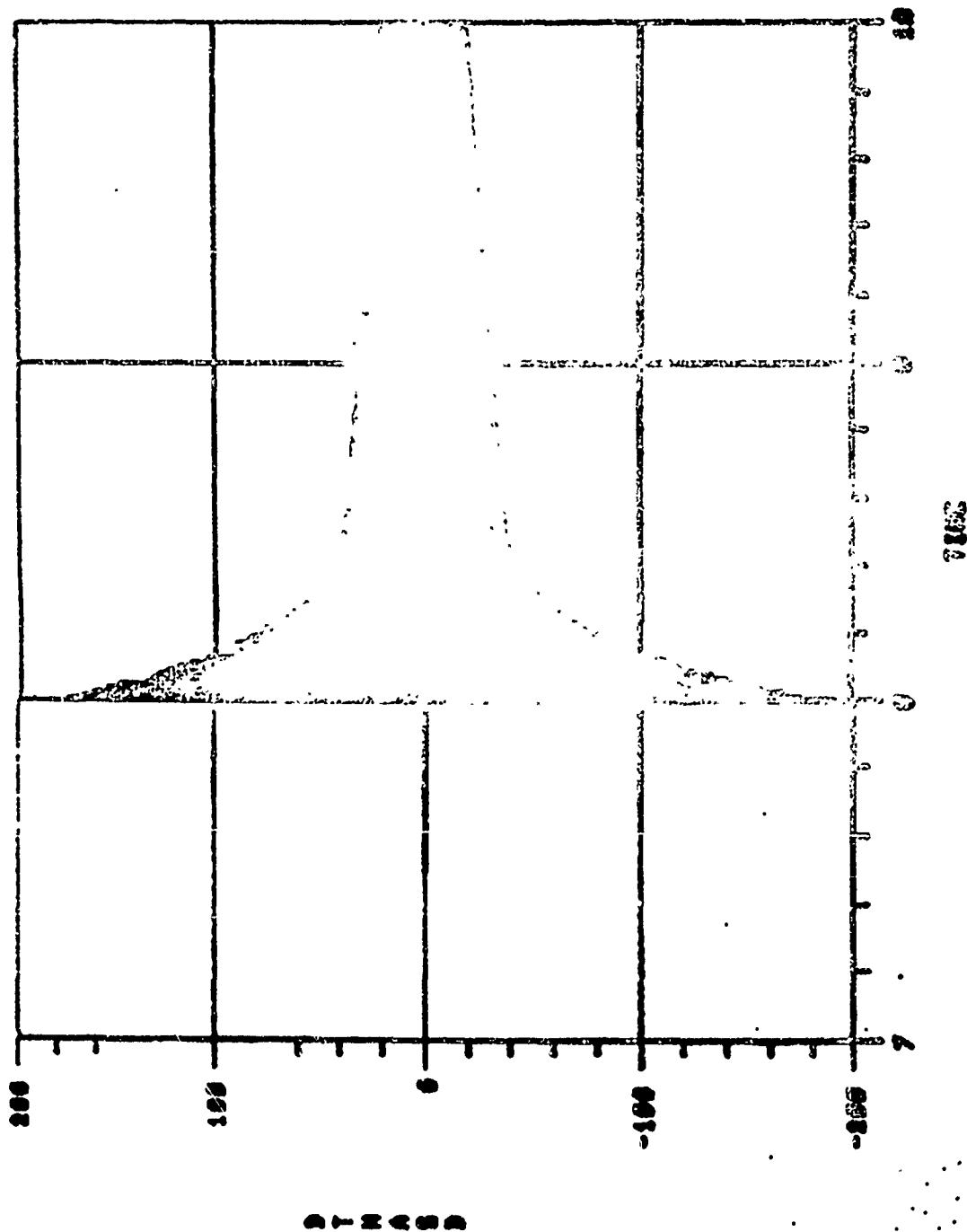


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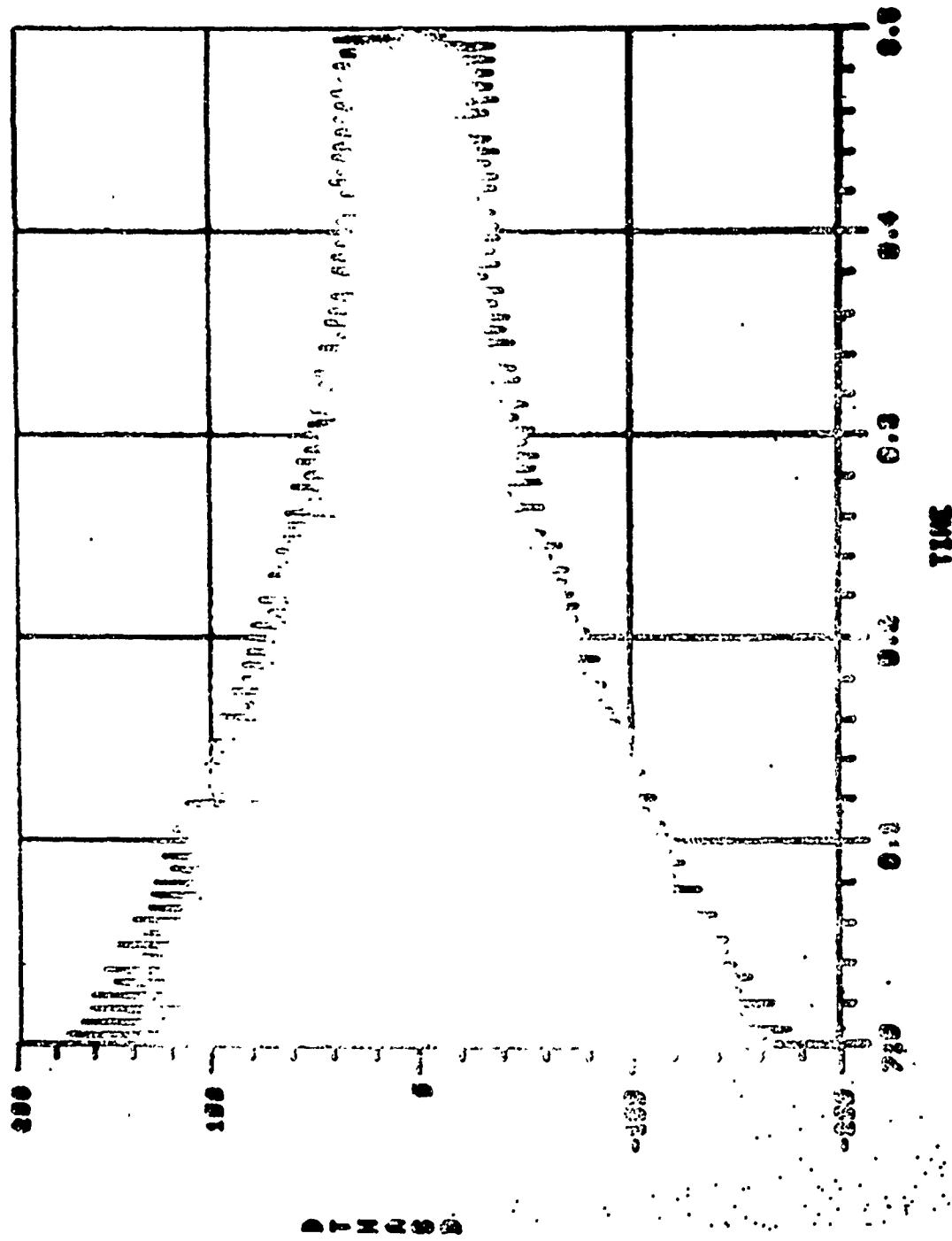


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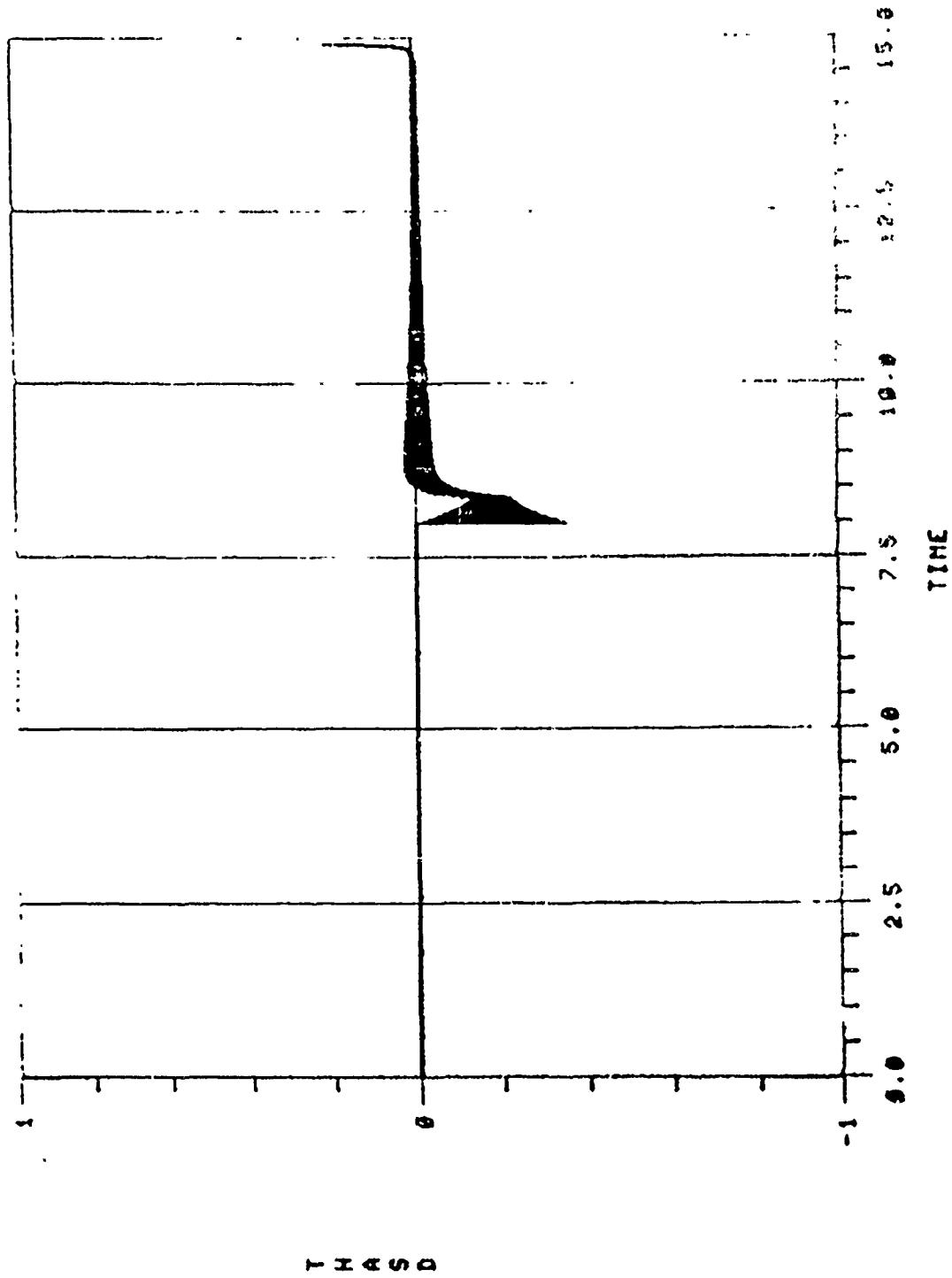


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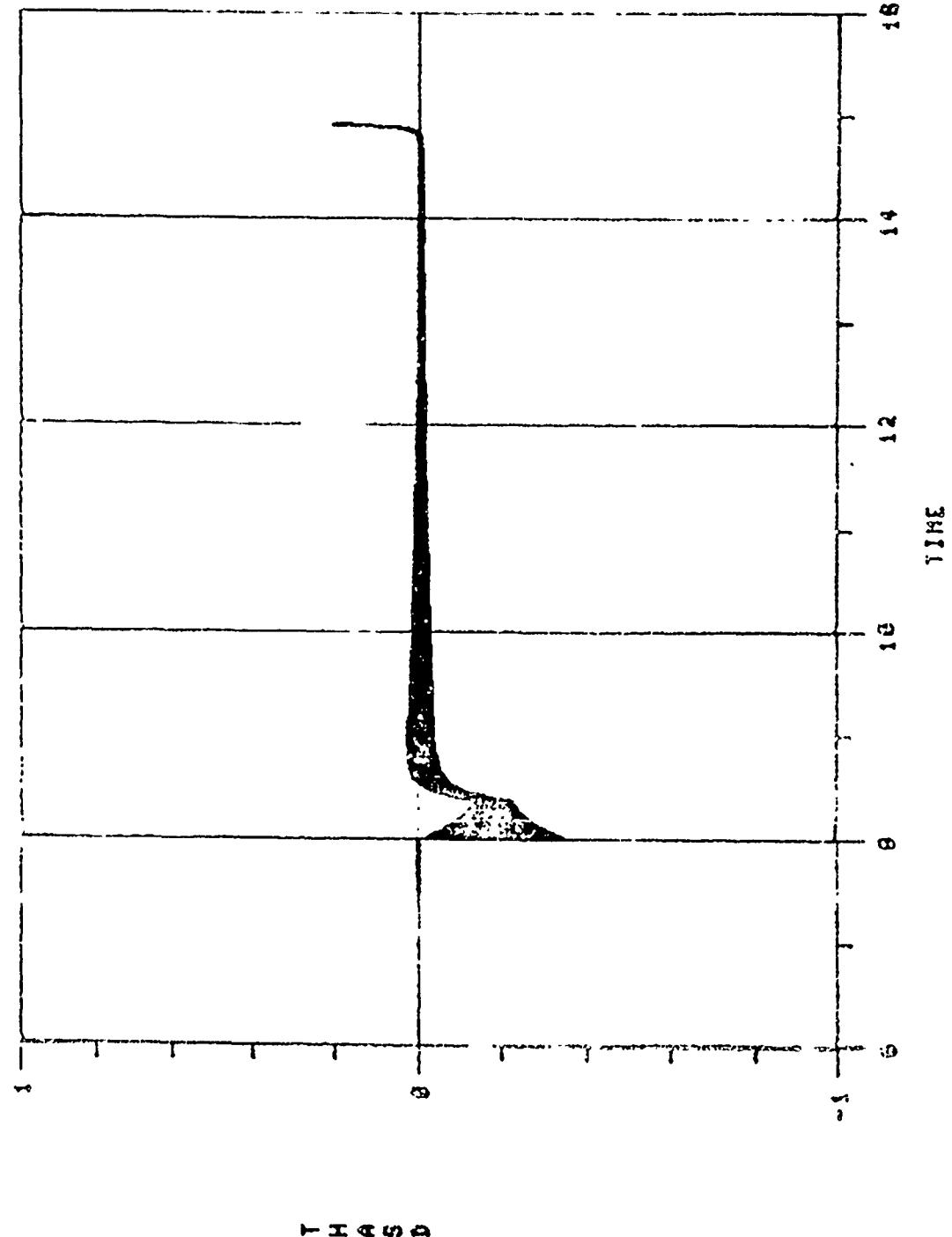
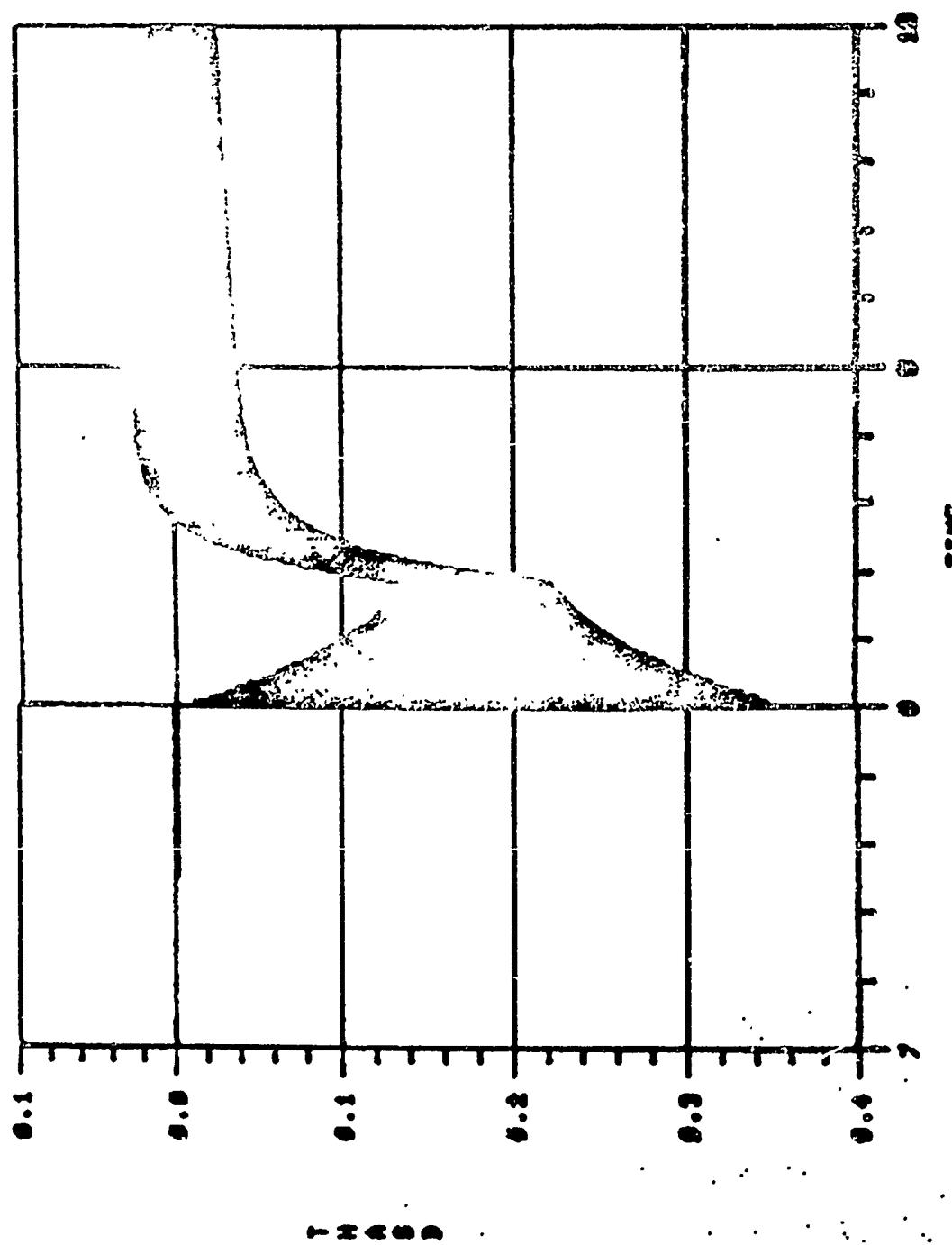


Figure 98.

Figure 99.



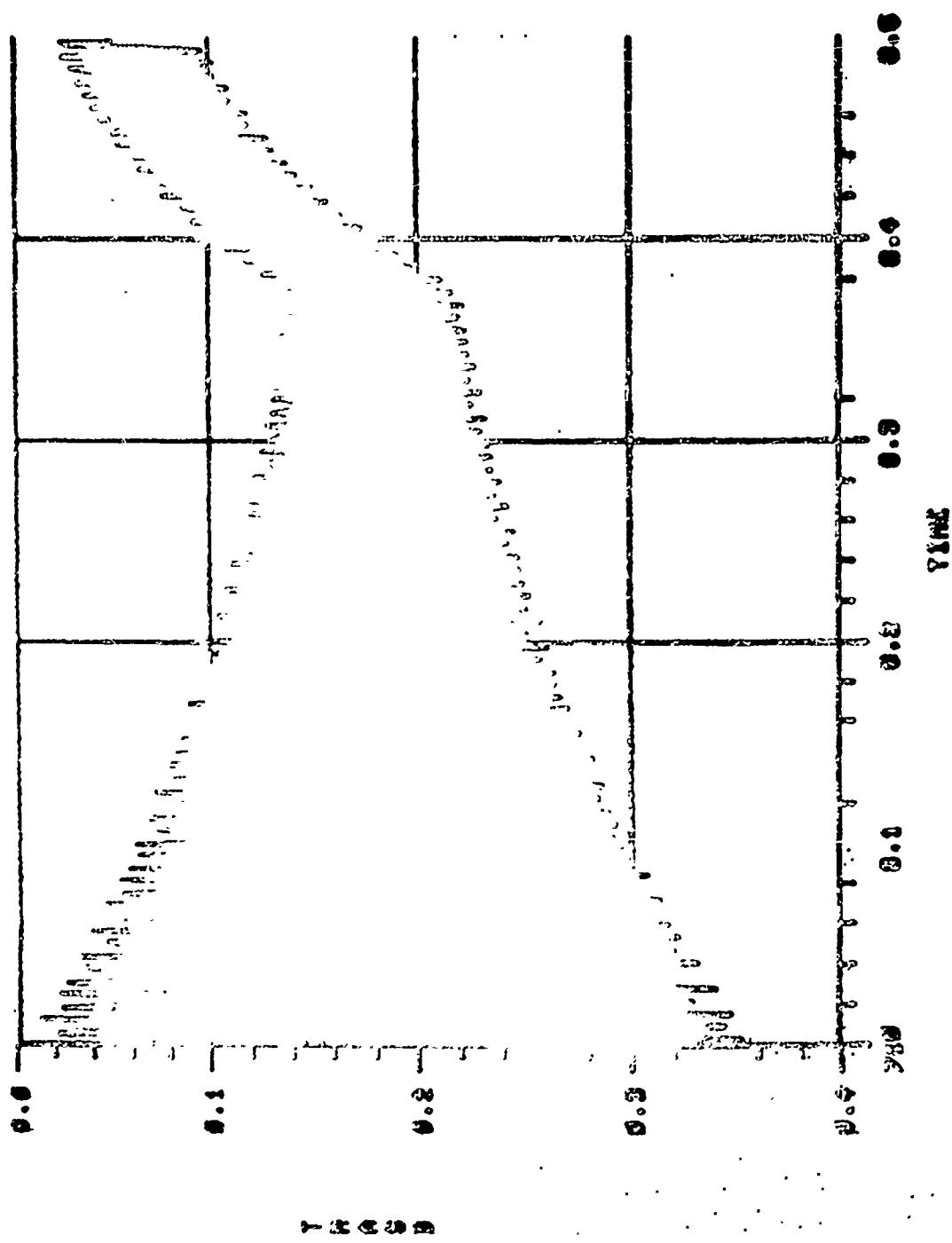


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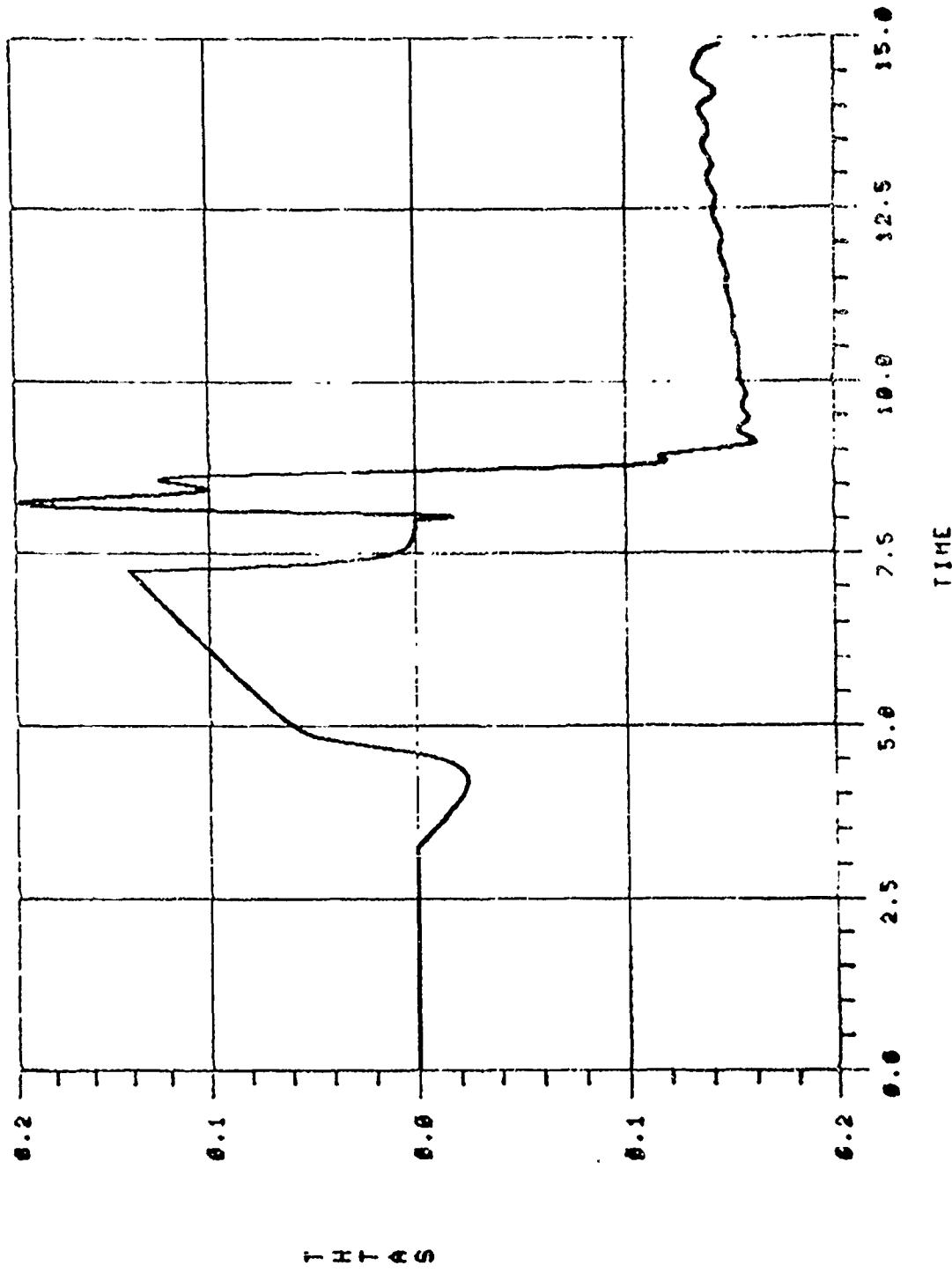
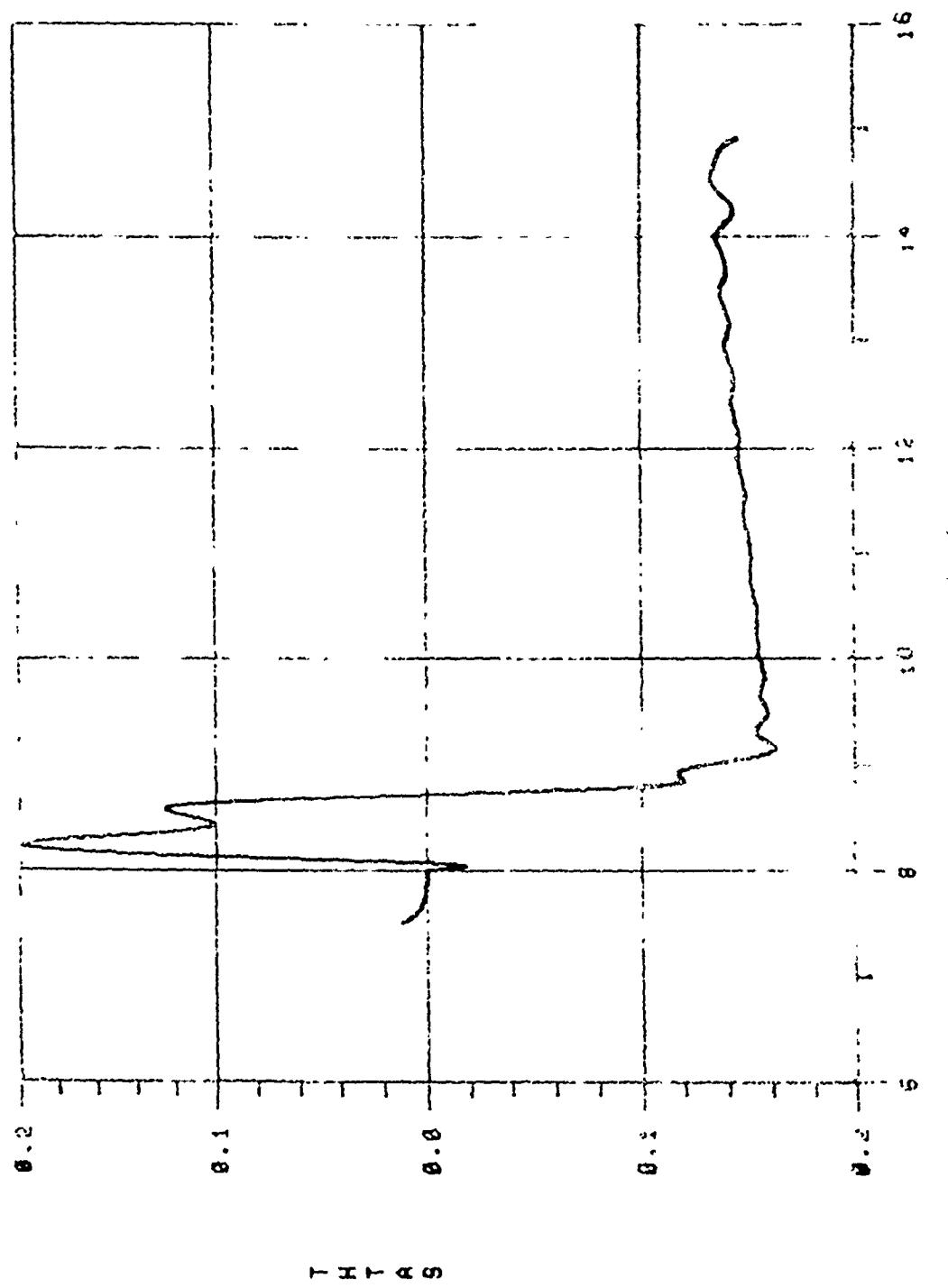


Figure 101.

Figure 102.



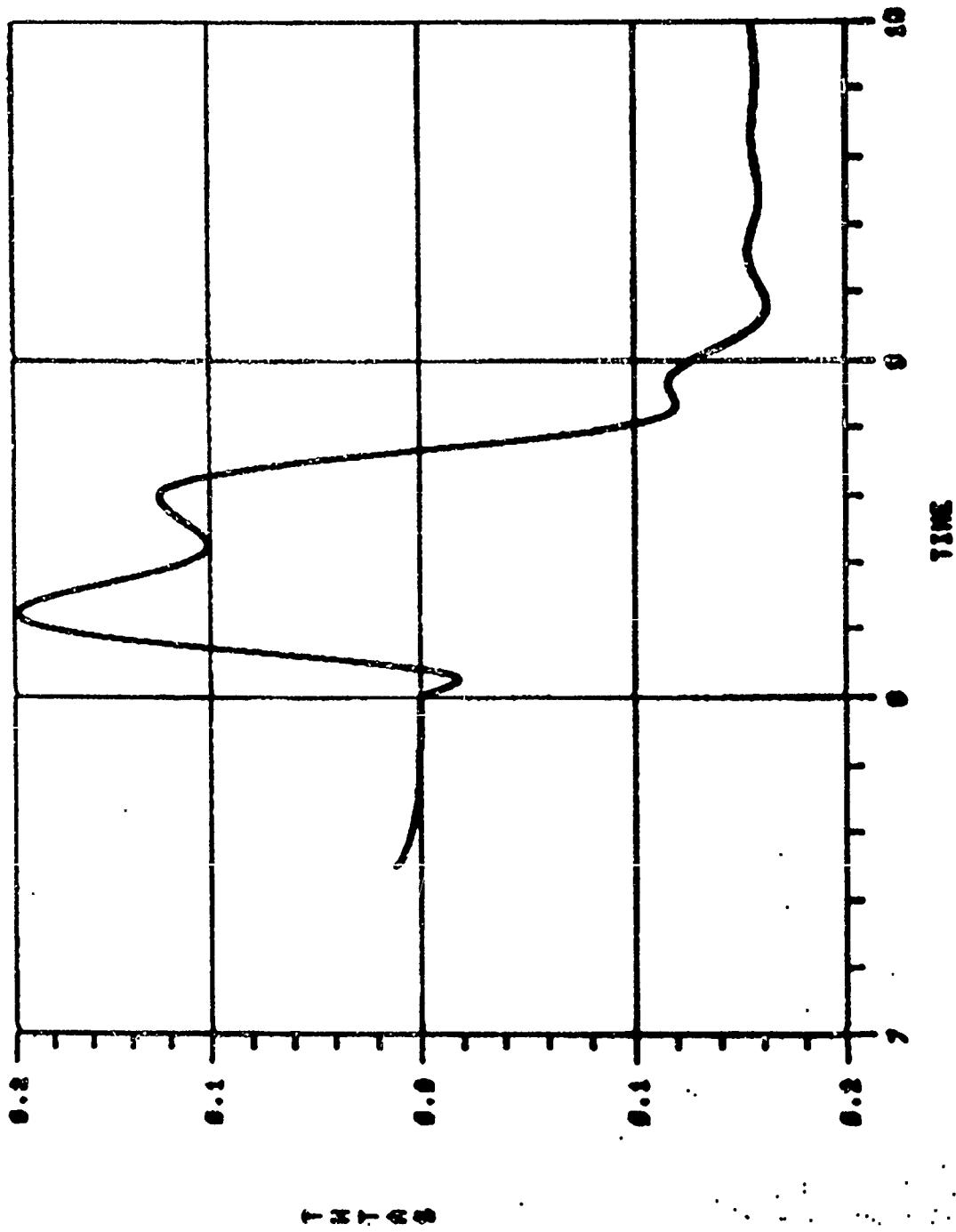
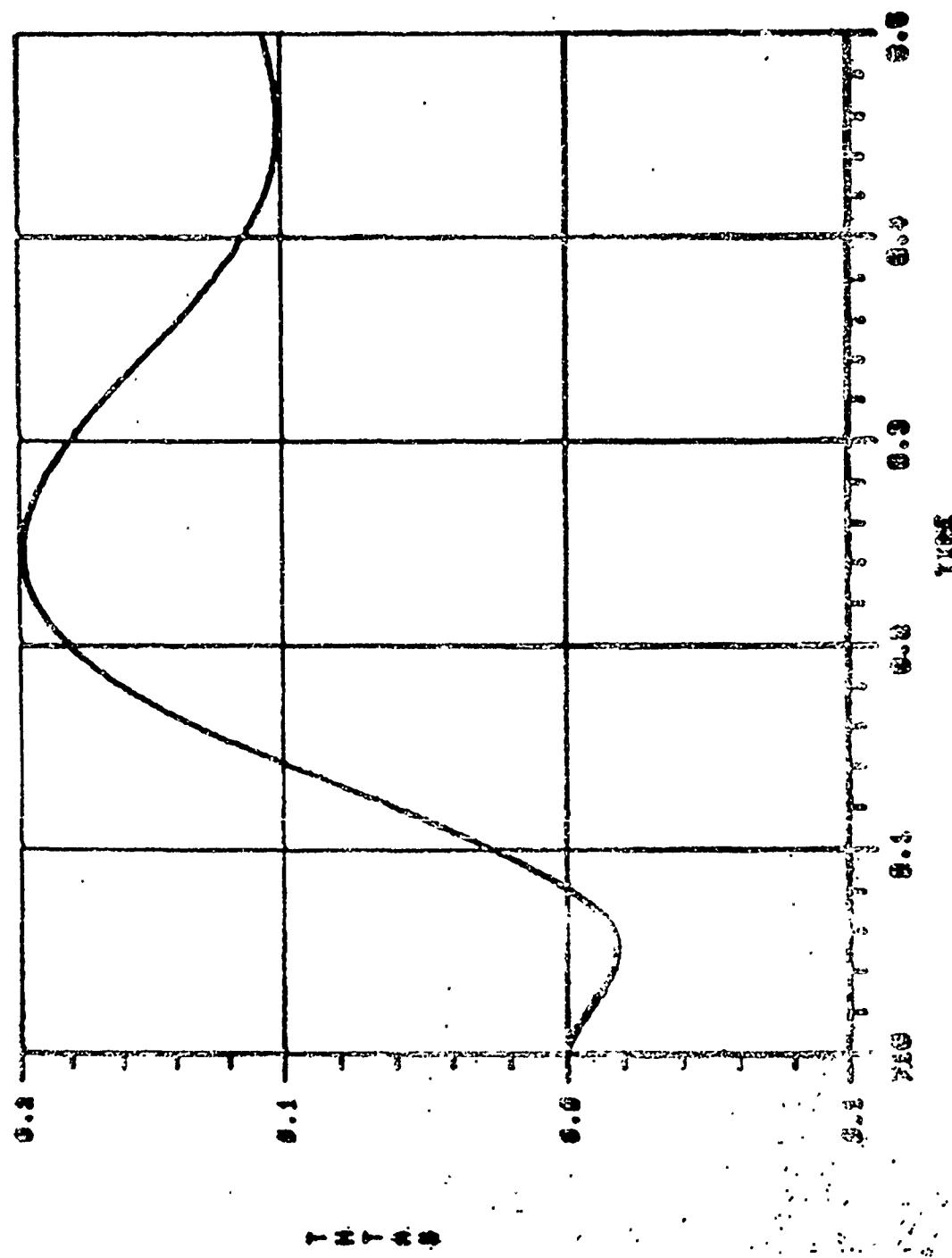


Figure 103.

Figure 104.



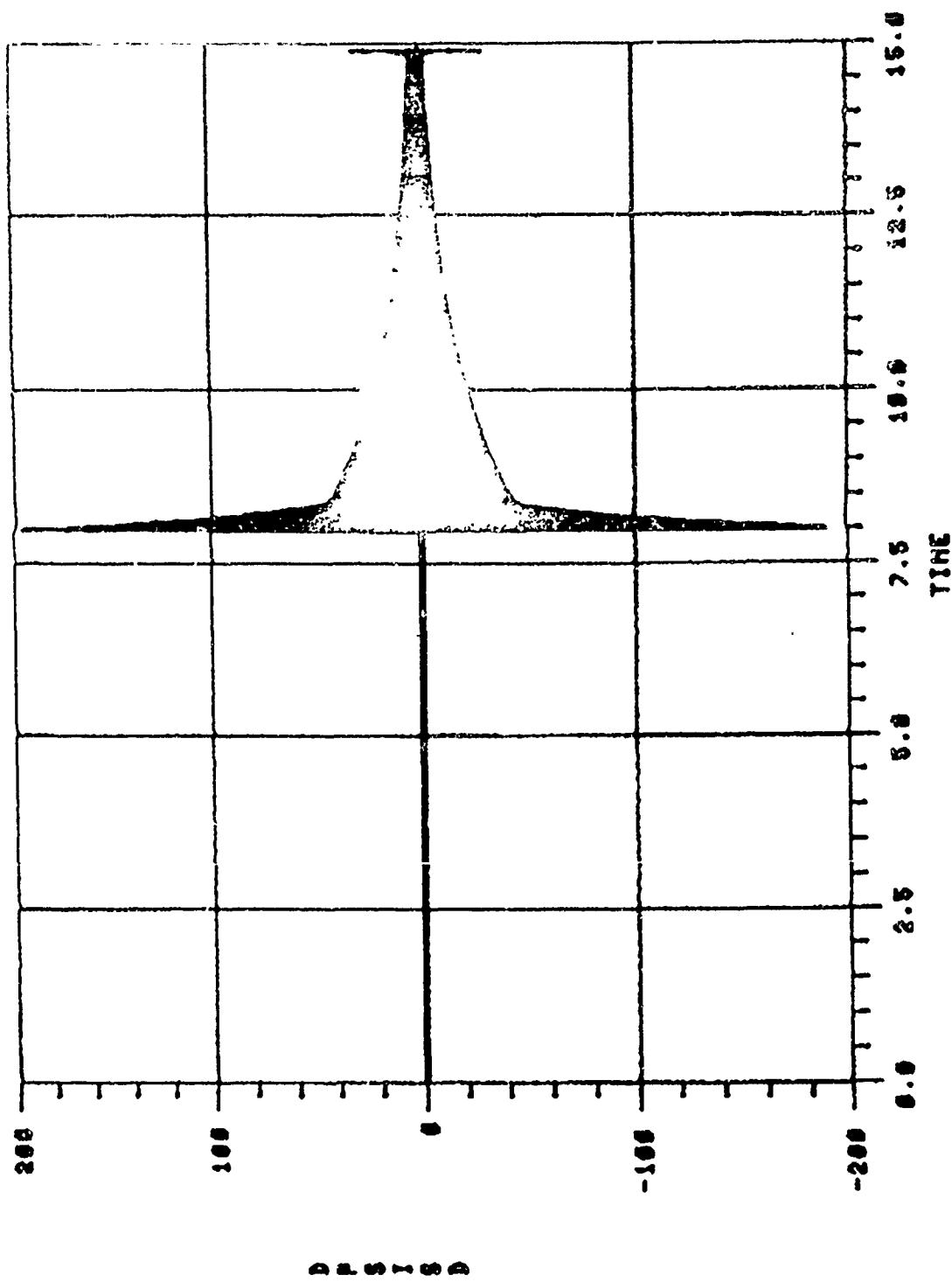


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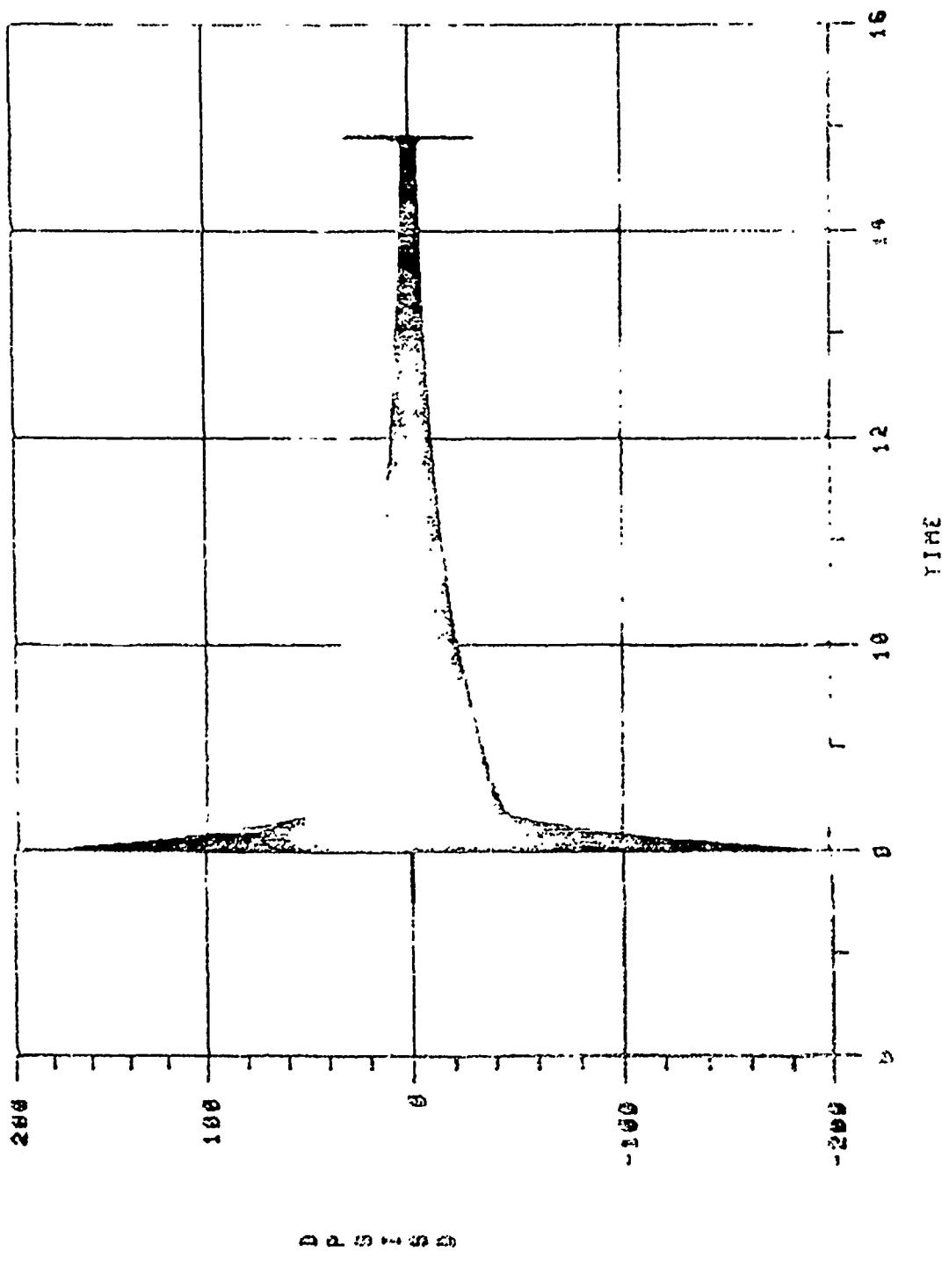


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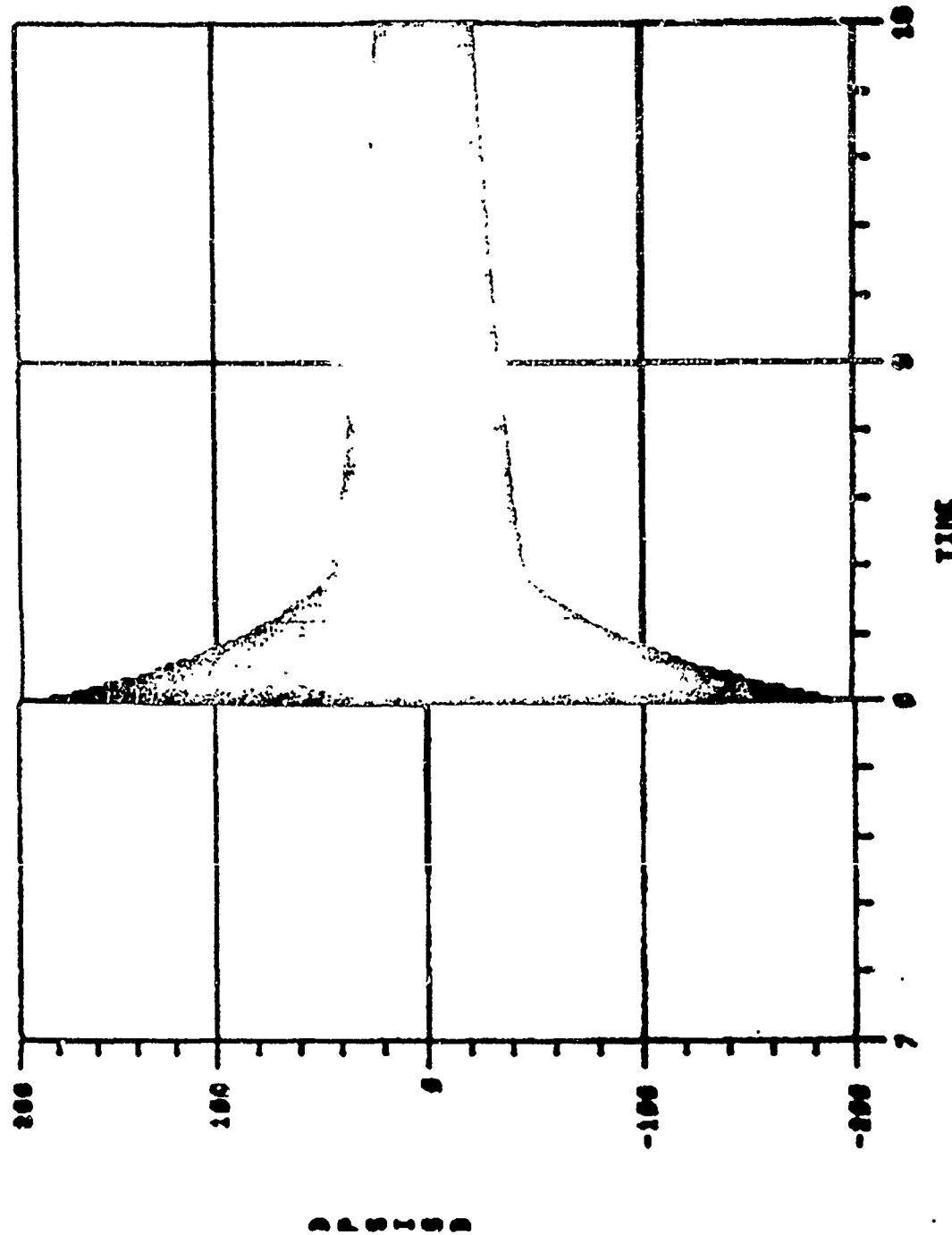


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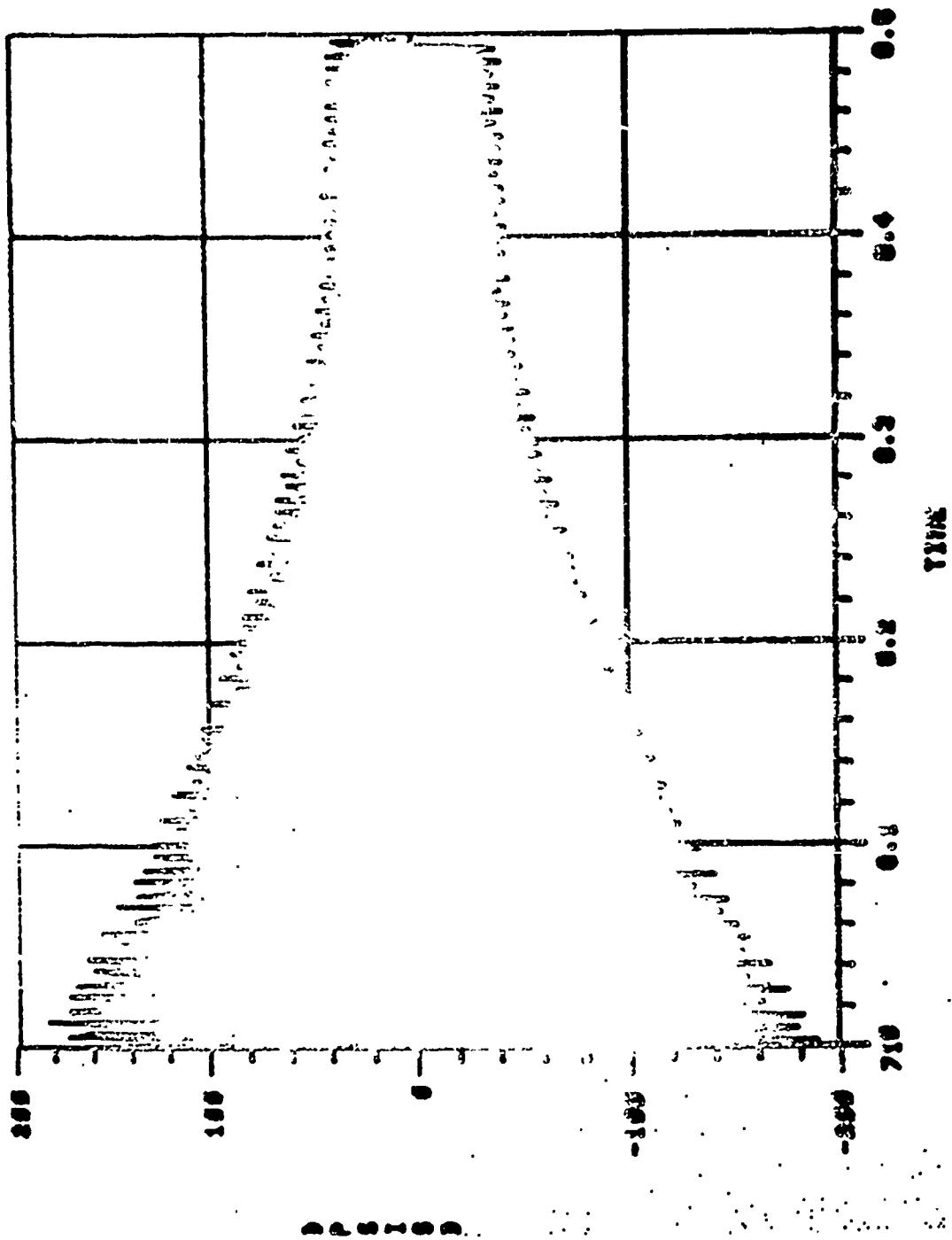


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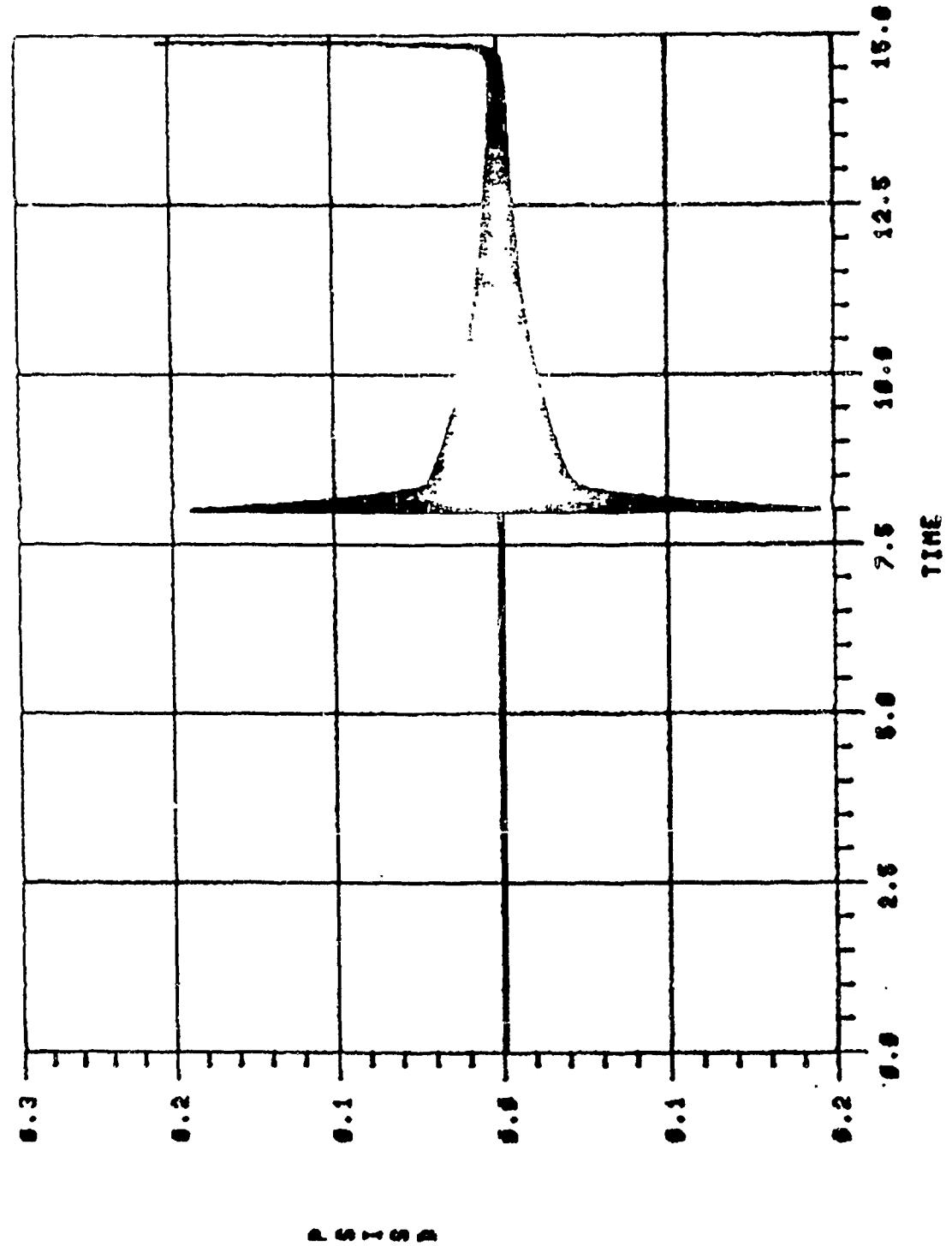


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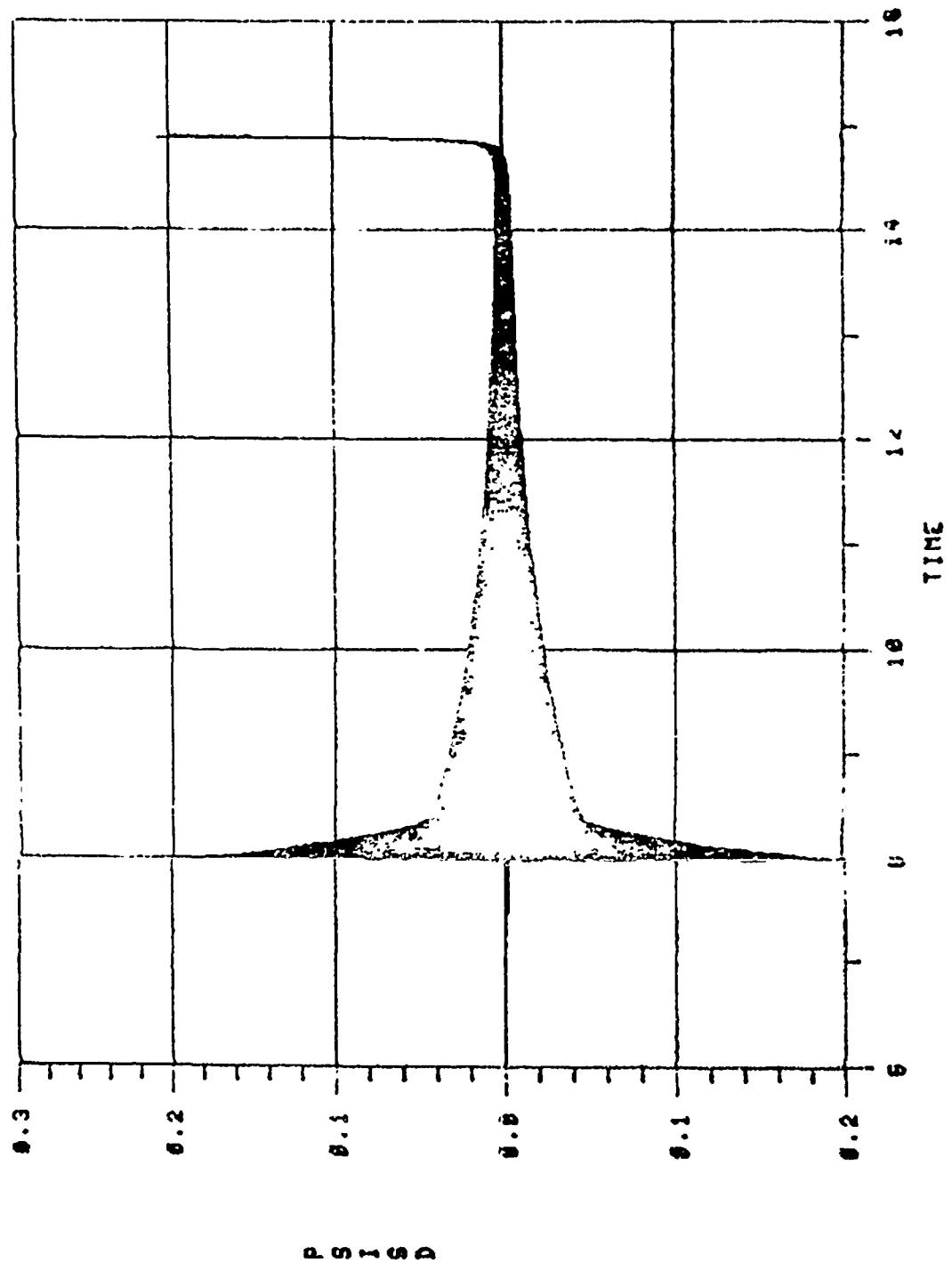


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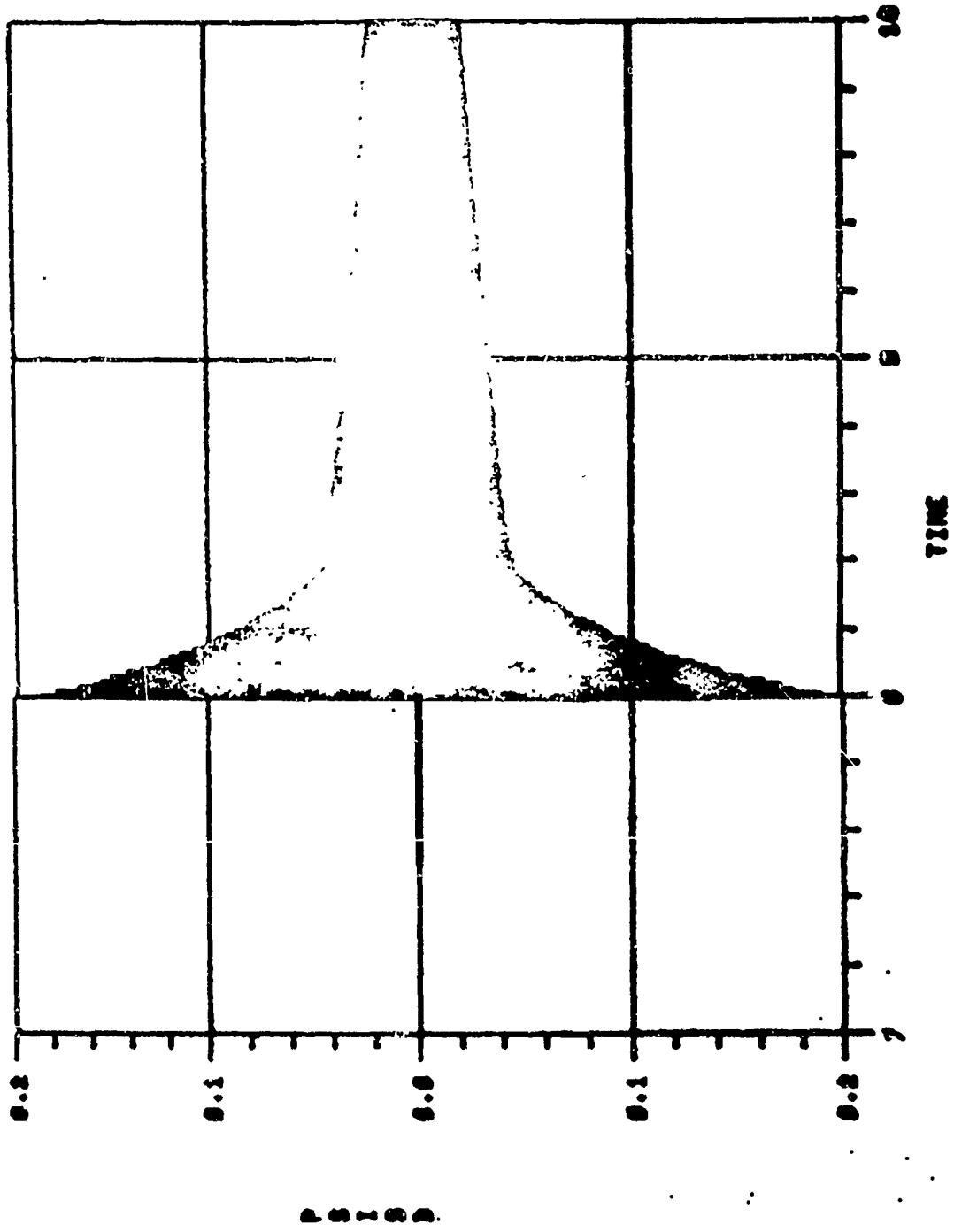


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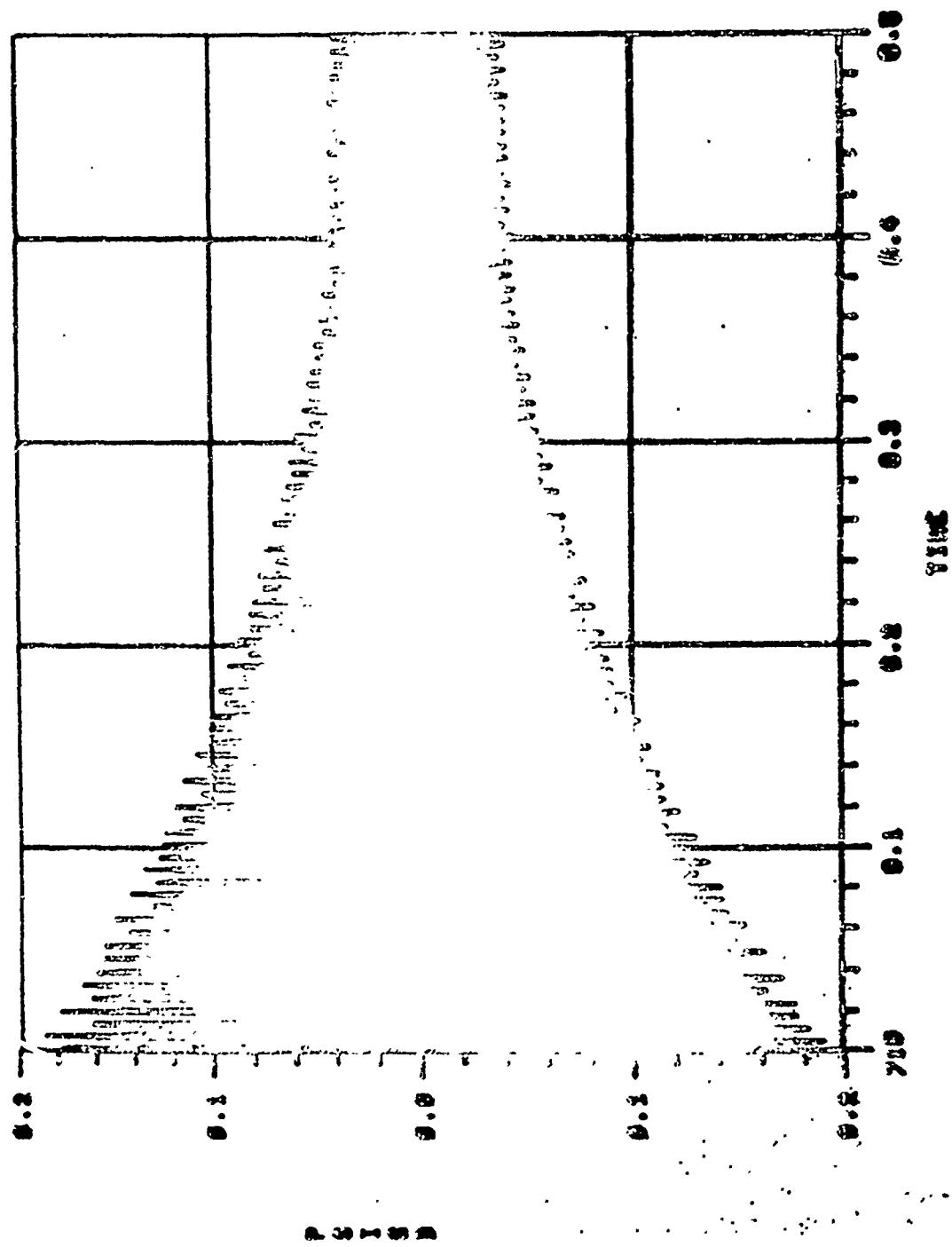


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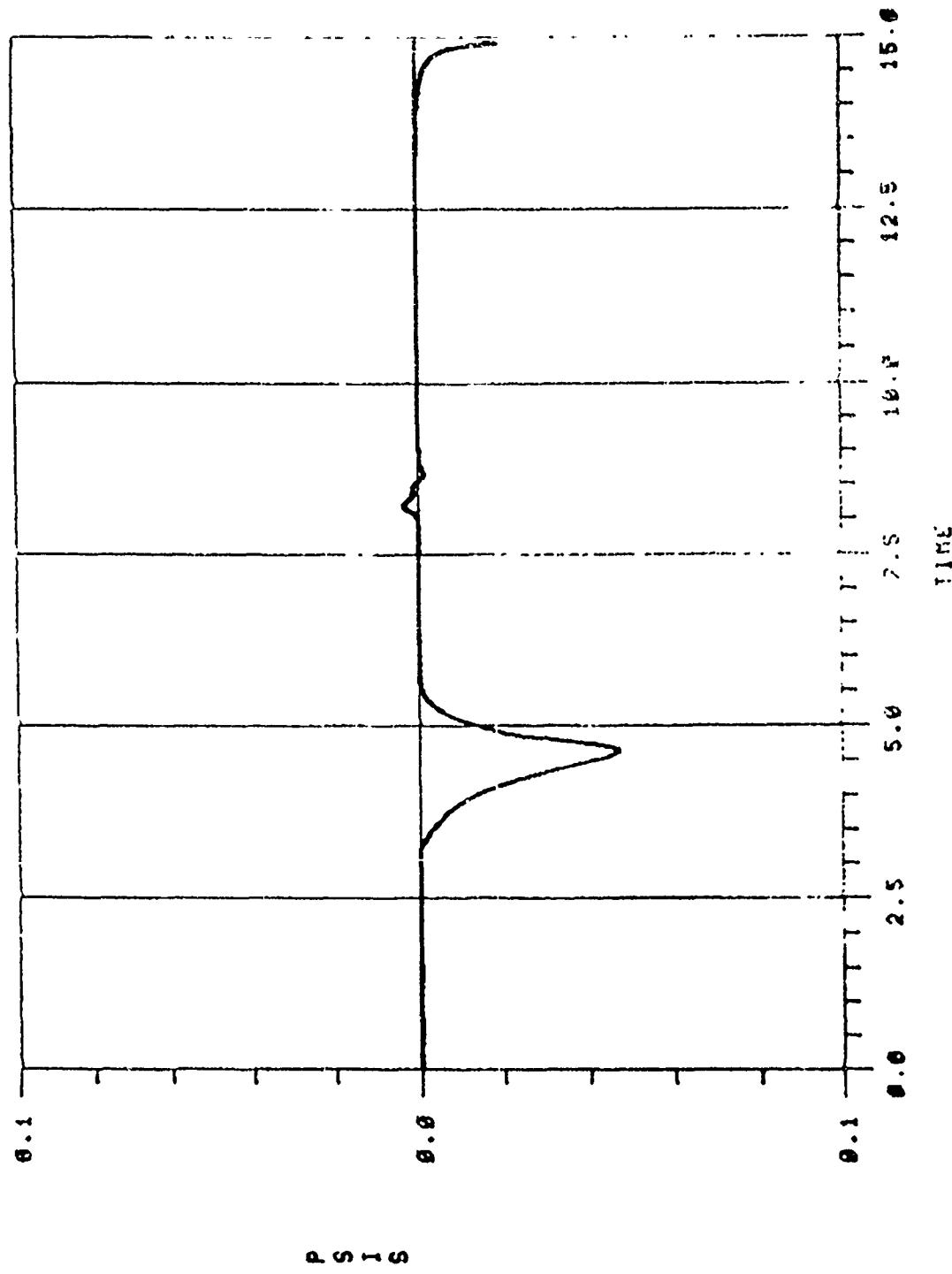


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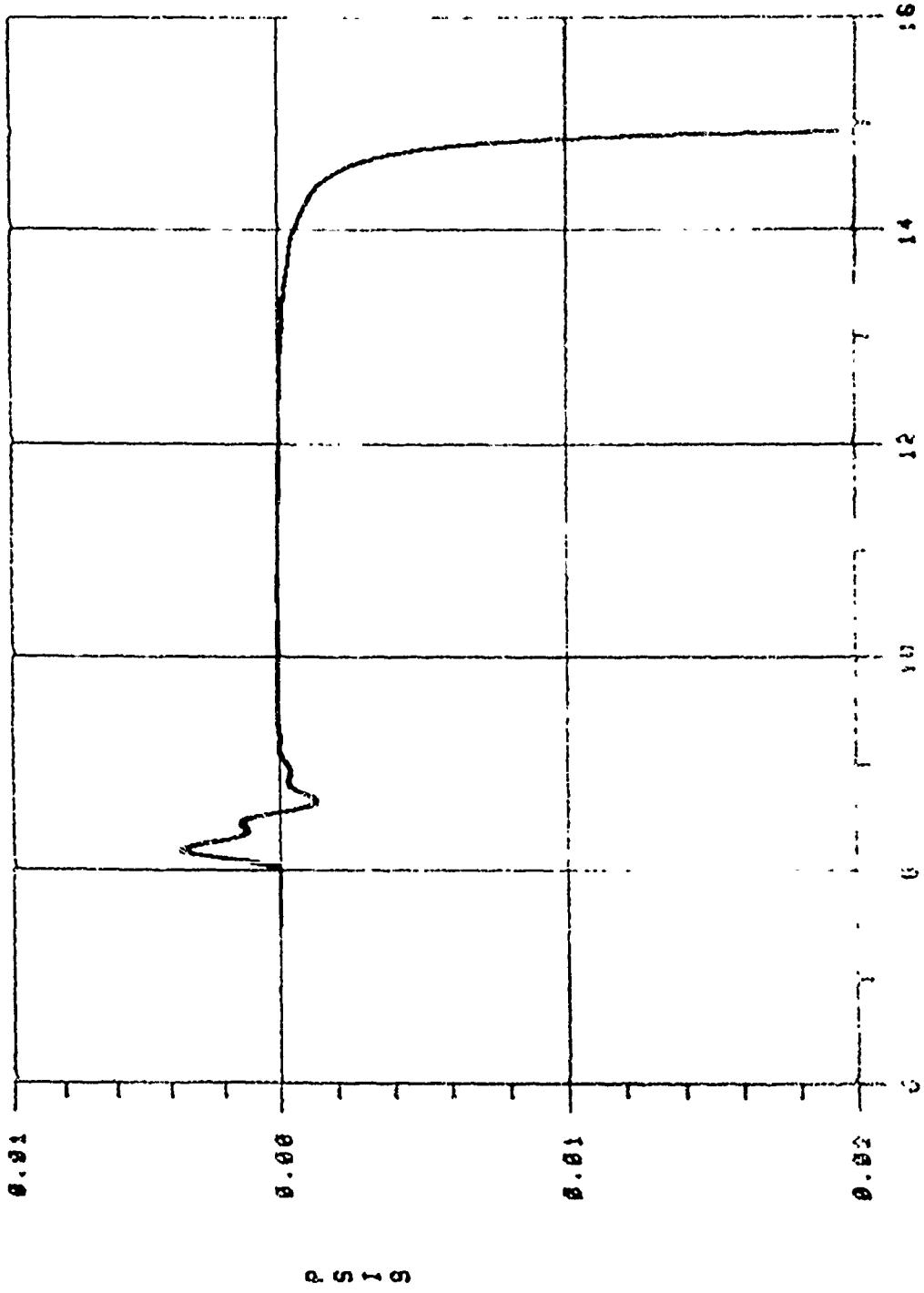


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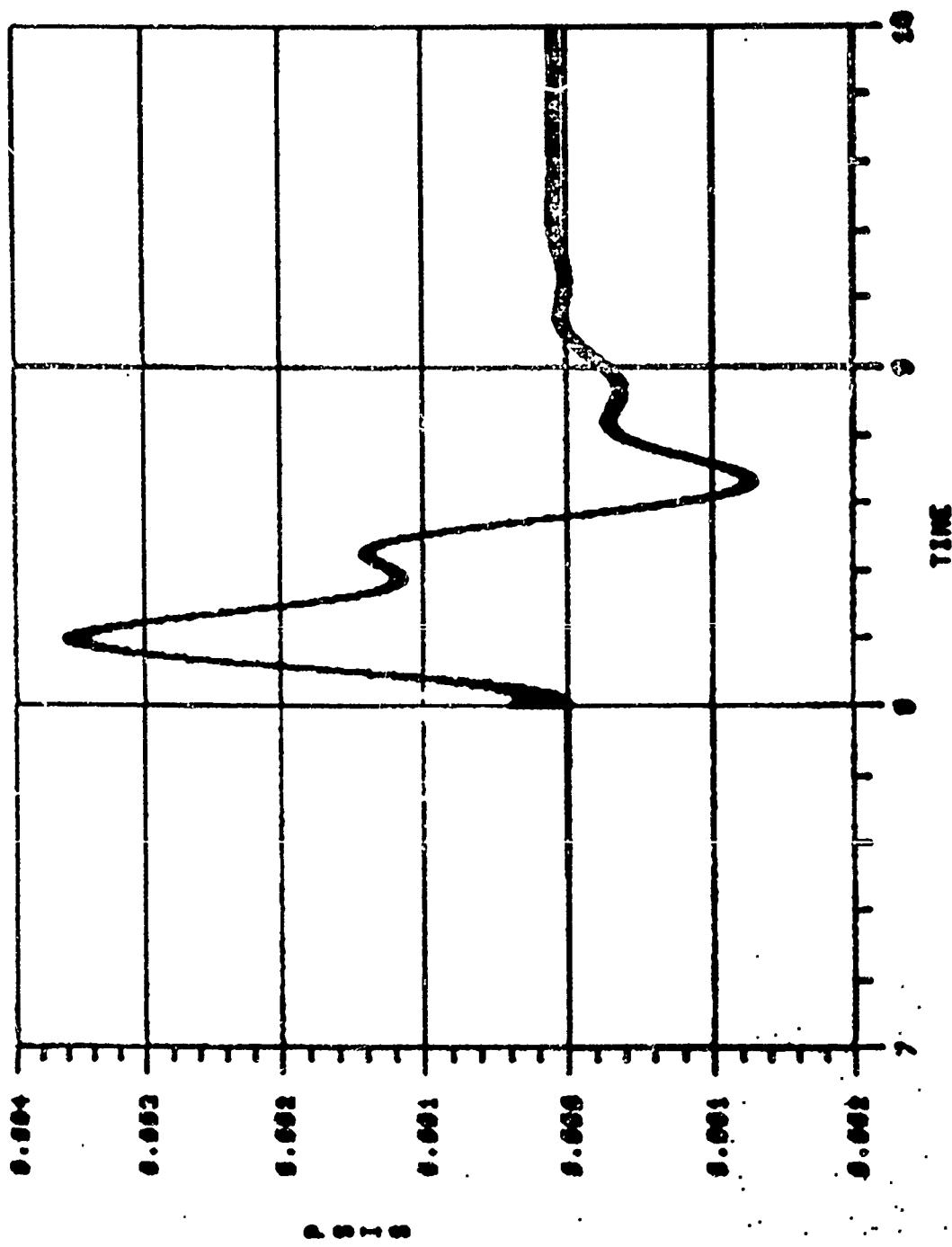
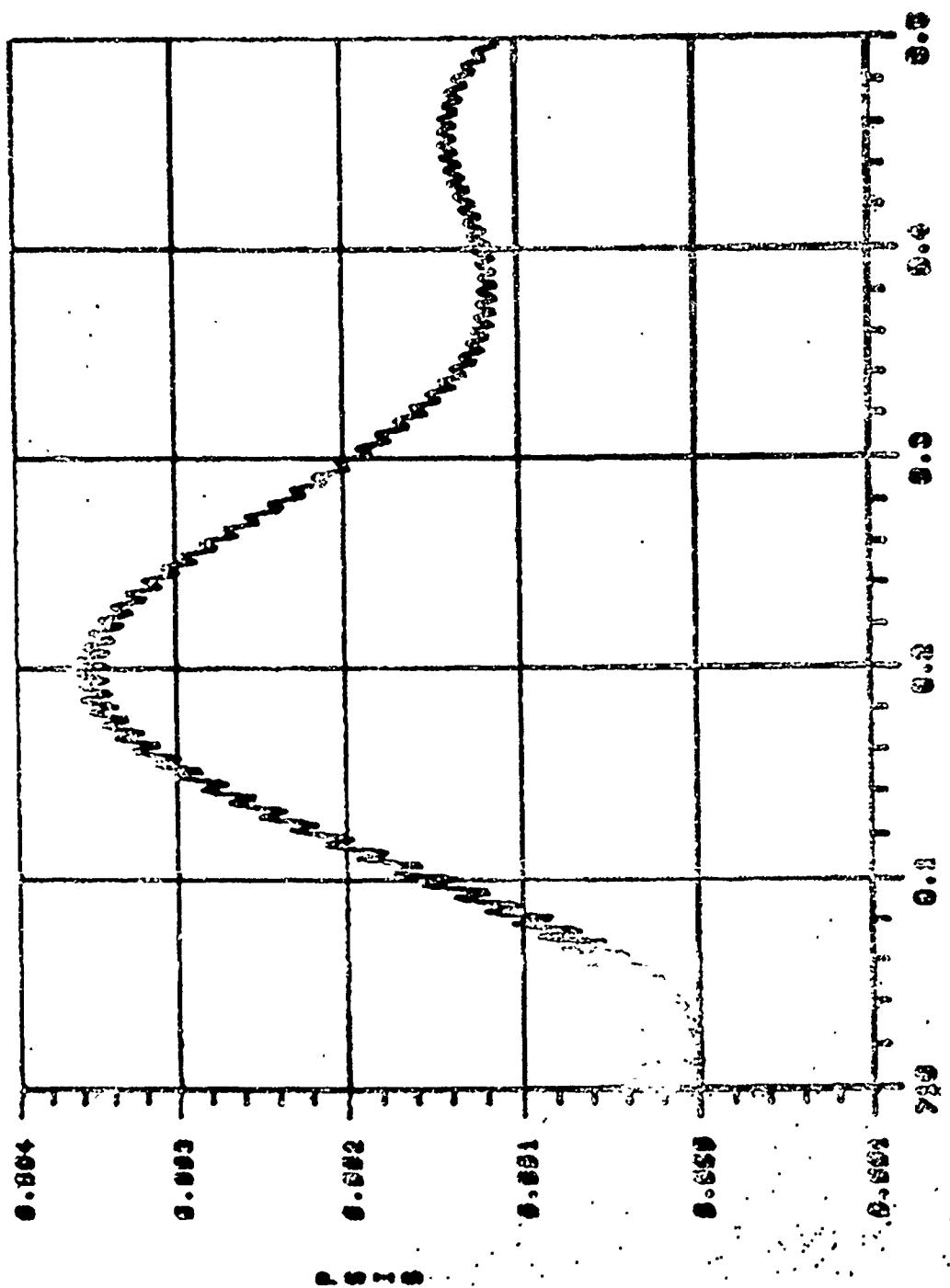


Figure 115.

Figure 116.



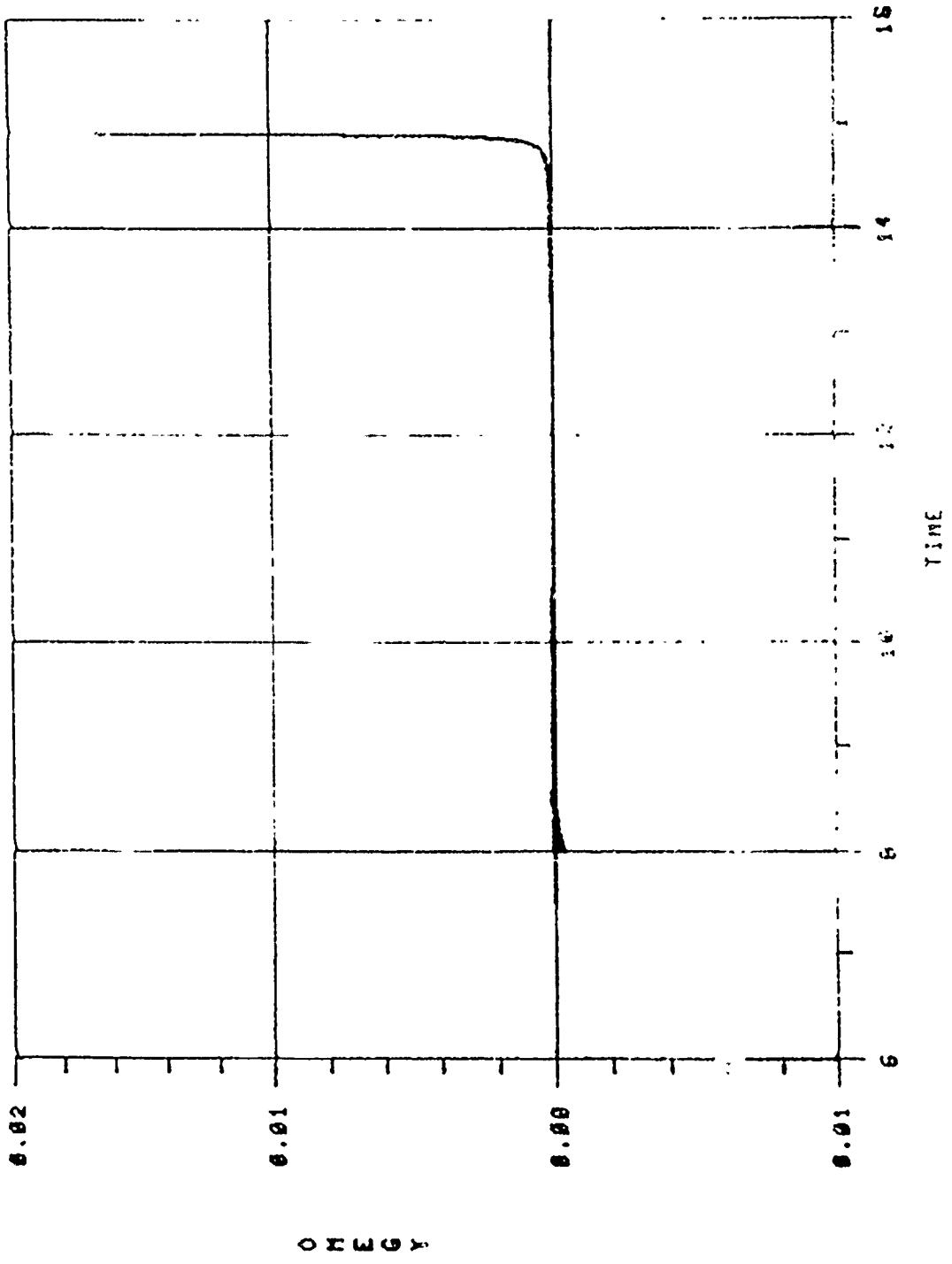


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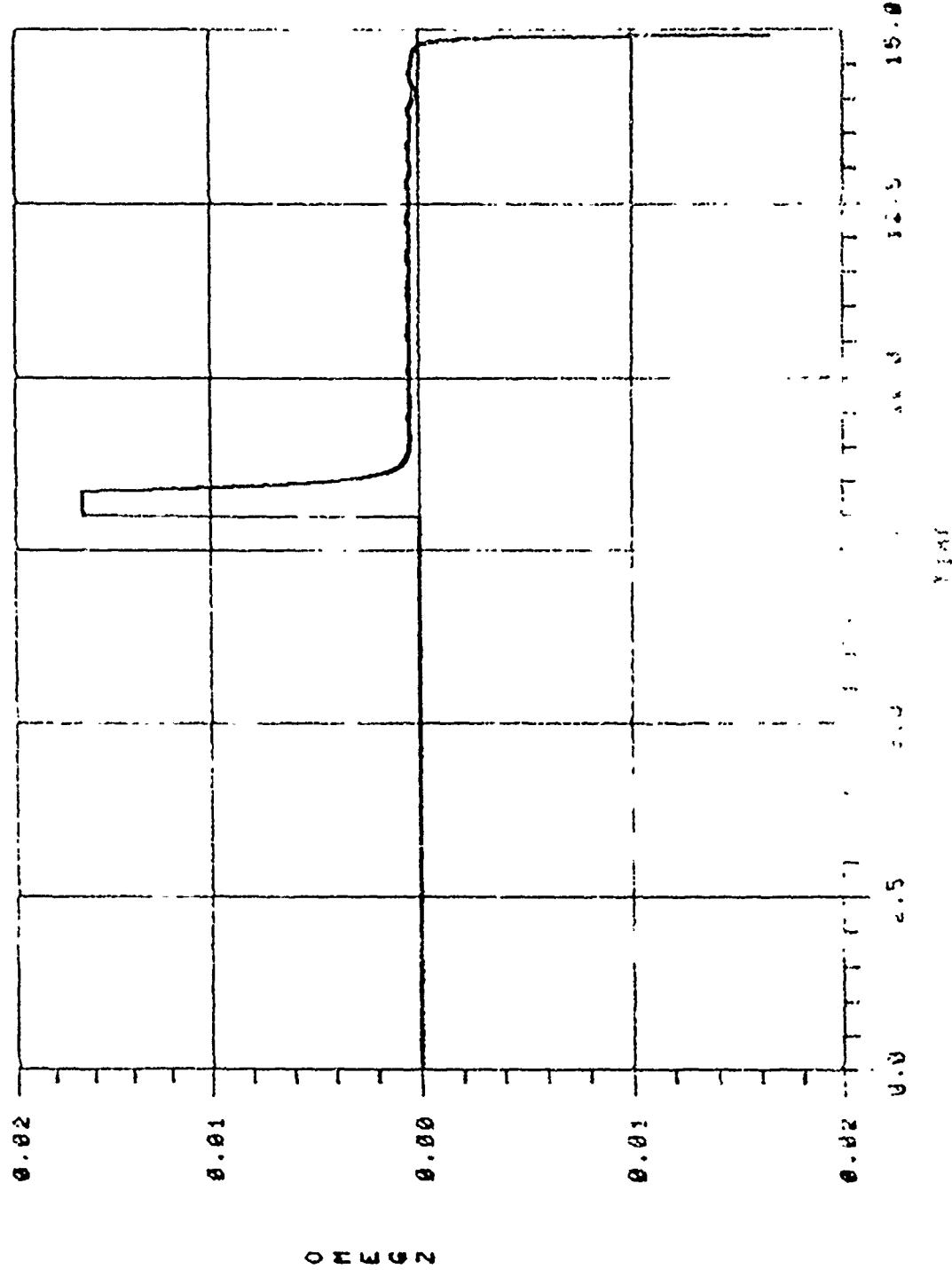


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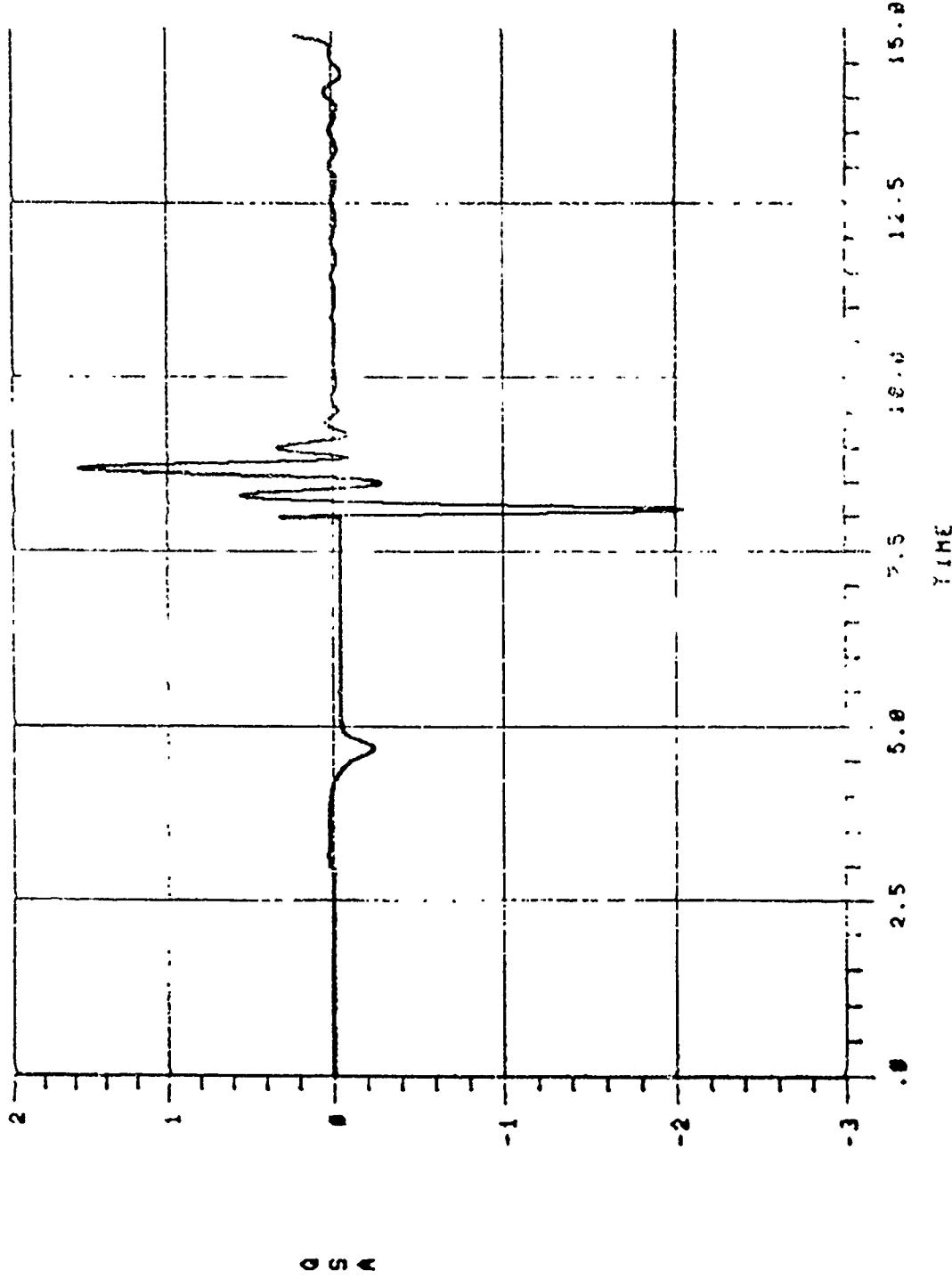


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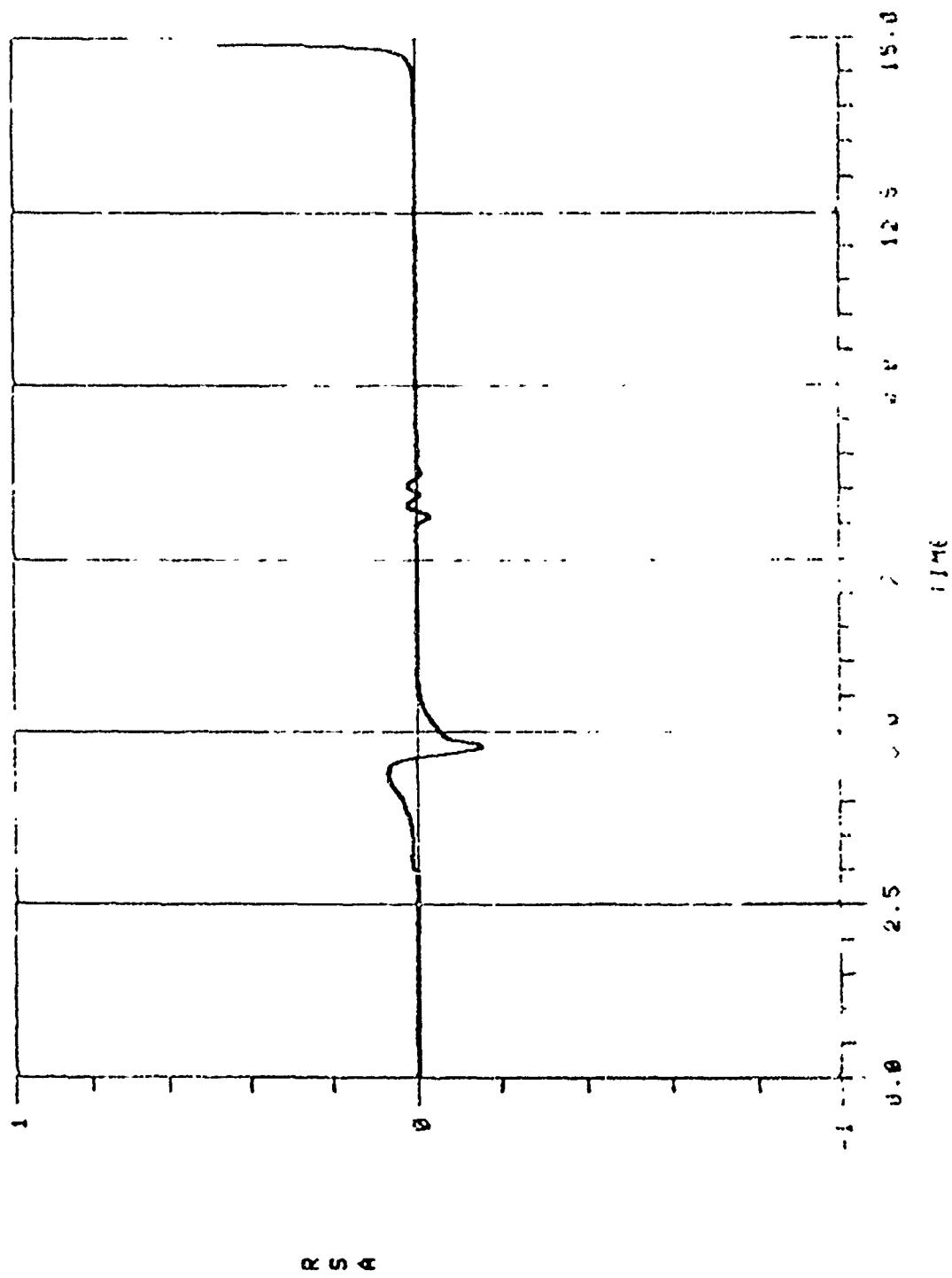


Figure 120.

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Appendix A.

**6-DOF DIGITAL MISSILE TRAJECTORY SIMULATION
WITH AN IDEAL GYROSCOPE MODEL**

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JAA 409F, DIGITAL MISSILE TRAJECTORY SIMULATION WITH AN IDEAL CYRRESCAPE MODEL
ATTACHMENT FILE, X61, PFORMAT.CT, TSIZE, 1950), SAVE
UPDATE

1 C *** AERODYNAMICS AS AT 12/20/72 AND MEASURED SEEKER PERFOR.
2 C *** MAKE DATA AT 12/72.
3 EXTERNAL DERIVATIVES
4
5 1 CALL INITIAL (1S,DERIVATIVES)
6 2 CALL RUNK
7 CALL FINISH
8 GA TO 2
9 END

```

1      S U B C R I T I C A L ( F N D R L V , D E R I V S )
2      O P L E L F P R E C I S I O N D T , F S T S A M , S P E R , T T E , T T V E D , T T M F 1 , T T M F 2 , T T M F 3 ,
3      T T M E 4 , T S T , D T A , T I M E
4      - - - - - R E A L - - - - - K P C / K P T , K T , K T I , K T I O , K T Z O
5      R E A L K T 3 0
6      R E A L K B , K G L , K P
7      R E A L K G , K G G L , K G , L A M P R , L A M Y R , L A M B I
8      R E A L L P , K C / K S , K A , K S , K R
9      R E A L M A C H , M A S S , I X , I Y Z , I T , I A
10      R E A L - - - - - X X A T 3 3 7 0 , X X B T 3 3 7 1
11      C O M M A N / I T E S / K U T T A , U X , D T R K , U , V , > , P , Q , R , P H I , T H T A , P S I , X , Y , Z , R T H T A ,
12      I R P S I , T H T A S , P T S I , P T I C D , B M E G A , T X F D , P X F D , P E F , Y E F , D E L I , D E L V P ,
13      2 C E L 3 , C O E L 1 , D C E L V P , C T E L 3 , R L A M P , R L A M Y , R P H I G , R P H I O , D U , D V , D W , D P , D G , D R ,
14      3 P L I , C T H T A , P P S I , D X , D Y , D Z , D R T H T A , D R P S I , C T H T A S , C T H A S O , D P S I S , D P S I S O ,
15      4 D C M E G A , D C T X E D , D P X F D , J 9 S F , C Y E F , C D E L P 1 , C D E L P P , C D E L P 3 , C D D E L 1 , C D D E L P ,
16      5 D C D C E L 3 , C D C L A M , D C R M T 0 , D O I
17      C O M M A N / E T E / E B 1 1 , E B 1 2 , E B 1 3 , E 9 2 1 , E 8 2 2 , F 5 2 3 , F 8 3 1 , E 9 3 2 , E 8 3 3
18      C O M M A N / B T 8 / B S 1 1 , B S 1 2 , B S 1 3 , B S 2 1 , B S 2 2 , F 5 2 3 , R S 3 1 , E 9 3 2 , E 8 3 3
19      C O M M A N / T D G / C P S I , S P S I , S P M I , C P M I
20      C O M M A N / I R / G A M P , G A M Y , D E L X T R , D E L V T B , C E L Z T R
21      C O M M A N / P T V / D E L X V , D E L V V , D E L Z V
22      C O M M A N / C E L T / D E L X , C E L Y , D E L Z
23      C O M M A N / S T U F F / D E L X S , D E L Y S , D E L Z S
24      C O M M A N / I N P S K R / P I T E R , Y A N V R R
25      C O M M A N / M A C L / M A C H , V S N C , U R , V R , W R , V R S , V R M , V D
26      C O M M A N / C O E F / C A Z , C Y , C N , C L P , C M C B , C V C B , C L D , C M C , C N R , A L P H A , B E T A , C M A D ,
27      I C L R A C
28      C O M M A N / T O C E C / A X B , A Y B , A Z B , C L B , C N B , A L B , A M B , A N B , C M B
29      C O M M A N / C D / D E L V Y , C E L V R , D E L R , D E L R B L
30      C O M M A N / J U R K / T I M E , T I M E 3 , R M 0 , S , D , S C U M , C A P , I R A P , R A P T M 1 , R A P T M 2 , I A C T ,
31      1 S L U P F 1 , P T 1 , R A P T M 3 , S L U P E 2 , B T 2 , C T T , C P T , S P T , X L T A , S T T , Q A P S , Q A P S U ,
32      2 C A P S C V , T H
33      C O M M A N / F F / P F C L B , F F C M B , F F C V B , F F A X B , F F A Y B , F F F X A Z B , F F A L D , F F A M B , F F A N D
34      C O M M A N / G G / G X B , G Y B , G Z B
35      C O M M A N / J U R K 1 / T N C L D , T N C L L , > , M A S S , I X , I Y Z , X I N T I A , N A V Y
36      C O M M A N / M O / G E R A L T , T D , T O R A D , R H B S L , A R G 1 , W T M 1 L , R S T A R ,
37      1 R M R E , A R U 2 , G 9 , T M 9 L
38      C O M M A N / T T / F S T S A M , T I M E 4 , D T , D T A , T S T , T T E , S P E R , T S A M , D O , J M A X , I P R I N T , T 2
39      C O M M A N / J U R K 2 / S A Y C E T T U P P , T A C C G R C E T S , Y A N V R S , P I T E R S , P H F O V , B A Y , R M G L I N Y
40      1 P I T Y A L S C , R 2 0 , N U L S K A , B R S , R F L E C T , N U L L , K A G E
41      C O M M A N / B O X / R S L , K T , K T 1 0 , K T 2 0 , L A M P R , L A M Y R , R T M , R T M I N , R S G E , E D 1 , F L G o r ,
42      1 R S A , F D 4 , Q S A
43      C O M M A N / P E R V / D M E G Y , D M E G Z
44      C O M M A N / P U T A P / Y E G , R E G , P E G
45      C O M M A N / A R R O W / P H T O S P C G I T , L C 2 , V L C 3 , R E F , R P L , V E O , P E O , T H R B S , P S R B S ,
46      1 T H B S , P S B S , G R L V , P F F L , K P D , K C , K M , K B , L A M B I , P O L E S
47      C O M M A N / S S / S 1 , S 2 , S 3 , S 4 , S 5 , S 6
48      C O M M A N / G P / R R , R R , W , A , B , K T 3 0
49      C O M M A N / S T U F F 1 / D E L X B , D E L Y B , D E L Z B
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1441      C
1442      C
1443      C
1444      C
1445      C
1446      C
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1449      C
1450      C
1451      C
1452      C
1453      C
1454      C
1455      C
1456      C
1457      C
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C      DEFAULT VALUES
C
C      REAL REAL P261/
C      1+2.*96857017E+01,+5.-18678220E+02,+3.-21767422E+01,   001--003
C      2-3.-6616017E-03,+2.-08545313E+07,+3.-37690000E-03,   004--006
C      3+4.-971952917E+04,+5.-31200700E+06,+4.-48869000E+07,   007--009
C      4+2.-01000000E-01,+1.-5.72370000E+00,+5.-03307000E-01,   010--012
C      -5*-000000000E*00,-3+1*-97876E+00,-7*000000000E+00,   013--015
C      6+C.000000007E+00,+0.000000000E+00,+0.000000000E+00,   016--018
C      7+4.-0000000001+00,+8.-000000000CE+01,+0.-000000000E+00,   019--021
C      8+1.500000001E+01,+8.-000000001CE-02,+6.-000000000E-01,   022--024
C      9+1.-4*5000000F+02,+4.-000000000E+00,+8.-250000000CE+00,   025--027
C      1+2.-500000000E+02,+2.-500000000CE+01,+2.-000000000E+00,   028--030
C      -8+1.000000000E*00,-3+1*-000000000E+00,-7*000000000E+00,   031--033
C      6+C.000000000E+00,+5.-000000000E-01,+1.-500000000E+01,   034--036
C      9+1.000000000E+00,+1.-000000000E+00,+1.-000000000E+00,   037--039
C      F+1.000000000E+00,-1.-000000000E+00,+1.-000000000E+00,   040--042
C      F+1.000000000E+00,+1.-000000000E+00,+1.-000000000E+00,   043--045
C      G+1.000000000E+00,+8.-000000000E+00,+1.-500000000E+01,   046--048
C      -W+1.000000000E+01,-7*-500000000E+00,-5*-000000000E+00,   049--051
C      69     !+5.-000000000E-02,+2.-352*00000E-05,+1.-622600000F-05,   052--054
C      70     ,+2.-000000000F-01,+1.-1.500000000E+00,+1.-250000000E+01,   035--057
C      71     ,+1.-250000000E+01,+1.-500000000CE+01,+2.-000000000CE+01,   058--060
C      72     L+3.-000000000E+02,+1.-000000000E+01,+0.-000000000E+00,   061--063
C      73     M+1.000000000E-01,+6.-000000000E+00,+3.-140000000E+02,   064--066
C      -K+2*-000000000E-03,+1*2+500000000E+03,-8*-000000000E+00,   067--069
C      74     ,+0.-000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   070--072
C      75     P+C.000000000E+00,-0.-000000000E+00,+2.-830000000E+01,   073--075
C      76     Q+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   076--078
C      77     R+4.-000000000E+03,+0.-000000000E+00,+0.-000000000E+00,   079--081
C      78     S+C.000000000F+00,+0.-000000000E+00,+0.-000000000E+00,   082--084
C      80     T+C.000000000E+00,-0.-000000000E+00,-9*-000000000E+00,   085--087
C      81     U+C.000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   088--090
C      82     V+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   091--093
C      83     W+C.000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   094--096
C      84     X+C.000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   097--099
C      85     Y+C.000000000E+00,+2.-1.2274847E+02,+3.-25*000000E+02,   100--102
C      -B+0.726679000E-03,-1*-000000000E+00,-7*000000000E+00,   103--105
C      87     1+C.000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   106--108
C      88     2+C.000000000E+00,+0.-000000000F+00,+0.-000000000E+00,   109--111
C      89     3+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   112--114
C      90     4+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   115--117
C      91     5+C.000000000E+00,+0.-000000000E+00,+0.-000000000E+00,   118--120
C      -Q+0.000000000E+00,-1*-250000000E+00,-7*000000000E+00,   121--122
C      93     5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   123--125
C      94     5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   126--128
C      95     F+C.000000000F+02,+0.-000000000E+00,+0.-000000000E+00,   129--131
C      96     5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   132--134
C      97     5+C.000000000F+00,-0.-000000000E+00,+0.-000000000E+00,   135--137
C      98     -G+0.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   138--140
C      99     5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   141--143
C      100    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   144--146
C      101    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   147--149
C      102    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   150--152
C      103    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   153--155
C      104    -B+0.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   156--158
C      105    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   159--161
C      106    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   162--164
C      107    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   165--167
C      108    5+C.000000000E+00,-0.-000000000E+00,+0.-000000000E+00,   168--170

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170 C INPUT VALUES
 171
 172 GATE(CC1) = RST; GATE(CC2) = RST; GATE(CC3) = RST; GATE(CC4) = RST-----
 173 GATE(CC5) = RST; GATE(CC6) = RST; GATE(CC7) = RST-----
 174 TIME = DOUBLE(071)
 175 XX = FIXED(001); NUM = FIXED(002)
 176 IPINT = FIXED(003); NPPS = FIXED(004)
 177 ACT = FIXED(005); ACTA = FIXED(006)
 178 KAGE = FIXED(007); NULSKR = FIXED(008)
 179 KXV = FIXED(009); TOU1F = FIXED(010)
 180 IFLFA = FIXED(011); IRALL = FIXED(012)
 181 ISKR = FIXED(013); IRAP = FIXED(014)
 182 IACT = FIXED(015); IRALLOC = FIXED(016)
 183 IACC = FIXED(017); NULL = FIXED(018)
 184 KAGE = FIXED(019); IDUM = FIXED(020)
 185 IDC = FIXED(021); IDUM = FIXED(021)
 186 IDC = FIXED(023); IDUM = FIXED(024)
 187 IDC = FIXED(025); IDUM = FIXED(026)
 188 IDC = FIXED(027); IDUM = FIXED(028)
 189 IDC = FIXED(029); IDUM = FIXED(029)
 190 FLGB = LOGICAL(001); IMPACT = LOGICAL(002)
 191 ERPH = LOGICAL(003)
 192 RTMOL = REAL(001); T7 = REAL(002)
 193 GO = REAL(003); TORAD = REAL(004)
 194 GO = REAL(005); RWSSL = REAL(006)
 195 RSTAR = REAL(007); CG = REAL(008)
 196 MASS = REAL(009); IX = REAL(010)
 197 ITZ = REAL(011); ID = REAL(012)
 198 RFLECT = REAL(013); PI = REAL(014)
 199 WAPC = REAL(015); RP = REAL(016)
 200 FSTSAM = DOUBLE(REAL(017)); BRS = REAL(018)
 201 CELRNL = REAL(019); LAMP1 = REAL(020)
 202 KG = REAL(021); KG = REAL(022)
 203 KU = REAL(023); KROL = REAL(024)
 204 RC = REAL(025); RVBIA5 = REAL(026)
 205 RF = REAL(027); R9 = REAL(028)
 206 AF = REAL(029); R95 = REAL(030)
 207 RWMAX = REAL(031); RTOL = REAL(032)
 208 RA = REAL(033); CS = REAL(034)
 209 K = REAL(035); DC = REAL(036)
 210 KGL = REAL(037); FFCLB = REAL(038)
 211 FFCMA = REAL(039); FFCMB = REAL(040)
 212 FFAYB = REAL(041); FFAYB = REAL(042)
 213 FFAYB = REAL(043); FFALB = REAL(044)
 214 FFALB = REAL(045); FFA' B = REAL(046)
 215 GAMC = REAL(047); DCL = REAL(048)
 216 VCL = REAL(049); THTAC = REAL(050)
 217 GF = REAL(051); CLD = REAL(052)
 218 TA = REAL(053); IT = REAL(054)
 219 XC = REAL(055); RYBLI = REAL(056)
 220 PEFAY = REAL(057); VHF9V = REAL(058)
 221 PEFAY = REAL(059); DFLMY = REAL(060)
 222 VRATE = REAL(061); K4 = REAL(062)
 223 K9 = REAL(063); FRGN = REAL(064)
 224 KS = REAL(065); BMEGA = REAL(066)
 225 PCA = REAL(067); U = REAL(068)
 226 V = REAL(069); W = REAL(070)
 227 D = REAL(071); D = REAL(072)
 228 D = REAL(073); PSI = REAL(074)
 229 THTA = REAL(075); PHI = REAL(076)
 230 Y = REAL(077); Y = REAL(078)
 231 Z = REAL(079); PSIS = REAL(080)

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|-----|--------|----------------------|-------------|
| 237 | THTAS | * REAL(081) / DP | * REAL(082) |
| 238 | PG | * REAL(083) / D9 | * REAL(084) |
| 239 | CL | * REAL(085) / DV | * REAL(086) |
| 240 | DX | * REAL(087) / DFLXB | * REAL(088) |
| 241 | DELVP | * REAL(099) / DFLZD | * REAL(090) |
| 242 | TELXS | * REAL(091) / DFLYS | * REAL(092) |
| 243 | TELZS | * REAL(093) / P1TERP | * REAL(094) |
| 244 | YAXERR | * REAL(095) / P1TERP | * REAL(096) |
| 245 | YAXERR | * REAL(097) / 0ME5Y | * REAL(098) |
| 246 | IPPEOT | * REAL(097) / PSR3 | * REAL(100) |
| 247 | PT1 | * REAL(101) / BT2 | * REAL(102) |
| 248 | THTBL | * REAL(103) / KC | * REAL(104) |
| 249 | SFC | * REAL(105) / SF1 | * REAL(106) |
| 250 | SPP | * REAL(107) / SF3 | * REAL(108) |
| 251 | SF4 | * REAL(109) / SF5 | * REAL(110) |
| 252 | SP6 | * REAL(111) / SF7 | * REAL(112) |
| 253 | SFR | * REAL(113) / SF9 | * REAL(114) |
| 254 | SPJC | * REAL(115) / SF11 | * REAL(116) |
| 255 | SF12 | * REAL(117) / SF13 | * REAL(118) |
| 256 | SP14 | * REAL(119) / SF15 | * REAL(120) |
| 257 | TIC | * REAL(121) / TIC1 | * REAL(122) |
| 258 | PBRO | * REAL(123) / YBRG | * REAL(124) |
| 259 | C5A | * REAL(125) / RSA | * REAL(126) |
| 260 | PEG | * REAL(127) / YFG | * REAL(128) |
| 261 | REG | * REAL(129) / RFT | * REAL(130) |
| 262 | PER | * REAL(131) / RED | * REAL(132) |
| 263 | T2 | * REAL(133) / DFLXV | * REAL(134) |
| 264 | CELVV | * REAL(135) / DFLZV | * REAL(136) |
| 265 | CEL1 | * REAL(137) / DFL2 | * REAL(138) |
| 266 | CEL3 | * REAL(139) / DFL4 | * REAL(140) |
| 267 | CELVP | * REAL(141) / DFL1C | * REAL(142) |
| 268 | TH | * REAL(143) / THB9 | * REAL(144) |
| 269 | PSRE | * REAL(145) / THRBS | * REAL(146) |
| 270 | PSRES | * REAL(147) / THTAO | * REAL(148) |
| 271 | REF | * REAL(149) / PEF | * REAL(150) |
| 272 | YEF | * REAL(151) / TXED | * REAL(152) |
| 273 | PXFD | * REAL(153) / F1 | * REAL(154) |
| 274 | FE | * REAL(155) / F3 | * REAL(156) |
| 275 | PSISP | * REAL(157) / THASC | * REAL(158) |
| 276 | CATHTA | * REAL(159) / DMP9 | * REAL(160) |
| 277 | CCEL1 | * REAL(161) / DDEL3 | * REAL(162) |
| 278 | CCFLP1 | * REAL(163) / DDELP3 | * REAL(164) |
| 279 | CCELVP | * REAL(165) / DDELPP | * REAL(166) |
| 280 | CCCEL1 | * REAL(167) / DDDEL3 | * REAL(168) |
| 281 | CCFLP | * REAL(169) / CALAMP | * REAL(170) |
| 282 | CATMY | * REAL(171) / DPMH10 | * REAL(172) |
| 283 | RLAMY | * REAL(173) / RLAMP | * REAL(174) |
| 284 | RPLIG | * REAL(175) / RPS1 | * REAL(176) |
| 285 | RTLTA | * REAL(177) / XT | * REAL(178) |
| 286 | YT | * REAL(179) / YT | * REAL(180) |
| 287 | DPC1C | * REAL(181) / DTHTAG | * REAL(182) |
| 288 | THHTAT | * REAL(183) / PTIV | * REAL(184) |
| 289 | PEC | * REAL(185) / YFD | * REAL(186) |
| 290 | CHFF | * REAL(187) / CYEF | * REAL(188) |
| 291 | PEFL | * REAL(189) / PHIG | * REAL(190) |
| 292 | DPM10 | * REAL(191) / TATACP | * REAL(192) |
| 293 | VM | * REAL(193) / DPM10 | * REAL(194) |
| 294 | DPM10 | * REAL(195) / THBD | * REAL(196) |
| 295 | RCFT | * REAL(197) / TIMEC | * REAL(198) |
| 296 | TIME1 | * REAL(199) / TIME2 | * REAL(200) |
| 297 | TIME3 | * REAL(201) / TIME4 | * REAL(202) |
| 298 | ZTM | * REAL(203) / RTMIN | * REAL(204) |

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294      DUM      = REAL(205)  DUM      = REAL(206)
295      CTASC    = REAL(205)  DPSISN  = REAL(206)
296
297      C      CALCULATED VALUES
298      C
299      ARG1=1.+(C0+WTMP1)/(RSTAR+TRGRAD)
300      XINTIA = (IYZ-IX)/IYZ
301      S=.25*PI*C*PI
302      WANG=PI*PI
303
304      CMAX=MAX(XANG)
305      CS=ATG(CMSL*WANG)
306      SPER=1.00/DRLE(FL9AT(NPPS))
307      TME=SPER
308
309      CT=1.00/DRLE(FL9AT(NOT))
310      CTK=SMGL(CT)
311
312      CTMAX=0.00/DRLE(FL9AT(NOT))
313      CELRAL=REAL(C19)/R20
314      CELRL=CELRL/R20
315      LAMPI=LAMPI/R20
316      PRIMAX=PRIMAX/R20
317      GAMLR=GAMLR/R20
318
319      VCL=VCL/R20
320      PRFV=PRFV/R20
321      VRATE=VRATE/R20
322      RVBIAS=RVBIAS/R20
323      GC=GC/R20
324      PCL=PCL/R20
325
326      THTRAC=THTRAC/R20
327      C1=(IT-1A)/IT
328      R1=IA/IT
329      RAGL1N=RAGL1N/R20
330      VNPV=VNPV/R20
331      K4,K4/R20
332
333      THTA=THTA/R20
334      CPSIS=CPS(PSIS)
335
336      C**** JMAX=PRINT CONTROL. PRINTING OCCURS EVERY JMAX INTERVALS.
337      JMAX=1.00/CT+.000001
338      INPLT(105)
339      ZHALD=Z
340
341      THTA=THTA
342
343      TC1=T0++/T02+TC1+++
344      TC3=T02++2
345      TC4=TC3++2
346      TC5=TC4++2
347      TC6=TC5++2
348
349      TC7=TC6++2
350      T1=TC++2,
351      IF(T2.LT.+01)T2=T1++.
352      CTT=COS(THETAT)
353      STT=SIN(THETAT)
354      CPT=CPS(PSIT)
355
356      SPT=SIN(PSIT)
357      IF((IRALLOC+FG+2).NE.2)
358      C**** RANGE TARGET FROM MISSILE=RTM IN FEET.
359      RTM=SQRT((XT-X)**2+(YT-Y)**2+(ZT-Z)**2)
360
361      C      WHITE SANDS ALTITUDE=4000, FT.
362      C**** IMPORTANT-DEFINE TIME0 FOR EACH TRAJECTORY.
363
364      C**** START ROLL GYRO(LINE358) AT TIME1
365      C**** START PITCH AND YAW GYROS(LINE 367)/ROLL CONTROL(LINE 399) AT TIME3
366      C**** FINISH TRACK AT TIME4      IF TARGET IS WITHIN FOV AND ROEY

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1000      C**** RAILISTIC FLIGHT
1001      !IF(DELTLT+5.0)TIME4=999.
1002      !TIME=TIME+1.000001
1003      F4****FIRST SCHEDULED PRINT TIME
1004      PRINT#0!ITEMP
1005      DELX=XT-X
1006      DELY=YT-Y
1007      DELZ=ZT-Z
1008      DELXT=DELX
1009      DELYT=DELY
1010      DELZT=DELZ
1011      CMG=C.
1012      CND=0.
1013
1014      C***** ECO#1
1015      ECT#71=0#23
1016      EC2#12
1017      EC3#FC1#1.2
1018      EC4=EC3#3.8
1019      EC5#TIME3
1020      DELMX=DEL#X/R2D
1021      DELMY=DEL#Y/R2D
1022      DELMZ=DEL#Z/R2D
1023      JDELMY=DELMY/R2D
1024
1025      9#0001 FORMAT(//2X,'NULL ROLL RATE SENSORS')
1026      9#0002 FORMAT(//2X,'ROLL HOLD')
1027      9#0003 FORMAT(//2X,'LATERAL ENABLE')
1028      9#0004 FORMAT(//2X,'OUTDANCE ENABLE')
1029      9#0005 FORMAT(//2X,'ACQUISITION')
1030      9#0006 FORMAT(//2X,'URCAGE GYRA FOR ROLL TO VERTICAL')
1031      9#0007 FORMAT(1M1)
1032      9#010 FORMAT(//2X,'BEGIN SEEKER CANT')
1033      9 CONTINUE
1034      KLTIA = C
1035      R E T U R N
1036
1037      C      ENTRY DERIVATIVES
1038      C      KUTTA + KUTTA + 1
1039      C
1040      ALT#0=Z
1041      G_X=0.000000000000000E+000
1042      GERALT#R0=ALT/(R0+ALT)
1043      C** METO CALCULATES V9AD
1044      CALL METO
1045      13 CONTINUE
1046
1047      C      C** PROTR SCS TRANSFORMATION
1048      CALL TRSFEB
1049
1050      C      RCS TO SCS TRANSFORMATION, SEQUENCE IS THTA9#PE#B
1051      CALL TRSFBS
1052      100 IF(KLTIA<0.0) GO TO 105
1053      IF((TIME>LT+THOLD))NN#14
1054      IF((GATE(003))00 TA 1235
1055      IF((TIME<LT-TIME3))GA TA 1235
1056      GATE(003)=SFT
1057      IFPRINT#2
1058
1059      1039 CONTINUE
1060      IF(GATE(004))00 TA 1236
1061      IF((TIME>LT-TIME1))00 TA 1236
1062      GATE(004)=SFT
1063      IFPRINT#2

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417      1236 CONTINUE
418      IF(GATE(CC5))GO TO 1237
419      IF(TIME.LT.TIME2)GO TO 1237
420      GATE(CC5)SET
421      IPRINT#2
422      CONTINUE
423      IF(GATE(CC6))GO TO 1238
424      IF(TIME.LT.TIME4)GO TO 1238
425      GATE(CC6)SET
426      IPRINT#2
427      1238 IF(GATE(CC7))GO TO 1239
428      IF(TIME.LT.T1)GO TO 1239
429      GATE(CC7)SET
430      IPRINT#2
431      1239 CONTINUE
432
433      C    LOS ERROR IN SCS
434      CALL LOSERR
435      C
436      C** SUBROUTINE SEEK DETECTS TARGET WITHIN THE DEFLECTION RANGE OF SEEKER
437      C    TARGET WITHIN THE FIELD OF VIEW, SO A H1 SEEKER WITHIN LINEAR RANGE
438      CALL SEEK
439      10K CONTINUE
440      C
441      C** MISSILE VELOCITY WRT AIR MASS
442      WADV=0.0007367*Z+5.236
443      WADVW=0*(1.+0.6*SIN(WADV))
444      WVS = WADVW*WADV
445      WVS = WADVW*WADV
446      CALL WCALC
447      C
448      C** ANGLE OF ATTACK COMPONENTS
449      C** TERMS FOR EQUATIONS OF MOTION
450      CALL AERO_AKO
451      C** SUBROUTINE DIFEG CALCULATES FORCES AND MOMENTS FOR THE DIFEG EQUATIONS
452      CALL DIFEG
453      C
454      C** SUBROUTINE DIFEG CONSTRUCTS THE EQUATIONS OF MOTION
455      CALL DIFEG
456      1230 PRINT#2,1230 TO 5150
457      IF(TIME.LT.T1)GO TO 406
458      IF(.NOT.FLG0)GO TO 6668
459      PRINT 90001;1PRINT#2;FLG0=.NOT.FLG0
460      6668 CONTINUE
461      NX=33
462
463      C** SUBROUTINE EDISKRGYR CONSTRUCTS THE SEEKER GYRO MODEL FOR ED
464      CALL EDISKRGYR
465      5203 CONTINUE
466      C
467      C** FC AUTOPILOT
468      CALL_EAP
469      GO TO 226
470      C
471      C    ENGINEERING DESIGN AUTOPILOT
472      C
473      5150 IF(TIME.LT.T E3100 TO 401
474      TTIME4=T+FLG5+600 TO 6671
475      PRINT 90010;1PRINT#2;FLG5=.NOT.FLG5
476      6671 CONTINUE
477      NX = 32
478      5150 FLG5=K5=YAKFRO

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541      PEG+THRAS+THBS+PFF
542      VEG+PSRMS+PSB5+VFF
543      PEG = -PEG
544      IF(ABS(VEG),GT,YCL)VER=913N(YCL,VEG)
545      C***ROLL COUPLER
546      301 CONTINUE
547      IF (TIME,LE,TIME3)GO TO 406
548      GO TO(1401/1402),IR9LLDC
549
550      INCY CONTINUE
551      C*****PRFV1008 ROLL DECOUPLER
552      IF((ACCG,EC,2,AND, TIME,GT,TIME4,AND, NULSKR,EC,2)) GO TO 300
553      RLAMY=PS15
554      RLAMP=RTHTA=RTHTA
555      GO TO 302
556      300 CONTINUE
557      CRLAMY=RLAMY
558      CRLAMP=RLAMP
559      302 CONTINUE
560      RICY=PS15
561      RICP=RTHTA=RTHTA
562      RECVR=TCP=RLAMP
563      REENR=ICY=RLAMY+RESI
564      304 CONTINUE
565      IF(RED,LT,4363)RED=.4363
566      IF(RED,GT,1.7453) RED=1.7453
567      RET=REN/RED
568      PH1082V=RET
569      GO TO 1404
570      1402 CONTINUE
571      C*****LATER ROLL DECOUPLER
572      CRLAMY=PS15(PS15=RLAMY)
573      IF((ACCG,EC,2)DRLAMY=0,
574      RET=PS15*PS2+RLAMY*S3+PS15
575      REC=S4+RTHTA=SS+RTHTA
576      IF(ABS(RET),LT,RTBL)GO TO 304
577      C***CHECK FOR SATURATION
578      IF(ABS(PH)MAX=ABS(RET)),LT,RTBL,AND,RED<LT,RFN/RET)GO TO 306
579      C***+
580      305 RET=SIGN(RET)*SIGN(RET)
581      IF(RED,GT,0,)IRET=REN/RED
582      306 CONTINUE
583      IF(ABS(RET),GT,PHIMAX)RFT=SIGN(PHIMAX,RET)
584      PH10=RET
585      1404 CONTINUE
586      CHPW(G=BG+RH1H)G=PG+1V=BG+F7+PH10
587      REF=(PG/AF)*PH10*RPH10
588      REF=K*REF
589      IF(ABS(REF),GT,.17453) REF=SIGN(.17453,REF)
590      309 CONTINUE
591      REG=REF+RVBIAS
592
593      C** CONTROL SYSTEM, CANARDS FOR EACH PLANE ON COMMON SHAFT
594      307 CONTINUE
595      IF((ACCG,EC,2,AND, NULSKR,EC,2)) GO TO 226
596      221 CONTINUE
597      VEG=0.
598      PEG=0.
599
600      206 CONTINUE
601      CALL CONTROL
602      C** 4TH ORDER RUNGE KUTTA INTEGRATION
603      *06 CONTINUE

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603      IF(KUTTA .NE. 11) GO TO 90
18      CALL BSVTAPE(IE,SNGL(TIME),ETHASD,THASD,PS1SD,PS1SD,THTAS,PS1SD)
604      CONTINUE
605      C
606      C      PROCESS TIC MARKS ON CHANNELS 0 AND A
607      C
608      C      TICL=0.
609      C      IF(TIME.LT.DELT(TIC)) GO TO 1777
610      C
611      C      SET EVENT LEVEL
612      C
613      C      IF(KAGE,EG+2)TICL=TICL+1
614      C      IF(NLL,EG+2)TICL=TICL+2
615      C      TICL=TICL+1
616      C      TICL=TICL+05
617      C
618      C      SET ACQUISITION SIGN
619      C
620      C      IF(IACG,EG+2)TICL=TICL
621      1777  CONTINUE
622      PHOTATAN2(SIN(PHI),COS(PHI))
623      C
624      C      PROCESS MDAC BUFFER
625      C
626      MDAC(01)=TICL/SFO          /MDAC(09)=TICL/SF8
627      MDAC(02)=(ALV=4000.)/SF1    /MDAC(10)=R2D*9MEGY/SF9
628      MDAC(03)=TOTACC/SF2        /MDAC(11)=R2D*PEFL/SF10
629      MDAC(04)=R2D*THTAS/SF3    /MDAC(12)=R2D*THTRS/SF11
630      MDAC(05)=R2D*PS1S/SF4      /MDAC(13)=R2D*PEG/SF12
631      MDAC(06)=R2D*CELRS/SF5      /MDAC(14)=R2D*THRBS/SF13
632      MDAC(07)=R2D*DELVY/SFA     /MDAC(15)=R2D*ORLAMY/SF14
633      MDAC(08)=R2D*DELVP/SF7     /MDAC(16)=R2D*THTA/SF15
634      C
635      C      LIMIT MDAC OUTPUT
636      C
637      DO 1492 I=1,16
638      IF(ABS(MDAC(I)).GT.0.9999)MDAC(I)=81GN(.9999,MDAC(I))
639      1492  CONTINUE
640      C
641      C      OUTPUT MDAC VALUES
642      C
643      X      CALL MDACS(0,16,MDAC)
644      X      JERR=ISVTAPE(SNGL(TIME),R2D+TXED)
645      PRNTEXT=PRINTH(1,E=6
646      IF(TIME.LT.PRNTNEXT.AND.IPRINT.EC.1) GO TO 72
647      IF(TIME.GE.PRNTNEXT) PRINTM=PRINTH(J"XX"CT)
648      IPRIAT=1
649      70 TMP1=SIN(PHI)
650      TMP2=COS(PHI)
651      PHOTATAN2(TMP1,TMP2)
652      C-----C
653      C      LINE PRINTER 1/A
654      C
655      C
656      C-----C
657      IF(GATE(001)) GO TO 1661
658      PRINT 900C7
659      PRINT 90000,4,"THE EUT",4,"HNN-E",4,"THE EUT",4,"HNN-E",4,"HNN-E"
660      14HBF ,4H    ,BF    ,4HRTOL,4H    ,RT2L,
661      14HBG ,4H    ,BG    ,4HRA  ,4H    ,BAs,
662      14HBRS,4H    ,BR5   ,4HKP  ,4H    ,KPs,
663      14HBRS,4H    ,BR5   ,4HKQ  ,4H    ,KQs

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| 664 | 14HBT1 ,4H | ,BT1 | ,4HBT2 ,4H | ,BT2 | , |
| 665 | 14HCPT ,4H | ,CPT | ,4HSST ,4H | ,STT | , |
| 666 | 14HCS ,4H | ,CS | ,4HFFCM,4HB | ,FFCMBS, | |
| 667 | 14HCTT ,4H | ,CTT | ,4HRAPT,4HM3 | ,RAPTM3 | , |
| 668 | 14HD ,4H | ,D | ,4HKG ,4H | ,KG, | |
| 669 | 14HDELM,4HY | ,DELHY | ,4HEDO ,4H | ,EDO | , |
| 670 | 14HFC1 ,4H | ,ED1 | ,4HED2 ,4H | ,ED2 | , |
| 671 | 14HFD3 ,4H | ,ED3 | ,4HED4 ,4H | ,ED4 | , |
| 672 | 14HED5 ,4H | ,ED5 | ,4HKT10,4H | ,KT10 | , |
| 673 | 14HFFAL,4HB | ,FFALB | ,4HYCL ,4H | ,YCL, | |
| 674 | 14HFFAN,4HB | ,FFANB | ,4HGF ,4H | ,GF, | |
| 675 | 14HFFCL,4HB | ,FFCLB | ,4HFFAZ,4HB | ,FFAZB, | |
| 676 | 14HFFCA,4HB | ,FFCNB | ,4HFFAM,4HB | ,FFAMR, | |
| 677 | 14HGAML,4HB | ,GAMLB | ,4HPHFC,4HV | ,PHFV, | |
| 678 | 14HGC ,4H | ,GC | ,4HFFAX,4HB | ,FFAXB, | |
| 679 | 14HTACT,4H | ,HTACT | ,4HTRBL,4HLOC | ,TRBLLOC | , |
| 680 | 14HIDLW,4H | ,IDUM | , | | |
| 681 | 14HIFLP,4HB | ,IFUF8 | ,4HNULL,4H | ,NULL | , |
| 682 | 14HIRBL,4HL | ,IRALL | ,4HKT20,4H | ,KT20 | , |
| 683 | 14HISKR,4H | ,ISKR | ,4HS5 ,4H | ,SS | , |
| 684 | 14HIT ,4H | ,IT | ,4HFBN,4H | ,FBGN, | |
| 685 | 14HTX ,4H | ,IX | ,4HBD ,4H | ,BD, | |
| 686 | 14HTYZ ,4H | ,IYZ | ,4HR2 ,4H | ,R2 | , |
| 687 | 14HK4 ,4H | ,K4 | ,4HPCA ,4H | ,PCA, | |
| 688 | 14HKE ,4H | ,KB | ,4HRVBI,4HAS | ,RVBIAS, | |
| 689 | 14HKC ,4H | ,KC | ,4HTHTB,4HL | ,HTBL | , |
| 690 | 14HKGL ,4H | ,KGL | ,4HFFAY,4HB | ,FFAYR, | |
| 691 | 14HKPD ,4H | ,KPD | ,4HT1P5,4H | ,T1P5 | , |
| 692 | 14HKRGL,4H | ,KRGL | ,4HAF ,4H | ,AF, | |
| 693 | 14HK8 ,4H | ,KS | ,4HKM ,4H | ,KM | , |
| 694 | 14HLAMB,4HI | ,LAMBI | ,4HJMAX,4H | ,JMAX | , |
| 695 | 14HMASS,4H | ,MASS | ,4HCG ,4H | ,CG, | |
| 696 | 14HARLA,4H | ,ARUN | , | | |
| 697 | 14HPCL ,4H | ,PCL | ,4HTA ,4H | ,TA, | |
| 698 | 14HPHIM,4HAX | ,PHIMAX | ,4HS8 ,4H | ,S8 | , |
| 699 | 14HPRIN,4HTM | ,PRINTM | ,4HJMAX,4H | ,JMAX | , |
| 700 | 14HRAPT,4HM2 | ,RAPTM2 | ,4HRAPT,4HM1 | ,RAPTM1 | , |
| 701 | 14HRDET,4H | ,RDCT | ,4HDTA ,4H | ,DTA | , |
| 702 | 14HRFLE,4HCT | ,RFLECT | ,4HPI ,4H | ,PI, | |
| 703 | 14HRLAM,4HP | ,RLAMP | ,4HPSIT,4H | ,PSIT | , |
| 704 | 14HRLAM,4HY | ,RLAMY | ,4HRPSI,4H | ,RPSI | , |
| 705 | 14HRNBL,4HIN | ,RNGLIN | ,4HVRAT,4HF | ,VRATE, | |
| 706 | 14HRTMI,4HN | ,RTMIN | ,4HKM ,4H | ,KM | , |
| 707 | 14HS7 ,4H | ,S7 | ,4HS6 ,4H | ,S6 | , |
| 708 | 14HS10 ,4H | ,S10 | ,4HS9 ,4H | ,S9 | , |
| 709 | 14HS12 ,4H | ,S12 | ,4HS11 ,4H | ,S11 | , |
| 710 | 14HS4 ,4H | ,S4 | ,4HS3 ,4H | ,S3 | , |
| 711 | 14HS2 ,4H | ,S2 | ,4HS1 ,4H | ,S1 | , |
| 712 | 14HS ,4H | ,S | ,4HDELM,4HX | ,DELMX | , |
| 713 | 14HSFO ,4H | ,SF0 | ,4HSF1 ,4H | ,SF1 | , |
| 714 | 14HSF2 ,4H | ,SF2 | ,4HSF3 ,4H | ,SF3 | , |
| 715 | 14HSF4 ,4H | ,SF4 | ,4HSF5 ,4H | ,SF5 | , |
| 716 | 14HSF6 ,4H | ,SF6 | ,4HSF7 ,4H | ,SF7 | , |
| 717 | 14HSF8 ,4H | ,SF8 | ,4HSF9 ,4H | ,SF9 | , |
| 718 | 14HSF10,4H | ,SF10 | ,4HSF11,4H | ,SF11 | , |
| 719 | 14HSF12,4H | ,SF12 | ,4HSF13,4H | ,SF13 | , |
| 720 | 14HSF14,4H | ,SF14 | ,4HSF15,4H | ,SF15, | |
| 721 | 14HSLAP,4HE2 | ,SLAPE? | ,4HSL9P,4HF1 | ,SL0PF1 | , |
| 722 | 14HTC1 ,4H | ,TC1 | ,4HTO ,4H | ,TO | , |
| 723 | 14HTC3 ,4H | ,TC3 | ,4HTOP ,4H | ,TO2 | , |
| 724 | 14HTO5 ,4H | ,TO5 | ,4HTO4 ,4H | ,TO4 | , |
| 725 | 14HTO7 ,4H | ,TO7 | ,4HTO6 ,4H | ,TO6 | , |

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|-----|--------------------------------------|----------|--------------|---------|---|--|
| 726 | 14HT2 ,4H | ,T2 | ,4HT1 ,4L | ,T1 | , | |
| 727 | 14HTB ,4H | ,TB | ,4HSPT ,4L | ,SPT | , | |
| 728 | 14HTHPL,4HD | ,THPLD, | | | | |
| 729 | 14HTHTA,4HC | ,HTAC | ,4HKD ,4H | ,KC, | | |
| 730 | 14HTHET,4HAT | ,HTETAT | ,4HTRAP,4H | ,TRAP | , | |
| 731 | 14HTHBL,4HD | ,THPLC | , | | | |
| 732 | 14HTIC ,4H | ,TIC | ,4HTICI,4H | ,TICI, | | |
| 733 | 14HTIME,4H3 | ,TIME3 | ,4HTIME,4H3 | ,TIME3 | , | |
| 734 | 14HTIME,4H1 | ,TIME1 | ,4HTIME,4H0 | ,TIME1 | , | |
| 735 | 14HTIF1,4H | ,TIPI | ,4HTT ,4H | ,TT | , | |
| 736 | 14HYHFB,4HV | ,YHFBV | ,4HK5 ,4H | ,K5, | | |
| 737 | 14HZMIN,4H | ,ZMIN | ,4HTIME,4H4 | ,TIME4 | , | |
| 738 | 14HWIND8,4H | ,WIND8 | ,4HZMIN,4H | ,ZMIN | | |
| 739 | GATE(001)=SET | | | | | |
| 740 | 1661 | CONTINUE | | | | |
| 741 | PRINT 900C7 | | | | | |
| 742 | 14HTIME,4H | ,TIME | ,4HRSA ,4H | ,RSA | , | |
| 743 | 14HDELV,4HP | ,DELVP | ,4HU ,4H | ,U | | |
| 744 | 14MV ,4H | ,V | ,4MW ,4H | ,W | | |
| 745 | 14HTHTA,4H | ,HTA | ,4HPDN ,4H | ,PHD | , | |
| 746 | 14MCELZ,4H | ,DELZ | ,4HTSTA,4HCC | ,TSTAET | | |
| 747 | 14HCDZ ,4H | ,DZ | ,4HDY ,4H | ,DY | | |
| 748 | 14HCPHI,4H | ,CPHI | ,4HDTHT,4HA | ,DTHTA | , | |
| 749 | 14HCOX ,4H | ,DX | ,4HDPSTI,4H | ,DPSTI | | |
| 750 | 14HCR ,4H | ,DR | ,4HDOQ ,4H | ,DO | | |
| 751 | 14HDP ,4H | ,DP | ,4HDW ,4H | ,DW | | |
| 752 | 14HCC ,4H | ,DU | ,4HCV ,4H | ,OV | | |
| 753 | 14HVRW ,4H | ,VRW | ,4HMACH,4H | ,MACH | | |
| 754 | 14HGPAP ,4H | ,GAP | ,4HPSI ,4H | ,PSI | | |
| 755 | 14HMP ,4H | ,P | ,4HQ ,4H | ,C | | |
| 756 | 14HMR ,4H | ,R | ,4HDELV,4HV | ,DELVV | | |
| 757 | 14HAZE ,4H | ,AZB | ,4HDELY,4HV | ,DELXV | | |
| 758 | 14MCELY,4HV | ,DELVV | ,4MCELZ,4HV | ,DELZV | | |
| 759 | 14HX ,4H | ,X | ,4HV ,4H | ,Y | | |
| 760 | 14HZ ,4H | ,Z | ,4HAM9 ,4H | ,AMP | | |
| 761 | 14HXT ,4H | ,XT | ,4HVT ,4H | ,YT | | |
| 762 | 14HDTHT,4HA | ,DTHTA | | | | |
| 763 | 14HCPHI,4H | ,CPHI | ,4HSPHI,4H | ,SPHI | | |
| 764 | 14HCPST,4H | ,CPST | ,4HSPST,4H | ,SPST | | |
| 765 | 14HCPSI,4HS | ,CPSIS | ,4HGZB ,4H | ,GZF | | |
| 766 | 14HGYB ,4H | ,GYB | ,4HGX8 ,4H | ,GX8 | | |
| 767 | PRINT 90000,4,4HAUTO,4HPILO,4HTI ,4L | | | | | |
| 768 | 14HCDPH,4HIO | ,DOPHIO | | | | |
| 769 | 14MCELX,4HS | ,DELXS | ,4HPEG ,4H | ,PEG | | |
| 770 | 14MCELM,4HIS | ,DELMIS | ,4HTXED,4H | ,TXED | | |
| 771 | 14MCELZ,4HS | ,DELZS | ,4HMEG,4HA | ,OMEGA | | |
| 772 | 14HDYEF,4H | ,DYEF | ,4HPEF ,4H | ,PEF | | |
| 773 | 14HDTHT,4HAS | ,DTHTAS | ,4HRTV ,4H | ,RTM | | |
| 774 | 14HKT ,4H | ,KT | ,4HPEFL,4H | ,PEFL | | |
| 775 | 14HNULL,4H | ,NULL | ,4HDELP,4H | ,DELR | | |
| 776 | 14HMEG,4HZ | ,OMEQZ | ,4HPSPG,4H | ,PSRG | | |
| 777 | 14HPED ,4H | ,PED | ,4HPEF ,4H | ,PEF | | |
| 778 | 14HPITE,4HRB | ,PITERB | ,4HPHIG,4H | ,PHIG | | |
| 779 | 14HPSIS,4H | ,PSIS | | | | |
| 780 | 14HPXED,4H | ,PXED | ,4HTHBS,4H | ,THBS | | |
| 781 | 14HPSBS,4H | ,PSBS | ,4HDEL1,4H | ,DEL1 | | |
| 782 | 14HRLAM,4HY | ,RЛАМ | ,4HRLAM,4HP | ,RLA4P | | |
| 783 | 14HTHTA,4HS | ,HTHTA | ,4HTHQB,4HS | ,THBQS | | |
| 784 | 14HYEF ,4H | ,YEF | ,4HPEF ,4H | ,PEF | | |
| 785 | 14HYED ,4H | ,YED | ,4HPED ,4H | ,PED | | |
| 786 | 14HYEF ,4H | ,YEF | ,4HYBPG,4H | ,YBPG | | |

791 14HYEG,4H YEG ,4HDELY,4HS ,DELYG ,
 792 14HYAWE,4HRR ,YALERR ,4HYALF,4HRR ,YA-F70 ,
 793 14HFLAMY,4HR ,LAMYR ,4HLAMP,4HR ,LAMPR ,
 794 14HOSA,4M ,GSA ,4HMGAPSTH ,GAPS ,
 795 14HCPSTI,4HS ,DPSIS ,4HIACC,4H ,IACC ,
 796 14HPSRB,4HS ,PCRSIS ,4HREI ,4L ,REI ,
 797 PRINT 90000,2,4HL8GI,4HC1 ,
 798 14HGATE,4H 1,GATE(001),4HGATE,4H 2,GATE(002),
 799 24HGATE,4H 3,GATE(003),4HGATE,4H 4,GATE(004),
 800 24HGATE,4H 5,GATE(005),4HGATE,4H 5,GATE(006),
 801 34HGATE,4H 7,GATE(007)
 802 PRINT 90000,4,4HAERM,4HDYNA,4HMICS,4HI ,
 803 14HCLD,4H ,CLD ,4HALB,4H ,ALB ,
 804 14HCNR,4H ,CNR ,4HCMG,4H ,CMG ,
 805 14HCY,4H ,CY ,4HCAZ,4H ,CAZ ,
 806 14HCLP,4H ,CLP ,4HCKT,4H ,CKT ,
 807 14HCYCG,4H ,CYCG ,4HCMCG,4H ,CMCG ,
 808 14HANB,4H ,ANE ,4HCLB,4H ,CLB ,
 809 14HCMB,4H ,CMB ,4HCNB,4H ,CNB ,
 1* 14HTHAS,4HD ,THASD ,4HDTHAS,4HSD ,DTHASD ,
 2* 14HPSIS,4HD ,PSISO ,4HPSI,4HSD ,CPSI90 ,
 810 14HALPH,4HA ,ALPHA ,4HRETAT,4H ,BETA ,
 811 PRINT 90000,1,4HRAPI,
 812 14HSTT,4H ,STT ,4HCTT,4H ,CTT ,
 813 14HSPT,4H ,SPT ,4HCPY,4H ,CPT ,
 1* 14HTH,4H ,TH ,4HXLT,4H ,XLTA ,
 815 PRINT 90000,3,4HDEBU,4HG PR,4HINTI,
 816 14HDELX,4HE ,DELXB ,4HDELY,4HS ,DELYS ,
 1* 14HDELZ,4HB ,DELZB ,4HDELX,4HS ,DELYS ,
 818 14HDELY,4HS ,DELYS ,4HDELZ,4HS ,DELYS ,
 819 14HKUTTA,4HA ,KUTTA ,
 820 14HPITE,4HRR ,PITERR ,4HYAWE,4HRR ,YALERR ,
 821 14HPITE,4HRO ,PITERA ,4HYAWE,4HRR ,YALERR ,
 822 34HORLA,4HMY ,ORLAMY ,4HFS3 ,FS3 ,
 823 34HCRPS,4HI ,DRPSI ,4HDRTH,4HTA ,DRHTA ,
 824 34HCRPM,4HIG ,DRPHIO ,4HPRHI,4HG ,PRHIG ,
 825 14HDELV,4HR ,DELVR ,4HDPHI,4HC ,DPHIQ ,
 826 14KG,4H ,G ,4HVSN,4H ,VSND ,
 827 14HISKR,4H ,ISKR ,4HIACT,4H ,IACT ,
 828 14HTOLI,4HDE ,HTOLCE ,4HTRAP,4H ,TRAP ,
 829 14HKAGE,4H ,KAGE ,4HNavy,4H ,NAVY ,
 830 34HF1,4H ,F1 ,4HDLRA,4HMP ,ORLAMP ,
 831 14HNUM,4H ,NUM ,4HIPRI,4HNT ,IPRINT ,
 832 14HNPPS,4H ,NPPS ,4HNNDT,4H ,NDT ,
 833 14HKDTA,4H ,NDTA ,4HNULS,4HXR ,NULSKR ,
 834 34HPEFL,4H ,PEFL ,4HBMGT,4H ,BMGT ,
 835 14HRHO,4H ,RHO ,
 836 14HS2,4H ,S2 ,4HDELR,4HHL ,DELR9L ,
 837 14HRED,4H ,RED ,4HRET,4H ,RET ,
 838 14HREQ,4H ,REQ ,4HPSI,4H ,PSI ,
 1* 14HRTHT,4HA ,RTHTA ,
 840 14HMEQ,4HY ,MEQY ,4HMEQJ,4WZ ,AME97 ,
 841 14HNX,4H ,NX
 842 72 IF(IMPACT)PRINT 90000,2,4HIMPA,4HCTI ,
 843 14HPCAT,4H ,PCAT ,4HPCAX,4H ,PCAX ,
 844 14HPCAY,4H ,PCAY ,4HPCAZ,4H ,PCA2 ,
 845 14HPCA,4H ,PCA ,
 846 IF(IMPACT .EQ. ERROR) R-E-T-U-R-N - END RUN
 847 50 C O N T I N U E
 848 C
 849 C DISPLACEMENT ERRORS FROM AIM POINT
 850 C

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851      C    DISPLACEMENT ERRORS FROM SPAT
852      DELX=XT-X
853      DELY=YT-Y
854      DELZ=ZT-Z
855      IF (TIME.LT.TIMER) GO TO 51
856      C
857      IF (ABS(DEL1).GT.DELMY) DEL1 =SIGN(DELMY,DEL1)
858      IF (ABS(DELVP).GT.DELMX) DFLVP=SIGN(DFLVP,DFLVP)
859      IF (ABS(DEL3).GT.DELY) DEL3 =SIGN(DFLY,DFL3)
860      IF (ABS(DDELV1).GT.VRATE) DDELV1 =SIGN(VRATE,DFLVP)
861      IF (ABS(DDEL1).GT.VRATE) DDEL1 =SIGN(VRATE,DFL1)
862      IF (ABS(DDEL3).GT.VRATE) DDEL3 =SIGN(VRATE,DFL3)
863      IF (IACT.GT.0) GO TO 51
864      CEL1 = YEG*REG
865      DELVP = PEG
866      DEL3 = -YEG*REG
867      IF (IACT.EQ.2) DEL1*REG=YFG
868      IF (IACT.EQ.2) DEL3*REG=YFG
869      51 CONTINUE
870      RETURN
871      C
872      ENTRY FINISH
873      C
874      C
875      IF (IACC.EQ.1) GO TO 40
876      XT = XT+DTRK*VXT
877      YT = YT+DTRK*VYT
878      40 CONTINUE
879      VMS=L*U+V*W+W*U
880      VP=SGRT(VMS)
881      TOTACC=(SGRT((AYB*AYB+AZB*AZB))/MASS
882      C***TRAJECTORY TERMINATION
883      IF (TIME.GT.5.0.AND.Z.GT.ZMIN) GO TO 45
884      IPTZ,LT,ZMIN) GO TO 157
885      45 CONTINUE
886      DELXT = XT-X
887      DELYT = YT-Y
888      DELZT = ZT-Z
889      DELXTB=EB11*DELXT+EB12*DELYT+EB13*DELZT
890      DELYTB=EB21*DELXT+EB22*DELYT+EB23*DELZT
891      DELZTB=EB31*DELXT+EB32*DELYT+EB33*DELZT
892      C** L98 IN ECS
893      VERLAM=ATAN2(-DELZ,SGRT(DELX*DELX+DELY*DFLY))
894      HORLAM=ATAN2(DELY,DELX)
895      C** TOTAL MISSILE N-N-FIELD ACCELERATION
896      C
897      GAMPA=ATAN2(W,U)
898      RTUWS=SGRT(U*U+W*W)
899      GAMY=ATAN2(V,RTUWS)
900      C** RCS TO VC8 TRANSFORMATION
901      CALL TRSF8V
902      DETM18=SGRT(DELV*2*DELZV*2)
903      GO TO 73
904      157 CONTINUE
905      C*** RANGE TARGET FROM MISSILE-RTM IN FEET.
906      RTM=SGRT((XT-X)**2+(YT-Y)**2+(ZT-Z)**2)
907      C*** POINT OF CLOSEST APPROXIMATE COMPUTATION=PCA IN FEET.
908      IF(RTM.GT.PCAT) GO TO 55
909      PCAT=ENGL(TIME);PCAX=X;PCAY=Y;PCAZ=Z;PCA=RTM
910      55 CONTINUE
911      GO TO 9
912      73 IMPACT=.TRUE.

```

```

913      IPRINT#2
914      PRINT 90000,2,4HIMPA,4HCTI ,4HTIME,4H      ,TIME
915      GO TO 9
916      9999 GATE(002)8FT
917      ERROR=,TRUE,
918      GO TO 70
919      9998 PRINT 90000,5,4HEND=,4HF=F,4HILF ,4HAN 0,4HNITI,
920      14HLLN,I,4HT ,LUNIT
921      DB 3.21 I=1,16
922      3121 MDAC(17)0
923      DB 3122 I=1,1500
924      X CALL WDACS(0,16,MDAC)
925      3122 CONTINUE
1*      CALL WERF(IE)
2*      CALL WERF$BA
3*      CALL WERF$BB
926      X CALL MODE('R')
927      X CALL MODE('P')
928      X CALL WEBF
929      X CALL PLBT(1,1 TIME',2,1 TXED 1)
930      X CALL FGRLS(1AV 1)
931      STOP
932      END

```

```

1      SUBROUTINE SEEKER(SRNGE,REFLEC,ERR,ERR)
2      DIMENSION TRNGE(1R),TRFLEC(2),TL8(1R,2),AEND(1),TBLAS(1R,2)
3      DIMENSION TRAD(6)
4
5      DATA TRNGE/1E0,,2000.,3000.,4000.,5000.,6000.,8000.,10000.,12000.,14000.,16000./
6      DATA TRFLEC /1.25,5./
7      DATA TL8S /-1.5,-1.33,-1.17,-1.0,-0.83,-0.67,-0.5,-0.33,-0.17,-0.07,-0.17,-0.33/
8      DATA TRAD /4.3E-14,4.6E-13,4.5E-12,4.1E-11,4.1E-10,2.6E-9,
9      DATA TBLAS/11,2.6E-11,3.4E-12,5.6E-12,7.6E-12,7.4E-12,1.1E-11,
10     19.0E-13,2.1E-13,9.3E-14,5.0E-14,7.0E-14,2.2E-14,1.4E-14,7.0E-14/
11     25.0E-15,3.6E-15,2.6E-15,
12     33.7E-9,9.0E-10,3.7E-11,2.1E-11,1.4E-11,9.2E-12,5.0E-12,3.3E-12,
13     48.4E-13,3.7E-13,2.0E-13,1.4E-13,8.4E-14,4.6E-14,3.0E-14,2.7E-14,
14     51.0E-14,1.0E-14/
15      DATA TBLAS/11,2.6E-11,3.4E-12,5.6E-12,7.6E-12,7.4E-12,1.1E-11,
16     1.75,1.05,1.12,1.3,1.4,1.5,1.5,1.6,
17     2.4,1.4,1.3,1.95,-3.85,-3.6,-3.35,-2.8,-2.1,-0.85,-0.6,2.15,3.1,3.45,
18     33.7,3.78,3.9,3.95,4.0,4.0,
19     4.4,7,4.7,4.65,4.5,4.5,4.4,2,-3.2,-2.6,-1.15,7.2,3,3.2,3.5,3.7,
20     53.75,3.8,3.9,3.9,3.9,
21     6.9,5,-9,-4,-3,-2,-3,-2,-9,-2,-8,-2,-6,-2,-5,-1.15 Cx,1+9+1+7+1+95,
22     72.1,2.4,2.5,2.6,2.6,2.6,2.6,
23     8+3.55+3.55,-3.8,-3.6,-3.2,-3.0,-2.55,-2.5,-1.8,-1.9,-0.4,-0.5,-0.25,
24     9.5,-7,-9,-1,-1.05,-1.1,
25     A=2.4,-2.4,-2.35,-2.3,-2.2,-2.1,-1.85,-1.1,-1.1,-0.95,-0.8,-0.5,-0.35,
26     B=-2,-1,-0.05,-0.025,-0.05,-0.05/
27      DATA ENDTRN-AEND/1,AEND/1/
28      DATA IS,IR,JH/3#0/
29      I =IS
30      CALL FIND(I,TRNGE,18,SRNGE)
31      IF(I.EQ.IS) GO TO 10
32      IS=I
33      CALL NTERP(AHS,TBLAS,I,TRNGE,IS,TRFLEC)
34      HS=FUNCTION(AHS,SRNGE,REFLEC)
35      RRR=ERR+57+296
36      I=IS; JH=H
37      CALL FIND(I,TL8S,19,RRR)
38      CALL FIND(J,TRAD,6,HS)
39      IF(J.NE.I+1) GO TO 20
40      IF(J.EQ.JH) GO TO 30
41      IS=J; JH=H
42      CALL NTERP(AEND,TBLAS,I+1,TL8S,19,J,TRAD)
43      HS=FUNCTION(AEND,RRR,HS)
44      ERR = END/4+57+296
45      END=END+1
46      RETURN
47      END

```

```

1      SUBROUTINE AERO (T1,T2,FMACH,ALPHA,BETA,DELTAYAN,DELRAZ,
2      1  CN,CPCG,CY,CLNCG,CA,CLP,CLD,CM2,CHAD,CLR,CLRAD)
3      C   MM
4
5      C   INPUTS
6      C   T1  * TIME = SEC.
7      C   T2  * TIME TO START CONTROL PHASE = SEC.
8      C   FMACH * FREE STREAM MACH NUMBER
9      C   ALPHA * ANGLE OF ATTACK (PITCH PLANE) = DEG.
10     C   BETA  * ANGLE OF ATTACK (YAW PLANE) = DEG.
11     C   DELPIT * CONTROL DEFLECTION ANGLE (PITCH PLANE) = DEG.
12     C   DELYAN * CONTROL DEFLECTION ANGLE (YAW PLANE) = DEG.
13     C   DELRAL * CONTROL DEFLECTION (ROLL) = DEG.
14
15     C   OUTPUT
16     C   CN  * NORMAL FORCE COEFF.
17     C   CPCG * PITCHING MOMENT COEFF.
18     C   CY  * YAW FORCE COEFF.
19     C   CLACG * YAW MOMENT COEFF.
20     C   CA  * AXIAL FORCE COEFF.
21     C   CLP  * ROLL DAMPING COEFF. = (1/RAD)
22     C   CLD  * ROLL MOMENT COEFF. = (1/DEGT)
23     C   CMG  * PITCH DAMPING COEFF. DUE TO THETA DOT
24     C   CMAD  * PITCH DAMPING COEFF. DUE TO ALPHA DOT
25     C   CLR  * YAW DAMPING COEFF. DUE TO PSI DOT
26     C   CLRAD  * YAW DAMPING COEFF. DUE TO ALPHA DOT
27
28     C   TABLES
29     C   TCA1 * TABLE OF CN FOR CONTROL PHASE
30     C   TCMC01 * TABLE OF CMCG FOR CONTROL PHASE
31     C   TCA1 * TABLE OF CA FOR CONTROL PHASE
32     C   TCA2 * TABLE OF CN FOR BALLISTIC PHASE
33     C   TCMC02 * TABLE OF CMCG FOR BALLISTIC PHASE
34     C   TCA2 * TABLE OF CA FOR BALLISTIC PHASE
35     C   TCAELT1 * TABLE OF DELTA FOR CN,CMCG
36     C   TMACH1 * TABLE OF FMACH FOR CONTROL PHASE
37     C   TMACH2 * TABLE OF FMACH FOR BALLISTIC PHASE
38     C   TMACH3 * TABLE OF FMACH FOR CLP,CLD
39     C   TMACH4 * TABLE OF FMACH FOR CMG
40     C   TMACH5 * TABLE OF FMACH FOR CA (BALLISTIC PHASE)
41
42     C   DOUBLE PRECISION T1,T2
43     DIMENSION TALP(6),TDEL*(7),          TCN1(6,7,3),TCN2(6,5)
44     DIMENSION TCMC01(6,7,3),TCMC02(6,5),TCA1(6,7,3),TCA2(15)
45     DIMENSION TCLP(8),TCLD(8),TCM1(10,5),TALP4(10)
46     DIMENSION TMACH1(7),TMACH2(8),TMACH3(8),TMACH4(5),TMACH5(15)
47     DIMENSION ACV(8),ACMO(R),ACY(8),ACLNCG(R),ACAP(R),
48     1 ACAB(8),ACAO(R),ACLP(2),ACLD(2),ACMD(4),ACLNH(6)
49     DIMENSION ISAVE(13)
50     DATA ISAVE /1300/
51     DATA TCA1 /
52     X  V1*95  V1*99  V1*91  V1*94  V1*96  V2*18  / -20 ++
53     X  +1*2  +1*6  +1*6  +1*35  +2*4  +3*39  / +15 ++
54     X  +1*  +1*06  +1*67  +1*81  +2*72  +3*45  / +10 ++
55     X  +1*44  +1*35  +1*32  +2*19  +2*74  +3*67  / +5 ++
56     X  +0  +1*93  +1*8  +2*9  +2*94  +3*8  / 0 ++
57     X  +4  +1*3  +1*84  +2*3  +2*35  +3*95  / 5 ++
58     X  +1*95  +1*9  +1*84  +2*43  +2*2  +4*03  / 10 ++
59     X  +1*35  +1*9  +1*2  +1*05  +2*1  +3*34  / -20 ++
60     X  +1*25  +1*65  +1*6  +1*48  +2*54  +3*67  / +15 ++
61     Y  +1*1  +1*19  +1*95  +1*9  +2*89  +3*89  / +10 ++
62     X  +1*56  +1*4  +1*45  +2*29  +2*1  +4*08  / +5 ++

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| | | | | | | | | |
|-----|---------------|--------|---------|---------|---------|---------|---|---------|
| 69 | x .0 | .1.07 | .1.85 | .2.65 | .3.31 | .4.28 | / | .0 |
| 70 | x .48 | .1.18 | .1.95 | .2.64 | .3.30 | .4.39 | / | .0 |
| 71 | x 1. | .1.06 | .2.1 | .2.8 | .3.56 | .4.65 | / | .1 |
| 72 | x -.21 | .1.17 | .1.92 | .2.71 | .3.23 | .4.13 | / | -20 1.0 |
| 73 | x .1.7 | .1.64 | .1.59 | .2.7 | .3.24 | .4.62 | / | -15 1.0 |
| 74 | x .1.2 | .1.0 | .1. | .2.24 | .3.62 | .5.05 | / | -10 1.0 |
| 75 | x .0.6 | .1.45 | .1.54 | .2.75 | .3.05 | .5.43 | / | .0 1. |
| 76 | x .0 | .1.05 | .2.2 | .3.1 | .4.25 | .5.32 | / | .0 1.0 |
| 77 | x .43 | .1.6 | .2.6 | .3.44 | .4.28 | .5.38 | / | .0 1.0 |
| 78 | x .18 | .2.1 | .2.85 | .3.05 | .4.34 | .5.91 | / | 10 1.0 |
| 79 | DATA TCMC1 / | | | | | | | |
| 80 | x .0 | .1.93 | .1.8 | .2.29 | .3.24 | .4.8 | / | .0 .4 |
| 81 | x .0 | .1.05 | .1.85 | .2.54 | .3.31 | .4.28 | / | .0 .8 |
| 82 | x .0 | .1.05 | .2.2 | .3.1 | .4.25 | .5.32 | / | .0 1.0 |
| 83 | x .0 | .1.85 | .1.8 | .2.82 | .3.2 | .5.6 | / | .0 1.0 |
| 84 | x .0 | .1.89 | .1.8 | .2.15 | .3.2 | .4.15 | / | .0 1.0 |
| 85 | DATA TCMC01 / | | | | | | | |
| 86 | x 3.6 | .4. | .3.35 | .2.73 | .1.8 | .1.3 | / | -20 .4 |
| 87 | x 3.4 | .3.12 | .1.9 | .1.1 | .0.8 | .0.4 | / | -15 .4 |
| 88 | x 2.84 | .1.67 | .0.53 | .0.25 | .0.5 | .0.2 | / | -10 .4 |
| 89 | x 1.25 | .0.37 | .0.75 | .0.1.32 | .0.70 | .0.3 | / | .0 .4 |
| 90 | x .0 | .1.23 | .0.81 | .0.1.62 | .0.12 | .0.38 | / | .0 .4 |
| 91 | x .1.1 | .0.38 | .0.82 | .0.1.7 | .0.10 | .0.35 | / | .5 .4 |
| 92 | x .2.7 | .0.89 | .0.78 | .0.2.05 | .0.194 | .0.65 | / | 10 .4 |
| 93 | x 3.25 | .4. | .3.6 | .2.14 | .1.7 | .1.0 | / | -20 .8 |
| 94 | x 3.6 | .3.8 | .1.95 | .0.88 | .0.3 | .0.91 | / | -15 .8 |
| 95 | x 3.1 | .1.65 | .0.35 | .0.4 | .0.7 | .0.25 | / | -10 .8 |
| 96 | x 1.88 | .62 | .0.1.08 | .0.1.5 | .0.1.75 | .0.83 | / | .0 .8 |
| 97 | x .0 | .1.7 | .0.2.78 | .0.2.2 | .0.1.98 | .0.62 | / | .0 .8 |
| 98 | x .1.2 | .0.87 | .0.2.86 | .0.2.8 | .0.2.35 | .0.1.8 | / | .5 .8 |
| 99 | x .3.94 | .0.31 | .0.3 | .0.2.98 | .0.2.17 | .0.2.16 | / | 10 .8 |
| 100 | x 5.9 | .0.98 | .0.17 | .0.1.92 | .0.1.3 | .0.1 | / | -20 1.0 |
| 101 | x 4.98 | .3.38 | .1.82 | .0.51 | .0.3 | .0.79 | / | -15 1.0 |
| 102 | x 3.05 | .1.58 | .0.87 | .0.1.12 | .0.2.7 | .0.71 | / | -10 1.0 |
| 103 | x 1.7 | .0.08 | .0.1.62 | .0.3.0 | .0.3.6 | .0.2.72 | / | .5 1.0 |
| 104 | x .0 | .1.68 | .0.3.32 | .0.4.4 | .0.4.1 | .0.3.04 | / | 0 1.0 |
| 105 | x .0 | .1.83 | .0.3.3 | .0.4.57 | .0.4.75 | .0.4.3 | / | .0 1.0 |
| 106 | x .2.98 | .0.47 | .0.97 | .0.4.9 | .0.4.05 | .0.3.38 | / | 10 1.0 |
| 107 | DATA TCMC02 / | | | | | | | |
| 108 | x .0 | .0.71 | .0.09 | .0.2.71 | .0.1.02 | .0.07 | / | .0 .4 |
| 109 | x .885 | .0.004 | .0.302 | .0.26 | .0.173 | .0.02 | / | -15 .4 |
| 110 | x .038 | .0.28 | .0.275 | .0.162 | .0.102 | .0.03 | / | -10 .4 |
| 111 | x .328 | .0.311 | .0.26 | .0.26 | .0.245 | .0.22 | / | .0 .4 |
| 112 | x .298 | .0.294 | .0.313 | .0.341 | .0.323 | .0.19 | / | .0 .4 |
| 113 | x .32 | .0.366 | .0.412 | .0.476 | .0.425 | .0.404 | / | .5 .4 |
| 114 | x .78 | .0.67 | .0.02 | .0.07 | .0.024 | .0.05 | / | .0 .4 |
| 115 | x .76 | .0.767 | .0.52 | .0.519 | .0.24 | .0.061 | / | -20 .8 |
| 116 | x .65 | .0.384 | .0.355 | .0.298 | .0.151 | .0.068 | / | -15 .8 |
| 117 | x .61 | .0.419 | .0.348 | .0.28 | .0.196 | .0.153 | / | -10 .8 |
| 118 | x .378 | .0.352 | .0.309 | .0.301 | .0.29 | .0.26 | / | .5 .4 |
| 119 | x .238 | .0.338 | .0.381 | .0.390 | .0.403 | .0.387 | / | .0 .8 |
| 120 | x .579 | .0.029 | .0.02 | .0.51 | .0.744 | .0.519 | / | .4 .4 |
| 121 | x .478 | .0.53 | .0.581 | .0.615 | .0.65 | .0.66 | / | 10 .4 |
| 122 | x 1.83 | .1.11 | .0.88 | .0.645 | .0.67 | .0.216 | / | -20 1.0 |
| 123 | x 1.06 | .0.855 | .0.704 | .0.56 | .0.361 | .0.175 | / | -15 1.0 |
| 124 | x .79 | .0.673 | .0.61 | .0.515 | .0.356 | .0.226 | / | -10 1.0 |

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125      X .643    .605    .58     .54     .54     .382    / .5 1.-
126      X .582    .661    .695    .695    .695    .695    / 0 1.-
127      X .63     .685    .753    .775    .768    .774    / 5 1.-
128      X .73     .83     .90     .918    .92     .93     / 12 1.-
129      DATA TCA2    / .31,.314,.32,.322,.367,.428,.505,.58,
130      X .615,.639,.645,.639,.628,.60,.565/
131      DATA TALP    /0,.5,.10,.15,.20,.25,/
132      DATA TALP$   /0,.4,.6,.8,.10,.12,.14,.16,.18,.20,/
133      DATA TOELT1  /.20,.15,.10,.05,.05,.10,/
134      DATA TMACH1  /.87.8.1.0/
135      DATA TMACH2  /.4,.8.1.0.1.3.1.8/
136      DATA TMACH4  /.4,.8.1.0.1.3.1.8/
137      DATA TMACH3  /.4,.6.8.1.0.1.2.1.4.1.6.1.8/
138      DATA TMACH5  /.4,.5.6.7.8.85.9.95.1.0.1.1.2/
139      X 1.3.1.4.1.6.1.8/
140      DATA TCLP    /.16.5.7.17.7.721.07.29.26.21.19.77.14.7
141      DATA TCID    /.085,.087,.090,.097,.086,.073,.061,.049/
142      DATA TCMQ    /
143      X .145,.165,.142,.125,.100,.101,.107,.104,.105,.107,.
144      X .150,.185,.190,.165,.135,.108,.75,.75,.75,.
145      X .160,.205,.218,.220,.234,.240,.246,.227,.180,.107,.
146      X .178,.196,.199,.199,.194,.192,.195,.197,.196,.110,.
147      X .130,.158,.162,.155,.150,.143,.134,.120,.105,.087,.
148      ABALP = ABS(ALPHA) * 57.296
149      ABBET = ABS(BETA) * 57.296
150      IF(T1.LT.T2) GO TO 2
151      DELP = DELP * 57.296
152      DELY = DELY * 57.296
153      IF(ALPHA.LT.0.) DELP = -DELP
154      IF(BETA.LT.0.) DELY = -DELY
155      I = ISAVE(1)
156      J = ISAVE(2)
157      K = ISAVE(3)
158      CALL PIND1(TALP,6,ABALP)
159      CALL FIND(J,TOELT1,7,DELP)
160      CALL FIND(K,TMACH1,3,DELY)
161      IF(I .NE. ISAVE(1))      GA TO 50
162      IF(J .NE. ISAVE(2))      GA TO 60
163      IF(K .NE. ISAVE(3))      GA TO 70
164      GA TO 80
165      50  ISAVE(1) = I
166      60  ISAVE(2) = J
167      70  CONTINUE
168      CALL NTERP (ACN,TEN1),TALP,6,J,TOELT1,7,K,TMACH1)
169      CALL NTERP (ACMC0,TCMC01)
170      CALL NTERP (ACAP,TCA1)
171      80  I = ISAVE(4)
172      J = ISAVE(5)
173      CALL FIND(1,TALP,6,ABBEY)
174      CALL FIND(J,TOELT1,7,DELY)
175      IF(I .NE. ISAVE(4))      GA TO 150
176      IF(J .NE. ISAVE(5))      GA TO 160
177      IF(K .NE. ISAVE(3))      GA TO 170
178      GA TO 180
179      150  ISAVE(4) = I
180      160  ISAVE(5) = J
181      170  CONTINUE
182      CALL NTERP (ACY,TEN1),TALP,6,J,TOELT1,7,K,TMACH1)
183      CALL NTERP (ACLNCG,TCMC01)
184      CALL NTERP (ACAB,TCA1)
185      180  IF(K .EQ. ISAVE(3))      GA TO 190
186
C

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187      C SET I & J FOR ALPHA = DELTA = 0.0 IN TAIP 3 TDFIT1
188
189      I = 1
190      J = 5
191      CALL NTERP (ACAR,TCAS,I,TALP,6,..,TDFLT1,7,K,Y,AC(1))
192      ACAB(2) * ACAB(5)
193      ISAVE(3) * K
194      190 CONTINUE
195      CA   * FUNCTION(ACN,ABALP,DELP,FMACH)
196      CMCG  * FUNCTION(ACMCG)
197      CAP   * FUNCTION(ACAP)
198      CY    * FUNCTION(ACY,ABBET,DELY,FMACH)
199      CLNCB  * FUNCTION(ACLNCB)
200      CAB   * FUNCTION(ACAB)
201      CAB   * FUNCTION(ACAB,FMACH)
202      CA * CAP * CAB = CAB
203      GO TO 3
204
205      2      I = ISAVE(6)
206      J = ISAVE(7)
207      K = ISAVE(8)
208      CALL FIND(I,TALP,6,ABALP)
209      CALL FIND(J,TMACH2,6,FMACH)
210      CALL FIND(K,TALP,6,ABBET)
211      IF(J .NE. ISAVE(7))          GO TO 250
212      IF(I .EQ. ISAVE(6))          GO TO 260
213      250 ISAVE(6) * I
214      CALL NTERP (ACK,TCN2,I,TALP,6,J,TMACH2)
215      CALL NTERP (ACMCG,TCMCG2)
216      260 IF(J .NE. ISAVE(7))          GO TO 270
217      IF(K .EQ. ISAVE(8))          GO TO 280
218      270 ISAVE(7) * J
219      ISAVE(8) * K
220      CALL NTERP (ACY,TCN2,K,TALP,6,J,TMACH2)
221      CALL NTERP (ACLNCB,TCMCG2)
222      280 I = ISAVE(9)
223      CALL FIND(I,TMACH5,15,FMACH)
224      IF(I .EQ. ISAVE(9))          GO TO 290
225      ISAVE(9) * I
226      CALL NTERP (ACAP,TCA2,I,TMACH5)
227      290 CONTINUE
228      CN   * FUNCTION(ACN,ABALP,FMACH)
229      CMCG * FUNCTION(ACMCG)
230      CY    * FUNCTION(ACY,ABBET,FMACH)
231      CLNCB * FUNCTION(ACLNCB)
232      CA   * FUNCTION(ACAP,FMACH)
233
234      3      I = ISAVE(10)
235      CALL FIND(I,TMACH3,8,FMACH)
236      IF(I .EQ. ISAVE(10))          GO TO 350
237      ISAVE(10) * I
238      CALL NTERP (ACLP,TCLP,I,TMACH3)
239      CALL NTERP (ACLD,TCLD)
240      350 I = ISAVE(11)
241      J = ISAVE(12)
242      K = ISAVE(13)
243      CALL FIND(I,TMACH4,5,FMACH)
244      CALL FIND(J,TALP4,10,ABALP)
245      CALL FIND(K,TALP4,10,ABBET)
246      IF(I .NE. ISAVE(11))          GO TO 360
247      IF(J .EQ. ISAVE(12))          GO TO 370
248      360 ISAVE(12) * J

```

```

249      CALL NTERP (ACMG, TCMQ, J, TAI, P4, 10, I, TMACH4)
250      370  IF(I .NE. ISAVE(11))          G8 T8 38C
251          IF(K .EQ. ISAVE(13))          G8 T9 39D
252      380  ISAVE(11) = I
253          ISAVE(13) = K
254          CALL NTERP (ACLNK, TCMQ, K, TALP4, 10, I, TMACH4)
255          390  CONTINUE
256          CLP      * FUNCTION(ACLP, FMACH)
257          CLD      * FUNCTION(ACLD)
258          CMQ      * FUNCTION(ACMQ, ABALP, FMACH)
259          CLNR     * FUNCTION(ACLNK, ABBET, FMACH)
260          IF(ALPHA .LT. 0.0)  CN = -CN
261          IF(BETA  .LT. 0.0)  CY = -CY
262          CMAD=0.
263          CLNAD=0.
264          RETURN
265          END

```

```

1      SUBROUTINE TRSFEE
2      C*** THIS SUBROUTINE PERFORMS THE EARTH TO BODY COORDINATE SYS. TRANSFORMATION
3      C
4      DIMENSION DUM(7),DUMY(57)
5      COMMON/INTEG/I,J,DUM,PHI,THTA,PSI,DUY
6      COMMON/E811,E812,E813,E821,E822,F823,F831,E832,E833
7      COMMON/TDC/CPSI,SPSI,CPSI,SPHI,CPSI
8      CPSI=COS(PSI)
9      SPSI=SIN(PSI)
10     CTHTA=COS(THTA)
11     STHTA=SIN(THTA)
12     CPSI=COS(PHI)
13     SPHI=SIN(PHI)
14     E811=CPsi*CTHTA
15     E812=SPSi
16     E813=CPSI*STHTA
17     E821=SPHi*STHTA=CPHi*SPSi*CTHTA
18     E822=CPHi*CPsi
19     E823=SPHi*CTHTA=CPHi*SPSi*STHTA
20     E831=CPHi*STHTA=SPHi*SPSi*CTHTA
21     E832=SPHi*CPsi
22     E833=CPHi*CTHTA=SPHi*SPSi*STHTA
23     RETURN
24

```

1 SUBROUTINE TRSFBS
2 C THIS SUBROUTINE PERFORMS THE BODY TO SEEKER COORDINATE SYS. TRANSFORMATION

```
3      C
4      DIMENSION DUM(15),DUMR(9)
5      COMMON/INTEG/I,J,DUM,THTAS,CC,PS1S,DLMR
6      COMMON/BTS/BS11,PS12,BS13,BS21,BS22,BS23,RS23,RS31,RS32,BS33
7      BS12=SIN(PS1S)
8      BS22=COS(PS1S)
9      BS31=SIN(THTAS)
10     BS33=COS(THTAS)
11     BS11=BS22*BS33
12     BS13=BS22*BS31
13     BS21=BS12*BS33
14     BS23=BS12*BS31
15     BS32=0.
16     RETURN
17     END
```

1 SUBROUTINE TRSFVR
2 C *** THIS SUBROUTINE PERFORMS THE BCS TO VCS TRANSFORMATION
3 C

4 COMMON/ IN/ GAMP, GAMY, DFLXTR, DELYTR, DFLZTR
5 COMMON/ BTY/ DELXV, DELYV, DELZV
6 BV12=SIN(GAMY)
7 BV22=COS(GAMY)
8 BV31=SIN(GAMP)
9 BV33=COS(GAMP)

10 BV11=BV22*BV33
11 BV13=BV22*BV31
12 BV21=BV12*BV33
13 BV23=BV12*BV31
14 BV32=0.
15 DELXV=BV11*DELXTR+BV12*DELYTR+BV13*DFLZTR
16 DELYV=BV21*DELXTR+BV22*DELYTR+BV23*DFLZTR
17 DELZV=BV31*DELXTR+BV32*DELYTR+BV33*DFLZTR
18 RETURN
19 END

```

1          SUBROUTINE LASERR
2  C*** THIS SUBROUTINE TRANSFORMS "MISSLE TO TARGET MISPLACEMENTS
3  C*** FROM ECS TO BCS, FROM BCS TO SCS AND COMPUTES LPS ERRR IN SCS
4
5      COMMON/BT8/BS11,BS12,BS13,BS21,BS22,BS23,BS31,BS32,BS33
6      COMMON/ET8/EB11,EP12,EB13,EP21,EB22,EP23,FP31,EP32,EB33
7      COMMON/INPBKR/PITERR,YAVERR
8      COMMON/DEL/DELX,DELY,DELZ
9      COMMON/STUFF/ DELX6,DELYS,DELZS
10     COMMON/STUFF/ DELXB,DELYB,DELZB
11     DELXB=EB11*DELX+EB12*DELY+EP13*DFLZ
12     DELYB=EB21*DELX+EB22*DELY+EP23*DELZ
13     CELZB=EB31*DELX+EB32*DELY+EP33*DFLZ
14     DELXS=BS11*DELXB+BS12*DELYB+BS13*DELZB
15     DELYS=BS21*DELXB+BS22*DELYB+BS23*DELZB
16     CELZS=BS31*DELXB+BS32*DELYB+BS33*DELZB
17     PITERR=ATAN2(=DELZS,DELX6)
18     YAVERR=ATAN2(DELYS,SQRT(DELXS*DELXS+DELZS*DELZS))
19     RETURN
20     END

```

```
1      SUBROUTINE MCALC
2      C*** THIS SUBROUTINE CALCULATES THE MACH NUMBER
3      C
4      DIMENSION RUP(63)
5      REAL MACH
6      COMMON/ETB/EB11,EB12,EB13,EB21,EB22,F823,FR31,E832,E833
7      COMMON/MACL/MACH,VSND,UR,VR,WR,VRS,VRW,VW
8      COMMON/INTEG/I,J,GG,U,V,W,RUM
9      COMMON/F/WXS,WYS,WZS
10     CW=EB11*WXS+EB12*WYS
11     VH=EB21*WXS+EB22*WYS
12     WK=EB31*WXS+EB32*WYS
13     UR=U-UW
14     VR=V-VW
15     WR=H-HW
16     VRSGRT=UR*VR*VR*WR*WR
17     VRW=SGRT(VRS)
18     MACH=VRW/VSND
19     RETURN
20     END
```

```

1      SUBROUTINE FARMAN
2      SUBROUTINE FARMAN CALCULATES FORCES AND MOMENTS FOR THE DIFLC & PRMTINES
3
4      DOUBLE PRECISION TIME,TIME3
5      REAL MACH
6      DIMENSION HWH(8),HWH(17),HWH(40)
7      COMMON/T0CEG/AXB,AYB,AZB,CL0,CN0,CH0,AM0,AN0,CM0
8      COMMON/CDF/CAZ,CY,CN,CLP,CMCG,CYCG,CLD,CMG,CR,ALPHA,BETA,CHAD,
9      1CLAD
10     COMMON/MACL/MACH,TAX,VTR,VRS,VRT,VRS,VRA
11     COMMON/CD/DEL_VR,REL_VR,DEL_R,REL_R
12     COMMON/JUNK/TIME,TIME3,RHM,S,D,SCUV,CAP,IRAP,RAPTM1,RAPTM2,IACT,
13     !SL5PE1,PT1,RAPTM3,SLAPE2,BT2,CTT,CPT,SPT,XLT,STT,CAPS,CAPSJ,
14     2CAPSCM,TH
15     COMMON/IATEG/I,J,40HP,P,G,F,HWH,DELI,CLV,REL3,IHI
16     COMMON/PP/FFCCL,FFCME,FFCNB,FFAXB,FFAYB,FFAZB,FFACB,FFAMB,FFANG
17     ALPHATAN2(VR,UR)
18     SGL=SCRT(VR*UR+VR*UR)
19     BETA=ATAN2(VR,SGL)
20     CAP=.5*RHJ*VRS
21     CAPS=CAPS
22     CAPSC=CAPS
23     IF(VRK*EG.0.)GO TO 121
24     CAPSC=CAPSD*D/(2.*VRW)
25     GO TO 122
26     121 CAPSC=C
27     122 CONTINUE
28     CELVV=(DEL1+CEL3)/2.
29     CELVR=(DEL1+CEL3)/2.
30     IF((IACT+EG+2)*ELVV*(DEL2+CEL1)+3
31     IF((TIME*GE+TI*E3)*DELRL+CELVR
32     CELR=CELRL*57.2957795
33     CALL AERO(TIME,TIME3,MACH,ALPHA,BETA,CELVV,REL_R,CN,CMCG,CY,
34     !CYC,CAZ,CLP,CLD,CM,CHAD,CY,CCN,DT
35     CLB=CAPSD*CLD*CEL_R*FFCLR
36     CMR = CAPSDM*CMC*G*FFCMA
37     CNB = CAPSCM*CNR*R*FFCNR
38     AXB = -CAPS*CAZ*FFAXB
39     AYB = -CAPS*CY*FFAYB
40     AZB = -CAPS*CY*FFAZB
41     ALB=CAPSDM*CLP*P*FFALB
42     AMB = CAPSDG*CMCG*FFAMB
43     ANB=CAPSC*CYCG*FFAER
44     IF(IRAP+EG+0.5R+TIME*LT,RAPTM1)GO TO 123
45     IF((TIME*LE+RAPTM2)*6LAPFS+TIME*BT1
46     IF((TIME*GT+RAPTM3)*4D+TIME*LT+RAPTM3)*TH=RI*APP+TIME+BT2
47     IF((TIME*GT+RAPTM3)*T4=0,
48     IF((TIME*GT+RAPTM3)*IRAP=0
49     123 AXB=AXB+TH*CTT*CPT
50     AYB=AYB+TH*CTT*SPT
51     AZB=AZB+TH*STT
52     ANB=ANB+TH*CTT*SPT*XLT
53     ANB=ANB+TH*STT*XLT
54     RETURN
55     END

```

1 SUBROUTINE DIFEQ
 2 C***SUBROUTINE DIFEQ CONSTRUCTS THE EQUATIONS OF MOTION
 3 DOUBLE PRECISION TIME
 4 CIPERSON URG(27),LWW(21)
 5 REAL MASS,IX,IYZ
 6 COMMON/ETB/EB11,EB12,EB13,EB21,EB22,EB23,FB31,FB32,EB33
 7 COMMON/TODEQ/AXB,AYB,AZB,CLB,CNB,ALB,AMP,ANB,CMB
 8 COMMON/INTEG/I,J,GG,U,V,W,P,G,R,DSG,DU,DV,DW,DP,DC,DR,
 9 1DPLI,DTHTA,OPSI,CX,DY,DZ,CBW
 TO COMMON/JUNK/TIME
 11 COMMON/JUNK1/THOLD,IROLL,G,MASS,IX,IYZ,XINTIA,NAVY
 12 COMMON/TDC/CPSI,SPSI,SPHI,CPHI
 13 COMMON/GG/GXB,GYB,GZB
 14 C** GRAVITY RESOLUTION TO ECS
 15 GXB=FB13*G
 16 GYB=EB23*G
 17 GZB=EB33*G
 18 C** EQUATIONS OF MOTION
 19 CL=AXB/MASS+R*V=G*W+GXB
 20 IF(TIME.LT.THOLD.AND.NAVY.EQ.1)CL=0.
 21 CV=AYB/MASS+P*W=R*L+GYB
 22 DR=AZB/MASS+G*U=P*V+GZB
 23 DP=(ALB+CLB)/IX
 24 DG=(AMB+CMB)/IYZ+P*R*XINTIA
 25 DR=(ANB+CNB)/IYZ+P*Q*XINTIA
 26 DTHTA=(Q*CPHI+R*SPHI)/CPSI
 27 CPHI=P*DTHTA*SPSI
 28 OPSI=R*CPHI+G*3PV
 29 IF(IROLL.NE.C)DP=0.
 30 IF(IROLL.NE.C)P=0.
 31 C** MISSILE VELOCITY IN ECS
 32 CX=EB11*U+EB21*V+EB31*W
 33 DY=EB12*U+EB22*V+EB32*W
 34 DZ=EB13*U+EB23*V+EB33*W
 35 RETURN
 36 END

1 SUBROUTINE METC
2 C** SUBROUTINE METC CALCULATES THE VELOCITY OF SOUND
3 C

4 DOUBLE PRECISION TIME,TIME3
5 DIMENSION DUM(22),CUMPY(6)
6 REAL MACH
7 COMMON/MO/GEBAL,TB,TGRAD,RHOSL,ARG1,WTMEL,RSTAR,
8 RHOB,ARG2,GR,TMEL
9 COMMON/JUNK/TIME,TIME3,RHP,DUM
10 COMMON/MACL/MACH,VSND,DUMY
11 IF(GEBALT.GT.36089.2389) GR TA 12
12 TMEL=TB+TGRAD*GEBALT
13 RH0=RHOSL*(TB/TMEL)**ARG1
14 RHOB=RHO
15 VSND=SQRT(1.4*RSTAR*TMEL/WTMEL)
16 GO TO 13
17 12 CONTINUE
18 ARG2=(GR*WTMEL*(GEBALT-36089.2389)/(RSTAR*TMEL))
19 RH0=RHOB*EXP(ARG2)
20 13 RETURN
21 END

```

1      SUBROUTINE SEEK
2      C** THIS SUBROUTINE DETECTS TARGET WITHIN THE DETECTION RANGE OF SEEKER,
3      C TARGET WITHIN THE FIELD OF VIEW, S-A-H, SEEKER WITHIN LINEAR RANGE
4      C
5      DOUBLE PRECISION TIME,FSTSAM,TIME4,DT,DTA,TST,TMF,SPER
6      DIMENSION CAT(14),RAT(49)
7      COMMON/STUFF/DELXS,DELYS,DELZS
8      COMMON/JUNK2/SRNGE,IFUFR,IACC,RDFT,YAHERR,PITER0,PHFOV,BA,RNGLIN,
9      1PI1Y4,JG,R2D,NULSKR,BRS,REFLECT,NLL,KAGE
10     COMMON/TIM3CR/PITER0,YAHERR
11     COMMON/JUNK/TIME
12     COMMON/INT00/I,J,DTRK,CAT,THTAS,THASD,PS1S,RAY
13     COMMON/TT/FSTSAM,TIME4,DT,DTA,TST,TME,ST4,TSAM,DO,JMAX,IPRINT,T2
14     SRNGE$SGRT(DELXS=DELXS+DELYS+DELYS+DELZS+CFLZS)
15     DATA IACQ1/0/
16     IF(TIME>TIME4)GO TO 560
17     IF(TIME<LT-T2)GO TO 105
18     IF(IACQ1.NE.0)GO TO 11
19     IF(IACQ1.NE.1)GO TO 10
20     FSTSAM=TIME
21     10 IF(IACQ1.EQ.2)IACQ1=1
22     11 CONTINUE
23     GO TO(565,107),IACC
24     560 CONTINUE
25     IF(IACQ1.EQ.2)GO TO 107
26     FSTSAM=TIME
27     IF(TIME>TIME4)GO TO 565
28     IF(TIME<LT-TIME4)GO TO 105
29     C*** ACQUISITION(IACQ1=2) WHEN TARGET IS WITHIN FOV AND RDET
30     565 CONTINUE
31     C
32     C** LINEAR SEEKER, NO OUTPUT WHEN OUT OF FOV
33     IF(SRNGE.GT.RDET)GO TO 101
34     IF(SCRT(YAHERR+YAHERR*PITER0*PITER0).GT.PHFOV)GO TO 101
35     IF(SCRT(PITER0*2*YAHERR*2).GT.0.0872664)GO TO 101
36     IF(SCRT(PS1S*PS1S*THTAS*THTAS).LT.BA100)GO TO 101
37     567 CONTINUE
38     C*** PRINT EVERY JMAX INTERVALS
39     JMAX1=DO/DTA+000001
40     DT/DTA
41     DTRK$RNGL(DT)
42     IACQ2
43     IPRINT=2
44     PRINT 90005
45     90005 FORMAT(1X,2X,'ACQUISITION')
46     GO TO 103
47     107 CONTINUE
48     C*** NULL SEEKER
49     PITER0$ATAN2(-DELZS,DELXS)
50     YAHERR$ATAN2(DELYS,SCRT(DELXS+DELZS+DELZS))
51     C
52     C** LOSS OF ACQUISITION
53     C
54     IF(SCRT(PITER0*PITER0+YAHERR*YAHERR).GT.PHFOV)GO TO 101
55     PI1Y4$SCRT(PITER0*PITER0+YAHERR*YAHERR)
56     IF(PI1Y4*YAHERR*2*0.5/R2D)NULSKR=2
57     103 CONTINUE
58     C** SAMPLE-AND-HOLD, IF FSTSAM<TIME IS INCLUDED AFTER STATEMENT 107
59     TST=TIME-FSTSAM
60     TSAM=TST+TME
61     IF(TSAM>SPER)104,104,104
62     104 TME=TIME+SPER

```

```

58      IF (SRNGE .LT. BRS) GO TO 108
59      IF (SGRT (YAWERR * YAWERR + PI TERR * PI TERR) .GT. PHEBV) GO TO 108
60      IF (SGRT (PSIS * PSIS + THTAS * THTAS) .LT. BA) GO TO 108
61      CALL SEEKER (SRNGE, RFLECT, PI TERR, PI TERR)
62      CALL SEEKER (SRNGE, RFLECT, YAWERR, YAWERR)
63      PI TERR = PI TERR
64      YAWERR = YAWERR
65      GO TO 109
66      101 !ACG = NULL * KAGE = 1
67      108 YAWERR = 0
68      PI TERR = 0
69      109 CONTINUE
70      C
71      C** SEEKER WITH LINEAR RANGE
72      IF (ABS (YAWERR) .GE. RNLIN) YAWERR = SIGN (RNGI IN, YAWERR)
73      IF (ABS (PI TERR) .GE. RNLIN) PI TERR = SIGN (RNGL IN, PI TERR)
74      105 RETURN
75      END

```

```

1      SUBROUTINE EDSKRGYR
2      C THIS SUBROUTINE CONSTRUCTS THE SEEKER GYRO MODEL FOR ED
3      C
4      DOUBLE PRECISION TIME
5      REAL KT,KT10,KT20,LAMPR,LAMYR
6      REAL KG,KT30
7      LOGICAL FLG4/.TRUE./
8      COMMON/INTEG/KUTTA,VX,DTRK,U,V,W,P,C,R,PHI,THTA,PSI,X,Y,Z,RTHTA,
9      1RPSI,THTAS,TK1SD,PSIS,PSISD,OMEGA,TXFD,PYFD,PFF,YEF,DEL1,DEL2,
10     2DEL3,DEL13,DEL13,DLAMY,DLAMP,DRPHIG,DPH10,DU,DV,DU,DCP,DCP,
11     3CPH1,CTHTA,DPsi,CX,DY,DZ,DTHTA,DRPSI,DTHTAS,DTWASD,DPsis,DPsisD,
12     4C0MEGA,DXED,DPXFD,DPFF,DYEF,DDEL1,DDELPP,DDFLP3,DDDEL1,DDUEL,
13     5DDEL3,DLAMY,DLAMP,DRPHIG,DPH10,
14     COMMON/JUNK/TIME
15     COMMON/TT/FSTSAM,TIME4,CT,DTA,TST,TMF,SPER,TSAM,DO,JMAX,IFPRINT,T2
16     COMMON/PERY,EG,Z,EGZ
17     COMMON/BW/RSL,K,KT10,KT20,LAMPR,LAMYR,RTM,RTMIN,RSGE,ED1,PLG4,
18     1RSA,ED4,CSA
19     COMMON/BTS/BS11,BS12,BS13,BS21,BS22,BS23,BS31,BS32,BS33
20     COMMON/JUNK2/SRNGE,IFUFB,IACQ,RDY,VAWERB,PITERB,PHFOV,BA,RNGLIN,
21     1PIYAKSG,R2D,NULSKR,BRS,REFLCT,NLLL,KAGE
22     COMMON/OP/RB,RRJH,A,B,KT30
23     CPMIO=DPHI
24     RSL=I25/R2D) IF(ABS(CPMIO).GT.RSL) DPH10=SIGN(RSL,CPMIO)
25     IF(TIME.LT.T2) GO TO 5005
26     C****CHECK FOR NULL SEEKER
27     IF(TIME.GT.1000000.DT,RTM.LT,RTMIN) GO TO 5000
28     IF(NLLL.EC.2) GO TO 5000
29     NLLL=1
30     RSGE=SQRT(THTAS*THTAS+PSIS*PSIS) IF(RSGE.LE.0.5/R2D.AND.IACQ.EC.2)
31     1NULL=2
32     C****IF(SCRT(IPITERB*2+VAWERB*2).GT.PHFOV) IACR=NULL=1
33     5000 IF(IACQ.EC.1) NLLL=1
34     C
35     IF(NLLL.EC.1) LAMPR=LAMYR=0.
36     C
37     IF(NLLL.EC.1) KT=KT20
38     IF(NLLL.EC.2) KT=KT10
39     1PTABSTR(LAMY,KT,872654) RLAMY=STRT(872654) RLAMY
40     0MEGY=KT*PITERB
41     0MEGZ=KT*VAWERB
42     IF(ABS(0MEGY).GT..1745329) 0MEGY=SIGN(.1745329,0MEGY)
43     IF(ABS(0MEGZ).GT..1745329) 0MEGZ=SIGN(.1745329,0MEGZ)
44     LAMPR=0MEGZ
45     C SEEKER GYRO FOR ED
46     C
47     5005 CONTINUE
48     IF(TIME.LT.ED1) GO TO 6670
49     IF(.NOT.FLG4) GO TO 6670
50     KAGE=2*FLG4*4*807*FLG4*PRINT-9000R
51     900CA FORMAT(/,2X,'UNCAGE GYR FOR ROLL TO VERTICAL')
52     6470 CONTINUE
53     IF(TIME.GT.ED4.AND.IACR.NE.2.AND.ITUF8.NE.2) KAGE=1
54     IF(IACQ.EC.2) KAGE=2
55     QSA=BS21*F+BS22*G+BS23*R
56     QSA=BS31*F+BS32*G+BS33*R
57     GO TO(5200,5201),KAGE
58     C
59     C CAGE
60     C

```

61 5200 CTLTAS==10.*THIAS;CPSIS==10.*PSIS
62 G8 TR 5203
63 5201 G8 TR(5202,5204),IACG
64 C
65 C UNCLAGE
66 C
67 C FREE GYRB
68 C
69 5202 CTLTAS==QSA/CBS(PSIS)
70 CPSIS==RSA
71 G8 TP 5203
72 C
73 C TRACK
74 C
75 5204 CTLTAS=(BMEGY=QSA)/CBS(PSIS)
76 CPSIS=OMEGZ=RSA
77 5203 RETURN
78 END

```

1      SUBROUTINE EDAP
2      THIS SUBROUTINE CONSTRUCTS THE AUTOPILOT MODEL FOR ED VERSION
3      DOUBLE PRECISION TIME
4      LOGICAL PEG1/TRUE/,PLG02/TRUE/,PLG3/TRUE/
5      COMMON/JUNK/TIME
6      COMMON/S1/S1,S2,S3,S4,S5/S6
7      REAL POLES(01)//+20./
8      REAL KPD,KQ,KM,LAMBI,LAMPR,LAMYR,KG
9      COMMON/OUTAP/YEG,REG,PEG
10     COMMON/BODY/ISLJKT,KTIO/KT20,LAMPB,LAMYR,RTHMIN,RSGETED1,PLG4/
11     IRS4,ED4,USA
12     COMMON/JUNK2/SRNGE,IFUPR,IACQ,ROFT,YAWERR,PITFR9,PHFOV,BA,RNGLIN,
13     1PITYAWSGR2D,NULSKA,BRS,REFLECT,NULL,KAGE
14     COMMON/ARR8X/PHIG,FLG1,FLG2,FLG3,REF,RFL,VFD,PEC,THRBS,PSRBS,
15     1THBS,PSBS,GBLV,PEFL,KPD,KQ,KM,KG,LAMBI,PLFS
16     COMMON/INTEG/KUTTA,NX,OTRK,U,V,W,P,G,R,PHI,THTA,PS13,MATZ2,THTAS,
17     1RPSI,THTB,THASD,PSIS,PS18D,OMEGA,TXFD,PXFD,PEF,YEF,DEL1,DELVP,
18     2DEL3,COEL1,ODELVP,COEL3,RLAMY,RLAMP,RPHIG,DPHIO,DU,DV,DW,DP,DG,DR,
19     3DPH1,DTHTA,DPSI,DY,DZ,DRTHTA,DRPSI,DTHTAS,CTWASD,DPS19,DPS10,
20     4DMEGA,DTXED,DPXED,PEF,YEF,DEL1,ODELPP,ODELP3,ODEL1,ODELP,
21     5DDEL3,DLAMY,DLAMP,DPHIG,DOPHIO
22     COMMON/M7PSTSAP,TIME,DT,DTA,TSYM,TIME,SPER,TSAM,COSUMAX,IPRINT,T2
23     C ROLL AUTOPILOT
24     C
25     IF(TIME.GE.ED4)GO TO 5025
26     PHIG=DPHIO+S1*75.+PS15*82
27     GO TO 5030
28     5015 IF(IFCP0.EQ.2)GO TO 5025
29     IF(IACQ.EC.2)GO TO 5025
30     PHIG=DPHIO+S1*75.+PS15*82
31     GO TO 5030
32     5025 IF(.NOT.FLG1)GO TO 6667
33     PRINT 90002,IPRINT#2,FLG1,.NOT.FLG1
34     90002 FORMAT(//2X,'ROLL MODE')
35     6667 CONTINUE
36     DLAMY=10.*DOPHIO
37     PHIG=DPHIO+S1=DLAMY*83
38
39     C. LEAD LAG ROLL AUTOPILOT REG/PHIG+KPD*(S+5)/S+12.5)
40     5030 CONTINUE
41     CALL FLTR(PHIG,RPHIG,DRPHIG,REG,12.5,5.,KPD)
42     RFL=7./REG) IF(ABS(REG).GT.RFL)REG=8.*GN(RFL,REG)
43     C
44     C** PITCH YAW AUTOPILOT
45     C** RATE DAMPING OF GIMBAL ANGLES THRBS/THTAS=KG*S/(.0067*S+1)
46     CALL EDRTDAMP(THTA,TXED,TXED,THTB,PSL29(01),KG,KM,THBS)
47     CALL EDRTDAMP(PSIS,PXED,DPXED,PSRBS,POLES(01),KG,KM,PSBS)
48     C INPUT TO GUIDANCE FILTER-PED,YED
49     5065 CONTINUE
50     PED=LAMPR
51     YED=LAMYR
52     C** GUIDANCE FILTER-PED/PED*KG/TV*8*1)
53     5075 CONTINUE
54     CALL FTLG(PED,PEF,DPED,KG,10.)
55     CALL FTLG(YED,YEF,DYEF,KG,10.)
56     PEFL=PEF+LAMBI
57     GBLV=8./R2D
58     IF(ABS(PEFL).GT.GBLV)PEFL=SIGN(GLBLV,PEFL)
59     IF(ABS(YEF).GT.GBLV)YEF=SIGN(GLBLV,YEF)
60     IF(TIME.LT.T2+8R.IACQ.EC.1)GO TO 5100
61     IF(.NOT.FLG2)GO TO 6668
62     PRINT 90003,IPRINT#2,FLG2,.NOT.FLG2

```

63 90003 FORMAT(//2X,1LATERAL ENABLE!)
64 6668 CONTINUE
65 G8 T8 (5080,5085),NULL
66 5080 PEG+(PEFL+THRBS+S6+YHRBS+S4)+S5
67 YEG+YEF+PSRBS+S6+PSRBS+S4
68 G8 T8 S100
69 5085 IF(.NOT.FLG3)G8 T8 6669
70 PRINT 90004;IPRINT=2;FLG3=.NOT.FLG3
71 90004 FORMAT(//2X,1GUIDANCE ENABLE!)
72 6669 CONTINUE
73 PEG+(PEFL+THRBS+S4)+S5
74 YEG+YEF+PSRBS+S4
75 5100 IF(ABS(PEG)>.20943948)PEG+SIGN(.20943948,PEG)
76 TF(ABS(YEG)>.20943948)YEG+SIGN(.20943948,YEG)
77 RETURN
78 END

1 SUBROUTINE FLTR(X,Y,Z,A,B,C,D)
2 Z=X*B*Y
3 A=(C*Y+Z)*D
4 RETURN
5 END

1 SUBROUTINE EDRTDAMP(X,Y,Z,A,B,C,D,E)
2 Z=B*(C*X-Y)
3 A=B*(C*X-Y)
4 E=D*(X+A)
5 RETURN
6 END

1 SUBROUTINE FTLG(X,Y,Z,A,B)
2 Z=B*(A*X-Y)
3 RETURN
4 END

```

1          SUBROUTINE CONTROL
2      C*** THIS SUBROUTINE CONTAINS THE CONTROL SYSTEM, COMMANDS FOR EACH PLANE ON
3      C      COMMUN SHAFY, SECND, BDRFR ACTUATOR MODEL
4      C      DIMENSION ACT(24),ACTB(27) SECVR(6)
5      C      COMMUN/JUNK/SR/GE,IFLFP/IACC,ADFT,TAWERA,PITFRS,PKF0V,BA,RNGLIN,
6      C      IPITYA,NSC,R2D,\ULSKR,BRS,RFLECY,ULLL,KAGE
7      C      COMMRA/AUTAB/YEG,REG,PEO
8      C      COMMRA/INTEG/I,J,ACT,DEL1,DELVP,DEL3,ODEL1,ODFLVP,ODEL3,ACTB,
9      C      1ODELP1,ODELPP,ODELP3,ODEL1,ODELPP,ODEL3,ACTB
10     C      COMMRA/JUNK/TIME,TIME3,RTM05,DSCWNS,CAP,TRAPTRAPTM17RAPTM2,IACT
11     C      ISLAPE1,BT1,RAPTM3,SL0PE2,BT2,CYT,CPT,SPT,XLYA,8TY,GAPS,CAPSU,
12     C      2CAPSCP,TH
13     C      CCCEL1=60.0*(60.0*(YEG-REG*DEL1)-ODEL1)
14     C      CCCEL2=50.0*(50.0*(PEO-DELVP)-ODELVP)
15     C      CCCEL3=60.0*(60.0*(-VEG-RFO*DEL3)-ODEL3)
16     C      IF((IACT*EG+2)ODDFL3=60.0*(60.0*(REG+YEG*DEL3)-ODEL3))
17     C      ODELP1*ODEL1
18     C      ODELP2*ODELVP
19     C      ODELP3*ODEL3
20     C      RETURN
21     C      END

```

AI1RBT (FILE, Y1), (FORMAT, U), (RSIZE, 202), (FSIZE, 240)
AI1RBT (FILE, X2), (FORMAT, U), (RSIZE, 202), (FSIZE, 100)
ASSIGN (M1S1, RT, X6)

FORTRAN SY, GEAMS, BC

PI PAP (TEMP, ECO), (LIP, USER/SYSTEM)
PRBRT (FILE, RT, GA, EBD))
((FILE, D1, \$SYSLIP, EBD))
I, SRFF LL 7CPT
I, SRFF LL 7CFDT

LPRINTING WAS COMPLETED

WARNING: UNSATISFIED REF'S
REWIND 9TARC
RAV

BEGIN EXECUTION

| | | | | | | | | | | | |
|--------|----------|--------|-------------|---------|------------|-----------|-------|-------------|---------|---------|--------|
| BF | 0.2500 | R7BL | 1000000.01 | 80 | 1000000.01 | MA | 0 | 1000000 | 80 | 1000000 | 25000 |
| KB | 10.000 | RBS | 0.00000 | K0 | 0.00000 | C8 | 0 | 1500000P-07 | 371 | 211.22 | 672 |
| CPT | 1.0000 | S7T | 0.00000 | - | - | 100000 | PFCB | 0 | 100000 | CTT | 0 |
| RABTR3 | 13.000 | EDC | 0.500130 | K0 | 0.0000 | 3.5000 | DELMY | 0 | 34907 | EDO | 0 |
| ED1 | 3.2500 | - | - | - | - | 3.4500 | TD4 | 0 | 72500 | EDS | 0 |
| KT1C | 10.000 | FFALB | 1.00000 | YCL | 0.0000 | 0.0180 | PFANB | 0 | 1.0000 | GF | 0 |
| PFELB | 1.0000 | PFZB | 1.00000 | PPCNH | 0.0000 | 0.0000 | PFAMB | 0 | 0.0000 | QMB | 0.3983 |
| PFBV | 0.21A17 | GC | 0.26140 | PPAXB | 0.0000 | 1.0000 | IACT | 0 | 0 | IRBLDC | 1 |
| ICLP | 0 | TFFB | 0 | NULL | 0 | 1.0000 | IRBL | 0 | 0 | XT20 | 20.000 |
| ISKP | C | S5 | 0.1.0000 | IT | 0.0000 | 16226P-04 | PRGN | 0 | 100000 | IX | .2C100 |
| SC | 149.23 | IYZ | 5.7230 | R2 | 0.0000 | X4 | 0 | 17493 | PCA | 0 | 200.0 |
| KA | .C0000C | RVB1A5 | 0.000000 | KC | 0.0000 | TMGL | 0 | 0.87266E-02 | KGL | 0 | 1.0000 |
| PRATE | 1.CC0C | RPO | 1150000E-01 | TIPS | 0.0000 | TRDC | 0 | 1800000 | MASS | 0 | 25.000 |
| KS | 6.0000C | KP | 2.00000 | LAMBI | 0.12651 | JMAX | 0 | 1265 | 126 | 4.4887 | |
| CG | 6.312C | NRL | 1081984843 | PCL | 0.26180 | JA | 0 | 23528E-04 | PHMAX | 0 | 1.7453 |
| BA | 1.0000C | PRINTP | 1.00000 | JMAX | 0.26180 | RAPTM2 | 0 | 6.5000 | RAPTH1 | 0 | 0.0000 |
| RCET | 700C.C | DTA | 139043E-02 | REFLECT | 5.00000 | PI | 0 | 3.1416 | RLAMP | 0 | |
| PS17 | .C0000C | BLAHY | 0.000000 | RPSI | 0.00000 | RNGLN | 0 | 26180E-01 | VRATE | 0 | 5.2360 |
| RTPTK | 1000TC | KP | 270000 | 67 | 0.0000 | 36 | 0 | 100000 | 810 | 0 | 1.0000 |
| S9 | 1.00000 | 812 | 0.1.0000 | 811 | 0.0000 | 84 | 0 | 1.0000 | S3 | 0 | 1.0000 |
| S2 | 1.00000 | 61 | 0.1.0000 | 8 | 0.0000 | 12092 | 0 | 26180 | SPO | 0 | 1.0000 |
| SF1 | 1CC.OC | SF2 | 0.00000 | 873 | 0.0000 | 874 | 0 | 20.000 | SFS | 0 | 15.000 |
| SF6 | 18.000 | SF7 | 0.15.000 | 878 | 0.0000 | 879 | 0 | 50.000 | SP10 | 0 | 20.000 |
| SF11 | 20.COC | SF12 | 0.50.000C | SF13 | 0.0000 | 125.00 | SP15 | 0 | 15.000 | SP15 | 0 |
| SCMPZ | 11.538 | SLOPC1 | 387735 | TO1 | 0.0000 | TO | 0 | 100000 | TOS | 0 | 0.0000 |
| T02 | 1.8C0C | T05 | 2.4000 | TO4 | 0.0000 | TO7 | 0 | 2.8000 | TC6 | 0 | 2.6000 |
| T2 | 8.0000C | T1 | 3.0000 | T8 | 0.0000 | SP7 | 0 | 0.0000 | TM6.D | 0 | 0.0000 |
| THTAC | *1.1308C | KC | 0.20000 | TEMAT | 0.00000 | TRAP | 0 | 0 | TH6.L | 0 | 0.0000 |
| T1C | *1.2500C | TIG1 | 0.125000 | T1W63 | 0.00000 | T1W2 | 0 | 0.65000 | TIME. | 0 | 0.0000 |
| T1WFC | *3000C | TIP1 | 0.00000 | CT | 0.7825P-09 | YWDV | 0 | 0.21817 | K5 | 0 | 0.0000 |
| ZPTK | *400C.C | TYPE | 0.60000 | WNOB | 0 | 1000000 | ZPTK | 0 | 0.00000 | 0 | |

PRINTFILE!

| | | | | | | | | | |
|--------------|------------|-------|---------|--------|--------|------------|--------|--------|-----------|
| TYPE | 000000 | RSA | 100000 | DELVP | 000000 | DELZ | 000000 | DTACC | 000000 |
| X | 000000 | THTA | 022689 | PHO | 000000 | DTATA | 000000 | DX | 0C719 |
| CZ | 0232.80 | DY | 000000 | DPHJ | 000000 | DP | 3.8354 | DN | 311337 |
| DBS1 | 000000 | DR | 000000 | QG | 000000 | WACH | 93316 | DP | 142815 |
| DU | 035.494 | DV | 100000 | VAN | 000000 | DELV | 000000 | DELV | 000000 |
| PSI | 000000 | P | 100000 | O | 000000 | CECZV | 000000 | X | 000000 |
| XZ | 000000 | DECV | 100000 | DELV | 000000 | CECZV | 000000 | YT | 000000 |
| Y | 000000 | Z | 040010 | AMH | 000000 | XY | 131201 | YT | 000000 |
| DTATA | 000000 | CPMT | 110000 | SPHI | 000000 | CPST | 100000 | SPOT | 000000 |
| CGS16 | 1.00000 | GZB | 31.337 | 078 | 000000 | GBB | 7.2348 | - | - |
| <hr/> | | | | | | | | | |
| AUTOPILLETS! | | | | | | | | | |
| DPHTIC | 000000 | DECTG | 127.815 | PEO | 000000 | DECTG | 000000 | TXED | 000000 |
| DFL79 | 095114 | OMEGA | 314.00 | DYEP | 000000 | DEPF | 000000 | DTHTAB | 000000 |
| RTW | 131201 | KT | 201000 | DEPL | 000000 | NULL | 1 | DCLA | 098132+C1 |
| OMEQ2 | 000000 | PERG | 000000 | PEO | 000000 | PEF | 000000 | PIERG | 000000 |
| PULG | 000000 | PSIS | 000000 | PEXO | 000000 | THOS | 000000 | PESS | 000000 |
| DELI | 000000 | RLAMV | 100000 | PLAMP | 000000 | THIAS | 000000 | THBS | 000000 |
| TEP | 000000 | PEP | 100000 | VED | 000000 | PEO | 000000 | VEP | 000000 |
| YBRO | 000000 | YEG | 000000 | DELV | 000000 | YAKER | 000000 | YAMBO | 000000 |
| LAVR | 000000 | LAMPR | 000000 | NSA | 000000 | CAPS | 828.99 | OPSIS | 000000 |
| TAAC | 000000 | PSRBS | 000000 | REN | 000000 | - | - | - | - |
| <hr/> | | | | | | | | | |
| Load1! | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| <hr/> | | | | | | | | | |
| APRCYANICS1 | | | | | | | | | |
| CLD | 19447CE=01 | ALB | 000000 | CNR | 000000 | CNC | 000000 | CY | 000000 |
| CA2 | 456374 | CLP | 26.566 | CN9 | 000000 | CYQ | 000000 | CMCQ | 000000 |
| AXE | 000000 | CLB | 77.011 | DP915C | 000000 | CNG | 000000 | THAS | 000000 |
| DTM16C | 000000 | PS15C | 000000 | - | 000000 | ALPHA | 000000 | BETA | 000000 |
| <hr/> | | | | | | | | | |
| RAB | 000000 | CFT | 100000 | SPF | 000000 | CPT | 000000 | TP | 000000 |
| BTT | 000000 | CLT1 | 1.66667 | - | - | - | - | - | - |
| XLT1 | 0 | - | - | - | - | - | - | - | - |
| <hr/> | | | | | | | | | |
| DFSLG PRINTS | | | | | | | | | |
| CFLX2 | 127A4+ | DELYC | 000000 | DELZ | 000000 | CELXS | 000000 | CELYS | 000000 |
| DFL76 | 295114 | XLTIA | 0 | PIERR | 000000 | YAKER | 000000 | STERC | 000000 |
| VALFRO | 000000 | DLAMP | 000000 | P9 | 000000 | SPB81 | 000000 | DTMTA | 000000 |
| DRPL10 | 000000 | RPH10 | 000000 | DELV | 000000 | OPH10 | 000000 | G | 32.162 |
| VSIC | 000000 | TSK1C | 0 | FACT | 000000 | TOCIE | 000000 | O | 0 |
| XAD2 | 1 | NAVY | 0 | F1 | 000000 | ORLAMP | 000000 | NLSKRA | 0 |
| IPR117 | 1 | NPPB | --- | NDT | 000000 | 125 | NO-A | 256 | CELYS |
| PFPL | 000000 | PHID | 000000 | RHS | 000000 | 121109F=02 | 82 | DELROL | 12185E+C2 |
| KFC | 000000 | RET | 000000 | RHS | 000000 | RPS1 | 000000 | RHTA | 000000 |
| AMEV | 000000 | MEQZ | 000000 | NN | 000000 | 14 | - | - | - |

| PROJECTILE | | | | | | | | | |
|---------------|--------------|--------|-------|-------------|--------|--------|--------------|---------|-------------|
| TYPE | *60156 | RGA | * | 000001 | DELVP | * | 00000 | * | 101313 |
| W | *69A96 | THTA | * | 120771 | PHD | * | 126714 | * | 132.9d |
| DY | *205.73 | DY | * | 0.75777E-03 | DPHI | * | .90425 | * | 18184E-01 |
| DPS1 | *.78131E-04 | DR | * | *.85931E-01 | OG | * | .27547 | * | .39867 |
| DU | *.32.A13 | DY | * | 1.1270 | VRW | * | 1013.3 | * | 12.644 |
| PS1 | *.84.193E-05 | P | * | 150485 | O | * | *.16944E-01 | * | 1079.4 |
| X78 | *1.8175 | DELYV | * | 00000 | DELYV | * | 00000 | * | 16599E-02 |
| V | *.13185E-C3 | Z | * | *.133.0 | AMB | * | 1.4695 | * | DELVY |
| DTHTA | *.18184E-C1 | CPTM | * | 133335 | SPHJ | * | 135895 | * | 0.0000 |
| CDSIS | *1.0000 | QZB | * | 89.373 | QYD | * | 11.296 | * | *.6334 |
| AUXILIARY | | | | | | | | | |
| OPPFC | *.00000 | DELTX | * | 122222 | PEF | * | 00000 | * | 00000 |
| OPRFS | *253.4 | SPFGA | * | 31400 | DPF | * | 00000 | * | 00000 |
| RTK | *1282C | KT | * | 201000 | PEPL | * | NULL | * | 1.6913E-C1 |
| RTK02 | *.00000C | PSRG | * | *.00000 | PED | * | 00000 | * | 00000 |
| PKIG | *.00000C | PSIG | * | *.00000 | PXE0 | * | 00000 | * | 10000 |
| DFL1 | *.00000C | QLAM | * | *.00000 | RLAMP | * | 00000 | * | 1.0000 |
| YTF | *1.00000 | PEF | * | 100000 | YET | * | 00000 | * | 00000 |
| YBRG | *.00000C | VEO | * | *.00000 | DELYS | * | 973.61 | * | 1.7846E-01 |
| LAVYR | *.000000 | LARPR | * | *.00000 | GSA | * | 00000 | * | YAKER |
| IACC | * | PSRBS | * | *.00000 | REN | * | 00000 | * | 00000 |
| Logic | | | | | | | | | |
| GATE | 1 | 1 | GATE | 2 | F | DATE | 3 | F | DATE |
| GATE | 6 | 8 | GATE | 7 | * | F | DATE | * | F |
| AFRC/CYANIC81 | | | | | | | | | |
| CLC | *94223E-01 | ALB | * | 0.65229 | CNA | * | -156.19 | CY | *.3C928E-C2 |
| CA2 | *.5342C | CLB | * | *.25.832 | CN | * | *.029967E-02 | CRCG | *.13199E-C1 |
| XRN | *.547760 | CLB | * | 173242 | CNA | * | *.74023E-01 | TRNG | *.00000 |
| OTMASD | *.00000C | PS1SD | * | *.00000 | NPS1SD | * | 00000 | ALPHA | *.25765E-03 |
| RAB1 | * | 00000C | CPT | * | 1.0000 | SPT | * | 00000 | BETA |
| STT | * | 00000C | CPT | * | 1.0000 | CPT | * | 1.0000 | 00000 |
| XLT | * | 1.6667 | | | | | | | |
| DFLD PRINT! | | | | | | | | | |
| DFLX8 | *122222 | DELYE | * | 973.03 | 1 | DEL29 | * | 2931.4 | DEL8 |
| DFL7S | *2531.4 | KUTA | * | 00000 | 1 | PIERR | * | *.20423 | *.77846E-01 |
| VALERA | *.00000C | DRALAY | * | 00000 | P9 | * | *.00000 | CRPS1 | *.00000 |
| DRHIG | *.00000C | RPHIG | * | 00000 | DELVA | * | *.00000 | OPH10 | *.00000 |
| VRNT | *1100.5 | TSKG | * | 0 | TACT | * | 0 | TRNG | *.32.161 |
| XAGF | * | 1 | NAVY | * | 0 | F1 | * | 0 | NULSKR |
| IPRINT | * | 1 | NPPS | * | 20 | NDT | * | 12R | *.256 |
| PF1 | * | 00000C | PHIG | * | 0 | CRLAMP | * | NDTA | *.00000 |
| QF2 | * | 00000C | RET | * | 00000 | RHS | * | SP | *.00000 |
| MEGV | * | 00000C | APEGZ | * | 00000 | REQ | * | QPS1 | *.00000 |
| | | | | | | NX | * | 1. | RTHT4 |

| PROJECTILE! | | | | | | | | | |
|----------------|-------------|--------|-------------|------------|--------------|---------|-------------|-------------|-------------|
| TYPE | 00021 | RWA | 00000 | DELVP | 00000 | U | 1011-5 | V | 198837-E01 |
| X | 02073 | THA | 020701 | RWD | 041718 | DEL2 | 14438 | TOTACC | 013970 |
| D2 | 020767 | DY | 04885497-01 | DPHJ | 072402 | DTHTA | 012038E-01 | DX | 0969198 |
| DPS1 | 01457CE-03 | DR | 042198E-01 | DC | 068173E-01 | DP | 032663 | DW | 17482 |
| DU | 0321756 | DV | 078336 | TRW | 1011-5 | MACH | 0191221 | CAP | 105713 |
| PB1 | 011775E-05 | DV | 092402 | O | 010948E-01 | 0 | 050078E-02 | DELVY | 00000 |
| X74 | 015704 | DELVY | 00000 | DELVY | 00000 | DEC2Y | 00000 | X | 665732 |
| Y | 0117746E-C3 | Z | 0144-4 | AMB | 046339 | XP | 13120 | YT | 00000 |
| DTHTA | 012338E-01 | CPM1 | 01488 | SPHJ | 040515 | CPS1 | 110000 | SPS1 | 017735E-05 |
| CPS12 | 1.000C | Q28 | 28.776 | OYS | 12.752 | QXB | 0-6.4103 | | |
| AUTOPIL011 | | | | | | | | | |
| DFLPTD | 000000 | DEEX3 | 121857 | PEO | 00000 | DELM1 | 00000 | TXED | 00000 |
| DFL23 | 24714 | AMEGA | 314.00 | DYF | 00000 | DPF | 00000 | DTMTAB | 00000 |
| RTW | 12348 | KT | 20.000 | PERL | 00000 | NULL | 0 | DLR | 09813E-01 |
| ANEG2 | 10000C | PSRG | 00000 | PEO | 00000 | REF | 00000 | PITERO | 00000 |
| PH10 | 00000C | PSIS | 00000 | PXED | 00000 | THBS | 00000 | PSGS | 00000 |
| DEFL1 | 1.0000C | RLARY | 00000 | PLAMP | 00000 | THTAS | 00000 | THRBS | 00000 |
| TEP | 10000 | TP | 00000 | YED | 00000 | PEO | 00000 | YEF | 00000 |
| VARC | 0.000C | YEG | 00000 | DELYS | 1095.3 | YAMERR | 0187975E-01 | YAKER | 00000 |
| LAPYR | 0.000C | LAMR | 00000 | QSA | 00000 | GAPS | 0218.19 | OPS18 | 00000 |
| TACC | 1 | PSRBS | 00000 | REN | 00000 | | | | |
| LPGIC1 | | | | | | | | | |
| DATE | 1 | F | GATE | 2 | F | GATE | 3 | F | DATE |
| GATE | 6 | F | GATE | 7 | F | GATE | 8 | F | |
| AFRCYC-A-FIC61 | | | | | | | | | |
| CLD | 094172E-C1 | ALB | 0.6639C | CNR | 0194-02 | CNG | 0156-09 | CY | 011757E-02 |
| CA2 | 0533182 | CLP | 025.763 | CH | 026263E-02 | CYCD | 018701E-02 | CMCQ | 011771E-02 |
| XK8 | 020747 | CLG | 072978 | CMB | 07878197E-01 | CNB | 021772E-01 | PHASD | 00000 |
| DTMASC | 0.0000C | PS15D | 0.00000 | OPSI9D | 0.00000 | ALPHA | 021827E-03 | BETA | 0.97711E-04 |
| RAPI | 1.0000C | CFT | 1.00000 | SPY | 0.00000 | CPT | 0.1.0000 | TH | 0.00000 |
| STT | 1.6667 | | | | | | | | |
| XLTA | | | | | | | | | |
| DFELD PRINT1 | | | | | | | | | |
| DFLX3 | 121651 | DELYB | 01095.3 | DEL29 | 02471-4 | DELS6 | 012169. | DELYS | 1095.3 |
| DFL15 | 24714 | KUTTA | 1 | PITERR | 000037 | YAKER | 087975E-01 | PITERO | 00000 |
| YAPB0 | 0.000C | DRALMY | 0.00000 | P3 | 00000 | CRPS1 | 00000 | DTMTA | 00000 |
| DRB10 | 0.000C | RPB10 | 0.00000 | DELVR | 0.00000 | CPH10 | 00000 | G | 32.161 |
| YAPC | 1.0000C | TPC | 0 | TPC | 0 | TPC | 0 | TPA | 0 |
| KAGE | 1 | YAV | 0 | C1 | 0 | CRLAMP | 0 | YUM | 0 |
| IPR117 | 1 | PPG | 0 | 20 | RH9 | 128 | YOTA | 256 | YULSKA |
| PFPL | 0000C0 | PP10 | 0.00000 | 210119E-02 | 92 | 0.00000 | DELRBL | 0.12165E-02 | RTMTA |
| RFPT | 0.000C | RFPT | 0.00000 | REG | 0 | 0.00000 | QPS1 | 0 | 0.00000 |
| NUDAY | 1.0000C | PPG1 | 0.00000 | NX | 0 | | | | |

| PROJECTILE: | | | | | | | | | |
|--------------|-------------|--------|----------|-------------|--------|-------------|--------------|--------|-------------|
| TYPE | 100000 | 100000 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 | 000000 |
| X | 132080C | THTA | 0 | 19646 | PHO | 0 | 174807 | DELZ | 0 |
| DZ | • 15% .89 | DY | 0 | • 14745E•02 | OPHI | 0 | • 17827E•01 | DX | 0 |
| DPRI | • 1A288E•03 | DR | 0 | • 10995 | 00 | 0 | • 96910E•01 | DP | 0 |
| DU | • 3C.919 | DV | 0 | Y372 | — | 0 | • 1000.6 | CW | 0 |
| PSI | • 62C32E•06 | P | 0 | 98850 | Q | 0 | • 118943E•01 | MACH | 0 |
| AZ | • 082192 | DELV | 0 | 00000 | DELY | 0 | • 12260E•01 | CELVY | 0 |
| V | • 50.16E•03 | Z | 0 | • 8213.5 | AMB | 0 | • 146551 | X1 | 0 |
| DTHTA | • 17827E•C1 | CPH1 | — | • 17330 | SPRI | 0 | • 168023 | CP81 | 0 |
| CPSIS | • 10000C | 328 | 0 | 23.121 | 0Y8 | 0 | 21.456 | 0XB | 0 |
| ALTSPILST1 | | | | | | | | | |
| DFPTC | 100000 | DELVX | 11051. | PEO | 0 | 100000 | DEPFS | 0 | 100000 |
| DFL26 | 1868.5 | AMEGA | 314.00 | OPF | 0 | 00000 | OPF | 0 | 00000 |
| RTW | 12128. | KT | 20.000 | REPL | 0 | 00000 | NULL | 0 | 109813E•C1 |
| AME02 | • 0000C | PSRG | 00000 | PEF | 0 | 00000 | PEF | 0 | 00000 |
| PHD | • 0000C | PS15 | 00000 | PEXED | 0 | 00000 | THB | 0 | 00000 |
| DFL13 | • 0000C | R1AMY | 00000 | RLMP | 0 | 00000 | THMAS | 0 | 00000 |
| VPP | • 0000C | PEP | 00000 | RED | 0 | 100000 | PED | 0 | 00000 |
| YARG | • 0000C | VEG | 00000 | DEYS | 0 | 1752.5 | YAMERR | 0 | 00000 |
| LAMYR | • 0000C | LAMPR | 00000 | CGA | 0 | 100000 | YAHM0 | 0 | 00000 |
| TACC | • 0000C | PSRB8 | 00000 | REN | 0 | 00000 | OP818 | 0 | 00000 |
| LOGIC1 | | | | | | | | | |
| DATE | 1 | F | DATE | 2 | F | DATE | 3 | F | DATE |
| QATF | 6 | F | GATF | 7 | F | DATE | 3 | F | DATE |
| AFROCYANIC61 | | | | | | | | | |
| CL1 | • 93A33E•01 | ALB | • 69015 | CHQ | 0 | • 155.66 | CY | 0 | • 35421E•02 |
| CL2 | • 51928 | CLP | • 25.331 | CN | 0 | • 18575F•05 | CYCQ | 0 | • 56425E•02 |
| TRK | • 01110 | CTG | • 70346 | CTB | 0 | • 76314F•01 | CRM0 | 0 | • 61450E•02 |
| DTHASC | • 0000C | PS1SD | • 00000 | DP919D | 0 | • 00000 | ALPHA | 0 | • 92492E•01 |
| RAPI | | | | | | | | | |
| SYT | • 0000C | CFT | • 1,0000 | SFT | 0 | 00000 | CFT | 0 | 1,0000 |
| XITA | • 08467 | — | — | — | — | — | — | — | • 00000 |
| DEBUG PRINT! | | | | | | | | | |
| DFL28 | 11861. | DELYB | • 1732.8 | DELZ | 0 | 1088.4 | CELXB | 0 | 11651. |
| DFL26 | 1868.5 | KLTIA | 0 | PIYERR | 0 | • 15802 | YAMERR | 0 | • 14501 |
| YALPR | • 0000C | ORLARY | • 00000 | P3 | 0 | 100000 | CR91 | 0 | 00000 |
| DRPH1G | • 0000C | RPW1G | • 00000 | DELYA | 0 | 00000 | OPH10 | 0 | 32.161 |
| VSKC | • 1103.2 | TSK1 | 0 | TAET | 0 | 0 | TOTIDE | 0 | 0 |
| KADF | 0 | NAVY | 0 | F1 | 0 | 00000 | DRAMP | 0 | 0 |
| LPIN17 | 0 | NBPS | 20 | NDT | 0 | 10874 | NDTA | 0 | 236 |
| PFPL | • 0000C | PHIG | • 00000 | RM0 | 0 | • 20974E•02 | CELRL | 0 | 12105E•C2 |
| RFC | • 0000C | RET | • 00000 | REG | 0 | 1,00000 | RTHTA | 0 | 00000 |
| AMFDY | • 0000C | GMED2 | • 00000 | NX | 0 | • 00000 | 14 | 0 | 0 |

| PROJECTILE! | | | | | | | | | |
|-----------------------|--------------|--------|--------------|--------|---------------|---------------|----------------|-----------|--------------|
| TYPE | 2-0000 | RSA | 100000U | DELVP | 0 | 00000U | 0 | 771-87 | V |
| W | • 00001E-01 | THTA | • 116421 | RHO | • 1.7570 | DELZ | • 189.91 | TETACC | • 12449 |
| DY | • 158.65 | DY | • 32116E-02 | OPHI | • 1.0169 | DTHTA | • 25166E-01 | CX | • 258.64 |
| DRSI | • 23012E-03 | DR | • 655665E-01 | 08 | • 34737P-01 | OP | • 56181E-02 | DH | • 1.3301 |
| DU | • 276.645 | DV | • 700222 | VRN | • 971.87 | MACH | • 88395- | GAP | • 985.29 |
| P81 | • 14109E-05 | P | • 1.0169 | C | • 48553E-09 | R | • 24668E-01 | DELVY | • 00000 |
| X78 | • 39015E-01 | DELXY | • 00000U | DELTV | • 00000 | X | • 13120. | YT | • 19670 |
| Y | • 25355E-02 | Z | • 4389.9 | AMS | • 80460P-01 | X7 | • 1.1000- | SPSI | • 00000 |
| DTHTA | • 25166E-01 | CPHI | • 618818 | SPHI | • 198271 | CP81 | • 1.1000- | SPSI | • 14109E-05 |
| CP81S | • 1.0000 | Q29 | • 65.6743 | GYB | • 31.179 | QXB | • 5.2573 | - | - |
| AUTOPILOT! | | | | | | | | | |
| DOPRTO | • 00000 | DETSX | • 10942- | SEG | • 00000 | DETMS | • 00000 | TX20 | • 00000 |
| DELS2 | • 008.88 | OMEGA | • 314.00 | DYEF | • 00000 | OPFR | • 00000 | DTHTAS | • 00000 |
| RTW | • 11163. | KY | • 20.000 | PEFL | • 00000 | NULL | • 1 | DELR | • 159813E-01 |
| OME02 | • 00000 | PERO | • 00000 | PEC | • 00000 | REF | • 00000 | PITERD | • 00000 |
| PHG | • 00000 | PEIS | • 00000 | PXED | • 00000 | THBS | • 00000 | PBBG | • 00000 |
| DFL1 | • 00000 | QLAMY | • 00000 | RLAMP | • 00000 | THHTAS | • 00000 | THRBS | • 00000 |
| Y86 | • 00000 | SEF | • 00000 | YED | • 00000 | YED | • 00000 | YEP | • 00000 |
| Y86 | • 00000 | VEG | • 00000 | DELYS | • 2170.1 | YAHERR | • 19565 | YAMERB | • 00000 |
| LAWV | • 00000 | LAYER | • 00000 | GJA | • 10000 | CAPS | • 199.94 | DF918 | • 00000 |
| TACI | • 00000 | PGRSB | • 00000 | REN | • 00000 | - | - | - | - |
| LAUNCH! | | | | | | | | | |
| DATE | 1 | DATE | 2 | F | DATE | 3 | F | DATE | 4 |
| DATE | 6 | DATE | 7 | F | DATE | 8 | F | DATE | 9 |
| AERODYNAMICS! | | | | | | | | | |
| CLG | • -02938E-01 | ALB | • -0.165827 | -- | CH4 | • 0159523P-01 | CH4 | • -154.02 | CY |
| CA2 | • 40828 | CLP | • -24.351 | CN | • 0149523P-01 | CYG | • -1440041E-02 | CMG | • 79190E-03 |
| DTM150 | • 144720 | CLG | • 185940 | CH3 | • 0159523P-01 | CNB | • -10186 | THABD | • 00000 |
| DTM150 | • ,00000 | PS150 | • ,00000 | DP9190 | • ,00000 | ALPHA | • 01159E-04 | GETA | • 22871E-03 |
| RPL | STP | 10000C | - | CPT | • 10000 | CPT | • 1.0000 | TM | • 00000 |
| XLT1 | • 1.6667 | - | - | - | - | - | - | - | - |
| DFLDG PRINT! | | | | | | | | | |
| DFLX8 | • 109.2 | DELYB | • 2170.1 | DELZA | • 408.88 | CELEX | • 10942. | CFLYS | • 2170.1 |
| DFL75 | • 408.88 | KUTTA | • 1 | PITRR | • 37350P-01 | YAVERR | • 19565 | PITERD | • 00000 |
| YALGA | • 00000 | ORLAMY | • 100000 | P3 | • 10000 | SPSI | • 00000 | DFHTA | • 00000 |
| OPPH10 | • 00000 | RP10 | • 100000 | DELVA | • 10000 | CPH10 | • 10000 | G | • 32.161 |
| YALGA | • 109.2 | TPHTS | • 0 | FACT | • 0 | TCIDE | • 0 | TRP | • 0 |
| IPRAT | • 1 | YAV | • 0 | F1 | • 00000 | DRAMP | • 00000 | AUN | • 0 |
| PPRL | • COCCC | YPPS | • 20 | NDT | • 128 | YOTA | • 1.0000 | 256 | • 0 |
| PPRL | • COCCC | PHG | • 00000 | PH9 | • 190863E-02 | 82 | • 1.0000 | NUBLR | • 12185F-02 |
| PPRL | • COCCC | QET | • 100000 | REG | • 100000 | SPSI | • 10000 | CFHTA | • 00000 |
| PPRL | • COCCC | QPE02 | • 100000 | YX | • 14 | - | - | - | - |
| NULL ROLL RATE SENS09 | | | | | | | | | |

PROJECT E

| ALTOPILBY! | 000000 | DELTAS | 100511 | PEP | 100000 | DELTA8 | 00000 | TACO | 00000 |
|------------|---------|--------|-----------|-------|--------|--------|-------|--------|--------|
| COMPACT | 000000 | DELS3 | 101801-19 | DYEP | 00000 | DPER | 00000 | DT-TAS | 00000 |
| DRL29 | 01735.3 | 6MEGA | 012651 | PEPL | 00000 | NULL | 00000 | 1 | PIERO |
| RTW | 10221. | KT | 020000 | PEPL | 00000 | PEF | 00000 | | P0000 |
| DRMEOZ | 000000 | PSRO | 000000 | PEO | 00000 | PEO | 00000 | | P509 |
| RPWIG | 1.0164 | PSIS | 000000 | SEED | 00000 | THBS | 00000 | | PHB9 |
| DPL1 | 000000 | RLAMY | 000000 | ALAMP | 00000 | THTB8 | 00000 | | THRB9 |
| VEF | 000000 | PSI | 000000 | YED | 00000 | VED | 00000 | | YEP |
| YARD | 000000 | VEG | 000000 | DELYS | 00000 | YAHERR | 00000 | | YAMERO |
| LARVE | 000000 | LAMPR | 000000 | OSA | 00000 | YAPS | 00000 | | OPSIS |
| IACC | 000000 | PSRBS | 000000 | REN | 00000 | | 00000 | | |

| R API | STT | COCOC | C#T | 1.0000 | EPT | 0.0000 | CPT | 1.0000 | T# | 0.0000 |
|------------|---------|--------|-----------|--------|-------------|--------|-----------|--------|--------|--------|
| REFL PRINT | | | | | | | | | | |
| DFLXA | 10C81. | DELYE | 664-054 | DEL24 | 1735-3 | DELX5 | 10051- | DELYS | 664-53 | |
| DDEL75 | -1735-3 | KUTTA | 1 | PITER | 17096 | YALERA | 65061E-C1 | PITER | .00000 | |
| YAWERO | CCOCOC | DRALAY | 00000 | P3 | 00000 | DRMTA | 00000 | DRMTA | .00000 | |
| DRBWIG | 99994 | QRMIG | 13287E-02 | DELVA | 00000 | DPM10 | 10164 | DRMTA | 32160 | |
| VRC | ICRHS | TSKQ | 0 | TACT | 0 | TACT | 0 | TRAP | 0 | |
| KAGF | 1 | NAVY | 0 | F1 | 00000 | DRLAHP | CCCCA | AV | 0 | |
| REFL PRINT | | NPPS | 20 | NDT | - | ACTA | 00000 | AVLSKR | 256 | |
| REFL | 12451 | RHIG | 1,0164 | RHA | 120774F-02 | S2 | 10000C | CELRLG | .00000 | |
| REFL | CCOCOC | RE? | 00000 | REG | 115097FR-01 | APS1 | 00000 | ST-YTA | .00000 | |
| DRFGV | CCOCOC | 9MEGZ | CCCC0 | NX | 93 | | | | | |

HUNGARIAN GYERÉK FÉRÉC BÖLLETÉK VERTICAL

PROJECTILE!

| | | | | | | | | | |
|-------|-------------|-------|-------------|-------|-------------|--------|-------------|-------|-------------|
| TYPE | 4.0CCOC | RGA | 0.3339E+01 | DELVP | 0.00000 | U | 0.28E-07 | V | 0.00132E+01 |
| W | 0.2364E+01 | TWTA | 0.96730E+01 | PWD | 0.2.6132 | DELZ | 0.636.95 | DX | 0.24350E+01 |
| D7 | 0.89.863 | DY | 0.46200E+02 | DPW1 | 0.773937 | DTMFTA | 0.33861E+01 | DY | 0.922.54 |
| DBS1 | 0.1216E+04 | DR | 0.69246E+03 | DQ | 0.44462E+01 | DP | 0.1.9467 | DX | 0.61291 |
| DU | 0.1818E+06 | DV | 0.33294 | VAV | 0.226387 | MACH | 0.86376 | GAP | 0.869.80 |
| PE1 | 0.7866E+05 | P | 0.739397 | Q | 0.99260E+01 | R | 0.17036E+01 | DELVY | 0.00000 |
| X76 | 0.79C53E+01 | DELXY | 0.00000 | DELVY | 0.00000 | DXLZY | 0.00000 | XT | 0.384.373 |
| Y | 0.1076E+01 | Z | 0.64637.0 | AMS | 0.17401E+01 | XT | 0.13120. | YT | 0.00000 |
| DWTA | 0.3341E+01 | CPWT | 0.886360 | SPHT | 0.18041E+01 | CPSI | 0.1.00000 | SPSI | 0.78860E+03 |
| CP815 | 0.1.0000C | G2E | 0.27.643 | GTE | 0.141138 | GXB | 0.3.1000 | --- | --- |

AUTOPILOT!

| | | | | | | | | | |
|--------|-------------|-------|--------------|-------|-------------|--------|------------|--------|-------------|
| DEPFI0 | 0.00000 | DEPS1 | 0.122916 | PRO | 0.00000 | DEPM10 | 0.00000 | TXED | 0.1C+01E+04 |
| DFL73 | 0.1523.9 | DEPA1 | 0.78288E+17 | DYEP | 0.00000 | DPEP | 0.00000 | DPTA8 | 0.19666E+01 |
| RTV | 0.9298.5 | KT | 0.20.000 | DEPL | 0.00000 | NUL | 0.12651 | DLR | 0.56248E+01 |
| 8*E02 | 0.00000 | PSAO | 0.00000 | PEO | 0.00000 | PEF | 0.00000 | PITER0 | 0.C0000 |
| PLIG | 0.22919 | PS1S | 0.12914E+01 | PXED | 0.15295E+01 | THBS | 0.4661E+01 | PSBS | 0.28878E+01 |
| DFL1 | 0.16492E+02 | RALVY | 0.00000 | ALAMP | 0.00000 | THTAG | 0.2213E+01 | THRBS | 0.11718E+02 |
| VPS | 0.00000 | PEP | 0.00000 | VED | 0.00000 | PED | 0.00000 | YEF | 0.00000 |
| YBRC | 0.00000 | YEG | 0.00000 | DELYS | 0.049.24 | YAHERR | 0.9577E+01 | YAHERO | 0.00000 |
| LAKYR | 0.00000 | LAMPR | 0.00000 | CGA | 0.19668E+01 | GAPS | 0.180.50 | DPS13 | 0.23394E+01 |
| IACC | 0.00000 | PSRBS | 0.115250E+02 | REN | 0.00000 | --- | --- | --- | --- |

LOGIC!

| DATE | TIME | DATE | TIME | DATE | TIME | DATE | TIME | DATE | TIME |
|--------------|-------------|---------|--------------|--------|--------------|--------|-------------|--------|--------------|
| DATE | 6.0 | F | DATE | 7.0 | F | DATE | 8.0 | DATE | 9.0 |
| APR DYNAMIC! | | | | | | | | | |
| CLC | 0.91532E+01 | ALG | 0.42317 | CNE | 0.1522.20 | CPO | 0.152.24 | CY | 0.33917E+03 |
| CA2 | 0.39139 | CLP | 0.22.780 | CH | 0.150156E+01 | CYCG | 0.1545E+03 | CRCB | 0.8C6669E+03 |
| XNB | 0.15CC+01 | CLG | 0.181443 | CHG | 0.111183 | CHE | 0.65233E+01 | DTA30 | 0.00000 |
| DFMSD | 0.10000C | PS1SD | 0.00000 | DP81SD | 0.00000 | ALPHA | 0.41689E+04 | BETA | 0.28192E+04 |
| RAPI | 0.00000 | PSRBS | 0.115250E+02 | REN | 0.00000 | --- | --- | --- | --- |
| STT | 0.00000 | CFT | 0.1.00000 | SPT | 0.00000 | CPT | 0.1.00000 | TT | 0.00000 |
| XLTA | 0.1.6667 | --- | --- | --- | --- | --- | --- | --- | --- |
| DFBLG PRINT! | | | | | | | | | |
| DFLX8 | 0.9171.8 | DELVS | 0.791.87 | DELZ9 | 0.1321.13 | DLXLS | 0.129.6 | DELYS | 0.889.24 |
| DPL2S | 0.1523.9 | KLTIA | 0.1 | PIVER | 0.16540 | YAHERR | 0.9577E+01 | PITER0 | 0.C0000 |
| YAHERO | 0.00000 | ORLARY- | 0.00000 | P3 | 0.00000 | CRPS1 | 0.00000 | DRHTA | 0.C0000 |
| DRBNG | 0.37923E+01 | RPM1G | 0.153309E+01 | CELVR | 0.159277E+02 | DPH10 | 0.73937 | G | 0.32.16C |
| WNC | 0.109473 | TLVH | 0.1 | TACT | 0.16619E+02 | --- | 0.1A9 | --- | --- |
| KAF | 0.0 | NAV | 0. | P1 | 0.00000 | DRLAMP | 0.00000 | NLM | 0 |
| IPRINT | 0.1 | APP9 | 0. | NDT | 0.20 | NDTA | 0.256 | NLLSKR | 0 |
| PPFL | 0.12651 | PH1G | 0.22919 | RHS | 0.P0704F+02 | 62 | 0.1.00000 | CELREL | 0.16927E+02 |
| RCFC | 0.00000 | NET | 0.00000 | REQ | 0.117156E+03 | SPSI | 0.00000 | RTHTA | 0.C0000 |
| MURIV | 0.00000 | 9EGZ | 0.00000 | IX | 0.3 | 33 | --- | --- | --- |

| PROJECTILE1 | | | | | | | | | |
|---------------|-------------|--------|--------------|--------|-------|--------------|--------|-----------|-------------|
| TYPE | 0.0000 | RGA | 0.5617E-01 | DELYP | 0 | 000000 | 0 | 000000 | V |
| W | 0.39976E+01 | THTA | 0.61939E-01 | PHD | 0 | 02285 | 0 | 709.55 | V0TACC |
| D2 | 0.56124E+02 | DY | 0.33309E+03 | OPHT | 0 | -1.0972 | 0 | -3642E+01 | CX |
| DPSI | 0.50776E+04 | DR | 0.158402E+01 | DQ | 0 | 11251E+09 | 0 | 4.1207 | -1.0972 |
| DU | 0.16135E+02 | DV | 0.28139 | YRN | 0 | 909.25 | 0 | 62795 | GAP |
| PSI | 0.1257E+05 | P | 0.1.0572 | 0 | 0 | 38451E+01 | 0 | 18358E+02 | DELVY |
| XPA | 0.91682E+01 | DELXY | 0.00000 | DELTV | 0 | 000000 | 0 | 00000 | X |
| Y | 0.13111E+01 | Z | 0.109.5 | AMB | 0 | 17536E+01 | 0 | 13120. | YT |
| DRHTA | 0.36423E+01 | CPH | 0.93301 | SPH | 0 | 123015 | 0 | 1.0000 | SPSI |
| CASIE | 1.0000 | GIB | 31.0232 | GYB | 0 | 7.0065 | 0 | -1.9997 | xx+1237E+05 |
| AUTOPILOT1 | | | | | | | | | |
| DPBHTG | 0.00000 | DECYS | 0.8212E+08 | PEO | 0 | 400000 | 0 | 000000 | TXED |
| DFL79 | 0.167A+4 | OMEDA | 0.156646E+16 | DEF | 0 | 100000 | 0 | 00000 | DTHTAS |
| RPM | 0.33921C | KT | 20.000 | PEPL | 0 | 12651 | 0 | 1 | DELR |
| OMEG2 | 0.00000 | PBRG | 0.00000 | PED | 0 | 000000 | 0 | 00000 | PITERO |
| PHIG | 0.51484E+01 | PGIS | 0.13942E+01 | PXED | 0 | +68988AF+0.1 | 0 | 12387 | PSBS |
| DFL1 | 0.80223E+03 | RLAMY | 0.00000 | RLAH | 0 | 000000 | 0 | 58786E+01 | THRBS |
| YFP | 0.00000 | PEP | 0.00000 | YCO | 0 | 10000 | 0 | 00000 | YF |
| VRG | 0.00000 | YEG | 0.00000 | DELV | 0 | 39.43 | 0 | 473.6E+01 | YAKERD |
| LAMYR | 0.00000 | LAMPR | 0.34554E+02 | GFA | 0 | +50725E+01 | 0 | 173.33 | OPDIS |
| IAAC | 0 | PSRBSS | 0 | REN | 0 | 0.00000 | 0 | 0 | xx+6117E+01 |
| LOGIC1 | | | | | | | | | |
| DATE | 1 | F | DATE | 2 | F | DATE | 3 | F | DATE |
| GATE | 6 | * | GATE | 7 | * | GATE | 8 | * | GATE |
| AERODYNAMICS1 | | | | | | | | | |
| CLC | 0.90978E+01 | AEB | 0.159760 | CNA | 0 | 151.41 | 0 | 151.02 | CY |
| CA2 | 0.3721C | CLP | 0.221118 | CN | 0 | 528947E+03 | 0 | 2910E+03 | CRCA |
| TRB | 0.2570CE+01 | CTG | 0.773065 | CPG | 0 | 372.19 | 0 | 31152E+01 | TRASD |
| DRHASC | 0.00000 | PGISD | 0.00000 | DPG1SD | 0 | 000000 | 0 | 43965E+04 | BETA |
| RAPI | 0.00000 | CFT | 0.100000 | SPY | 0 | 000000 | 0 | 0.0000 | TP |
| STT | 0.00000 | XTA | 1.6667 | | | | | 0 | 0.0000 |
| DFBLG PRINT1 | | | | | | | | | |
| DFBLX | 0.8302+0 | DELYB | 0.232E+09 | 1 | DELB3 | 0 | 1192.7 | 0 | 8212.8 |
| DFL78 | 0.1678+4 | KUTTA | 0.00000 | P3 | 0 | -20158 | 0 | 47374E+01 | PITERO |
| YALFRG | 0.00000 | DRALRY | 0.121233E+02 | DELYR | 0 | 000000 | 0 | 00000 | DTHTA |
| DRBLG | 0.21192E+01 | RPH1G | 0.121233E+02 | TKCT | 0 | 0 | 0 | 0 | 32.16C |
| VSNU | 0.109R+2 | TKA | 0 | F1 | 0 | 100000 | 0 | 0 | TRXP |
| KAGE | 0 | N:VY | 0 | 0 | 0 | 12A | 0 | 0 | ULM |
| IPRINT | 1 | NPPS | 0 | KDT | 0 | 20663F+02 | 0 | 256 | ULSKR |
| PFPL | 0.12651 | PHIG | 0.51484E+01 | RHO | 0 | 1.0000 | 0 | 0 | CELRAL |
| QFPL | 0.10000 | RET | 0.00000 | REG | 0 | 0.00000 | 0 | 0 | BTHTA |
| QEENY | 0.00000 | ANEGZ | 0.00000 | NX | 0 | 0.00000 | 0 | 0 | 0.00000 |
| | | | | | | 33 | | | |

PROJECTILE!

| TYPE | W | 0.7000C | YBA | 0.185370E+03 | DELIV | 0 | 100000 | U | 850705 | V | 177719E+02 | |
|---------------|------|-------------|------------|--------------|-------------|-------------|--------|-------------|---------|-----|-------------|---------|
| W | 0 | 1.0920 | THTA | 0 | 26414E-01 | PHD | 0 | -14625E+02 | DEL2 | 0 | 749.12 | |
| D7 | - | 0.23.524 | DY | 0 | 803373E-03 | DPHT | 0 | -133872E+02 | DTHTA | 0 | -36133E-01 | |
| OPS | 0 | 0.82613E+04 | DR | 0 | 368512E-03 | DA | 0 | -12269E+01 | DP | 0 | -11417E-01 | |
| DU | 0 | 0.1.095 | DV | 0 | 775358E+01 | TRH | 0 | 854.05 | FACH | 0 | -81421 | |
| P61 | 0 | 0.27012E+05 | P | 0 | 334866E+02 | O | 0 | -36143E+01 | R | 0 | -13547E+03 | |
| XTH | 0 | 0.2597 | DELXY | 0 | 100000 | DELIV | 0 | 100000 | DELVY | 0 | 0.0000 | |
| Y | 0 | 0.12544E+01 | L | 0 | 4749.1 | AMB | 0 | -20200 | XT | 0 | 565.74 | |
| DTHTA | 0 | 0.36143E+01 | CPTM | 0 | 100000 | SPW1 | 0 | -614623E+02 | CPS1 | 0 | 0.0000 | |
| CPSIS | 0 | 1.000C | Q2B | 0 | 32.168 | QYB | 0 | -67015E+01 | QXB | 0 | -27012E+05 | |
| AUTOPILOTI | 0 | 10000C | DECX3 | 0 | 7319.4 | PEQ | 0 | 100000 | DECTO | 0 | -70752E+02 | |
| DFPHTC | 0 | 1454.2 | AHEDA | 0 | 123402E+16 | DYEP | 0 | 100000 | DPER | 0 | 13614E+01 | |
| DFL29 | 0 | -7499.2 | KT | 0 | 20.000 | PEFL | 0 | 12651 | NULL | 0 | -152493E+03 | |
| RTV | - | 0.0000 | PRG | 0 | 0.0000 | PEP | 0 | 0.0000 | PIERO | 0 | 0.0000 | |
| 92E02 | 0 | 0.5400E+02 | PG18 | 0 | 12266E+03 | PXED | 0 | 14449E+04 | THBS | 0 | -23265E+03 | |
| PH10 | 0 | 0.91618E+05 | RLARY | 0 | 0.0000 | RALAB | 0 | 10000 | HTHTA | 0 | -17833E+02 | |
| DELI | 0 | 0.91618E+05 | YEG | 0 | 0.0000 | YEO | 0 | 10000 | PEO | 0 | 0.0000 | |
| YTF | 0 | 10000C | PEP | 0 | 0.0000 | DELYS | 0 | -2.2882 | YAHERR | 0 | 0.0000 | |
| YBRG | 0 | 100000 | YEG | 0 | 0.0000 | GBA | 0 | -10164E+01 | CAPS1 | 0 | 167.38 | |
| LAMYR | 0 | 100000 | LAMPR | 0 | 0.0000 | REN | 0 | 0.0000 | DPS16 | 0 | -16590E+03 | |
| LAC | 0 | 0.0000 | PSRGE | 0 | 0.63350E+05 | | | | | | | |
| L831C1 | DATE | 1 | DATE | 2 | 1 | DATE | 3 | 1 | DATE | 4 | 1 | |
| DATE | 6 | 4 | F | GATE | 7 | 0 | | | | | | |
| AFRODYNAMICSI | CLC | 0 | 19CA97E+01 | ALB | 0 | 7117487E+02 | CNA | 0 | 180.71 | CMG | 0 | -150.77 |
| CA2 | 0 | 35R33 | CLP | 0 | 21.558 | CN | 0 | 146965E+02 | CYCC | 0 | 36448E+04 | |
| DNKASD | 0 | 0.32711E+02 | CLS | 0 | 100000E+02 | CMG | 0 | 13779 | CY | 0 | -9375E+03 | |
| RAP1 | 0 | 100000C | PS130 | 0 | 100000 | DPS180 | 0 | 100000 | ALPHA | 0 | -12214E+03 | |
| STY | 0 | 0.0000C | CPT | 0 | 100000 | SPF | 0 | 100000 | CPT | 0 | 1.0000 | |
| XLT1 | 0 | 1.6667 | | | | | | | TM | 0 | 0.0000 | |
| DFPLD PRIATI | 0 | 10931 | DELVB | 0 | 1.3910 | DELTA | 0 | 945.93 | DELX3 | 0 | 7314.4 | |
| DFLX8 | 0 | 74391.3 | XUTTA | 0 | 1 | PITERA | 0 | 192261 | YAKER | 0 | -30513E+03 | |
| DFL29 | 0 | 1654.2 | CHLAM | 0 | 10000C | PH | 0 | 10000 | CPRS1 | 0 | 0.0000 | |
| VALERB | 0 | ICCOOC | ROH10 | 0 | 70128E+03 | DELVA | 0 | 916187E+02 | CPM10 | 0 | 334872E+02 | |
| DRPH10 | 0 | 0.2914AE+02 | | | | TXCT | 0 | | | 0 | 1742 | |
| VRC | 0 | 10931 | 2 | NAVY | 0 | 0 | PI | 0.0000 | DRCLAMP | 0 | 1.00 | |
| KAGE | 0 | 1 | YPPS | 0 | 20 | NDF | 0 | 102261 | NOTA | 0 | 256 | |
| IPRIATI | 0 | 12641 | PHIG | 0 | 0.58508E+02 | RHS | 0 | 100000 | NUISKR | 0 | 0 | |
| PFPL | 0 | 0.0000C | RET | 0 | 10000 | QEG | 0 | 0.8714E+02 | DELRL | 0 | -91618E+05 | |
| RF2 | 0 | 0.0000 | ME02 | 0 | 0.0000 | XX | 0 | 0.0000 | RTHTA | 0 | 0.0000 | |

PROJECTILE!

| | | | | | | | | | | | | | | |
|-------|---|------------|-------|---|------------|-------|---|-------------|-------|--------|------------|-------------|---|------------|
| TYPE | 9 | 6.6016 | RSA | 9 | 932811E-04 | DELVP | 9 | 000000 | U | 085-93 | V | 1127022E-C2 | | |
| X | 0 | 59483E-C1 | THA | 0 | 66464E-02 | RHD | 0 | 019077E-01 | DELZ | 0 | 797.25 | T97ACC | 0 | 129674E-C1 |
| D2 | 0 | 4.0568 | DY | 0 | 58412E-03 | DPHI | - | 140578E-03 | DTHTA | 2 | 35802E-01 | LX | 0 | 889.99 |
| DP81 | 0 | 57AE2E-04 | DR | 0 | 4.2480E-03 | DQ | 0 | 036067E-02 | DP | 0 | 619012E-02 | DN | 0 | 4.1067 |
| DU | 0 | 12A26 | DV | 0 | 505658E-01 | DRVN | - | 845.95 | MACH | - | 80685 | CAP | 0 | 809.74 |
| PSI | 0 | 20AC2E-05 | D | 0 | 0571E-03 | Q | 0 | 035802E-01 | R | 0 | 50592E-04 | DELVY | 0 | 00000 |
| X28 | 0 | 113318 | DELXY | 0 | 100000 | DELXY | 0 | 00000 | DELZY | 0 | 00000 | X | 0 | 0-315 |
| Y | 0 | 12136E-C1 | Z | 0 | 4.957.3 | AM8 | 0 | 10950 | XY | 0 | 13120. | YT | 0 | 00000 |
| DHTA | 0 | 35EA02E-01 | CPW1 | 0 | 1.0000 | DPH1 | - | 019077E-01 | CP81 | 0 | 1.0000 | SPSI | 0 | 120802E-05 |
| CP819 | 0 | 1.0000 | Q28 | 0 | 32.6159 | Q18 | 0 | 0.613.68-02 | QX8 | 0 | 0.14943 | | | |

ALTOPILOTI!

| | | | | | | | | | | | | | | |
|--------|---|-----------|-------|---|-------------|-------|---|------------|-------|---|-----------|--------|---|------------|
| OPRHTO | 0 | 100000C | DELD3 | 0 | 078273 | ED0 | 0 | 000000 | DELM3 | 0 | 00000 | TXD | 0 | 579.75-02 |
| OPFL75 | 0 | 15.96-9 | OPEDA | 0 | 02164E-16 | DYEF | 0 | 00000 | OPEF | 0 | 00000 | 2HTAS | 0 | 35802E-C1 |
| RTW | 0 | 6947.8 | KT | 0 | 20.000 | REPL | 0 | 12651 | NULL | 0 | 1 | DELA | 0 | 13764E-C3 |
| OPED2 | 0 | 00000C | PSRQ | 0 | 00000 | PED | 0 | 00000 | PIER0 | 0 | 00000 | | | |
| PH10 | 0 | 13A53E-04 | RS15 | 0 | 55952E-05 | PXED | 0 | 157785P-04 | TH05 | 0 | 23901 | PSB3 | 0 | 73330E-06 |
| OPR1 | 0 | 2.023E-05 | RLAY | 0 | 00000 | RLAMP | 0 | 00000 | THAT5 | 0 | 11770 | THBS | 0 | 18045E-04 |
| YTP | 0 | 100000 | VE | 0 | 00000 | VE0 | 0 | 00000 | VED | 0 | 00000 | VE | 0 | 00000 |
| YB80 | 0 | 0.0000 | VEQ | 0 | 00000 | DELYS | 0 | 019081 | YAHM | 0 | 027352-04 | YAHERO | 0 | 00000 |
| LANVR | 0 | 0.0000 | LAMR | 0 | 00000 | OSA | 0 | 035802P-01 | GAPS | 0 | 16.32 | OPSI | 0 | 198281E-C4 |
| IACS | 0 | 0.0000 | PSRBS | 0 | 0.596182-08 | REN | 0 | 00000 | | | | | | |

Logic!

| | | | | | | | | | | | | | | | |
|---------------|-----|------------|---------|-----|--------------|---------|------|-------------|---------|-----|-------------|--------|------|-------------|---------|
| DATE | 1 | 0 | GATE | 2 | 0 | F | DATE | 3 | 0 | T | DATE | 4 | GATE | 5 | |
| DATE | 6 | 0 | GATE | 7 | 0 | F | DATE | 8 | 0 | T | DATE | 9 | GATE | 10 | |
| APRACY\ARMCS! | | | | | | | | | | | | | | | |
| CLD | 0 | 18034CE-C1 | ALG | 0 | 0.20680E-03 | CNG | 0 | -110-3A | CNG | 0 | 0.150.38 | CY | 0 | 117193E-C4 | |
| CAZ | 0 | 3.636 | CLP | 0 | 0.21.27* | CH | 0 | 0.1051R-03 | CYCG | 0 | 0.27869E-04 | CYCG | 0 | 0.13110E-C2 | |
| XW | 0 | 23377E-032 | CC0 | 0 | 0.10374E-02 | CP3 | 0 | 0.17899 | CNE | 0 | 0.16368E-03 | TM80 | 0 | 0.00000 | |
| DTMAS0 | 0 | 0.00000 | PS1SD | 0 | 0.00000 | OP91SD | 0 | 0.00000 | ALPHA | 0 | 0.67356E-04 | BETA | 0 | 0.14337E-C5 | |
| RASI | 877 | 0 | 0.00000 | CR1 | - | 0.10000 | SP1 | - | 0.00000 | CP1 | 0 | 1.0000 | TH4 | 0 | 0.00000 |
| XLT1A | 0 | 1.6667 | | | | | | | | | | | | | |
| DEBLG PRINT! | | | | | | | | | | | | | | | |
| DEFLY | 0 | 692219 | FLBLB | 0 | 0.19286 | DEL19 | 0 | 789.93 | CLXLS | 0 | 6752.9 | CELY9 | 0 | 0.19081 | |
| DFL23 | 0 | 1596.9 | KCT1A | 0 | 0.00000 | 1 | 0 | 0.23124 | VALERR | 0 | 0.27345E-04 | PIER0 | 0 | 0.00000 | |
| YALE90 | 0 | 0.00000 | DR1L1V | 0 | 0.25558E-04 | P3 | 0 | 0.00000 | CAPS1 | 0 | 0.00000 | DRHTA | 0 | 0.00000 | |
| DRPH10 | 0 | 26613E-03 | RPH10 | 0 | 0.25558E-04 | DELV4 | 0 | 0.20023P-04 | CRH10 | 0 | 0.40578E-03 | G | 0 | 32.159 | |
| YSTC | 0 | 1C9HTC | 19HT | 0 | 0 | 19CT | 0 | 0 | TOUD2 | 0 | 0 | FRAD | 0 | 0 | |
| KAGE | 0 | 2 | NAVY | 0 | 0 | F1 | 0 | 0.00000 | DRAMP | 0 | 0.00000 | NUM | 0 | 0 | |
| IPRNT | 0 | 1 | NPPS | 0 | 20 | NDT | 0 | 0.00000 | YOTA | 0 | 0.00000 | 256 | 0 | 0 | |
| OPFL | 0 | 12651 | PW1G | 0 | 0.138653E-04 | QH9 | 0 | 0.20633P-02 | 82 | 0 | 1.0000 | CELRL | 0 | 0.24023E-C5 | |
| REFS | 0 | 0.00000 | SET | 0 | 0.00000 | REG | 0 | 0.00000 | RTHTA | 0 | 0.00000 | | 0 | 0.00000 | |
| ANFGY | 0 | 1COCDC | 1N-EGZ | 0 | 0.00000 | NX | 0 | 0.14943 | | | | | | | |

| PROJECTILE | | | | | | | | | | |
|----------------|------------|---------|---------------|----------|----------|--------------|----------|-------------|----------|----------|
| TYPE | NAME | TIME | DELCV | DELCV | DELCV | DELCV | DELCV | DELCV | DELCV | DELCV |
| X | 170985E+01 | THTA | 0 193282E+02 | PHD | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DZ | 817293 | JY | 0 061439E+03 | DPW1 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DPE1 | 134648E+04 | DR | 0 062889E+03 | CG | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DU | 12002C | DV | 0 0729638E+03 | VRN | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| PS1 | 248070E+03 | P | 0 0633375E+04 | C | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| AZ | 15732 | DELTV | 0 000000 | DELTV | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| Y | 18705E+01 | 2 | 0 0756E+02 | AMH | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DYTA | 36057E+01 | CPM1 | 0 100000 | BPM1 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| CPG1S | 1.0000C | G2B | 0 32188 | 0YB | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| AUTOPILOT | | | | | | | | | | |
| DCDHTC | 00000C | DELCX3 | 0 68333E+12 | PEU | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DFLTS | 1552+9 | SREGA | 0 312779E+14 | DYFF | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| RYM | 661A+0 | KT | 0 200000 | PEFD | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| SNF02 | 0.0000 | PSRU | 0 000000 | PED | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| PHD | 19597CE+04 | PS18 | 0 212132E+05 | PXED | 0 000000 | 0 24739E+05 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| DR1 | 181511E+05 | RLAWY | 0 000000 | RLAMP | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| VEP | 00000C | VEP | 0 000000 | VED | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| YRD | 0.0000 | YEQ | 0 000000 | DELYS | 0 000000 | 0 74270E+01 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| LAVR | 0.0000C | LAPP | 0 000000 | CSA | 0 000000 | 0 326047E+01 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| TAAC | 1 | PSRBS | 0 21737E+06 | REN | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| LOGIC | | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 | DATE |
| APPROXYARCS! | | | | | | | | | | |
| SUD | 90082E+01 | ALB | 0 311851E+04 | CNR | 0 000000 | 0 150+12 | 0 000000 | 0 150+16 | 0 000000 | 0 000000 |
| CA2 | 34C95 | CLP | 0 021053 | CH | 0 000000 | 0 9694E+01 | 0 000000 | 0 210E+04 | 0 000000 | 0 000000 |
| TRN | 34778E+02 | CL8 | 0 351758E+03 | CH8 | 0 000000 | 0 1289E+01 | 0 000000 | 0 222E+03 | 0 000000 | 0 000000 |
| DTMASD | 0.0600C | PS150 | 0 000000 | DP8150 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| RAPI | STT | 0 00000 | CTT | 0 100000 | SP7 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| XLTA | 1.6667 | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| DRUG PRINT1 | | | | | | | | | | |
| DRDLX | 6551+7 | DELB | 0 0379310E+01 | DEL20 | 0 000000 | 0 691+55 | 0 000000 | 0 6433E+02 | 0 000000 | 0 000000 |
| DRL79 | 1552+9 | KLTIA | 0 000000 | PITERA | 0 000000 | 0 023686 | 0 000000 | 0 11223E+04 | 0 000000 | 0 000000 |
| YAWER | 1000C | DR1ARY | 0 000000 | F3 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| RP10 | 59268E+04 | RPM10 | 0 293625E+05 | DELVA | 0 000000 | 0 11215E+04 | 0 000000 | 0 6327E+04 | 0 000000 | 0 000000 |
| YAGE | 1094C | 1948 | 0 000000 | FACT | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| IPRIAT | 2 | NAVY | 0 000000 | F1 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| PPFL | 12651 | NPH8 | 0 000000 | NDP | 0 000000 | 0 100000 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| PP | 0.0000 | PH10 | 0 000000 | RHO | 0 000000 | 0 20631E+04 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| GREY | 0.0000C | QET | 0 000000 | REG | 0 000000 | 0 110939E+04 | 0 000000 | 0 000000 | 0 000000 | 0 000000 |
| ROLL WFLC | | | | | | | | | | |
| APCI 1971PA | | | | | | | | | | |
| LATURAL ENABLE | | | | | | | | | | |
| PRECISE ENABLE | | | | | | | | | | |

| PROJECTILE1 | | | | | | | | | |
|--------------|-----------------|-------|----------------|-------|-----------------|----------|----------------|-------------|---------------|
| TYPE | 80000C | 95A | 0 75722E-006 | DELVA | 0 10700C | 0 669761 | Y | 00075C2 | |
| X | 0 64792E+01 | TH7A | 0 0 6519E+01 | PHD | 0 0 11165R+01 | DELZ | 0 731.31 | TOYACC | |
| DZ | 0 40.513 | DY | 0 0 65361E+03 | DPMT | 0 0 1084205E+07 | DTWTA | 0 0 370.9E+01 | 0 1390E+01 | |
| DPSI | 0 14836E+05 | CR | 0 0 16588E+03 | DO | 0 0 16588E+02 | DP | 0 11867E+05 | 868.0E+07 | |
| DL | 0 0 10.408 | DV | 0 0 19663E+02 | VRN | 0 0 19663E+02 | MACH | 0 79208 | 0 13255 | |
| P61 | 0 0 9663CE+06 | P | 0 0 4848E+07 | Q | 0 0 37049E+01 | A | 0 78723E+06 | 781.1E+12 | |
| ZZ5 | 0 0 14086 | DELVA | 0 0 0000 | DELVA | 0 0 0000 | DELVA | 0 0 0000 | 0 0000C | |
| Y | 0 11200E+01 | Z | 0 0 4731.9 | AMB | 0 0 1155A | XP | 0 13120 | Y | |
| DTWTA | 0 0 37049E+01 | CPMT | 0 0 1.0000 | SPH1 | 0 0 11135R+01 | CP81 | 0 0 0000 | 0 0000 | |
| CPS19 | 0 1.0000C | Q28 | 0 0 32.128 | SYB | 0 0 3588519E+01 | SPS1 | 0 0 0000 | 0 96630E+06 | |
| AUTOPILOT1 | | | | | | | | | |
| DTWTA | 0 0 0000 | DEDXS | 0 0 5787.8 | PEU | 0 0 012757.9 | DEPT15 | 0 0 07 | TEXO | 0 79181E+03 |
| OF125 | 0 465.91 | OMEGA | 0 0 39095E+16 | DYEF | 0 0 14123E+02 | DAEF | 0 0 1037 | DTHTAS | 0 137.8 |
| RTW | 0 574.7 | KT | 0 0 10.000 | PEFL | 0 0 12631 | NUL | 0 2 | DTL | 0 29650E+07 |
| PMED2 | 0 0 61322E+04 | PSRG | 0 0 0000 | PEFL | 0 0 17483 | REF | 0 0 0000 | PITERO | 0 26180E+01 |
| PHIG | 0 0 11942E+07 | PS1S | 0 0 14912E+08 | PXF | 0 0 16900E+09 | THBS | 0 0 900.7E+07 | P685 | 0 15765E+11 |
| DFL1 | 0 0 51748E+09 | RLAHY | 0 0 142342E+07 | PAMP | 0 0 0000 | THTAS | 0 0 79203E+04 | THRB8 | 0 79150E+04 |
| YFF | 0 0 0000 | PEP | 0 0 0000 | VEO | 0 0 13277E+06 | PED | 0 0 17433 | YEP | 0 0 0000 |
| YBRG | 0 0 0000 | VEQ | 0 0 14900E+04 | DELVS | 0 0 3826207E+01 | YAKER | 0 0 61322E+05 | YAKER | 0 61322E+05 |
| LAMVR | 0 0 61322E+04 | LAMP | 0 0 17483 | GSA | 0 0 37049E+01 | CAPS | 0 0 158.51 | OPSIS | 0 62079E+04 |
| JACC | 0 0 0 14550E+08 | PSRBS | 0 0 14550E+08 | REN | 0 0 0000 | IC_GUC | | | |
| Logic1 | | | | | | | | | |
| DATE | 1 | 1 | 1 | DATE | 2 | DATE | 3 | DATE | 4 |
| GATE | 6 | 6 | 7 | GATE | 7 | GATE | 8 | GATE | 9 |
| APRACYAPICS1 | | | | | | | | | |
| CLC | 0 0 89191E+01 | ALB | 0 0 23020E+07 | CNR | 0 0 149.9 | CRC | 0 0 109.9 | CY | 0 20461E+04 |
| CAZ | 0 0 33715 | CLP | 0 0 869 | CN | 0 0 68867 | CYCG | 0 0 33123E+04 | CPG | 0 0 14346E+02 |
| TRH | 0 0 26667E+02 | CLS | 0 0 21571E+06 | CNB | 0 0 13077 | CNC | 0 0 20722E+05 | THB3D | 0 0 0000 |
| OTHASD | 0 0 0000C | PS1SC | 0 0 0000 | NPSSD | 0 0 0000 | ALPHA | 0 0 74030E+04 | BETA | 0 17092E+05 |
| RADI | | | | | | | | | |
| STT | 0 0 0000C | CTT | 0 0 1.0000 | SPT | 0 0 0000 | CPT | 0 0 1.0000 | TP | 0 0 0000 |
| XLTA | 0 1.6457 | | | | | | | | |
| DEBUG 0.0.71 | | | | | | | | | |
| DP12X | 0 9727.8 | DELVE | 0 0 35231E+01 | RELZ | 0 0 5.5 | CELYA | 0 0 9727.8 | DELYS | 0 35240E+01 |
| YAFER | 0 465.91 | KUTYA | 0 0 184285E+06 | PITER | 0 0 11162F+01 | YAKER | 0 0 61322E+05 | PITERO | 0 26180E+01 |
| DRPH10 | 0 0 22912E+07 | RPH10 | 0 0 15224E+08 | #3 | 0 0 10000 | DRPS1 | 0 0 184285E+07 | DRHTA | 0 0 0000 |
| YSGU | 0 2 | YAV | 0 0 0 | FAT | 0 0 11748E+09 | DTIDE | 0 0 0 | FAT | 0 32.159 |
| IPRIAT | 0 1 | NPSS | 0 0 20 | P1 | 0 0 0000 | DRCLAMP | 0 0 0000 | NPSS | 0 |
| PEFL | 0 12651 | RHIG | 0 0 11942E+07 | NDT | 0 0 0206492 | DTA | 0 0 296 | ULSKR | 0 51740E+02 |
| REFL | 0 0 0000C | QET1 | 0 0 0000 | REQ | 0 0 1697877E+09 | SD | 0 0 1.0000 | CELRL | 0 0 0000 |
| CMEGV | 0 0 17453 | 9MEGZ | 0 0 61382E+04 | NX | 0 0 0000 | RP91 | 0 0 0000 | GTHTA | 0 33 |

PROJECTFILE:

| | | | | | | | | | | | | | |
|----------------------|--------------|-------|---------------|--------|---------------|--------------|--------------|---------|---------------|--------|-------------|-------------|-------------|
| TYPE | 9.00000 | RSA | 0.00000E+00 | DELVP | 0.00000E+01 | DEL2 | 0.00000E+01 | DEL3 | 0.00000E+01 | DELACC | 0.00000E+01 | V | 0.00000E+03 |
| W | 76.962 | TNTA | 0.12885E+01 | PHO | 0.011156E+01 | DEL1 | 0.02166 | DEL4 | 0.02166 | DX | 0.00000E+01 | 14.157 | |
| DZ | - | DY | 0.97899E+03 | DPH1 | 0.0107187E+05 | DTHTA | 0.02476 | DTHTB | 0.02476 | DX | 0.00000E+01 | 851.09 | |
| OPRI | 0.27822E+04 | DR | 0.050492E+03 | DO | 0.00239 | DP | 0.039335E+04 | DPH2 | 0.039335E+04 | DX | 0.00000E+01 | 228.98 | |
| DL | 0.30.858 | DV | 0.02883E+06 | VW | 0.85675 | MACH | 0.77912 | DEL5 | 0.77912 | CAP | 0.00000E+01 | 757.72 | |
| PSI | 0.10337E+04 | P | 0.014874E+05 | C | 0.02475 | A | 0.022780E+06 | DEL6 | 0.022780E+06 | CAP | 0.00000E+01 | 14673E+05 | |
| J2B | 0.83.557 | DEDXV | 0.00000 | DCCTV | 0.00000 | DEL2V | 0.00000 | X | 0.00000 | DELV | 0.00000E+01 | 8278.0 | |
| Y | 0.11183E+01 | Z | 0.46624 | AMS | 0.00000 | X7 | 0.00000 | Y | 0.00000 | YT | 0.00000E+01 | 0.0000 | |
| DTHTA | 0.28.554 | CPI | 0.00000 | SPW1 | 0.00000 | CP81 | 0.00000 | S | 0.00000 | SPS1 | 0.00000E+01 | -10337E+05 | |
| CP818 | 1.00000 | OZB | 0.32.156 | OYB | 0.00000 | 0XB | 0.00000 | 0 | 0.00000 | 0XB | 0.00000E+01 | 4754.8 | |
| <hr/> | | | | | | | | | | | | | |
| AUTOPILOT1 | | | | | | | | | | | | | |
| OPBATO | 0.00000 | DECX8 | 0.00000E+00 | PEU | 0.00000E+01 | DEC118 | 0.00000 | TAXD | 0.00000E+01 | TAXD | 0.00000E+01 | 0.00000E+02 | |
| DEFL25 | 0.28767 | BMEGA | 0.06912E+01 | DYF | 0.00000 | OPEF | 0.00000 | DTHTAS | 0.00000 | DTHTAS | 0.00000 | 0.25342 | |
| RTW | 0.48856 | KT | 0.10100 | PEFL | 0.00000 | NULL | 0.00000 | 2 | 0.00000 | DELRA | 0.00000 | 12297E+05 | |
| SHRG2 | 0.46221E+07 | PBRG | 0.00000 | PED | 0.00000 | PEF | 0.00000E+01 | PITERO | 0.00000 | PITERO | 0.00000 | 58872E+05 | |
| PM10 | 0.19894E+05 | PS13 | 0.07934E+06 | PXED | 0.00000 | THBS | 0.00000 | 0 | 0.00000 | THBS | 0.00000 | 32762E+05 | |
| DEPL1 | 0.14888E+05 | RLARY | 0.01793E+06 | ALAMP | 0.00000 | THTB | 0.00000 | 0 | 0.00000 | THTB | 0.00000 | 67277E+02 | |
| Y2 | 0.035C71E08 | REP | 0.029032E+01 | YEO | 0.00000 | 0038271E07 | 0.00000 | 0 | 0.00000 | YEP | 0.00000 | 65054E+02 | |
| YBAG | 0.00000 | YEG | 0.011922E+05 | DELYS | 0.00000 | YAWERR | 0.00000 | 0 | 0.00000 | YAMERO | 0.00000 | 46271E+05 | |
| LAWTR | 0.446971E+07 | LAMP | 0.081802E+02 | GSA | 0.00000 | CAPS | 0.00000 | 0 | 0.00000 | DPG19 | 0.00000 | 83529E+05 | |
| IACQ | 0.00000 | PSRBS | 0.081473E+06 | REN | 0.00000 | 00000 | 0.00000 | 0 | 0.00000 | 0 | 0.00000 | 0 | |
| <hr/> | | | | | | | | | | | | | |
| LOGIC1 | | | | | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 | DATE | |
| DATE | 6 | 7 | 7 | 8 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | |
| <hr/> | | | | | | | | | | | | | |
| APR8DYNAA1CS1 | | | | | | | | | | | | | |
| CLC | 0.89687E+01 | ALY | 0.073102E+06 | CNR | 0.01937 | CMA | 0.00000 | CY | 0.00000 | CY | 0.00000 | 18057E+04 | |
| CAZ | 0.35068 | CLP | 0.020455 | Ch | 0.041329 | CYCG | 0.00000 | CMCD | 0.00000 | CMCD | 0.00000 | 3C838 | |
| DKWAD0 | 0.28925E+02 | CLB | 0.0001938E+08 | CHB | 0.000722 | CNC | 0.00000 | TMAD | 0.00000 | TMAD | 0.00000 | 0.0000 | |
| RAPI | 0.00000 | PS15D | 0.00000 | NP51D | 0.00000 | ALPHA | 0.00000 | 0 | 0.00000 | BETA | 0.00000 | 0.00000 | |
| STT | 0.00000 | CTT | 0.00000 | SP1 | 0.00000 | CPT | 0.00000 | 1 | 0.00000 | RY | 0.00000 | 0.00000 | |
| XLT | 0.1.6667 | CTT | 0.00000 | SP1 | 0.00000 | CTCT | 0.00000 | 0 | 0.00000 | DLAMP | 0.00000 | 0.00000 | |
| <hr/> | | | | | | | | | | | | | |
| DFBLG PRINT1 | | | | | | | | | | | | | |
| DFLXB | 0.450.5 | - | - | DELVB | 0.00000 | DEL2A | 0.00000 | DEL3S | 0.00000 | DEL5 | 0.00000 | 22609E+04 | |
| DFL79 | 0.2.8767 | KUTA | 0.0107187E+01 | PITERA | 0.00000 | YAWERR | 0.00000 | PITERB | 0.00000 | PITERB | 0.00000 | 52872E+03 | |
| YAKER | 0.1.6271E+08 | - | - | CRARY | 0.0107187E+04 | P3 | 0.00000 | OPB1 | 0.00000 | DRTHTA | 0.00000 | 0.0000 | |
| DFPH10 | 0.11178E+05 | RPB10 | 0.063727E+07 | DELVR | 0.00000 | 0.021468E+07 | OPH10 | 0.00000 | 0.0107187E+05 | G | 0.00000 | 32.160 | |
| VSC | 0.00000 | CTCT | 0.00000 | CTCT | 0.00000 | 0 | 0.00000 | 0 | 0.00000 | 0 | 0.00000 | 0 | |
| KDF | 0.00000 | CTCT | 0.00000 | F1 | 0.00000 | 0 | 0.00000 | 0 | 0.00000 | NULSR | 0.00000 | 0 | |
| IRBT17 | 0.00000 | NPB1 | 0.00000 | NPB1 | 0.00000 | 12A | 0.00000 | 256 | 0.00000 | PIELR | 0.00000 | 21462E+02 | |
| PFPL | 0.9701CE+01 | PH10 | 0.019694E+05 | PH10 | 0.00000 | 82 | 0.00000 | 0 | 0.00000 | RTHTA | 0.00000 | 0.0000 | |
| RFN | 0.00000 | RET | 0.00000 | RET | 0.00000 | 0 | 0.00000 | 0 | 0.00000 | RTHTA | 0.00000 | 0 | |
| SHDV | 0.041972E+02 | 9M02 | 0.0141971E+07 | 9M02 | 0.00000 | NX | 0.00000 | 31 | 0.00000 | 0 | 0.00000 | 0 | |

| PROJECTILE: | | | | | | | | | |
|---------------|-------------|--------|--------------|--------|--------------|---------|--------------|--------|--------------|
| TTHF | 10.000 | RGA | 0.00370E+06 | DELV | 0.010761 | U | 0.037786 | V | 0.017778E+02 |
| W | 107.11 | TW1A | 0.12807E+01 | PHD | 0.01116E+03 | CELZ | 0.569.16 | TOTACC | 25.390 |
| DZ | 96.37 | DY | 0.34603E+02 | CPHJ | 0.05469E+07 | DTHTA | 0.12713E+01 | DX | 639.17 |
| DPSI | 10504.05 | DR | 0.28872E+05 | DO | 0.14361E+01 | OP | 0.17626E+06 | DW | 0.3.9061 |
| DU | 10.418 | DV | 0.27509E+02 | VRW | 0.846.68 | MACH | 0.676875 | CAP | 74C.26 |
| PSI | 15805E+04 | P | 0.23603E+06 | C | 0.012739E+01 | R | 0.37194E+06 | DELVY | 2.6386E+05 |
| X75 | 113.97 | DELVX | 0.000000 | DELV | 0.000000 | DELV | 0.000000 | X | 5.2374 |
| Y | 14137E+01 | Z | 0.4569.2 | AMB | 0.042846 | XT | 0.13120. | YT | 0.00000 |
| DHTA | 12339E+01 | CPHJ | 0.10000 | SPHT | 0.01116E+01 | CPSI | 0.00000 | SPI | 0.15805E+C4 |
| CPS18 | 1.0000C | GBR | 0.32.157 | QTB | 0.035970E+02 | QXB | 0.041185 | | |
| AUTOPILOT: | | | | | | | | | |
| DRHTC | 0.0000C | DELSX | 0.037710 | PEG | 0.010761 | DELMIS | 0.000000 | TXED | 0.077072E+02 |
| DFL7S | 2.02268 | AMEGA | 0.54728E+16 | DYEF | 0.07477E+04 | DPEF | 0.040606E+03 | DTHTA | 0.72225E+02 |
| RTM | 4037.0C | KT | 0.10.C00 | PEFL | 0.010725 | NULL | 0.19267E+01 | DELV | 0.61751E+02 |
| MP02 | 85007E+06 | PSRQ | 0.00000 | PED | 0.05164E+02 | PEFL | 0.30697 | PITERO | 0.55161E+C3 |
| PLIG | 31246E+C7 | P815 | 0.18776E+05 | PXED | 0.01279E+07 | TMBS | 0.00000 | P803 | 0.38593E+05 |
| DFL1 | 26385E+05 | RLAY | 0.65545E+07 | ALAMP | 0.00000 | THTAG | 0.18371 | TMR88 | 0.42997E+03 |
| YFF | 2600075 | PEP | 0.19267E+01 | YED | 0.00000F+06 | PED | 0.05103E+02 | YET | 0.26000C+03 |
| YARG | 0.0000C | YEQ | 0.26525E+05 | DELYS | 0.04479E+03 | MAKERR | 0.85452E+07 | YAHERO | 0.85452E+07 |
| LAMY | 85007E+06 | LAMDR | 0.5316E+05 | GSA | 0.012739E+01 | GAPS | 0.150.22 | CPS18 | 0.12538E+05 |
| IACC | 0.85007E+02 | PSR88 | 0.52040E+07 | REN | 0.00000 | | | | |
| LOGIC1 | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| AFROCRYPTICS: | | | | | | | | | |
| CLD | 89531E+01 | ALB | 0.11100E+06 | CNR | 0.0149.61 | CNC | 0.0171.14 | CY | 0.014036E+04 |
| CA2 | 0.33977 | CLP | 0.020.484 | CH | 0.075869 | CYCG | 0.23337E+06 | CMCG | 0.56114E+02 |
| X55 | 17813E+04 | CLG | 0.62213E+07 | CM | 0.00000F+01 | CNE | 0.12784E+03 | TMXSD | 0.00000 |
| DTWASD | 0.0000C | PS160 | 0.00000 | DPS160 | 0.00000 | ALPHA | 0.12715 | BETA | 0.25778E+05 |
| RARI | 0.0000C | CFT | 0.10000 | SPY | 0.00000 | CPT | 0.10000 | TY | 0.00000 |
| STT | 0.0000C | CTT | 0.10000 | SPY | 0.00000 | | | | |
| XLT1 | 0.16667 | | | | | | | | |
| DFLDG PRINT1 | | | | | | | | | |
| DFLYE | 3989.C | DELVB | 0.179248E+02 | RELZA | 0.620.30 | DFLX8 | 0.037.0 | DELYS | 0.34497E+C3 |
| DFL7S | 2.02268 | KLTAA | 0.05161F+01 | PITERP | 0.05161F+03 | YAYERR | 0.85452E+07 | PITERO | 0.55161E+03 |
| YAWERD | 0.85452E+07 | QRLAHY | 0.34699E+06 | P3 | 0.00000 | CRPS1 | 0.00000 | DTHTA | 0.00000 |
| DRP16 | 36317E+07 | QPH1G | 0.54051E+08 | DELVR | 0.107782E+09 | CPH10 | 0.34699E+07 | G | 32.160 |
| VSNT | 109X+8 | TSK7 | 0 | TACT | 0 | TDUDDE | 0 | TRAP | 0 |
| KAGF | 2 | NAVY | 0 | F1 | 0 | 0.00000 | ORLAMP | NUN | 0 |
| IPF1AT | 1 | NPSS | 0 | O | 0 | 0.00000 | NDTA | 256 | 0 |
| PFPL | 0.0725 | PH1G | 0.312446E+07 | RMH | 0.20750F+02 | 82 | 0.10000 | CELRBL | 0.1C778E+C9 |
| QFR | 0.0000C | QET | 0.00000 | REG | 0.013937F+09 | RPS1 | 0.00000 | RTHTA | 0.00000 |
| QFCFV | 0.5E144E+02 | 8ME1Z | 0.85007E+06 | NX | 0.00000 | 31 | | | |

| PROJECTILE | | TYPE | 110000 | RSA | 0.30561E+03 | DECIVW | 0.01065Y | 0.027108 | V | TOTALC | 0.468484 | V | 0.000000 | | | |
|--------------|--|------|--------------|--------|---------------|----------|---------------|--------------|----------|-------------|--------------|-----------|-----------|-----------|----------|--|
| W | | X | 105.4Y | THTA | 0.24194E+02 | PHD | 0.011145E+03 | DELZ | 0 | 468.484 | 0 | 24.819 | | | | |
| DZ | | Z | 103.47 | DR | 0.52646E+02 | DPMI | 0.0165568E+03 | DTHTA | 0 | 411211E+01 | 0 | 827.73 | | | | |
| DPSI | | Y | 44047E+03 | DR | 0.29508E+02 | DG | 0.01920E+03 | DP | 0 | 153395E+07 | 0 | -1.9357 | | | | |
| DU | | Z | 93.966G | DR | 0.45075E+02 | VR4 | 0.014417 | MACH | 0 | 75892 | 0 | 72.14 | | | | |
| PSI | | X | 13328E+04 | P | 0.14665E+06 | G | 0.012121E+01 | A | 0 | 31530E+08 | DELVI | 0 | 74272E+03 | | | |
| XZB | | Y | 0.000000 | DECIVV | 0.000000 | DECIV | 0 | 0.000000 | X | 0.000000 | X | 0.000000 | | | | |
| Y | | Z | 0.1857CE+01 | A | 0.4765E+08 | AMR | 0.016059E+01 | XT | 0 | 131200 | Y | 0.000000 | | | | |
| DTHTA | | W | 0.11211E+01 | CPM1 | 0.160000 | SPHT | 0 | 0.011165E+03 | CP81 | 0 | 1.000000 | SPAT | 0 | 0.000000 | | |
| CP819 | | X | 0.00000 | GZB | 0.32.160 | GYB | 0 | 0.035917E+08 | AXB | 0 | 0.077810E+03 | | 0 | | | |
| AUTORAIL! | | | | | | | | | | | | | | | | |
| DOPPERIO | | Y | 0.000000 | DECIXS | 0.3198E+03 | PEO | 0.01065Y | DECNT | 0 | 0.000000 | TXD | 0 | 0.000000 | | | |
| DFL28 | | Z | 1.8381 | 0MEGA | 0.62548E+016 | DYEF | 0.058899E+0CF | OPEF | 0 | 0.03877E+03 | DTHTA | 0 | 0.000000 | | | |
| RTW | | W | 319K.8 | KTR | 0.100000 | PEFL | 0 | 0.010641 | NULL | 0 | 10761E+07 | DL5 | 0 | 0.000000 | | |
| 0ME02 | | X | 23255E+05 | PSR0 | 0.000000 | PELO | 0 | 0.010641 | PEF | 0 | 0.020102E+01 | F17E13 | 0 | 0.000000 | | |
| PH10 | | Y | 0.29495E+07 | PS19 | 0.21194E+05 | PKED | 0 | 0.010765E+05 | THES | 0 | 0.000000 | PEAS | 0 | 0.000000 | | |
| DFL1 | | Z | 74274E+05 | RLANY | 0.29119E+07 | RLAMP | 0 | 0.000000 | FINAS | 0 | 0.0144897 | 1-RC01 | 0 | 0.000000 | | |
| VFP | | W | 0.748112E+05 | REP | 0.0720102E+01 | YED | 0 | 0.023258E+05 | PEO | 0 | 0.000000 | YEP | 0 | 0.000000 | | |
| YB0 | | X | 0.00000 | YED | 0.174281E+05 | DELYS | 0 | 0.017438E+03 | YAHEN | 0 | 0.032588E+06 | YAHENO | 0 | 0.000000 | | |
| IANYR | | Y | 0.83258E+05 | LAMPR | 0.052939E+02 | GSA | 0 | 0.011211E+01 | YAPB | 0 | 0.000000 | DPO1P | 0 | 0.000000 | | |
| IACC | | Z | 0.000000 | PSRSB | 0.33222E+07 | REN | 0 | 0.000000 | | 0 | 0.000000 | Y7029E+04 | 0 | 0.000000 | | |
| LOGIC! | | | | | | | | | | | | | | | | |
| STATE | | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 | | | | |
| GATE | | 6 | Y | DATE | 7 | Y | DATE | 7 | Y | DATE | 7 | Y | | | | |
| AFROCYANICS! | | | | | | | | | | | | | | | | |
| GLD | | X | 0.89384E+01 | ALY | 0.68375E+07 | CNR | 0.143.49 | CNG | 0 | 170.654 | CY | 0 | 39023E+05 | | | |
| CA2 | | Y | 0.33A17 | CLP | 0.20.322 | CH | 0.075814 | CYCG | 0 | 36957E+06 | CMCG | 0 | 75054E+03 | | | |
| XK9 | | Z | 0.27AC4E+04 | CUB | 0.71641E+07 | CHB | 0.033097E+01 | CRD | 0 | 0.07220E+04 | TMASU | 0 | 0.0000 | | | |
| DTWAD | | W | 0.00000 | PS1SD | 0 | 0.000000 | DP91SD | 0 | 0.000000 | ALPHA | 0 | 0.02673 | BETA | 0 | 0.000000 | |
| RAP1 | | X | 0.00000 | CTT | 0.1.00000 | SP7 | 0 | 0.000000 | CPT | 0 | 1.00000 | TPH | 0 | 0.000000 | | |
| XLT | | Y | 1.6667 | - | - | - | - | - | - | - | - | - | | | | |
| DEBDG PRINT! | | | | | | | | | | | | | | | | |
| DPLX8 | | X | 316216 | DECYB | 0.173222E+02 | DELZ | 0 | 0.016130 | DTLX9 | 0 | 3198.2 | CELYS | 0 | 17438E+03 | | |
| DPL78 | | Y | 1.83A1 | KUTTA | 0.176668E+01 | PITER | 0 | 0.017473E+01 | YAWER | 0 | 0.023585 | PIERO | 0 | 0.000000 | | |
| YANF80 | | Z | 0.23255E+06 | DRLANY | 0.0230J10E+08 | PSI | 0 | 0.000000 | CRPSI | 0 | 0.000000 | DRTHYA | 0 | 0.000000 | | |
| CARSHIG | | W | 0.74400E+09 | RPA10 | 0.0230J10E+08 | DELVR | 0 | 0.018761E+09 | OPH10 | 0 | 0.076568E+09 | 0 | 32.160 | | | |
| YSRC | | X | 109972 | 19M | 0 | TACT | 0 | 0.01010E | 0 | 0.000000 | DRAP | 0 | 0 | 0 | | |
| KADE | | Y | 2 | NAVY | 0 | F1 | 0 | 0.000000 | DRALMP | 0 | 0.000000 | NUM | 0 | 0 | | |
| IPRIAT- | | Z | 4 | HPP9 | 0 | 0 | 0 | 0.000000 | NDT | 0 | 0.000000 | NUL3K | 0 | 0 | | |
| PFFL | | W | 10641 | PH10 | 0.29085E+07 | RNA | 0 | 0.020813E+02 | S2 | 0 | 1.000000 | DELR01 | 0 | 18791E+03 | | |
| REFL | | X | 0.00000 | REV | 0.100000 | REQ | 0 | 0.018604E+09 | RP81 | 0 | 0.000000 | RTHTA | 0 | 0.000000 | | |
| SUFAY | | Y | 0.07473E+02 | REGEZ | 0.2328AE+05 | NX | 0 | 0.000000 | 33 | 0 | 0 | 0 | 0 | 0 | | |

| PROJECTILE | | | | | | | | | | | | |
|--------------|-------------|--------|-------------|--------------|--------|--------------|-------------|--------|--------------|-------------|-------------|--------|
| TYPE | 12.000 | RSA | 10328E-05 | DELVP | 0 | 10396 | 0 | 17.80 | V | 112861E-01 | | |
| K | 103.82 | THIA | 0.88930E-02 | PHD | 0 | -0.11164E-03 | DELZ | 0 | 361.18 | TOYAC! | 2.1203 | |
| DZ | 111.75 | DY | 0.59735E-02 | DPHT | 0 | 0.12487E-05 | DTWTA | 0 | -0.11560E-01 | DX | 216.04 | |
| OPSI | 11A37E-04 | DR | 0.75474E-05 | DQ | 0 | -0.27109E-02 | DP | 0 | -0.14434E-06 | DW | -1.4977 | |
| DU | 5.3203 | DV | 0.94951E-02 | VRX | 0 | 824.36 | MACH | 0 | 774971 | DAP | 709.01 | |
| PSI | 5.7812E-05 | P | 0.97352E-07 | C | 0 | -0.11560E-01 | R | 0 | 0.10546E-04 | DELVY | 16085E-C4 | |
| ZH | 108.64 | DELXV | 0.00000 | DELVV | 0 | 0.00000 | DELZV | 0 | 100000 | DELZV | 1077.81 | |
| Y | 24305E-01 | Z | 0.4361E-02 | AMB | 0 | 0.59882E-01 | XT | 0 | 13120. | YT | .00000 | |
| DTWTA | 1156CE-01 | CPHT | 1.0000 | TPW! | 0 | 0.11164E-03 | CP81 | 0 | 1.0000 | SPS1 | -167512E-03 | |
| OPSI | 1.0000 | G2B | 32.159 | G7B | 0 | 0.35888E-02 | GXB | 0 | 288600 | | | |
| AUTOPILOT | | | | | | | | | | | | |
| DEPMTC | 0.00000 | DELYS | 236377 | PEU | 0 | 0.10395 | DEMF | 0 | 0.00000 | TXED | 771906E-02 | |
| DFL29 | 1.4238 | AMEGA | 0 | 0.70361E-14 | DYEF | 0 | 0.12699E-04 | DTHTA | 0 | 0.55518E-02 | | |
| RTW | 2369.7 | XT | 10.C00 | PEFL | 0 | 0.10567 | NJLL | 0 | 2 | DELR | 0.41638E-09 | |
| PEOZ | 150.27E-03 | PSRG | 0.00000 | PEO | 0 | 0.60086E-09 | PIEF | 0 | 0.20844E-01 | PITERO | 0.6C086E-C3 | |
| PLIG | 62382E-03 | PSRGE | 0.59019E-06 | PKPD | 0 | 0.16943E-07 | THBS | 0 | 0.28642E-09 | PEBS | -1.6842E-09 | |
| DFL1 | 16364E-04 | RLAMY | 0 | 0.94869E-08 | RLAMP | 0 | 0.00000 | THTAG | 0 | 0.14352 | THRB8 | |
| YPP | 16379E-03 | PEF | 0.20344E-03 | VED | 0 | 0.00327E-05 | VED | 0 | 0.00000 | YEP | -16379E-04 | |
| YARG | 0.0000C | YEG | 0 | 0.16128E-04 | DELYS | 0 | 0.11949E-02 | YAHERR | 0 | 0.50422E-06 | YAWERH | |
| LAMYR | 50427E-05 | LAMPR | 0 | 0.60086E-02 | CGA | 0 | 0.11560E-01 | GAPS | 0 | 0.143.98 | CPS16 | |
| IAGR | 2 | PSRAS | 0 | 0.25162E-06 | REN | 0 | 0.00000 | | 0 | 0.63881E-05 | | |
| LOGIC | | | | | | | | | | | | |
| DATE | 1 | 0 | 1 | DATE | 2 | 0 | 1 | DATE | 3 | 0 | 1 | |
| GATE | 6 | 0 | 7 | GATE | 7 | 0 | 1 | GATE | 3 | 0 | 1 | |
| AFRANNAKICS1 | | | | | | | | | | | | |
| CLC | 89246E-01 | ALB | 0.31735E-07 | CNA | 0 | 0.149.3A | CNG | 0 | 0.170.10 | CY. | 0.84522E-04 | |
| CA2 | 33691 | CLP | 0.20.170 | CH | 0 | 0.75456 | CYCG | 0 | 0.1075E-05 | CMG | 0.81042E-C3 | |
| XKH | 78733E-08 | CLB | 0.27228E-08 | CMB | 0 | 0.43367E-01 | CQB | 0 | 0.35544E-04 | TM3D | 0.80000 | |
| DTWASD | 0.0000C | PG160 | 0.00000 | DPS15D | 0 | 0.00000 | ALPHA | 0 | 0.12628 | BETA | 0.15601E-04 | |
| QAB1 | 0.0000C | CYT | 0 | 1.0000 | GPT | 0 | 0.00000 | CPT | 0 | 1.0000 | THI | .00000 |
| XLTAA | 1.6A67 | | | | | | | | | | | |
| DEFLG PRINT | | | | | | | | | | | | |
| DFLXA | 2345.1 | DELVB | 0 | 0.251630E-03 | REL29 | 0 | 300.34 | DELXB | 0 | 2369.7 | DELYS | |
| DFLTS | 1.4238 | KUTTA | 0 | 0.38487E-01 | PITERR | 0 | 0.60086E-01 | YAWERR | 0 | 0.50422E-06 | PITERO | |
| YALERD | 50427E-16 | DALAMY | 0 | 0.712222E-03 | F3 | 0 | 0.00000 | DRPS1 | 0 | 0.00000 | DATHTA | |
| ORPH1G | 26646E-08 | RPK1G | 0 | 0.72760F-11 | RELVR | 0 | 0.72760F-11 | OPH10 | 0 | 0.32487E-08 | G | |
| Y5NC | 139976 | 13N | 0 | 0.1ACT | 0 | 0 | 0.1ACT | 0 | 0.18010E | TRAP | 32.161 | |
| KA1F | 2 | NAVY | 0 | 0 | F1 | 0 | 0.00000 | CRLAMP | 0 | 0.00000 | NULSKR | |
| IPR1AT | 1 | NPPG | 0 | 0.107 | S1A | 0 | 0.00000 | ADTA | 0 | 256 | | |
| PFEL | 10567 | PA1G | 0 | 0.62332E-03 | RMA | 0 | 0.00881E-02 | S2 | 0 | 1.0000 | DELRL | |
| FFR | 0CCN | RE7 | 0 | 0.00000 | REG | 0 | 0.13340E-10 | PPS1 | 0 | 0.00000 | RTWTA | |
| YMEAY | 0.6CCRAE-02 | SMED2 | 0 | 0.50422E-05 | XX | 0 | 0 | 0 | 0 | 0 | | |

PROJECTILE!

| | | | | | | | | | | |
|-------|------------|-------|-------------|-------------|-------|---------|------------|--------|---|-------------|
| TIME | 13.0000 | RSA | '322283E+05 | DELVY | 0 | 0110527 | U | 008.80 | V | -280342E+01 |
| W | 102.3C | THTA | 0 | 020897E+01 | PHD | 0 | 011164E+03 | DELZ | 0 | 23.652 |
| D2 | 119.1E | DY | 0 | 0646341E+02 | DPHT | 0 | 010093E+07 | DTHTA | 0 | 8C6199 |
| DPS1 | 334922E+04 | DR | 0 | 312328E+04 | DQ | 0 | 067847E+09 | DP | 0 | -1.312 |
| DU | 3.6555 | DV | 0 | 0724102E+01 | VR4 | 0 | 015.25 | MACH | 0 | -696733 |
| PS1 | 1482.0E+04 | D | 0 | 016978E+06 | G | 0 | 012134E+01 | R | 0 | 35538E+04 |
| AT4 | 106.17 | DECXV | 0 | 000000 | DELVY | 0 | 000000 | DEL2Y | 0 | 14589 |
| Y | 29452E+01 | Z | 0 | 4245.6 | AM3 | 0 | 004934E+01 | XT | 0 | 00000 |
| DTWTA | 12134E+01 | CPT | 0 | 10000 | SPH1 | 0 | 011161E+03 | CPS1 | 0 | 00000 |
| CPS1S | 1.000C | G28 | 0 | 32.15s | DYB | 0 | 036955E+09 | DX8 | 0 | 04824E+04 |

ALTAPILLET!

| | | | | | | | | | | |
|-------|------------|-------|--------|-------------|-------|-------|-------------|-------|------|-------------|
| DPHTO | 00000C | DELYS | 150014 | PEO | 0 | 10527 | DELYS | 0 | TXED | -168942E+02 |
| DEL2S | 195713 | QHEGA | 0 | 010177E+15 | DYEF | 0 | 033542E+04 | DPEF | 0 | 09608E+02 |
| RTU | 1550.4 | XT | 0 | 10.000 | PEPL | 0 | 10497 | NULL | 0 | -2419E+01 |
| SMFG2 | 11422E+04 | PSRG | 0 | 00000 | PED | 0 | 0161736E+00 | REF | 0 | 61736E+03 |
| PHD | 159331E+04 | PS18 | 0 | 011950E+04 | PXED | 0 | 004874E+06 | THBS | 0 | -25850E+04 |
| DPL1 | 35837E+04 | RLAMY | 0 | 049233E+07 | RLAMP | 0 | 00000 | THTAS | 0 | 29832E+03 |
| YTF | 366222E+04 | PEP | 0 | 021047E+01 | YED | 0 | 011122E+05 | YEP | 0 | 36622E+04 |
| YRD | 0000C | VEG | 0 | 035647E+04 | YEDS | 0 | 017709E+05 | YANER | 0 | 01422E+05 |
| YAMR | 11422E+04 | LAPPR | 0 | 061736E+02 | OSA | 0 | 0112134E+07 | CAPS | 0 | 00861E+04 |
| IACC | 2 | PSRBS | 0 | 0.97820E+06 | REN | 0 | 00000 | | 0 | 00000 |

LOGIC!

| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | |
|--------------|------------|-----------|-------|------------|-----------|------|-------------|--------|-------|------------|-----------|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 | DATE | |
| APROCYANICS! | | | | | | | | | | | |
| CLC | 189117E+01 | XL9 | 0 | 171135E+07 | CNA | 0 | 0149.2E | CNG | 0 | 18601E+03 | |
| CA2 | 033574 | CLP | 0 | 20.028 | CH | 0 | 075135 | CYCG | 0 | -1186E+02 | |
| DTMASD | 0000CC | PG160 | 0 | 071378E+06 | CHB | 0 | 008103E+07 | CNE | 0 | 00000 | |
| RARI | 0 | 0000C | CTT | 0 | 00000 | DPAD | 0 | 00000 | ALPHA | 0 | 03439E+04 |
| STT | 0 | 0000C | CTT | 0 | 1.0000 | SPF | 0 | 00000 | CPT | 0 | 1.0000 |
| XLT | 0 | 1.6667 | | | | | | | | | 0.0000 |
| DFSLG DRINT! | | | | | | | | | | | |
| DFLX3 | 1535.7 | DELYE | 0 | 010787E+01 | DELY3 | 0 | 0113.80 | DELY3 | 0 | 1550.4 | |
| DFL2S | 195713 | KUTTA | 0 | 010136E+01 | PIVER | 0 | 0061736E+03 | YAWER | 0 | 11422E+05 | |
| VALER | 11422E+04 | DRALY | 0 | 010098E+06 | P9 | 0 | 00000 | DRPSI | 0 | 00000 | |
| DARH10 | 83791E+04 | RPHIG | 0 | 043761E+08 | DELVR | 0 | 0042201E+09 | DPH10 | 0 | 32.161 | |
| VSC | 1100.C | 18H | 0 | 0 | TACT | 0 | 0 | TRAP | 0 | 0 | |
| KAGE | 2 | NAVY | 0 | 0 | P1 | 0 | 00000 | ORLAMP | 0 | 0 | |
| IPRINT | 10497 | NPHG | 0 | 0 | 20 | 0 | 0 | NOTA | 0 | 256 | |
| PEEL | 0 | PH10 | 0 | 05331E+07 | RH6 | 0 | 00954E+09 | NOTA | 0 | 142201E+03 | |
| RCG | 0000C | RTT | 0 | 00000 | REQ | 0 | 003103E+04 | SPSI | 0 | 00000 | |
| QUEGY | 0 | 11422E+04 | RMEO2 | 0 | 01422E+05 | WX | 0 | 00000 | RTMTA | 0 | 00000 |

| PROJECTILE! | | | | | | | | | | | |
|--------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|--------------|------|---|
| TYPE | 14.000 | RSA | 016319E-03 | DELVP | 010473 | U | 800.47 | V | 0.822270E+01 | | |
| W | 100.91 | THTA | 033506E-01 | PHD | 011161E-01 | DELZ | 171.80 | TOTACC | 23.150 | | |
| D2 | 127.67 | DY | 022353E-02 | DPH1 | 012709E-01 | DTMTA | 012709E-01 | DY | 796.64 | | |
| DRS1 | 16588E-03 | DR | 033011E-03 | DG | 023145E-05 | OP | 23145E-05 | DR | 1.1805 | | |
| DU | 7.5983 | DY | 0111860 | VRW | 0806.80 | MACH | 073312 | GAP | 684.83 | | |
| PS1 | .91407E-04 | P | 010975E-05 | O | 012709E-01 | R | 16446E-03 | DELVY | 1C653E-03 | | |
| X28 | 103.91 | DELXV | 00000 | DELV | 00000 | DEC2V | 00000 | X | 12390. | | |
| Y | 31856E-01 | 2 | 01121.8 | AMB | 033667E-01 | XT | 13120. | YT | 00000 | | |
| DHTA | 1.12709E-01 | CPh1 | 01.0000 | SPH1 | 011161E-03 | CPS1 | 1.0000 | SPS1 | 91807E-04 | | |
| CRSIS | 1.000C | G2B | 32.143 | GYS | 0368661E-02 | GXB | 1.077. | | | | |
| AIRCRAFT! | | | | | | | | | | | |
| DFRATO | 00000C | DELXS | 739.94 | PEO | 010473 | DELMTS | 00000 | TX20 | 0.85770E-02 | | |
| DFL29 | 166471 | SMEGA | 085964E-16 | DYEP | 012801P-03 | DPEF | 011756E-02 | DTMTAS | 1.6289E-02 | | |
| RTW | 739.94 | KT | 10.44 | PEPC | 010441 | NUL | 010441 | DELTAS | 1.15133E-02 | | |
| DRS02 | 372985E-04 | PSRG | 00000 | PEO | 012803P-02 | PEF | 022099E-01 | PITERO | 0.62803E-03 | | |
| PHD | 35473E-C6 | PG15 | 086064E-04 | PXED | 0130210P-05 | THBS | 026183 | PS89 | 1.942E-03 | | |
| DFL1 | 10653E-C3 | RLAMV | 028926E-06 | RLAMP | 00000 | THTAB | 013123 | THRBS | 31278E-03 | | |
| YTF | 11273E-C3 | PEP | 022095E-01 | YEO | 037295E-03 | PEC | 0828032E-02 | YEP | 1.273E-03 | | |
| YRG | 00000C | YEO | 010709E-03 | DELYS | 027596E-02 | YAWERR | 037295E-05 | YANERO | 37295E-05 | | |
| LAMY | 37295E-04 | LARM | 0662803E-02 | C3A | 012709E-01 | GAPS | 136.91 | DPS10 | 1.2690E-03 | | |
| YAGC | 37295E-02 | PSRBS | 0566439E-03 | REN | 00000 | | | | | | |
| LOGIC! | | | | | | | | | | | |
| STATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 |
| GATE | 6 | Y | GATE | 7 | Y | GATE | 7 | Y | | | |
| AE9994APICS! | | | | | | | | | | | |
| CLC | .88997E-C1 | ALB | 1.8567E-06 | CMA | 149.21 | CMG | 169.31 | CY | 1.54483E-03 | | |
| CA2 | .33472 | CLP | 1.896 | CH | 74809 | CYCG | 34489E-04 | CRG | 0.47684E-03 | | |
| DRHSD | 32435TE-C2 | CLD | 095090E-08 | CM8 | 878359E-01 | CNE | 878359E-03 | CTSD | 00000 | | |
| | 0.0000C | PS10 | 000000 | OPS10D | 000000 | ALPHA | 012541 | BETA | 0.10198E-03 | | |
| RAP1 | STT | 0000C | C77 | 0 | 0.0000 | CPT | 1.0000 | TY | 0.0000 | | |
| X1TA | 1.6667 | | | | | | | | | | |
| OPALG PRINT! | | | | | | | | | | | |
| DFLYA | 733.92 | DELVE | 0104124E-01 | DEL29 | 971.283 | DELXS | 739.9. | DELYS | 27596E-02 | | |
| DFL26 | 146471 | KUTTA | 1 | PITER | 012803E-02 | YAKERR | 037295E-05 | PITERO | 1.62803E-03 | | |
| YAKER | 372985E-05 | DRLAMV | 065495E-06 | P9 | 00000 | DAPS1 | 00000 | DRMTA | 00000 | | |
| DRMLD | 56181E-07 | APHLG | 0238884E-07 | DELV | 0126112E-04 | OPH10 | 065475E-07 | OPH10 | 32.161 | | |
| YSG3 | 1100C9 | 1359 | 0 | FACT | 0 | TOUDC | 0 | TRAP | 0 | | |
| KALP | 2 | NAVY | 0 | P1 | 00000 | CRCLMP | 00000 | NLM | 0 | | |
| IPRFAT | 1 | PPS | 0 | NOT | 0 | NOTA | 0 | NULSKR | 0 | | |
| PFPL | 10441 | PHLG | 035473E-C6 | RHO | 010328P-02 | S2 | 1.0000 | CELRAL | 0.26412E-08 | | |
| REC | 0000C | REF | 0000C | REG | 096340E-04 | RPS1 | 0.0000 | RTMTA | 0.0000 | | |
| AVGAY | 0.628C3E-02 | 9MEG2 | 03729KE-04 | RY | 33 | | | | | | |
| IMPACT: | | | | | | | | | | | |
| TIME | | | | | | | | | | | |

PROJECTILE:

| | | | | | | | | | | | | | | |
|-------|--------|-------------|-------------|-----------|---------|-----------|------------|-------------|-------|-----------|-----------|------|---------|-----------|
| TYPE | 1-926 | 907 | 1623875E-01 | DELVA | 0 | 28379E-01 | DELZ | 0 | 79887 | Y | TOTACC | 0 | 3350 | |
| W | 711483 | THIA | 0 | 41187E-01 | PHO | 0 | 011488E-04 | DELZ | 0 | 34104 | DX | 0 | 35.891 | |
| D7 | 135.99 | DY | 0 | 98320E-02 | OPHJ | 0 | 18160E-03 | DMTA | 0 | 71473 | DN | 0 | 768705 | |
| DRB: | 0 | 02425E-01 | DR | 0 | 3.5731 | 00 | 0234618 | OP | 0 | 30593E-01 | DN | 0 | 573.03 | |
| DU | 0 | 32.391 | DV | 0 | 0521485 | VRY | 0 | 799670 | MACH | 0 | 72635 | GAP | 0 | 67493 |
| P41 | 0 | 30121E-02 | P | 0 | 0723872 | 03 | 0 | 671474 | R | 0 | 62557E-01 | DELV | 0 | 19351E-01 |
| Z74 | 0 | 35076 | DECKV | 0 | 331875 | DELVV | 0 | 18389E-01 | DELZV | 0 | 203397 | X | 1-9123- | |
| Y | 0 | 0118255E-01 | 2 | 0 | 3999.7 | AMB | 0 | 0136.92 | XT | 0 | 13120. | YT | 0 | 00000 |
| DTWA | 0 | 671473 | CPTM | 0 | 1.0000 | SPHI | 0 | 0118180E-04 | CPTI | 0 | 1.00000 | SPSI | 0 | 3C1812-02 |
| CPS18 | 0 | 1.0000 | 028 | 0 | 32.054 | 0Y9 | 0 | 010482E-01 | QX6 | 0 | 8.6063 | | | |

AUTOPILLOT:

| | | | | | | | | | | | | | | |
|--------|---|------------|-------|---|-------------|------|---|-------------|-------|---|------------|-------|---|------------|
| UNPHTD | 0 | 00000 | DELEX | 0 | 371165 | PEU | 0 | 141127E-01 | DECP | 0 | 20473 | TXED | 0 | 653465E-02 |
| DEL25 | 0 | 21960 | MEGA | 0 | 493230E-16 | DYEF | 0 | 0118816 | DPFF | 0 | 1.6087 | DTMTA | 0 | 944669 |
| RTW | 0 | 21458 | KT | 0 | 201010 | PEPL | 0 | 0118359E-01 | NULL | 0 | - | DELRA | 0 | 10457E-02 |
| DMF02 | 0 | 00000C | PSRO | 0 | 00000 | PED | 0 | 00000 | PEF | 0 | - | PITER | 0 | 00000 |
| PM10 | 0 | 117175E-02 | PS18 | 0 | 119037E-02 | PSED | 0 | 016428 | THFS | 0 | - | PSBS | 0 | 468857E-02 |
| OFL1 | 0 | 193333E-21 | RLAPY | 0 | 30188E-02 | RLAD | 0 | 016428 | THFS | 0 | - | THRS | 0 | 12541E-01 |
| VPP | 0 | 11867 | REP | 0 | 11867 | RECO | 0 | 00000 | PED | 0 | - | YEP | 0 | 188044E-01 |
| YBRO | 0 | 00000C | YER | 0 | 19012E-01 | DEL8 | 0 | 011822E-01 | YAKER | 0 | 068313E-02 | YAKRS | 0 | 00000 |
| LAMY | 0 | 00000 | LAMP | 0 | 00000 | GBA | 0 | 011822E-01 | CAPS | 0 | 136.97 | DPS18 | 0 | 19037E-01 |
| IACC | 0 | 1 | PSROS | 0 | 0439812E-03 | REN | 0 | 00000 | | 0 | | | | |

LOGIC:

| | | | | | | | | | | | | | | | |
|---------------|-----|------------|-------|------|------------|--------|-----|---------|-------|------|-----------|--------|----|------------|-------|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 | DATE | 7 | | |
| DATE | 6 | DATE | 7 | DATE | 7 | DATE | 7 | DATE | 7 | DATE | 7 | DATE | 7 | | |
| AERODYNAMICS: | | | | | | | | | | | | | | | |
| CLC | 0 | 188497E-01 | ALP | 0 | 32288E-03 | CHB | 0 | 1180.44 | CMC | 0 | 183.33 | CY | 0 | 184755E-01 | |
| CAZ | 0 | 37030 | CLP | 0 | 19.785 | CN | 0 | 1.1736 | CVCG | 0 | 29675 | CRG | 0 | 1.9666 | |
| AXH | 0 | 20180 | CLG | 0 | 169717E-02 | CMG | 0 | 2.8893 | CNB | 0 | 20830 | TM490 | 0 | 000000 | |
| DTMSD | 0 | 00000 | PS18D | 0 | 00000 | OP619D | 0 | 00000 | ALPHA | 0 | 89767E-01 | BETA | 0 | 29943E-02 | |
| RAS1 | STT | Y | 10000 | CRT | 0 | 1.0000 | SPT | 0 | 00000 | CPT | 0 | 1.0000 | PT | 0 | 00000 |
| XLTA | 0 | 1.6667 | | | | | | | | | | | | | |

DELOS PRINT!

| | | | | | | | | | | | | | | |
|--------|---|-----------|--------|---|------------|-------|---|-------------|--------|---|------------|--------|---|-----------|
| DFLX2 | 0 | 1929 | DELYB | 0 | 127886E-01 | DEL2a | 0 | 01258E-01 | DELXB | 0 | 3.1865 | DELYS | 0 | 21820E-01 |
| DFL29 | 0 | 21960 | KUTTA | 0 | 114160E-01 | PITER | 0 | 03.0728 | YAKER | 0 | 168313E-02 | PITER | 0 | 00000 |
| VALFB | 0 | 00000C | ORLAPY | 0 | 028541E-04 | PSI | 0 | 00000 | CRPSI | 0 | 00000 | ORTHTA | 0 | 00000 |
| DRPH10 | 0 | 13609E-02 | RPH10 | 0 | 0 | DELVA | 0 | 0118259E-04 | OPH10 | 0 | 1416CE-02 | IRAP | 0 | 32.162 |
| YRDO | 0 | 117170 | YRDA | 0 | 0 | FACT | 0 | 0 | DELAMP | 0 | 0 | IRAP | 0 | 0 |
| K13F | 1 | NAVY | 0 | 1 | 0 | F1 | 0 | 00000 | DELAMP | 0 | 00000 | NULSKA | 0 | 0 |
| IPAT17 | 0 | 1 | YPPS | 0 | 20 | KDT | 0 | 1.8A | NDTA | 0 | 1.0000 | BB86 | 0 | 2 |
| PFPL | 0 | 34359E-01 | PH10 | 0 | 17178E-02 | AM9 | 0 | 01110E-03 | 82 | 0 | 1.0000 | DELRL | 0 | 18250E-C4 |
| QFC | 0 | 00000C | QET | 0 | 00000 | REG | 0 | 022559E-04 | RP81 | 0 | 00000 | RTWTA | 0 | 00000 |
| DRHIV | 0 | 00000C | QME02 | 0 | 00000 | NX | 0 | 0 | 33 | 0 | | | | |

IMPACT!

| | | | | | | | | | | | | | | |
|-------------------------|---|--------|------|---|-------|------|---|-------------|------|---|--------|-----|---|-------|
| PCAT | 0 | 14.922 | PCAX | 0 | 1318C | PCAY | 0 | 0183377E-01 | PCAZ | 0 | 4000.0 | PCA | 0 | 21458 |
| END-PROFILE ON UNIT | 1 | 15 | | | | | | | | | | | | |
| LIMIT | 0 | | | | | | | | | | | | | |
| TOTAL WOB T11F=CC113156 | 0 | | | | | | | | | | | | | |

Appendix B.
CSSL PROGRAM – DYNAMIC GYRO MODEL

09 CSPL, -RAYR0
 ENDING STAPC
 LL8BT (FILE, AV), (FS1, 2E, C), SAVE
 LL8BT (FILE, AV), (FS1, 2E, C), SAVE
 LL8BT (FILE, X6), (FORMAT, B), (RSIZE, 128), (FSIZE, 280), SAVE
 LL8BT (FILE, X5), (FORMAT, B), (RSIZE, 128), (FSIZE, 350), SAVE
 LL8BT (FILE, X4), (FORMAT, B), (RSIZE, 128), (FSIZE, 350), SAVE
 SSIGN (F11, X4)
 SSIGN (F12, X5)
 SSIGN (F14, 99A, P0)
 SEL
 PROGRAM - 9720
 INITIAL
 P=0.921875
 A=0.027083
 P=0.032083
 RR=COC17192
 RA=COC17192
 THIAS=PSI540,
 TPI=0.
 END
 CYANOMIC
 IF(T>TFIN) LI,L1,L2
 L1=CANTINUE
 DERIVATIVE(EVEQ
 RMY, STEF(C,0,T))
 RMY=C1562B+RML
 RYPU=STEP(0.,T)
 RYP=C1562B+RML
 CPSISD=THTASD*(H/A)-(R/H/A)*PSISD+(RMY/A)
 PSISD=INTEG(CPSISD,C0)
 CHTASD=PSIFD*(H/B)-(R/B)*THTASD+(RMP/B)
 THTASD=INTEG(CHTASD,0,1)
 THTASD=INTEG(CHTASD,C0)
 PUT T
 ALT DESIRE, CHTASD, PSISD, THTASD, RMY, THTASD, RPSISD, THTASD, T
 CINTERVAL C1, T1, T2
 ASTEPS=ET/234
 FDC DRIVATIV
 FDC DYNAMIC
 TFRM TIAL
 L2=CANTINUE
 END TEFIN
 END BREGFLY

```

CONNECT (PZ6E,RT9L)
END
SUBROUTINE RTSL
  COMMON/Z0004/Z0004(58)
  COMMON/Z0004/RMYU,RMY,RMPU,RMP,H,A,RR,PSIS,B,RB,THTAS
  ECLIVALENCE (Z0004(4),DPSISO),(Z0004(3),Z0000),(Z0004(18),PSISD),(Z0004(17),Z0001),(Z0004(32),DTHTASD),(Z0004(31),Z0002),(Z0004(46),2THTASD),(Z0004(45),Z0003)
  EXTERNAL GYR8
  99997 Z9995=0
  NST=256
  CINT=1,0
  T=0.0
  IALGR=R5
  JALGR=S5
  HMINT=0.000001
  NIST=1
  ITER=2
  Z0004(1)=0,
  Z0004(2)=0,
  Z0004(42)=0,
  Z0004(56)=0,
  H=G921875
  A=C027083
  B=C032083
  RR=C0017192
  RB=C0017192
  THTAS=PSIS=0.
  TFIN=10.
  CALL Z9998(4,Z0004,GYR8,NST,CINT,T,0)
  99999 CONTINUE
  IF(T>TFIN)90000,90000,90001
  90000 CONTINUE
  PRINT 90003,T
  90003 FORMAT(6I8X,E12.5)
  90002 CONTINUE
  PRINT 90005,DPSISO,DTHTASD,PSISD,THTASD,PSIS,THTAS
  90005 FORMAT(6(8X,E12.5))
  90004 CONTINUE
  CALL Z9999(4,Z0004,GYR8,NST,CINT,T,IALGR,JALGR,HMINT,NIST,ITER,IERR)
  Z9995=1
  G9 TO 99999
  99998 CONTINUE
  90001 CONTINUE
  STEP
  END
  SUBROUTINE GYR8(T)
  COMMON/Z0004/Z0004(58)
  ECLIVALENCE (Z0004(4),DPSISO),(Z0004(3),Z0000),(Z0004(18),PSISD),(Z0004(17),Z0001),(Z0004(32),DTHTASD),(Z0004(31),Z0002),(Z0004(46),2THTASD),(Z0004(45),Z0003)
  COMMON/Z0004/RMYU,RMY,RMPU,RMP,H,A,RR,PSIS,B,RB,THTAS
  RMYL=STEP(0.,T)
  RMYU=C15625*RMYU
  RMPU=STEP(0.,T)
  RMF=+015625*RMPU
  PSISO=Z0000
  PSIS=Z0001
  THTASD=Z0002
  THTAS=Z0003

```

```
CPSISD+THTASD+(H/A)-(RP/A)*PSISD+(RMY/A)
CTHTASC+PSISD+(H/B)-(RB/B)*THTASD+(RMP/B)
RETURN
END
***TOP* 0
E8F 9TA8C
TOTAL JOB TIME=00:02:10
```

```
***FIRST PASS DONE***
INVOKING PROGRAM MACRS
INVOKING INITIAL MACRS
INVOKING DYNAMIC MACRS
INVOKING BUT MACRS
INVOKING BUT MACRS
INVOKING TERMINAL MACRS
***SECOND PASS DONE***
***THIRD PASS DONE 0 ERRORS***
***FOURTH PASS DONE 0 ERRORS***
***FIFTH PASS DONE***
***SIXTH PASS DONE***
```


Appendix C.

**6-DOF DIGITAL MISSILE TRAJECTORY SIMULATION
WITH DYNAMIC GYROSCOPE MODEL**

```

1      C **** AERODYNAMICS AS AT 12/20/72 AND MEASURED SEEKER PERFORMANCE
2      C *** PANCE DATA AT 12/7/72.
3      C EXTERNAL DERIVATIVES
4      1 CALL INITIAL (IS,DERIVATIVES)
5      2 CALL RUNK
6      3 CALL FINISH
7      68 T6 2
8      END

```

```

1      S L B R O U T I N E   I N I T I A L (E' DRAU, CEGIVS)
2      DOUBLE PRECISION DT,FSTSAM,SPER,TME,TIME,TIME0,TIME1,TIME2,TIME3
3      TIME0,TST,DYA,TME
4      REAL KPCJKM,KCARTXKTIOS,KT20
5      REAL KT30
6      REAL KB,KGL,KP
7      REAL KG,KRGL,KG,LAMPR,LAMYR,LAMEI
8      REAL LP,KDARS,K4,K5,KR
9      REAL MACH,MASS,IX,IYZ,IT,IA
10     REAL X0A(33),X0B(33)
11     COMMON/INTEG/KUTTA,UX,DTRK,U,V,W,P,C,R,PH1,THTA,PEI,X,Y,Z,RTHTA,
12     1RPS1,THTAS,THASD,PSIS,PSISC,0MEGA,TXFD,PXFD,PF,VEF,DEL1,DELVD,
13     2DEL3,COEL1,DCEL1,DEEL3,RLAMY,RLAMP,APH13,DPH10,CU,DV,DW,CP,CG,CR,
14     3CPH1,CTHTA,OPSI,FX,DY,DZ,DTHTA,CRPS1,CTHTAB,CTHASD,CPSIS,OPSI,SC,
15     4COMEGA,CTXED,DPXFD,PF,CF,COEL1,CCDELPP,COELP3,DDDEL1,COELP,
16     5CCDEL3,DRCLAP,DRPTIG,DRPH13
17     COMMON/ETB/EB11,EB12,EB13,EP21,EB22,FB31,E932,E833
18     COMMON/BTS/BS11,BS12,BS13,BS21,BS22,BS23,BS31,BS32,BS33
19     COMMON/YDC/CPS1,SPSI,SPHI,CPH1
20     COMMON/IR/ GAMF,GAMY,DELXTB,DELYTB,DELZTB
21     COMMON/ETV/DELXV,DELYV,DELZV
22     COMMON/DEL/DELX,DELY,DELZ
23     COMMON/STLFF/ DELXS,DELYS,DELZS
24     COMMON/INPSKR/PIERR,YAERR
25     COMMON/MACL/MACH,VEND,UR,VR,WR,VRB,VRW,VW
26     COMMON/F/XXS,WYS,WZS
27     COMMON/CBEF/CA2,CY,CA,CLP,CMCB,CYC,CLE,CMC,CNR,ALPHA,BETA,CMAD,
28     ICCRAC
29     COMMON/TODEC/AXB,AYB,AZB,CLR,CNE,ALE,AMB,ANB,CMB
30     COMMON/DD/DELVT,DELVR,DELRI,CELRL
31     COMMON/JUNK/TIME,TIME3,RHA,S,D,SCUW,CAP,IRAP,RAFTM1,RAFTM2,IACT,
32     ISLOPE1,BT1,RAFTM3,ISLOPE2,BT2,CTT,CMT,SPT,XLTA,STT,QAPB,QAPBD,
33     2CAPSM,TH
34     COMMON/PP/PPCLB,PPCMB,PPCVB,PPAXB,PPAYB,PPAZB,PPACB,FFAMO,FFAMO
35     COMMON/OG/0XB,0YB,0ZB
36     COMMON/JUNK1/TM0L,IR0L,IR1L,0,MASS,TX,IYZ,XINTIA,NAVY
37     COMMON/MO/0BAL,TB,TORAD,RM0BL,ARG1,WT49L,RESTAR,
38     IRMRE,ARG2,0R,TMC
39     COMMON/TT/FSTSAM,TIME4,DT,DYA,TST,TME,SPER,TSAH,CC,JMAX,IPRINT,T2
40     1PITYAKS,ND,NULSKR,BRS,RPLECT,NULLKAGE
41     COMMON/B0/RSL,KT,KT10,KT20,LAMPR,LAMYR,RTM,RTMIN,RSQE,ED1,FLG4,
42     1RSA,ED4,0BA
43     COMMON/PERV/0MEGY,0MEQZ
44     COMMON/BUTAP/YEG,REG,PEO
45     COMMON/ARROW/PHT0,PL01,PL02,PL03,REF,REFL,REC,PEO,THR89,PS086,
46     1TH85,FS85,GRLV,PFPL,KPD,KC,KM,KG,LAMBI,PSLFS
47     COMMON/SS/S1,S2,S3,S4,S5,S6
48     COMMON/CP/RB,RR,W,A,B,KT30
49     COMMON/STUFF1/DELXB,DELYB,DELEB
50     C   DICTIONARY
51     C
52     C   AERO
53     C
54     C   ALPHA
55     C
56     C   CAS
57     C
58     C   ALTOPLT

```

```

45
46
47 C DEFAULT VALUES
48
49 C
50
51 REAL REAL(206)/
52 1+2.898600C00E+01, +5.186785000E+C2, +3.21747000E+C1,
53 2+3.56616000F-03, +2.085553150E+C7, +2.376900C00E-C3,
54 3+4.971982570E+04, +5.312000000E+C0, +4.488645000E+C0,
55 4+2.C10000C00E-C1, +5.723000000E+C0, +5.083000000E-C1,
56 5+5.C00000000E+00, +3+1+592854E+C0, +0.000000000E+C0,
57 6+0.000000000F+00, +0.000000000E+C0, +0.000000000E+C0,
58 7+4.000000000E+00, +8.000000000E+01, +0.000000000E+C0,
59 8+1.500000000E+C1, +4.000000000E-C2, +6.000000000E-11,
60 9+1.+92900C00E+02, +4.000000000E+C0, +6.25000C00E+C0,
61 A+2.500000000E+02, +2.500000000E+C1, +2.000000000E+C0,
62 P+1.C0CCCCCCC00E+02, +1.000000000E+C0, +0.000000000E+C0,
63 C+C, CCCCCCCCC00E+00, +5.000000000E-01, +1.500000000E+01,
64 D+1.C0CCCCCCCC00E+C0, +1.000000000E+C0, +1.000000000E+00,
65 E+1.000000000E+C0, +1.000000000E+C0, +1.000000000E+C0,
66 F+1.000000000E+C0, +1.000000000E+C0, +1.000000000E+00,
67 G+1.000000000E+00, +8.000000000E+C0, +1.500000000E+01,
68 H+1.8CCCCCCCC00E+01, +7.500000000E+C0, +9.000000000E+00,
69 I+6.000000000E-02, +2.3528C0000E-08, +1.622600000E-05,
70 J+2.CCCCCCCCC00E-01, +1.500000000E+C0, +1.250000000E+01,
71 K+1.250000000E+01, +1.500000000E+C1, +2.000000000E+01,
72 L+3.000000000E+02, +1.000000000E+01, +0.000000000E+00,
73 M+1.CCCCCCCCC00E-01, +6.000000000E+00, +3.140000000E+02,
74 N+2.CCCCCCCCC00E+03, +1+2+500000000E+01, +0.000000000E+00,
75 O+0.000000000F+00, +0.000000000F+00, +0.000000000E+C0,
76 P+0.000000000E+00, +0.000000000E+C0, +2.830000000E+01,
77 Q+C, CCCCCCCCC00E+CC, +C.000000000E+C0, +0.000000000E+C0,
78 R+4.000000000E+03, +0.000000000E+C0, +0.000000000E+00,
79 S+C, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+00,
80 T+C, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+C0,
81 U+C, CCCCCCCCC00E+C0, +0.000000000E+C0, +0.000000000E+00,
82 V+0.000000000E+00, +0.000000000E+C0, +0.000000000E+C0,
83 W+C, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+00,
84 X+G, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+00,
85 Y+C, CCCCCCCCC00E+00, +2+112244897E+02, +5.250000000E+02,
86 Z+C, CCCCCCCCC00E+03, +1.000000000E+C0, +0.000000000E+00,
87 1+C, CCCCCCCCC00E+CC, +0.000000000E+C0, +0.000000000E+00,
88 2+C, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+00,
89 3+C, CCCCCCCCC00E+C0, +0.000000000E+00, +0.000000000E+C0,
90 4+G, CCCCCCCCC00E+C0, +0.000000000E+C0, +0.000000000E+00,
91 5+C, 0.000000000E+C0, +0.000000000E+00, +0.000000000E+00,
92 5+C, CCCCCCCCC00E+C0, +1+2+500000000E+C0, +0.000000000E+C0,
93 5+C, 0.000000000E+00, +0.000000000E+C0, +0.000000000E+00,
94 5+C, 0.000000000E+00, +0.000000000E+C0, +0.000000000E+00,
95 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+00,
96 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+00,
97 5+C, 0.000000000E+00, +0.000000000E+C0, +0.000000000E+00,
98 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+00,
99 5+C, CCCCCCCCC00E+C0, +0.000000000E+C0, +0.000000000E+00,
100 5+C, 0.000000000F+00, +0.000000000F+C0, +0.000000000E+C0,
101 5+C, CCCCCCCCC00E+C0, +0.000000000E+C0, +C.000000000E+C0,
102 5+C, CCCCCCCCC00E+00, +0.000000000E+C0, +0.000000000E+00,
103 5+C, CCCCCCCCC00E+C0, +C.000000000E+C0, +0.000000000E+C0,
104 5+G, 0.000000000E+00, +0.000000000E+C0, +0.000000000E+00,
105 5+C, C000000000E+C0, +0.000000000E+C0, +0.000000000E+00,
106 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+C0,
107 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+00,
108 5+C, 0.000000000E+C0, +0.000000000E+C0, +0.000000000E+00,

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| | C | INPUT VALUES |
|-----|---|---|
| 170 | | GATE(001) • RST; GATE(002) • RST; GATE(003) • RST; GATE(004) • RST----- |
| 171 | C | GATE(005) • RST; GATE(006) • RST; GATE(007) • RST----- |
| 172 | | TIME • DRUBLF(001) |
| 173 | | XX • FIXED(001); NUM • FIXED(002) |
| 174 | | IPRINT • FIXED(003); APPS • FIXED(004) |
| 175 | | NCT • FIXED(005); NDTA • FIXED(006) |
| 176 | | KAGE • FIXED(007); NULSKR • FIXED(008) |
| 177 | | KAVY • FIXED(009); SOURCE • FIXED(010) |
| 178 | | IFLFC • FIXED(011); IRLL • FIXED(012) |
| 179 | | ISKR • FIXED(013); TRAP • FIXED(014) |
| 180 | | IACT • FIXED(015); IRULLDC • FIXED(016) |
| 181 | | JACG • FIXED(017); NULL • FIXED(018) |
| 182 | | KAGE • FIXED(019); IDUM • FIXED(020) |
| 183 | | ICLM • FIXED(021); IDUM • FIXE(022) |
| 184 | | ICLM • FIXED(023); IDUM • FIXED(024) |
| 185 | | ICLM • FIXED(025); IDUM • FIXED(026) |
| 186 | | ICLM • FIXED(027); IDUM • FIXED(028) |
| 187 | | ICLM • FIXED(029); IDUM • FIXED(030) |
| 188 | | FLGS • LOGICAL(001); IMPACT • LOGICAL(002) |
| 189 | | EROR • LOGICAL(003) |
| 190 | | WTMOL • REAL(001); TR • REAL(002) |
| 191 | | OO • REAL(003); TORAD • REAL(004) |
| 192 | | R0 • REAL(005); RHOSL • REAL(006) |
| 193 | | ROTAR • REAL(007); CO • REAL(008) |
| 194 | | MASS • REAL(009); IX • REAL(010) |
| 195 | | 142 • REAL(011); D • REAL(012) |
| 196 | | REFLECT • REAL(013); PI • REAL(014) |
| 197 | | WDCD • REAL(015); RZ • REAL(016) |
| 198 | | FSTSAM • DBLE(REAL(017)); BRS • REAL(018) |
| 199 | | CELRBL • REAL(019); LAMBI • REAL(020) |
| 200 | | KB • REAL(021); KG • REAL(022) |
| 201 | | KG • REAL(023); KRGL • REAL(024) |
| 202 | | BC • REAL(025); RVBIAS • REAL(026) |
| 203 | | BF • REAL(027); BD • REAL(028) |
| 204 | | AF • REAL(029); BR5 • REAL(030) |
| 205 | | PFTMAX • REAL(031); RTOL • REAL(032) |
| 206 | | BA • REAL(033); CS • REAL(034) |
| 207 | | KP • REAL(035); BC • REAL(036) |
| 208 | | KQ • REAL(037); FFCLB • REAL(038) |
| 209 | | FFCPB • REAL(039); FFCNB • REAL(040) |
| 210 | | FFAXE • REAL(041); FFAYB • REAL(042) |
| 211 | | FFAZE • REAL(043); FFALB • REAL(044) |
| 212 | | FFAMB • REAL(045); FFANB • REAL(046) |
| 213 | | GAMLB • REAL(047); PCL • REAL(048) |
| 214 | | YCL • REAL(049); THTAC • REAL(050) |
| 215 | | GF • REAL(051); CLD • REAL(052) |
| 216 | | TA • REAL(053); IT • REAL(054) |
| 217 | | KC • REAL(055); RNBLIN • REAL(056) |
| 218 | | PHFAV • REAL(057); YHFAV • REAL(058) |
| 219 | | DELMX • REAL(059); DELMY • REAL(060) |
| 220 | | VRATE • REAL(061); K6 • REAL(062) |
| 221 | | K5 • REAL(063); FBN • REAL(064) |
| 222 | | K8 • REAL(065); OMEGA • REAL(066) |
| 223 | | PCA • REAL(067); U • REAL(068) |
| 224 | | V • REAL(069); W • REAL(070) |
| 225 | | P • REAL(071); D • REAL(072) |
| 226 | | R • REAL(073); PRI • REAL(074) |
| 227 | | THTA • REAL(075); PHI • REAL(076) |
| 228 | | X • REAL(077); Y • REAL(078) |
| 229 | | Z • REAL(079); PSIG • REAL(080) |

| | | | | |
|-----|--------|-------------|--------|--------------|
| 232 | THTAS | * REAL(081) | DP | * REAL(082) |
| 233 | CG | V-REAL(083) | DR | * REAL(084) |
| 234 | CL | * REAL(085) | DV | * REAL(086) |
| 235 | DR | V-REAL(087) | DFLXB | * REAL(088) |
| 236 | CELYB | * REAL(089) | DELZB | * REAL(090) |
| 237 | CELXS | * REAL(091) | DFLYS | * REAL(092) |
| 238 | CELZS | * REAL(093) | PITRAQ | * REAL(094) |
| 239 | YALERR | * REAL(095) | PT9EKA | * REAL(096) |
| 240 | YAKERD | * REAL(095) | BMEGY | * REAL(098) |
| 241 | OPED2 | V-REAL(099) | PSR9 | V-REAL(100) |
| 242 | BT1 | * REAL(101) | BT2 | * REAL(102) |
| 243 | THTBL | V-REAL(103) | KC | * REAL(104) |
| 244 | SF0 | * REAL(105) | SF1 | * REAL(106) |
| 245 | SF2 | V-REAL(107) | SF3 | * REAL(108) |
| 246 | SF4 | * REAL(109) | SF5 | * REAL(110) |
| 247 | SP6 | V-REAL(111) | SP7 | V-REAL(112) |
| 248 | SF8 | * REAL(113) | SF9 | V-REAL(114) |
| 249 | SF10 | V-REAL(113) | SP11 | V-REAL(116) |
| 250 | SF12 | * REAL(117) | SP13 | * REAL(118) |
| 251 | SP14 | * REAL(119) | SP15 | V-REAL(120) |
| 252 | TIC | * REAL(121) | TIC1 | V-REAL(122) |
| 253 | POHO | V-REAL(123) | YERG | * REAL(124) |
| 254 | OSA | * REAL(125) | RSA | * REAL(126) |
| 255 | PEB | V-REAL(127) | YFO | * REAL(128) |
| 256 | REG | * REAL(129) | RET | * REAL(130) |
| 257 | REN | V-REAL(131) | REO | * REAL(132) |
| 258 | T2 | * REAL(133) | DELXV | * REAL(134) |
| 259 | CELYV | V-REAL(135) | DFLZV | * REAL(136) |
| 260 | CEL1 | * REAL(137) | DEL2 | * REAL(139) |
| 261 | CEL3 | V-REAL(139) | DFL4 | * REAL(140) |
| 262 | CELVP | * REAL(141) | DELM18 | * REAL(142) |
| 263 | TK | V-REAL(143) | THBS | * REAL(144) |
| 264 | PSBS | * REAL(145) | THBS5 | * REAL(146) |
| 265 | PRBS5 | V-REAL(147) | TWTXO | * REAL(148) |
| 266 | REF | * REAL(149) | PEF | * REAL(150) |
| 267 | YEF | V-REAL(151) | TXED | * REAL(152) |
| 268 | PXED | * REAL(153) | F1 | * REAL(154) |
| 269 | F2 | V-REAL(155) | F3 | * REAL(156) |
| 270 | PSISG | * REAL(157) | THAGD | * REAL(158) |
| 271 | DTHTA | V-REAL(159) | DRP81 | * REAL(160) |
| 272 | DCEL1 | * REAL(161) | DOEL3 | * REAL(162) |
| 273 | DCELP1 | V-REAL(163) | DOELP3 | * REAL(164) |
| 274 | DCELVP | * REAL(165) | DOELPP | * REAL(166) |
| 275 | DCCEL1 | V-REAL(167) | DCDEL3 | * REAL(168) |
| 276 | DCCELP | * REAL(169) | DRLAMP | * REAL(170) |
| 277 | CRAPY | V-REAL(171) | DRPH10 | * REAL(172) |
| 278 | RLAMP | * REAL(173) | RLAMP | * REAL(174) |
| 279 | RPM10 | V-REAL(175) | RPS1 | * REAL(176) |
| 280 | RTHTA | * REAL(177) | XT | * REAL(178) |
| 281 | YT | * REAL(179) | ZT | * REAL(180) |
| 282 | CPBIS | * REAL(181) | DTHTAS | * REAL(182) |
| 283 | THETAT | V-REAL(183) | PS1T | * REAL(184) |
| 284 | PEO | * REAL(185) | YFD | * REAL(186) |
| 285 | CPEP | V-REAL(187) | DYEP | * REAL(188) |
| 286 | PEFL | * REAL(189) | PHIG | * REAL(190) |
| 287 | CPH10 | V-REAL(191) | PTTACC | * REAL(192) |
| 288 | VM | * REAL(193) | DPH10 | * REAL(194) |
| 289 | CPH10C | V-REAL(195) | THOLD | * RFACT(196) |
| 290 | RCET | V-REAL(197) | TIME0 | * REAL(198) |
| 291 | TIME1 | V-REAL(199) | TIME2 | * REAL(200) |
| 292 | TIME3 | * REAL(201) | TIME4 | * REAL(202) |
| 293 | ZMIN | V-REAL(203) | RTMIN | * REAL(204) |

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294      DLM      * REAL(205); DLM      * REAL(206)
1*      DTHASC  * REAL(205); DPSISD  * REAL(206)
295      C
296      C      CALCULATED VALUES
297      C
298      ARG1=1.0*(G0+LTML)/(RSTAR+TGRAD)
299      XIATIA = (IYZ+IX)/IYZ
300      SI=.75*PI=0.0
301      WANG=PI=R2
302      SINKANG=SINKWANG
303      CS=ANG=COS(LWANG)
304      SPER=1.00/DBLE(FLOAT(NPPS))
305      TPE=SPEP
306      CT=1.00/DBLE(FLOAT(NCT))
307      CTRK=SNGL(CT)
308      CTAVI=DC/CBLC(FLOAT(NOTA))
309      CELR0L=REAL(C19)/R2D
310      DELR0L=CELRL0L/R2D
311      LAMB1=LAMB1/R2C
312      PHIMAX=PHIMAX/R2C
313      GAMLB=GAMLB/R2D
314      YCL=YCL/R2D
315      PHF0V=PHF0V/R2C
316      VRATE=VRATE/R2D
317      RVBIAS=RVBIAS/R2C
318      GC=GC/R2D
319      PCL=PCL/R2D
320      THTA=THTA/R2C
321      CI=(IT-IA)/IT
322      RI=IA/IT
323      RANGLIN=RANGLIN/R2D
324      YMFSV=YMFSV/R2D
325      K4=K4/R2D
326      THTA=THTA/R2C
327      CPSIS=COS(PSIS)
328      **** JMAX=PRINT CONTROL. PRINTING SCCLRS EVERY JMAX INTERVALS*
329      JMAX=1.00/DT+.000001
330      INPUT(105)
331      ZHOLC=Z
332      THTA=THTA
333      TC1=TC1++1;T02=T01++1
334      TC2=TC2++2
335      TC3=TC3++2
336      TC4=TC4++2
337      TC5=TC5++2
338      TC6=TC6++2
339      T1=TC++2;
340      IF(T2>LT+.01)T2=T1++1
341      CT=COS(THETAT)
342      ST=SIN(THETAT)
343      CPSIS=SIN(PSIT)
344      SP=SIN(PSIT)
345      IF((ROLLLOC>2))ACT=2
346      **** RANGE TARGET FROM MISSILE=RTM IN FEET,
347      RTM=SGRT((XT-X)**2+(YT-Y)**2+(ZT-Z)**2)
348      ****
349      C      WHITE SANDS ALTITUDE=4000. FT.
350      **** IMPORTANT-DEFINE-TIME0-FOR-TRAJEKTORY
351      ****
352      **** START ROLL GYRO(LINE358) AT TIME1
353      **** START PITCH AND YAW GYROS(LINE 367)/ROLL CONTROL(LINE 399) AT TIME3
354      **** ENABLE TRACK AT TIME4      IF TARGET IS WITHIN FOV AND ROET

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355      C**** BALLISTIC FLYOUT
356      IPI(RCETSLT=55;TIME=9999;
357      ITEMP=TIME+1.000001
358      C*****FIRST SCMECUCED PRINT TIME
359      PRINM=ITEMP
360      CELX=XT-X
361      CELY=YT-Y
362      CELZ=ZT-Z
363      DELXT=DELX
364      CELYT=DELY
365      CELZT=DELZ
366      CMC=0.
367      CRC=0.
368      C*****  

369      EDC=Y1
370      EC1=EY1*0.25
371      EC2=Z2
372      EC3=ED1+*2
373      EC4=EC3*3.8
374      EC5=TIME3
375      CELPX=DELPX/R2D          ;DELMY=DELMY/R2D
376      3M001 FORMAT(//2X,K45//,5T2X)E6,17,011.5)
377      90001 FORMAT(//2X, 'NULL ROLL RATE SENSORS')
378      90002 FORMAT(//2X, 'ROLL WYLD')
379      90003 FORMAT(//2X, 'LATERAL ENABLE')
380      90004 FORMAT(//2X, 'OUTDORSE ENABLE')
381      90005 FORMAT(//2X, 'ACQUISITION')
382      90006 FORMAT(//2X, 'UNCAKE GYRA FOR ROLL TO VERTICAL')    PLOM
383      90007 FORMAT(1H1)
384      90010 FORMAT(//2X, 'BETIN SEEKER CANT')
385      9 CONTINUE
386      KUTTA = C
387      R E T U R N
388      C
389      C      E N T R Y   D E R I V A T I V E S
390      C
391      KLTIA = KUTTA + 1
392      C
393      ALTY=Z
394      0 = G000000/(R00ALT)*W2
395      GEPALT=RD*ALY/(R00ALT)
396      C** METO CALCULATES VSND
397      CALL METO
398      13 CONTINUE
399      C
400      C** ECS TO RCS TRANSFORMATION
401      CALL TRSFEB
402      C
403      C** RCS TO SCS TRANSFORMATION, SEQUENCE IS THIAS,PS1S
404      CALL TRSFBS
405      100 IF(KLTIA.NE.1) G0 TO 108
406      IF(TIME.LT.TM9LD)NX=1
407      IF(TIME.GE.TM9LD)NX=14
408      IF(GATE(003).GE.100 TO 1235
409      IF(TIME.LT.TIME3)G0 TO 1235
410      GATE(003)=SET
411      IPRINT=2
412
413      1235 CONTINUE
414      IF(GATE(004).GE.100 TO 1236
415      IF(TIME.LT.TIME1)G0 TO 1236
416      GATE(004)=SET
417      IPRINT=2

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417      1236 CONTINUE
418      IF(GATE(OC5))GO TO 1237
419      IF(TIME.LT.TIME2)GO TO 1237
420      GATE(OC5)=SET
421      IPRINT=2
422      1237 CONTINUE
423      IF(GATE(OC6))GO TO 1238
424      IF(TIME.LT.TIME4)GO TO 1238
425      GATE(OC6)=SFT
426      IPRINT=2
427      1238 IF(GATE(OC7))GO TO 1239
428      IF(TIME.LT.T1)GO TO 1239
429      GATE(OC7)=SET
430      IPRINT=2
431      1239 CONTINUE
432      C
433      C   LOS ERROR IN SCS
434      - CALL LOSERR
435      C
436      C** SUBROUTINE SEEK DETECTS TARGET WITHIN THE DETECTION RANGE OF SEEKER/
437      C   TARGET WITHIN THE FIELD OF VIEW/S=A=L,SEEKFR WITHIN LINEAR RANGE
438      CALL SEEK
439      105 CONTINUE
440      C
441      C** MISSILE VELOCITY WRT AIR MASS
442      KACV=0.00007367*Z+5.236
443      KACV=KACV*(1.0+0.6*SIN(WNOV))
444      KAB = WND*BKGANG
445      KBS = WND*CSWANG
446      CALL "CALC"
447      C
448      C** ANGLE OF ATTACK COMPONENTS
449      C** TERMS FOR EQUATIONS OF MOTION
450      C** AERO AND CONTROL FORCES AND MOMENTS
451      C** SUBROUTINE FORMAN CALCULATES FORCES AND MOMENTS FOR THE DIFEG EQUATIONS
452      CALL FORMAN
453      C
454      C** SUBROUTINE DIFEG CONSTRUCTS THE EQUATIONS OF MOTION
455      CALL DIFEG
456      IPT1PCP9780 TO 5150
457      IF(TIME.LT.T1)GO TO 406
458      IF(VROT,FLG0)GO TO 6666
459      PRINT 9001;IPRINT=2;FLG0=NBT;FLG0
460      6666 CONTINUE
10      XX=33
462      C
463      C** SUBROUTINE EDISKRGYR CONSTRUCTS THE SEEKER GYRO MODEL FOR ED
464      CALL EDISKRGYR
465      5203 CONTINUE
466      C
467      C** ED AUTOPILST
468      CALL EDAP
469      GO TO 226
470      C
471      C   ENGINEERING DESIGN AUTOPILST
472      C
473      5150 IF(TIME.LT.TIME3)GO TO 401
474      IF(VROT,FLG9)GO TO 6671
475      PRINT 9001;IPRINT=2;FLG5=.FALSE.
476      6671 CONTINUE
477      XX = 32
478      9MF02*KB*YAHZRB

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FL05
FL05
FLG5

```

479      C***CARTSEEKER
480      C***CARTSEEKER UNTIL ACQUISITION(TACCU2)
481          RMEGY=KS=(THTAC-THTAS)
482          IF(THTAC>THTAS) RMEGY=KS*(PITEYN)
483          IF(ABS(RMEGY)>GT,,10472) RMEGY=SIGN(.10472,RMEGY)
484          IF(ABS(RMEGZ)>GT,,10472) RMEGZ=SIGN(.10472,RMEGZ)
485          ICEAL GYRO
486          GSA=BS21*P+BS22*C+BS23*R
487          RSA=BS31*P+BS32*C+BS33*R
488          F1=GPEUD-QSA1/CRST(PSTS)
489          F3=RMEGZ-RSA
490          CPSIS=COS(PSTS)
491          IF((ISKR,EG+1)F1=(RMEGY-RSA)/CPSIS
492          IF((ISKR,EG+1)F3=RMEGZ-QSA
493          FA=0.
494          FSA=
495          LAMPR = RMEGY
496          LAMPR = RMEGZ
497          IF((JACQ,NE+2)LAMPR=LAMYR=C.
498          GYRO EQUATIONS FOLLOW
499          CTHTAS=F1
500          CTWASC=F2
501          CPSIS=F3
502          CPSISUN=F4
503          COMEGA=F5
504          C*** ROLL RATE GYRO
505          *01 CONTINUE
506          IF ((TIME<LT,TIME1)) GO TO 406
507          C*** ROLL GYRO EOS
508          TMP3 = SIN(CTHTA)
509          TMP4 = COS(CTHTA)
510          CTHTA = (P+THPA,R+THP3)*TAU(NPS1)+C
511          CRPST = -VTP+THP3+R+THP4)
512          C*** RATE CAMPING OF GIMBAL ANGLES
513          C           IF ((TIME<LT,TIME6)) GO TO 301
514          C           IF ((TIME<LT,TIME3)) GO TO 301
515          CTXED=BD*(TXED-KQ*THTAS)
516          THRBS=BD*(KQ*THTAS-TXED)
517          CPXEDU=BD*(TPXED-KQ*PS13)
518          PSRBS=BD*(KQ*PS15-PXED)
519          TMP5=KRBL*THRBS*THTAS
520          PSBS=KRBL*PSRBS*PS15
521          C*** CEAC BAND ZONE FOR PSBS,THBS
522          IF(ABS(THBS),LE,GAPLB) GO TO 180
523          THBS = KBL*(THBS-SIGN(GAPLB,THBS))
524          GO TO 161
525          180 TMP5=0.
526          161 IF(ABS(PSBS),LE,GAPLB) GO TO 162
527          PSBS = KBL*(PSBS-SIGN(GAPLB,PSBS))
528          GO TO 163
529          162 PSBS=C-
530          163 CONTINUE
531          C*** GUIDANCE FILTER
532          C*** KG AND LAMBI ARE TIME CONTROLLED CONSTANTS
533          164 CONTINUE
534          PEC=LAMPR+LAMBI+KB*THTAB
535          VEC=LAMYR
536          CPFF=BF*(PEF-KQ*PED)
537          CYFF=BF*(YEF-KQ*YED)
538          IF(ABS(PEF),GT,GC)PEF=SIGN(GC,PEF)
539          IF(ABS(YEF),GT,GC)YEF=SIGN(GC,YEF)
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HILL

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541 PEG+THRBS+THBS+PEF
542 VEG+PSRBS+PBS+YFF
543 PEG = PEG
544 IF(ABST(PEG),GT,PCL)PEG=SIGN(PCL,PEG)
545 IF(ABS(YEG),GT,YCL)YEG=SIGN(YCL,YEG)
546 C***ROLL DECOUPLER
547 301 CONTINUE
548 IF (TIME>LE,TIME3)G7 TO 406
549 GO TO(1401,1402),IROLLDC
550 1401 CONTINUE
551 C****PREVIOUS ROLL DECOUPLER
552 IF(IACQ,EG=2,AND, TIME>GT+TIMER ,AND, NULSKR,EG,2) GO TO 300
553 RLAMV=PSIS
554 RLAMP=THAS=RTHTA
555 GO TO 302
556 300 CONTINUE
557 CRLAMY=LAMYR
558 ORLAMP=LAMPR
559 302 CONTINUE
560 RICY=PSIS
561 RICP=THAS=RTHTA
562 REC=RICP=RLAMP
563 REN=RICY=RLAMY+RPSI
564 305 CONTINUE
565 IF(RED,LT,.4363)REC=.4363
566 IF(RED,GT+.7453)REC=.7453
567 RET=REN/RED
568 PHT082=RET
569 GO TO 1404
570 1402 CONTINUE
571 C****SLATEST ROLL DECOUPLER
572 CRLAMY+BR5*(PSIS-RLAMY)
573 IF(IACQ,EG=2)ORLAMY=0
574 REC=S1+RPSI*S2+RLAMY=SS+PSIS
575 REC=S4+THAS=SS+RTHTA
576 IF(ABS(RET),LT,RTOL)GO TO 304
577 C***CHECK FOR SATURATION
578 IF(APS(PHIMAX=ABST(RET)),LT,RTBL,AND,RED,LT,RFN/RET)GO TO 306
579 C*** 304 RET=SIGN(.999,RET)
580 IF(RED,GT,0,)RET=REN/RED
581 306 CONTINUE
582 IF(ABS(RET),GT,PHIMAX)RET=SIGN(.999,RET)
583 PHT082=RET
584 1404 CONTINUE
585 DRPHIG=BGDRPHIG=BG+(1,-BG,AP),PHIG
586 REF=(BG/AP)*PHIG+RPHIG
587 REF=KP*REF
588 IF(ABS(REF),GT,.17453) REF=SIGN(.17453,REF)
589 303 CONTINUE
590 REG=REF=RVBIAS
591 C
592 C** CONTROL SYSTEM, CANARDS FOR EACH PLANE ON COMMON SHAFT
593 307 CONTINUE
594 IF(IACQ,EG=2,AND, NULSKR,EG,2) GO TO 226
595 221 CONTINUE
596 YEG=0.
597 PEG=0.
598 226 CONTINUE
599 CALL CTRL
600 C** 4TH ORDER RUNGE KUTTA INTEGRATION
601 406 CONTINUE

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603      IF(XLTTA .NE. 1) GO TO 50
1*      CALL(SVETAPETIE,3K0L(TIME),DTARD,THSD,TPSTED,PSISO,THTAS,PSIS)
604      29  CONTINUE
605      C
606      C      PROCESS TIC MARKS BY CHANNELS 0 AND A
607      C
608      C      TICL=C
609      C      IF(TIME.LT=0BLE(TIC))GO TO 1777
610      C
611      C      SET EVENT LEVEL
612      C
613      C      IF(IADE.EG=2)TICL=TICL+1
614      C      IF(ALL.EG=2)TICL=TICL+2
615      C      TICL=TICL+1
616      C      TICL=TICL+05
617      C
618      C      SET ACQUISITION SIGN
619      C
620      C      IF(IACG.EG=2)TICL+=TICL
621      1777  CONTINUE
622      PHC=ATAN2(SIN(PHI),COS(PHI))
623      C
624      C      PROCESS MDAC BUFFER
625      C
626      MCAC(01)=TICL/SF0          JMDAC(09)=TICL/SF8
627      MCAC(02)=(ALT-4CCG)/SF1    JMDAC(10)=R2D*9MEGY/SF9
628      MCAC(03)=TBACC/SF2        JMDAC(11)=R2D*PFIL/SF10
629      MCAC(04)=R2D*THTAS/SF3    JMDACT12=R2D*THRBS/SF11
630      MCAC(05)=R2D*PBIS/SF4    JMDAC(13)=R2D*PEQ/SF12
631      MCAC(06)=R2D*DELRLC/SF5    JMDACT14=R2D*THRBS/SF13
632      MCAC(07)=R2D*DELVV/SF6    JMDAC(15)=R2D*CRLAHY/SF14
633      MCAC(08)=R2D*DELVP/SF7    JMDAC(16)=R2D*THTA/SF15
634      C
635      C      LIMIT MDAC OUTPUT
636      C
637      DB 1692 181,16
638      IF(ABS(MDAC(1)).GT.0.9999)MDAC(1)=SIGN(.9999,MDAC(1))
639      1692  CONTINUE
640      C
641      C      OUTPUT MDAC VALUES
642      C
643      X      CALL(WOACS(0),18,MDAC)
644      X      IERR=SVTAP(E(SNGL(TIME)),R2D+TXED)
645      PRNTTEXT=PRINT(1,E=8)
646      IF(TIME.LT=PRNTNEXT.AND.IPRINT.EG=1)GO TO 72
647      IPRINT=PRNTNEXT+1
648      IPRINT=1
649      7C  TMP1=SP1(PHI)
650      TMP2=COS(PHI)
651      PHC=ATAN2(TMP1,TMP2)
652      C*****
653      C
654      C      LINE PRINTER 1/0
655      C
656      C*****
657      IF(GATE(0C1))GO TO 1661
658      PRINT 90007
659      PRINT 90007,4M40C174H"EXTREME CUT THRESHOLD"
660      14H8F ,4H ,8F ,AHRTQL,4H ,RTBL,
661      14H80 ,4H ,80 ,AHRA ,4H ,RAJ,
662      14H83 ,4H ,83 ,AHKP ,4H ,KPS,
663      14H83 ,4H ,83 ,AHKQ ,4H ,KQS

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|-----|--------------|--------|---------------|-----------|--|
| 664 | 14HB1,4H | BT1 | ,4HBTP,4H | ,BT2 | |
| 665 | 14HCPT,4H | CPT | ,4HSTT,4H | ,STT | |
| 666 | 14HCS,4H | CS | ,4HFFCM,4WB | ,FFCMR, | |
| 667 | 14HCTY,4H | CTY | ,4HPART,4HM3 | ,RAPTM3 | |
| 668 | 14HD,4H | D | ,4HKG,4H | ,KG, | |
| 669 | 14HDELM,4HY | DELHY | ,4HEDO,4H | ,EDO | |
| 670 | 14HED1,4H | ED1 | ,4HED2,4H | ,ED2 | |
| 671 | 14HED3,4H | ED3 | ,4HED4,4H | ,ED4 | |
| 672 | 14HED5,4H | ED5 | ,4HKT10,4H | ,KT10 | |
| 673 | 14HFFAL,4HB | FFALB | ,4HFFCL,4H | ,YCL, | |
| 674 | 14HFFAN,4HB | FFANB | ,4HGF,4H | ,GF, | |
| 675 | 14HFFCL,4HB | FFCLB | ,4HFFAZ,4HB | ,FFAZR, | |
| 676 | 14HFFCA,4HB | FFCNB | ,4HFFAM,4HB | ,FFAMR, | |
| 677 | 14HGAME,4WB | GAPLB | ,4HPHFB,4HV | ,PHFBV, | |
| 678 | 14HGC,4H | GC | ,4HFFAX,4HB | ,FFAXR, | |
| 679 | 14HFACT,4M | FACT | ,4HTRNL,4HLOC | ,TRPLLCDC | |
| 680 | 14HIDLW,4H | IDLW | , | | |
| 681 | 14HIFUF,4MA | IFUFB | ,4HNULL,4H | ,NULL | |
| 682 | 14HIRBL,4HL | IRBL | ,4HKT20,4H | ,KT20 | |
| 683 | 14HISKR,4M | ISKR | ,4MS5,4H | ,SS | |
| 684 | 14HIT,4H | IT | ,4HPBGN,4H | ,FBGN, | |
| 685 | 14HIX,4H | IX | ,4HBD,4H | ,BD, | |
| 686 | 14HIYZ,4H | IYZ | ,4HR2,4H | ,R2 | |
| 687 | 14HK4,4H | HK4 | ,4HPCA,4H | ,PCA, | |
| 688 | 14HK8,4H | KB | ,4HARVRI,4HAS | ,RVBIAS, | |
| 689 | 14HKC,4H | KC | ,4HTHTB,4WL | ,HTBL | |
| 690 | 14HKGL,4H | KGL | ,4HFFAY,4WB | ,FFAYB, | |
| 691 | 14HKPC,4M | KPC | ,4HTIPS,4H | ,TIPS | |
| 692 | 14HKRGL,4H | KRGL | ,4HAF,4H | ,AF, | |
| 693 | 14HKS,4M | KS | ,4HKM,4H | ,KM | |
| 694 | 14HLLAMB,4HI | LAMB1 | ,4HJMAX,4H | ,JMAX | |
| 695 | 14HMASS,4H | MASS | ,4HCG,4H | ,CG, | |
| 696 | 14HARLN,4H | ARLN | , | | |
| 697 | 14HPCL,4H | PCL | ,4HTA,4H | ,TA, | |
| 698 | 14HPHIM,4HAX | PHIMAX | ,4HS8,4H | ,S8 | |
| 699 | 14HPRIN,4HTM | PRNTM | ,4HJMAX,4H | ,JMAX | |
| 700 | 14HRAPT,4HM2 | RAPT2 | ,4HRAPT,4HM1 | ,RAPTM1 | |
| 701 | 14HRCET,4H | RDET | ,4HDTA,4H | ,DTA | |
| 702 | 14HRFLE,4HCT | RFLECT | ,4HPI,4H | ,PI, | |
| 703 | 14HRLAM,4HF | RLAMP | ,4HPSTT,4H | ,PSIT | |
| 704 | 14HRLAM,4HY | RLAMY | ,4HPSI,4H | ,PSI | |
| 705 | 14HRNGL,4HIN | RNGLIN | ,4HVRAT,4HF | ,VRATE, | |
| 706 | 14HRTM1,4HN | RTMIN | ,4HKM,4H | ,KM | |
| 707 | 14HS7,4H | S7 | ,4HS6,4H | ,S6 | |
| 708 | 14HS10,4H | S10 | ,4HS9,4H | ,S9 | |
| 709 | 14HS12,4H | S12 | ,4HS11,4H | ,S11 | |
| 710 | 14HS4,4H | S4 | ,4HS3,4H | ,S3 | |
| 711 | 14HS2,4H | S2 | ,4HS1,4H | ,S1 | |
| 712 | 14HS,4H | S | ,4HDELM,4HW | ,DELMX | |
| 713 | 14HSF0,4H | SF0 | ,4HSF1,4H | ,SF1 | |
| 714 | 14HSF2,4H | SF2 | ,4HSF3,4H | ,SF3 | |
| 715 | 14HSF4,4H | SF4 | ,4HSF5,4H | ,SF5 | |
| 716 | 14HSF6,4H | SF6 | ,4HSF7,4H | ,SF7 | |
| 717 | 14HSF8,4H | SF8 | ,4HSF9,4H | ,SF9 | |
| 718 | 14HSF10,4H | SF10 | ,4HSF11,4H | ,SF11 | |
| 719 | 14HSF12,4H | SF12 | ,4HSF13,4H | ,SF13 | |
| 720 | 14HSF14,4H | SF14 | ,4HSF15,4H | ,SF15, | |
| 721 | 14HSLOP,4HEZ | SLOPE2 | ,4HSLOP,4HF1 | ,SLOPE1 | |
| 722 | 14HT01,4H | T01 | ,4HT0,4H | ,TO | |
| 723 | 14HT03,4H | T03 | ,4HT02,4H | ,TO2 | |
| 724 | 14HT05,4H | T05 | ,4HT04,4H | ,TO4 | |
| 725 | 14HT07,4H | T07 | ,4HT06,4H | ,TO6 | |

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|-----|---------------------------------------|----------|--------------|---------|--|
| 726 | 14HT2 ,4H | ,T2 | ,4HT1 ,4H | ,T1 | |
| 727 | 14HTB ,4H | ,TB | ,4HSPT ,4H | ,SPT | |
| 728 | 14HTPL ,4HD | ,THALC | | | |
| 729 | 14HTHTA ,4HC | ,THYAC | ,4HKD ,4H | ,RDS | |
| 730 | 14HTHET ,4HAT | ,THEtat | ,4HJRAP ,4H | ,IRAP | |
| 731 | 14HTHAL ,4HD | ,THBLD | , | | |
| 732 | 14HTIC ,4H | ,TIC | ,4HTICI ,4H | ,TICI | |
| 733 | 14HTIME ,4M3 | ,TIME3 | ,4HTIME ,4H2 | ,TIME2 | |
| 734 | 14HTIME ,4M1 | ,TIME1 | ,4HTIME ,4H0 | ,TIME0 | |
| 735 | 14HTIP1 ,4H | ,TIP1 | ,4HTIT ,4H | ,DT | |
| 736 | 14HYHFO ,4HV | ,YHF9V | ,4HKS ,4H | ,K5 | |
| 737 | 14HZMIN ,4H | ,ZMIN | ,4HTIME ,4H4 | ,TIME4 | |
| 738 | 14HWAD0 ,4H | ,WAD0 | ,4HZMIN ,4H | ,ZMIN | |
| 739 | DATE1CC1)SET | | | | |
| 740 | 1661 | CONTINUE | | | |
| 741 | PRINT 90007 | | | | |
| 742 | PRINT 90000,4,4HPR0J,4HECTI,4HLE1 ,4H | | | | |
| 743 | 14HTIME ,4H | ,TIME | ,4HRSA ,4H | ,RSA | |
| 744 | 14HDELV ,4HP | ,DELVP | ,4HU ,4H | ,U | |
| 745 | 14KV ,4H | ,V | ,4HW ,4H | ,W | |
| 746 | 14HTHTA ,4H | ,THTA | ,4HPHO ,4H | ,PHO | |
| 748 | 14HDELZ ,4H | ,DELZ | ,4HTOT0 ,4HC | ,TOTACC | |
| 749 | 14HDZ ,4H | ,DZ | ,4HDY ,4H | ,DY | |
| 750 | 14HCPHI ,4H | ,CPHI | ,4HDTHT ,4HA | ,DTHTA | |
| 751 | 14HDX ,4H | ,DX | ,4HDPSI ,4H | ,DPSI | |
| 752 | 14HCR ,4H | ,DR | ,4HDDG ,4H | ,DG | |
| 753 | 14HDP ,4H | ,DP | ,4HDW ,4H | ,DW | |
| 754 | 14HDC ,4H | ,D | ,4HDV ,4H | ,DV | |
| 755 | 14HVRK ,4H | ,VRK | ,4HMACH ,4H | ,MACH | |
| 756 | 14HCP ,4H | ,CP | ,4HPST ,4H | ,PST | |
| 757 | 14HP ,4H | ,P | ,4HG ,4H | ,G | |
| 758 | 14HRT ,4H | ,R | ,4HDELV ,4HY | ,DELVY | |
| 760 | 14HAZB ,4H | ,AZB | ,4HDELX ,4HV | ,DELXV | |
| 761 | 14HCELY ,4HV | ,CELYV | ,4HDELZ ,4HV | ,DELZV | |
| 762 | 14HX ,4H | ,X | ,4HY ,4H | ,Y | |
| 763 | 14HZ ,4H | ,Z | ,4HMR ,4H | ,AMB | |
| 764 | 14HXT ,4H | ,XT | ,4HYT ,4H | ,YT | |
| 765 | 14HCTHT ,4HA | ,OTHATA | | | |
| 766 | 14HCPHI ,4H | ,CPHI | ,4HSPHI ,4H | ,SPHI | |
| 767 | 14HCPST ,4H | ,CPST | ,4HSPST ,4H | ,SPST | |
| 768 | 14HCPSI ,4HS | ,CPSTIS | ,4HGZB ,4H | ,GZB | |
| 769 | 14HGYB ,4H | ,GYB | ,4HGX8 ,4H | ,GX8 | |
| 771 | PRINT 90000,4,4HAUT0,4HPIL0,4HT1 ,4H | | | | |
| 772 | 14HCPH ,4H10 | ,10PHIO | | | |
| 773 | 14HCELX ,4HS | ,DELXS | ,4HPEG ,4H | ,PEG | |
| 774 | 14HCELM ,4H19 | ,DELM19 | ,4HTXED ,4H | ,TXED | |
| 775 | 14HCELZ ,4HS | ,DELZS | ,4HOMEG ,4HA | ,OMEGA | |
| 776 | 14HOTEF ,4H | ,OTEF | ,4HOTFF ,4H | ,OPEF | |
| 777 | 14HDTHT ,4HAS | ,DTHTAS | ,4HRTH ,4H | ,RTM | |
| 778 | 14HKT ,4H | ,KT | ,4HPEFL ,4H | ,PEFL | |
| 779 | 14HNULL ,4H | ,NULL | ,4HDELR ,4H | ,DELR | |
| 780 | 14HOMEG ,4HZ | ,OME02 | ,4HPSRO ,4H | ,PSRS | |
| 781 | 14HPED ,4H | ,PED | ,4HPEF ,4H | ,PEF | |
| 782 | 14HPITE ,4HRO | ,PITER0 | ,4HPI0 ,4H | ,PHIG | |
| 783 | 14HPSIS ,4H | ,PSIS | | | |
| 784 | 14HPXED ,4H | ,PXED | ,4HTHRS ,4H | ,THBS | |
| 785 | 14HPSBS ,4H | ,PSBS | ,4HDEL1 ,4H | ,DEL1 | |
| 786 | 14HRLAM ,4HY | ,RLAMY | ,4HRLAM ,4HP | ,RLAMP | |
| 787 | 14HTHTA ,4HS | ,THTAS | ,4HTHRE ,4HS | ,THRRE | |
| 788 | 14HYEF ,4H | ,YEF | ,4HPEF ,4H | ,PEF | |
| 789 | 14HYEC ,4H | ,YED | ,4HPED ,4H | ,PED | |
| 790 | 14HYEF ,4H | ,YEF | ,4HYBRG ,4H | ,YBRG | |

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|-----|---|-----------------------|--------------|---------|---------|
| 791 | 14HYEG ,4H | ,YEG | ,4HDELY,4HS | ,DELYS | , |
| 792 | 14HYAWE,4HRR | ,YAHERR | ,4HYAWE,4HRR | ,YAKER | , |
| 793 | 14HLAMY,4HR | ,LAMYR | ,4HLAMP,4HR | ,LAMPR | , |
| 794 | 14HCSA ,4HM | ,CSA | ,4HCAFS,4H | ,CAPS | , |
| 795 | 14HCPST,4HS | ,DPSIS | ,4HJACG,4L | ,JACQ | , |
| 796 | 14HPSRB,4HS | ,PSRS | ,4HREV ,4H | ,REV | , |
| 797 | PRINT 90000,2,4HLAGI,4HCl | , | | | |
| 798 | 14HGATE,4H | 1,GATE(001),4HGATE,4H | 2,GATE(002), | | |
| 799 | 24HGATE,4H | 3,GATE(003),4HGATE,4H | 4,GATE(004), | | |
| 800 | 24PGATE,4H | 5,GATE(005),4HGATE,4H | 6,GATE(006), | | |
| 801 | 34HGATE,4H | 7,GATE(007) | | | |
| 802 | PRINT 90000,4,4HAERB,4HDYNA,4HMICS,4HI | , | | | |
| 803 | 14HCLD ,4H | ,CLC | ,4HALB ,4H | ,ALB | , |
| 804 | 14HCNR ,4H | ,CNR | ,4HCMG ,4H | ,CMG | , |
| 805 | 14HCY ,4H | ,CY | ,4HCAZ ,4H | ,CAZ | , |
| 806 | 14HCLP ,4H | ,CLP | ,4HCHN ,4H | ,CN | , |
| 807 | 14HCYCG,4H | ,CYCG | ,4HCMCG,4H | ,CMCG | , |
| 808 | 14HANB ,4H | ,ANB | ,4HCLB ,4H | ,CLB | , |
| 809 | 14HCPB ,4H | ,CMB | ,4HCBN ,4H | ,CNB | , |
| 1* | 14HTHAS,4HD | ,THASC | ,4HOTHA,4HSD | ,OTHASD | , |
| 2* | 14HPSIS,4HD | ,PSISO | ,4HPCSI,4HSD | ,DPSISO | , |
| 810 | 14HALPH,4HA | ,ALPHA | ,4HBETA,4H | ,BETA | , |
| 811 | PRINT 90000,1,4HRAPI, | | | | |
| 812 | 14HSTT ,4H | ,STT | ,4HCTT ,4H | ,CTT | , |
| 813 | 14HSPY ,4H | ,SPY | ,4HCPY ,4H | ,CPT | , |
| 1* | 14HTHT ,4H | ,TH | ,4HXLTa,4H | ,XLTA | , |
| 815 | PRINT 90000,3,4HDEBU,4HG PR,4HINTI, | | | | |
| 816 | 14HDELX,4HB | ,DELXB | ,4HELY,4HB | ,DELYS | , |
| 1* | 14HDELZ,4HB | ,DELZB | ,4HDELX,4HS | ,DELXS | , |
| 818 | 14HDELY,4HS | ,DELYS | ,4HDELZ,4HS | ,DELZS | , |
| 819 | 14HKUTT,4HA | ,KUTTA | , | | |
| 820 | 14HPITE,4HRR | ,PITFRR | ,4HYAWE,4HRR | ,YAKER | , |
| 821 | 14HPITE,4HRS | ,PITER8 | ,4HVANE,4HRS | ,YAKER | , |
| 822 | 34HCRLA,4HMT | ,CRLAMY | ,4HF3 ,4H | ,F3 | , |
| 823 | 34HCRPS,4HI | ,DRPSI | ,4HDRTH,4HTA | ,DRTHYA | , |
| 824 | 34HCRPH,4HIG | ,DRPHIG | ,4HRPHT,4HG | ,RPHIG | , |
| 825 | 14HDELV,4HR | ,DELVR | ,4HDPHI,4HO | ,DPHIO | , |
| 826 | 14HG ,4H | ,G | ,4HVEND,4H | ,VSND | , |
| 827 | 14HISKR,4H | ,ISKR | ,4HFACT,4H | ,IACT | , |
| 828 | 14HICOUT,4HDE | ,ICOUTDE | ,4HTRAP,4H | ,TRAP | , |
| 829 | 14HKAGE,4H | ,KAGE | ,4HNAVY,4H | ,NAVY | , |
| 830 | 34HF1 ,4H | ,F1 | ,4HDLRA,4HMP | ,DLRAMP | , |
| 831 | 14HNALW ,4H | ,NUM | ,4HPIRI,4HNT | ,IPRINT | , |
| 832 | 14HNPPS,4H | ,NPPS | ,4HNODT ,4H | ,NOT | , |
| 833 | 14HNDTA,4H | ,NDTA | ,4HNULS,4HKR | ,NULSKR | , |
| 834 | 34HPEFL,4H | ,PEFL | ,4HPHTO,4H | ,PHIG | , |
| 835 | 14HRHS ,4H | ,RHS | , | | |
| 836 | 14HS2 ,4H | ,S2 | ,4HDELR,4HBL | ,DELRBL | , |
| 837 | 14HREC ,4H | ,RED | ,4HRET ,4H | ,RET | , |
| 838 | 14HREG ,4H | ,REG | ,4HRSPT,4H | ,RPSI | , |
| 1* | 14HRTHT,4HA | ,RHTHA | , | | |
| 840 | 14HSMFO,4HY | ,SMFY | ,4HMEQ,4HZ | ,MENQ | , |
| 841 | 14HNX ,4H | ,NX | | | |
| 842 | 72 IF(IIMPACT)PRINT 90000,2,4HIMPA,4HCTI, | | | | |
| 843 | 14HPCAT,4H | ,PCAT | ,4HPCAX,4H | ,PCAX | , |
| 844 | 14HPCAY,4H | ,PCAY | ,4HPCAZ,4H | ,PCA2 | , |
| 845 | 14HPCA ,4H | ,PCA | | | |
| 846 | IPT(IIMPACT,0.0, ERROR) | | RETUR | | END RUN |
| 847 | 50 C O N T I N U E | | | | |
| 848 | C | | | | |
| 849 | C DISPLACEMENT ERRORS FROM AIM POINT | | | | |
| 850 | C | | | | |

```

851      C    DISPLACEMENT ERRORS FROM SPRT
852      CELX=XT=X
853      CELY=YT=Y
854      CELZ=ZT=Z
855      IF (TIME>LT,TIME3) GO TO 51
856      C
857      IF (ABS(DEL1)>GT,DELH1)*SIGN(DELH1,DEL1)
858      IF (ABS(DELVP)>GT,DELMX)*SIGN(DELH1,DELVP)
859      IF (ABS(DEL3)>GT,DELH3)*SIGN(DELH1,DEL3)
860      IF (ABS(DDEL1)>GT,VRATE)*DDEL1*SIGN(VRATE,DDEL1)
861      IF (ABS(DDEL3)>GT,VRATE)*DDEL3*SIGN(VRATE,DDEL3)
862      IF (IACT>0) GO TO 51
863      DEL1 = YEG*REG
864      DELVP = PEG
865      DEL3 = YEG*REG
866      IF (IACT.EQ.2) DEL1=REG*YEG
867      IF (IACT.EQ.2) DEL3=REG*YEG
868      51 CONTINUE
869      RETURN
870
871      C
872      ENTRY FINISH
873      C
874      C
875      IF (IACG.EQ.1) GO TO 40
876      XT = XT+DTRK*VXT
877      YT = YT+DTRK*VYT
878      40 CONTINUE
879      VMS=U+V+V+W
880      VPK=SGRT(VMS)
881      TOTACC=(SGRT((AYB*AYB+AZB*AZB))/MASS
882      C***TRAJECTORY TERMINATION
883      IF (TIME>5.0 AND Z>ZMIN) GO TO 45
884      IF (Z>ZMIN) GO TO 157
885      45 CONTINUE
886      CELXT = XT=X
887      DELYT = YT=Y
888      CELZT = ZT=Z
889      CELXTB=EB11*DELXT+EB12*DELYT+EB13*DELZT
890      CELYTB=EB21*DELXT+EB22*DELYT+EB23*DELZT
891      CELZTB=EB31*DELXT+EB32*DELYT+EB33*DELZT
892      C** EGS IN ECS
893      VERLAM=ATAN2(-DELZ,SGRT(DELX*DELX+DELY*DELY))
894      HORLAM=ATAN2(DELY,DELX)
895      C** TOTAL MISSILE NON-FIELD ACCELERATION
896      C
897      GAMU=ATAN2(W,U)
898      RTUWS=SGRT(U*U+W*W)
899      GAMV=ATAN2(V,RTUWS)
900      C** BCS TO VCS TRANSFORMATION
901      CALL TRSFBV
902      DELMIS=SGRT(DELV*V*2+DELZV*Z)
903      GO TO 73
904      157 CONTINUE
905      C*** RANGE TARGET FROM MISSILE-RTM IN FEET.
906      RTM=SGRT((XT-X)*2+(YT-Y)*2+(ZT-Z)*2)
907      C*** POINT OF CLOSEST APPROACH COMPUTATION-PCA IN FEET.
908      IF (RTM>PCA) GO TO 55
909      PCAT=SNGL(TIME);PCAX=X;PCAY=Y;PCAZ=Z;PCA=RTM
910      55 CONTINUE
911      GO TO 9
912      73 IMPACT=.TRUE.

```

913 1PRINT=2
914 PRINT 90000,2,4HIMPA,6HTTY,6HTIME,4H ,TIME
915 GO TO 9
916 9999 GATE1 JC21#SET
917 ERRRRE,TRUE,
918 GO TO 70
919 9998 PRINT 90000,5,4HEVD=,4H&F=F,4HILF ,4HON U,4HNITI,
920 14MLUKI,4HT ,LUNIT
921 GO 3121 I=1,16
922 3121 MDAC(I)=\$0.
923 GO 3122 I=1,1500
924 X CALL MDACS(0,16,MDAC)
925 3122 CONTINUE
1* CALL BEOF(IE)
2* CALL WEOF\$80
3* CALL WEOP\$80
926 X CALL MODE('R')
927 X CALL MODET('P')
928 X CALL WEOF
929 X CALL PLOT(1,'TIME',251 TXED 1)
930 X CALL FGRLS(10V 1)
931 STOP
932 END

```

1      SUBROUTINE SEEKER(SRNGE,REFLEC,ERR,ERO)
2      DIMENSION TRNGE(18),TRFLEC(21),TBS(18,21),TLBS(19),TERB(19,6)
3      DIMENSION TRAD(6)
4      DATA TRNGE/100.,200.,300.,400.,500.,600.,700.,800.,900.,1000.,1100.,1200.,1300.,1400.,1500.,1600./
5      DATA TRFLEC /1.25,5./
6      DATA TBS /-1.5,-1.33,-1.167,-1.033,-0.667,-0.5,-0.333,-0.167,0.,
7      1.167,-0.333,-0.5,-0.667,-0.333,1*,1.167,1.333,1.5/
8      DATA TRAD /6.3E-14,4.6E-13,4.5E-12,4.1E-11,4.1E-10,2.6E-9/
9      DATA TERB/3E*11,2.6E*11,9.4E*12,5.8E*12,3.6E*12,2.9E*12,1.6E*12,
10     1.9*13,2*1E-13,9.3E-14,5.0E-14,3*0E-14,2.2E-14,1.4E-14,7.5E-15,
11     25*0E-15,3*0E-15,2*0E-15,
12     33*7E-9,9*CE-10,3.7E-11,2*1E-11,1.4E-11,9.2E-12,5.0E-12,3*3E-12,
13     48*4E-13,3*7E-13,2*0E-13,1,4E-13,8.4E-14,4.6E-14,3*0E-14,2.0E-14,
14     51*8E-14,1*05E-14/
15      DATA TERB/2*0E2,-1*95,7*1*86,-1*85*1*72,-1*5,-1*29,-6*33,0,-7*33,-
16     1*75,-1*05,-1*2,-1*3,-1*4,-1*5,-1*5,-1*6,-
17     2*4,-,-4,-,-3*95,-3*85,-3*6,-3*35,-7*8,-2*1,-,-85,-6,2*15,3*1,3*45,-
18     33*7,3*75,3*9,3*95,4*4,-
19     4*4.7,-4*7,-4*65,-4*5,-4*5,-4*2,-3*2,-2*6,-1*15,-7*2*3,3*2,3*5,3*7,-
20     53*75,3*8,3*9,3*9,3*9,-
21     6*3.5,-3*45,-3*25,-3*1,-2*9,-2*8,-2*5,-2*05,-1*19,0,-1*3,-1*3*1*7,-1*83,-
22     72*1*2*4,2*5,2*6,2*6,2*6,-
23     8*3.55,-3*55,-3*5,-3*4,-3*2,-3*0,-2*85,-2*5,-1*8,-,-9,-,-4,-,-05,-,-25,-
24     9*6,-,-7,-,-1,-,-1.05,-,-1,-,-
25     1*42,-4,-2*4,-2*35,-2*3,-2*2,-2*1,-1.85,-1*1,-1*1,-1*95,-,-8,-,-5,-,-35,-
26     8*2,-,-1,-,-05,-,-025,-,-05,-,-05,-
27      DIMENSION AHS(4), AEND(4)
28      DATA IS,IR, JH/3*0/
29      I=IS
30      CALL FIND(I,TRNGE,18,SRNGE)
31      IPTI,EG,IS)= 08 TO 10
32      IS=I
33      CALL NTERP(TAMS,TBS,I,TRNGE,18,1,TRFLEC)
34      10 HSFUNCTN(AHS,SRNGE,REFLEC)
35      RRR&ERR=57+296
36      I=IS; J=JH
37      CALL FIND(I,TLBS,IS,RRR)
38      CALL FIND(J,TRAD,6,HG)
39      IPTI,EG,IS)= 08 TO 20
40      IF(IJ&EQ,JH) 08 TO 30
41      IS=IS JH=J
42      CALL NTERP(AEND,TERB,I,TLBS,19,J,TRAD)
43      30 ENDFUNCTN(AEND,RRR,HG)
44      ERO = END/4+57+296
45      RETRN
46
47      END

```

```

1          SUBROUTINE AERO (T1,T2,FMACH,ALPHA,BETA,DFLPIT,CELYAW,DELROL,
2          T,CN,CMC0,CY,CLNC0,CA,CLP,CD,CMC0,CHAD,CLNR,CLNAU)
3          MP
4
5          C INPUTS
6          T1  * TIME = SEC.
7          T2  * TIME TO START CONTROL PHASE - SEC.
8          FMACH * FREE STREAM MACH NUMBER
9          ALPHA * ANGLE OF ATTACK (PITCH PLANE) - DEG.
10         BEYA * ANGLE OF ATTACK (YAW PLANE) - DEG.
11         DFLPIT * CONTROL DEFLECTION ANGLE (PITCH PLANE) - DEG.
12         CELYAW * CONTROL DEFLECTION ANGLE (YAW PLANE) - DEG.
13         DELROL * CONTROL DEFLECTION (ROLL) - DEG.
14
15         C OUTPUT
16         CN  * NORMAL FORCE COEFF.
17         CMC0 * PITCHING MOMENT COEFF.
18         CY  * YAW FORCE COEFF.
19         CLNC0 * YAW MOMENT COEFF.
20         CA  * AXIAL FORCE COEFF.
21         CLP  * ROLL DAMPING COEFF. = (1/RAD)
22         CLD  * ROLL MOMENT COEFF. = ((1/DEG))
23         CMQ  * PITCH DAMPING COEFF. DUE TO THETA DOT
24         CPAD  * PITCH DAMPING COEFF. DUE TO ALPHA DOT
25         CLR  * YAW DAMPING COEFF. DUE TO PSI DOT
26         CLNAD  * YAW DAMPING COEFF. DUE TO ALPHA DOT
27
28         C TABLES
29         TCA1  * TABLE OF CN FOR CONTROL PHASE
30         TCMC01 * TABLE OF CMC0 FOR CONTROL PHASE
31         TCA1  * TABLE OF CA FOR CONTROL PHASE
32         TCA2  * TABLE OF CN FOR BALLISTIC PHASE
33         TCMC02 * TABLE OF CMQ FOR BALLISTIC PHASE
34         TCA2  * TABLE OF CA FOR BALLISTIC PHASE
35         TDELT1  * TABLE OF DELTA FOR CN,CMC0
36         TMACH1  * TABLE OF FMACH FOR CONTROL PHASE
37         TMACH2  * TABLE OF FMACH FOR BALLISTIC PHASE
38         TMACH3  * TABLE OF FMACH FOR CCP,CLD
39         TMACH4  * TABLE OF FMACH FOR CMQ
40         TMACH5  * TABLE OF FMACH FOR CA (BALLISTIC PHASE)
41
42         DOUBLE-PRECISION T1,T2
43         DIMENSION TALP(6),TDELT1(7),          TCA1(6,7,2),TCN2(6,8)
44         DIMENSION TCMC01(6,7,8),TCMCG2(6,5),TCA2(10)
45         DIMENSION TCLP(8),TCLD(8),TMC0(10,5),TALP(10)
46         DIMENSION TMACH1(9),TMACH2(9),TMACH3(8),TMACH4(9),TMACH5(10)
47         DIMENSION ACN(18),ACMCG(8),ACY(8),ACLNCG(4),ACAP(8),
48         1-ACAB(8),ACAO(8),ACLP(8),ACLD(2),ACMD(4),ACLN(4)
49         DIMENSION ISAVE(13)
50         DATA 1- ISAVE /13*0/
51         DATA TCN1 /
52
53         X  -1.25  1.09  1.01  1.93  1.98  2.12  /  -80 .4
54         X  -1.2   1.06  1.04  1.35  2.4  3.39  /  -15 .4
55         X  -1.  -1.08  -1.07  1.81  2.72  3.45  /  -10 .4
56         X  -0.44  1.35  1.32  2.19  2.78  3.60  /  -5 .4
57         X  -0.  -1.03  1.08  2.29  2.95  3.8  /  0 .4
58         X  .0   1.03  1.04  2.3  3.05  3.95  /  5 .4
59         X  .95  1.05  1.03  2.63  3.2  4.05  /  10 .4
60         X  -1.35  1.09  1.02  1.05  2.1  3.35  /  -20 .8
61         X  -1.25  1.09  1.04  1.48  2.56  3.67  /  -15 .8
62         X  -1.1  1.09  1.05  1.09  2.59  3.89  /  -10 .8
63         X  -0.96  -1.04  1.05  2.29  3.1  4.08  /  -5 .8

```

| | | | | | | | | | |
|-----|---|-------|-------|-------|-------|-------|-------|---|---------|
| 63 | X | .0 | .1.05 | .1.85 | .2.54 | .3.31 | .4.2* | / | 0 .* |
| 64 | X | .45 | .1.35 | .1.95 | .2.64 | .3.45 | .4.39 | / | 5 .* |
| 65 | X | 1. | .1.56 | .2.1 | .2.8 | .3.56 | .4.5 | / | 10 .8 |
| 66 | X | .2* | .1.17 | .1.92 | .1.73 | .2.9 | .3.13 | / | -20 1.0 |
| 67 | X | .1.7 | .1.64 | .1.59 | .1.17 | .3.06 | .4.65 | / | -15 1.0 |
| 68 | X | .1.2 | .1.0 | .1. | .2.74 | .3.62 | .5.05 | / | -10 1.0 |
| 69 | X | .6 | .0.8 | .1.56 | .2.75 | .4.08 | .5.23 | / | -5 1.0 |
| 70 | X | .0 | .1.05 | .2.2 | .3.3 | .4.25 | .5.32 | / | 0 1.0 |
| 71 | X | .43 | .1.06 | .2.6 | .3.44 | .4.28 | .5.39 | / | 5 1.0 |
| 72 | X | 10 | .2.01 | .2.85 | .3.05 | .4.36 | .5.41 | / | 10 1.0 |
| 73 | | | | | | | | | |
| 74 | X | .0 | .0.93 | .1.8 | .2.99 | .3.34 | .4.8 | / | 0 .4 |
| 75 | X | .0 | .1.05 | .1.85 | .2.54 | .3.31 | .4.28 | / | 0 .8 |
| 76 | X | .0 | .1.05 | .2.2 | .3.3 | .4.25 | .5.32 | / | 0 1.0 |
| 77 | X | .0 | .0.85 | .1.8 | .2.85 | .4.2 | .5.6 | / | 0 1.3 |
| 78 | X | .0 | .0.89 | .1.84 | .2.85 | .3.8 | .4.8 | / | 0 1.8 |
| 79 | | | | | | | | | |
| 80 | | | | | | | | | |
| 81 | X | 3.6 | .46 | .3.35 | .2.35 | .1.8 | .1.3 | / | -20 .4 |
| 82 | X | 3.4 | .3.12 | .1.9 | .1.1 | .0.48 | .0.4 | / | -15 .4 |
| 83 | X | 2.85 | .1.57 | .1.53 | .0.75 | .0.5 | .0.2 | / | -10 .4 |
| 84 | X | 1.25 | .1.37 | .1.75 | .1.32 | .1.70 | .1.3 | / | -5 .4 |
| 85 | X | .0 | .1.25 | .2.01 | .1.62 | .1.12 | .1.98 | / | 0 .4 |
| 86 | X | .1.1 | .2.35 | .2.2 | .1.7 | .1.5 | .1.35 | / | 5 .4 |
| 87 | X | .2.7 | .2.9 | .2.25 | .2.05 | .1.94 | .1.65 | / | 10 .4 |
| 88 | X | 3.85 | .46 | .3.6 | .2.16 | .1.7 | .1.5 | / | -20 .8 |
| 89 | X | 3.0 | .3.2 | .1.95 | .0.88 | .0.3 | .0.41 | / | -15 .8 |
| 90 | X | 3.1 | .1.65 | .1.35 | .0.6 | .0.7 | .0.25 | / | -10 .8 |
| 91 | X | 1.65 | .73 | .1.08 | .1.3 | .1.35 | .1.83 | / | 0 .8 |
| 92 | X | .1.2 | .1.7 | .2.28 | .2.2 | .1.98 | .1.52 | / | 0 .8 |
| 93 | X | .3.94 | .3.1 | .3. | .2.98 | .2.7 | .2.16 | / | 10 .8 |
| 94 | X | 3.9 | .4.96 | .1.17 | .1.98 | .1.3 | .1. | / | -20 1.0 |
| 95 | X | 4.98 | .3.32 | .1.52 | .0.53 | .0.4 | .0.79 | / | -15 1.0 |
| 96 | X | 3.95 | .1.66 | .1.27 | .1.12 | .1.2 | .2.1 | / | -10 1.0 |
| 97 | X | 1.7 | .02 | .1.42 | .3.0 | .2.5 | .2.72 | / | 5 1.0 |
| 98 | X | .0 | .1.65 | .3.32 | .4.4 | .4.1 | .3.04 | / | 0 1.0 |
| 99 | X | .1.23 | .3.3 | .0.57 | .0.75 | .0.43 | .3.2 | / | 5 1.0 |
| 100 | X | .2.95 | .6.7 | .3.27 | .4.9 | .4.45 | .3.38 | / | 10 1.0 |
| 101 | | | | | | | | | |
| 102 | X | .0 | .1.25 | .2.01 | .1.42 | .1.12 | .1.98 | / | 0 .4 |
| 103 | X | .0 | .1.7 | .2.28 | .2.2 | .1.98 | .1.52 | / | 0 .8 |
| 104 | X | .0 | .1.65 | .3.32 | .4.4 | .4.1 | .3.04 | / | 0 1.0 |
| 105 | X | .0 | .0.9 | .1.8 | .2.38 | .2.17 | .6.5 | / | 0 1.3 |
| 106 | X | .0 | .0.28 | .1.45 | .1.57 | .0.57 | .0.57 | / | 0 1.8 |
| 107 | | | | | | | | | |
| 108 | X | .71 | .0.9 | .95 | .3.03 | .1.76 | .0.03 | / | -20 .4 |
| 109 | X | .585 | .506 | .382 | .24 | .1.73 | .0.02 | / | -15 .4 |
| 110 | X | .495 | .35 | .275 | .1.19 | .1.02 | .0.09 | / | -10 .4 |
| 111 | X | .328 | .311 | .26 | .25 | .245 | .2.2 | / | -5 .4 |
| 112 | X | .295 | .294 | .313 | .341 | .323 | .19 | / | 0 .6 |
| 113 | X | .32 | .366 | .412 | .496 | .425 | .404 | / | 5 .4 |
| 114 | X | .42 | .47 | .502 | .59 | .529 | .5 | / | -10 .4 |
| 115 | X | .78 | .767 | .652 | .419 | .24 | .061 | / | -20 .8 |
| 116 | X | .64 | .384 | .438 | .298 | .153 | .068 | / | -15 .8 |
| 117 | X | .51 | .419 | .345 | .24 | .196 | .153 | / | -10 .8 |
| 118 | X | .375 | .352 | .304 | .301 | .29 | .26 | / | -5 .8 |
| 119 | X | .338 | .338 | .381 | .390 | .403 | .383 | / | 0 .8 |
| 120 | X | .373 | .429 | .482 | .5 | .446 | .515 | / | -5 .8 |
| 121 | X | .475 | .53 | .481 | .635 | .65 | .66 | / | 10 .3 |
| 122 | X | 1.23 | .1.11 | .1.88 | .685 | .47 | .214 | / | -20 1.0 |
| 123 | X | 1.06 | .855 | .703 | .56 | .363 | .178 | / | -15 1.0 |
| 124 | X | .79 | .673 | .61 | .518 | .156 | .226 | / | -10 1.0 |

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125 X .643 .605 .48 .54 .456 .382 / .5 1.0
126 X .582 .661 .4395 .58 .54 .50 / 0 1.0
127 X .63 .685 .753 .775 .765 .74 / 5 1.0
128 X .73 .683 .90 .6918 .92 .89 / 10 1.0
129 DATA TCA42 / .31,.314,.322,.322,.367,.428,.505,.58,
130 X .615,.639,.645,.639,.628,.60,.565/
131 DATA TALP / .0,.5,.10,.15,.20,.25,/
132 DATA TALP2 / .0,.4,.6,.8,.10,.12,.14,.16,.18,.20,/
133 DATA TDELT1 / .20,.15,.10,.5,.0,.5,.10,/
134 DATA TMACH1 / .4,.8,.1,.0,.1,.3,.1,.8/
135 DATA TMACH2 / .4,.8,.1,.0,.1,.3,.1,.8/
136 CAT TMACH4 / .4,.8,.1,.0,.1,.3,.1,.8/
137 DATA TMACH3 / .4,.6,.8,.1,.0,.1,.0,.1,.6,.1,.8/
138 DATA TMACH5 / .4,.5,.6,.7,.8,.85,.9,.95,.1,.0,.1,.1,.2,
139 X 1.3.1.4.1.6.1.R/
140 DATA TCP1 / .18.5.17.7.21.0.29.26.27.17.14.1
141 DATA TCID / .085,.087,.090,.097,.086,.073,.061,.049,
142 DATA TCPQ / -
143 X -145.,-165.,-162.,-125.,-100.,-101.,-102.,-104.,-105.,-107.,
144 X -150.,-185.,-190.,-165.,-135.,-135.,-75.,-75.,-75.,-75.,
145 X -160.,-205.,-215.,-220.,-230.,-240.,-244.,-227.,-100.,-107.,
146 X -178.,-194.,-195.,-193.,-193.,-193.,-192.,-188.,-174.,-168.,-110,
147 X -130.,-155.,-162.,-155.,-150.,-143.,-134.,-120.,-105.,-67./
148 ABALP * ABBT(ALPHA)=57.296
149 ABET * ABB(BETA)=57.296
150 IF(TITLT1) GO TO 2
151 CELP * DELPIT=57.296
152 DELY * DELTAW=57.296
153 IF(ALPHA<LT.0.) CELP=DELP
154 IF(BETA>LT.0.) DELY=DELY
155 I = ISAVE(1)
156 J = ISAVE(2)
157 K = ISAVE(3)
158 CALL FIND(I,TALP,6,ABALP)
159 CALL FIND(J,TDELT1,7,DELY)
160 CALL FIND(K,TMACH1,3,TMACH1)
161 IF(I .NE. ISAVE(1)) GO TO 50
162 IF(J .NE. ISAVE(2)) GO TO 60
163 IF(K .NE. ISAVE(3)) GO TO 70
164 GO TO 80
165 50 ISAVE(1) = I
166 60 ISAVE(2) = J
167 70 CONTINUE
168 CALL NTERP (ACN1,TCM1,I,TALP,6,J,TDELT1,7,K,TMACH1)
169 CALL NTERP (ACMC0,TCMC01)
170 CALL NTERP (ACAP,TCA1)
171 80 I = ISAVE(4)
172 V = ISAVE(5)
173 CALL FIND(I,TALP,6,ABET)
174 CALL FIND(J,TDELT1,7,DELY)
175 IF(I .NE. ISAVE(4)) GO TO 150
176 IF(J .NE. ISAVE(5)) GO TO 160
177 IF(K .NE. ISAVE(3)) GO TO 170
178 GO TO 180
179 150 ISAVE(4) = I
180 160 ISAVE(5) = J
181 170 CONTINUE
182 CALL NTERP (ACY,TCM1,I,TALP,6,J,TDELT1,7,K,TMACH1)
183 CALL NTERP (ACLNCO,TCMC01)
184 CALL NTERP (ACAB,TCA1)
185 180 IF(K .EQ. ISAVE(3)) GO TO 190
186

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187      C SET I & J FOR ALPHA = DELTA = 0.0 IN TALP & TDELT1
188      C
189      I = 1
190      J = 5
191      CALL NTERP (ACAB,TCA1,I,TALP,6,J,TDELT1,7,K,TMACH1)
192      ACAB(2) * ACAB(5)
193      ISAVE(3) * K
194      CONTINUE
195      CA      * FUNCTION(ACN,ABALP,DELP,FMACH1)
196      CPCG    * FUNCTION(ACMCG)
197      CAP     * FUNCTION(ACAP)
198      CY      * FUNCTION(ACY,ARBET,DELY,FMACH1)
199      CLNCG   * FUNCTION(ACLNCG)
200      CAB     * FUNCTION(ACAB)
201      CAB     * FUNCTION(ACAB,FMACH)
202      CA * CAP * CAB = CAB
203      GO TO 3
204      C
205      ?      I = ISAVE(6)
206      ?      J = ISAVE(7)
207      ?      K = ISAVE(8)
208      CALL FINOT(I,TALP,6,ABALP)
209      CALL FIND(J,TMACH2,5,FMACH)
210      CALL FIND(K,TALP,6,ARBET)
211      IF(J .NE. ISAVE(7))          GO TO 250
212      IF(I .EQ. ISAVE(6))          GO TO 260
213      250      ISAVE(6) = I
214      CALL NTERP (ACN,TCN2,I,TALP,6,J,TMACH2)
215      CALL NTERP (ACMCG,TCMCG2)
216      260      IF(J .NE. ISAVE(7))          GO TO 270
217      IF(K .EQ. ISAVE(8))          GO TO 280
218      270      ISAVE(7) = J
219      ISAVE(8) = K
220      CALL NTERP (ACY,TCN2,K,TALP,6,J,TMACH2)
221      CALL NTERP (ACLNCG,TCMCG2)
222      280      I = ISAVE(9)
223      CALL FIND(I,TMACH5,15,FMACH)
224      IF(I .EQ. ISAVE(9))          GO TO 290
225      ISAVE(9) = I
226      CALL NTERP (ACAP,TCAP2,I,TMACH5)
227      290      CONTINUE
228      CA      * FUNCTION(ACN,ABALP,FMACH)
229      CMCG    * FUNCTION(ACMCG)
230      CY      * FUNCTION(ACY,ARBET,FMACH)
231      CLNCG   * FUNCTION(ACLNCG)
232      CA      * FUNCTION(ACAP,FMACH)
233      C
234      ?      I = ISAVE(10)
235      CALL FIND(I,TMACH3,8,FMACH)
236      IF(I .EQ. ISAVE(10))          GO TO 350
237      ISAVE(10) = I
238      CALL NTERP (TALP,TCLP,I,TMACH3)
239      CALL NTERP (ACLD,TCLD)
240      350      I = ISAVE(11)
241      J = ISAVE(12)
242      K = ISAVE(13)
243      CALL FIND(I,TMACH4,5,FMACH)
244      CALL FINOT(J,TALP4,10,ABALP)
245      CALL FIND(K,TALP4,10,ARBET)
246      IF(I .NE. ISAVE(11))          GO TO 360
247      IF(J .EQ. ISAVE(12))          GO TO 370
248      360      ISAVE(12) = J

```

249
250 370 CALL NTERP (ACMG, TCMQ, J, TALP4, 10, I, TMACH4)
251 IF(I .NE. ISAVE(11)) G8 T9 380
252 IF(K .EQ. ISAVE(13)) G8 T9 390
253 380 ISAVE(11) = I
254 ISAVE(13) = K
255 CALL NTERP (ACLNR, TCMQ, K, TALP4, 10, I, TMACH4)
256 390 CONTINUE
257 CLP * FUNCTION(ACLP, FMACH)
258 CLD * FUNCTION(ACLD)
259 CMG * FUNCTION(ACMG, ABALP, FMACH)
260 CLNR * FUNCTION(ACLNR, ABBET, FMACH)
261 IF(ALPHA .LT. 0.0) CN = -CN
262 IF(BETA .LT. 0.0) CY = -CY CMCG = CMCG
263 CLNAD = 0
264 CLNAC = 0
265 RETURN
END

1 SUBROUTINE TRSFEB
 2 THIS SUBROUTINE PERFORMS THE EARTH TO ESOV COORDINATE SYS. TRANSFORMATION
 3
 4 DIMENSION DUM(7),DUM1(7)
 5 CWM/R/INTG!1,DUM,PHI,THA,PSI,DMY!
 6 CWMX/ETB/EBT,EBS1,EBS2,EBS3,EBS4,EBS5,EBS6,EBS7,EBS8,EBS9
 7 COMMON/TDC/CBS1,SBS1,SPHI,CPhi
 8 CPS1=COS(Psi)
 9 SP1=SIN(Psi)
 10 CTH1=COS(THA)
 11 STH1=SIN(THA)
 12 CPS1=COS(PSI)
 13 SP1=SIN(PSI)
 14 CPS1=COS(THA)
 15 SP1=SIN(THA)
 16 EBS1=SPHI*SHTA-CPhi*SPTA
 17 EBS2=SPHI*SHTA+CPhi*SPTA
 18 EBS3=SPHI*CPhi*SPTA+SPHI*SHTA
 19 EBS4=SPHI*CPhi*SPTA-SPHI*SHTA
 20 EBS5=SPHI*CPhi*SPTA+SPHI*SHTA
 21 EBS6=SPHI*CPhi*SPTA-SPHI*SHTA
 22 EBS7=SPHI*CPhi*SPTA+SPHI*SHTA
 23 EBS8=SPHI*CPhi*SPTA-SPHI*SHTA
 24 END
 25 RETURN

```

1      SUBROUTINE TRSFBS
2      C *** THIS SUBROUTINE PERFORMS THE BODY TO SEEKER COORDINATE SYS. TRANSFORMATION
3      C
4      DIMENSION DUM(15),DUMRT(9)
5      COMMON/INTG/I,J,DUM,THTAS,QQ,PS19,DUMR
6      COMMON/BTG/BS11,BS12,BS13,BS21,BS22,BS23,BS31,BS32,BS33
7      BS12*SIN(RS16)
8      BS22*COS(RS16)
9      BS31*SIN(THTAS)
10     BS33*COS(THTAS)
11     BS11*BS22*BS33
12     BS13*BS22*BS31
13     BS21*BS12*BS33
14     BS23*BS12*BS31
15     BS32*0,
16     RETURN
17     END

```

```

1      C SUBROUTINE TRSFRTV
2      C *** THIS SUBROUTINE PERFORMS THE BCS TRANSFER
3      C OPERATIONS, GENERATING DELTA T'S, DELETING
4      C ROWS/RTV/DELXV, DELETV, DELZV
5      C
6      C
7      C
8      C
9      C
10     C
11     BV13=BV22*BV31
12     BV21=BV12*BV33
13     BV23=BV12*BV31
14     BV32=0.
15     RELXV=BV11*DELXTP+BV12*DEL YTR+BV13*DELZT9
16     RELZV=BV31*DELXTB+BV32*DELYTB+BV33*DFLZT9
17     RETURN
18
19     END

```

1 *----- CALLINE LASERR
 2 *----- C*** THIS SUBROUTINE TRANSFERS VSSLF TO TARGET DISPLACEMENTS
 3 *----- FROM FCS TO ACS, FROM ACS TO SCS AND CANDLES LASERR IN SCS
 4
 5 CMMAN/PITS/RS11,FS12,RS13,BG21,PS22,PS23,BS31,BS32,BS33
 6 CMMAN/ETR/FR11,FR12,EG13,EN21,EG22,FR31,ER32,EB33
 7 CMMAN/INFSKP/PIERR,YA,ER9
 8 CMMAN/DEL/TELX,DELY,DELZ
 9 CMMAN/STUFF/DFLXS,DELYS,DELZS
 10 CMMAN/STUFF/DELXR,DELYB,DELZB
 11 DELXR=ER11*DELX+FR12*DELY+ER13*DELZ
 12 DELYR=ER21*DELX+FR22*DELY+ER23*DELZ
 13 DELZP=ER31*DELX+FR32*DELY+ER33*DFLZ
 14 DELXS=BS11*DELXR+BS12*DELYA+BS13*DELZA
 15 DELYS=BS21*DELXR+BS22*DELYB+BS23*DELZB
 16 DELZS=BS31*DELXR+BS32*DELYC+BS33*DELZB
 17 PIERR=ATAN2(DELZS,DELXS)
 18 YAKER=ATAN2(DELYS,SGRT(DELYS*DELXS+DELZS*DELZB))
 19 RETURN
 ENC

```

1      SUBROUTINE WCALC
2      C*** SUPPORTIVE CALCULATES THE MACH NUMBER
3
4      DIMENSION RINT(63)
5      REAL MACH
6      COMMON/ETB/FR11,ER12,EB13,ER21,ER22,FAP3,FR31,ER32,E833
7      COMMON/MACL/MACH,V SND,UR,VR,WR,VRS,VR A,VW
8      COMMON/INTEG/I,J,GG,U,V,W,RIN
9      COMMON/F/WXS,MYS,W2S
10     UR=ER11*WXS+ER12*WYS
11     VR=EP21*WXS+EP22*WYS
12     WH=EP31*WXS+EP32*WYS
13     UR=U+LW
14     VR=V+VW
15     WR=K+WW
16     VRW=SCRT(VRS)
17     MACH=VRW/V SND
18
19     RETURN
20     END

```

```

1      SUBROUTINE FPRMEN
2      SUBROUTINE FPRMEN CALCULATES FORCES AND MOMENTS FOR THE DIFEG SUBROUTINES
3
4      DOUBLE PRECISION TIME,TIME3
5      REAL MACH
6      DIMENSION HWH(4),HHT(17),HHT(40)
7      COMMON/YOCEQ/AXB,AYB,AZB,CLP,CNP,ALB,AMB,ANB,CHB
8      COMMON/COPP/CAZ,CY,CN,CLP,CNCB,CYCG,CLD,CNC,CNR,ALPHA,BETA,CHAC,
9      ICLAC
10     COMMON/MACH/PACH,AA,UR,VUR,VUR3,VUR4,VUR5
11     COMMON/OD/DELVY,DELVR,DELR0L,DELR0L
12     COMMON/JUR/TIME,TIME3,RHM,S,D,SGUW,CAP,IRAD,RAPTM1,RAPTM2,IACT,
13     ISLOPE1,BT1,RAPTM3,SL0PE2,BT2,CTT,CPT,SPT,XLT4,STT,GAPS,GAPSU,
14     ZQAPSCM,TH
15     COMMON/INTEG/I,J,H040,P,G,R,H0H1,DEL1,DELVP,DEPL3,H0H1
16     COMMON/PP7PPCLB,FFCMB,FFCMN,FFAXB,FFAYB,FFAZB,FFALB,FFAMB,FFANB
17     ALPHA=ATAN2(WR,UR)
18     SQUW=SQRT(UR*UR+WR*WR)
19     BET=ATAN2(VR,SQUW)
20     GAB=SGRM7*VRS
21     CAPS=CAP0S
22     CAPSC=CAPSD0
23     IF(VRH>EQ0,100 TO 121
24     CAPSD=CAPSD00/(2.*VRH)
25     GO TO 122
26     -- 121 CAPSD=M0F
27     122 CONTINUE
28     DELVY=(DELI+DEL3)/2
29     DELVR=(DELI+DEL3)/2
30     IF((ACT>EG+2)*DELVY*(DEL3-DELI)>0.5
31     IF((TIME.GE.TIME3)*DELR0L>DELVR
32     DELR=DELR0L*0.57*2957793
33     CALL AERO(TIME,TIME3,MACH,ALPHA,BETA,DELVP,DELVR,DEL R,CN,CNCB,CY,
34     ICYC0,CAZ,CLP,CLD,CHAC,CHB,CN,CLNAD)
35     CLB=CAPSD*CLD*DELR*FFCLR
36     CMB = CAPSD*CN*CHB*FFCMB
37     CNB = CAPSD*CN*CR*FFCNB
38     AXB = CAPS*CAZ*FFAXB
39     AYB = CAPS*CY*FFAYB
40     AZB = CAPS*CY*FFAZB
41     ALB=CAPSD*CLP*P*FFALB
42     APB = CAPSD*CN*CHB*FFAMB
43     ANB=CAPSD*CYCG*FFANB
44     IF((IRAP>EG+0.05*TIME).LT.+RAPTM1)GO TO 123
45     IF((TIME.LE.+RAPTM2).THE+SLOPE1+TIME>BT1
46     IF((TIME>BT1+RAPTM2).THE+SLOPE1+TIME>BT1
47     IF((TIME>BT1+RAPTM3).THE+SLOPE1+TIME>BT1
48     IF((TIME>BT1+RAPTM3).THE+SLOPE1+TIME>BT1
49     123 AXB=AXB+TH*CTT*CPT
50     AYB=AYB+TH*CTT*SPT
51     AZB=AZB+TH*STT
52     AMB=AMB+TH*STT*XLT4
53     ANB=ANB+TH*CTT*SPT*XLT4
54     RETURN
55     END

```

```

1      SUBROUTINE DIFEC
2      C***STRUCTURE OF THE SUBROUTINES ARE VARY IN
3      DOUBLE PRECISION TIME
4      CTYPESTAR(DNGT27),C8W(21)
5      REAL MASS,IX,IY,IZ
6      COMMON/ETRA/EF112,FB113,ER21,EB22,FR31,EE32,E833
7      COMMON/TBDEC/AXB,Ayb,Azb,Cla,Cnb,Alb,Amr,Anr,Cm3
8      COMMON/INTEG/I,J,GG,U,V,W,P,Q,R,Dg,G,FU,Dn,P,DC,DR,
9      DPHI,DT,TA,DPsi,DX,DY,DZ,C0W
10     CAPPEND/JUNK/TIME
11     CMYAN/JUNK1/THALD,IROLL,G,VASS,IX,IYZ,XINTIA,NAVY
12     CMYAN/TDG/CPsi,SPsi,SPhi,CPHi
13     CMYAN/GG/GXB,GYB,GZB
14     GRAVITY 'RESOLUTION TS 8CS
15     GXB*EE13*G
16     CYCLED23*G
17     GZB*EE33*G
18     C*** EQUATIONS OF MOTION
19     CU=AXB/MASS+R*R*V=G*W*GXH
20     IP=TIME*LT*THOLD*AND*NAV*ECON*ICU*0.
21     DV=AyB/MASS+P*W*R*U*GYB
22     DW=AzB/MASS+G*U*P*V*GZB
23     DP=(ALB+CLB)/IX
24     DC=(AMB+CMB)/IYZ*P*XINTIA
25     DR=(ANB+CNB)/IYZ*P*Q*XINTIA
26     CTHTA((G*CPHi+R*SPHi)/CPsi)
27     DPHI=P*DTHA*Spsi
28     CPsi=F*CPHi*G*SPHi
29     IF(IROLL.NE.C1)DP=0.
30     IF(IROLL.NE.0)P=0.
31     C*** MISSILE VELOCITY IN ECS
32     CX*EE12*UE021*VEE831*W
33     DY*EE12*UE822*VEE832*W
34     DZ*EE12*UE823*VEE833*W
35     RETURN
36     END

```

```

1      SUBROUTINE METO
2      C*  SUBROUTINE METO-CALCULATES THE VFLUCITY OF EACH
3
4      CUTEFFECTS TIME STEP
5      DIMENSION DUM(22),DUM(6)
6      REAL MACH
7      COMMON/M0/GEALT,TA,TGRAD,RHASL,ARG1,ATVAL,RSTAR,
8      IRHS,ARE2,GA,TVAL
9      COMMON/JUNK/TIME3,RHO,SUM
10     COMMON/FACT/VSM,DUM
11     IF(GEALT.GT.36089.2389) GO TO 12
12     TVAL=T8+TGRAD*GEALT
13     RH=RHOSL*(TA/TVAL)**ARG1
14     RHE=RHE
15     VSM=SGRT(1.4*RSTAR*TMEL/ATVAL)
16     GO TO 13
17     12 CONTINUE
18     ARG2=G9*TML*(GEALT-36089.2389)/(RSTAR*TVAL)
19     RHE=RHE*EXP(ARG2)
20     13 RETURN
21     END

```

```

1      SUBROUTINE SEEK
2      C60 THIS SUBROUTINE DETECTS TARGET WITHIN THE DEFLECTION RANGE OF SEEKERS
3      C TARGET WITHIN THE FIELD OF VIEW, S-A-H, SEEKER WITHIN LINEAR RANGE
4      C
5      DOUBLE PRECISION TIME,FSTSAM,TIMEA,DT,DTA,TST,TME,SPER
6      COMMON/CINERT/ CAT(14),RAT(49)
7      COMMON/STUFF/DELXS,DELYS,DELZS
8      COMMON/JUNK/BRNGE,IFUFB,IACC,ROET,YAWERB,PITERB,PHFBV,BA,RNGLNB,
9      IPITYANSC,R2D,NULSKR,BRS,REFLECT,NULL,KAGE
10     COMMON/INPSKR/PITERB,YAWERB
11     COMMON/JUNK/TIME
12     COMMON/INTES/TAJ,DTAK,CAT,THTAS,THASD,PSIS,RAT
13     COMMON/TT/FSTSAM,TIMEA,D TA,TST,TMF,SPER,TSAM,DO,JMAX,IPRINT,T2
14     BRNGEUSCRT(DELXS+DELXS+DELYS+DELYS+DELZS+DELZS)
15     DATA IACQ1/0/
16     IPTIPCPATEG,C108 TO 560
17     IF(TIME.LT.T2)G9 TO 105
18     IP(IACQ1+NE,0)G9 TO 11
19     IF(IACQ,NE+1)G9 TO 10
20     FSTSAM=TIME
21     IF(IACQ,EC+2)IACC1+1
22     10 IF(IACQ,EC+2)IACC1+1
23     II CONTINUE
24     G9 TO 565,107,IACQ
25     360 CONTINUE
26     IF(IACQ,EC,2)G9 TO 107
27     FSTSAM=TIME
28     IF(TIME,NE+TIMEA)G9 TO 565
29     IPTIMECLT(T2-2)G9 TO 105
30     C0000 ACQUISITION(IACQ>0) WHEN TARGET IS WITHIN PHFBV AND ROET
31     565 CONTINUE
32     C
33     C0000 LINEAR SEEKER, NO OUTPUT WHEN OUT OF FOV
34     IF(BRNGE,LT,ROET)G9 TO 101
35     IPTSCRT(YAWERR+YAWERRPITERR+PITERB),GT,PHFBV100 TO 102
36     IP(SCRT(PITERB+2*YAWERR+2),GT,0.00872664)G9 TO 101
37     IPTSCRT(PSIS+PSIS*YHTAS*THTAS),LT,BA100 TO 101
38     567 CONTINUE
39     C0000 PRINT EVERY JMAX INTERVALS
40     JPA=1024
41     DT=DTA
42     DTAK=SNOL(DY)
43     IACQ=2
44     IPRINT=2
45     PRINT-30005
46     92005 FORMAT(/,2X,1ACQUISITION/)
47     G9 TO 103
48     107 CONTINUE
49     C0000 NULL SEEKER
50     PITERB=ATAN2(-DELZS,DELXS)
51     YAWERR=ATAN2(DELYS,SCRT(DELXS+DELXS+DELZS+DELZS))
52     C
53     C0000 LOSS OF ACQUISITION
54     C
55     IF(SCRT(PITERB+PITERB+YAWERR+YAWERR),GT,PHFBV100 TO 101
56     IPITYANSC=SCRT(PITERB+PITERB+YAWERR+YAWERR)
57     IF(IPITYANSC,LE,0.5/R2D)NULSKR=2
58     103 CONTINUE
59     C0000 SAMPLE AND HOLD IF FSTSAM>TIME IS INCLUDED AFTER STATEMENT 102
60     TST=TIME-FSTSAM
61     TSAM=TST+TME
62     IF(TSAM>SPER)104,104,104
63     104 TME=TME-SPER

```

```

59      IF (ISRANGE .LT. PRS1) G9    TO 108
60      IF (SCHRTT YAKER# * ATER# * PITER# * PITERR#) .GT. PLSFRV1(G9 -T9 108
61      IF (SCHRT (PS15 * PS15 * THATS * THATS) * LT * BA) G4    TO 102
62      CALL SEEKER(SRANG,FREFCT,PITERR,PITER)
63      CALL SEEKER(SRANG,FREFCT,YAVERR,YAWFRA)
64      PITER# = PITER
65      YAKER# = YAKER
66      G9    TO 109
67      101  IACG# = NULL#KAGE#1
68      FOR YAKER# = 0
69      109  CONTINUE
70      PITER# = 0
71      C*   SEEKER WITH LINEAR RANGE
72      IF (LARS(YAKER#) .GE. RNL1(H)) YAVERR# = SIGN ( RNL1(YAVERR#) )
73      IF (TAMS(PITER#) .GE. RNL1(TPITER#)) PITER# = SIGN ( TPITER# )
74      105  RETURN
75      END

```

```

1      C  SUBROUTINE EDSKRGYR0
2      C  THIS SUBROUTINE CONSTRUCTS THE SEEKER GYRO MODEL FOR ED
3
4      C  DOUBLE PRECISION TIME
5      REAL KT,KT10,KT20,LAMPR,LAMYR
6      REAL KG,KT30
7      LOGICAL FLG4=.TRUE./
8      COMMON/INTEG/KUTTA,NX,DTRK,U,V,W,P,G,R,PHI,THTA,PSI,X,Y,Z,RTHTA,
9      1RPSI,THTAS,THASD,PSIS,PSISO,OMEGA,TXED,PXFD,PEF,VEF,DEL1,DELVP,
10     2DEL3,DOEL3,DOELVP,DOEL3,RLAMYR,RLAMP,RPHT0,DPHT0,DT,DOV,DOV,DP,DOV,DP
11     3CPHI,DTHTA,DPSI,CX,DY,DZ,DTHTA,DRPSI,DTHTAS,CTHASD,DPsis,DPsiso,
12     4DMEGA,DTXED,DPXFD,PEF,VEF,DOELP1,DOELPP,DOELP3,DODEL1,DOELP,
13     5DOEL3,DRALMY,DRALAMP,DRSHIG,DPH10
14     COMMON/JUNK/TIME
15     COMMON/TT/STSAM,TIME4,DT,DTA,TST,TMF,SPER,TSAM,DO,JMAX,IPRINT,T2
16     COMMON/PERT/OMEGY,OMEGZ
17     COMMON/BW/RBL,KT,KT10,KT20,LAMPR,LAMYR,RTM,RTMIN,RSGE,ED1,FLGA,
18     1RGA,EC4,GS4-
19     COMMON/BTS/BS11,BS12,BS13,BS21,BS22,BS23,BS31,BS32,BS33
20     COMMON/JUNK2/SRNGE,IPURO,IACG,DET,YAKER,PITPRB,PHFOY,BA,RNGLIN,
21     1PITYAKSQ,R20,NULSK,ERS,REFLECT,NULL,KAGE
22     COMMON/OP/RR,RR,HSKA,B,KT30
23     D/H10=0PHI
24     RSL=125./R2D;IFT(ABSTOPHT0>0,GT,RSL)OPH10*SIGN(RSL,OPH10)
25     IF(TIME.LT.T2)GO TO 5005
26     C*****CHECK FOR NULL SEEKER
27     IFTIME>0.1000 AND RTM.LT.RTMIN GO TO 5000
28     IF(INLL,EG>2)GO TO 5000
29     NULL=1
30     RSCE=SIGN(THTAS+THTAS+PSI8+PSI1);IF(RSGE.LE.0.5/R2D,AND,IACG,EG>2)
31     INULL=2
32     C*****IF(ISCRT(PITERR>0.2*YAKER>0.2,GT,PHFOV)IACG=NULL+1
33     5000 IFTIACG>EG,IACG=1
34     C
35     IF(INLL,EG>1)KT=KT20
36     IF(INLL,EG>2)KT=KT10
37     IFTAB8(LAMYR)>0.8728887RLAMYR*SIGN(-.8728887RLAMY)
38     KG=KT/KT30
39     OMEGY=KG*YAKERB
40     OMEGZ=KG*PITERB
41     IF(YAKER(0MEGZ)>0,GT,.0165625),MEGZ=SIGN(.0165625,0MEGZ)
42     IF(YAKER(0MEGY)>0,GT,.0165625),MEGY=SIGN(.0165625,0MEGY)
43     LAMPR=0MEGZ/KT30
44     LAMYR=0MEGY/KT30
45     IFTAB8(LAMYR)>0.1745329) LAMYR=SIGN(.1745329,LAMYR)
46     .1745329)LAMPR=SIGN(.1745329,LAMPR)
47     C  SEEKER GYRO FOR ED
48     C
49     5005 CONTINUE
50     IF(TIME>0.1000,FLG4=.NOT.FLG4,PRINT 90004
51     KAGE=2,FLG4=.NOT.FLG4,PRINT 90004
52     -90005,FORMAT1//,3X,IUNCGE GYRO FOR ROLL-TO VERTICAL !)
53     6670 CONTINUE
54     IFTIME>0.1000,FLG4=.NOT.FLG4,PRINT 90004
55     IF(IACG,EG>2)KAGE=2
56     GSAR921*P+BS22+C*BS23*R
57     R6A+BS31*P+BS32*C+BS33*R
58     GO TO(5200,5201),KAGE

```

| | | |
|----|------|-------------------------------------|
| 59 | C | |
| 60 | C | CAGEF |
| 61 | C | |
| 61 | 5200 | CTHTAS#-1C#*THHTAS/DPSIS#-10.*PSIS |
| 62 | | GO TA 5203 |
| 63 | 5201 | GO TA(5202,5204),IACG |
| 64 | C | |
| 65 | C | UNCAGE |
| 66 | C | |
| 67 | C | FREE GYRO |
| 68 | C | |
| 1* | 5202 | CTHTAS#THASD-CSA/CBS(PSIS) |
| 2* | | DPSIS#PSISD-RSA |
| 3* | | CTHASD#(*H#PSISD-RB#THASD)/S |
| 4* | | DPSISD#(*RR#PSISD+H#CTHASD)/A |
| 71 | | GO TA 5203 |
| 72 | C | |
| 73 | C | TRACK |
| 74 | C | |
| 1* | 5204 | CTHTAS#THASD-CSA/CBS(PSIS) |
| 2* | | DPSIS#PSISD-RSA |
| 3* | | CTHASD#(*H#PSISD-RB#THASD+BFEGRY)7B |
| 4* | | DPSISD#(AMEGZ-RR#PSISD+H#THASD)/A |
| 77 | 5203 | RETURN |
| 78 | | END |

```

1      SUBROUTINE EDAP
2      THIS SUBROUTINE CONSTRUCTS THE AUTOPILST MODEL FOR ED VERSION
3      DOUBLE PRECISION TIME
4      LOGICAL FLG1, TRUE1, FLG2, TRUE2, FLG3, TRUE3
5      COMMON/JUNK/TIME
6      COMMON/S1,S2,S3,S4,S5,S6
7      REAL POLES(01)/+20/
8      REAL KPC,KQ,KM,LAMBI,LAMPR,LAMYR,KB
9      COMMON/BUTAP/YEG,REG,PEG
10     COMMON/BOW/RSL,KY,KTIO,KT20,LAMPR,LAMYR,RYHYN,RSOE,EDO,FLG4
11     1RSA,ED4,QSA
12     COMMON/JUNK/SRNGE,IFUFRA,ACO,ROET,YAWER9,PITER9,PHFOV,BA,RNGLIN,
13     1PITYA,SG,R2D,NULSKR,BRS,REFLECT,NULL,KAGE
14     COMMON/ARROW/PHIG,FLG1,FLG2,FLG3,REF,RFL,YED,PEO,THRBS,PSRBS,
15     1THBS,PSBS,GBLV,PEFL,KPD,KQ,KM,KG,LAMBI,POLES
16     COMMON/TINTED/XUTTA,VX,DTRK,C,VXN,PG,RSPT,THTA,PSI,JAY,TZ,THTAT,
17     1R9SI,THTAS,YHASD,PSIS,PS1SD,OMEGA,TXFD,PXFD,PEF,YEF,DEL1,CELVP,
18     2DEL3,DOEL1,DOELVP,DOEL3,RLAY,RLAMP,RPHIG,DPHIO,DU,OV,DMACP,DC,DR,
19     3DPHI,CTHTA,DPSI,DX,DY,DZ,CRTHTA,DRPSI,DT4TAS,DTLASD,DPsis,DPsisD,
20     4CMEGA,DTXED,DPXED,DPFEP,DPYEF,DOELP1,DOELPP,DOELP3,DOEL1,DOELVP,
21     5DOEL3,DRLAY,DRLAMP,DRPHIG,DPHIO
22     COMMON/TTT/PSTSAM,TIME4,DT,DTA,TSTAT,THEISPER,TSAM,OCJMAX,IPRINT,T2
23     C ROLL AUTOPILST
24     C
25     IF(TIME.GE.ED4+100) GO TO 5025
26     PHT0=DPHIO*S1+75.0*PS15*S2
27     GO TO 5030
28 5015 IPTTIFUP0*EG,2100 TO 5025
29     IF((ACO-EG*2)*100 TO 5025
30     PHT0=DPHIO*S1+75.0*PS15*S2
31     GO TO 5030
32 5025 IPTT*+0*FLG1+100 TO 6667
33     PRINT 90002,IPRINT=2,FLG1=N0T,FLG1
34     90002 FORMAT(72X,1ROLL HOLD)
35     6667 CONTINUE
36     DRLAY=10.0*DPHIO
37     PHT0=DPHIO*S1-RLAY*S3
38     C
39     C** LEAD LAG ROLL AUTOPILST REG/PHIG*KPD*(S+5)/(S+12.5)
40     9030 CONTINUE
41     CALL FLTR(PHIG,RPHIG,DRPHIG,REG,12.5,5.0,KPD)
42     RFL=7.7/R2D+IF(ABS(REG).GT.RFL)REG*SIGN(RFL,REG)
43     C
44     C** PITCH YAW AUTOPILST
45     C** RATE DAMPING OF GIMBAL ANGLES THRBS/THTAS=KG*S/(.0067*S+1)
46     CALL EDRTDAMP(THTAS,TXED,DTXED,THRBS,POLES(01),KG,KM,THCS)
47     CALL EDRTDAMP(PSIS,PXFD,DPXFD,PSRBS,POLES(01),KG,KM,PSHS)
48     C INPUT TO GUIDANCE FILTER*PEO,YED
49     5065 CONTINUE
50     PEOLAMPY
51     YED=LAMYR
52     C** Guidance FILTER PEY/PED*KG/(S+8+1)
53     5075 CONTINUE
54     CALL FTLG1(PED,PEP,DPFP,KG,10.+)
55     CALL FTLG1(YED,YEF,DPYEF,KG,10.+)
56     PEFL=PEP+LAMBI
57     GBLV=S/R2D
58     IF(ABS(PEFL).GT.GBLV)PEFL=SIGN(GBLV,PEFL)
59     IF(ABS(YEF).GT.GBLV)YEF=SIGN(GBLV,YEF)
60     IF(TIME.LT.T2+0.1)ACO-EG+1)100 TO 5100
61     IF(.1BT,FLG2)GO TO 6668
62     PRINT 90003,IPRINT=2,PL02=N0T,FLG2

```

```

63      9~0~2  FORMAT(10,2X,'LATERAL ENRULF')
64      4~4~2  CANTINUF
65
66      5~8~C  PERCENTPERCENTPERCENTPERCENTPERCENT
67      YEG*YEF+PSHC*66-PSHES*54
68      3B TA 510C
69      6~8~5  IF(I*AT+LG3)69 TO 6669
70      PRINT 900C;IPIA1,T=PFLC3=,IPT,FI 33
71      9~0~4  FORMAT(10,2X,'QUINANCE ENRULF')
72      6669 CANTINUF
73      PEG*(PEFL=TRANS*4)*55
74      YEG*YEF+PSHES*54
75      =100  IF(IARS(PEG)*CT*0.20943942)FEC=SIG,(0.20943942,DFG
76      IF(IABS(YEG)*67*0.20943948)VER=SIG,(0.20943948,YEG
77      RETURN

```

1 SUBROUTINE FLTR(X,Y,Z,A,B,C,D)
2 Z=X*B*Y
3 A=(C*Y+Z)*D
4 RETURN
5 END

1 SUBROUTINE EDRTDAMP(X,Y,Z,A,B,C,D,E)
2 Z=B*(C*X-Y)
3 A=B*(C*X-Y)
4 E=D*(X+A)
5 RETURN
6 END

1 SUBROUTINE FTLG(X,Y,Z,A,B)
2 Z=B*(A*X-Y)
3 RETURN
4 END

```

1          SUBROUTINE CONTROL
2          THIS SUBROUTINE CONTAINS THE CONTROL SYSTEM CANARDS FOR EACH PLANE ON
3          COMMON SHAFT, SECOND ORDER ACTUATOR MODEL
4          DPERIODN ACT(24),ACT(27),ACT(4)
5          COMMON/JUNK2/SRNGE,IUF0,IACORDET,YAWERO,PITER0,PHFOV,BA,RNGLIN,
6          IPYAWSG/R2D,NULSKR,BRS,RFLECT,NULLSKAGE
7          CMAN/BUTAPI/YEG,REG,PEG
8          CMGN/INTEGT,J,ACT,DELT,DELVP,DEL3,DDDEL3,ACT0,
9          DDDEL1,DDDELPP,DDDEL3,DDDELPP,DDDEL3,ACTR
10         COMMON/JUNK2/TIME,TIME3,TH,S,DS,SGUN,TRAP,TRAPM2,FACTS
11         ISLOFE1,BT1,RAPTM3,SLOPE2,BT2,CIT,CPT,SPT,XLTA,STT,QAPS,QAPSD,
12         2GAPS0,TH
13         DDDEL1=60.*((60.*((YEG+REG*DEL1)*DDEL1))
14         DDDELPP=50.*((REG*DELVP)*DDELVP)
15         DDDEL3=60.*((60.*((YEG+REG*DEL1)*DDEL3))
16         IF((ACT*EG>2)DDDEL3=60.*((60.*((REG+YEG*DEL1)*DDEL1))
17         DDDEL1*DDDEL1
18         DDDELPP*DDDELVP
19         DDDEL3*DDDEL3
20         RETURN
21         END

```

~~AI1ART (FILE,X1), (FORMAT,U), (RSIZE,202), (FSIZE,240)~~
~~AI1ART (FILE,X2), (FORMAT,L), (RSIZE,202), (FSIZE,100)~~
ASSIGN (M:SI,BT,X6)
~~FSFTGRAN SY,GR,RS,SC~~
~~BLRAD (TEMP,E00), (LIP,USER,SYSTEM)~~
~~:R0BT (FILE,BT,GB,E0D)~~
~~:(FILE,D1,SSYSLIB,E0D)~~
~~U SREF UL 7DPDT~~
~~U SREF UL 7DPDT~~
~~LINKING WAS COMPLETED~~

~~WARNING: UNSATISFIED REF'S~~
~~REWIND 9TARC~~
~~RAV~~

REFUGIA EXECUTIVA

| BEGIN EXECUTION! | | | | | | | | | |
|------------------|---------|--------|-------------|--------|------------|-----------|-------------|---------|---------|
| HP | 6.7500 | RTEL | 10000E+19 | SQ | 150.00 | 0.00000 | BRS | 0.0000 | E0000 |
| XP | 10.000 | BRS | 0.0000 | KG | 0.5000E-01 | BT1 | 21.122 | BT2 | 25.00 |
| CPT | 1.0000 | STY | 0.0000 | CG | 0.00000 | FFMB | 1.0000 | CTT | 1.0000 |
| RAP13 | 13.000 | D | 0.0000 | KD | 0.3000 | DELHY | 3.4907 | EDO | 3.0000 |
| ED1 | 3.2500 | ED2 | 0.50830 | KD | 0.3000 | ED6 | 7.2500 | ED9 | 3.0000 |
| XT10 | 10.000 | FFAL8 | 1.0000 | ED3 | 0.34500 | FFAN8 | 1.0000 | GF | 5.0000 |
| FFC18 | 1.0000 | FPX28 | 1.0000 | YCL | 0.26180 | PPMB | 1.00000 | GAMBL | 3.9963 |
| ABF1V | 0.21817 | QC | 0.26180 | PPCHB | 1.0000 | IACT | 0.00000 | IRROLIC | 1 |
| TOLV | 0 | TFUP8 | 0 | PPAXB | 1.0000 | ITRBL | 0 | KT20 | 2C+00 |
| ISKA | C | SS | 1.0000 | NULL | 17 | 16222E-04 | FBNQ | 1X | 20100 |
| EC | 1.69.25 | IVZ | — | IT | 0.0000 | XK | 1.7483 | PCA | 2000.0 |
| KB | 0.00000 | RVB1AS | 0.00000 | ITZ | 0.0000 | TPTOL | 0.87266E-02 | QKL | 1.0000 |
| PPATS | 1.0000 | KPC | 1.0000E+01 | TP5 | 0.0000 | KPQ | 0.00000 | KP | 25.00 |
| KS | 6.0000 | KP | 2.0000 | LAMB1 | 0.1263. | JHAX | 0.00000 | HAB5 | 4.4847 |
| FG | 8.63.20 | NRNU | — | PCL | 0.26180 | JAPME | 12.8 | PMIMAX | 1.17453 |
| SA | 1.0000 | PRATH | 1.0000 | JMAX | 1.88 | RAPE | 6.5000 | PLATM | 0.0000 |
| RCET | 7000.0 | DTA | 0.97656E+03 | RFECT | 0.0000 | PI | 9.1E+16 | PLAMP | 0.0000 |
| PSIT | 0.00000 | RLARY | 0.0000J | RPSI | 0.0000 | RNGIN | 1.26160E+01 | VRATE | 5.2360 |
| QTPTN | 1000.0 | KT | 2.0000 | RT | 0.0000 | SG | 0.00000 | GT | 1.0000 |
| R9 | 1.0000 | S12 | 1.0000 | S11 | 1.0000 | S4 | 1.0000 | S3 | 1.0000 |
| S2 | 1.0000 | S1 | 1.0000 | S9 | 0.20292 | DELMX | 0.26180 | SFO | 1.0000 |
| SF1 | 10C.00 | SF2 | 100.00 | SF3 | 20.000 | SP4 | 20.000 | SP5 | 15.000 |
| SF6 | 15.000 | SF7 | 15.000 | SF8 | 50.000 | SP9 | 50.000 | SP10 | 20.000 |
| SF11 | 20.000 | SF12 | 50.000 | SF13 | 125.00 | SP14 | 15.000 | SP15 | 12.000 |
| SCOPT2 | 11.33 | SCOPT1 | 3.0E+35 | TO1 | 1.0000 | TO3 | 1.0000 | TO5 | 2.0000 |
| T02 | 1.8CC0 | TC5 | 2.04000 | TO6 | 2.0000 | TO7 | 2.08000 | TO8 | 2.0000 |
| T2 | 8.0000 | T1 | 3.0000 | TC6 | 0.00000 | SPT | 0.00000 | THOLD | 0.0000 |
| WTAC | 1.13080 | KC | 0.20000 | THETAT | 0.40000 | TRAP | 0.00000 | TMOLD | 0.0000 |
| TIC | 1.12500 | T1C1 | 0.12500 | TIME3 | 0.30000 | TIME2 | 0.65000 | TIME1 | 0.60000 |
| TIRFO | 0.3CC0 | T1P1 | 0.00000 | DT | 0.21817 | YHF0Y | 0.21817 | KG | 0.0000 |
| ZTK | 0.00000 | TTT | 0.00000 | TTT | 0.00000 | TTT | 0.00000 | TTT | 0.0000 |

| PROJECTILE! | TYPE | 00000 | PBA | 00000 | DELPB | 00000 | U | 10340 | V | 00000 |
|---------------|------------|--------|---------|--------|---------|--------|--------|----------|--------|------------|
| W | 00000 | THTA | 022689 | PHD | 00000 | DELZ | 0 | 00000 | TETACC | 00000 |
| HZ | - | DY | 00000 | OPHI | 00000 | DTHTA | 0 | 00000 | OX | 10015 |
| BSG1 | - | DR | 00000 | DA | 00000 | DP | 0 | 3.8354 | DW | 31.337 |
| NU | - | DV | 00000 | VBN | 10340 | MACH | 0 | 00000 | QAP | 1128.5 |
| PS1 | - | F | 00000 | G | 00000 | R | 0 | 00000 | DELVY | 00000 |
| AZE | - | TC000 | DELTAV | 00000 | DECEV | 00000 | X | 00000 | X | 00000 |
| Y | 00000 | Z | 04000.0 | AMB | 00000 | XT | 0 | 13120. | YT | 00000 |
| CTHTA | 00000 | CPT1 | 00000 | CPS1 | 00000 | CPS1 | 0 | 1.0000 | SPAT | 00000 |
| CPS1S | 1.0000 | 028 | 31.337 | GVB | 00000 | 0XB | 0 | 7.2348 | - | 00000 |
| ALTOPILLET! | | | | | | | | | | |
| DELPITO | 00000 | DELTAS | 0127840 | PEQ | 00000 | DECMIS | 0 | 00000 | TXED | 00000 |
| DELPITO | 00000 | BREGA | 914.00 | DYEP | 00000 | DPEP | 0 | 00000 | DTHTAS | 00000 |
| ATP | - | KT | 20.000 | PEFL | - | NULL | 0 | - | DELR | 69613E-01 |
| AMEG2 | 00000 | PSNG | 00000 | PED | 00000 | PEF | 0 | 00000 | PTERO | 00000 |
| PHTO | 00000 | PS1S | 00000 | PXED | 00000 | TMBS | 0 | 00000 | PSBS | 00000 |
| REL1 | 00000 | BLARY | 00000 | MLAMP | 00000 | THRSB | 0 | 00000 | YHRB | 00000 |
| VEP | 00000 | PEP | 00000 | YED | 00000 | TEP | 0 | 00000 | YEP | 00000 |
| YBRO | 00000 | YEG | 00000 | DELVS | 00000 | YAHERR | 0 | 00000 | YAHERO | 00000 |
| LAMY4 | 00000 | LAPPB | - | OSA | 00000 | YAPB | 0 | 223.93 | OSIG | 00000 |
| TAES | - | POREB | 00000 | REN | 00000 | - | - | - | - | - |
| IADIC: | | GATE | 1 | GATE | 2 | GATE | 3 | GATE | 4 | GATE |
| GATE | 6 | F | GATE | 7 | F | GATE | 8 | F | GATE | 5 |
| AERODYNAMICS! | | | | | | | | | | |
| PLC | 94870CE-C1 | XLB | 00000 | CNR | 0186.95 | CYQ | 0 | 156.94 | CY | 00000 |
| CA2 | 56374 | CLP | 026.566 | CN | 0.0000 | CYQ | 0 | 00000 | CMCG | 00000 |
| ANB | 00000 | CCB | 077091 | CMB | 0.0000 | CNB | 0 | 00000 | TM3D | 00000 |
| CHASC | 00000 | PS18C | 0.00000 | DP518D | 0.00003 | ALPHA | 0 | 00000 | BETA | 00000 |
| RA21 | - | CTT | - | 0P1 | - | 0P1 | 0 | 1.0000 | TM | - |
| STT | 00000 | XLTA | 1.6667 | - | - | - | - | 00000 | - | 00000 |
| CEFLG PRINT! | | | | | | | | | | |
| CELG | 22704. | CELY8 | - | -00000 | - | DELB8 | - | 12784 | DELX8 | 00000 |
| DELZ | 29514 | KLTAA | 0 | 1 | FITER | 0 | 222649 | YAHERR | 00000 | PTERO |
| YAKER | 00000 | CRLAY | 0 | -P3- | 0 | 00000 | DPGSI | 0 | 00000 | DATA |
| CRBLIN | 00000 | RPHIG | 0.00000 | DELVR | 0 | 00000 | DPMIO | 0 | 00000 | G |
| VAND | 00000 | TKRA | 0 | FACT | 0 | 00000 | TOOTIE | 0 | 144P | 0 |
| KAGE | - | NAV | 0 | 0 | F1 | 0 | 00000 | ORLAMP | 00000 | NUM |
| IPRAT- | - | NPPG | - | 20- | 0 | - | 00000 | QOTA | 256 | AUXEKA |
| PFPL | 00000 | PHIG | 00000 | NOT- | 0 | 00000 | 82 | 01109E08 | DELRLD | 1218.5E-02 |
| REC | 00000 | RET | 00000 | REG | 0 | 00000 | RPGI | - | 00000 | RTHTA |
| AMGY | 00000 | AREGZ | 00000 | NX | 0 | 00000 | 14 | - | - | 00000 |

| PROJECTILE: | | | | | | | | | |
|---------------|-------------|---------|------|----------|---------|------|------------|--------|-------------|
| TYPE | 00156 | RSA | 0 | 000000 | DELVP | 0 | 000000 | 0 | 1013.3 |
| R | -69896 | TMA | 0 | 20175 | PMD | 0 | 36714 | DELZ | 132196 |
| DZ | -20973 | DY | 0 | 000000 | DPHT | 0 | 00025 | DTA | 1886E-01 |
| DRS1 | 76131E-04 | DR | 0 | 000000 | DG | 0 | 027547 | DP | 39867 |
| DL | 7328113E-04 | DV | 0 | 000000 | VRA | 0 | 000000 | MACH | 1694E-01 |
| PS1 | 0.8193E-05 | P | 0 | 00423 | Q | 0 | 000000 | RT | 65999E-02 |
| AZP | 10A179 | CETX | 1 | 000000 | DELVP | 0 | 000000 | DELVY | 00000 |
| Y | 0.13188E-03 | Z | 0 | 000000 | AMB | 0 | 000000 | X | 00000 |
| DTHTA | 0.18184E-01 | CPI | 0 | 000000 | SPNT | 0 | 000000 | YT | 00000 |
| CPSIS | 1.0000 | O2B | 0 | 29.373 | GYB | 0 | 11.294 | SPSI | 004493E-05 |
| AUTAPILST! | | | | | | | | | |
| UDPPTO | 100000 | DECTS | 0 | 12222 | PRO | 0 | 000000 | OCMHS | 00000 |
| REL28 | 2831.4 | OREGA | 0 | 314.00 | DVER | 0 | 000000 | OPF | 00000 |
| RTP | 12521. | KT | 0 | 20.000 | PPFL | 0 | 000000 | NULL | 00000 |
| ANEG2 | 0.0000 | PSRC | 0 | 00000 | PEO | 0 | 00000 | PEF | 00000 |
| PHD | 0.0000 | PTS | 0 | 00000 | PXED | 0 | 00000 | TMBS | 00000 |
| CEL1 | 0.0000 | RLARY | 0 | 00000 | RLAMP | 0 | 00000 | TMAS | 00000 |
| VEP | 0.0000 | PEO | 0 | 00000 | YED | 0 | 00000 | YEF | 00000 |
| YBRC | 0.0000 | YEO | 0 | 00000 | DELYS | 0 | 00000 | YAFR | 00000 |
| YAPYR | 0.0000 | LAMPA | 0 | 00000 | G9A | 0 | 00000 | YAHRO | 00000 |
| YACG | 0 | 1 PBRSS | 0 | 00000 | REN | 0 | 00000 | DPSI8 | 00000 |
| LOGIC: | | | | | | | | | |
| GATE | 1 | F | DATE | 2 | F | DATE | 3 | F | DATE |
| GATE | 6 | F | GATE | 7 | F | GATE | 8 | F | GATE |
| AERODYNAMICS: | | | | | | | | | |
| FDC | 94228E-01 | ALB | 0 | 65229 | CNR | 0 | 156.19 | CRQ | *156.45 |
| C42 | 0.83620 | CLP | 0 | 025.0132 | CN | 0 | 022996E-02 | CYCQ | *149184E-02 |
| ANG | 0.84780 | CLB | 0 | 731.52 | CNS | 0 | 07432E-01 | CNG | *287866E-01 |
| PHASD | 0.00000 | PS1SD | 0 | 00000 | DPS1SD | 0 | 00000 | ALPHA | *68978E-03 |
| RAPI | | | | | | | | BETA | *25704E-03 |
| S1T | 0.00000 | CIT | 0 | 1.0000 | SP1 | 0 | 00000 | CPT | 0.10000 |
| XLTA | 1.6667 | | | | | | | | 000000 |
| PRAGU PRINT! | | | | | | | | | |
| DELX8 | 12222 | CELYB | 0 | 973.63 | DELZB | 0 | 2531.6 | DELXB | 12222E-01 |
| DELS8 | 2831.4 | KLTAA | 0 | 00000 | 1 PITER | 0 | 020423 | YAHERR | 77846E-01 |
| VALERA | 0.00000 | DRLAY | 0 | 00000 | F3 | 0 | 00000 | DRPSI | 00000 |
| RAFHIG | 0.00000 | RPIIG | 0 | 00000 | DELVA | 0 | 00000 | OPHIO | 00000 |
| VSC | 11CC-3 | TOKA | 0 | 0 | FACT | 0 | 00000 | TOVIE | 00000 |
| XACE | 1 | NAVY | 0 | 0 | P1 | 0 | 00000 | ORLAMP | 00000 |
| TRANT | 0.00000 | NPPS | 0 | 20 | NDT | 0 | 00000 | NDTA | 00000 |
| PEPL | 0.00000 | PHIG | 0 | 00000 | RHO | 0 | 21029E-02 | S2 | 1.00000 |
| REC | 0.00000 | REP | 0 | 00000 | REG | 0 | 00000 | RPSI | 00000 |
| ANEDY | 0.00000 | BRFGZ | 0 | 00000 | RR | 0 | 14 | RTUPA | 00000 |

| PROJECTILE! | | | | | | | | | |
|---------------|------------|-------|---|------------|--------|------|------------|--------|---------|
| TYPE | 035625 | RSA | 0 | 000000 | DELPV | 0 | 000000 | U | 10118 |
| W | 022079 | THTA | 0 | 020701 | PHD | 0 | 01715 | DELZ | 0 |
| DZ | 0207167 | DT | 0 | 088649E+03 | DPMT | 0 | 09240X | CTHTA | 0 |
| DPSI | 0142705-03 | DR | 0 | 042198E-01 | DO | 0 | 068173F+01 | DPP | 0 |
| DU | 032.556 | DV | 0 | 708334 | VBN | 0 | 1011.B | MACH | 0 |
| PSI | 017735E-05 | P | 0 | 92402 | Q | 0 | 1094AE+01 | R | 0 |
| A2B | 0357304 | CDCXV | 0 | 300000 | DELV | 0 | 00000 | DELVY | 0 |
| Y | 017742E-03 | Z | 0 | 04144.4 | AMB | 0 | 066332 | X | 0 |
| DTHTA | 012032E-01 | CPM1 | 0 | 791425 | SPH1 | 0 | 00518 | XT | 0 |
| CP81S | 1.00000 | QVB | 0 | 28.776 | QVB | 0 | 12.751 | CP81 | 0 |
| | | | 0 | 28.776 | QVB | 0 | 12.751 | QXB | -6.6103 |
| AUTOPILOT! | | | | | | | | | |
| ODPHTC | 000000 | OGLX5 | 0 | 101091 | PEO | 0 | 00000 | TXD | 0 |
| DELZS | 2471.4 | SMRGA | 0 | 314.00 | DYEP | 0 | 00000 | DPFF | 0 |
| RPM | 12466. | KT | 0 | 20.000 | PEFL | 0 | 00000 | NULL | 0 |
| AMEQZ | 000000 | PSRG | 0 | 00000 | PED | 0 | 00000 | PEP | 0 |
| MUJO | 000000 | PTES | 0 | 00000 | PXED | 0 | 00000 | TMBS | 0 |
| DELI | 000000 | RLARY | 0 | 00000 | RLAMP | 0 | 00000 | WTAB | 0 |
| EEA | 000000 | PEP | 0 | 00000 | YED | 0 | 00000 | PTD | 0 |
| YARG | 000000 | YEG | 0 | 00000 | DELYS | 0 | 109.3 | YAHEN | 0 |
| LANVM | 000000 | LAPPR | 0 | 00000 | OSA | 0 | 00000 | OP313 | 0 |
| TAAC | 000000 | PSRBS | 0 | 00000 | REN | 0 | 00000 | YAHENO | 0 |
| | | | 0 | 00000 | REN | 0 | 00000 | OP313 | 0 |
| LOGIC! | | | | | | | | | |
| GATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| GATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| AERODYNAMICS! | | | | | | | | | |
| CLC | 05172E-01 | ALB | 0 | 5166350 | CNR | 0 | 196.07 | CRG | 0 |
| CA2 | 053342 | CLP | 0 | 25.768 | CN | 0 | 262632E+02 | CVC | 0 |
| ANH | 120741 | CCB | 0 | 72916 | CN9 | 0 | 37619E+01 | CNS | 0 |
| DTMASC | 000000 | PG16C | 0 | 00000 | DP815D | 0 | 00000 | ALPHA | 0 |
| RAPI | 0 | RTT | 0 | 100000 | SPT | 0 | 00000 | CPY | 0 |
| XL7A | 1.66667 | | | | | | 1.00000 | TH | 0 |
| DEBUG PRINT! | | | | | | | | | |
| DELX8 | 12169. | DELVE | 0 | 109513 | DEL20 | 0 | 2471.4 | DELMS | 0 |
| DFL29 | 2471.4 | KUTTA | 0 | 1 | PITERR | 0 | 02037 | YAHENR | 0 |
| YAKER | 00000 | GALAY | 0 | 00000 | F3 | 0 | 00000 | DP813 | 0 |
| DBWH1 | 00000 | RPL1G | 0 | 00000 | DELVR | 0 | 00000 | DPH10 | 0 |
| VSK1 | 1103.4 | TRK4 | 0 | 0 | FACT | 0 | 0 | FACT02 | 0 |
| KADP | 0 | NAV | 0 | 0 | F1 | 0 | 0 | ORLAMP | 0 |
| IBRINT | 0 | NP93 | 0 | 0 | NOT | 0 | 0 | NOTA | 0 |
| DFPL | 10000 | PH1G | 0 | 00000 | RHO | 0 | 21014E+02 | Q2 | 0 |
| RFIC | 10000 | RST | 0 | 00000 | RHO | 0 | 00000 | AP81 | 0 |
| ANFAY | 00000 | BLF02 | 0 | 00000 | NA | 0 | 0 | AP81 | 0 |

| PROJECTILE! | | | | | | | | | |
|---------------|-------------|--------|-------------|--------|------------|---------|-------------|--------|-------------|
| TYPE | 10000C | R3 | 00000 | DELVP | 00000 | DELZ | 10000 | TOTACC | 29-57 |
| " | *3208C | THA | *13646 | PHD | *74BCJ | DELZ | 213-48 | DX | *248-47 |
| DZ | *194-35 | DY | -157-58E-02 | DEHT | -98885U | DTHTX | -17822E-01 | CW | *981-45 |
| DPSI | *18228E-03 | CR | *1C995 | DC | *94910E-01 | DP | *96090E-01 | QAP | *9-659 |
| DL | *3C-919 | CV | 9-2373 | VTH | 1000-6 | PACH | *90952 | DELVY | *1C50-C |
| PSI | *82042E-06 | P | 9-98850 | Q | *12941E-01 | R | *12260E-01 | DELVY | *.0000 |
| ZTH | *-82192 | DELAV | *00000 | DELVY | *00000 | X | *10000 | X | *-9-13 |
| Y | *-5C-16E-03 | Z | *4215-5 | AMB | *6551 | XY | 131200 | YY | *.000CC |
| DTHA | *17827E-01 | CPHT | *7335U | SPHT | *68021 | CPSI | 10000 | -SPSI | *-62042E-06 |
| CPSIS | 1.C0000 | GZB | 23-121 | QVH | 21-45A | 6x3 | *6-2778 | | |
| ALTITUDE! | | | | | | | | | |
| DCPHTO | 00000 | DCXJS | 11251 | PEO | 00000 | OCHE | *10000 | TXEO | *.0000 |
| DELZS | 1888-5 | BREGA | 314-00 | OVER | 00000 | OPF | *.00000 | DTHTAS | *.000CC |
| RTV | 12128 | XT | 20-000 | PEPL | 00000 | NULL | * | DELR | *-69813E-01 |
| DMEU2 | *00000 | PSRQ | .00000 | PEO | 00000 | PF | *.00000 | PI72AO | *.00000 |
| PHIG | *00000 | PS178 | .00000 | PXED | 00000 | TWS | *.00000 | PWS | *.00000 |
| DEL1 | *00000 | RLAPY | .00000 | RLAMP | 00000 | THAS | *.00000 | THRBS | *.00000 |
| YEF | *00000 | PEP | *00000 | YEO | *00000 | PEO | *.00000 | YEP | *.00000 |
| YARD | *00000 | YEG | *00000 | DELVY | *1752- | YAKER | *14501 | YANERO | *.00000 |
| LAMY | *00000 | LAMPR | *00000 | 29A | *00000 | QAPB | 213-07 | DRB1G | *.00000 |
| IACC | * | 00000 | PSRBS | *00000 | REN | | | | |
| LOGIC! | | | | | | | | | |
| GATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| GATE | 6 | F | DATE | 7 | F | | | | |
| AERODYNAMICS! | | | | | | | | | |
| CLC | *93-33E-01 | ALB | *.69015 | CNR | *155-65 | CM8 | *155-66 | CY | *35-21E-02 |
| CAY | *51928 | CLP | *-25-381 | CN | *38579E-02 | CYCG | *.56425E-02 | CMCD | *.6150E-02 |
| DTA3D | *00000 | CG8 | *70958 | CM8 | *35574E-01 | CNG | *72-72E-01 | THA3D | *.0000 |
| | | PS1SC | *.00000 | OPS180 | *.00000 | ALPHA | *.32060E-03 | BETA | *.29439E-03 |
| RAPI | | | | | | | | | |
| RTT | - | *00000 | - | SP7 | - | *.00000 | - | TM | *.00000 |
| XLTA | 1.6667 | | | | | | | | |
| DEBUG PRINT! | | | | | | | | | |
| DFLX8 | 11-51- | DELVB | 1752-5 | DEL28 | *1888-5 | DELNS | 11851- | DELYS | *1752-5 |
| DELZS | 1888-5 | KUITA | 1 | PITER | *15808 | YAKER | *14501 | PITER | *.000CC |
| VALER | *00000 | ORLAMY | *00000 | F3 | *00000 | OPPSI | *.00000 | DRWTA | *.000CC |
| DRWIG | *00000 | RPJIG | *00000 | DELVA | *.00000 | DPW10 | *.00000 | Q | *32.161 |
| YEN | 110-72 | TSK-A | * | JACT | 0 | IGVFCZ | 0 | IRAD | 0 |
| YAGE | * | NAVY | * | 0 | *.00001 | DRLAMP | *.00000 | NUM | C |
| IPRINT | * | NPS | * | F1 | * | NOTA | * | NULSKA | 2 |
| OFFL | *CCCCC | PK10 | * | 20 | NDT | *.00000 | 256 | CELROL | *12145E-02 |
| QFC | *00000 | REP | * | R40 | *.00000 | S2 | *1.00000 | ATATA | *.000CC |
| AWFCY | *CCCCC | BRGZ | * | REG | *.00000 | APSI | *.00000 | 14 | |

PROJECTILE!

| TYPE | 2.0000 | RCA | 0.0000 | DECP | 0.0000 | U | 0.0000 | V | 0.0000 | Y | 0.0000 |
|-------|--------------|-------|-------------|------|-------------|-------|-------------|--------|------------|---|--------|
| W | 0.4000F+01 | THTA | 0.16421 | PWD | 0.107570 | DEL2 | 0.289.93 | TOTACC | 0.12649 | | |
| DX | 0.188.63 | DY | 0.32116E+02 | ANL | 0.10169 | DTHTA | 0.25166E+01 | CX | 0.958.64 | | |
| DR | 0.23012E+03 | DR | 0.55663E+01 | DP | 0.34787E+01 | DP | 0.56183E+02 | CW | 0.1.3301 | | |
| DSI | 0.26.645 | CV | 0.70272 | AN | 0.971.87 | MACH | 0.88339 | DAP | 0.985.29 | | |
| DU | | | | | | | | | | | |
| PSI | 0.14.1C9E+05 | P | 0.10169 | | 0.48655E+02 | R | 0.24688E+01 | DELVY | 0.0000 | | |
| ZY | 0.99C1E+01 | DCRVA | 0.0000 | DCRV | 0.00000 | DCRV | 0.0000 | X | 0.967.03 | | |
| Y | 0.25355E+02 | Z | 0.64389.9 | AMG | 0.80080E+01 | XT | 0.13120. | YT | 0.0000 | | |
| DTHTA | 0.28166E+01 | CPHT | 0.18819 | SPHT | 0.98271 | CPHT | 0.10000 | SPHT | 0.1409E+03 | | |
| CPHTS | 0.1.0000 | DSB | 0.64.87.3 | DVB | 0.31.17.9 | DSB | 0.5.2973 | | | | |

AUTOPILOT!

| DPHTIC | 1.00000 | DCRKS | 0.109121 | PCD | 0.00000 | DEPTS | 0.00000 | TXCD | 0.00000 | | |
|--------|----------|-------|----------|-------|----------|--------|----------|--------|-------------|--|--|
| DEL2 | 0.40A.88 | DPEDA | 0.31A.00 | DVEP | 0.00000 | DPF | 0.00000 | DTHTAS | 0.0000 | | |
| RTM | 0.11163. | KT | 0.20000 | PCFL | 0.00000 | NUL | 0.00000 | DCTR | 0.69813E+01 | | |
| DPED2 | 0.00000 | PSRO | 0.00000 | PED | 0.00000 | PEP | 0.00000 | PITERO | 0.0000 | | |
| PHTO | 0.00000 | PSBT | 0.00000 | PXED | 0.00000 | THBS | 0.00000 | PSBS | 0.0000 | | |
| DELI | 0.00000 | RLAMP | 0.00000 | RLAMP | 0.00000 | THTAG | 0.00000 | THRS | 0.0000 | | |
| VEP | 0.00000 | PEP | 0.00000 | YED | 0.00000 | PEO | 0.00000 | YEP | 0.0000 | | |
| VERQ | 0.00000 | YEG | 0.00000 | DELVS | 0.2170.1 | YAHERR | 0.19568 | YAZERO | 0.0000 | | |
| LAPVR | 0.00000 | LAMPR | 0.00000 | OSA | 0.00000 | GAPS | 0.199.94 | DPBIS | 0.0000 | | |
| TAQ | 0.00000 | 1 | 0.00000 | REN | 0.00000 | | | | | | |

LOGIC!

| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 |
|---------------|---------------|-------|-------------|--------|-------------|-------|-------------|-------|-------------|------|---|
| DATE | 6 | F | DATE | 7 | | | | | | | |
| AERODYNAMICS! | | | | | | | | | | | |
| PLC | 0.1922938E+01 | XLS | 0.0.0.0.887 | CNT | 0.015A.33 | CMB | 0.15A.82 | CY | 0.27518E+02 | | |
| CAY | 0.4A.C28 | CLP | 0.24.353 | CN | 0.49323E+03 | CVG | 0.4404E+02 | CMG | 0.79190E+03 | | |
| ANP | 0.448720 | CTB | 0.0.9.50 | CMB | 0.20C24E+01 | CMD | 0.1016 | PHASD | 0.0000 | | |
| DTMAGD | 0.0CCCC0 | PS180 | 0.00000 | DPS180 | 0.00000 | ALPHA | 0.41159E+04 | BETA | 0.22871E+03 | | |
| QAPJ | | | | | | | | | | | |
| STT | 0.00000 | C77 | 0.1.0000 | SP7 | 0.00000 | CPT | 0.1.0000 | TM | 0.00000 | | |
| XLT | 0.1.6667 | | | | | | | | | | |

DEBUG PRINT!

| | | | | | | | | | | | |
|---------|----------|-------|----------|-------|-------------|---------|---------|--------|-------------|----------|--|
| DFLXG | 109.2. | DEL7B | 0.2170.6 | DEL7B | 0.408.68 | - | DELXG | 109.8. | DELYS | 0.2170.1 | |
| CFL28 | 0.40A.88 | KLTIA | 0.00000 | P1 | 0.37350E+01 | YAHERR | 0.19565 | PITERO | 0.0000 | | |
| YALRN | 0.0CCCC0 | DLRAY | 0.00000 | P3 | 0.00000 | DRBII | 0.00000 | DRHTWA | 0.0000 | | |
| CRPHIG | 0.0CCCC0 | RPHIG | 0.00000 | DELVR | 0.00000 | DPM10 | 0.00000 | GRHIG | 0.32.161 | | |
| VSNC | 1.039.8 | 1 | 0.00000 | FACT | 0.00000 | OUTSIDE | 0.00000 | IRAB | 0.0 | | |
| KADF | 1 | NAVY | 0 | P1 | 0.00000 | DRALMP | 0.00000 | ALUM | 0.0 | | |
| IRPRINT | 1 | NPPB | 0 | NDY | 0 | NOTA | 0.00000 | ES56 | 0.00000 | | |
| RFPL | 0.0CCCC0 | PK10 | 0.00000 | RHO | 0.20863E+02 | SZ | 1.00000 | DE_ROL | 0.12185E+02 | | |
| REF | 0.0CCCC0 | RET | 0.00000 | REG | 0.00000 | -RPSI | 0.00000 | RTHTWA | 0.00000 | | |
| AMFGV | 0.0CCCC0 | RFQZ | 0.00000 | NX | 0.14 | | | | | | |

ALL CALL STATE SENSOR

PROJECTILEI

| | | | | | | | | | |
|-------|--------------|-------|-------------|-------|-----------|-------|-----------|--------|----------|
| TYPE | 375000 | RSA | 110304E=01 | DELPW | 000000 | DELZ | 530.70 | TBTACC | 1135E=01 |
| D2 | • 113087 | TYA | 1148750E=01 | PHD | 2,0758 | DTHTA | 12947E=01 | DX | -93.99 |
| DR | • 12357 | CY | 1135790E=01 | DDHT | 1,0161 | DP | 3,0612 | DH | -3.535 |
| DRS1 | • 20222E=03 | DR | 1135790E=01 | DC | 22232E=02 | MACH | 8618 | GAP | 93.71 |
| TL | • 21,611 | CY | 115877 | YRM | 957.09 | | 10344E=01 | DELVY | 0.0000 |
| BS1 | • 11365E=04 | P | 11.C164 | O | 27572E=01 | A | 0.0000 | X | 0.0000 |
| ZS | • 116721E=01 | CETXP | 1100000 | DELYV | 000003 | DELYV | 1312C | Y | 0.0000 |
| Y | • 112355E=02 | Z | 0 | AMG | 3807AE=01 | XT | 1.0000 | SPT1 | 0.0000 |
| DTHTA | • 112947E=01 | CPW1 | 1133384 | SPHT | 35765 | CPS1 | 4,1967 | GYB | 0.0000 |
| CP315 | • 1.0000 | Q2B | 1129,776 | | 11.405 | | | | |

AUTOPILOTI

| | | | | | | | | | |
|--------|----------|--------|--------|-------|-----------|--------|--------|-------|-------|
| DCPHTO | 000000 | DELTXS | 10051. | PEO | 00003 | DECHTS | 100000 | TXED | CCCCC |
| DELZS | • 1135.3 | OPEGA | 0 | DYEP | 00000 | OPER | 00000 | DTHTA | 00000 |
| RTW | • 1021. | KT | 20,000 | PEPL | 12651 | NULL | 0 | DELV | 00000 |
| DMPGZ | • 10000 | PSRG | 0 | PEO | 00000 | PITER | 0 | PITER | 00000 |
| PHG | • 1,0164 | PS18 | 0 | PEO | 00000 | TM88 | 00000 | TM88 | 00000 |
| DEL1 | • 00000 | RLTIV | 0 | RLAMP | 00000 | THAS | 00000 | THAS | 00000 |
| VEP | • 00000 | PEP | 0 | YEO | 00000 | PEO | 00000 | Y | 00000 |
| YB0 | • 00000 | YEG | 0 | DELYS | 664.51 | YAWER | 00000 | YAWER | 00000 |
| LAPYR | • 00000 | LAPYR | 0 | OSA | 87572E=01 | QAPS | 189.07 | DPSIS | 00000 |
| YACG | • 00000 | 1 | PSGRS8 | REN | 0.00000 | | | | |

INITI

| | | | | | | | | | |
|------|---|------|------|------|---|------|---|------|---|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | F | GATE | 7 | Y | | | | |
| DATE | 8 | | | | | | | | |

AERODYNAMICS!

| | | | | | | | | | |
|--------|--------------|-------|----------|-------|--------------|-------|-------------|-------|-------------|
| FLD | • 9216AF=01 | ALF | 5-W61531 | CNR | • 0.153.09 | CMQ | • 153.10 | CY | • 14510E=04 |
| C42 | • 41344 | CLF | 23.473 | CN | • 24.712E=03 | CYCG | • 23051E=04 | CMCG | • 39623E=03 |
| DTMABD | • 122192E=02 | CSE | 0 | CMB | • 100000 | CMB | • 4640E=03 | THASD | • 000000 |
| DTMABD | • 0.00000 | PS1SD | 1 | OP1SD | 0.00000 | ALPHA | • 20541E=04 | BETA | • 12094E=05 |

REFL

| | | | | | | | | | |
|-------|----------|-----|----------|-----|----------|-----|----------|----|----------|
| STT | • 0.0000 | C77 | • 1.0000 | SP7 | • .00000 | EPT | • 1.0000 | TK | • 0.0000 |
| XLTIA | • 1.6667 | | | | | | | | |

REFLG PRINT!

| | | | | | | | | | |
|--------|----------|-------|-----------|-------|------------|--------|-----------|-------|--------|
| REFLG | • 10051. | CELYS | 664.83 | DEL28 | • 1735.3 | DELX8 | 10051. | DELYS | 664.53 |
| REFLG | • 1735.3 | KLTIA | 1 | PITER | 17096 | PITER | 65061E=01 | PITER | CCCCC |
| YALERA | • 00000 | CRLAY | 0 | F3 | .00000 | ORPSI | 00000 | DTHTA | 00000 |
| CRPHIC | • 59994 | RPHIG | 13287E=02 | DELVR | 0.00000 | CPHIO | 1.3164 | G | 32.160 |
| VSKC | • 10051. | TKA | 0 | TKCT | 0 | TKCT | 0 | FRAD | 0 |
| KAGE | • 1 | NAVY | 0 | F1 | 00000 | DLRMP | 00000 | NUM | 0 |
| IPRINT | • 1 | NPPS | 20 | ND7A | 128 | NULSKR | 256 | DLRBL | 2 |
| REFL | • 12651 | PHIG | 1,0164 | RHG | 20774E=02 | REG | 1.00000 | RTHTA | CCCCC |
| REC | • 00000 | QET | 0.00000 | REG | 180972E=01 | NY | 33 | RTHTA | 00000 |
| REFLG | • 00000 | QEGU | 0 | | | | | | |

INCAGE GYR FOR ROLL TA VERTICAL

PROJECTILE

| | | | | | | | | |
|-------|-------------|-------|--------------|-------|-------------|------|-------------|-------------|
| TYPE | 00000 | RSA | 03333333E+01 | DELVP | 000000 | 0 | 920187 | 9201312+01 |
| WZ | 035640E+01 | THTA | 096730E+01 | PHD | 0.613 | 0 | 636.95 | 10TACC |
| DZ | 085.982 | DT | 042008E+02 | OPHI | 0.7397 | 0 | 33811E+03 | 0.24350E+01 |
| DRS1 | 02182E+04 | DR | 069240E+03 | DG | 0.44627E+01 | DP | 0.9467 | DX |
| DU | 018.846 | DV | 033294 | VAN | 0.26.87 | MACH | 0.4376 | DA |
| PG1 | 037A606E+05 | P | 073937 | Q | 0.29204E+01 | R | 0.17036E+01 | GAP |
| AZB | 0190531E+01 | DELXV | 000000 | DELVY | 000000 | X | 00000 | DELVY |
| Y | 010762E+01 | Z | 0637.0 | AMB | 0.70192E+01 | X1 | 13120. | X1 |
| DTHTA | 033811E+01 | CPH1 | 0186316 | SPH1 | 0.5041K | CPS1 | 0.10000 | SPS1 |
| CPS18 | 1.0000 | QZB | 027.643 | OYB | 0.16.13A | OXB | 0.31060 | SPS1 |

AUTSPILOT

| | | | | | | | | |
|-------|------------|-------|------------|-------|--------------|--------|-------------|-------------|
| DSPTC | 100000 | DELX8 | 9129518 | PEO | 000000 | 00LTS | 000000 | TXED |
| DL28 | 01823.9 | OPEDA | 00000 | DYEP | 00000 | DEPF | 00000 | DTHTAS |
| NYW | -9898.9 | KT | 200000 | PEPL | 0.12851 | NULC | 00000 | 0.19h64E+01 |
| AME02 | 00000 | PSRQ | 00000 | PEO | 00000 | PEF | 00000 | 0.8988E+01 |
| PH10 | 0122919 | PSGS | 012914E+01 | PSXO | 0.5694K6E+03 | TH88 | 0.66611E+01 | PSGS |
| DELI | 014917E+02 | BLAMY | 00000 | RLAMP | 00000 | PTHTAG | 0.22134E+01 | THRS |
| YEP | 00000 | PEP | 00000 | YED | 00000 | YEP | 00000 | YEP |
| YBQ | 00000 | YEQ | 00000 | DELVS | 0.89.2 | YAHERR | 00000 | YAHERR |
| LAVN | 000000 | LAMPN | 00000 | OSA | 0.19668E+01 | GPSB | 180.80 | GPSB |
| IACQ | 00000 | PSRBS | 015280E+02 | REN | 00000 | ALPHA | 0.41689E+04 | BETA |

LOGIC!

| | | | | | | | | |
|------|---|------|----|------|----|------|----|------|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE |
| DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 | DATE |
| DATE | 8 | DATE | 9 | DATE | 10 | DATE | 11 | DATE |
| DATE | 9 | DATE | 10 | DATE | 11 | DATE | 12 | DATE |

AERODYNAMICS!

| | | | | | | | | |
|-------|-------------|-------|---------|----------|-------------|-------|--------------|---------|
| ELD | 019332E+01 | ALB | 0323117 | CNR | 0152.20 | CRC | 0 -152121 | CY |
| CA2 | 039139 | CLP | 022.760 | CN | 0.50156E+03 | CYCG | 0.54546E+03 | CMG |
| ANB | 0350073E+01 | CLB | 081473 | CMB | 0.71113 | CRCB | 0.852332E+01 | TMASO |
| DTM8C | 00C000 | PS180 | 00000 | DS18D | 00000 | ALPHA | 0.41689E+04 | BETA |
| RAP1 | 577 | 00000 | CFT | -1.00000 | -0.00000 | CPT | 0.00000 | TM |
| XLTA | 16667 | | | | | | | 0.00000 |

AEROD PRINT!

| | | | | | | | | |
|---------|------------|--------|------------|--------|-------------|--------|-------------|--------|
| DPLX8 | 9171.8 | CBLY8 | 077117 | DEL28 | 0.1321.3 | DELX8 | 0.129.6 | DELY8 |
| CEL28 | 01523.9 | KLT7A | 0.1654 | PITERA | 0.1654 | YAHERR | 0.95778E+01 | PITERO |
| YAHERR | 00000 | CRAMPY | 00000 | FS | 00000 | DRPSI | 00000 | DRHTA |
| CRAMP10 | 037433E+01 | RP410 | 015309E+01 | DELVR | 0.16927E+02 | DK10 | 0.73937 | G |
| VSHC | 1C9873 | TKRA | 0.1654 | TRACT | 0.1654 | TRACT | 0.1749 | TRACT |
| KAGE | 2 | NAVY | 0 | F1 | 00000 | DLAMP | 00000 | NUM |
| IRPNV | 1 | NPPS | 0 | NOT | 00000 | YOTA | 00000 | NUISKA |
| PFPL | 112661 | RM10 | 0.22919 | RHO | 0.2070E+02 | RHO | 0.10000 | CELR0L |
| RPO | 0CCCCC | RST | 00000 | REG | 0.17114E+02 | RPSI | 00000 | RTMVA |
| AMFOY | 0CCCCC | ARE02 | 00000 | NX | 0.13333E+02 | 93 | 0 | 0 |

| PROJECTILE1 | | | | | | | | | |
|---------------|--------------|-------|---------------|--------|-------------|--------|-------------|--------|-------------|
| TYPE | 5.0000 | RSA | 0.58117E+01 | DELVP | 0.00000 | U | 909.23 | V | 13878E-01 |
| RZ | 0.34976E+01 | THTA | 0.61939E+01 | PHD | 0.23285 | DELZ | 0.709.55 | TOTACC | 0.21595E+01 |
| DR | 0.36.242 | DY | 0.33309E+03 | DPHT | 0.0977 | DTHTA | 0.36423E+01 | DX | -907.6 |
| DPST | 0.50.76E-04 | DR | 0.38482E+01 | DG | 0.11851E+02 | DP | 0.4.120 | DM | -1.0090 |
| DU | 0.16.385 | DY | 0.326135 | VRW | 0.30972K | TMCH | 0.82795 | GAP | 0.85.18 |
| PRI | 0.41257E+05 | P | 0.01.0972 | Q | 0.35451E+01 | R | 0.83550E+02 | DELVY | 0.00000 |
| AZB | 0.91034E+01 | DLXV | 0.00000 | DELCV | 0.00000 | DELCV | 0.00000 | X | 4.756.1 |
| Y | 0.13141E+01 | Z | 0.4709.5 | AMB | 0.75136E+01 | XT | 0.13120 | YT | 0.00000 |
| CTHTA | 0.36933E+01 | CPT | 0.797301 | SPHT | 0.733075 | CPSI | 0.10000 | SPSI | 0.41257E+05 |
| CNS18 | 0.1.0000 | Q28 | 0.31.232 | QVB | 0.74.065 | QX6 | 0.1.9907 | | |
| AUTOPILOT1 | | | | | | | | | |
| DPHTO | 0.00000 | DLX3 | 0.6212.6 | PEO | 0.00000 | DCMH3 | 0.00000 | TXED | 274.17E+02 |
| CEL2S | 0.1671.4 | SPEGA | 0.00000 | DYEP | 0.00000 | DPER | 0.00000 | DTHTAB | 0.50730E+01 |
| RTV | 0.8392.0 | XT | 0.20.000 | PEPL | 0.12651 | TMUL | 0.00000 | DELR | 0.26776E+01 |
| SPERO2 | 0.00000 | PSRQ | 0.00000 | PEP | 0.00000 | PEP | 0.00000 | PITERO | 0.00000 |
| PHIG | 0.51488E+01 | PSTB | 0.13942E+01 | PXED | 0.84988E+03 | THBS | 0.12387 | PSBS | 0.20874E+01 |
| CEL3 | 0.50223E+03 | RLAPV | 0.00000 | RLAMP | 0.00000 | THTAB | 0.58784E+01 | THRBE | 0.31490E+02 |
| YEP | 0.00000 | PEP | 0.00000 | YED | 0.00000 | PEO | 0.00000 | VEF | 0.00000 |
| YRD | 0.00000 | YED | 0.00000 | DELVS | 0.3974.3 | YAHERR | 0.47376E+01 | YAHED | 0.00000 |
| LARY | 0.00000 | LAMP | 0.00000 | SSA | 0.50725E+01 | DAFB | 0.173.33 | OPSI0 | 0.56117E+01 |
| TAQ | 0.00000 | PERES | 0.34584E+02 | REN | 0.00000 | | | | |
| LOGIC1 | | | | | | | | | |
| GATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | F | GATE | 7 | 1 | | | | |
| AERODYNAMICS1 | | | | | | | | | |
| CLD | 0.30978E+01 | ALB | 0.15976C | CNR | 0.181.41 | CNG | 0.151.48 | CY | 0.18094E+03 |
| CA2 | 0.37210 | CLP | 0.22.116 | CN | 0.52896E+03 | CYCG | 0.29170E+03 | CNC0 | 0.85260E+03 |
| ANB | 0.257002E+01 | CCE | 0.123063 | CMB | 0.19219 | CNG | 0.31152E+01 | THAGD | 0.0000 |
| DTMAGD | 0.00000 | PSISD | 0.00000 | DP81SD | 0.00000 | ALPHA | 0.43965E+04 | BETA | 0.15043E+04 |
| RAP1 | 0.00000 | CPR | 0.10000 | -897 | 0.00000 | CPT | 0.1.00000 | TH | 0.00000 |
| STT | 0.66667 | | | | | | | | |
| XLTA | | | | | | | | | |
| DEBUG PRINT1 | | | | | | | | | |
| DLX8 | 0.19C2.0 | DELVB | 0.282.89 | DEL28 | 0.1192.7 | DELXB | 0.8212.8 | DELYB | 0.397.43 |
| DLF2S | 0.1678.4 | KLT7A | 0.00000 | 01TPRR | 0.20198 | YAHERR | 0.47376E+01 | PITERO | 0.00000 |
| YAHERR | 0.00000 | DRL4W | 0.1242235E+02 | F3- | 0.00000 | DRP61 | 0.00000 | DRWTA | 0.00000 |
| CRPL1G | 0.21192E+01 | RPW10 | 0.1640 | 1KET | 0.50223E+03 | DPH10 | 0.1.0372 | G | 32.160 |
| VSNKC | 0.09472 | 16K0 | 0 | F1 | 0.00000 | 1Q10E | 0 | IRAP | 0 |
| KAGE | 2 | NAV | 0 | 0 | 0.00000 | ORLAMP | 0.00000 | NUM | 0 |
| TPRINT | 1 | NPPS | 0 | ADT | 0.124 | NOTA | 0.00000 | 256 | 0 |
| DPFL | 0.12651 | PM10 | 0.51444E+01 | RHO | 0.20661E+02 | S2 | 0.1.00000 | NULSKA | 2 |
| RC | 0.00000 | REY | 0.00000 | R20 | 0.4999AE+03 | RPSI | 0.00000 | DELRBL | 0.00000 |
| PNFGY | 0.00000 | 9PEQ2 | 0.00000 | KK | 0.33 | RTHTA | 0.00000 | | |

PROJECTILE1

| | | | | | | | | | | | | |
|-------|---|--------------|-------|---|-------------|-------|---|--------------|-------|--------|-------------|-----------|
| TPTR | 0 | 000000 | RSA | 0 | 018890E+03 | DELVP | 0 | 000000 | V | 894708 | V | 17718E+02 |
| Y | 0 | 01C920 | THA | 0 | 066410E+01 | PHD | 0 | 014625E+02 | DEL2 | 0 | 749.12 | TOTACC |
| DX | 0 | 0223.504 | DT | 0 | 080333E+03 | OPHT | 0 | 03308H2E+02 | DTHTX | 0 | 736143E+01 | DX |
| CPS1 | 0 | 0.82613E+00 | DR | 0 | 0.56851E+03 | DO | 0 | 0.12269E+01 | DP | 0 | 0.11417E+01 | DW |
| HU | 0 | 0.14.095 | DV | 0 | 0.75358E+01 | VAN | 0 | 0.894.05 | MACH | 0 | 0.18142E+01 | OKP |
| PG1 | 0 | 0.270C12E+05 | P | 0 | 0.33486E+02 | Q | 0 | 0.36163E+01 | R | 0 | 0.13542E+03 | DELVY |
| AZB | 0 | 0.24597 | DECRV | 0 | 0.00000 | DELVV | 0 | 0.00000 | DECIV | 0 | 0.00000 | X |
| Y | 0 | 0.12548E+01 | Z | 0 | 0.4749.1 | AMG | 0 | 0.20200 | XP | 0 | 13120.0 | YY |
| DTWTA | - | 0.36143E+01 | CPHT | - | 1.00000 | SPHT | 0 | 0.014625E+02 | CPST | - | 1.00000 | SPST |
| CPSIS | 0 | 1.50000 | GSB | 0 | 32.148 | QYS | 0 | 0.67015E+01 | QXB | 0 | 0.84916 | - |

AUTOPilot1

| | | | | | | | | | | | | |
|--------|---|-------------|-------|---|--------------|-------|---|-------------|--------|---|-------------|--------|
| DDPPTO | 0 | 000000 | DLXG | 0 | 73147.4 | PEO | 0 | 000000 | DELMIS | 0 | 0.00000 | TXEO |
| DEL28 | 0 | 1.684.2 | DEGA | 0 | 0.0000 | DYEP | 0 | 0.0000 | DPEF | 0 | 0.00000 | DTHTAS |
| RTW | 0 | 7499.2 | KT | 0 | 20.000 | PEFL | 0 | 0.122651 | NULL | 0 | 0.122651 | DLR |
| AVE02 | 0 | 0.00000 | PSRG | 0 | 0.0000 | PED | 0 | 0.0000 | PEF | 0 | 0.00000 | PITERO |
| BW10 | 0 | 0.58308E+02 | PSR8 | 0 | 0.12266E+03 | PXED | 0 | 0.6449RE+03 | TWS8 | 0 | 0.19543 | PBS |
| DR11 | 0 | 0.91618E+05 | RALY | 0 | 0.0000 | RLAMP | 0 | 0.0000 | THT8 | 0 | 0.95331E+01 | THR8 |
| VEP | 0 | 0.00000 | PEI | 0 | 0.0000 | TEO | 0 | 0.0000 | PEO | 0 | 0.00000 | TEP |
| YBR0 | 0 | 0.00000 | YEG | 0 | 0.0000 | DELAY | 0 | 0.22862 | YANER | 0 | 0.30518E+03 | YANERO |
| LAMVR | 0 | 0.00000 | LAMPR | 0 | 0.00000 | QSA | 0 | 0.36184E+01 | GAPS | 0 | 0.00000 | DPS18 |
| TAC | 0 | 0 | PSRBS | 0 | 0.633380E+06 | REN | 0 | 0.00000 | - | 0 | 0.00000 | - |

LEGIC1

| | | | | | | | | | | | | |
|----------------|---|--------------|-------|------|--------------|---------|---|-------------|-------|---|-------------|---------|
| DATE | 1 | 0 | GATE | 2 | 0 | GATE | 3 | 0 | GATE | 4 | 0 | GATE |
| DATE | 6 | 0 | F | GATE | 7 | 0 | - | - | - | - | - | - |
| AFRODYNAMICCS1 | - | - | - | - | - | - | - | - | - | - | - | - |
| FIC | 0 | 0.9C497E+01 | XLB | 0 | 0.217367E+02 | CNR | 0 | 0.150.7T | CFO | 0 | 0.150.7T | CY |
| C42 | 0 | 0.35533 | CLB | 0 | 0.21.566 | CN | 0 | 0.14696E+02 | CYCG | 0 | 0.38448E+04 | CMC0 |
| ANB | 0 | 0.327711E+02 | CCB | 0 | 0.0000 | CMB | 0 | 0.33179 | CKB | 0 | 0.33772E+03 | TMABD |
| DT41SD | 0 | 0.00000 | PS18C | 0 | 0.00000 | DP818D | 0 | 0.00000 | ALPHA | 0 | 0.12214E+03 | BETA |
| RAPI | 0 | 0 | - | - | - | - | - | - | - | - | - | - |
| STT | 0 | 00000 | - | CTT | 0 | 0.00000 | - | 0.00000 | CPT | 0 | 0.00000 | TK |
| XLTA | 0 | 1.66667 | - | - | - | - | - | - | - | - | 0 | 0.00000 |

DRBLG PRINT1

| | | | | | | | | | | | | |
|--------------|---|-------------|--------|---|--------------|-------|---|-------------|--------|---|-------------|--------|
| DRBLG PRINT1 | 0 | 7419.3 | CE11P | 0 | 0119310 | DEL28 | 0 | 0.95193 | DRBLX9 | 0 | 73147.4 | DELY8 |
| DRBLX | 0 | 1654.2 | KLTA | 0 | 0.0000 | 1 | 0 | 0.82241 | YAKER | 0 | 0.3C813E+03 | PITERO |
| YAKER | 0 | 0.CCCCC0 | CREARY | 0 | 0.0000 | 3 | 0 | 0.0000 | DRP61 | 0 | 0.00000 | DRWTA |
| DRBLX | 0 | 0.29148E+02 | RPKD | 0 | 0.701211E+03 | CLVR | 0 | 0.9161AE+05 | OPH10 | 0 | 0.33487E+02 | G |
| YAKC | 0 | 0.09811 | 1BK8 | 0 | 0 | FACT | 0 | 0.0000 | TOUDE | 0 | 0.00000 | IAP |
| KAKC | 0 | 2 | NAVY | 0 | 0 | FI | 0 | 0.0000 | DRAMP | 0 | 0.00000 | NUM |
| IPR1A7 | 0 | 1P98 | 1 | 0 | 0 | NDP | 0 | 0 | NDCTA | 0 | 0 | - |
| BPPL | 0 | 112651 | PM10 | 0 | 0.585011E+02 | RHO | 0 | 0.20539E+02 | S2 | 0 | 1.00000 | DELRL |
| RCFC | 0 | 0.CCCCC0 | RET | 0 | 0.00000 | RGE | 0 | 0.88716E+02 | RPS1 | 0 | 0.00000 | RFWTA |
| AVRAY | 0 | 0.CCCCC0 | 0RE02 | 0 | 0.00000 | NX | 0 | 0 | 33 | 0 | 0 | - |

| PROJECTILE! | | | | | | | | | | |
|---------------|--------------|---------|-------------|---------|--------------|---------|-------------|---------|---------------|---------|
| TYPE | 874015 | RJA | 0.3241E05 | DELVP | 0.00000 | 0 | 883193 | V | ***127022E+02 | |
| X | *39668E-01 | THTA | 0.4546E-08 | PHO | 0.1507E+03 | DELZ | 757.23 | YETACC | 0.2967E+01 | |
| DZ | *3.0568 | DT | 0.8811E-03 | DPFT | 0.4057E+03 | DTHTA | 0.3560E+01 | DX | 0.8519E+00 | |
| DR | *0.87322E-04 | DR | 0.4248E-03 | DQ | 0.3406E+02 | DP | 0.6190E+02 | | 0.41067 | |
| DU | 0.12.826 | DV | 0.5068E-01 | VRN | 0.80557 | MACH | 0.80683 | GAP | 0.8974 | |
| PEI | *2C6C2E-05 | P | 0.4057E-03 | Q | 0.3508E+01 | R | 0.3099E+04 | DELVY | 0.00000 | |
| XZB | *1.13318 | DLTDX | 0.00000 | DELVY | 0.00000 | DELYV | 0.00000 | X | 0.6937E+00 | |
| Y | *.12131E-01 | Z | 0.4757E+01 | AMB | 0.10590 | XT | 0.13120 | YT | 0.00000 | |
| DTHTA | *358AC2E-01 | CPh1 | 0.10000 | BPMT | 0.19077E+03 | CPh1 | 0.10000 | SAS1 | 0.20802E+05 | |
| CPh1S | 1.00000 | Q18 | 0.32.159 | QVB | 0.6133AE+02 | QXB | 0.14943 | | | |
| AUTOPILOT! | | | | | | | | | | |
| BOPPATO | 0.00000 | DLTXS | 0.6788E+01 | PEO | 0.00000 | OCM1S | 0.00000 | TX2D | 0.27297E+02 | |
| DEL2S | 1.896.9 | OPEGA | 0.00000 | OVER | 0.00000 | OPEF | 0.00000 | DTHTAS | 0.35802E+03 | |
| RTW | 6967.8 | KT | 0.20.000 | PEFL | 0.12681 | NULL | 0.1 | DLR | 0.1364E+03 | |
| EMEG2 | *0.00000 | PSRO | 0.00000 | PEO | 0.00000 | PIERO | 0.00000 | | | |
| BWTS | *.13853E-04 | PS18 | 0.55952E+05 | PKED | 0.37728E+06 | TMFS | 0.23901 | PSBS | 0.7930E+06 | |
| DELL | *.24023E-05 | RLAMY | 0.0000 | RLAMP | 0.00000 | THTAB | 0.11770 | THMS | 0.1805E+02 | |
| YEF | *.00000 | PCW | 0.00000 | TEU | 0.00000 | PEO | 0.00000 | YEP | 0.00000 | |
| YR0 | *.00000 | YEG | 0.00000 | DELVS | 0.19081 | YAWERR | 0.27385E+04 | YAWER | 0.00000 | |
| LAMR | *.00000 | LAMPR | 0.00000 | QSA | 0.35802E+01 | GAPS | 0.164.32 | DRS1S | 0.98331E+04 | |
| IACG | 1 | PGRS6 | 0.59611E+05 | REH | 0.00000 | | | | | |
| LOGIC! | | | | | | | | | | |
| DATE | 6 | DATE | 7 | DATE | 7 | DATE | 7 | DATE | 7 | |
| DATE | 6 | DATE | 7 | DATE | 7 | DATE | 7 | DATE | 7 | |
| AERODYNAMICS! | | | | | | | | | | |
| FLC | *9C24CE-01 | ALB | 0.20680E+03 | CYR | 0.150136 | CMA | 0.150.38 | CY | 0.1719E+04 | |
| C42 | .34636 | CLB | 0.21.271 | CN | 0.81081E+03 | CYCG | 0.27869E+04 | CMCG | 0.1311E+02 | |
| XN9 | *1.23277E+02 | CUS | 0.10371E+02 | CMB | 0.126394 | CNB | 0.18368E+03 | CMH99 | 0.00000 | |
| CTWASC | 0.CCCCC | PS18C | 0.00000 | DPM1SD | 0.00000 | ALPKA | 0.67366E+04 | BETA | 0.14333E+05 | |
| RAPI | STT | 0.C0000 | CFT | 0.10000 | 8P7 | 0.10000 | CPT | 0.10000 | TM | 0.00000 |
| XLTA | 0.1.6667 | | | | | | | | | |
| DEBLG PRINT1 | | | | | | | | | | |
| DEBLX | 6922.9 | DELYB | 0.192861 | DELB8 | 0.789.43 | DELB9 | 0.6782.3 | DELM9 | 0.19081 | |
| DELZS | 1.596.9 | KUTTA | 0.00000 | PIERR | 0.23124 | YANERR | 0.27385E+04 | PITERO | 0.00000 | |
| YAWERR | *.00000 | DRAMP | 0.22553E+04 | F3 | 0.00000 | DRP91 | 0.00000 | DRHTA | 0.00000 | |
| ERPI1G | *.26813E+03 | RPW1G | 0.00000 | DELVR | 0.24029E+05 | DPM10 | 0.4C578E+C3 | G | 33.159 | |
| VSRG | *109810 | TOK9 | 0 | TRCT | 0 | IGUOE | 0 | IGUE | 0 | |
| KAGF | 2 | NAVY | 0 | P1 | 0.00000 | ORLAMP | 0.00000 | NUM | 0 | |
| TPR1AT | 1 | APP9 | — | 20 | 0 | YOTA | 0.256 | MULSKR | 0 | |
| PFEL | *12451 | P+1G | 0.13853E+04 | RW3 | 0.20633E+02 | S2 | 1.000C | DELRBL | 0.20235E+05 | |
| REC | *.0C000 | REP | 0.00000 | REQ | 0.233300P+03 | RPS1 | 0.00000 | RTHTA | 0.00000 | |
| AREGY | *.CCCCC | BRFG2 | 0.00000 | NX | 0.23 | | | | | |

PROJECTILE!

| TYPE | 710000 | RUA | 010000 | DELIV | 000000 | DELZ | 010000 | 756.21 | 797ACC | 010000 | 1308E-02 |
|--------------|-------------|-------|--------|------------|--------|---------|------------|-------------|-----------|---------|-----------|
| W | 0.0886E+01 | THPA | 0.0000 | PHD | 0.0000 | DTMTC | 0.0000 | 0.36097E+01 | 0.0000 | 0.0000 | 35103E+01 |
| nx | 0.8729E+01 | CY | 0.0000 | DBH | 0.0000 | DP | 0.0000 | 0.24165E+02 | 0.0000 | 0.0000 | 880.96 |
| DPSI | 0.3648E+04 | CR | 0.0000 | DCR | 0.0000 | MACH | 0.0000 | 0.10424E+04 | 0.0000 | 0.0000 | 36574 |
| DU | 0.12020 | CV | 0.0000 | DNM | 0.0000 | R | 0.0000 | 0.10424E+04 | 0.0000 | 0.0000 | 0.0000 |
| PSI | 0.25072E+05 | P | 0.0000 | DSR | 0.0000 | DELV | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| A2B | 0.13732 | DLXV | 0.0000 | DELYA | 0.0000 | X | 0.0000 | 1.3100 | Y | 0.0000 | 0.0000 |
| Y | 0.18707E+01 | CPH1 | 0.0000 | AMB | 0.0000 | XP | 0.0000 | 1.0000 | Z | 0.0000 | 28507E+05 |
| DTHTA | 0.13047E+01 | CPH2 | 0.0000 | BNF | 0.0000 | CPG1 | 0.0000 | 0.991 | CPG2 | 0.0000 | 0.0000 |
| CPS18 | 1.0000 | Q2B | 0.0000 | QV8 | 0.0000 | QXB | 0.0000 | 0.91607 | QXC | 0.0000 | 0.0000 |
| 4 | AUTOPIL071 | | | | | | | | | | |
| DOPHTO | 100000 | DRDXS | 0.0000 | PEO | 0.0000 | DECMIS | 0.0000 | 0.0000 | DEMO | 0.0000 | 0.0000 |
| DEL28 | 1582.9 | OPEGA | 0.0000 | OPEP | 0.0000 | OPEP | 0.0000 | 0.0000 | DTMTAS | 0.0000 | 0.0000 |
| RTY | 66.810 | XT | 0.0000 | PERL | 0.0000 | NULL | 0.0000 | 1 | DTLRA | 0.0000 | 0.0000 |
| 8MED2 | 0.0000 | PERO | 0.0000 | PEP | 0.0000 | PITERO | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| DHTO | 19970E+03 | PS1S | 0.0000 | PLEX | 0.0000 | PBB5 | 0.0000 | 0.0000 | PRB8 | 0.0000 | 0.0000 |
| DEL1 | 0.12151E+05 | RALY | 0.0000 | RLAMP | 0.0000 | TMRB8 | 0.0000 | 0.0000 | TCB | 0.0000 | 0.0000 |
| VTP | 100000 | PEV | 0.0000 | TEO | 0.0000 | PEO | 0.0000 | 0.0000 | YAHERR | 0.0000 | 0.0000 |
| YPRO | 0.0000 | YEG | 0.0000 | DELV8 | 0.0000 | YAHERR | 0.0000 | 0.0000 | YAMERO | 0.0000 | 0.0000 |
| LAMVR | 0.0000 | LAMPR | 0.0000 | OGA | 0.0000 | OGA8 | 0.0000 | 0.0000 | OPSL8 | 0.0000 | 0.0000 |
| IACC | 0.0000 | PERBS | 0.0000 | REN | 0.0000 | REN8 | 0.0000 | 0.0000 | 21807E+04 | 0.0000 | 0.0000 |
| LA01C1 | | | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 |
| AEROMARICSI | | | | | | | | | | | |
| CLC | 0.90882E+01 | ACB | 0.0000 | 31851E+03 | CNR | 0.0000 | CMG | 0.0000 | CY | 0.0000 | 0.0000 |
| CAT | 0.30045 | CLP | 0.0000 | 21.093 | CN | 0.0000 | CYCG | 0.0000 | CMCG | 0.0000 | 0.0000 |
| AB | 0.37778E+02 | CCB | 0.0000 | 151795E+03 | CMG | 0.0000 | CMG8 | 0.0000 | CMCG | 0.0000 | 0.0000 |
| DTLASC | 0.0000 | PA1SD | 0.0000 | 0.00000 | DPS1BD | 0.00000 | ALPHA | 0.00000 | BETA | 0.00000 | 0.0000 |
| RAPI | 0.0000 | CTT | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| STT | 0.0000 | CTT | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| XLTA | 1.6697 | | | | | | | | | | |
| REFD0 PRINT! | | | | | | | | | | | |
| DELX8 | 6981.7 | DLVB | 0.0000 | DLZB | 0.0000 | DLX8 | 0.0000 | 0.0000 | DLX8 | 0.0000 | 0.0000 |
| CPL28 | 1582.9 | KLTIA | 0.0000 | PTERIN | 0.0000 | YAHERR | 0.0000 | 0.0000 | PITERO | 0.0000 | 0.0000 |
| YAKER | 0.0000 | DLARY | 0.0000 | F3 | 0.0000 | ORPSI | 0.0000 | 0.0000 | DARTHA | 0.0000 | 0.0000 |
| CRPM1G | 0.59268E+04 | RFHIG | 0.0000 | DLVRA | 0.0000 | CPH10 | 0.0000 | 0.0000 | CPH10 | 0.0000 | 0.0000 |
| VERC | 105970 | TK8 | 0.0000 | IXCT | 0.0000 | IXCT | 0.0000 | 0.0000 | IXCT | 0.0000 | 0.0000 |
| KAGE | 2 | NAVY | 0.0000 | O | 0.0000 | DLAMP | 0.0000 | 0.0000 | NULBKA | 0.0000 | 0.0000 |
| PORTAT | 1 | NPPS | 0.0000 | 110 | 0.0000 | NOTA | 0.0000 | 0.0000 | 256 | 0.0000 | 0.0000 |
| PFPL | 1.16651 | PH10 | 0.0000 | 195970E+04 | RHO | 0.0000 | 206332E+04 | 92 | DELROL | 0.0000 | 12151E+05 |
| REC | 0.0000 | RET | 0.0000 | 0.0000 | RZD | 0.0000 | 111C92E+04 | APB1 | 0.0000 | RTMVA | 0.0000 |
| EMFGY | 0.0000 | 9MF02 | 0.0000 | 0.0000 | NX | 0.0000 | 0.0000 | 33 | | | |

ROLL HOLD

ACCL/CTIA

LAYERED ENAPLE

BLINDAGE ENAPLE

| PROJECTILE 1 | | | | | | | | | |
|---------------|--------------|---------|---------------|---------|--------------|--------|-------------|-----------|-------------|
| TYPE | RDX | 7.00000 | CNCVP | 0.00000 | V | 889V81 | V | 14867E-02 | |
| W | 0.64392E+01 | THTA | 0.66519E+01 | PHD | 0.11165E+01 | DELZ | 0.731.31 | TOTACC | 0.31390E+C: |
| H2 | 40.53 | DY | 0.65341E+03 | DHTI | 0.84288E+07 | DHTX | 0.970.9E+01 | CX | 860.07 |
| DP51 | 0.8934E+05 | DR | 0.66501E+03 | DG | 0.26043E+02 | DP | 0.11667E+05 | DW | 0.13255 |
| DU | 0.104C8 | DV | 0.7796663E+02 | DTW | 0.369.81 | DACH | 0.79208 | GAP | 781.12 |
| PS1 | 0.96630E+06 | P | 0.648484E+07 | Q | 0.32709E+01 | A | 0.75723E+06 | DELV | 0.00000 |
| X7B | 0.970286 | DELV | 0.00000 | DLTIV | 0.00000 | DEC2V | 0.0000 | X | 7420+C |
| Y | 0.11200E+01 | Z | 0.4731.1 | AMB | 0.11155A | XP | 0.13120 | YT | 0.00000 |
| ZHTA | 0.37049E+01 | CPTH | 0.10000 | SPIR | 0.11165E+01 | CPSI | 0.10000 | SPSI | 0.96630E+06 |
| PSIS | 0.10000 | G2B | 0.32125 | QVB | 0.258851E+02 | QXB | 0.14953 | | |
| ALTA PILOT1 | | | | | | | | | |
| DCPHTC | 0.00000 | DCXJS | 0.727731 | PCP | 0.012033 | DEPNTS | 0.0000 | TXED | 0.72101E+05 |
| DEL2S | 0.465.91 | DREGA | 0.00000 | DYEP | 0.21463E+08 | DEPF | 0.6.1087 | DTHAS | 0.37049E+01 |
| RTV | 0.57.67 | XT | 0.10000 | PEFL | 0.12631 | NULL | 2 | DELT | 0.29650E+07 |
| SMEG2 | 0.16562E+01 | PSRG | 0 | PEFL | 0.12631 | PEF | 0.00000 | PITERO | 0.26180E+01 |
| PH10 | 0.419A2E+07 | PTIS | 0.14912E+08 | PKED | 0.11490AE+09 | THBS | 0.9007E+07 | PS08 | 0.15765E+01 |
| DEL1 | 0.5748E+09 | RLAMY | 0.42342E+07 | RLAMP | 0.00000 | THTAS | 0.79203E+04 | THRBS | 0.79168E+04 |
| TEP | 0.00000 | PCP | 0.00000 | YED | 0.81327E+04 | PEO | 0.177.9 | YEF | 0.66000 |
| YBRO | 0.00000 | YEG | 0.64901E+08 | DELYS | 0.35240E+01 | YAHERR | 0.61322E+05 | YAKED0 | 0.61322E+05 |
| LAPYR | 0.61322E+04 | LAMPR | 0.61778E+01 | OSA | 0.37049E+01 | CAB8 | 0.158.51 | OPSI8 | 0.75722E+05 |
| TACG | 0 | PSRB8 | 0.14906E+08 | REN | 0.00000 | | | | |
| LOGIC1 | | | | | | | | | |
| DATE | 1 | GATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | GATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| AERODYNAMICS1 | | | | | | | | | |
| CLC | 0.89581E+01 | ALB | 0.22380E+07 | CNR | 0.149.90 | -C1Q | 0.149.94 | CY | 0.20461E+04 |
| CA2 | 0.33718 | CLP | 0.20.869 | CN | 0.88082E+03 | CYCG | 0.33123E+04 | C-HCG | 0.14346E+02 |
| TRB | 0.726787E+02 | CCB | 0.21377E+06 | CMB | 0.13077 | CNB | 0.26728E+05 | TH3D | 0.00000 |
| DTMASC | 0.566677E+01 | PS16C | 0.00000 | DR919D | 0.196.75 | ALPHA | 0.74030E+04 | BETA | 0.17092E+05 |
| RAPI | 0.00000 | CPT | 0.10000 | SPR | 0.00000 | CPT | 0.10000 | TM | 0.00000 |
| STT | 0.00000 | | | | | | | | |
| XLPA | 1.0667 | | | | | | | | |
| DEBLG PR1\11 | | | | | | | | | |
| CFIXB | 0.5727.8 | CELC | 0.35231E+01 | DELZB | 0.465.16 | DELX3 | 0.5727.0 | DELYS | 0.35240E+01 |
| DEL2S | 0.465.91 | KLTIA | 0.84284E+06 | PITER | 0.8116E+01 | YAWERR | 0.61322E+05 | PITERO | 0.26180E+01 |
| YASFRN | 0.61322E+05 | DRALAY | 0.15222E+08 | F3 | 0.00000 | DRP81 | 0.00000 | CRTHTA | 0.00000 |
| CRP116 | 0.22912E+07 | RPWIG | 0.5174AE+09 | OPLVR | 0.5174AE+09 | DPH10 | 0.84285E+07 | DPH10 | 32.159 |
| VSNC | 0.10391 | TKR | 0 | FACT | 0 | IGUIDE | 0 | IGRAD | 0 |
| XAGE | 2 | NAVY | 0 | F1 | 0 | DRLAMP | 0.00000 | NULSKR | 0 |
| TRANT | 1 | YPP8 | 0 | HDT | 0 | NOTA | 0 | 256 | 0 |
| RFPL | 0.12651 | PH16 | 0.41940E+07 | RNG | 0.20645E+02 | 82 | 1.00000 | DELR0L | 0.51748E+01 |
| RFC | 0.00000 | RET | 0.10000 | REG | 0.48787E+06 | APSI | 0.00000 | RTHTA | 0.00000 |
| AMEGY | 0.5518E+05 | REG7 | 0.16522E+01 | NX | 0.33 | | | | |

| PROJECTILE | | | | | | | | | | PROJECTILE | | | | | | | | | | |
|-----------------|-------------|-------------|-------------|--------------|-------------|---------------|-------------|-------------|------------|------------|--------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| TYPE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| TYPE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| W | 0.0000 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 |
| W2 | 0.0.935 | THTA | 0.93364E+02 | PHO | 0.10647E+03 | DELZ | 0.66149 | YHTACC | 0 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 | 66149 |
| W8 | 0.886 | CY | 0.87517E+01 | DHMT | 0.14338E+03 | DTHTA | 0.12192 | DX | 0 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 | 12192 |
| CP81 | 0.27586E+02 | CR | 0.15246E+01 | DG | 0.15654 | DP | 0.76340E+03 | DW | 0 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 | 76340 |
| DL | 0.33.631 | DV | 0.214161 | VRW | 0.755779 | VACM | 0.177912 | GAP | 0 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 | 177912 |
| PCF | 0.29276E+03 | P | 0.35415E+04 | Q | 0.27392 | R | 0.27296E+02 | DELVY | 0 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 | 27296 |
| ZTH | 0.72.318 | DELVX | 0.100000 | DELVY | 0.100000 | DELCV | 0.100000 | DELCV | 0 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 |
| Y | 0.10529 | Z | 0.46115 | AMB | 0.18158 | X | 0.13120 | YT | 0 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 | 13120 |
| CTHTA | 0.27192 | CPHT | 0.100000 | SPHT | 0.10637E+03 | CPST | 0.100000 | SPST | 0 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 | 100000 |
| CP818 | 0.1.0000 | Q28 | 0.32.158 | QY8 | 0.35117E+02 | QXB | 0.30025 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| ALTITUDE/LETTER | | | | | | | | | | | | | | | | | | | | |
| CDPHTO | 0 | 700000 | DELXS | 0.98779 | PEU | 0.90138E+01 | DECMIS | 0 | 00000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | 10000 | |
| DELZS | 0 | 2.7168 | DEFGA | 0.00000 | DYEF | 0.111657E+01 | OPEF | 0 | 89659E+01 | DTHTAS | 0 | 30422 | 30422 | 30422 | 30422 | 30422 | 30422 | 30422 | 30422 | 30422 |
| RTW | 0 | 4887.7 | KT | 0.10.000 | PEFL | 0.98092E+01 | NULL | 0 | 2 | DELR | 0 | 24313E+04 |
| ANEQ2 | 0 | 1.5231E+03 | PSRQ | 0.00000 | PEP | 0.55585E+02 | PEP | 0 | 28420E+01 | PITERO | 0 | 55585E+03 |
| PHD | 0 | 75.386E+05 | PSTS | 0.28568E+03 | PKED | 0.1172314E+04 | THB8 | 0 | 26746 | PPBS | 0 | 33396E+03 |
| DEL | 0 | 13.9227E+03 | RLAMY | 0.51711E+04 | RLAMP | 0.00000 | THTAS | 0 | 12586 | THRS | 0 | 79674E+02 | |
| YEP | 0 | 12.790E+03 | PEP | 0.12820E+01 | YEO | 0.25853E+03 | PEO | 0 | 25853 | YEWK | 0 | 25653E+02 | |
| YARO | 0 | 0.0000 | YEG | 0.33757E+03 | DELYS | 0.12534 | YAWER | 0 | 25653 | YAWER | 0 | 25653E+04 | |
| LAMVR | 0 | 0.25653E+03 | LAFPR | 0.55585E+02 | QSA | 0.127192 | QAPS | 0 | 153.76 | OPSI9 | 0 | 13065E+01 | |
| TACG | 0 | 2 | PSRBS | 0.89671E+04 | RZN | 0.00000 | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| LOGIC! | | | | | | | | | | | | | | | | | | | | |
| DATE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | |
| DATE | 6 | 0 | 7 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | |
| AERODYNAMICS! | | | | | | | | | | | | | | | | | | | | |
| FLC | 0 | 1.89787E+01 | ATG | 0.11871E+04 | CNT | 0.11871E+04 | CPO | 0 | 107182 | CY- | 0 | 2614CE+02 | |
| CAZ | 0 | 3.4810 | CLP | 0.20.651 | CN | 0.47013 | CYCO | 0 | 12382E+02 | CMCO | 0 | 23226 | 23226 | 23226 | 23226 | 23226 | 23226 | 23226 | 23226 | |
| ANB | 0 | 1.9777E+01 | CCB | 0.17031E+03 | C78 | 0.171187 | CNB | 0 | 197982E+02 | TM8D | 0 | 32294E+01 | |
| DMASD | 0 | 14.045 | PS18D | 0.15771E+01 | DP918D | 0.9291248 | ALPHA | 0 | 54714E+01 | BETA | 0 | 40378E+03 | |
| RAPI | 0 | 0CCCC | C77 | 0.1.0000 | 897 | 0 | 700000 | - | - | CPT | 0 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | |
| STY | 0 | 1.6667 | XLTA | 0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | |
| AERODYNAMIC! | | | | | | | | | | | | | | | | | | | | |
| 2FLXB | 0 | 4848.7 | CELYC | 0.103793 | DPL2B | 0 | 61612E+01 | DELX8 | 0 | 6887.7 | DELY8 | 0 | 12538 | 12538 | 12538 | 12538 | 12538 | 12538 | 12538 | |
| DELZS | 0 | 2.7168 | KUTTA | 0.20.651 | PITER | 0 | 55584E+01 | YAWER | 0 | 25633E+04 | PITERO | 0 | 55585E+03 | |
| YAWER | 0 | 0.25653E+03 | DRLAMP | 0.144192E+03 | F3 | 0 | 00000 | DR91 | 0 | 00000 | DRHTA | 0 | 60000 | 60000 | 60000 | 60000 | 60000 | 60000 | 60000 | |
| GRAPHIC | 0 | 0.51732E+04 | RP10G | 0.47001E+05 | DELVR | 0 | 48433E+06 | DPH10 | 0 | 44192E+04 | G | 32.160 | 32.160 | 32.160 | 32.160 | 32.160 | 32.160 | 32.160 | | |
| VSRT | 0 | 10984 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | 0 | 10K1 | |
| XAD | 2 | NAV | 0 | 0 | F1 | 0 | 00000 | ORLAMP | 0 | 00000 | NUM | 0 | C | C | C | C | C | C | C | |
| TPR1T | 1 | NPP9 | 0 | 20 | HOT | 0 | 0 | NDTA | 0 | 0 | 256 | 256 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| PEFL | 0 | 1.94092E+01 | PH10 | 0 | 205181E+05 | RA6 | 0 | 20691E+02 | 82 | 0 | 1.0000 | 1.0000 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| RFCL | 0 | 0.00007 | 8ET | 0 | 0.00007 | R26 | 0 | 0.00007 | NP81 | 0 | 0.0000 | 0.0000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| AVERV | 0 | 0.23643E+04 | 8RFQ7 | 0 | 0.51231E+03 | NX | 0 | 0.51231E+03 | 93 | 0 | 0.0000 | 0.0000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| PROJECTILE | | | | | | | | | | |
|--------------|-------------|--------|-------------|--------|--------------|---------|-------------|---------|--------------|-------------|
| TYPE | 10.000 | RSA | 0.02431E+00 | DELVP | 0.10856 | 0.10856 | 0.10856 | 0.10856 | 0.10856 | 0.10856 |
| NZ | 107.83 | YHTA | 0.14760E+01 | PHO | 0.11162E+03 | DELZ | 0.567.52 | TOTACC | 0.25.569 | 0.44330E+01 |
| NZ | 95.659 | DY | 0.76667E+01 | DBHT | 0.17359E+05 | DTHTX | 0.16758E+01 | DX | 0.63911 | 0.43321E+05 |
| CPS1 | 0.43321E+05 | DR | 0.32215E+02 | DQ | 0.90239E+01 | DP | 0.13038E+06 | DW | 0.7.4828 | 0.32215E+02 |
| DL | -10.030 | DV | 0.13553E+01 | YAN | 0.144.32 | MACH | 0.76860 | GAP | 0.740101 | 0.13553E+01 |
| PS1 | 0.51679E+01 | P | 0.15672E+06 | Q | 0.15679E+01 | R | 0.62070E+05 | DELW | 0.40917E+04 | 0.51679E+01 |
| A2B | -114.77 | DELTAV | 0.00000 | DELTV | 0.00000 | DELY | 0.00000 | X | 0.91207 | 0.00000 |
| Y | 0.1A588 | Z | 0.4567.5 | AMB | 0.45066 | XT | 0.13120. | YT | 0.00000 | 0.53001E+04 |
| YHTA | 0.16798E+01 | CPHJ | 0.10000 | SPHT | 0.11162E+03 | CP81 | 0.10000 | SP81 | 0.53001E+04 | 0.10000 |
| CPS18 | 0.10000 | Q29 | 32.186 | QVB | 0.25.448E+02 | QXB | 0.447468 | | | |
| AUTOPILOT | | | | | | | | | | |
| CDPHW0 | 0.00000 | DEL23 | 0.40357 | PEG | 0.10856 | DECHTS | 0.00000 | TXED | 0.77891E+01 | 0.00000 |
| DEL28 | 2.1914 | 0PEQA | 0.00000 | DOEF | 0.76201E+02 | DPER | 0.43968E+02 | DTHTAS | 0.31111E+01 | 0.00000 |
| RTF | -4039.7 | KT | 0.10.C00 | PEFL | 0.10797 | NULL | 0.51267E+02 | 2 | 0.45440E+07 | 0.00000 |
| AMF02 | 0.49998E+03 | PSR0 | 0.00000 | PEFL | 0.51267E+02 | NULL | 0.18347E+01 | PITER0 | 0.54247E+03 | 0.00000 |
| BL10 | 0.39768E+07 | PTS5 | 0.57561E+05 | PKED | 0.38638E+05 | TMBS | 0.130912 | PSBS | 0.77211E+04 | 0.39768E+07 |
| F2L1 | 0.40918E+04 | RLAM | 0.13482E+06 | RLAMP | 0.00000 | THTAB | 0.15517 | THRBS | 0.61125E+03 | 0.13482E+06 |
| VE | 0.77224E+05 | PEP | 0.18547E+05 | TEO | 0.93121E+01 | PEO | 0.54247E+02 | TEP | 0.47224E+05 | 0.18547E+05 |
| YRD | 0.00000 | YEG | 0.27688E+05 | DEL8 | 0.93401E+01 | YANERR | 0.23121E+04 | YAWER0 | 0.23121E+05 | 0.00000 |
| LAWR | 0.23121E+03 | LAMR | 0.94267E+03 | QSA | 0.16758E+01 | QAPS | 0.150116 | DRS18 | 0.22129E+03 | 0.94267E+03 |
| IACN | 2 | PRGRS | 0.19336E+04 | REN | 0.00000 | | | | | |
| LOGIC | | | | | | | | | | |
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE |
| DATE | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| AERODYNAMICS | | | | | | | | | | |
| PLC | 0.89529E+01 | XIB | 0.33673E+06 | CNR | 0.149.63 | CMD | 0.170.47 | CY | 0.36739E+03 | 0.00000 |
| CA2 | 0.33977 | CLP | 0.20.402 | CN | 0.76430 | CYCG | 0.24182E+03 | CMCQ | 0.59042E+02 | 0.00000 |
| AE | 0.33977 | CC8 | 0.31252E+06 | CM9 | 0.23777E+03 | CNB9 | 0.23334E+03 | THBS9 | 0.44343E+01 | 0.00000 |
| DYABD | 0.39936 | PS9C | 0.22753E+03 | DS61SD | 0.21.614 | ALPHA | 0.12804 | BETA | 0.152467E+04 | 0.00000 |
| RAPI | 0.00000 | C77 | 0.10000 | SPT | 0.00000 | CPT | 0.1.0000 | TH | 0.00000 | 0.00000 |
| STT | 0.00000 | C77 | 0.10000 | SPT | 0.00000 | CPT | 0.1.0000 | TH | 0.00000 | 0.00000 |
| XLT | 1.6667 | | | | | | | | | |
| DEBUG PRINT | | | | | | | | | | |
| DFLXB | 399C.8 | DELYA | 0.32744 | DEL28 | 0.626.49 | DELX9 | 0.439.7 | CELYS | 0.93401E+01 | 0.00000 |
| DEL29 | 2.1214 | KUTTA | 0.17458E+01 | PITER | 0.54247E+03 | YAWER | 0.23121E+04 | PITER0 | 0.54247E+03 | 0.00000 |
| YAWER | 0.23121E+04 | DRALM | 0.17458E+05 | F9 | 0.00000 | DRP81 | 0.00000 | DRTHYA | 0.59042E+02 | 0.00000 |
| FRP10 | 0.56139E+07 | RPM10 | 0.13097E+08 | DELVR | 0.7930AE+02 | DPH10 | 0.17459E+06 | G | 0.32.160 | 0.00000 |
| VSN | 105A.8 | TRG | 0.14C9 | F1 | 0.00000 | 18040E | 0 | TRAP | 0 | 0.00000 |
| AGE | 2 | Heavy | 0 | O | 0.00000 | DRLAMP | 0.00000 | NUP | C | 0.00000 |
| PRINT | 1 | RPG | 20 | NDT | 0.128 | NDTA | 0.256 | NULSKR | 2 | 0.00000 |
| PFEL | 0.1C797 | PH16 | 0.39768E+07 | R40 | 0.20751E+02 | 62 | 1.00000 | DELBBL | 0.79308E+C3 | 0.00000 |
| RF | 0.00000 | RBT | 0.00000 | REQ | 0.07436AE+09 | RP81 | 0.00000 | RTMPA | 0.00000 | 0.00000 |
| AFR3Y | 0.2131CE+07 | SPGE7 | 0.49998E+03 | NX | 0.49998E+03 | S1 | | | | |

| PROJECTILE! | | | | | | | | | |
|---------------|---------------|---------|---------------|---------|--------------|----------|--------------|--------|--------------|
| TYPE | 11001 | RSA | • 24735E-04 | DELVP | • 10757 | U | 826193 | V | • 826032-01 |
| W | 106.99 | TMTA | • 055301E-02 | PWD | • 011162E-03 | DELB | 466.68 | TOTACC | • 25.106 |
| RZ | - | CY | • 066335E-01 | DPMH | • 950762E-05 | DINTA | - | DX | • 827.93 |
| DSI | 102.42 | CR | • 020504E-02 | DD | • 012373 | DP | - | - | • 60965 |
| CL | • 286899E-04 | DV | • 0784429E-02 | VRH | • 033-E | KTCM | - | - | • 723.02 |
| PSI | • 10.420 | P | • 28727E-07 | Q | • 075504E-08 | R | • 758863 | GAP | • 11025E-03 |
| ZB | • 113.99 | DELXV | • 00000 | DELV | • 00000 | DELV | • 25016E-04 | DELV | • 9352.5 |
| Y | • 0253C2 | Z | • 4466.7 | AMB | • 073715 | X1 | • 13120. | YT | • 00000 |
| CTHTA | • 785508E-02 | CPT1 | • 1.0000 | SPH1 | • 011162E-03 | CPS1 | • 10000. | SPST | • 80637E-05 |
| CPST3 | 1.00000 | 028 | • 32.160 | GYS | • 035688E-02 | DX8 | • 11785 | | |
| AUTOPILOT! | | | | | | | | | |
| OPDPTO | • 00000 | DELTAS | • 20107 | PEO | • 10751 | OPEM18 | • 000000 | TXED | • 75539E-02 |
| OPFL28 | 1.6833 | OPEDA | • 00000 | OYEP | • 043654E-02 | OPEF | • 011448E-02 | DTHTAS | • 093268E-02 |
| RTV | 3201.7 | XTT | • 10.000 | PREL | • 10800 | YUUL | - | - | • 21261E-07 |
| SMG02 | • 4.859E-03 | PSR0 | • 00000 | PED | • 02577E-02 | PEF | • 18517E-01 | PITER0 | • 52577E-03 |
| PW10 | • 15.2221E-07 | PST0 | • 68307E-04 | PXED | • 28857E-05 | TM88 | • 30275- | PSDG | • 37780E-03 |
| REL1 | • 011022E-03 | RLAMY | • 44714E-07 | RLAMP | • 00000 | YHTAS | • 15129 | THRS8 | • 8836E-04 |
| YEP | • 010307E-03 | PET | • 018617E-01 | TEO | • 05024E-04 | PEO | • 92977E-02 | TEP | • 10037E-03 |
| YRD | • 00000 | YEQ | • 011092E-03 | DELVS | • 30744E-01 | YAHRR | • 96024E-05 | YAHERO | • 96036E-05 |
| LAMW | • 0.95026E-04 | LAMPR | • 032577E-02 | OGK | • 75504E-02 | DP818 | • 146.88 | DP818- | • 60556E-02 |
| YACM | • 2 | PEAB8 | • 10592E-04 | REN | • 00000 | | | | |
| LOGIC! | | | | | | | | | |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| AERODYNAMICS! | | | | | | | | | |
| PLD | • 89379E-01 | PLB | • 13278E-07 | CNR | • 189.53 | CNG | • 165.10 | CY | • 38.09E-03 |
| CA2 | • 33779 | CLP | • 20.317 | CY | • 77356 | CGG | • 0.936E-03 | CMG | • 98.63E-02 |
| AB | • 011820E-01 | CB8 | • 29047E-06 | CG0 | • 29047E-01 | CG8 | • 0.8092E-04 | TM880 | • 98897E-04 |
| CTHAD0 | • 5.85527 | PS18C | • .60709E-02 | DP8180 | • 12.71. | ALPHA | • 0.12867 | BETA | • 1.00000 |
| RAPI | STT | • 0CCCC | C77 | • 10000 | • 001 | CPT | • 1.0000 | TH | • 00000 |
| XLTA | • 1.66667 | | | | | | | | |
| CPU& PRINT! | | | | | | | | | |
| DELX8 | 3164.8 | DELVC | • 418753 | DEL28 | • 386119 | DELX8 | • 3201.7 | DELVS | • 30744E-01 |
| DEL28 | 1.6833 | KUTTA | • 1 | PITER0 | • 82577E-01 | YAHRR | • 96026E-05 | PITER0 | • 52577E-03 |
| YAHRR | • 946C26E-05 | CRALMY | • 95076E-07 | F3 | • 00000 | OPPS1 | • 00000 | DRHTA | • C0000 |
| CRPL10 | • 55931E-08 | RP110 | • 38890E-08 | DLVR | • 97107E-09 | DRH10 | • 95076E-08 | G | • 32.160 |
| YRC | • 109972 | TKN | • 0 | JACT | • 0 | TOOTSC | • 0 | NUP | 0 |
| KAGE | 2 | NAVY | • 0 | F1 | • 00000 | DRAMP | • 00000 | E56 | MULGKA |
| TRINT | 1 | NPPG | • 20 | NOT | • 00000 | TPS-NOTA | • 1.0000 | CELROL | • 37107E-09 |
| PFPL | • 1CACCC | PHIG | • 56821E-07 | RHO | • 808182E-02 | S2 | • 0.0000 | ATMPA | • C0000 |
| RFM | • CCCCC | RET | • 00000 | REG | • 37574E-09 | NP01 | • 0.0000 | | |
| AMFAY | • 8A5C4E-05 | BRF07 | • 48489E-03 | NY | • 33 | | | | |

PROJECTILE

| | | | | | | | | | | | |
|-------|-------------|-------|--------------|--------|--------------|--------------|-------|------------|------------|------|-----------|
| TYPE | 12.CCI | RGA | 0.22715E+03 | CE-VIP | 0.10767 | 0 | 0 | 817.12 | V | 0 | 3891 |
| A | 1CB.15 | THTA | 0.570457E+02 | P-2 | 0.11.622E+03 | DELI | 0 | 358.9C | 167ACC | 0 | 24.515 |
| A2 | 1CG.81 | DY | 0.25372E+01 | DPMI | 0 | 13.78E+02 | DX | 0 | 6.616 | 0 | 1.1243 |
| CBSI | 22923E+03 | 0 | 0.216843E+02 | DG | 0 | 0.7376E+08 | DW | 0 | 1.1243 | 0 | 708.7C |
| CLU | 0.1C.948 | DY | 0.18005 | VRM | - | 823.86 | FACH | 0 | 164.45E+03 | 0 | 0 |
| PSI | 0.96957E+04 | P | 0.64412E+07 | 0 | 0.317.03E+02 | N | 0 | 223.95E+03 | CELVV | 0 | 0.7737 |
| L7E | 1C.17 | CELVV | 0.00300 | CELVV | 0 | 0.00300 | CELVV | 0 | 100000 | X | 0 |
| STATA | 31597 | 2 | 0.4356.0 | AMB | 0 | 219592E+01 | X1 | 0 | 1312C | YY | 0 |
| STATA | 31788E+02 | CPMI | 0.10000 | SPMI | 0 | 0.11163E+03 | CPMI | 0 | 110000 | SPMI | 0 |
| PSIS | 1.CCCC | 028 | 0.32160 | 0VB | 0 | 0.360742E+02 | 0VB | 0 | 163.97 | 0 | 96957E+04 |

ALERTFILE!

| | | | | | | | | | | | |
|-------|------------|-------|--------------|-------|---------|--------------|--------|--------|-------------|--------|-------------|
| TYPE | CCCCC | CELVX | 0.2374.8 | PZD | 0.10767 | CELVX | 0 | 100000 | TXZC | 0 | 7240E+02 |
| CELLS | 1.2373 | BPEGA | 0.00000 | CYPE | 0 | 0.17699E+02 | CYPE | 0 | 63633E+02 | CYHTAB | 0 |
| ETP | 2374.8 | X1 | 0.10000 | EPEL | 0 | 0.1778E+02 | FULL | 0 | 17525C | 0 | 0.23175E+04 |
| PWEG2 | 4.7389E+03 | PSRG | 0.00000 | PBD | 0 | 0.51417E+02 | REF | 0 | 0.52102E+03 | PITERO | 0 |
| PHIS | 38CICE+C6 | PSIS | 0.63629E+03 | PXED | 0 | 0.11933E+03 | THOB | 0 | 0.20559E+04 | PSIS | 0 |
| REL1 | 164.45E+03 | RLAY | 0.13638E+06 | RLAMP | 0 | 0.0000 | THTAB | 0 | 0.199C1E+03 | THOB | 0 |
| VEP | 17782E+03 | PE7 | 0.016832E+01 | YCD | 0 | 0.0352E+03 | YCD | 0 | 0.51456E+03 | YCD | 0 |
| YBG | 0.CCCC | YEG | 0.16770E+03 | CELYB | 0 | 0.34948E+01 | YAPERR | 0 | 14526E+04 | YAMERO | 0 |
| YAMY | 163.97E+03 | LAYPR | 0.016122E+02 | GSA | 0 | 0.317832E+02 | GAPS | 0 | 163.01 | DP816 | 0 |
| TAAC | ? | PSRS | 0.016642E+04 | REN | 0 | 0.0000 | REN | 0 | 0 | 0 | 0.63019E+03 |

LOGIC!

| STATE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
|---------------|--------------|------|---|--------------|--------|---|-------------|-------|---|-------------|------|---|
| DATE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| DATE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| AFCRCAVAPICS! | | | | | | | | | | | | |
| CLD | 4.89239E+01 | ALB | - | 0.429239E+07 | CEA | 0 | 0.19244 | CEA | 0 | 168.77 | CEA | 0 |
| CLD | 33692 | CLP | 0 | 201.163 | CN | 0 | 0.76516 | CYCG | 0 | 0.15918E+03 | CNCG | 0 |
| CEKB | 0.111836E+01 | CEB | 0 | 0.13122E+03 | CEB | 0 | 0.12028E+01 | CX8 | 0 | 0.77371E+03 | CEB | 0 |
| DTBASC | 4.6826 | PSIS | 0 | 0.41103E+03 | DP516D | 0 | 0.9.193 | ALPHA | 0 | 0.12799 | BETA | 0 |

RAPI

| | | | | | | | | | | | | |
|------|---------|-----|---|---------|-----|---|---------|-----|---|---------|----|---|
| RTT | 0.00000 | CYT | 0 | 1.00000 | 8AT | 0 | 0.00000 | CPT | 0 | 1.00000 | TM | 0 |
| XL7A | 1.46667 | | | | | | | | | | | |

OBLO PARI:T!

| | | | | | | | | | | | | |
|-------|------------|--------|--------------|--------------|--------|----------|--------------|--------|--------|------------|--------|---|
| CELBX | 2349.3 | CELYB | 0.099606E+01 | DEL2B | 0 | 0.34515C | CELBX | 0 | 2374.8 | CELYS | 0 | |
| CELBX | 1.2373 | KUTTA | 0 | 0.25372E+01 | PITERR | 0 | 0.52102E+04 | PITERQ | 0 | 1.4526E+04 | PITERQ | 0 |
| YAKER | 163.97E+03 | GRALAY | 0 | 0.26372E+03 | F3 | 0 | 0.0000 | CRPSI | 0 | 0.0000 | CRPSI | 0 |
| CRPSI | 1.1746E+03 | APL13 | 0 | 0.15411E+07 | DELVA | 0 | 0.40564E+08 | OPH10 | 0 | 0.2372E+06 | OPH10 | 0 |
| YPS | 0.09976 | FORA | 0 | 0 | FORA | 0 | 0 | TELE | 0 | 0.1442 | TELE | 0 |
| KAGE | 2 | HAVY | 0 | 0 | F1 | 0 | 0.00000 | DRLAMP | 0 | 0.00000 | NULSKA | 0 |
| PRINT | 1 | MPS | 0 | 0 | MPS | 0 | 0 | NDTA | 0 | 0.0000 | CELBX | 0 |
| PEFL | 1079d | DM16 | 0 | 0.38010CE+06 | RM9 | 0 | 0.20899PE+00 | S2 | 0 | 1.0000 | RTHTA | 0 |
| RTT | 0.CCCC | RET | 0 | 0.00000 | REG | 0 | 0.39677E+08 | RPSI | 0 | 0.0000 | RTHTA | 0 |
| QUEAY | 9365E+03 | SPEG7 | 0 | 0.47388E+03 | NX | 0 | 0 | 33 | 0 | 0 | 0 | 0 |

PROJECTILE!

| | | | | | | | | | |
|-------|------------|-------|-------------|-------|-------------|-------|-------------|--------|-------------|
| TYPE | 13-001 | R3A | 0.99997E+03 | DELVP | 0.10000 | 0 | 0.07170 | V | 0.28578 |
| W | 103471 | THTA | 0.41710E+01 | PWD | 0.11164E+03 | DELL | 2.3160 | TOTACC | 0.21374 |
| DZ | 117631 | DT | 0.18994E+01 | DPHY | 0.29605E+03 | DTMTX | 1.7023E+02 | DX | 0.6601 |
| OPSI | 45C391E+03 | CR | 0.15434E+02 | DO | 0.25353 | DP | 0.8012E+04 | DH | 0.14142 |
| DU | 310.762 | DY | 0.35779E+02 | YRH | 0.14553 | FACT | 1.74045 | GAP | 0.35116 |
| PSI | 129482E+03 | S | 0.86970E+06 | Q | 0.70923E+02 | R | 0.50470E+03 | DELVY | 0.33699E+03 |
| A2P | 3106458 | CBLXV | 0.00000 | DELYV | 0.00000 | DELEV | 1.00000 | X | 0.33821 |
| V | 1345216 | Z | 0.42434E+02 | AB | 0.14777 | XT | 1.31201 | YT | 0.00000 |
| CTHTA | 170923E+02 | CPHT | 0.10000 | SPHY | 0.11113E+03 | CPBT | 1.00000 | SPBT | 0.29482E+03 |
| CRSIS | 1.00000 | QZB | 0.32156 | QYB | 0.37519E+02 | QXB | 0.54992 | | |

ALTOPILIST!

| | | | | | | | | | |
|--------|------------|-------|-------------|-------|-------------|-------|-------------|--------|--------------|
| UDPHIC | 00000 | CELYS | 0.19873 | PEO | 0.10845 | DEFLN | 1.00000 | TXED | 0.18979E+02 |
| CTLZB | 174593 | SPEDA | 0.00000 | DPF | 0.14264E+02 | DPFR | 0.13528E+01 | DTMTR | 0.16618E+01 |
| RTW | 3587.3 | KT | 0.10000 | PEL | 0.10840 | NUL | 0 | DELR | 0.26152E+01 |
| BWZQZ | 44.140E+03 | PSRQ | 0.00000 | PED | 0.47891E+02 | PEP | 0.18118E+01 | PITERD | 0.477891E+03 |
| PHZD | 3199BE+03 | PSTB | 0.90001E+04 | PXED | 0.40365E+03 | THBS | 0.277883 | PSOB | 0.19854E+03 |
| REL1 | 339C3E+03 | RLAV | 0.23882E+06 | RLAMP | 0.00000 | THTAG | 0.13947 | THRBS | 0.49248E+04 |
| VEP | 135374E+03 | PEY | 0.18127E+01 | YED | 0.01714E+05 | PTO | 0.77891E+02 | TCP | 0.35324E+03 |
| YBQD | 0.00000 | YED | 0.34397E+03 | DELYS | 0.93719E+02 | YAFER | 0.60171E+05 | YAMERB | 0.60171E+05 |
| LANYR | 603711E+04 | LAMP | 0.57751E+02 | QSA | 0.70921E+02 | GAPG | 1.41101 | OP313 | 0.28550E+02 |
| IACC | 2 | PSR83 | 0.92713E+05 | REN | 0.00000 | | | | |

Logic:

| | | | | | | | | | |
|--------------|-------------|-------|-------------|-------|-------------|--------|-------------|--------|--------------|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 |
| DATE | 6 | DATE | 7 | DATE | 8 | DATE | 9 | DATE | 10 |
| AEROCVAMIC81 | 891072+01 | ALB | 0.78948E+06 | CNT | 0.189441 | CNG | 0.168722 | CY | 0.17060E+02 |
| PLC | 33689 | CLP | 0.20.017 | CN | 0.75057 | CYC | 0.14672E+03 | CMQ | 0.20609E+01 |
| CAZ | 10220E+01 | CG8 | 0.18725E+03 | CDS | 0.26691E+01 | CDT | 0.11670E+02 | TM5D | 0.31250E+01 |
| CTMASC | 3.03130 | PS160 | 0.33586E+02 | DP150 | 0.8.0856 | ALPHA | 0.12768 | BETA | 0.32258E+03 |
| RAP1 | 0.00000 | TCT | 0.1.00000 | SPT | 0.00000 | CPT | 0.110000 | TH | 0.00000 |
| RTT | 1.6667 | | | | | | | | |
| XLTA | | | | | | | | | |
| REFLQ PRINT! | 1542.3 | CELYS | 0.13081 | DELB | 0.21724 | DELS | 1.5575 | DELYS | 0.93719E+02 |
| DELXB | 174593 | KVTA | 0.1 | PITR | 0.67891E+03 | YAFER | 0.60171E+05 | PITERD | 0.477891E+03 |
| DELZB | 0.00171E+05 | CRAY | 0.29605E+03 | F3 | 0.00CNO | DRPSI | 0.00000 | DRHTA | 0.00000 |
| YAKER | 0.2633E+05 | RPMIG | 0.46469E+07 | DLVR | 0.42937E+07 | DPM10 | 0.29606E+05 | DR4 | 0.32.161 |
| QWAG | 1.995 | NAV | 0 | F1 | 0.00000 | DRLAMP | 0.00000 | NUP | 0 |
| VSKT | 2 | APP | 0 | 20 | 0.31955E+05 | RHO | 0.20945E+02 | 82 | 0.256 |
| TPRINT- | 10840 | MIG | 0.00000 | REG | 0.42937E+07 | RPSI | 0.00000 | DELRD | 0.42955E+07 |
| REFL | 0.00000 | QEF | 0.4140E+03 | NX | 0.4140E+03 | ATHTA | 0.00000 | ATHTA | 0.00000 |
| REFV | 35458E+05 | 8M | 0.93 | | | | | | |

PROJECTILE

| | | | | | | | | | | | |
|-------|------------|--------|---|-----------|-------|---|-----------|-------|-----------|--------|------------|
| TYPE | 16.CCI | RJA | 0 | 15555E+02 | DELOP | 0 | 11110 | U | 79819 | V | 70585 |
| W | 10.36 | FHTA | 0 | 26003E+01 | PHD | 0 | 11121E+03 | DELZ | 120.59 | TOTACC | 23.510 |
| CZ | 125.16 | CT | 0 | 68226E+01 | DPMT | 0 | 12271E+04 | DHTA | 29046E+02 | DX | 795.95 |
| DP81 | 15681E+02 | DR | 0 | 80007E+02 | DG | 0 | 52838 | DP | 30505E+03 | DW | 6.3139 |
| DL | 9.24C5 | CV | 0 | 11111 | VRN | 0 | 805.73 | PACH | 73213 | GAP | 682.72 |
| PS1 | 9.760E+03 | P | 0 | 16059E+04 | Q | 0 | 290.72 | R | 15678E+02 | DELVY | 9403E+03 |
| AZB | 10.53 | DELTAV | 0 | 00000 | DECYV | 0 | 00000 | DETEN | 00000 | X | 12381 |
| Y | 132693 | Z | 0 | 4120.6 | AMB | 0 | 3.0130 | X1 | 13120. | Y1 | 0.0000 |
| DTHTA | 129056E+02 | CPH1 | 0 | 1.0000 | OPMT | 0 | 11121F+03 | CP81 | 1.0000 | SP81 | .95760E+03 |
| CPS1 | 1.0000 | QZB | 0 | 32.150 | GYB | 0 | 49786E+02 | 8X8 | 1.0000 | 83878 | - |

AUTOPILER1

| | | | | | | | | | | | |
|---------|------------|-------|---|--------------|-------|---|-------------|--------|-----------|--------|-----------|
| CDPHOTO | 00000 | DELXS | 0 | 79700 | PRO | 0 | 11117 | DECHIS | 00000 | TXED | 87983E+02 |
| DELS8 | 124539 | 0M20A | 0 | 0.00000 | OPFL | 0 | 23911E+02 | OPF | 38971E+01 | DTHTA | 13134E+02 |
| NYV | 75.9.CI | XT | 0 | 10.000 | PEPL | 0 | 11115 | NULL | 18345E+01 | CELR | 872.5E+05 |
| 8M202 | 030196E+03 | PSRG | 0 | 0.00000 | PEO | 0 | 32769E+02 | PEF | 32262E+03 | PITERO | 32262E+03 |
| PH10 | 183107E+05 | PTTS | 0 | 56246E+03 | PXED | 0 | 25586E+04 | TMBS | 26923 | TMBS | 12266E+02 |
| CEL1 | 9.04.6E+03 | RLAPY | 0 | 39608E+05 | RLAMP | 0 | 0.00000 | TH7AS | 13829 | TH7AS | 67599E+03 |
| YEF | 190170E+03 | PEP | 0 | 12051E+01 | YED | 0 | 35055E+03 | PPD | 32762E+02 | VEP | 38637E+03 |
| YRD | 100020 | YEQ | 0 | 93.47E+03 | DELVS | 0 | 26264E+01 | YAMER | 35065E+04 | YAHERO | 35065E+04 |
| LAPYR | 135068E+03 | LAMPR | 0 | 13291.12E+02 | SSA | 0 | 18904.6E+02 | CAP9 | 138.54 | DP818 | 46487E+02 |
| IACC | 2 | PCRS8 | 0 | 55637E+04 | REN | 0 | 0.00000 | - | - | - | - |

LOGIC1

| | | | | | | | | | | | |
|---------------|-----------|--------|---|------------|--------|------|-----------|--------|-----------|--------|-----------|
| DATE | 1 | DATE | 2 | DATE | 3 | DATE | 4 | DATE | 5 | DATE | 6 |
| DATE | 6 | GATE | 7 | GATE | 8 | GATE | 9 | GATE | 10 | GATE | 11 |
| AERODYNAMICS1 | | | | | | | | | | | |
| FLC | 88992E+01 | ALB | 0 | 66672E+03 | CNA | 0 | 109784 | CRG | 165.76 | CY | 4532E+02 |
| CAZ | 133635 | CLP | 0 | 19.880 | CN | 0 | 76171 | CYCG | 72475E+03 | CM0 | 42.87E+01 |
| ANG | 51037E+01 | CCB | 0 | 154665E+04 | CMB | 0 | 10932E+01 | CRB | 52088E+02 | CMGD | 159.8E+02 |
| DTASC | 3.1864 | PS1SD | 0 | 303032E+02 | DPS1SD | 0 | 1.8503 | ALPHA | 0.12989 | BETA | 87939E+03 |
| RAPI | | | | | | | | | | | |
| STT | 00000 | CTT | 0 | 1.00000 | BTY | 0 | 0.00000 | CTT | 1.00000 | TH | 0.00000 |
| XLTA | 1.6667 | | | | | | | | | | |
| REFLG PRINT1 | | | | | | | | | | | |
| DELXB | 742.14 | CELYB | 0 | 355500 | DELZA | 0 | 101.67 | DELXS | 7.9.C1 | DELYS | 26264E+01 |
| DELS8 | 124539 | KUTTA | 0 | 12271E+01 | PITER | 0 | 32769E+03 | YAKERR | 35065E+04 | PITERO | 32762E+03 |
| YAKER | 9.065E+04 | DRLANV | 0 | 12271E+03 | F9 | 0 | 0.00000 | DRP61 | 0.00000 | DRHTA | CO000 |
| DRP11G | 11747E+04 | RFLIG | 0 | 27886E+06 | DELVR | 0 | 15227E+06 | DRPH10 | 12271E+04 | G | 32.161 |
| VSNC | 1100.5 | TSKA | 0 | 1.E+07 | TSK1 | 0 | 0.00000 | TRAP | 0 | NUR | 0 |
| KAGE | 2 | NAVY | 0 | 0 | P1 | 0 | 0.00000 | DRLAMP | 0.00000 | NUBKR | 0 |
| PRINT1 | 1 | NPP8 | 0 | 0 | NO1 | 0 | 0.00000 | NDTA | 0.00000 | E55 | 2 |
| REFL | 11115 | PH1G | 0 | 83107E+05 | RH8 | 0 | 21032E+02 | S2 | 1.00000 | DELRL | 15227E+06 |
| REF | CCCCC | RET | 0 | 0.00007 | RE9 | 0 | 1559AF+00 | RP91 | 0.00000 | RTYHA | CO000 |
| GWFAV | 32318E+74 | 8REG2 | 0 | 3C196E+03 | NX | 0 | 93 | | | | |

IMPACT1 TIME = 1e.937

PROJECTILE!

| | | | | | | | | | | | | | | | |
|-------|---------|------------|--------|------------|-------|------|------------|-------------|--------|------------|--------|--------|------------|---|---------|
| TYPE | 14.937 | RSA | 0 | 00501 | DELIV | 0 | 013604 | PHD | 0 | 022233E-01 | DELZ | 0 | 768312 | 0 | 7133778 |
| X | 1.21.04 | THTA | 0 | 013648E-01 | DELIV | 0 | 022233E-03 | PHD | 0 | 022233E-01 | 107ACC | 0 | 3C.016 | 0 | |
| 62 | - | 1.31.03 | 0 | 019826 | DMHT | 0 | 022233E-03 | DMHT | 0 | 021881 | DX | 0 | 788179 | 0 | |
| 63 | - | 04.7.35 | 0 | 019711 | DG | 0 | 022233E-03 | '9968R | 0 | 068274E-01 | DP | 0 | 127.27 | 0 | |
| 64 | - | 04.7.38 | 0 | 038107 | YRH | 0 | 022233E-03 | 797.76 | 0 | 072453 | PATCH | 0 | 67162 | 0 | |
| 65 | - | 025298E-01 | 0 | 028577E-02 | G | 0 | 021832 | R | 0 | 072454 | DELIV | 0 | 11386 | 0 | |
| A2B | 0 | 0121.04 | 0 | 00000 | DELIV | 0 | 015337 | 0 | 022233 | DELAY | 0 | 022233 | 0 | | |
| Y | 0 | 015.95 | 2 | 0399.9 | AM | 0 | 015337 | AM | 0 | 013120 | X | 0 | 00000 | 0 | |
| DRPA | - | 0 | 021851 | 0 | 00000 | DMHT | 0 | 022233E-03 | 0 | 099681 | CPT | 0 | 022237E-01 | 0 | |
| CP818 | 0 | 1.00000 | 028 | 0 | 00000 | QYB | 0 | 0162832E-01 | 0X8 | 0 | 043878 | - | - | - | |

AUTOPILOT!

| | | | | | | | | | | | | | | | |
|--------|---|------------|---|------------|-------|-------|--------|-------------|-----|-------------|---------|---|---------|---------|-------|
| DPUPTC | 0 | 00000 | 0 | 00003 | PEO | 0 | 013604 | PEO | 0 | 02029 | DELTAS | 0 | 02029 | 0 | 02029 |
| DPL2S | 0 | 021425 | 0 | 00000 | DPF | 0 | 013604 | DPF | 0 | 0.7448 | DPHTAS | 0 | 1.4559 | 0 | |
| ATP | 0 | 1.6799 | 0 | 00000 | PEP | 0 | 013604 | PEP | 0 | 0 | NULL | 0 | 0 | 0 | 0 |
| SMEO2 | 0 | 016802E-01 | 0 | 00000 | PEO | 0 | 013604 | PEO | 0 | 0.13639 | FILTER | 0 | 0.0000 | 0 | |
| DL10 | 0 | 036722E-02 | 0 | 00000 | PXE7 | 0 | 013604 | PXE7 | 0 | 0.63768E-03 | TA08 | 0 | 0.29755 | 0 | |
| CELI | 0 | 011386 | 0 | 011074E-02 | RLAHP | 0 | 00000 | RLAHP | 0 | 0.0000 | THAB | 0 | 0.14529 | THAB | 0 |
| YFP | 0 | 0125C3 | 0 | 00000 | PEO | 0 | 013604 | PEO | 0 | 0.17851 | PEO | 0 | 0.17851 | PEO | 0 |
| VERO | 0 | 000000 | 0 | 00000 | YEG | 0 | 013604 | YEG | 0 | 0.14864 | YAHAR | 0 | 0.16191 | YAHAR | 0 |
| LAMVR | 0 | 017433 | 0 | 00000 | LAMPR | 0 | 013604 | LAMPR | 0 | 0.21967 | CAPS | 0 | 0.13631 | CAPS | 0 |
| YACG | 0 | 0 | 0 | 0 | 00000 | PERBS | 0 | 0.67171E-02 | REN | 0 | 0.00000 | - | 0 | 0.49971 | - |

LOGIC!

| | | | | | | | | | | | | | | | | |
|------|---|---|---|---|------|---|---|---|---|---|------|---|---|---|---|---|
| DATE | 0 | 0 | 0 | 0 | DATE | 0 | 0 | 0 | 0 | 0 | DATE | 0 | 0 | 0 | 0 | 0 |
| DATE | 0 | 0 | 0 | 0 | DATE | 0 | 0 | 0 | 0 | 0 | DATE | 0 | 0 | 0 | 0 | 0 |

AERODYNAMICS!

| | | | | | | | | | | | | | | | | |
|--------|---|-------------|---|---|-------------|---|---|---------|---|-------------|--------|---|-------------|--------|---|-------------|
| CLC | 0 | 08849E-01 | 0 | 0 | 0128972E-02 | - | 0 | 018C2 | 0 | 018C2 | - | 0 | 0186481 | CY | 0 | 0.9980 |
| CAY | 0 | 039678 | 0 | 0 | 019.76 | 0 | 0 | 0.8939 | 0 | 0.16525 | CNG | 0 | 0.16525 | CNG | 0 | 0.9980 |
| GRPL1G | 0 | 0.23847E-02 | 0 | 0 | 00304E-03 | 0 | 0 | 0.70753 | 0 | 0.25698E-02 | CNTWTA | 0 | 0.25698E-02 | CNTWTA | 0 | 0.9980 |
| GRPL2G | 0 | 0.16.886 | 0 | 0 | 019961 | 0 | 0 | 0.10157 | 0 | 0.15241 | ALPHA | 0 | 0.15241 | BETA | 0 | 0.24731E-01 |
| RAP1 | 0 | 00000 | 0 | 0 | 00000 | 0 | 0 | 0 | 0 | 0 | CPT | 0 | 0 | 0 | 0 | 0 |
| RTT | 0 | 00000 | 0 | 0 | 00000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| XL7A | 0 | 1.66667 | 0 | 0 | 00000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

OPALG PRINT!

| | | | | | | | | | | | | | | | | |
|--------|---|-------------|---|---|-------------|---|---|-------------|---|-------------|-------------|------|-------------|---------|--------|---------|
| DLX8 | 0 | 0C878 | 0 | 0 | 013142 | 0 | 0 | 02128 | 0 | 0.85974E-01 | CELMG | 0 | 0.8809 | DELVS | 0 | 1.4866 |
| DLZ5 | 0 | -21635 | 0 | 0 | 013142 | 0 | 0 | 013142 | 0 | 0.23989 | YANR | 0 | 0.16191 | PITERO | 0 | 0.0000 |
| YANR6 | 0 | 00CCC | 0 | 0 | 0125698E-01 | 0 | 0 | 0.00000 | 0 | 0.00000 | DRB81 | 0 | 0.00000 | DRWTA | 0 | 0.0000 |
| GRPL1G | 0 | 0.23847E-02 | 0 | 0 | 0.10340E-03 | 0 | 0 | 0.62558E-04 | 0 | 0.25698E-02 | DPH10 | 0 | 0.25698E-02 | DPH10 | 0 | 0.32162 |
| GRPL2G | 0 | 0.16.886 | 0 | 0 | 0.19961 | 0 | 0 | 0.10157 | 0 | 0 | TELEP | 0 | 0 | 0 | 0 | 0 |
| KAGF | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00000 | 0 | 0 | DRDAMP | 0 | 0.00000 | NUP | 0 | 0 |
| TPRTY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PEFL | 0 | 0.13943 | 1 | 0 | 0 | 0 | 0 | 0.16772E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| REC | 0 | 0.0C100 | 0 | 0 | 0 | 0 | 0 | 0.00000 | 0 | 0 | 0.21109E-02 | S2 | 0 | 1.00000 | CELR0L | 0 |
| AVSY | 0 | 0.16542E-01 | 0 | 0 | 0.16562E-01 | 0 | 0 | 0.00000 | 0 | 0 | 0.00000 | RH7A | 0 | 0.00000 | RH7A | 0 |

IMPACT!

| | | | | | | | | | | | | | | | | |
|------|---|--------|---|---|------|---|---|-------|---|---|---------|---|---|---------|---------|---|
| SPAT | 0 | 14.936 | 0 | 0 | PCAX | 0 | 0 | 19151 | 0 | 0 | PCAY | 0 | 0 | 0.15887 | -- PCAZ | 0 |
| SPAT | 0 | 14.936 | 0 | 0 | PCAY | 0 | 0 | 19151 | 0 | 0 | -- PCAZ | 0 | 0 | 0.15887 | PCAZ | 0 |

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