©

Total GHA	75 deg.	18.70 min.	
DR Lo	73 deg.	15.50 min.	W
LHA	2 deg.	3.20 min.	
DR Lat	44 deg.	30.50 min.	N
DEC	12 deg.	12.70 min.	N
Ho	57 deg.	40.50 min.	
Hc	57 deg.	39.32 min.	
a	1.18 n. mi.	Toward	
Zn	183.8 deg.	Z N 176.25 W	

Use SR 96 worksheet to check data on the front of ED SR96a & ED SR 96b Sight Reduction Forms

LHA	2.05333 deg.		
DR Lat	44.50833 deg.		
DEC	12.21167 deg.		
Hc	57.65537 deg.		

SR via LOC, H.O. 229 & NASR Methods
Enter Body, Total GHA, DEC & Ho from the front of ED SR 96a or ED SR 96b Sight Reduction Forms Into Yellow Cells.

To Clear Data Cells Click On This Box

Use "Nav Bodies" worksheet to specify DR Position, Date & Time

Calculated values needed for entry on the ED SR 96a or ED SR 96b Sight Reduction Forms are shown in turquoise cells

Sight Reduction -- Intercept and Azimuth by the LAW of COSINES Method

EP Lat	44 deg.	29.32 min.	N
EP Lo	73 deg.	15.61 min.	W

Body SPICA Limb NA

Sight Number 9

Time Diagram ▪ 15° Mark (Hour) • 5° Mark (1/3 Hour)

Moon, Planet or Star

LHA of Aries 152.09 deg.

Aries

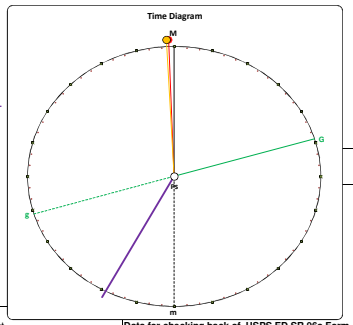
West is Counterclockwise (CCW)
East is Clockwise (CW)
O marks South Pole (Ps)
M--Ps is Upper Btanch of Observer's Meridian
m--Ps is Lower Branch of Observer's Meridian
G--Ps is the Upper Btanch of Greenwich Meridain
g--Ps is the Lower Branch of Greenwich Meridain

On the Time Diagram the Sun is Positioned by **GMT**

The Time Diagram shows the **Mean Sun**

Date & MeanTime @ Greenwich 20-Aug-17 17:04:31

Time Diagram



Data for checking back of USPS ED SR 96a Form & CLS 98 Plotting Sheet

Steps for Nautical Almanac Sight Reduction Intercept & Azimuth by NASR method

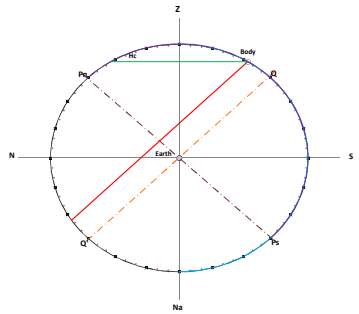
DR Lat	44 deg.	30.50 min.	N
DR Lo	73 deg.	15.50 min.	W
Total GHA	75 deg.	18.70 min.	
Asm Lo	73 deg.	18.70 min.	W
Asm Lat	45 deg.	N	Asm LHA 2 deg.
A	1 deg.	25 min.	
			Z 88.6 deg.
B	44 deg.	59 min.	
DEC	12 deg.	13 min.	N
F	57 deg.	12 min.	
A°	1 deg.	F° 57 deg.	

Data for the body SPICA shown in the lavender cells in this box was calculated by the "**Nav Bodies**" worksheet.
The value of **Hc** shown in cells C14 & E14 should agree with the value of **Hc** shown here within ±0.3 arc minutes. Hc 18 deg. 32.90 min.

Total GHA	23 deg.	49.48 min.	
Dec	11 deg.	15.01 min.	S

Scroll Down to Rows 61 through 94 for data needed to check back of USPS ED SR96b Form "H.O. PUB NO. 229 Sight Reduction"

Diagram on the Plane of the Observer's Celestial Meridian



Elevated Pole is North Pole

Observer's Latitude	44 deg.	30.5 min.	N
Observer's Meridian	73 deg.	15.5 min.	W
GHA of Sun	75 deg.	18.7 min.	
GHA of Aries	225 deg.	21.0 min.	
SPICA	Zn 184 deg.		
LHA of Body	2 deg.	3.2 min.	
DEC of Body	12 deg.	12.7 min.	N
Hc of Body	57 deg.	39.3 min.	

Celestial Horizon N — S
Celestial Equator Q — Q'
Polar Axis Pn — Ps
Declination of Body
Computed Altitude of Body — Hc
West is in Front & East is Behind the Plane of the Observer's Meridian
Prime Vertical Circle Z — Na
Hour Circle of a Body West of Observer
Hour Circle of a Body East of Observer
Vertical Circle of a Body West of Observer
Vertical Circle of a Body East of Observer
Observer's Celestial Meridian ▪ 15° Mark • 5° Mark

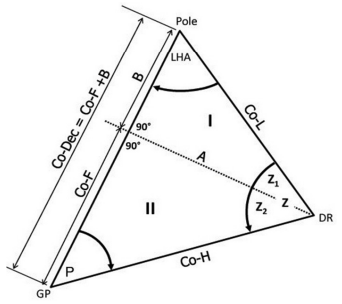
H	56 deg.	59.19 min.	P	88.2 deg.	Z_o 88.5 deg.
Corr 1	11.99 min.	← { F'	12	P°	88 }
Corr 2	-0.81 min.	← { A'	25	Z_o°	88 }
Hc	57 deg.	10.37 min.			
Ho	57 deg.	40.50 min.			
				Z	N 177.10 W
AP to NASR LOP distance	30.13 n. mi.	Toward	Zn	183 deg.	
Intercept • LOP Crossing Lat	44 deg.	29.89 min.	N		
Intercept • LOP Crossing Lo	73 deg.	20.18 min.	W		
DR to NASR LOP Distance	0.73 n. mi.	Toward	Zn	182.9 deg.	
DR_EP Lat	44 deg.	29.77 min.	N		
DR_EP Lo	73 deg.	15.54 min.	W		

Ψ 2.3E-06 min.

This Worksheet requires the Excel Solver Add-in to calculate values for DR_EP Lat & DR_EP Lo

Click on this box to solve for DR_EP Lat & DR_EP Lo

NASR Triangles



DR Lat	44 deg.	30.50 min.	N
DR Lo	73 deg.	15.50 min.	W
Total GHA	75 deg.	18.70 min.	
Asm Lo	73 deg.	18.70 min.	W
Tab LHA	2 deg.		
Tab Hc	56 deg.	57.34 min.	
Total Corr	12.69 min.		
Hc	57 deg.	10.03 min.	
Ho	57 deg.	40.50 min.	
AP to HO 229 LOP distance	30.47 n. mi.	Toward	Zn 183.6 deg.
Intercept • LOP Crossing Lat	44	29.57	N
Intercept • LOP Crossing Lo	73	20.95	W
DR to HO 229 LOP Distance	-- n. mi.	Away	
DR_EP Lat	--	--	--
DR_EP Lo	--	--	--

This Worksheet requires the Excel Solver Add-in to calculate values for DR_EP Lat & DR_EP Lo

Sight Number 9 Body SPICA Limb NA

Date & MeanTime @ Greenwich 20-Aug-17 17:04:31

d	59.94 min.	DSD	0.01 min.
d1 Corr	10.58 min.	Z diff	-0.09 deg.
d2 Corr	2.10 min.		
DSD Corr	0.01 min.		
Total Corr	12.69 min.		

Data needed for checking back of USPS SR ED 96b Form & CLS 98 Plotting Sheet
Sight Reduction -- Intercept and Azimuth by H.O. PUB. NO. 229 "Sight Reduction Tables for Marine Navigation"

Tab Dec	12 deg.		N
Dec Incr	12.70 min.		
Asm (Tab) Lat	45 deg.		N
Dec and Lat have	Same Names		
Tab Z	176.41 deg.		
Z Corr	-0.02 deg.		
Z	N 176.39 W		

Zn 183.6 deg.

Ψ 4.28903 min.

Click on this box to solve for DR_EP Lat & DR_EP Lo

Facsimile of HO 229 Table Excerpt Needed for Solution

2 • LHA
358 • LHA

Declination and Latitude have Same Names

45 • Latitude

	Dec°	Hc'	Hc'	d'	Z°
	10		54	57.46	59.94	176.57
	11		55	57.40	59.94	176.49
Tab Dec →	12		56	57.34	59.94	176.41
	13		57	57.28	59.93	176.33
	14		58	57.21	59.93	176.24

Celestial Sphere & the Navigational Triangle