

## APPENDIX

## SYMBOLS AND ABBREVIATIONS

## Section I. SYMBOLS

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<u>Symbol.</u>	<u>Definition</u>
A	Azimuth.
AG	Gyro azimuth.
AL	Launcher azimuth.
AM	Missile azimuth.
AT	Target azimuth.
B	Ballistic elevation angle.
D	Slant range.
DB	Slant range for ballistic circle or radius of constant time circle.
DM	Missile slant range.
DT	Target slant range.
E	Angular height.
EM	Missile angular height.
ET	Target angular height.
g	Gravity.
Gp	Order transmitted to the missile pitch fin.
Gy	Order transmitted to the missile yaw fin.
H-axis	Altitude axis.

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<u>Symbol</u>	<u>Definition</u>
$\dot{H}$	Vertical component of actual closing velocity between the target and the missile.
H-distance	Vertical distance between missile and target.
$H_B$	Altitude of the center of the constant time circle.
$H_G$	Gyro coordinate vertical axis.
$\dot{H}_{GM}$	Component of missile velocity along the gyro H-axis.
$H_I$	Altitude of the predicted intercept point above the designated launcher.
$H_L$	Vertical component of launcher parallax.
$H_M$	Vertical distance between missile and MTR.
$\dot{H}_M$	Vertical component of missile velocity.
$\dot{H}_P$	Vertical component of target velocity during the pre-launch phase.
$H_R$	Vertical component of radar parallax from MTR to TTR.
$H_{SL}$	H-stylus left.
$H_{SR}$	H-stylus right.
$\frac{H}{t}$	Vertical component of ideal closing velocity between missile and target.
$H_T$	Vertical distance between target and TTR.
$\dot{H}_T$	Vertical component of target velocity during the steering phase.
$L_i$	Line of intersection; the line of intersection between the gyro reference plane and the missile velocity slant plane.
P	Pitch.

<u>Symbol</u>	<u>Definition</u>
R <sub>B</sub>	Range to center of constant time circle.
R <sub>G</sub>	Ground range, TTR to center of launching area.
R <sub>I</sub>	Ground range to predicted intercept point from designated launcher.
R <sub>M</sub>	Missile ground range from missile-tracking radar.
R <sub>T</sub>	Target ground range from target-tracking radar.
SC	Steering error component along missile climb axis.
SGH	Steering error component along the gyro H-axis.
SGY	Steering error component along the gyro Y-axis.
SGX	Steering error component along the gyro X-axis.
S <sub>i</sub>	Steering error component that lies along the line of intersection (the terms P <sub>i</sub> and SGPS have also been used to symbolize this vector).
SPF	Steering error component perpendicular to the pitch fin.
S <sub>T</sub>	Steering error component along the missile turn axis.
S <sub>V</sub>	Steering error component along the missile velocity axis.
S <sub>X</sub>	Steering error component along the earth X-axis.
S <sub>Y</sub>	Steering error component along the earth Y-axis.
S <sub>YF</sub>	Steering error component perpendicular to the yaw fin.
t	Time; time of flight; time to intercept.
t <sub>d</sub>	Dead time; the period (7 seconds) timed by the dead-time unit.

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<u>Symbol</u>	<u>Definition</u>
$t_{SLR}$	Time stylus left and right.
$V_i$	Component of missile velocity along the line of intersection (the terms $Q_i$ and $SGPS$ have also been used to symbolize this vector).
$V_M$	Missile velocity.
X-axis	Earth east-west axis.
$\dot{X}$	East-west component of actual closing velocity between the target and the missile.
X-distance	East-west distance between target and missile.
$X_G$	Gyro coordinate east-west axis.
$X_{GM}$	Distance to missile measured along gyro X-axis.
$\dot{X}_{GM}$	Missile velocity component along gyro X-axis.
$X_I$	East-west distance to predicted intercept point from designated launcher.
$X_L$	East-west component of launcher parallax.
$X_M$	East-west distance between missile and MTR.
$\dot{X}_M$	East-west component of missile velocity.
$\dot{X}_p$	East-west component of target velocity during the prelaunch phase.
$X_R$	East-west component of radar parallax.
$X_{SL}$	X-stylus left.
$X_{SR}$	X-stylus right.
$\frac{X}{t}$	East-west component of ideal closing velocity between the missile and the target.

<u>Symbol</u>	<u>Definition</u>
$X_T$	East-west distance between target and TTR .
$\dot{X}_T$	East-west component of target velocity during steering phase .
Y	Yaw .
Y-axis	Earth north-south axis .
$\dot{Y}$	North-south component of actual closing velocity between the target and the missile .
Y-distance	North-south distance between target and missile .
$Y_G$	Gyro coordinate north-south axis .
$Y_{GM}$	Distance to missile measured along gyro Y-axis .
$\dot{Y}_{GM}$	Missile velocity component along gyro Y-axis .
$Y_I$	North-south distance to predicted intercept point from designated launcher .
$Y_L$	North-south component of launcher parallax .
$Y_M$	North-south distance between missile and MTR .
$\dot{Y}_M$	North-south component of missile velocity .
$\dot{Y}_p$	North-south component of target velocity during pre-launch phase .
$Y_R$	North-south component of radar parallax .
YSL	Y-stylus left .
YSR	Y-stylus right .
$\frac{Y}{t}$	North-south component of ideal closing velocity between the missile and the target .

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<u>Symbol</u>	<u>Definition</u>
$Y_T$	North-south distance between target and TTR.
$\dot{Y}_T$	North-south component of target velocity during steering phase.

Section II. ABBREVIATIONS

<u>Abbreviation</u>	<u>Definition</u>
Acq	Acquisition radar.
Az	Azimuth.
BCA	Battery control area.
BCO	Battery control officer.
BCT	Battery control trailer.
BTB	Burst time bias.
CA	Climb angle.
CTA	Critical turn angle.
DTA	Difference turn angle.
El	Elevation.
IP	Predicted intercept point.
IT	Initial turn.
LC	Launching control.
LCA	Launching control area.
LCT	Launching control trailer.
Lchr	Launcher.

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<u>Abbreviation</u>	<u>Definition</u>
M&ST	Maintenance and spares trailer.
MA	Missile away.
MSL	Mean sea level.
MTR	Missile-tracking radar.
MVSP	Missile velocity slant plane.
O Lim	Order limiting.
RCT	Radar control trailer.
Rg	Ground range.
RTF	Ready to fire.
RS	Roll stabilization.
+S	Scale factor voltage.
SAM	Surface-to-air missile.
STA	Skirting turn angle.
TA	Turn angle of the missile.
TAZ	Turn angle zero.
TDE	Target differentiator enable.
T Des	Target designate.
TGSA	Target ground speed amplifier.
TSL	Time slew.
TTR	Target-tracking radar.