

In the whole table values should be entered in colored cells ONLY

1. Dead reckoning position

Depth **5,0** meters

reckoning latitude $\phi$			Only <b>N</b> or <b>S</b> / <b>E</b> or <b>W</b> values can be entered at same time. Unused cells must be empty or = 0.	reckoning longitude $\lambda$			
°	'	rad		°	'	rad	
Northern	<b>55</b>	<b>0,0</b>		0,95993	Eastern	<b>3</b>	<b>7,8</b>
Southern	<b>0</b>	<b>0,0</b>	0,00000	Western	<b>0</b>	<b>0,0</b>	0,00000

2. Date and time of observations

day	month	year	hour	minutes	seconds
<b>9</b>	<b>10</b>	<b>1939</b>	<b>14</b>	<b>32</b>	<b>6</b>
Date/UT of sextant readings according to UT					

3. Enter data from SHS Almanac

SUN OBSERVATION				STAR OBSERVATION	calculated values on the UT of sextant readings			
Sun semidiameter <b>16</b> arc min					SHS Almanac for "TIME" <b>12:00:00 PM 10/9/1939</b>			
Sun Almanac				Aries Almanac	2:32:06 PM 10/9/1939			
Units	GHA	declination (sign ± shouldn't be entered) northern(+) southern(-)		GHA	GHA	declination	GHA	
	°	'	"		°	'	"	
	<b>3</b>	<b>0</b>	<b>6</b>	<b>22</b>	41	6	60	
	<b>7,6</b>	<b>0,0</b>	<b>0,8</b>	<b>-3,8</b>	<b>35,3</b>	9,1	3,2	43,0
rad	0,054571	0,000000	0,10495	-0,00111	0,39424	0,71823	-0,10565	1,059719

4. Calculations and observations

Celestial (No and name)	estimated altitude in dead reckoning position	Local Hour Angle	Azimuth calculations				Estimated altitude * (no ref, no dip)	Sextant readings *		Transfer on the azimuth direction			
	rad (no refraction, no dip)	arc minutes (no refraction, no dip)	rad	0 - 90	I	II	III	azimuth °	°	'	km		
<b>0 Sun *</b>	0,3278	1126,9	0,7729	47,2	FALSE	TRUE	FALSE	<b>227,2</b>	<b>18,51</b>	<b>18</b>	<b>57,3</b>	19,7	<b>39,3</b>

\*Measurements are carried out relative to the lower edge of the solar disk

Celestial (No and name)	estimated altitude in dead reckoning position	Local Hour Angle	Azimuth calculations				Estimated altitude (no ref, no dip)	Sextant readings		Transfer on the azimuth direction	
	rad (no refraction, no dip)	arc minutes (no refraction, no dip)	rad	0 - 90	I	II	III	azimuth °	°	'	km

LIST 1

No	Name	0,9714	3339,5	0,4542	0,6	FALSE	FALSE	TRUE	359,4	55,7	59	1,8	197,8	395,6
2	Alioth	0,5009	1721,9	4,0313	29,5	TRUE	FALSE	TRUE	29,5	28,7			-1761,1	-3522,3
3	Capella	1,3474	4632,1	6,0334	50,9	FALSE	FALSE	FALSE	-	-			-	-
3	Deneb	0,4285	1473,2	1,9898	45,1	TRUE	FALSE	TRUE	314,9	24,6			-1512,4	-3024,9
9	Vega	0,1461	502,2	2,5329	26,8	TRUE	FALSE	FALSE	333,2	8,4			-541,5	-1083,0
1	Alpheratz	0,6776	2329,5	1,0906	85,9	FALSE	FALSE	FALSE	265,9	38,8			-2368,7	-4737,5
1	Pollux	0,7761	2667,9	5,3824	75,6	FALSE	FALSE	FALSE	104,4	44,5			-2707,2	-5414,3
7	Arcturus	-0,1944	-668,4	3,6759	29,3	TRUE	FALSE	FALSE	-	-	30	12,3	-	-
0	Aldebaran	0,8948	3076,0	6,2077	6,6	FALSE	FALSE	FALSE	173,4	51,3			-3115,2	-6230,5
5	Regulus	0,1992	684,8	4,7563	85,0	FALSE	FALSE	TRUE	85,0	11,4			-724,1	-1448,2
1	Altair	-0,2171	-746,5	2,2138	54,1	TRUE	FALSE	FALSE	-	-			-	-
6	Betelgeuse	0,6744	2318,4	5,8613	31,3	FALSE	FALSE	FALSE	148,7	38,6	34	39,7	-244,1	-488,1
0	Procyon	0,4574	1572,3	5,4066	58,5	FALSE	FALSE	FALSE	121,5	26,2			-1611,6	-3223,1
1	Rigel	0,4477	1539,1	6,0373	15,5	FALSE	TRUE	FALSE	164,5	25,7			-1578,3	-3156,6
1	Spica	-0,6001	-2063,1	3,8974	54,7	TRUE	TRUE	FALSE	-	-			-	-
3	Sirius	0,2067	710,6	5,6411	35,9	FALSE	TRUE	FALSE	144,1	11,8			-749,9	-1499,7
2	Antares	-1,0691	-3675,4	3,0955	4,9	TRUE	TRUE	FALSE	-	-			-	-
6	Fomalhaut	-0,3296	-1133,0	1,3999	64,5	FALSE	TRUE	TRUE	-	-			-	-
7	Canopus	-0,3636	-1249,8	5,7287	20,0	FALSE	TRUE	TRUE	-	-			-	-
	Achernar	-0,4719	-1622,3	0,6976	22,8	FALSE	TRUE	TRUE	-	-			-	-
	AcruX	-1,0503	-3610,6	4,1538	51,2	TRUE	TRUE	TRUE	-	-			-	-

Celestial (№ and name)	Estimated altitude in dead reckoning position		Local Hour Angle rad	Azimuth calculations					Estimated altitude (no ref, no dip) °	Sextant readings		Transfer on the azimuth direction	
	rad (no refraction, no dip)	rc minutes (no refraction, no dip)		0 - 90	I	II	III	azimuth °		°	'	'	km

### LIST 2

0	Kochab	0,6972	2396,7	3,5131	7,4	TRUE	FALSE	TRUE	7.4	39.9			-2436,0	-4872.0
7	Dubhe	0,7358	2529,5	4,5166	38,4	TRUE	FALSE	TRUE	38.4	42.2			-2568,8	-5137.6
	Schedar	1,0472	3600,1	0,9518	64,8	FALSE	FALSE	TRUE	295.2	60.0			-3639,3	-7278.7
7	Eltanin	0,3227	1109,3	2,7070	16,0	TRUE	FALSE	FALSE	344.0	18.5			-1148,6	-2297.1
	Mirfak	1,3976	4804,6	0,2403	63,3	FALSE	FALSE	FALSE	-	-			-	-
4	Alkaid	0,3348	1150,9	3,7969	24,7	TRUE	FALSE	TRUE	24.7	19.2			-1190,2	-2380.4
4	Elnath	1,0631	3654,6	5,9894	31,5	FALSE	FALSE	FALSE	148.5	60.9			-3693,9	-7387.8
1	Alphecca	-0,1326	-455,7	3,3301	9,7	TRUE	FALSE	FALSE	-	-			-	-
	Hamal	0,8723	2998,8	0,5734	50,8	FALSE	FALSE	FALSE	230.8	50.0			-3038,1	-6076.2
7	Markab	0,3287	1130,0	1,3678	89,3	FALSE	FALSE	FALSE	269.3	18.8			-1169,2	-2338.5
8	Denebola	-0,0036	-12,5	4,3166	63,1	TRUE	FALSE	FALSE	-	-			-	-
6	Rasalhague	-0,3577	-1229,8	2,8066	20,0	TRUE	FALSE	FALSE	-	-			-	-
	Enif	0,0534	183,7	1,7195	77,5	TRUE	FALSE	FALSE	282.5	3.1			-223,0	-446.0
3	Bellatrix	0,6894	2370,0	5,9924	21,7	FALSE	FALSE	FALSE	158.3	39.5			-2409,2	-4818.5
	Menkar	0,6393	2197,6	0,3324	23,9	FALSE	FALSE	FALSE	203.9	36.6			-2236,9	-4473.7
5	Alnilam	0,5503	1891,8	5,9434	23,0	FALSE	TRUE	FALSE	157.0	31.5			-1931,0	-3862.1
5	Alphard	0,0042	14,3	4,9334	74,8	FALSE	TRUE	FALSE	-	-			-	-
1	Sabik	-0,8625	-2964,9	2,9156	19,4	TRUE	TRUE	FALSE	-	-			-	-
39	Zubenelgenubi	-0,8265	-2841,4	3,5241	32,0	TRUE	TRUE	FALSE	-	-			-	-
9	Gienah	-0,5370	-1846,1	4,2001	75,6	TRUE	TRUE	FALSE	-	-			-	-
	Diphda	0,0661	227,1	0,9367	50,1	FALSE	TRUE	FALSE	230.1	3.8			-266,4	-532.8
0	Nunki	-0,8674	-2982,0	2,4594	60,9	TRUE	TRUE	FALSE	-	-			-	-
7	Adhara	-0,0126	-43,3	5,5811	34,4	FALSE	TRUE	FALSE	-	-			-	-
8	Kaus Australis	-1,0501	-3610,1	2,5961	59,4	TRUE	TRUE	FALSE	-	-			-	-
5	Menkent	-1,0582	-3637,7	3,7180	63,8	TRUE	TRUE	FALSE	-	-			-	-
	Shaula	-1,1877	-4083,1	2,8169	42,9	TRUE	TRUE	FALSE	-	-			-	-
	Acamar	-0,1221	-419,9	0,3467	15,1	FALSE	TRUE	FALSE	-	-			-	-
	Ankaa	-0,3368	-1157,8	1,0123	41,4	FALSE	TRUE	TRUE	-	-			-	-
	Suhail	-0,4512	-1551,2	5,0161	50,6	FALSE	TRUE	TRUE	-	-			-	-
5	Al Na'ir	-0,6677	-2295,5	1,6174	59,8	TRUE	TRUE	TRUE	-	-			-	-
	Gacrux	-1,0299	-3540,5	4,1341	62,8	TRUE	TRUE	TRUE	-	-			-	-
2	Peacock	-0,9897	-3402,4	2,0689	60,9	TRUE	TRUE	TRUE	-	-			-	-
	Avior	-0,6000	-2062,7	5,2116	32,8	FALSE	TRUE	TRUE	-	-			-	-
	Hadar	-1,2451	-4280,3	3,7334	60,3	TRUE	TRUE	TRUE	-	-			-	-
8	Rigel Kentaurus	-1,3205	-4539,5	3,5778	56,8	TRUE	TRUE	TRUE	-	-			-	-
	Atria	-1,3214	-4542,7	3,0216	10,0	TRUE	TRUE	TRUE	-	-			-	-
4	Mianlacidus	-0,7934	-2727,5	4,9878	28,7	FALSE	TRUE	TRUE	-	-			-	-

In the whole table values should be entered in colored cells ONLY

**1. Dead reckoning position**

Depth 5,0 meters

reckoning latitude $\phi$		Only <b>N</b> or <b>S</b> / <b>E</b> or <b>W</b> values can be entered at same time. Unused cells must be empty or = 0.	reckoning longitude $\lambda$				
°	'		°	'			
rad			rad				
Northern	56	0,0	0,97738	Eastern	20	0,0	0,34907
Southern	0	0,0	0,00000	Western	0	0,0	0,00000

**2. Date and time of observations**

day	month	year	Date/UT of sextant readings	hour	minutes	seconds
31	8	1939		20	23	43
according to UT						

**3. Enter data from SH5 Almanac**

<b>MOON OBSERVATION</b>					calculated values		
"1" if Upper limb measured		0	"0" if lower limb measured		Moon SD		
"1" if Lower limb measured		1	"0" if upper limb measured		14,8		
SH5 Almanac for "TIME" 8:00:00 PM 8/31/1939					of sextant readings		
Moon Almanac					MOON		
Units	GHA	declination (sign ± shouldn't be entered)		Horizontal parallax (HP)	GHA	declination	Parallax
		northern(+)	southern(-)	d (sign ± must be entered)	54,2		
°	281	1	0	v	287	1	
'	49,8	50,8	0,0	60,9	35,4	54,7	50,7
rad	4,918861	0,03223	0,00000	0,01140	0,254	5,01938	0,03336

**4. Calculations and observations**

Celestial (№ and name)	Estimated H5 altitude in dead reckoning position		Local Hour Angle	Azimuth calculations				Estimated altitude* (no ref, no dip, no par.)	Sextant readings *		Transfer on the azimuth direction		
	rad (no refraction, no dip, no parallax)	arc minutes (refraction +dip+parallax)	rad	0 - 90	I	II	III	azimuth °	°	'	'	km	
-1 Moon *	0,3775	1297,6	5,3684	58,4	FALSE	FALSE	FALSE	121,6	21,38	20	38,6	-0,1	-0,2

\*Measurements are carried out relative to the lower or upper limb of the moon disk