

1. GENERAL INFORMATION

UNIT CONVERSION TABLE

Time to Target=(Distance/Speed)x60 | Six Minute Rule: Distance(Yards) in 6min=Speed(kts) X 200
 1nmi=1852m / 1000m=0.54nm | 1nmi=2025yards / 1000yards=0.49nm | 1m=3,28ft / 1ft=0.31m

PERISCOPE TARGET COURSE ESTIMATION

1. If Bearing <180° then add 180°; If Bearing >180° then subtract 180°.
2. If Bearing <180° and if Stbd aspect add AOB, if Port aspect subtract AOB.
 If Bearing >180° and if Port aspect add AOB, if Stbd aspect subtract AOB.
3. If >360° then subtract 360°.

2. SUBMARINE LAUNCHED ADVANCED WEAPON SETTINGS

TORPEDO SEARCH PATTERN SETTINGS

I: MK-48ADCAP, SPEARFISH

MODE 0 Snake/Circle Stbd Set: SNAKE/CIRCLE FLOOR 01000
 MODE 1 Snake/Circle Port Set: SNAKE/CIRCLE FLOOR 11000
 MODE 2 Snake Toward Set: SNAKE FLOOR 21000

II: UGST, DM2A4, BLACK SHARK

MODE 0 Port side Narrow Snake/Circle Set: SNAKE/CIRCLE FLOOR 0100
 MODE 1 Stbd side Narrow Snake/Circle Set: SNAKE/CIRCLE FLOOR 1100
 MODE 2 Port side Wide Snake/Circle Set: SNAKE/CIRCLE FLOOR 2100
 MODE 3 Stbd side Wide Snake/Circle Set: SNAKE/CIRCLE FLOOR 3100
 MODE 4 Straight Set: SNAKE/CIRCLE FLOOR 4100

TORPEDO ASW/ASuW TARGET DISCRIMINATION MODE SETTINGS

MK-48ADCAP, UGST, USET-80, TEST-71M, SPEARFISH, DM2A4, BLACK SHARK, F17M2, A184M3, YU-6

MODE ASW&ASuW Set: CEILING 2m/9ft
 MODE ASuW Set: CEILING 3m/10ft
 MODE ASW Set: CEILING ≥4m/11ft

TORPEDO WAKE HOMING/PASSIVE HOMING TOGGLE SETTINGS

UGST, USET-80, TEST-71M, DM2A4, BLACK SHARK, F17M2, YU-6

MODE Wake Homing Set: PASSIVE; DEPTH ≤10
 MODE Passive Set: PASSIVE; DEPTH ≥11

ROCKET TORPEDO SETTINGS

SHKVAL, BARRACUDA

MODE 0 MAD Sensor Enable Set: DEPTH 0100
 MODE 1 Detonation at Specific Range Set: DEPTH 1100

SPECIAL UNIT SETTINGS

MG-74 KORUND

MAX RANGE: 20nm @35kts / 40nm @1kts

I. AUTONOMOUS MODE:

MODE 1 Constant Course and Speed Set: SNAKE + ACTIVE
 MODE 2 Sprint and Drift Set: SNAKE + PASSIVE
 MODE 3 Circle Set: CIRCLE + ANY

SNAPSHOT BEARING: Transit Course

RUN TO ENABLE: Range to Enable MODE

DEPTH: Depth after MODE activation (NOT VALID: 0011, 0111, 0211, 0311, 0411, 0511)

SPEED: Transit Speed

CEILING: MODE Speed/Sprint Speed

II. WIRE GUIDED MODE:

DEPTH: Set MODE; VALID ONLY 0011, 0111, 0211, 0311, 0411, 0511

CEILING: Upper Depth

FLOOR: Lower Depth

SPEED CONTROL Button: PREENABLE	Set: ACTIVE/PASSIVE Constant/Variable Speed	DEPTH & SONAR CONTROL Button: ENABLE
MODE 1: 05Kts (02Kts) / 03-08Kts (01-05Kts)		MODE 1: Move to Upper Depth
MODE 2: 10Kts (05kts) / 10-17Kts (06-09Kts)		MODE 2: Move to Lower Depth
MODE 3: 20Kts (10kts) / 20-29Kts (10-15Kts)		MODE 3: Activate Active Sonar
MODE 4: 35KTS (17kts) / 35Kts (17Kts)		MODE 4: Disable Active Sonar
MODE 5: 0Kts (0kts) / 0Kts (0Kts)		MODE 5: Return to launch Depth

UUV

MAX. OPERATING TIME: 50min@3kts/10min@15kts, MAX. OPERATING DEPTH: 530m/1739ft

SNAPSHOT=Set Course
RUN TO ENABLE=Preset Distance to Sensor activation
SPEED=Preset cruise speed (3-15kts)
DEPTH=Preset search Depth
CEILING=Preset Depth change delay, true if value ≤5m/15ft
FLOOR=Search Speed Active Mode, true if set 20xx(xx=05-15knots)

MODE ACTIVE Set: ACTIVE CIRCLE
MODE ACTIVE&PASSIVE Set: ACTIVE SNAKE
MODE PASSIVE Set: PASSIVE SNAKE/CIRCLE

SUBROC TORPEDO SEARCH MODE SETTINGS

UUM-125, SS-N-27ASW, SS-N-16, SS-N-15, CY-1

MODE 1 Active below Layer Set: RUN TO ENABLE 00010
MODE 2 Active above Layer Set: RUN TO ENABLE 00110
MODE 3 Passive below Layer Set: RUN TO ENABLE 00210
MODE 4 Passive above Layer Set: RUN TO ENABLE 00310

UNDERWATER MISSILE SETTINGS

UGM-109D LAM, SS-N-27 ASM/LAM, SS-N-21 LAM, SCALP, CJ-10

Set Atttack Waypoint: Set: DESTRICT RANGE 000X (Value 1-5[1-4 for ASM] are valid)

ASURA

High Cruise Set: DESTRICT RANGE ≥44nm
Low Cruise Set: DESTRICT RANGE ≤43nm (max Range: 43nm/80km)

3. ADVANCED AIRBORNE AND SHIPBORNE WEAPON SETTINGS

TORPEDO SEARCH PATTERN SETTINGS

Mk-54, MK-50, MK-46, APR-3E*, APR-2E*, MPT-1UE, L5, MU-90

	Imp.	Metric
MODE 0 Port side Narrow Snake/Circle	Set: SNAKE/CIRCLE FLOOR 01000	0100
MODE 1 Stbd side Narrow Snake/Circle	Set: SNAKE/CIRCLE FLOOR 11000	1100
MODE 2 Port side Wide Snake/Circle	Set: SNAKE/CIRCLE FLOOR 21000	2100
MODE 3 Stbd side Wide Snake/Circle	Set: SNAKE/CIRCLE FLOOR 31000	3100
MODE 4 Straight (MK-54, MK-50, MK-46)	Set: SNAKE/CIRCLE FLOOR 32555	5555
MODE 4 Straight (MPT-1, L5)	Set: SNAKE/CIRCLE FLOOR -	5555
MODE 4 Straight (MU-90)	Set: SNAKE/CIRCLE FLOOR -	9987
MODE HELIX SEARCH (APR-3E, APR-2E)	Set: RTE -	≥0001

*APR-3E/APR-3E Spiral search ONLY; Set SNAKE=shallow spiral, Set CIRCLE=steep spiral.

SHIPBOARD ADVANCED HELO CONTROL SETTINGS

MODE 1 Transit MAD, ESM, VISUAL search; Act/Pass search on last waypoint Set: W-W-W-W
Enable Auto Attack Mode Set: W-T-W-W

MODE 2 Transit MAD, ESM, VISUAL search; Act/Pass search on every waypoint Set: W-W-W-T
Enable Auto Attack Mode Set: W-T-W-T

MODE 3 Transit MAD, ESM, VISUAL search; Passive search on last waypoint Set: W-W-T-W
Enable Auto Attack Mode Set: W-T-T-W

MODE 4 Transit MAD, ESM, VISUAL search; Passive search on every waypoint Set: W-W-T-T
Enable Auto Attack Mode Set: W-T-T-T

MODE 5 Long Distant Radar Search; ALT: 10kft/4km Speed: 40kts Set: T-T-T-T
Set Speed: 84-90kts Set: T-W-T-T

MODE 6 Radar Search; ALT: 6.5kft/2km Speed: 50kts Set: T-T-T-W
Set Speed: 99-105kts Set: T-W-T-W

MODE 7 Radar Search; ALT: 3.2kft/1km Speed: 60kts Set: T-T-W-T
Set Speed: 113-120kts Set: T-W-W-T

MODE 8 Radar Search; ALT: 1.6kft/0.5km Speed: 65kts Set: T-T-W-W
Set Speed: 122-130kts Set: T-W-W-W

To Delete Helo Program, drag the FIRST Waypoint to the far end (220nm)

SHIPBORNE MISSILE SETTINGS

SS-N-14, MILAS

MODE ASW
MODE ASuW

Set: WAYPOINT "F" <5000m away from Ownship
Set: WAYPOINT "F" >5000m away from Ownship

AIR DROPPED DEPTH BOMB AND MINE DEPTH SETTINGS

MK-11, PLAB-250, PLAB-500, WE-177	1000lb MINE	PMK-2
Surface Set: DEPTH 27m / 90ft	Surface Set: DEPTH 27m / 90ft	Surface Set: DEPTH 27m
Shallow Set: DEPTH 122m / 400ft	Shallow Set: DEPTH 122m / 400ft	Shallow Set: DEPTH 122m
Deep Set: DEPTH 305m / 1000ft	Max. Depth	Bottom Set: DEPTH 450m
Bottom Set: Depth 656m / 2152ft	& Bottom Set: DEPTH 183m / 600ft	Max. Bottom Set: DEPTH 1000m

4. TORPEDO CAPABILITIES TABLE

SUBMARINE LAUNCHED TORPEDOS

	MK48 ADCAP	MK48 MOD4	MK48 MOD1	UGST	USET 80K	USET 80	TEST 71M	62-76	53-65M	53-65K	SET65 (Yu-3)	SHKVAL	SPEAR FISH	TIGER FISH	DM2A4	BARRA CUDA	BLACK SHARK	A184 M3	F17 Mod2	Type89	Yu-6	
ASW	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	x	
ASuW	x	x	x	x	x	x	x	x	x	x	(x)	x	x	x	x	x	x	x	x	x	x	x
MD*	x			x	x	x	x						x		x		x	x	x		x	
Act	x	x	x	x	x	x	x				x		x	x	x		x	x	x	x	x	x
Pass	x	x	x	x	x	x	x				x		x	x	x		x	x	x	x	x	x
Wake				x	x	x	x	x	x	x					x		x					x
MAD												x				x						
Wire	x	x	x	x			x						x	x	x		x	x	x	x	x	x
Snake			x	x	x	x	x				x			x	x		x	x	x	x	x	x
Circle	x	x	x	x	x	x	x				x		x	x	x		x	x	x	x	x	x
Strait	x	x		x				x	x	x		x	x		x	x	x					
TRL*	x	x	x	x	x	x	x						x		x		x	x	x	x	x	x
DRL*	x	x	x	x	x	x							x		x		x	x	x	x	x	x
VSD*	x	x	x	x			x						x		x		x	x		x		x
S1*	40-55	40-55	40-55	30-50	35-50	30-48	26-40	-	-	-	30-40	200	29-70	24-35	30-50	194	35-50	30-45	30-40	35-55	40-65	
S1A*	55	55	55	50	50	48	40	-	-	-	40	-	70	35	50	-	50	45	40	55	65	
S2*	40-45	40-45	40-45	30-35	35-40	30-35	26	35/50	40/70	45	30-35	-	29-35	24-29	30-35	-	35-40	30-35	30-35	35-40	40-45	
S2A*	50	50	50	40	45	40	36	50	70	45	40	-	45	34	40	-	45	40	40	35	50	
Range Max.S	21nm 42ky	17nm 34ky	14nm 28ky	17nm 31km	9nm 18km	7nm 14km	8nm 15km	27nm 50km	8nm 15km	10nm 19km	6nm 11km	6nm 11km	13nm 23km	12nm 22km	21nm 38km	6nm 11km	16nm 30km	12nm 22km	10nm 19km	15nm 28km	17nm 32km	
Range Min.S	27nm 54ky	23nm 45ky	21nm 42ky	22nm 40km	12nm 22km	10nm 18km	14nm 25km	54nm 100km	12nm 22km	-	8nm 15km	-	35nm 65km	19nm 35km	30nm 56km	-	27nm 50km	18nm 33km	11nm 20km	21nm 39km	24nm 45km	
Depth	2499ft 762m	2250ft 686m	2099ft 640m	1689ft 515m	3280ft 1000m	3280ft 1000m	1312ft 400m	1722ft 480m	1007ft 307m	722ft 220m	1433ft 437m	1430ft 436m	2953ft 900m	1450ft 442m	1500ft 457m	984 300m	2706ft 825m	1968ft 600m	1968ft 600m	2099ft 640m	1968ft 600m	

* MD=Mode Discrimination, Torpedo can toggle between ASW,ASuW and ASW+ASuW mode; TRL=Torpedo Reattack Logic; DLR=Decoy Recognition Logic; VSD=Variable Search Depth; S1=Speed Range & Active Search Speed Range; S1A=Active Attack Speed; S2=Passive Search Speed Range; S2A=Passive Attack Speed

SHIP, AIR AND SUBROC LAUNCHED TORPEDOS AND LEGACY SUBMARINE LAUNCHED TORPEDOS

	Mk-54	Mk-50	Mk-46	APR-3	APR-2	MPT-1UE	UMGT-1	AT-2UM	L5	MU-90	MK-37 MOD0	Mk-37 MOD1	MK-37C	SET-53M	SEAT-60M
ASW	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ASuW	x						x	x		x		x	x		x
Act	x	x	x	x	x		x	x	x	x	1	1	x		x
Pass	x	x	x	x	x		x	x	x	x	1	1	x	x	x
Snake	x	x	x				x	x	x	x	x	x	x	x	x
Circle	x	x	x	x	x		x	x	x	x	x	x	x	x	x
Strait	x	x	x				x		x	x					
Helix				x	x										
TRL		x	x						x	x			x		
DRL										x			x		
S1	30-50	35-55	30-45	35	35	30-45	25-41	23-40	20-35	29-50	17-26	16-24	20-33	-	35-43
S1A	50	55	45	65	62	45	41	40	35	50	17-26	16-24	33	-	43
S2	30-35	35-40	30-35	35	35	30-35	N/A	23-28	20-25	29-34	-	-	20-25	29	N/A
S2A	40	45	40	65	62	40	N/A	33	30	39	-	-	30	29	N/A
Range Max.S	7nm 14ky	5nm 10ky	4.5nm 9ky	1.8nm 3.3km	1.6nm 3km	5.6nm 10km	4.9nm 9km	4.5 10.5km	3.8nm 7km	6nm 11km	4.9nm 9.9ky	3.9nm 7.8ky	10nm 20ky	8nm 14km	7nm 13km
Range Min.S	9nm 18ky	7nm 14ky	6nm 12ky	2.9nm 5.5km	2.3nm 4.3km	8nm 15km	7nm 13km	5.6nm 8km	5nm 9km	12nm 23km	11.3nm 22.8ky	8.9nm 18ky	19nm 38ky	-	8.5nm 15.7km
Depth	1722ft 525m	3608ft 1200m	1500ft 457m	2624ft 800m	2148ft 655m	2325ft 717m	1640ft 500m	1312ft 400m	1640ft 500m	3280ft 1000m	990ft 300m	990ft 300m	990ft 300m	656ft 200m	984m 300m

¹ MK-37 MOD0/1 Passive search, active search in terminal attack phase only.

5. SUBMARINE LAUNCHED MISSILE / MINE / UNDERWATER SPECIAL FORCES RANGE AND LAUNCH DEPTH TABLE

COMBAT DIVERS	4nm @3kts 7.4km	131ft 40m
SIRENA	8nm @5kts 14.8km	40m
Mk-8 SDV	7nm @8kts 14ky	187ft
SMDM	10nm @42kts 18km	220m
Mk-60	N/A	2998ft 914m
SLMM	8.6nm @26kts 16km	354ft 109m
CY-1	15nm 27km	40-50m
SS-N-15	19nm 35km	40-60m
SS-N-16	54nm 100km	40-150m
SS-N-27ASW	27nm 50km	14-100m
UUM-44	30nm 61ky	150ft
UUM-125B	35nm 71ky	150ft
CJ-10	810nm	40-50m
SCALP	542nm	46m
SS-N-21	1620nm	40-60m
SS-N-27LAM	1350nm	14-100m
UGM-109D	1400nm	150ft
C-802	65nm 120km	40-50m
IDAS	12nm 22km	11-25m
EXOCET	35nm 64km	50m
ASURA	81nm 150km	50m
SS-N-19	300nm 556km	20-60m
SS-N-22	65nm 120km	20-40m
3M-54B1	162nm 300km	14-100m
3M-54E	120nm 222km	14-100m
UGM-84	70nm 141ky	150ft 46m
UGM-109B	250nm 506ky	150ft

6. SHIPBORNE / AIRBORNE MISSILE RANGE AND TARGET TABLE

	SM-1MR	AIM-9	SA-N-9	Aster-30	AGM-84E	AGM-84H	AGM-88	AGM-64E	AGM-119B	AGM-114	SS-N-14	SS-N-25	SS-N-X-26	Kh-65	9M120	MARTE-ER	MILAS ASuW	MILAS ASW
Air	x	x	x	x											x			
Surf	x		x		x		x	x	x	x	x	x	x	x	x	x	x	
Sub											x							x
Land						x	x	x		x				x	x			
Range	21nm 42ky	9.7nm 18km	8nm 15km	54nm 100km	150nm 303ky	155nm 314ky	33nm 67ky	12nm 24ky	22nm 44ky	4.9nm 9.9ky	30nm 55km	70nm 130km	161nm 298km	1620nm 3000km	5.3nm 10.2km	52nm 96km	81nm 150km	32nm 60km

7. NARROWBAND SONAR FREQUENCY TABLE

1. Type	2. Tonnage	3. Propulsion																	
Vessels	241000t	DSRV	APR/Shkval	Pump Jet Sub.	ACTUV	Pump Jet Surf.	Torp. Elec.	Torp. HTP	Torp. Gas.	Gas Turbine	COGAG	COGOG	CODAG	CODOG	Sub. Air	Surf. Diesel	Sub. Diesel	Sub. Nuke	Surf. Steam
Torpedos	35000-40999t	565 Hz	550 Hz	535 Hz	520 Hz	505 Hz	490 Hz	475 Hz	460 Hz	445 Hz	430 Hz	415 Hz	400 Hz	385 Hz	370 Hz	355 Hz	340 Hz	325 Hz	310 Hz
	241000t	295 Hz	280 Hz	265 Hz	250 Hz	235 Hz	220 Hz	205 Hz	190 Hz	175 Hz	160 Hz	145 Hz	130 Hz	115 Hz	100 Hz	85 Hz	70 Hz	55 Hz	40 Hz

8. SONOBUOYS TABLE

BUOY TYPE	ACOUSTIC TYPE	FREQUENCY	MAX. RANGE	LIFESPAN	SHALLOW DEPTH	DEEP DEPTH
VLAD	PASS	0-100Hz	20nm 40.5ky	4 Hrs	600ft	1200ft
RGB 75	PASS	0-100Hz	20nm 37km	4 Hrs	100m	400m
DIFAR	PASS	75-2400Hz	65nm 132ky	2 Hrs	90ft	400ft
RGB 25	PASS	75-2400Hz	65nm 120km	2 Hrs	20m	200m
DICASS	PASS	0-2400Hz	6.5nm 13.2ky	2 Hrs	90ft	800ft
RGB 55	PASS	0-2400Hz	6.5nm 12km	2 Hrs	20m	200m
DICASS	ACT	10000Hz	7.4nm 14.9ky	2 Hrs	90ft	800ft
RGB 55	ACT	8000Hz	5.4nm 10km	2 Hrs	20m	200m

9. ADDITIONAL SUBMARINE LAUNCHED WEAPON SETTINGS

UNDERWATER LAUNCHED MISSILE SETTINGS

SS-N-19

MODE 0 Aim at priority targets in Battle Group	Set: DESTRUCT RANGE <u>0</u> 50
MODE 1 Aim at random targets in Battle Group	Set: DESTRUCT RANGE <u>1</u> 050
MODE 2 Aim at single target	Set: DESTRUCT RANGE <u>2</u> 050
MODE 3 Aim at unique class	Set: DESTRUCT RANGE <u>3</u> XXX (XXX Set Class ID)
MODE 4 Aim at unique ship	Set: DESTRUCT RANGE <u>4</u> XXX (XXX Set Ship ID)