# Workforms and Plotting Sheets

for use with

# Navigation Exercises for Practice Underway

www.starpath.com/kindle

# David Burch



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# Overview and Instructions

Full instructions and individual exercises can be found in the Kindle version of *Navigation Exercises for Practice Underway*.

# Basic Chart Work

#### **CW-1 Use of Chart Catalog**

Date	Lat/Lon	Description	1 Chart / scale	2 Chart / scale

#### CW-2 Lat/Lon, range and bearings

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18			
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17			
4 5 6 7 8 9 10 11 12 13 14 15 16 17			
5 6 7 8 9 10 11 12 13 14 15 16 17			
6 7 8 9 10 11 12 13 14 15 16 17 18			
7 8 9 10 11 12 13 14 15 16 17			
8 9 10 11 12 13 14 15 16 17			
9 10 11 12 13 14 15 16 17			
10 11 12 13 14 15 16 17			
11 12 13 14 15 16 17			
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24			
25			
26			
27			
28			
29			
30			
31			
32			
33		İ	

## CW-3 Depths and soundings

#	Date	Depth units	Depth at Point 1	Depth at Point 2	Deepest	Shallowest	MHW
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							

#### CW-4. Buoys

Date	Time	Lat/Lon	Buoy description	LL number	Chart – LL differences
		<u> </u>			

#### CW-5. Lighthouses

Date	Time	Lat/Lon	Light description	LL number	Chart – LL differences

## CW-6. Coast Pilots and Sailing Directions

Date	Time	Region studied	Book title	Notes / Comments

#### CW-7. Broadcast Notice to Mariners

Date	Time	VHF channel / Station	Notes / Comments

# Tides and Currents

#### TC-1 Tides at anchor

Date			
Time			
Lat			
Lon			
Description			
Measured depth			
Draft			
Sum 1			
Charted depth			
Tide height			
Sum 2			
Error			
	ı		
Date			
Time			
Lat			
Lon			
Description			
Measured depth			
Draft			
Sum 1			
Charted depth		 	
Tide height			
Sum 2			
Error			

## TC-2 Currents underway

		Part A			
Date					
Time					
Lat					
Lon					
Description					
Knotmeter speed					
SOG					
Heading					
COG					
·		Part B			
Computed Set					
Computed Drift					
		Part C			
Predicted Set					
Predicted Drift					

	Part A								
Date									
Time									
Lat									
Lon									
Description									
Knotmeter speed									
SOG									
Heading									
COG									
				Part B					
Computed Set									
Computed Drift									
	Part C								
Predicted Set									
Predicted Drift									

# Radar

#### R-1. Check out basic controls

Function	Date	Time	Function	Date	Time	Function	Date	Time
On / Off / Warm-up			Plot / wake options					
Brilliance								
Gain								
Range								
Range Rings								
VRM								
EBL								
Function	Date	Time	Function	Date	Time	Function	Date	Time
On / Off / Warm-up			Plot / wake options					
Brilliance								
Gain								
Range								
Range Rings								
VRM								
EBL								
Function	Date	Time	Function	Date	Time	Function	Date	Time
On / Off / Warm-up			Plot / wake options					
Brilliance								
Gain								
Range								
Range Rings								
VRM								
EBL								
Function	Date	Time	Function	Date	Time	Function	Date	Time
On / Off / Warm-up			Plot / wake options		İ			
Brilliance								
Gain								
		I .						
Range								
Range								

## R-2. Confirm GPS position using Radar Range and Bearing

Date	Time	Lat/Lon	Description	Chart R and B	Radar R and B

## R-3. Distinguish buoys and moving vessels

Date	Time	Range	SRM	S	Date	Time	Range	SRM	S
	1								

## R-4. Closest Point of Approach

Date	Time	Range	CPA	TCPA	CPA real	TCPA real	Comments

## R-5. Relative motion diagram (rapid radar plotting)

Date	Course	Speed	T1	R1	B1	T2	R2	B2	SRM	DRM	TC	TS

## R-6. Radar piloting

#	Date	Time	Н	S	Lat/Lon	Description of location
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
				_		
#				[	Description of piloting method used	l in the situation listed above
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

#### R-7. Position fix with Radar

Date	Time	Н	S	Туре	Radar Fix Lat/Lon	GPS Fix Lat/Lon	Error

# Navigation Rules

#### **NR-1 Reading Assignments**

Date	Assignment	Rules — Page count
	Part B, Sec I. Rules that apply all times, regardless of visibility	Rules 4 to 10 — 6 pages
	Part B, Sec II. Rules that apply when vessels can see each other	Rules 11 to 18 — 5 pages
	Part C, Lights and Shapes (power, fishing, and sailing)	Rules 23, 25, 26 — 12 pages
	Part C, Lights and Shapes (tow boat lights)	Rule 24 — 10 pages
	Part C, Lights and Shapes (anchored and aground)	Rule 30 — 3 pages
	Part D, Sound and Light Signals (maneuvering and warning)	Rule 34 — 2 pages
	Part D, Sound and Light Signals ("fog signals")	Rule 35 — 2 pages
	Part D, Sound and Light Signals (distress and getting attention)	Rules 37 and 36 — 2 pages

#### NR-2. Sound signals underway

Date	Time	Lat/Lon	Location description	Sound heard	Explanation

## NR-3. Lights Underway

Date	Time	Lat/Lon	Location description	Vessel lights	ID = vessel type / aspect

## NR-4. Right of way underway

Date	Time	Lat/Lon	Location description	Situation

#### NR-5. Rule 19d

Date	Assignment	Rules — Page count
	Part B, Sec III. Rules that apply when you cannot see each other	Rule 19 — 1 page

Date	Approach from	Your maneuver assuming target vessel is not in sight visually	Rules reference
	000 R		
	045 R		
	090 R		
	135 R		
	180 R		
	225 R		
	270 R		
	315 R		

# Piloting

#### P-1. Bearing Fix

#	Date	Time	Bearing	Target	С	S	Lat	L/Lon from GP	9
1	Date	111116	bearing	161961			Lai	LOII IIOIII GF	
							Derre	Deering o	d a 14 -
2							Range	Bearing	delta
3									
#	Date	Time	Bearing	Target	С	S	Lat	L/Lon from GP	S
1									
2							Range	Bearing	delta
3									
#	Date	Time	Bearing	Target	С	S	Lat	L/Lon from GP	S
1	Date	Time	Dearing	larget		0	Lai		
2							Range	Bearing	delta
3									
#	Date	Time	Bearing	Target	С	S	Lat	/Lon from GP	S
1									
2							Range	Bearing	delta
3									
ш	Dat-	T:	Doories -	Taurai			1 - 1	// on from OD	
#	Date	Time	Bearing	Target	С	S	Lai	L/Lon from GP	S
1							Derrie	Deering o	d a l t -
2							Range	Bearing	delta
3									
#	Date	Time	Bearing	Target	С	S	Lat	L/Lon from GP	S
1									
2							Range	Bearing	delta
3									
#	Date	Time	Bearing	Target	С	S	Lat	L/Lon from GP	S
1									
2							Range	Bearing	delta
3									

## P-2. LOP by natural ranges

Date	Time	GPS Lat/Lon	Range description	delta

#### P-3. Fix by soundings

Date	Time	GPS Lat/Lon	Method tried	delta

## P-4. COP from vertical sextant angle

Date	Time	GPS Lat/Lon	Target name	Н	Hs	D	delta

## P-5. Three-body fix by sextant

Date	Time	GPS Lat/Lon	A to B	B to C	Solution method	delta

# Electronic Charting

#### EC-1 Basic skills

Operation	Date	Time	Operation	Date	Time
Select charts and load chart of choice			R and B boat to point		
Scroll, center, zoom			R and B point to point		
Set scales, windows			Use of Cross Track Error XTE		
Read Lat/Lon of boat position			Use of Tides and Currents		
Set marks, properties, hide/show					
Set up a route, activate a waypoint					
Use of Plan Book					
Monitor GPS input signals					
Display multiple windows					
Split and join routes					
Set up projected boat position					
Use of range rings					

#### EC-2 Route monitoring underway

Date	Time	Next WP	R	В	Н	COG	SOG	XTE	VMG	ETA	TA

# GPS Navigation

#### **GPS-1 Basic Skills**

Operation	Date	Time	Operation	Date	Time
Read and interpret Lat and Lon					
Entering a waypoint					
Entering a route					
Read R and B to waypoint					
Reading COG and SOG					
Read and understand XTE					
Display, zoom, and pan the plot screen					
Advance to next waypoint on a route					
Arrival alarms					
Interpret active satellite data					

## GPS-2 Route monitoring underway

Date	Time	Next WP	R	В	Н	COG	SOG	XTE	VMG	ETA	TA

## GPS-3. Confirm position accuracy

Time	Date	GPS Lat/Lon	Lat jitter	Chart Lat/Lon	delta

# Dead Reckoning

#### DR-1. Basic Terms

Term	Time	Date	Term	Time	Date
Heading (H)			Knotmeter speed (S)		
Course (C)			Speed over ground (SOG)		
Course over ground			Velocity made good (VMG)		
Bearing to WP			Speed of Advance (SOA)		

### DR-2. ETA to Waypoint

Date	Start WP	Start Time	End WP	Dis- tance	ETA at End	TA at End	delta T

### DR-3. Magnetic variation

Date	Lat/Lon	Location Description	Charted var	GPS var

### DR-4. Compass check on range

Date	Time	Lat/Lon	Range Description	Chart H	Compass H	Dev

## Weather

#### W-1 VHF Weather Sources

Time	Date		Lat/Lon	Description
VHF Chan	Call sign or ID	station		Subjects
<b>-</b> .				
Time	Date		Lat/Lon	Description
VHF Chan	Call sign or ID	r station		Subjects
Time	Date		Lat/Lon	Description
Time	Date		Laveon	Description
	Call sign or	station		
VHF Chan	ID	Station		Subjects
Time	Date		Lat/Lon	Description
VHF Chan	Call sign or	station		Subjects

Time	Date		Lat/Lon	Description
VHF Chan	Call sign or ID	station		Subjects
Γ	Γ	1		
Time	Date		Lat/Lon	Description
VHF Chan	Call sign or ID	rstation		Subjects
Time	Date		Lat/Lon	Description
VHF Chan	Call sign or ID	rstation		Subjects

### W-2 VHF Weather Reports

Time	Date	Lat/Lon	Description
Neares	st report locati	ons Time	Wind, seas, weather, barometer
Your ov	vn observatio	ns =	
Nearest	forecast loca	tions	Wind, seas, weather
		<u>'</u>	
Time	Date	Lat/Lon	Description
Neares	st report locati	ons Time	Wind, seas, weather, barometer
Your ov	vn observatio	ns =	
Nearest	forecast loca	tions	Wind, seas, weather
Time	Date	Lat/Lon	Description
Time	Date	LavLon	Description
Nooros	st report locati	ons Time	Wind, seas, weather, barometer
	тероп юсан	ons mine	willu, Seas, weather, parometer
Vaur au			
	vn observatio		Wind oos works
inearest	forecast loca	UOTIS	Wind, seas, weather

Time	Date		Lat/Lon		Description
Neares	st report locati	ons	Time		Wind, seas, weather, barometer
Your ov	vn observatio	ns =			
Nearest	forecast loca	tions			Wind, seas, weather
Time	Date		Lat/Lon		Description
				1	
Neares	st report locati	ons	Time		Wind, seas, weather, barometer
	vn observatio				
Nearest	forecast loca	tions			Wind, seas, weather
Time	Date		Lat/Lon		Description
Neares	st report locati	ons	Time		Wind, seas, weather, barometer
	· · · · · · · · · · · · · · · · · · ·				
Your ov	vn observation	ns =			
	forecast loca				Wind, seas, weather
					, , , ::::
				+	

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Time	Date	Lat/Lon	Description
Neares	st report location	ons Time	Wind, seas, weather, barometer
Your o	wn observatior	19 =	
	forecast local		Wind, seas, weather
inearesi	- IOIECast IOCai	lions	williu, seas, weather
	5.		
Time	Date	Lat/Lon	Description
Neares	st report location	ons Time	Wind, seas, weather, barometer
Your o	wn observatior	ns =	
Nearest	forecast locat	tions	Wind, seas, weather

## W-3 Cloud Spotting

Туре	Date	Time	Date	Time	Date	Time	Date	Time	Date	Time
Cumulus										
Cumulonimbus										
Stratus										
Nimbostratus										
Altostratus										
Altocumulus										
Stratocumulus										
Cirrostratus										
Cirrocumulus										
Cirrus										

### W-4 Apparent to true wind

Date	Time	AWA	AWS	Course	Speed	TWS	TWA	TWD

### W-5 Baro comparisons

Time	Date	Lat/Lon	Ship's baro	Interpolated map baro

# Celestial Navigation

### **CN-1 Star spotting**

Date	Time	Lat/Lon	Star Name	Hs	Zn

## CN-2. Twilight times

Date	Lat/Lon	Sunset	Civil Twi	Naut Twi	Sight time	Hs	Zn	Body
		1						

## CN-3 Checking Watch Time

Date	Time	WE (F or S)	Date	Time	WE (F or S)	Date	Time	WE (F or S)
		Set to 0.0						

WE	I											
VVE												
12s												
11s												
10s												
9s												
8s												
7s												
6s												
5s												
4s												
3s												
2s												
1s												
Date =												

### CN-4. Compass check from sun

Date	Time	GPS Lat/Lon	Var.	Heading	Sun Zn (M)	Sun Zn (C)	Deviation

## CN-5. Sunline running fix

Date	Time	No of sights	Celestial Fix	GPS position	delta

### CN-6. Sun-moon fix

Date	Time	No of sights	Celestial Fix	GPS position	delta

### CN-7. Star-planet fix

Date	Time	No of sights	Celestial Fix	GPS position	delta

## Navigation Challenges

#### NC-1. Unforseen Eventualities

Date	Time	GPS Lat/Lon	Special situation and solution
1	I	1	

# Reference List

See Kindle ebook for references

# Personal Logbook

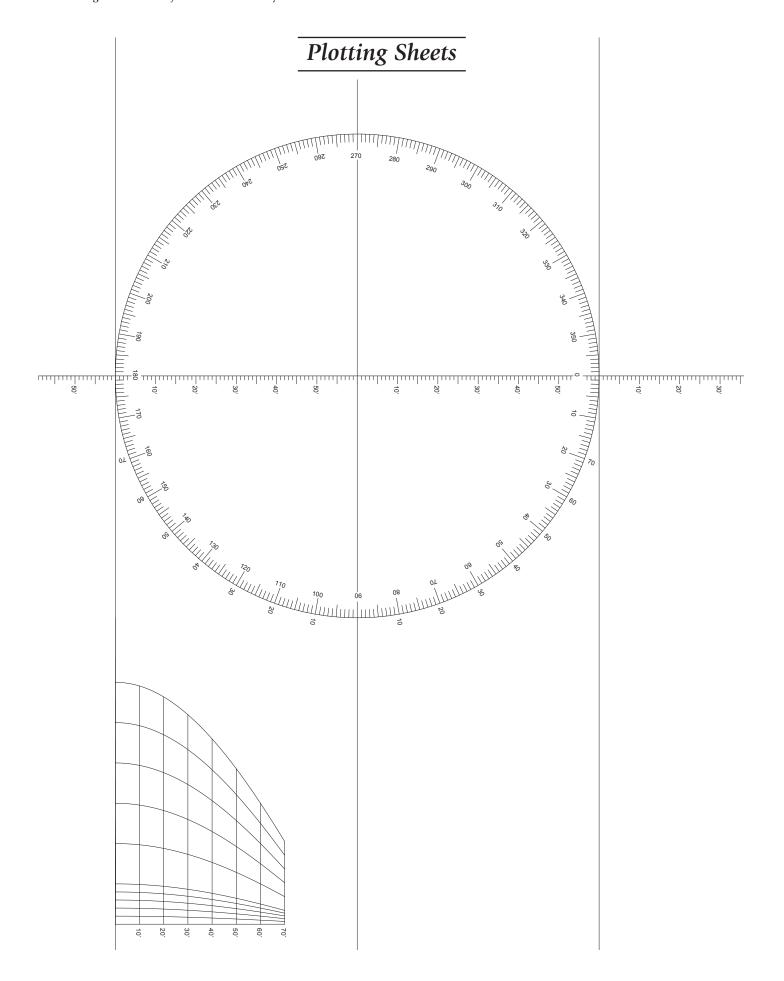
See Kindle ebook Logbook instructions

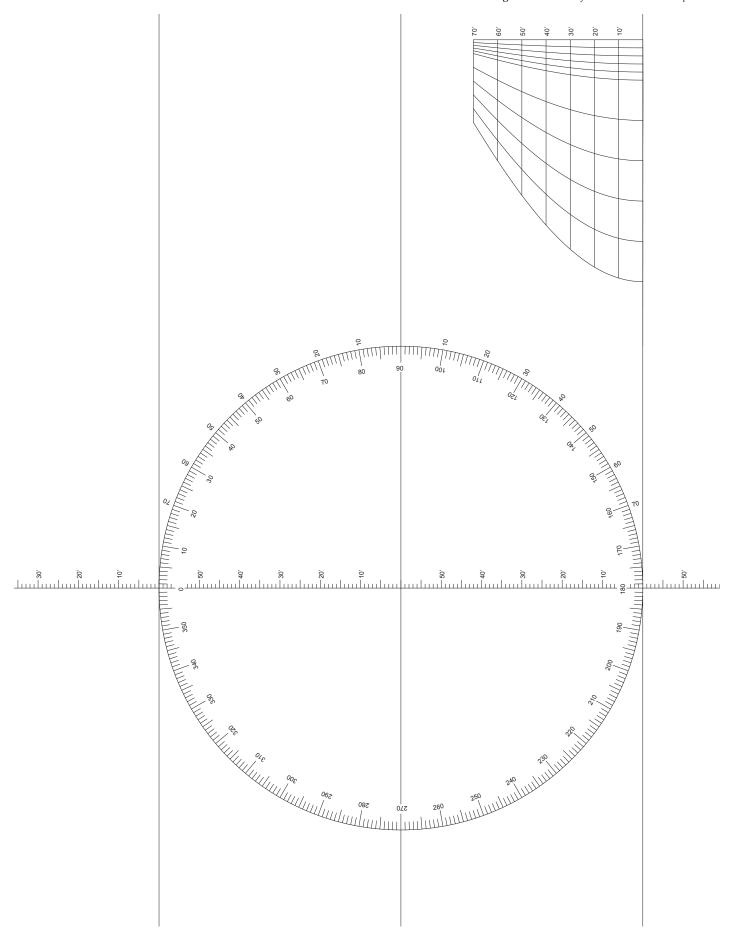
	Day#	Date	Description	Time	Log	Lat/Lon	Course	Speed	Baro
1			Depart						
2			Mid-morning						
3			Mid-day						
4			Mid-afternoon						
5			Anchorage						
6			Depart						
7			Mid-morning						
8			Mid-day						
9			Mid-afternoon						
10			Anchorage						
11			Depart						
12			Mid-morning						
13			Mid-day						
14			Mid-afternoon						
15			Anchorage						
16			Depart						
17			Mid-morning						
18			Mid-day						
19			Mid-afternoon						
20			Anchorage						
21			Depart						
22			Mid-morning						
23			Mid-day						
24			Mid-afternoon						
25			Anchorage						
26			Depart						
27			Mid-morning						
28			Mid-day						
29			Mid-afternoon						
30			Anchorage						
	1	2	3	4	5	6	7	8	9

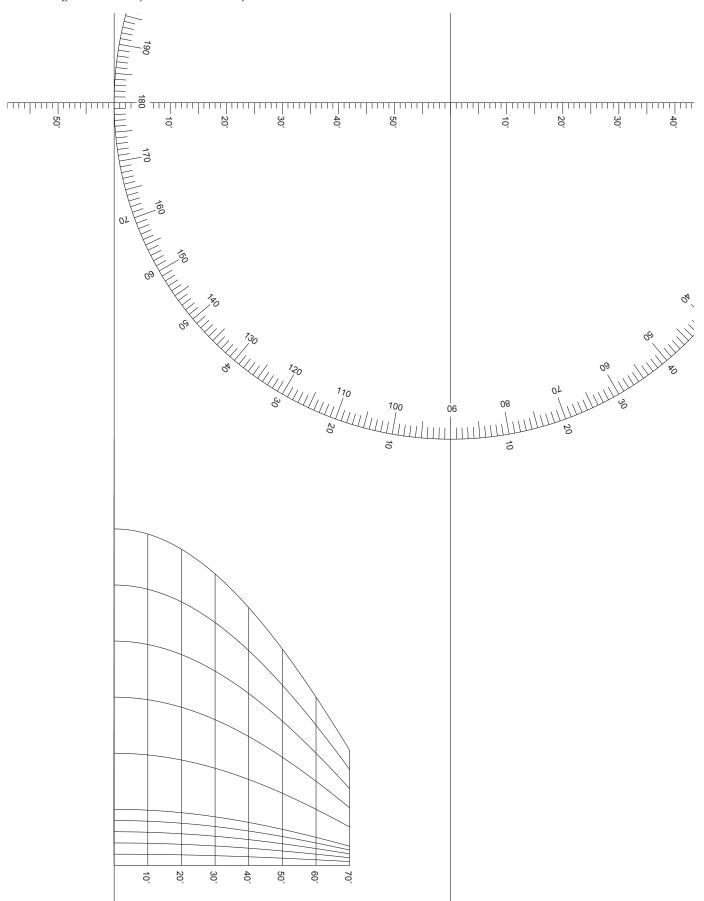
	AWS	AWA	Location Description and Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
	10	11	12

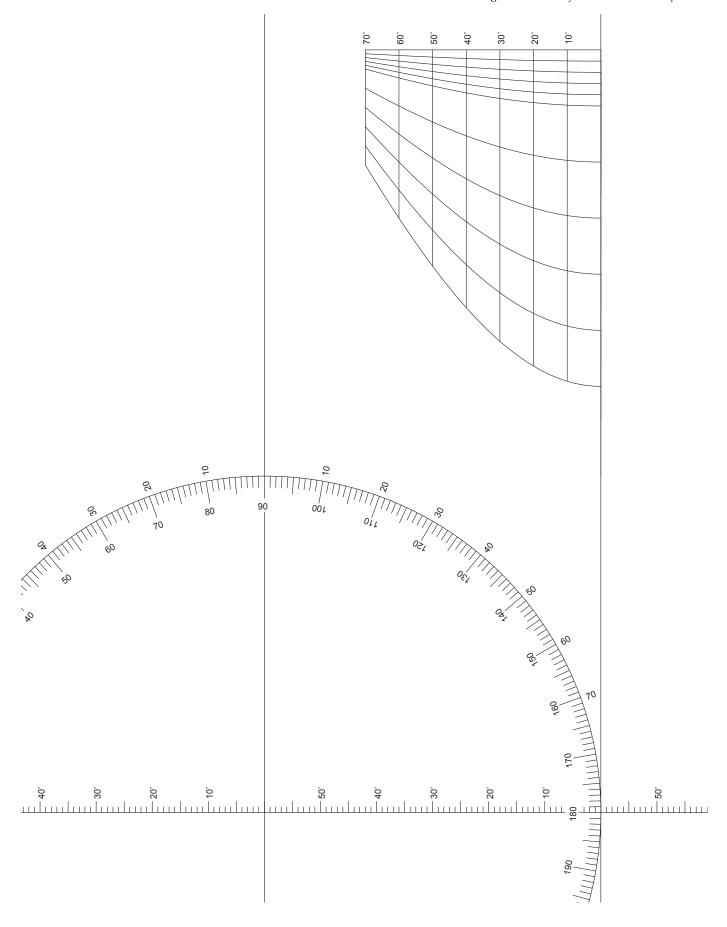
	Day#	Date	Description	Time	Log	Lat/Lon	Course	Speed	Baro
1			Depart						
2			Mid-morning						
3			Mid-day						
4			Mid-afternoon						
5			Anchorage						
6			Depart						
7			Mid-morning						
8			Mid-day						
9			Mid-afternoon						
10			Anchorage						
11			Depart						
12			Mid-morning						
13			Mid-day						
14			Mid-afternoon						
15			Anchorage						
16			Depart						
17			Mid-morning						
18			Mid-day						
19			Mid-afternoon						
20			Anchorage						
21			Depart						
22			Mid-morning						
23			Mid-day						
24			Mid-afternoon						
25			Anchorage						
26			Depart						
27			Mid-morning						
28			Mid-day						
29			Mid-afternoon						
30			Anchorage						
	1	2	3	4	5	6	7	8	9

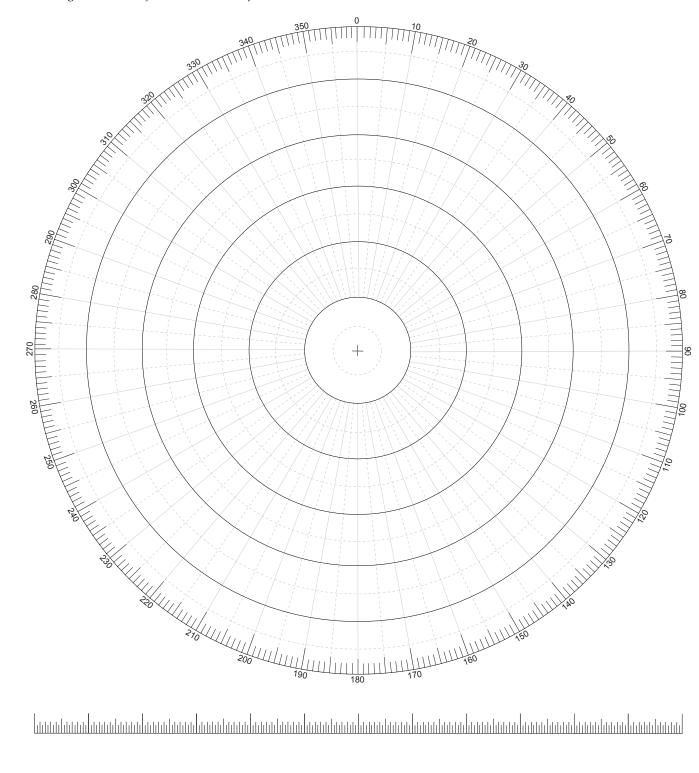
	AWS	AWA	Location Description and Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
	10	11	12

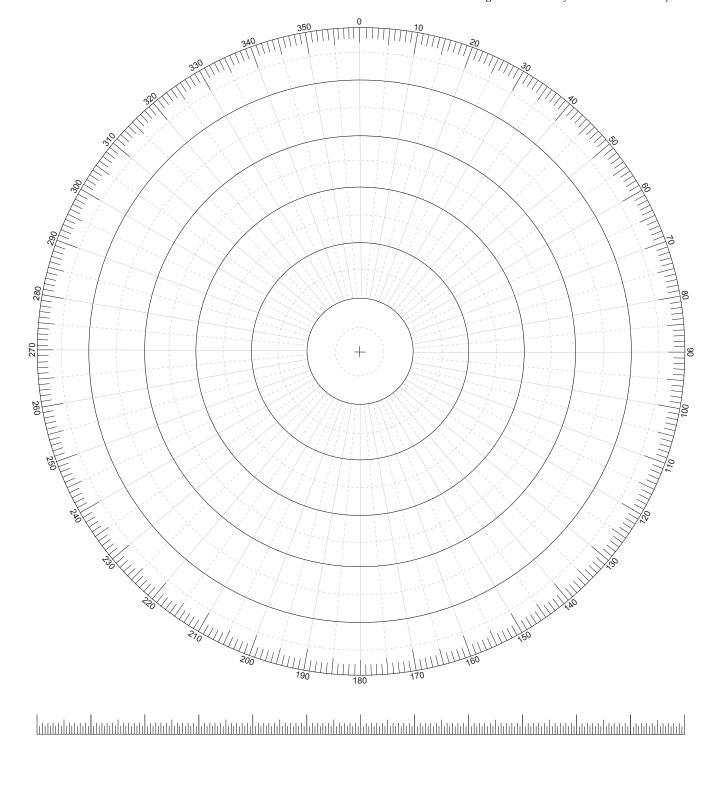


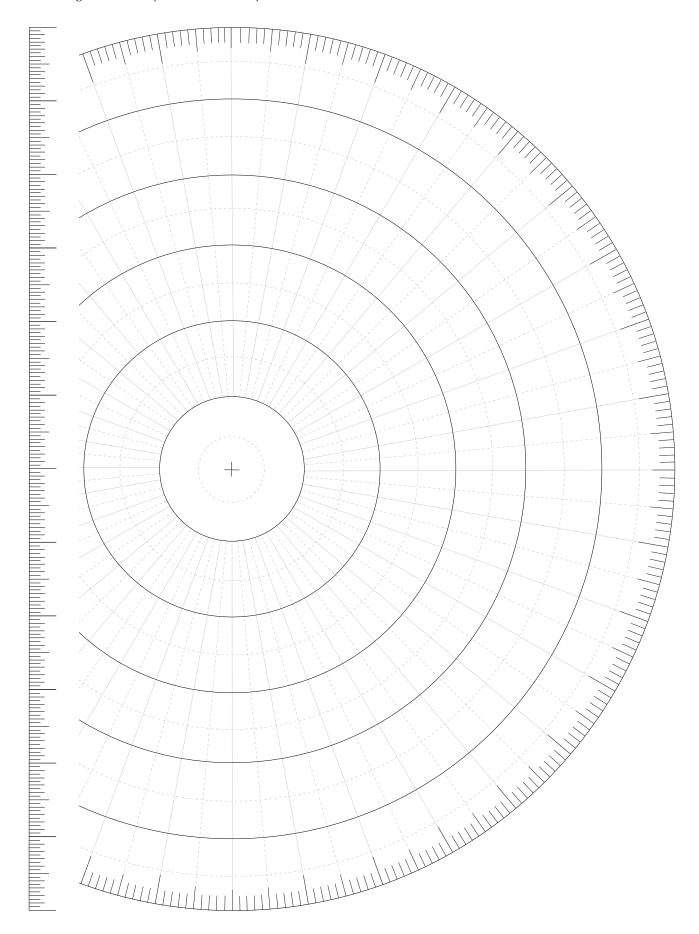


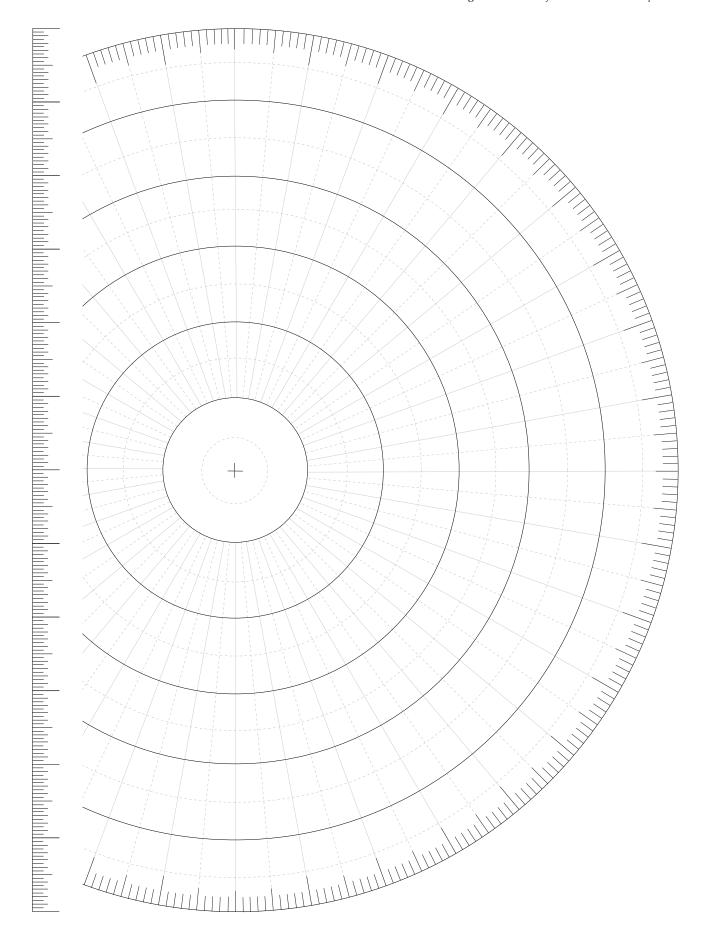


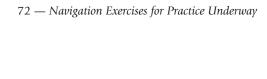












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