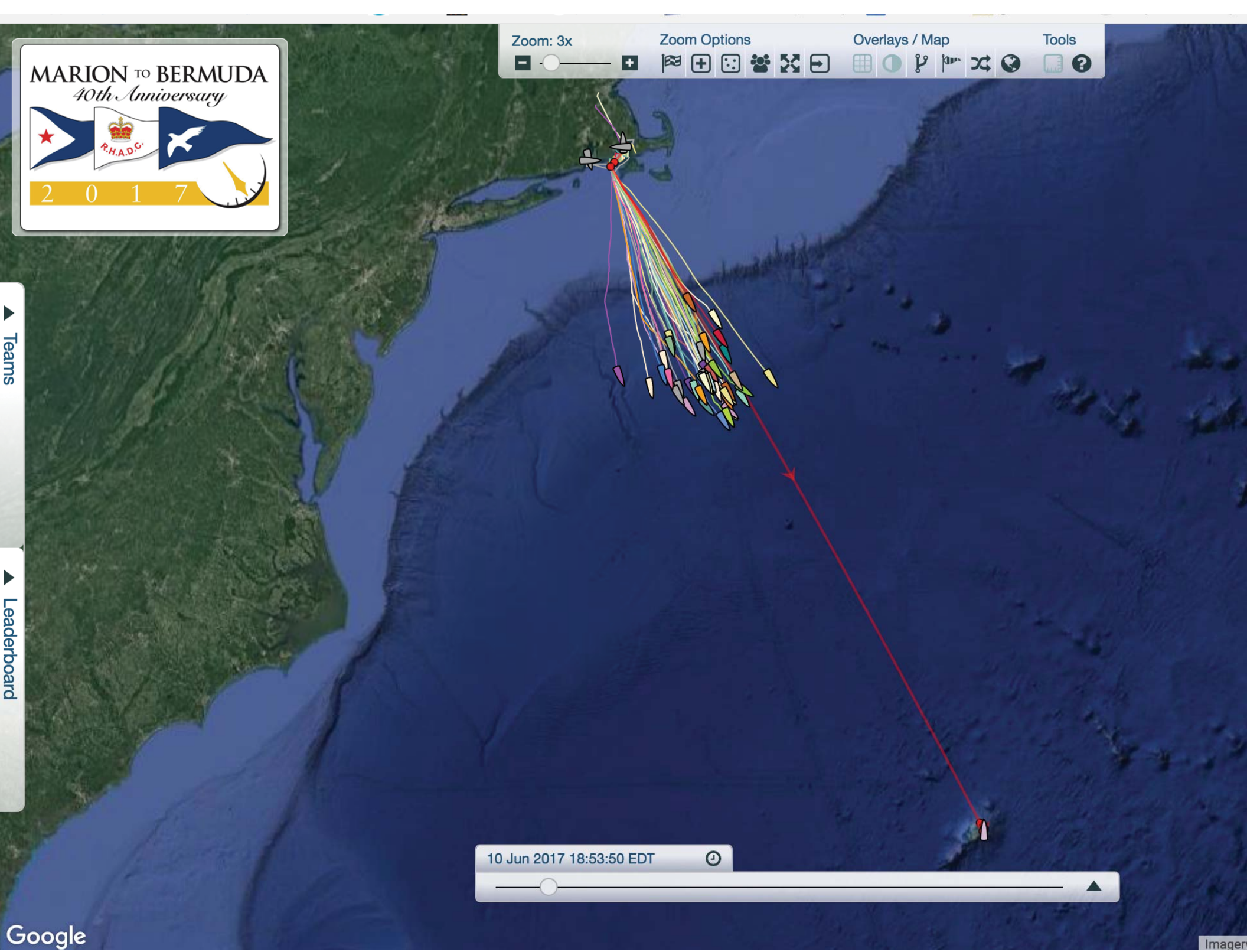
BECOMING A CELESTIAL NAVIGATOR IN THE

MARION TO BERMUDA RACE

BECOMING A CELESTIAL NAVIGATOR

BACKGROUND


TIARA
MARBLEHEAD TO HALIFAX
OCEAN RACE · 2012
PLASTIMO
John


MARION TO BERMUDA
40th Anniversary
R.H.A.D.C.
2017
Zoom: 3x
Zoom Options
Overlays / Map
Tools
Teams
Leaderboard
10 Jun 2017 18:53:50 EDT
Google

Race Requires Stout Sails and Strong Stomachs

Men Often Seasick in the Newport-to-Bermuda Test

By JOHN RENDEL

More than 100 cruising-type sailing yachts of thirty-four to seventy-two feet, about 800 men and possibly a scattering of brine-steeped women will begin the Newport-to-Bermuda race next Saturday.

Nobody knows at present just how many from the original record 121 entries will go. All will not be at the Brenton Reef Lightship line for the start of America's classic ocean race. They never are. Two already are known to have withdrawn.

And it is fairly certain that all that start will not cross the finish line off St. David's Head. At least a few always put into ports along the way for one

yawl Finisterre, winner in 1956, which again

Occasionally the lawn of the Royal Bermuda Yacht Club has groups of anxious wives awaiting word of their seafaring spouses, overdue when most others have finished. Fortunately, all have showed up even-

One Sinbad Really Sank His Teeth Into Problem

Cruising Club has partly waived its ban on the use of radio-telephone transmitters this year. They may be used on the fifth day at sea. By that time, it is figured, the race results should be established.

It's Not a Bowl of Cherries

Ocean racing is an amateur sport for all but a few professionals on the larger vessels. The amateurs do it for fun. "What fun?" ask the shorebound and those yachtsmen who prefer their sailing in easy afternoon doses. There can be gales and soaking rain and wetting seas and seasickness and midnight clawing for canvas

Bermuda Race Summaries

1958 CLASS A

Yacht and owner.	Footage Over-all.	Rig.	Elapsed Time.	Corrected Time.
Legend, Wells Morss	52	Y	4:08:34:17	3:20:20:33
Gesture, A. Howard Fuller	57	SL	4:08:06:41	3:21:07:33
Argyll, William T. Moore	56	Y	4:08:19:21	3:21:33:36
Stormy Weather, James O'Neill	53	Y	4:09:24:56	3:21:35:10
Drumbeat, Max Aitken	58	SL	4:10:04:47	3:22:33:28
Caribbee, Seabury Stanton	58	Y	4:08:32:37	3:23:21:15
Nimrod V, Robert L. Hall	55	C	4:07:43:41	3:23:21:15
Caper, H. Irving Pratt	56	SL	4:09:21:19	3:23:23:35
Dyna, Clayton Ewing	56	Y	4:08:12:34	3:23:41:56
Rob Roy, August Boorstein	56	Y	4:10:09:31	4:00:20:11
Malabar +III, Samuel Zorovich	53	S	4:12:13:08	4:01:04:53
Good News, J. H. Hedden	64	Y	4:06:23:48	4:01:11:37
Salmagal II, Arthur Homer	54	Y	4:13:14:44	4:01:29:35
Sea Lion, Gilbert Verney	66	Y	4:07:23:24	4:01:29:52
Nina, de Coursey Fales	59	S	4:08:06:38	4:01:37:26
Criollo, Luis H. Vidana	67	Y	4:08:20:30	4:02:12:42
Enchanta, Richard Stiegler	66	Y	4:09:33:44	4:03:04:32
Barlovento, P. S. du Pont 3d	64	S	4:09:27:16	4:03:05:26
Highland Light, U. S. Naval Acad.	61	C	4:08:20:27	4:03:31:33
Windigo, W. S. Gubelman	72	Y	4:07:28:14	4:04:50:11
Cotton Blossom IV, Walter Wheeler	71	Y	4:07:20:31	4:05:03:02
Gulf Stream, M. E. Hemerdinger	70	Y	4:08:51:21	4:05:06:41
Pickle, Royal Canadian Navy	58	Y	4:11:48:30	4:05:29:54
Petrel, U. S. C. G. Academy	69	Y	4:07:21:02	4:05:45:45
Black Watch, Dr. G. W. Brooks	68	Y	4:08:17:28	4:05:[illegible]:17
Royono, U. S. Naval Academy	71	Y	4:08:05:36	4:05:56:40
Manitou, U. S. C. G. Academy	61	Y	4:14:41:08	4:07:01:27
Ticonderoga, N. Y. S. M. Academy	72	K	4:07:39:06	4:07:39:06
Fortune, Monroe Feiring	51	S	Withdrew	

Newport-Bermuda Summaries

By the Associated Press

1960 CLASS A

Yacht and Owner: (Fleet position in parentheses.)	Footage Over-all.	Rig.	Elapsed Time.	Corrected Time.
Dyna, Clayton Ewing (2)	58	Y	121:40:34	114:04:00
Jubilee, Francis Wetherill (6)	60	Y	123:37:09	116:23:14
Caper, H. Irving Pratt (9)	56	SL	125:14:35	116:27:45
Barlovento II, Pierre duPont (7)	72	K	123:45:10	117:32:32
Germania V, Hans Howaldt (3)	65	Y	123:23:51	118:09:19
Caribee, Seabury Stanton (22)	58	Y	127:22:02	118:51:17
Java, Alfred Meyer Jr. (119)	56	SL	127:22:02	118:51:17
Royono, Naval Academy (14)	71	Y	125:38:38	119:46:01
Venturer, Harry G. Haskell Jr. (1)	73	Y	121:13:12	119:48:38
Djinn, Henry S. Morgan (16)	62	SL	125:50:06	121:40:20
Enchanta, Richard Steigler (30)	66	Y	128:35:02	121:57:14
Highland Light, Naval Academy (20)	62	SL	126:56:59	123:18:07
Escapade, B. M. Baldwin (13)	72	Y	127:28:05	124:29:52
Petrel, Coast Guard Academy (28)	69	Y	128:36:29	127:35:44
Manitou, Coast Guard Academy (48)	61	Y	131:29:46	125:10:02
Nimrod V, Gene Trept (49)	55	SL	131:41:29	124:16:21
Skookum III, Burton Raymond (75)	63	S	135:41:14	129:38:58
Nam Sang, J. Cutter-A. Robbs (80)	66	C	136:17:33	132:10:51
Teragram, Coast Guard Acad. (94)	58	S	139:06:03	132:17:45
Cotton Blossom IV, W. Wheeler Jr.	71	Y	No Time Available	
Windigo, Walter Gubelmann	71	Y	No Time Available	
Nina, Decoursey Fales	59	S	No Time Available	

BECOMING A CELESTIAL NAVIGATOR

RACE PREPARATION

Magnolia Beach near Gloucester, MA

Maybe a 24 hour trip offshore out and back with as much crew as possible so we can practice race... you can practice brining cold cuts.

That's exactly what I was thinking - overnighter at sea. 🚣‍♂️🐬

I'm comparing Delorme track with our DR, and I found your moon sight location on the plotting sheet. Looks very close. What time was that taken?

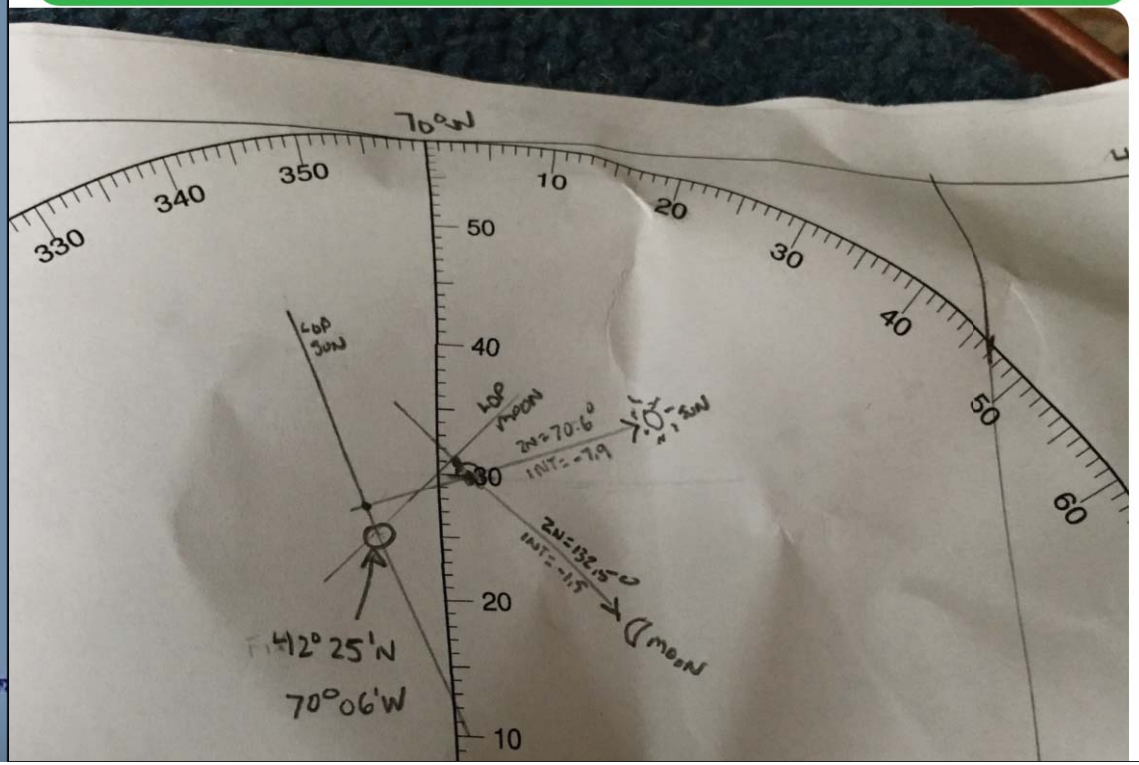
I wrote that down on the spiral ringed notepad titled "Celestial Sights 5-21-2017"

I took three sights in the morning... I'm pretty sure the first one was near 5am.

The second two I used to get a fix:

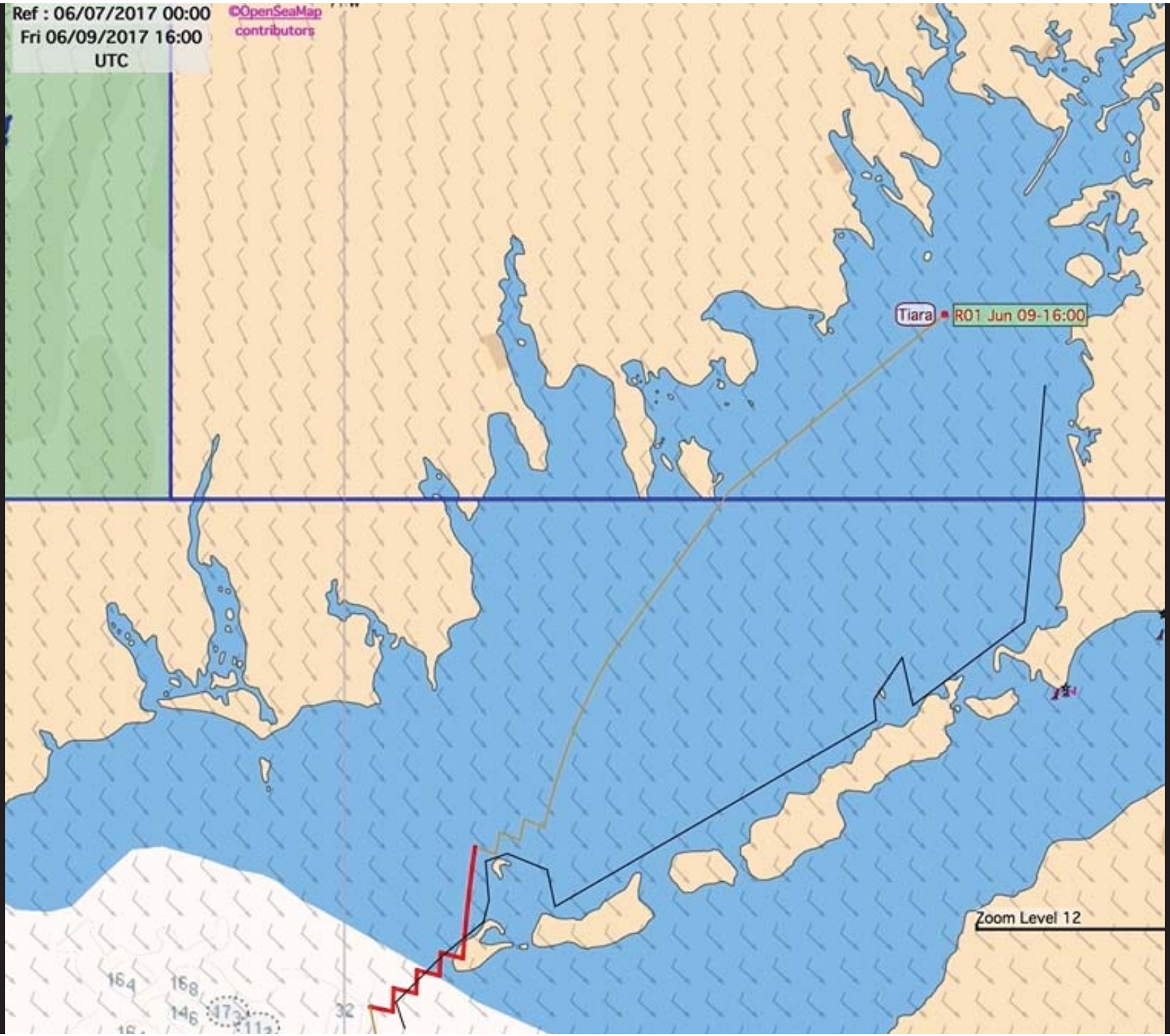
moon and sun between 6:10am and 6:15am

I have that plotting sheet with me and I'll send you a picture of it right now.

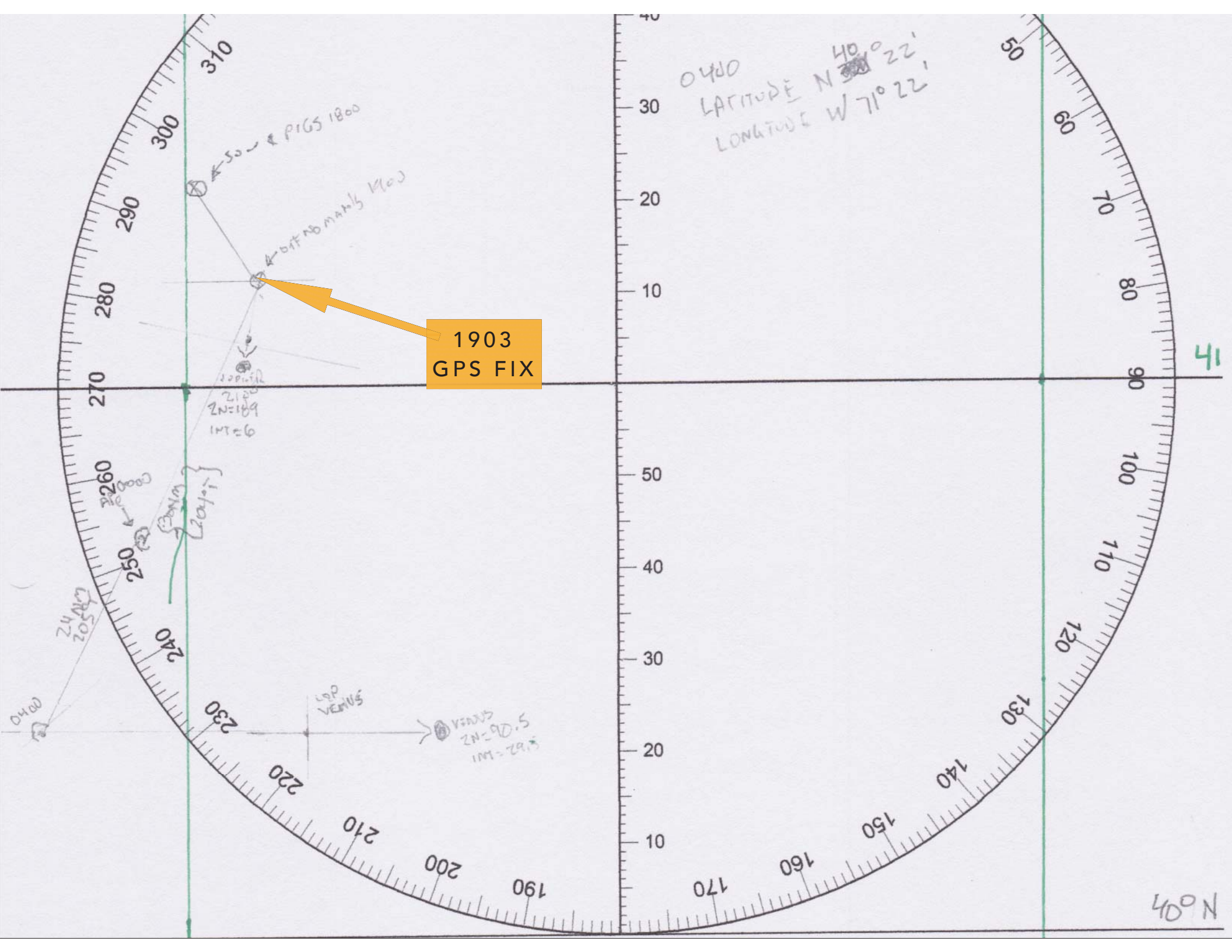


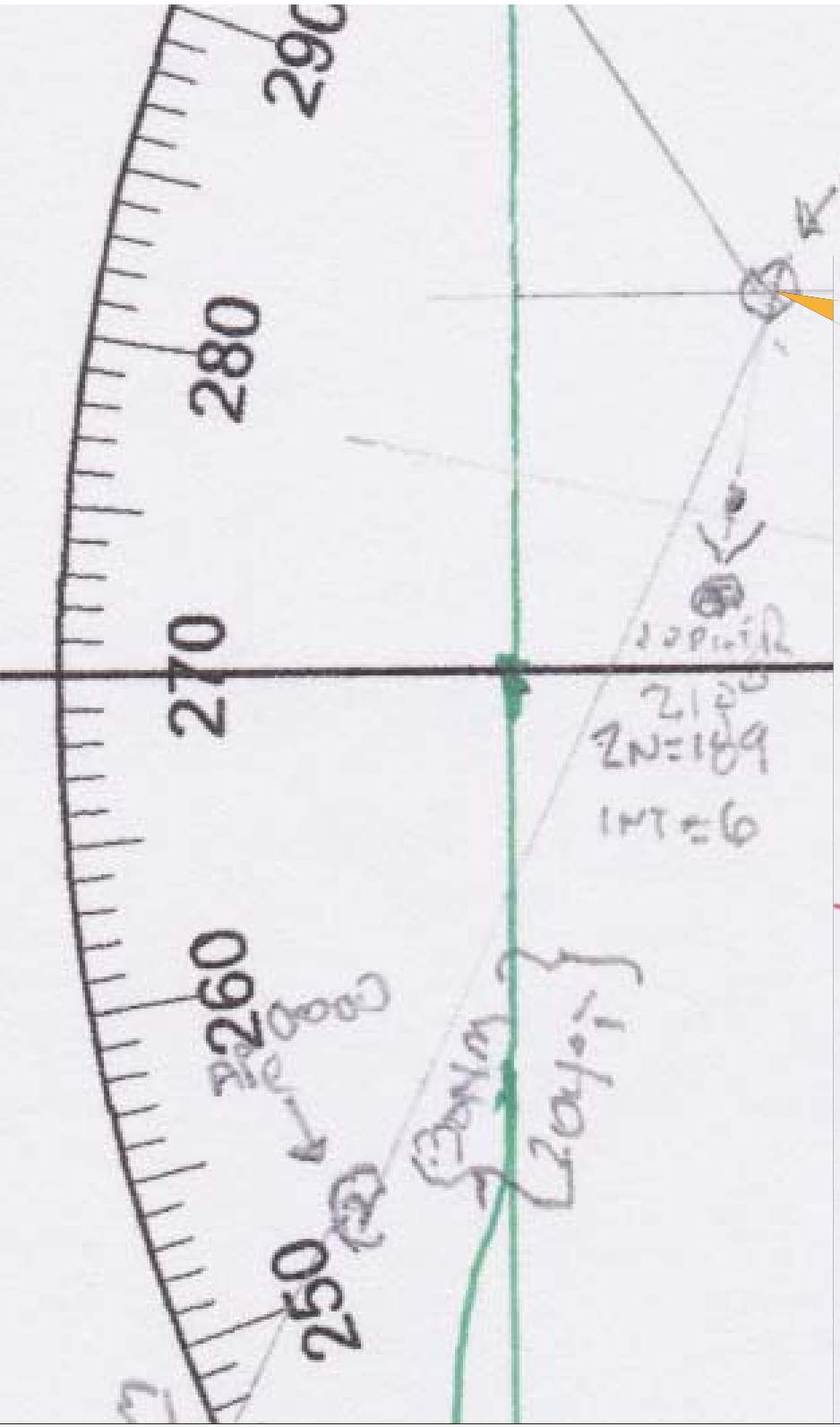
BECOMING A CELESTIAL NAVIGATOR

DAY ONE


Ref : 06/07/2017 00:00
Fri 06/09/2017 16:00
UTC
©OpenSeaMap
contributors
Tiara
R01 Jun 09-16:00
Zoom Level 12


BERMUDA
Somerset
Freetown
Rochester
Wareham
SAGAMORE
Sandwich
Orleans
Brewster
ONSET
Bourne
Dennis
Acushnet
Fall River
Marion
Barnstable
Chatham
Harwich
195
6
New Bedford
NORTH FALMOUTH
Mashpee
HYANNIS
Tiverton
Dartmouth
Portsmouth
Westport
EAST FALMOUTH
Falmouth
Middletown
Little Compton
WOODS HOLE
Buzzards Bay
Newport
Naushon Island
Vineyard Sound
Oak Bluffs
Martha's Vineyard
Edgartown
Chilmark
Nantucket Sound
Wauwinet
Polpis
GPS off at 20NM from No Man's Tower
09 Jun 2017 21:40:23 EDT
Map data ©2017 Google Imagery ©2017 TerraMetrics
5 km


1903
GPS FIX
0400
LATITUDE N 40° 22'
LONGITUDE W 71° 22'
41
40° N



JUPITER · 20:44:01

44° 41' 40"

188.4° = ZN

6 = INT

20:45:31

44° 39'

188.9 = ZN

6.1 = INT

20:46:12

44° 38'

189.1 = ZN

6.3 = INT

AVG ZN = 188.7

AVG INT = 6.15

MOON: 20:51:51

5° 49'

ZN = 121.8°

INT = ~~54.5~~ 44.3

20:53:12

6° 2' 30"

ZN = 121.7°

INT = 57.8

BECOMING A CELESTIAL NAVIGATOR

DAY TWO

2000	180°M	9.95
2100	190°M	19.5
2200	190°M	27.3
2300	190	34.9
0000	193	
0100	193	44.9
0200	193	50
0300	190	57
0400	190	64
0500	190	70
0600	190	76
0700	190	82.4
0800	190	90.2
0900	195°C	95.6
1000	170	103
1100	170	109
1200	170	115

2000 Summary: °T= Dist:

2000-2400:
avg C + Dev = Mag + Var = True
191 + 15 = 206 -2° = 204

← Course & Log Reading from Prior Day

0000-0400:
avg C + Dev = Mag + Var = True
191.5 + 15 = 206.5 -2 = 204.5

0400 Summary: °T= 204.5 Dist: 24 NM

0400-0800:
avg C + Dev = Mag + Var = True
190° - 2 = 188 - 15 = 173°

0800 Summary: °T= 173 -Dist: 25 nm

0800-1200:
avg C + Dev = Mag + Var = True
176°C -2 = 174 - 15 = 159°T

1200 Summary: °T= 159°T Dist: 19 nm

6/10 NAUTICAL TWILIGHT

VEGA 63° 33

VENUS 15° 33

→ 4:31:34

→ 433:22

→ 4°37.10 - 18°6.3'4

4:40:20 →
18°43'

ZN = 91.4
INT = 31

MOON

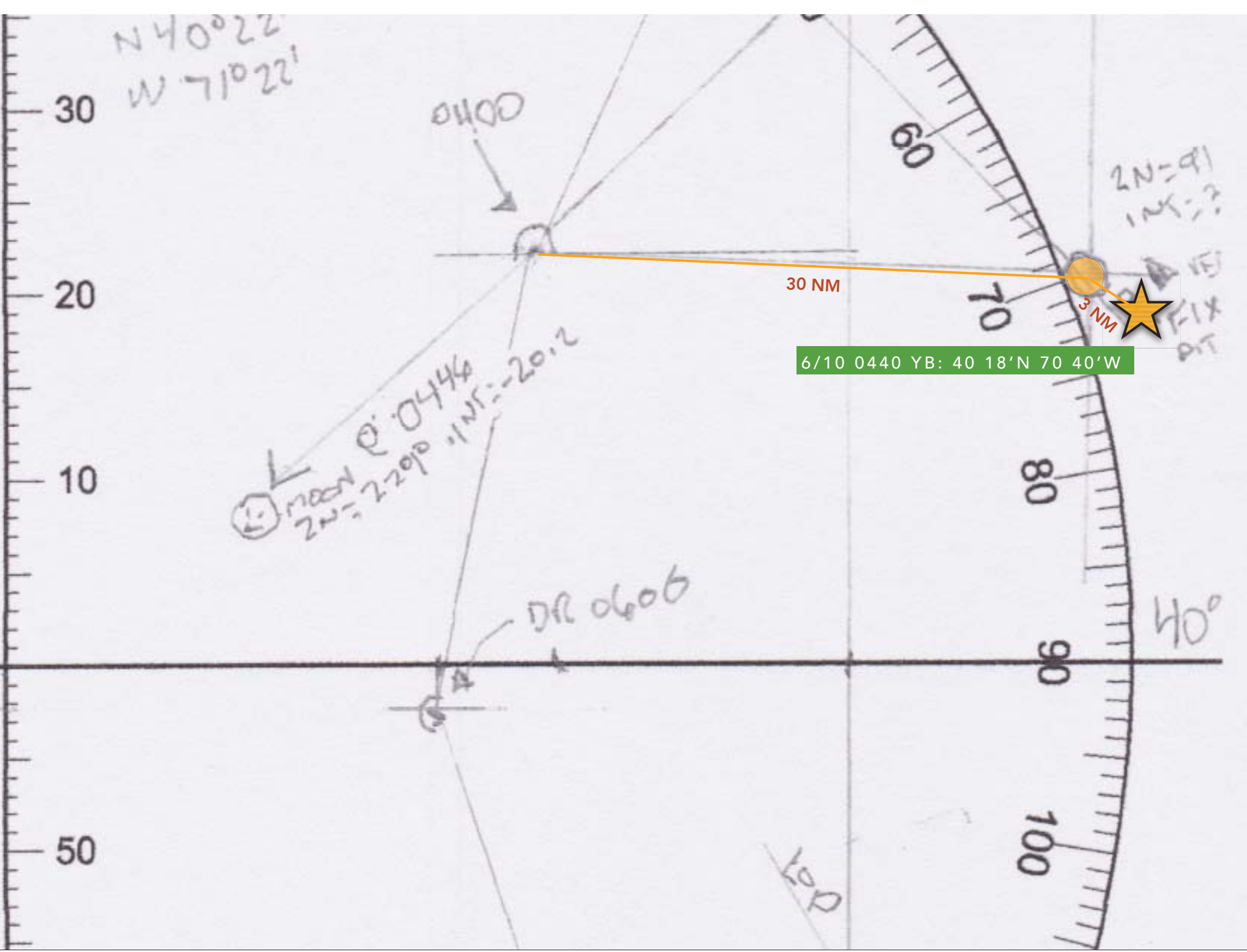
4:46:30 → 12°45.3'04
4:48:46 → 120°27'
4:50:46 → 120°08.10'11

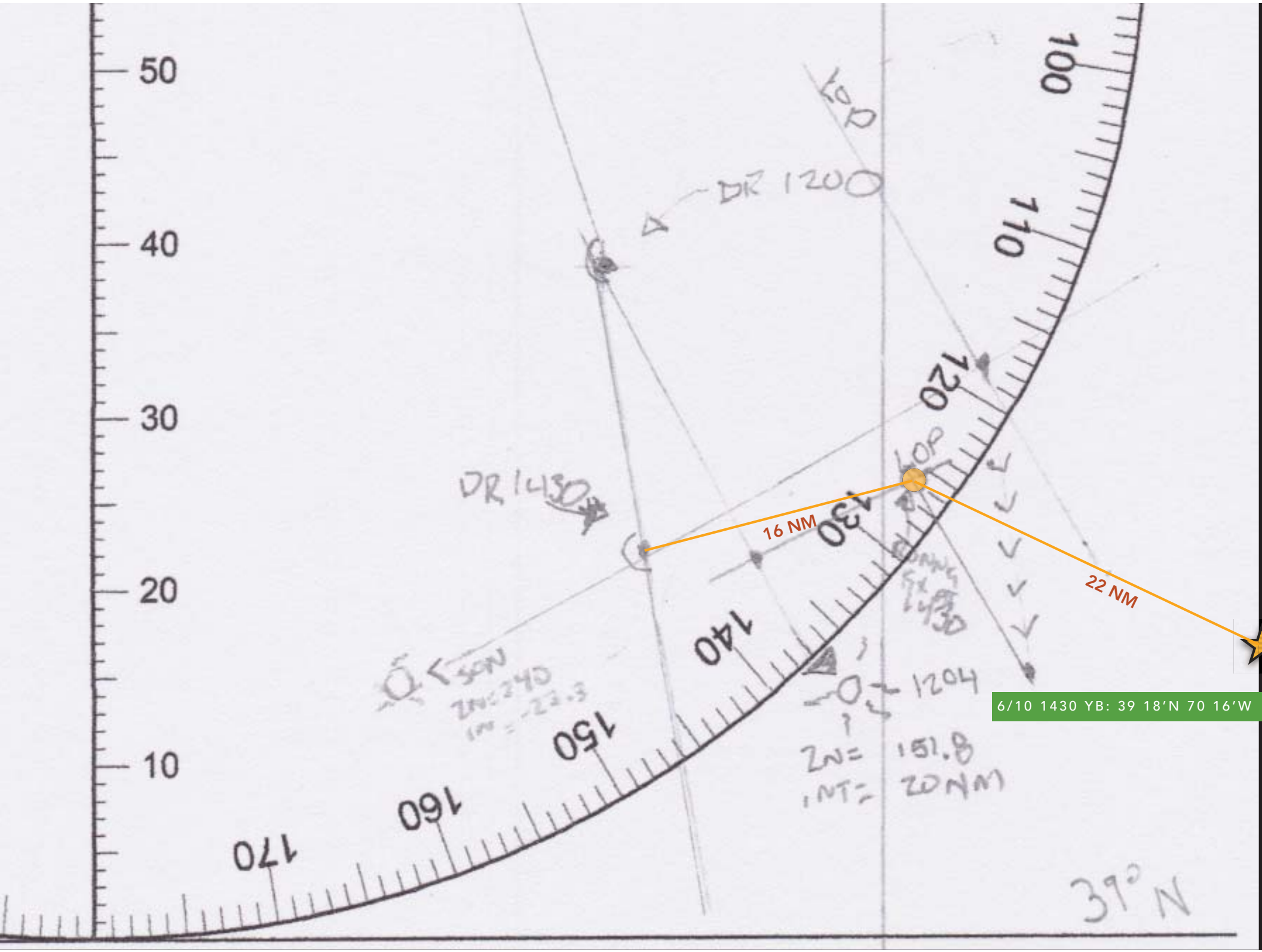
→ ZN = 229° INT = -59.6
→ ZN = 229° INT = -58.6
→ ZN = 229.8° INT = -60.4

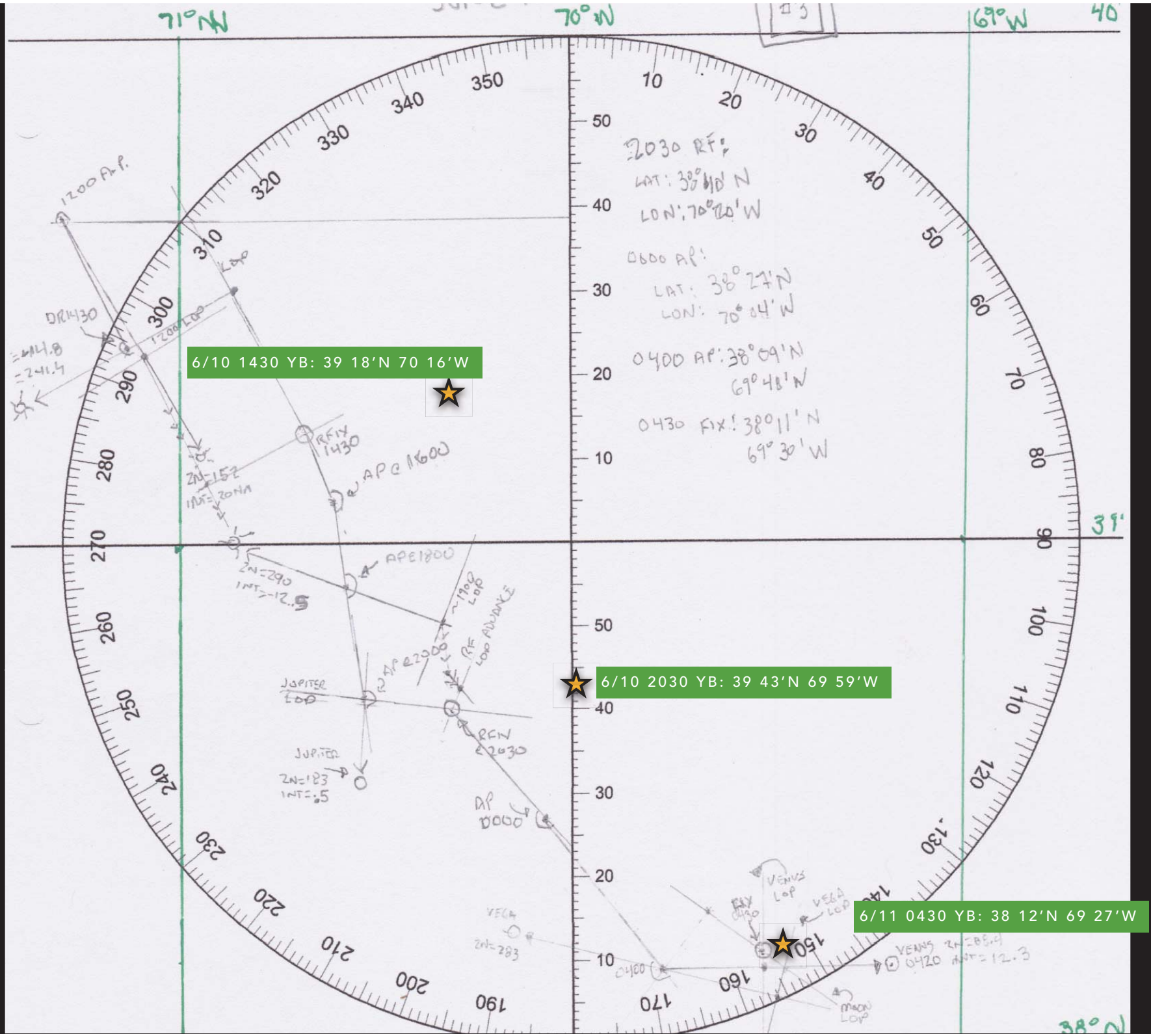
#2

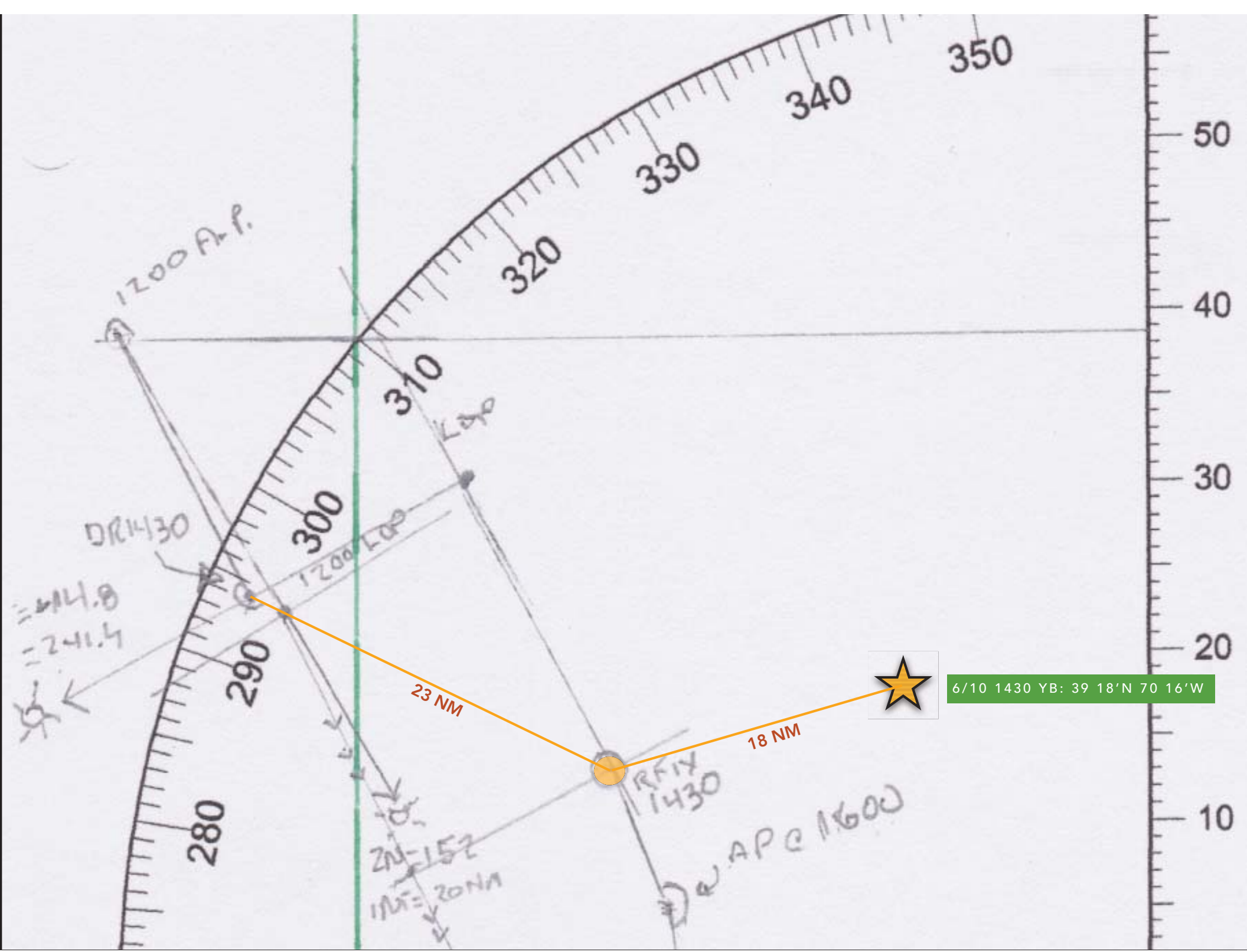
6/10 0440 YB: 40 18'N 70 40'W

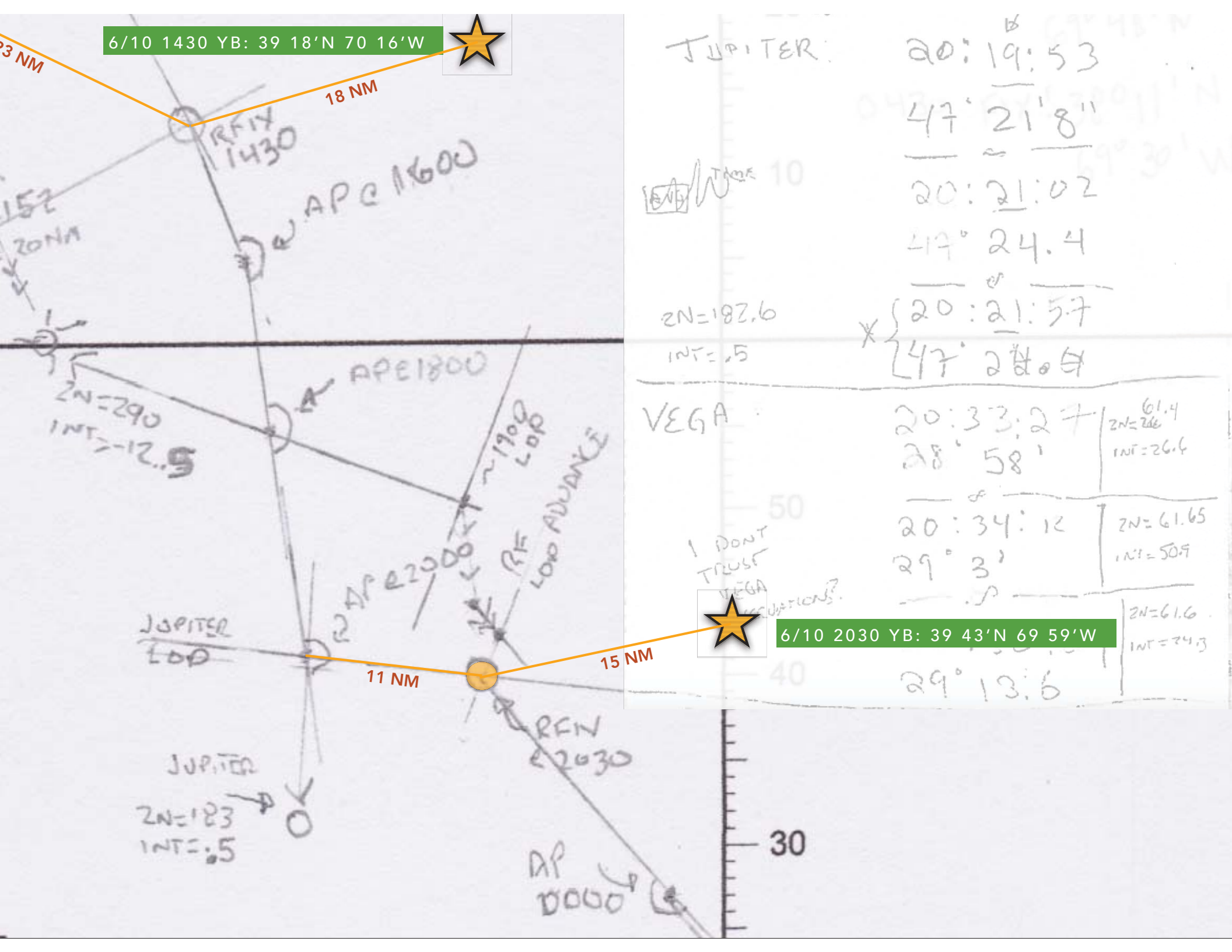
6/10 1430 YB: 39 18'N 70 16'W

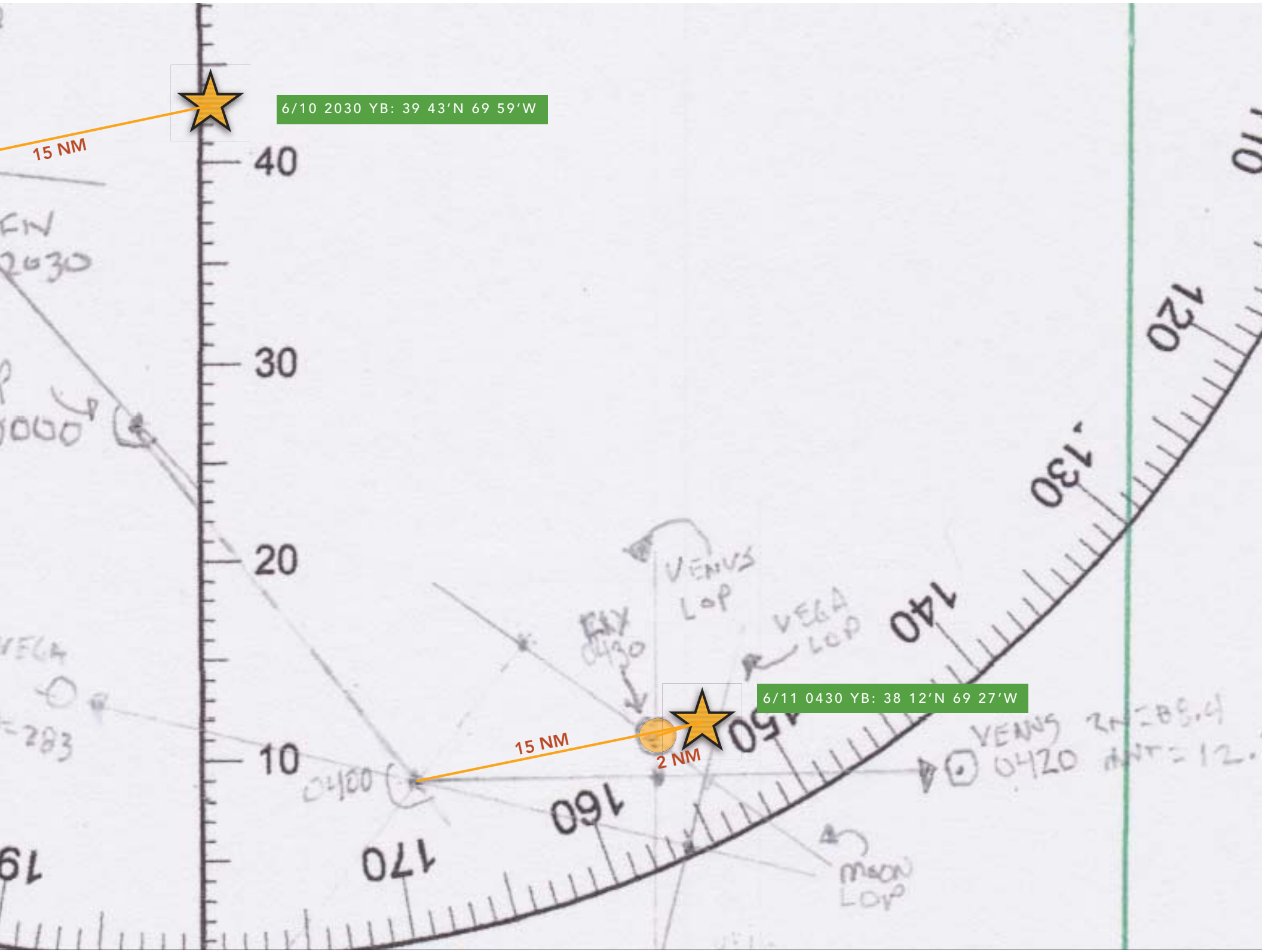

30 NM
3 NM
6/10 0440 YB: 40 18'N 70 40'W
0400
DR 0606
40°
30
20
10
50
60
70
80
90
100


50
40
30
20
10
100
110
120
130
140
150
160
170
LOP
DR 1200
DR 1430
16 NM
22 NM
LOP
1204
ZN= 151.8
INT= 20 NM
6/10 1430 YB: 39 18'N 70 16'W
39° N


6/10 1430 YB: 39 18'N 70 16'W
6/10 2030 YB: 39 43'N 69 59'W
6/11 0430 YB: 38 12'N 69 27'W
71°W
70°W
69°W
39°
38°N
2030 RF:
LAT: 38°40' N
LON: 70°20' W
0600 AP:
LAT: 38° 27'N
LON: 70° 04' W
0400 AP: 38° 09'N
69° 48' N
0430 FIX: 38° 11' N
69° 30' W
1200 A.P.
DR 1430
1200 LOP
RFIX 1430
AP @ 1600
APE 1800
1900 LOP
RAP 2300
RF LOP ADVANCE
RFIX 2030
JUPITER LOP
JUPITER ZN=123 INT=.5
AP 0000
VEGA ZN=283
VENUS LOP
RFIX 0420
VEGA LOP
VENUS 0420
MOON LOP


350
340
330
320
310
300
290
280
50
40
30
20
10
1200 A.P.
LOP
1200 LOP
DR 1430
=244.8
=241.4
23 NM
18 NM
6/10 1430 YB: 39 18'N 70 16'W
RFIX
1430
APC 1600
2N-15Z
INT= 20NM


6/10 1430 YB: 39 18'N 70 16'W
3 NM
18 NM
RFIX 1430
APC 1600
20NM
APE1800
2N=290
INT=-12.5
~1900 LOP
RF LOP ADVANCE
APE2000
JUPITER LOP
11 NM
15 NM
6/10 2030 YB: 39 43'N 69 59'W
RFIX 2030
JUPITER
2N=183
INT=.5
AP 0000
30
JUPITER
20:19:53
47° 21' 8"
Time
20:21:02
47° 24.4
2N=182.6
INT=.5
20:21:57
VEGA
20:33:27
28° 58'
2N=61.4
INT=26.4
20:34:12
29° 3'
2N=61.65
INT=50.9
I DONT TRUST VEGA OCCULTATIONS?
2N=61.6
INT=74.3
29° 13.6


6/10 2030 YB: 39 43'N 69 59'W
15 NM
6/11 0430 YB: 38 12'N 69 27'W
15 NM
2 NM
VENUS LOP
VEGA LOP
MOON LOP
40
30
20
10
120
130
140
150
160
170

BECOMING A CELESTIAL NAVIGATOR

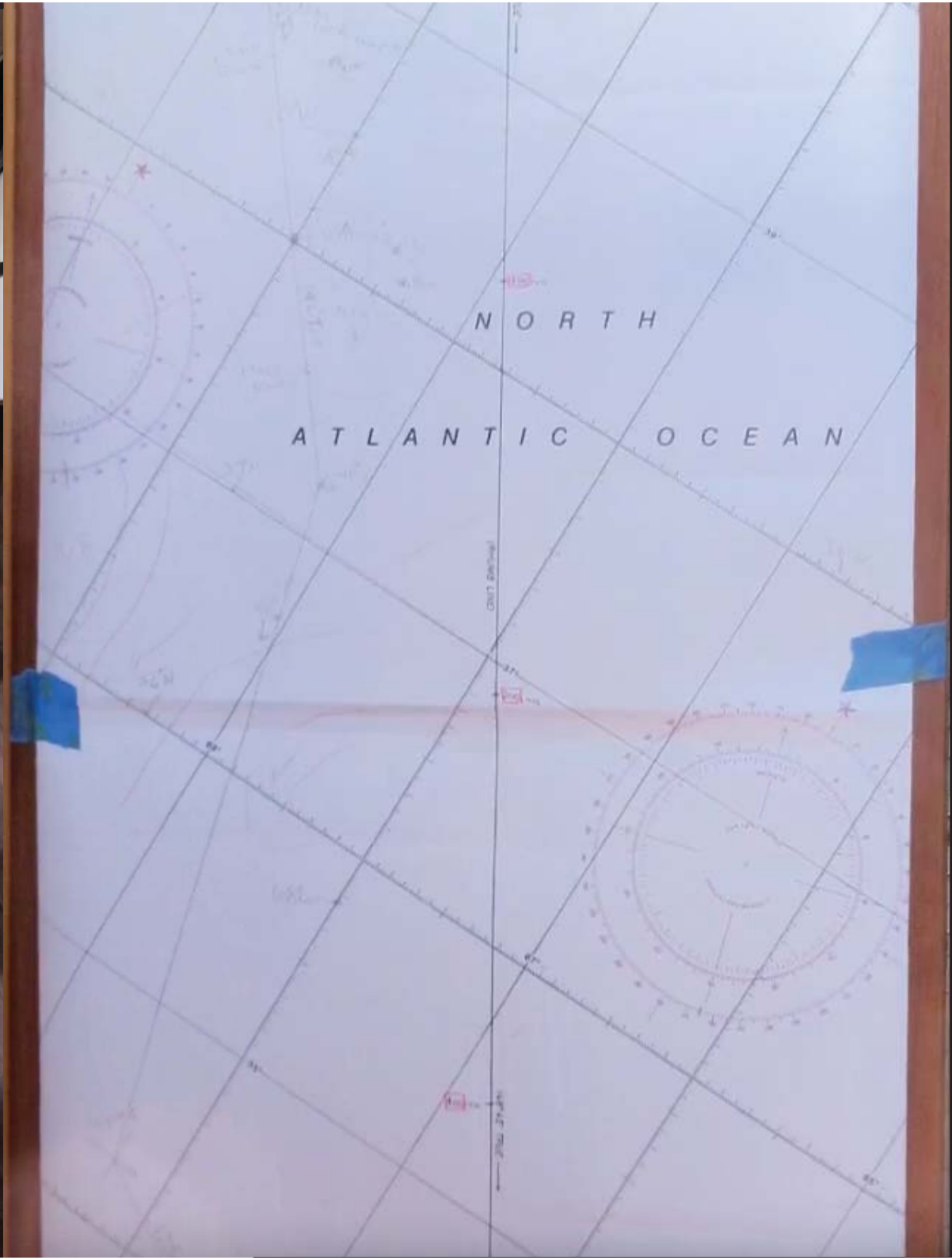
DAY THREE

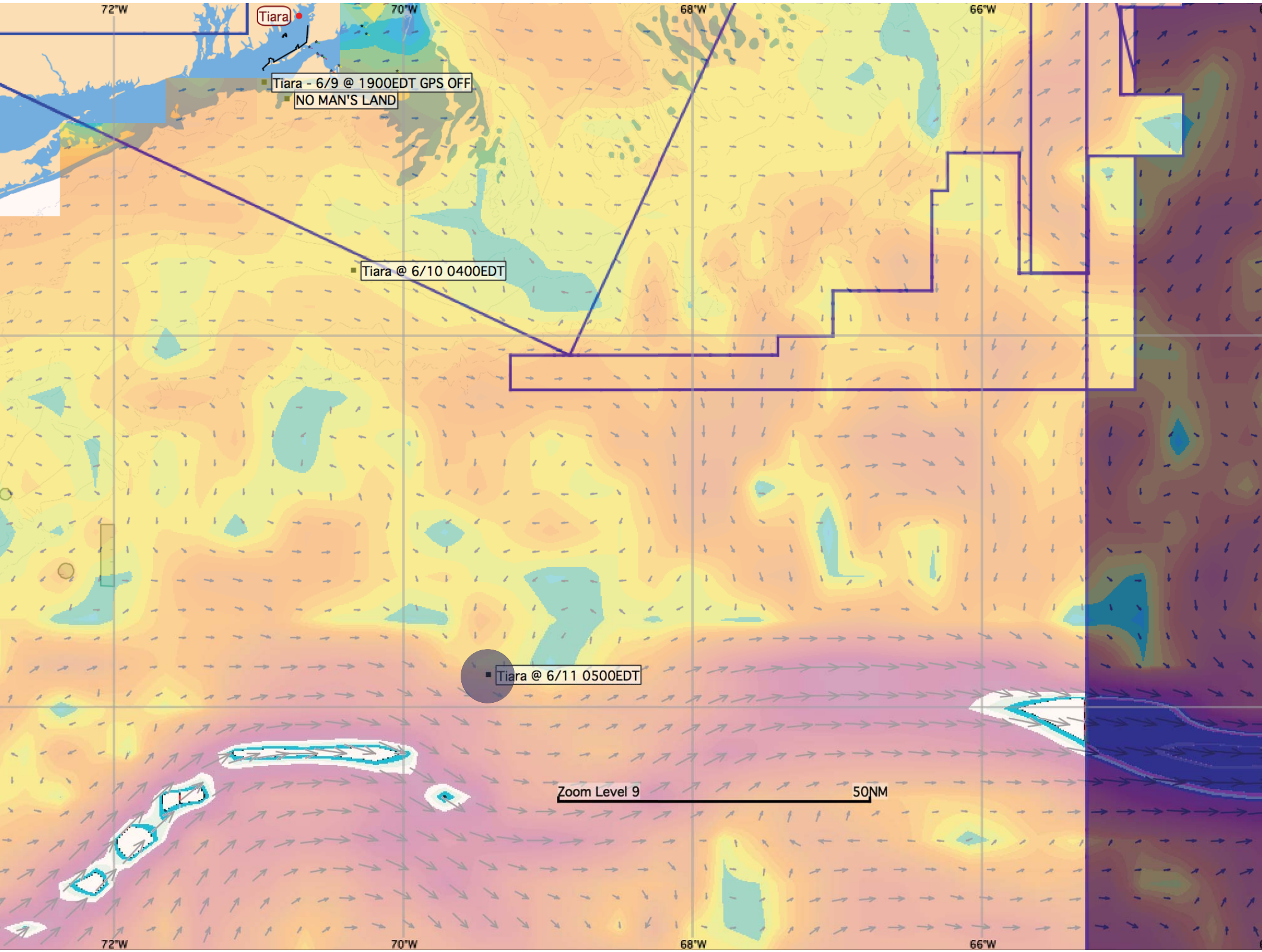
"Why don't we see any other boats?"

"Are you sure you know where we are?"

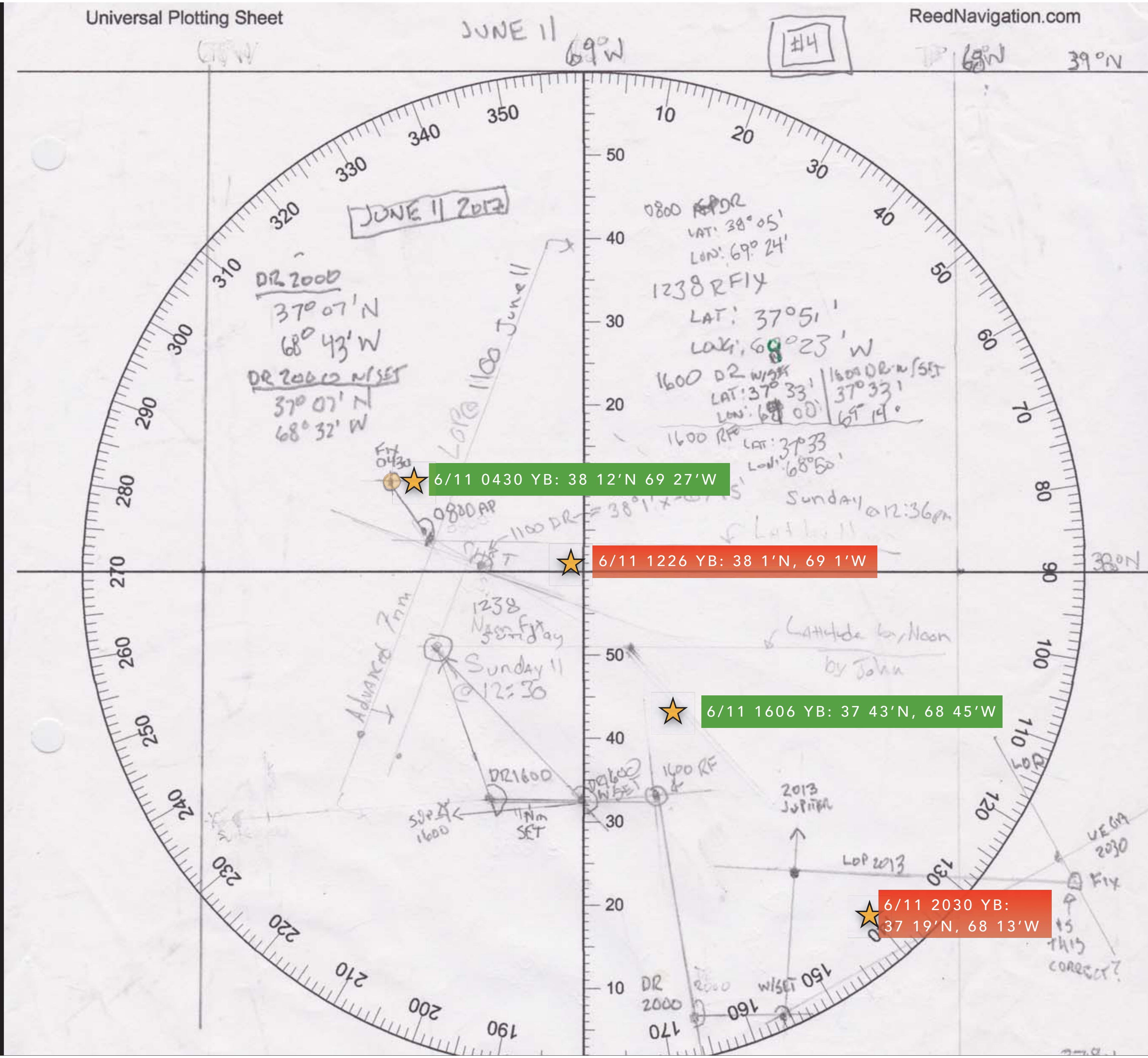
–THE CREW

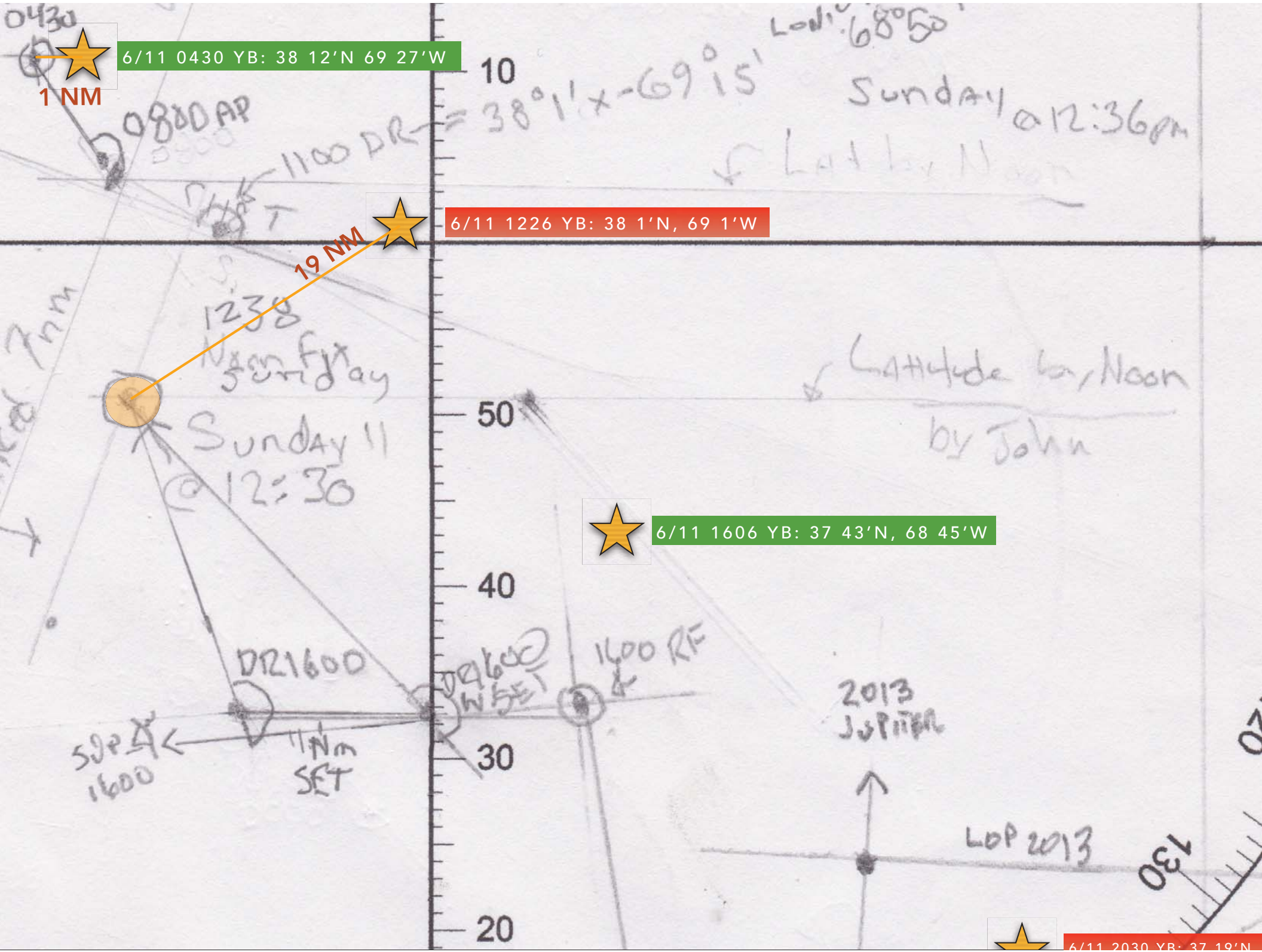

NORTH
ATLANTIC OCEAN

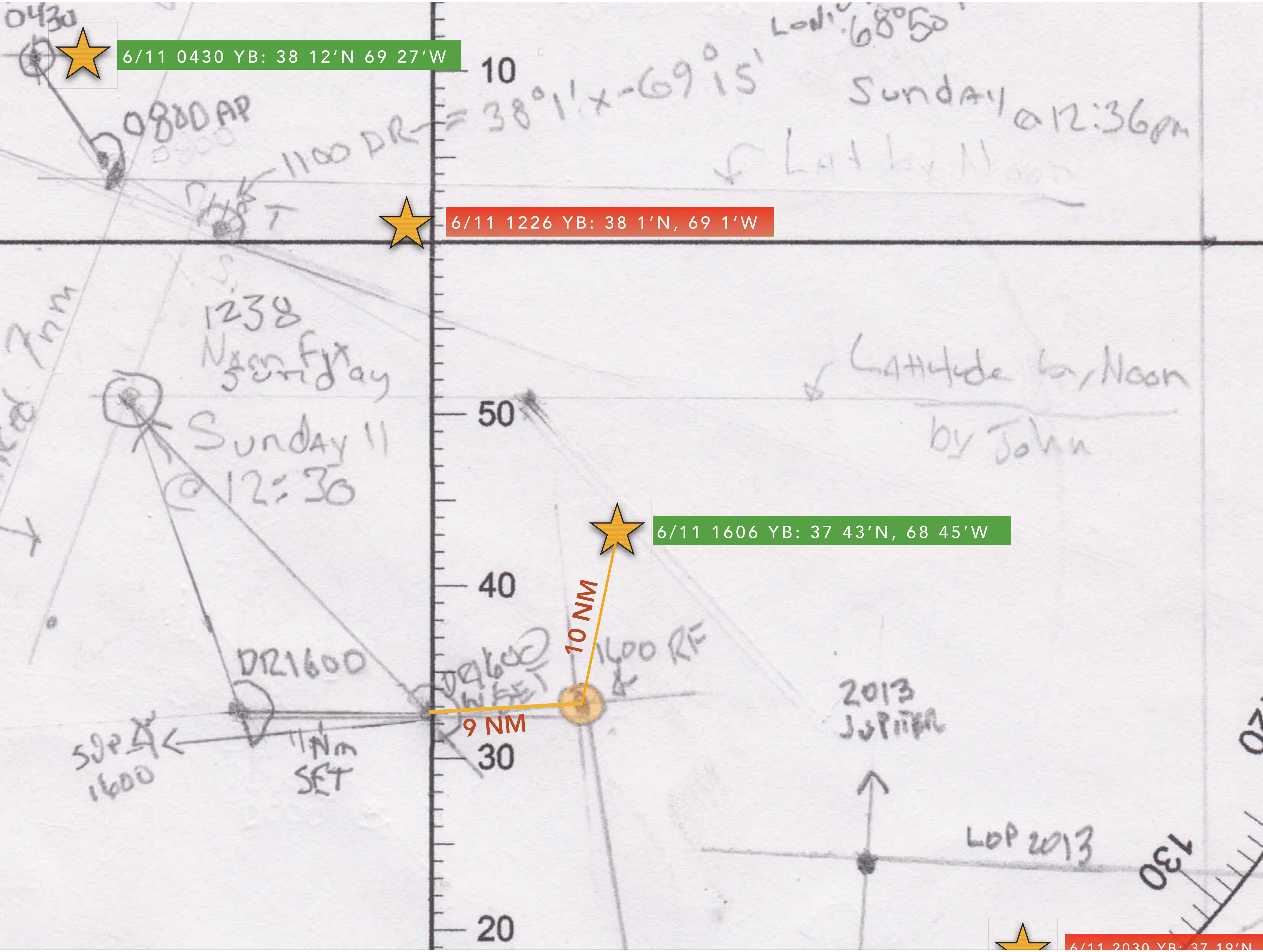

NORTH
ATLANTIC OCEAN


72°W
70°W
68°W
66°W
Tiara
Tiara - 6/9 @ 1900EDT GPS OFF
NO MAN'S LAND
Tiara @ 6/10 0400EDT
Tiara @ 6/11 0500EDT
Zoom Level 9
50NM


FRITZ REUTER


Universal Plotting Sheet
ReedNavigation.com
JUNE 11
#4
JUNE 11 2017
6/11 0430 YB: 38 12'N 69 27'W
6/11 1226 YB: 38 1'N, 69 1'W
6/11 1606 YB: 37 43'N, 68 45'W
6/11 2030 YB:
37 19'N, 68 13'W


6/11 0430 YB: 38 12'N 69 27'W
1 NM
0430
0800 AP
1100 DR
6/11 1226 YB: 38 1'N, 69 1'W
19 NM
1238
Noon Sunday
Sunday 11 @12:30
6/11 1606 YB: 37 43'N, 68 45'W
DR1600
1600 RF
SET
SUP 1600
11 Nm SET
2013 JUPITER
LOP 2013
Latitude by Noon
by John
10
50
40
30
20
6/11 2030 YB: 37 19'N


6/11 0430 YB: 38 12′N 69 27′W
6/11 1226 YB: 38 1′N, 69 1′W
6/11 1606 YB: 37 43′N, 68 45′W
10 NM
9 NM
10
50
40
30
20
0430
0800 AP
1100 DR
38°1′ x -69°15′
Sunday @ 12:36pm
Latitude by Noon
by John
1238
Noon Fix
Sunday
Sunday 11
@ 12:30
DR1600
1600 RF
2013
JUPITER
LOP 2013
130


6/11 1606 YB: 37 43'N, 68 45'W
40
30
20
10
1600 RF
4
2013
JUPITER
LOP 2013
VEGA
2030
FIX
25 NM
6/11 2030 YB: 37 19'N, 68 13'W
40 NM
IS
THIS
CORRECT?
DR
2000
W/SET
37.8 N

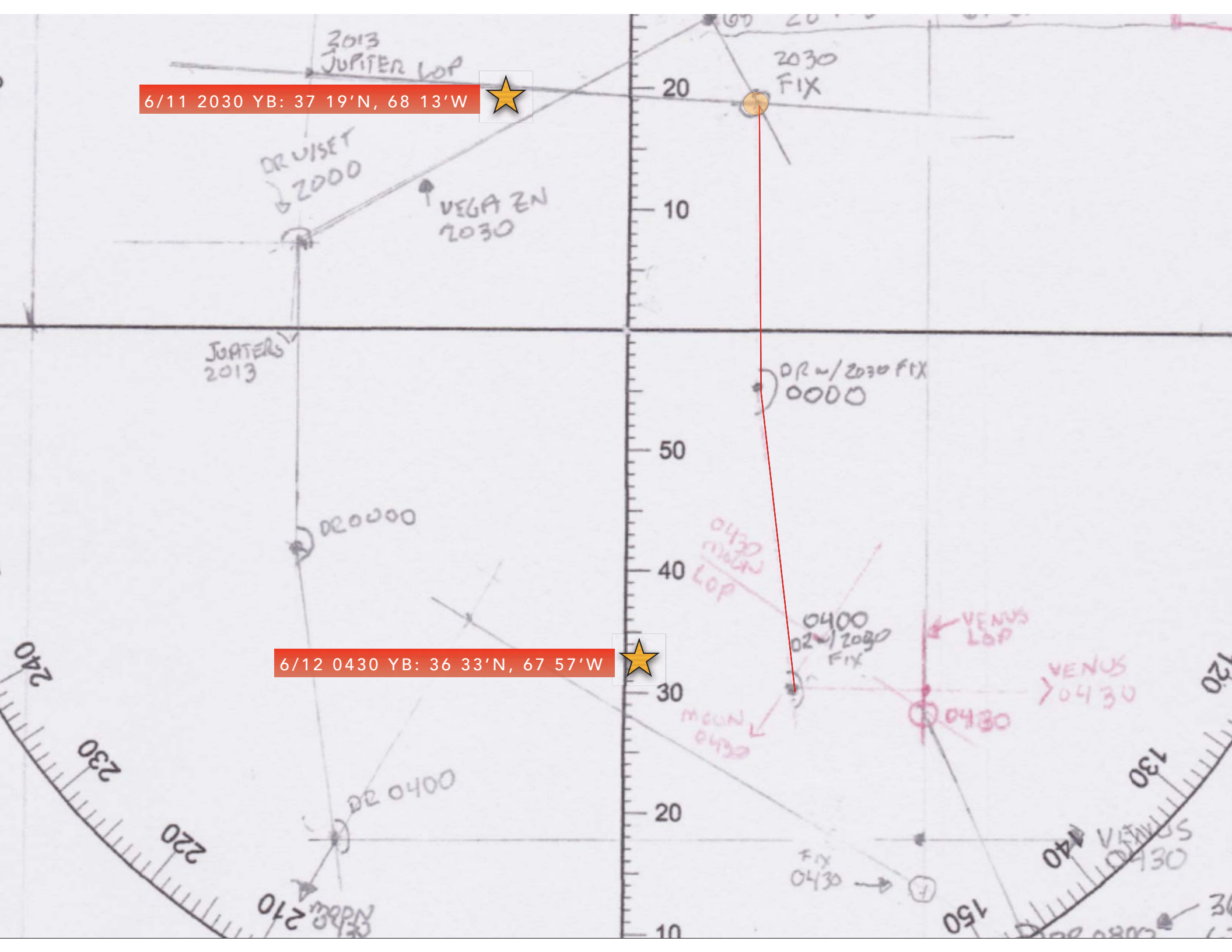
JOHN.

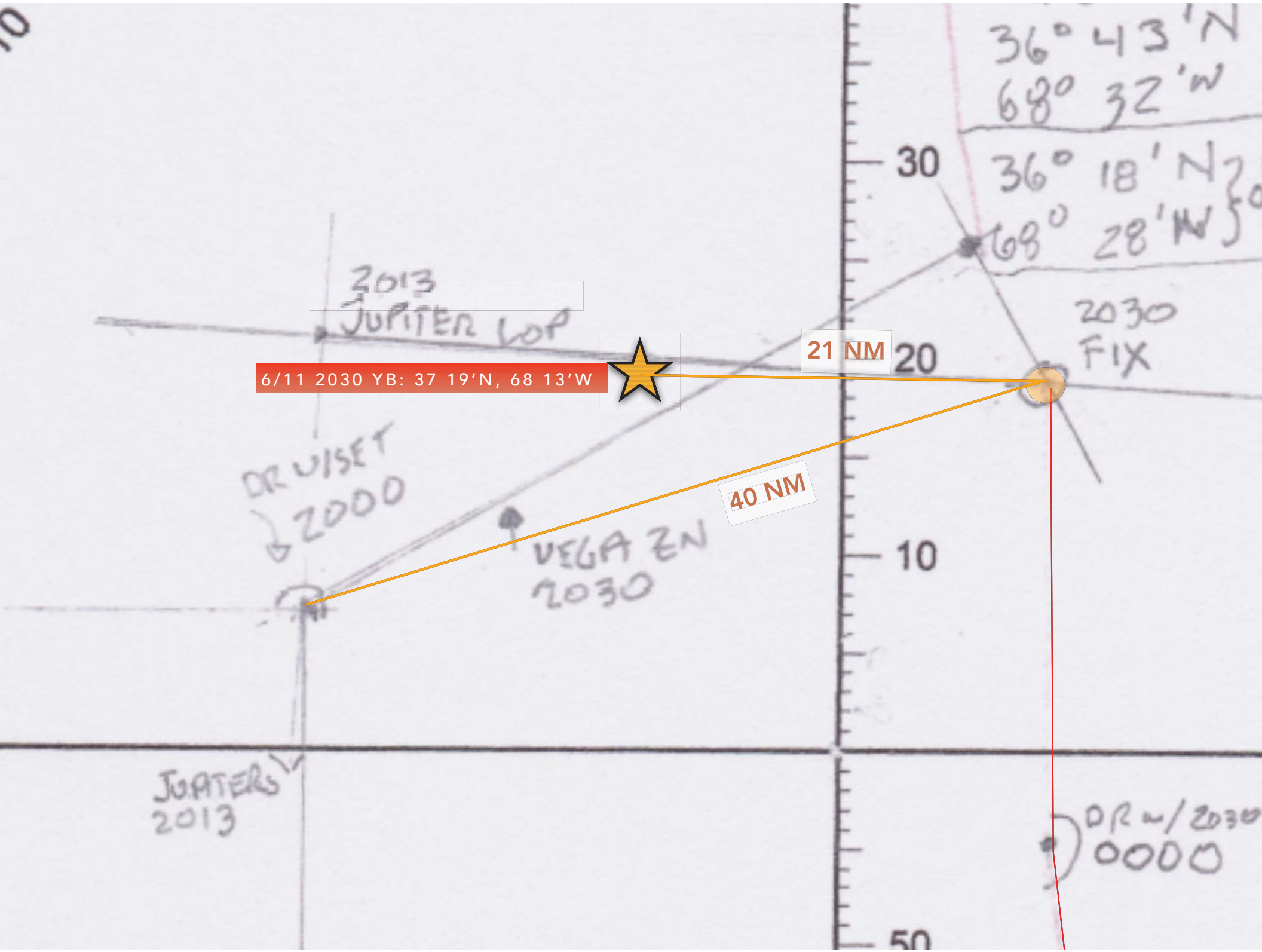
THERE WAS SOMETHING WRONG WITH THE 2030 CELESTIAL FIX. CAN YOU WAKE ME @ 0330 FOR NAUTICAL TWILIGHT?

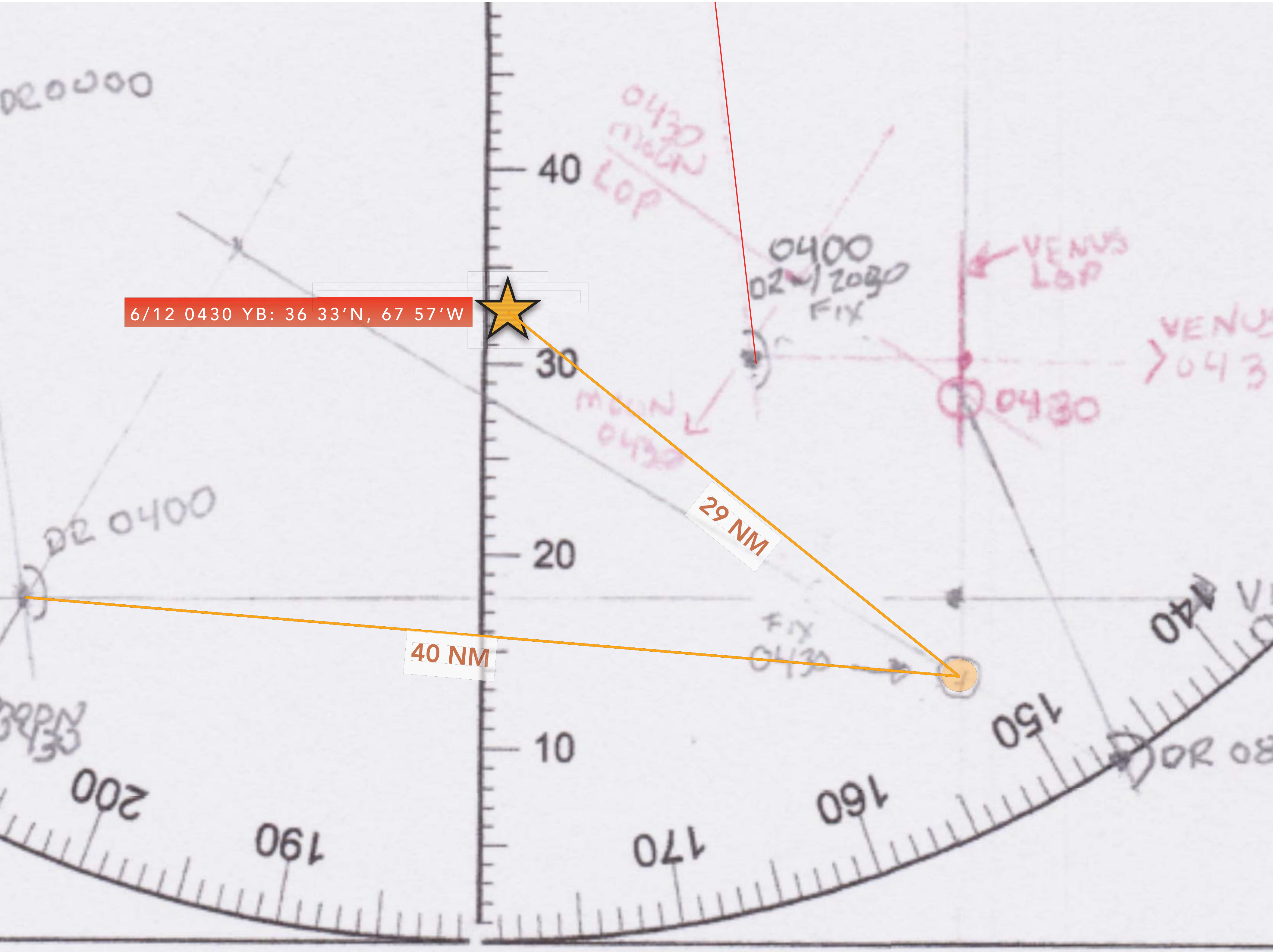
-BOB

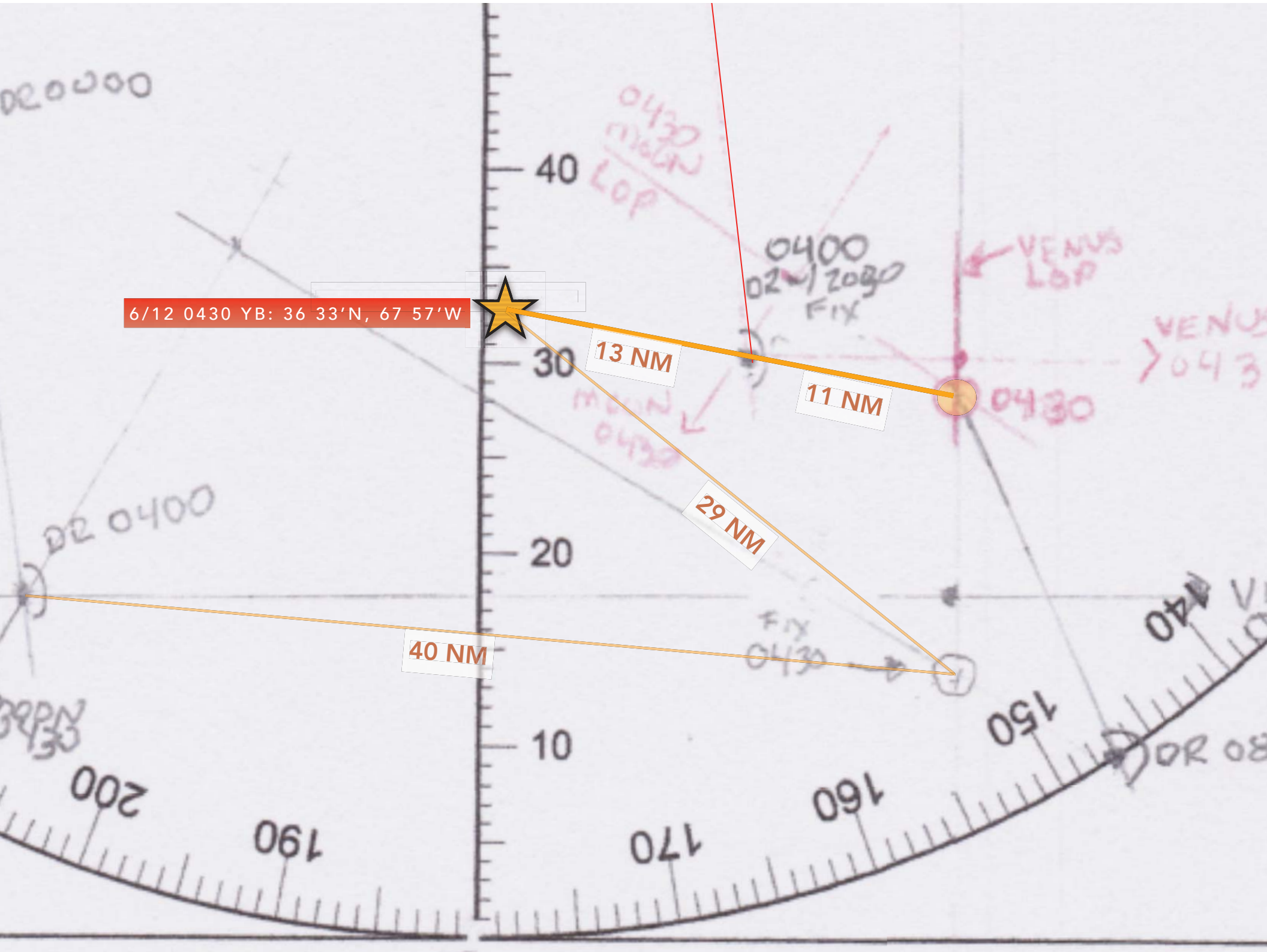
BECOMING A CELESTIAL NAVIGATOR

DAY FOUR


6/11 2030 YB: 37 19'N, 68 13'W
6/12 0430 YB: 36 33'N, 67 57'W
2013 JUPITER LOP
2030 FIX
DR UISET 2000
VEGA EN 2030
JUPITERS 2013
DR 0000
DR w/ 2030 FIX 0000
0430 MOON LOP
0400 DR w/ 2030 FIX
VENUS LOP
VENUS 0430
MOON 0430
0430
DR 0400
FIX 0430
VENUS 0430
50
40
30
20
10
240
230
220
210
150
140
130
120

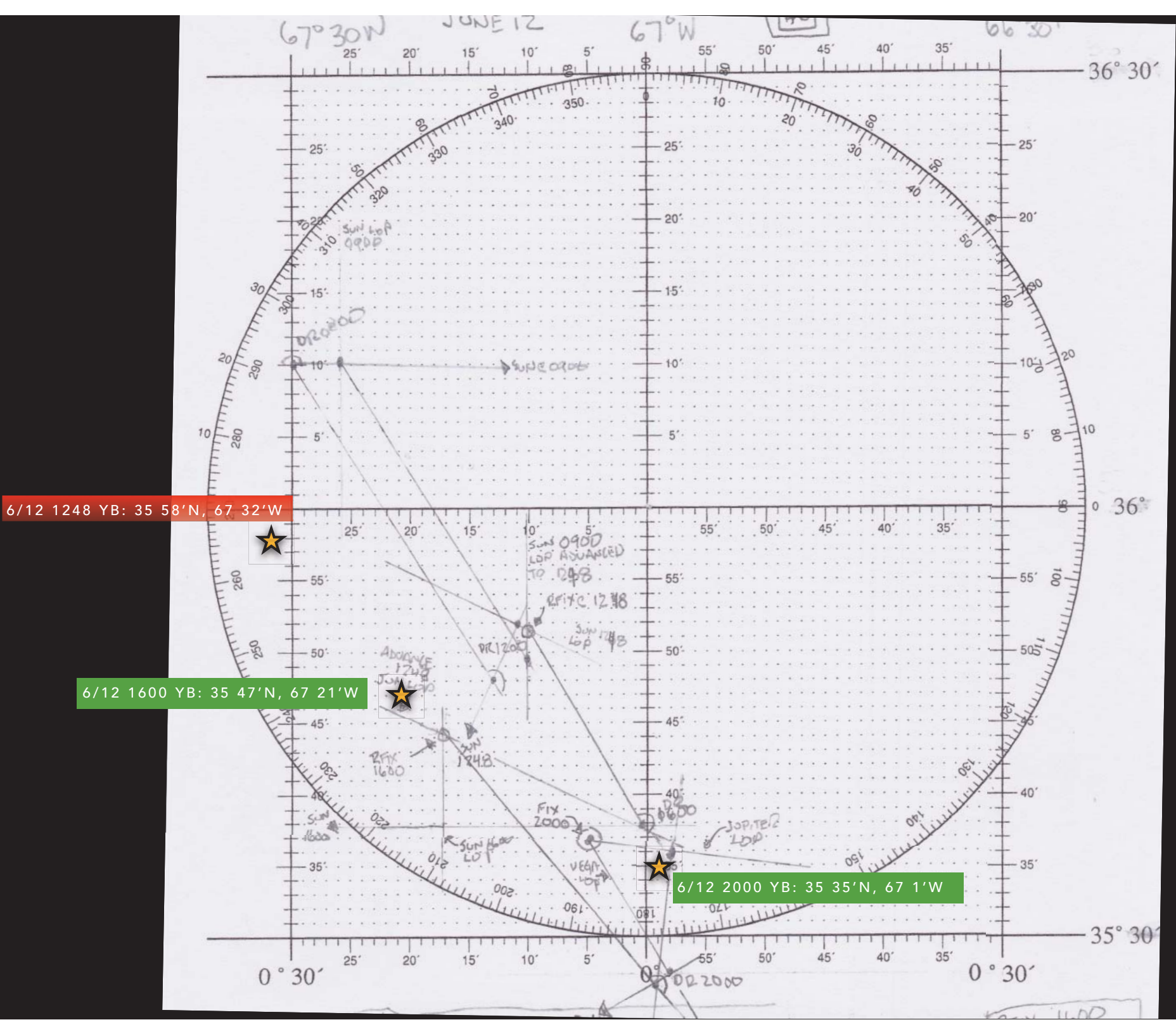

36° 43'N
68° 32'W
36° 18'N
68° 28'W
30
20
10
50
2013
JUPITER LOP
6/11 2030 YB: 37 19'N, 68 13'W
21 NM
2030
FIX
DR VISET
2000
40 NM
VEGA ZN
2030
JUPITER
2013
DR w/ 2030
0000

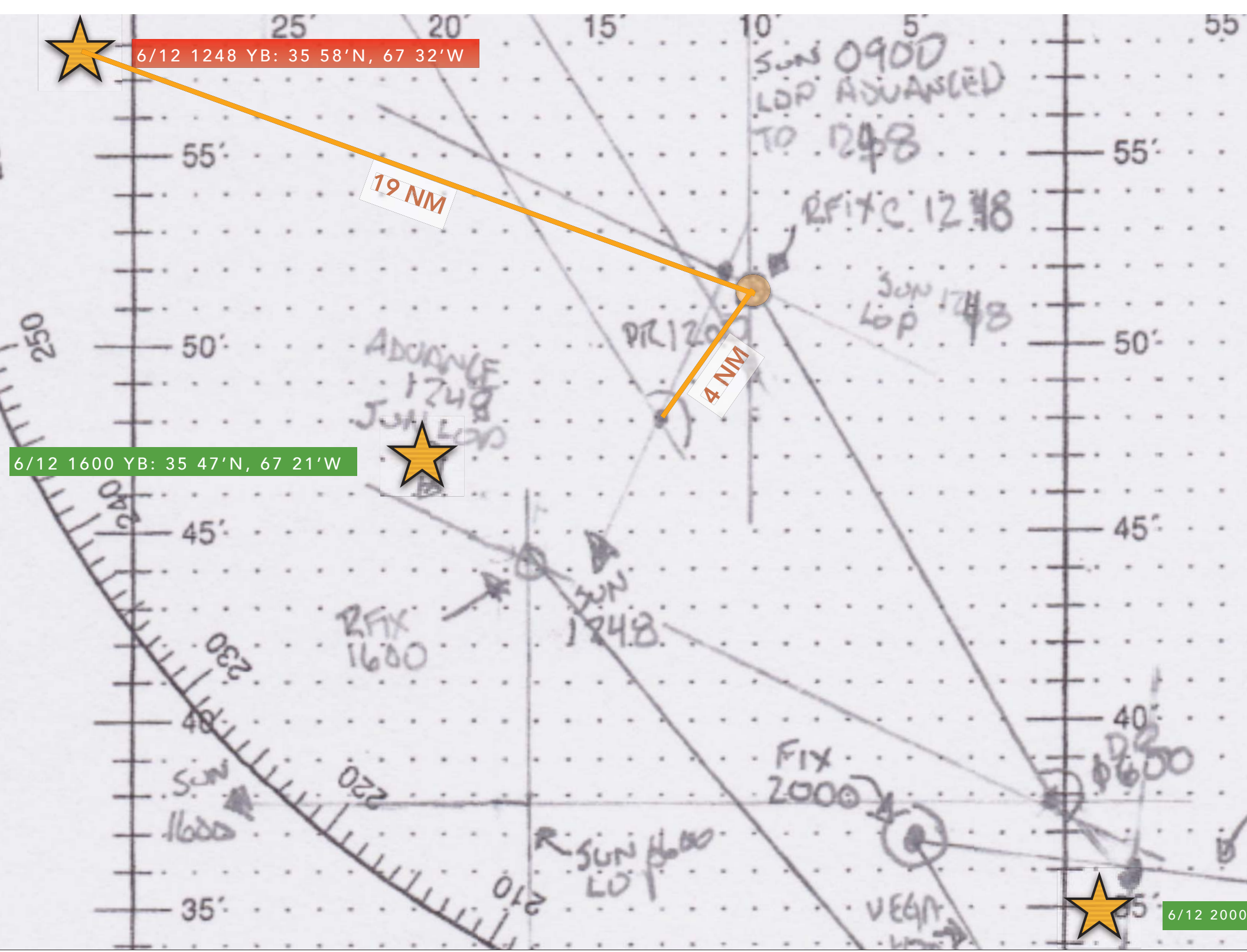

6/12 0430 YB: 36 33'N, 67 57'W
29 NM
40 NM
DR 0400
VENUS LOP
0430

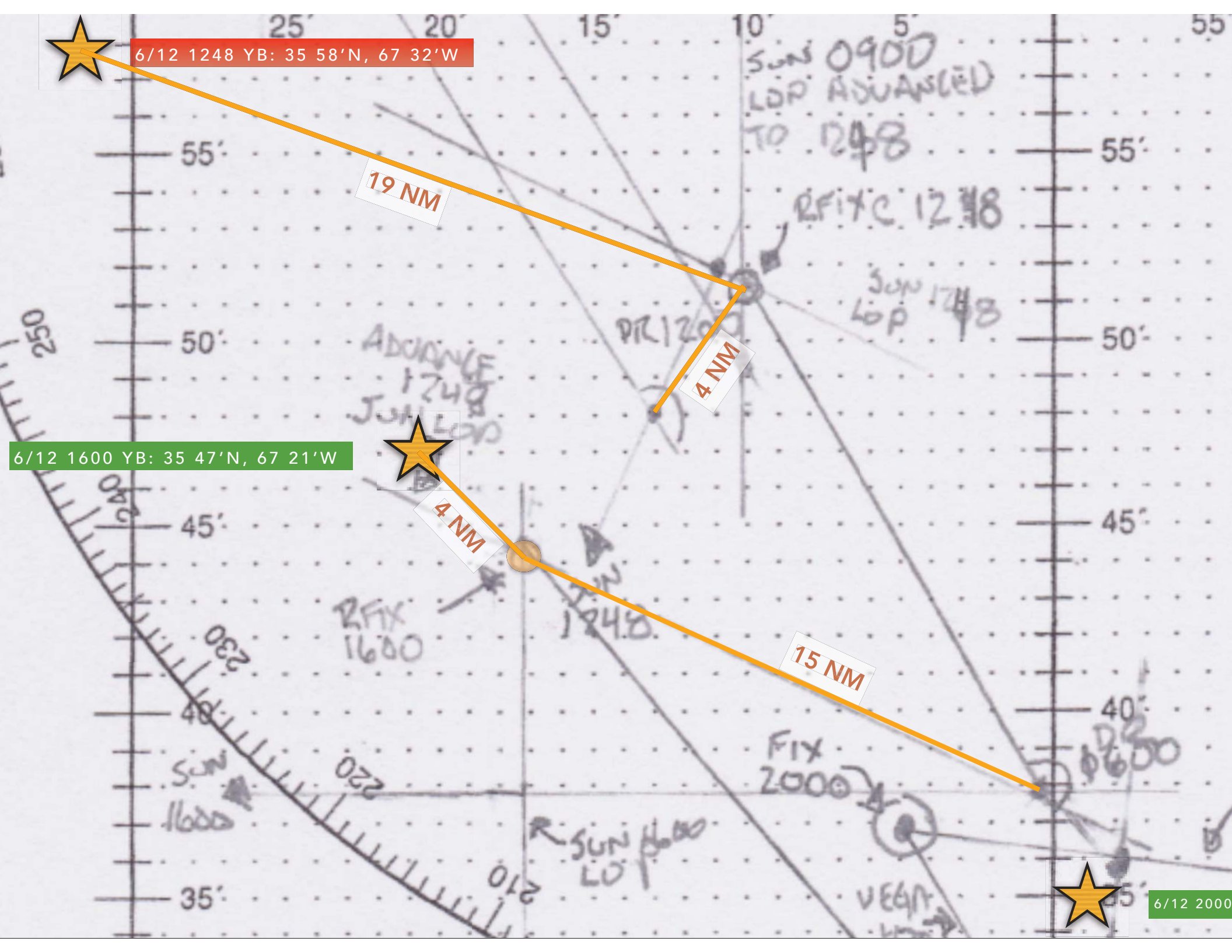

6/12 0430 YB: 36 33'N, 67 57'W
13 NM
11 NM
29 NM
40 NM
0400
FIX
VENUS LOP
0430
40
30
20
10
150
160
170
190
200

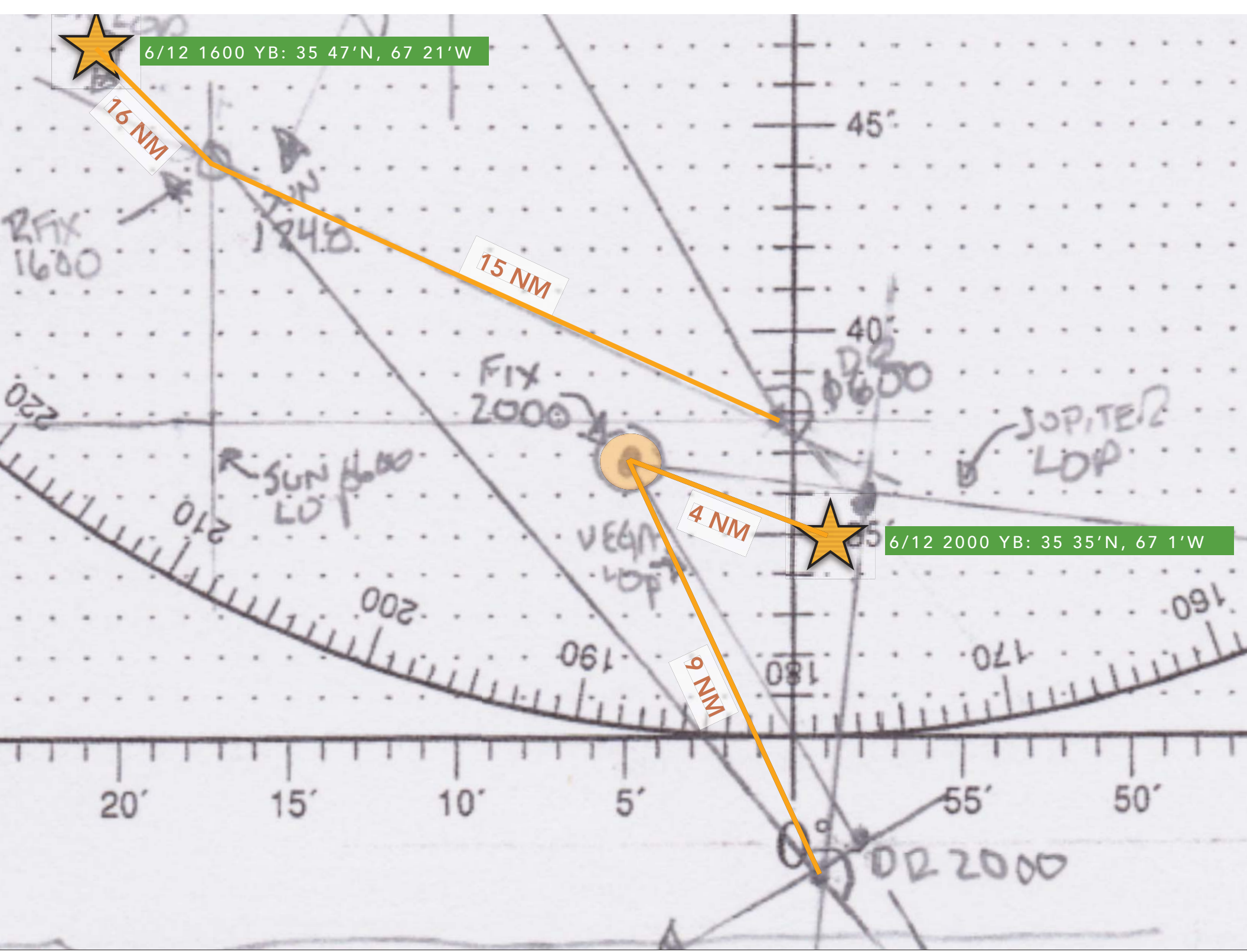
"Navigation by Celestial is more relaxing than navigation by GPS because I don't obsess over minute to minute course corrections."

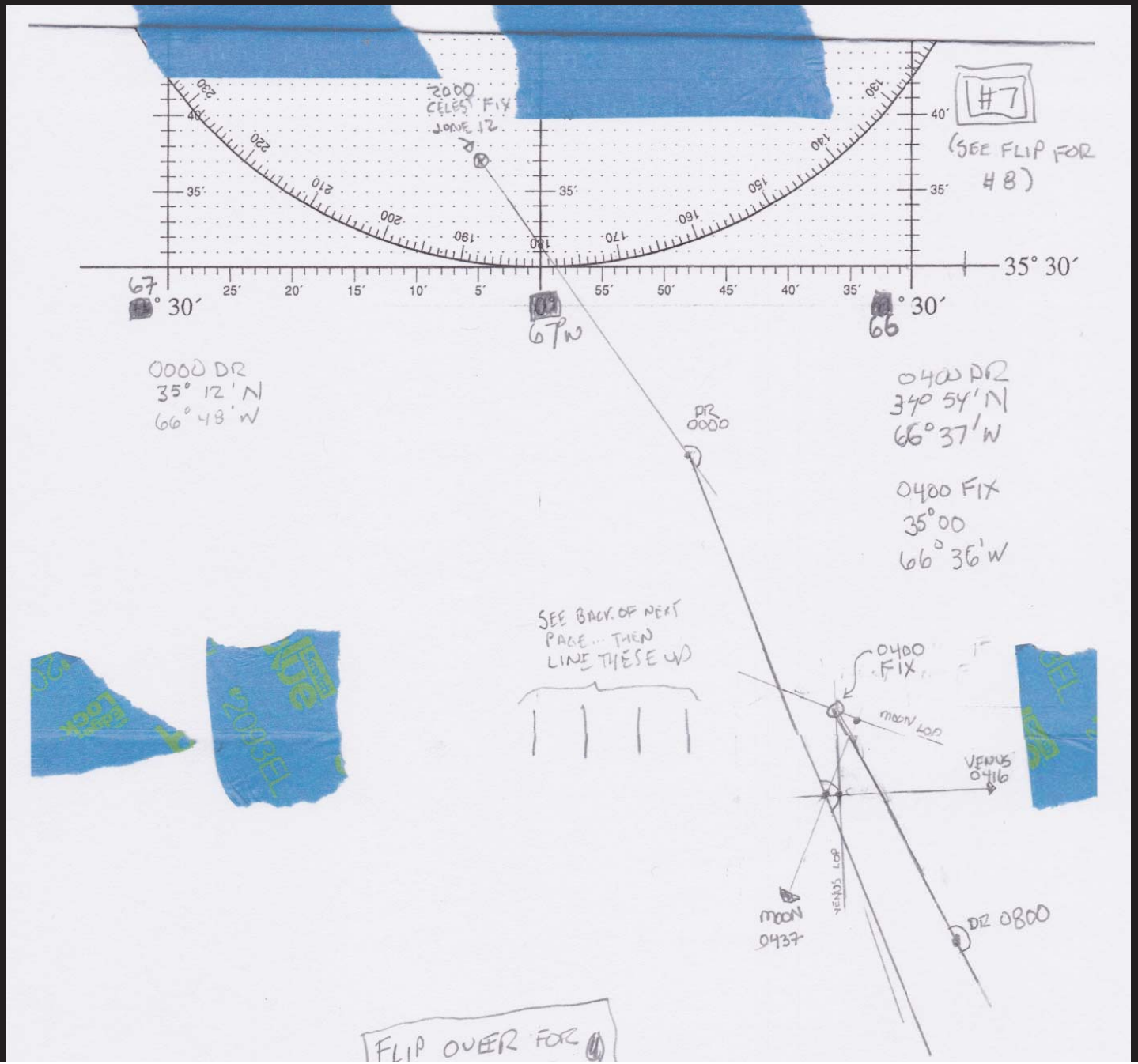
–BRIAN DUNCAN, WATCH CAPTAIN


6/12 1248 YB: 35 58'N, 67 32'W
6/12 1600 YB: 35 47'N, 67 21'W
6/12 2000 YB: 35 35'N, 67 1'W
67°30W
JUNE 12
67°W
36° 30'
36°
35° 30'
0 ° 30'
SUN LOP 0900
SUN LOP ASSUMED TO 0948
RFIX 1248
SUN LOP 1248
RFIX 1600
FIX 2000
JUPITER LOP
VEGA LOP
DR 2000


6/12 1248 YB: 35 58'N, 67 32'W
19 NM
4 NM
6/12 1600 YB: 35 47'N, 67 21'W
6/12 2000
SUN 0900
LOP ADVANCED
TO 1248
RFIX 1248
SUN LOP 1248
ADVANCE 1248
SUN LOP
RFIX 1600
SUN 1248
FIX 2000
SUN 1600
SUN LOP
VEGA
25
20
15
10
5
55
50
45
40
35
250
240
230
220
210

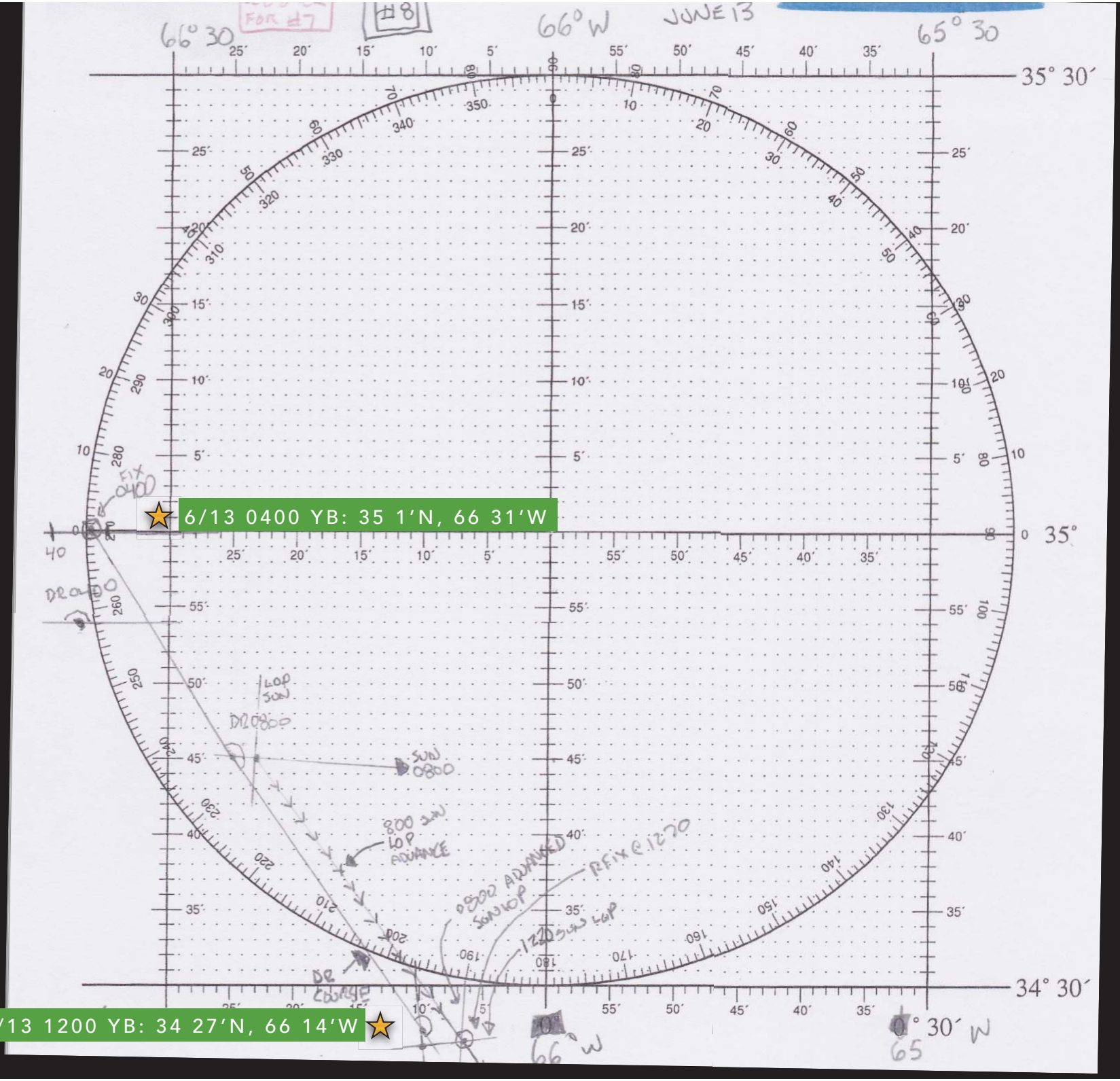

6/12 1248 YB: 35 58'N, 67 32'W
19 NM
4 NM
6/12 1600 YB: 35 47'N, 67 21'W
4 NM
15 NM
6/12 2000
SUN 0900
LOP ADVANCED
TO 1248
RFIX 1248
SUN LOP
ADVANCE
1248
SUN LOP
RFIX
1600
SUN
1248
FIX
2000
SUN
1600
SUN LOP
VEGA
25
20
15
10
5
55
50
45
40
35
250
240
230
220
210

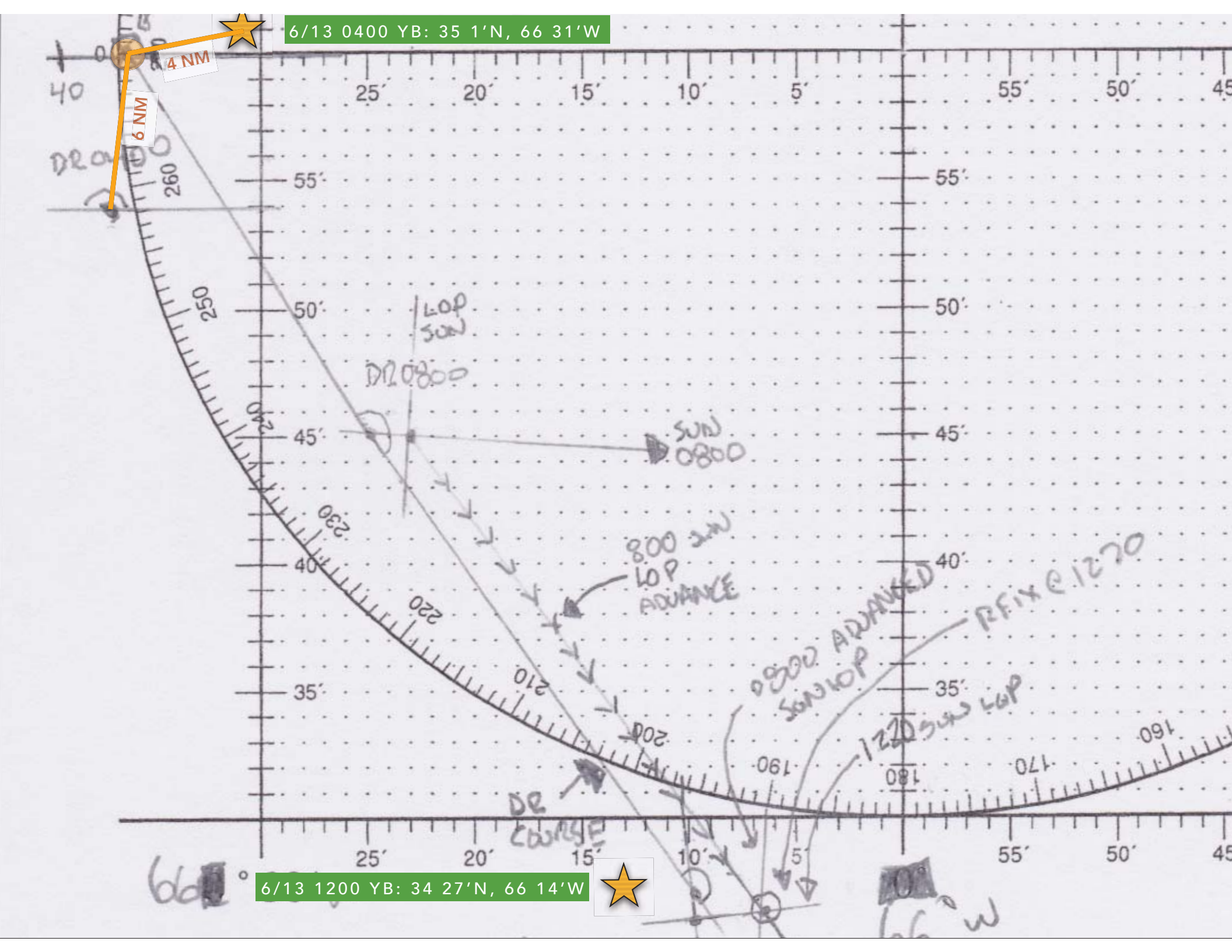

6/12 1600 YB: 35 47'N, 67 21'W
16 NM
15 NM
4 NM
9 NM
6/12 2000 YB: 35 35'N, 67 1'W
RFIX 1600
FIX 2000
SUN LOP
JUPITER LOP
VEGA LOP
DR 2000
45'
40'
20'
15'
10'
5'
55'
50'
210
200
190
180
170
160
220

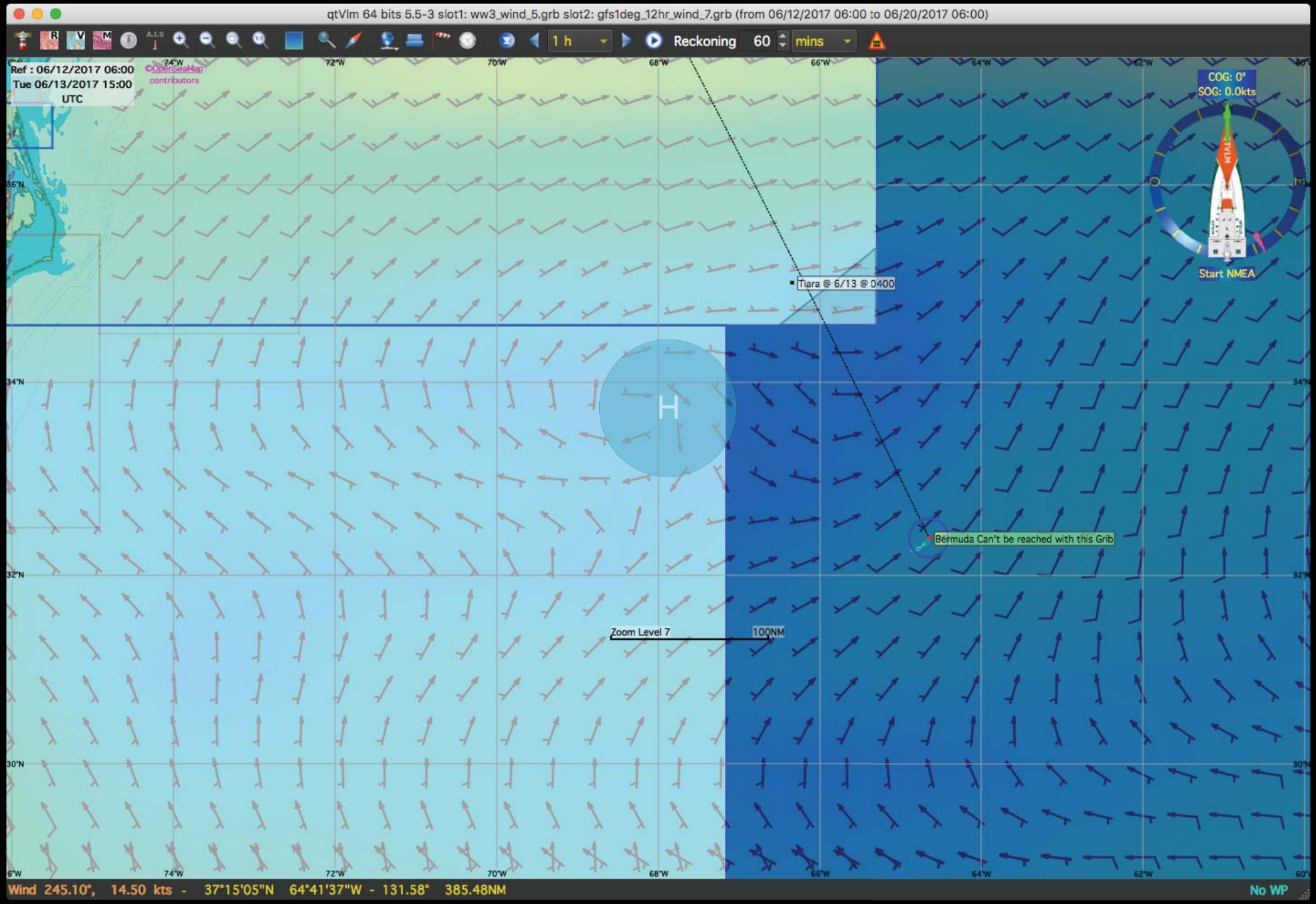

#7
(SEE FLIP FOR #8)
2000 CELES FIX JOINE 12
35° 30′
67° 30′
66° 30′
67°W
0000 DR
35° 12′ N
66° 48′ W
0400 DR
34° 54′ N
66° 37′ W
0400 FIX
35° 00
66° 36′ W
DR 0000
SEE BACK OF NEXT PAGE... THEN LINE THESE UP
0400 FIX
MOON LOP
VENUS 0416
VENUS LOP
MOON 0437
DR 0800
FLIP OVER FOR

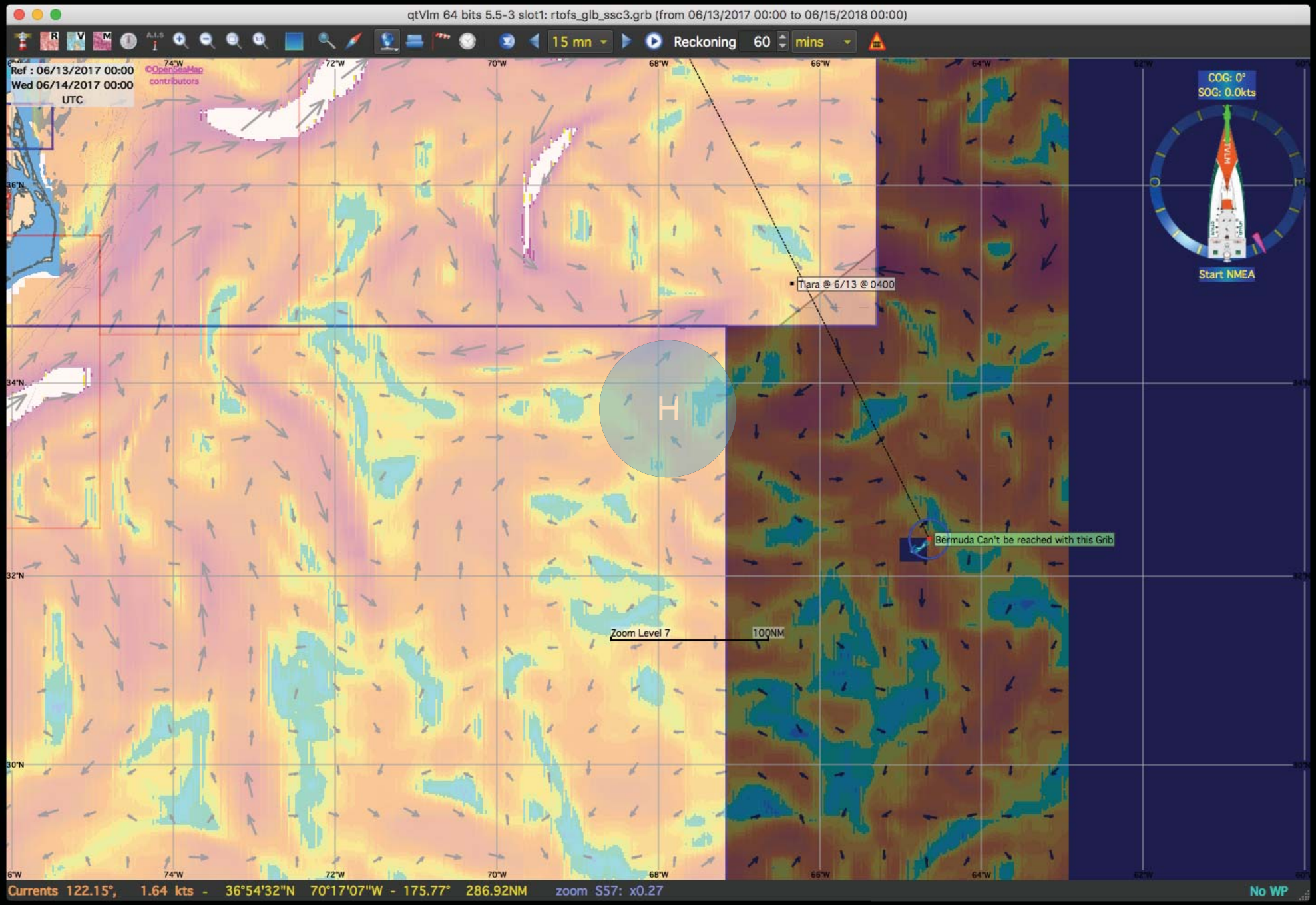
BECOMING A CELESTIAL NAVIGATOR

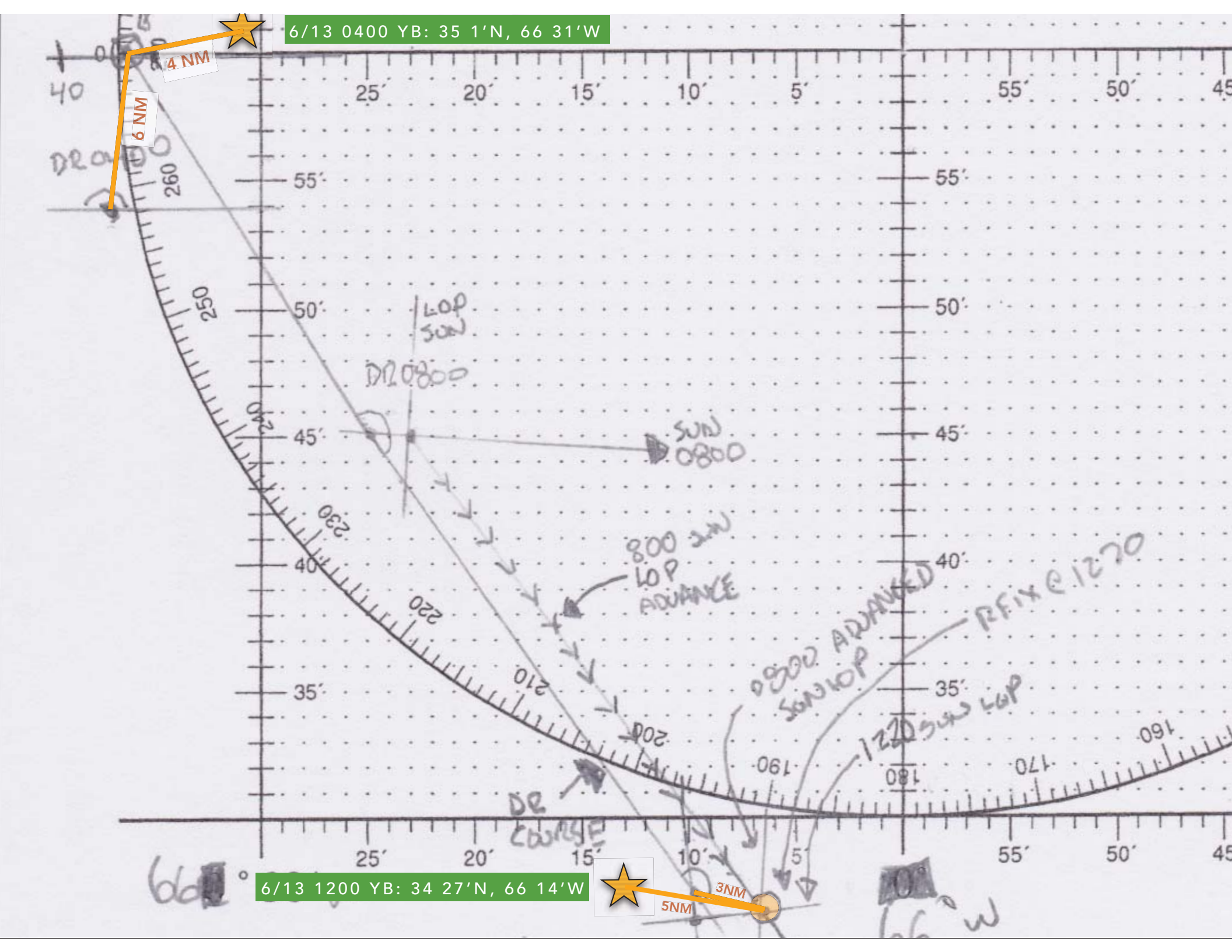
DAY FIVE

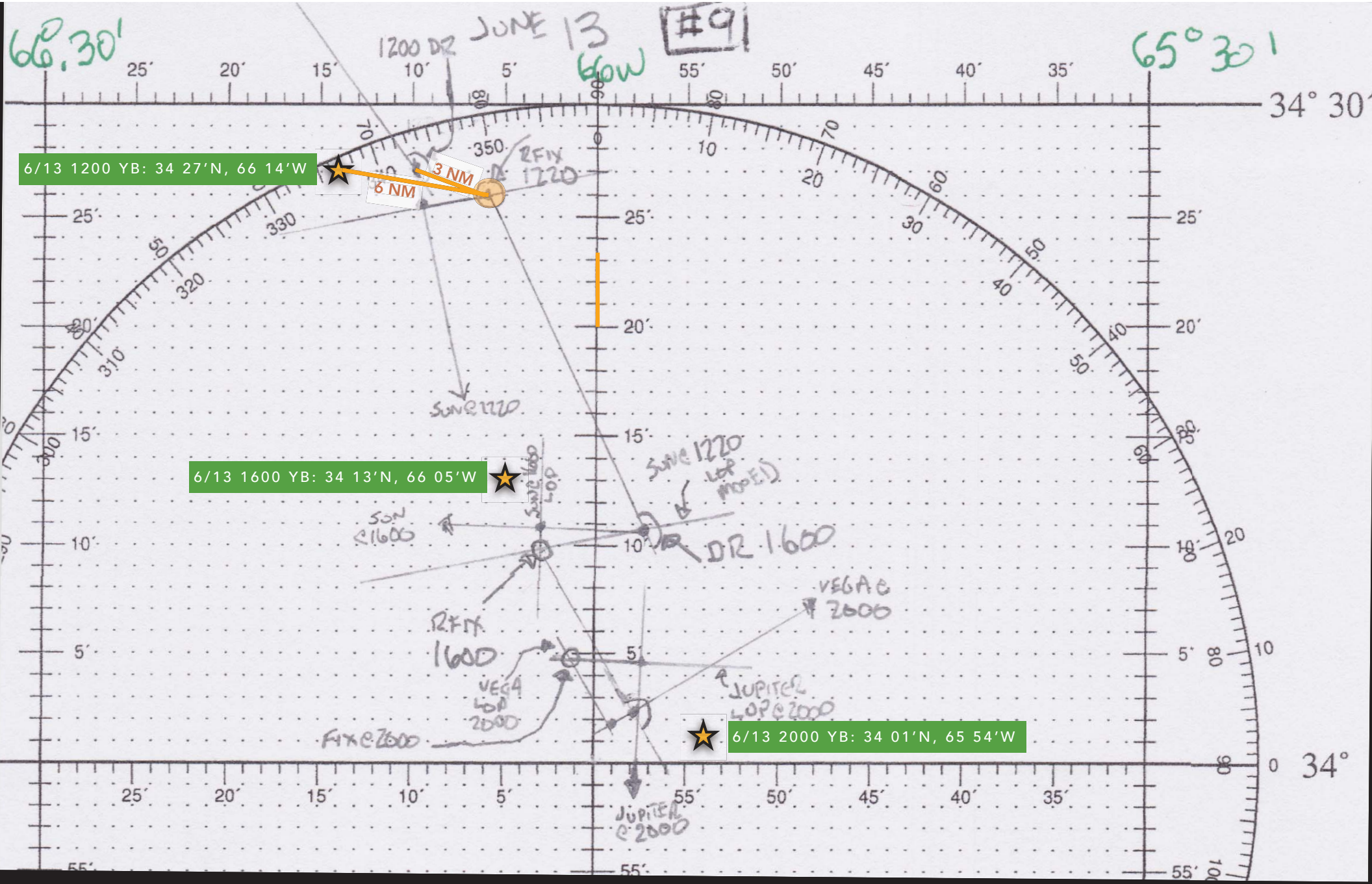

66° 30
#8
66° W
JUNE 13
65° 30
35° 30′
35°
34° 30′
65° 30′ W
6/13 0400 YB: 35 1′N, 66 31′W
6/13 1200 YB: 34 27′N, 66 14′W
FIX 0400
DR 0800
SUN 0800
800 SUN LOP ADVANCE
0800 ADVANCED SUN LOP
1200 SUN LOP
1200 FIX
DR
66° W
65

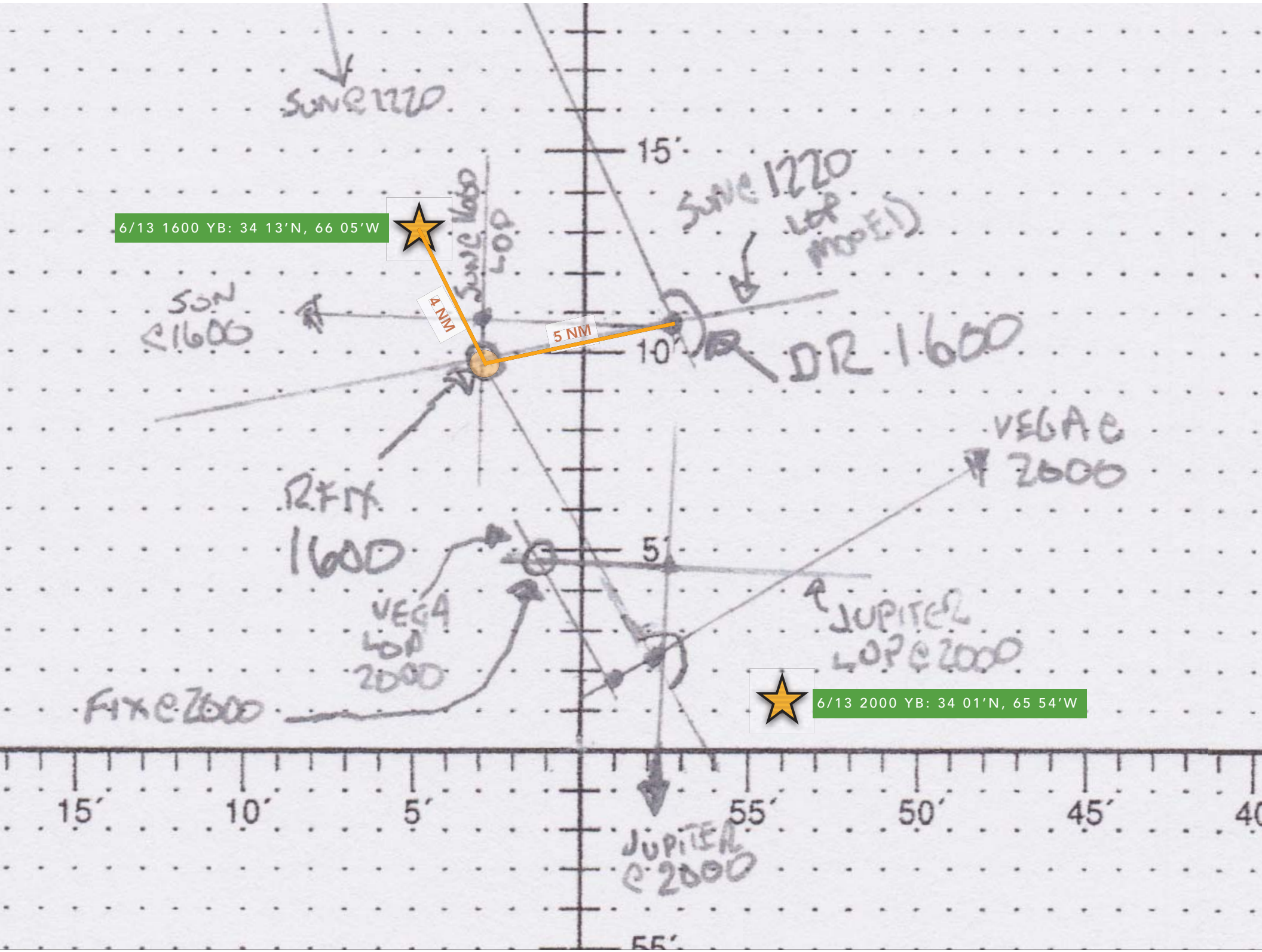

6/13 0400 YB: 35 1'N, 66 31'W
4 NM
6 NM
DR 0800
LOP SUN
SUN 0800
800 SUN LOP ADVANCE
0800 ADVANCED SUN LOP
FIX @ 1220
1220 SUN LOP
DR COURSE
6/13 1200 YB: 34 27'N, 66 14'W

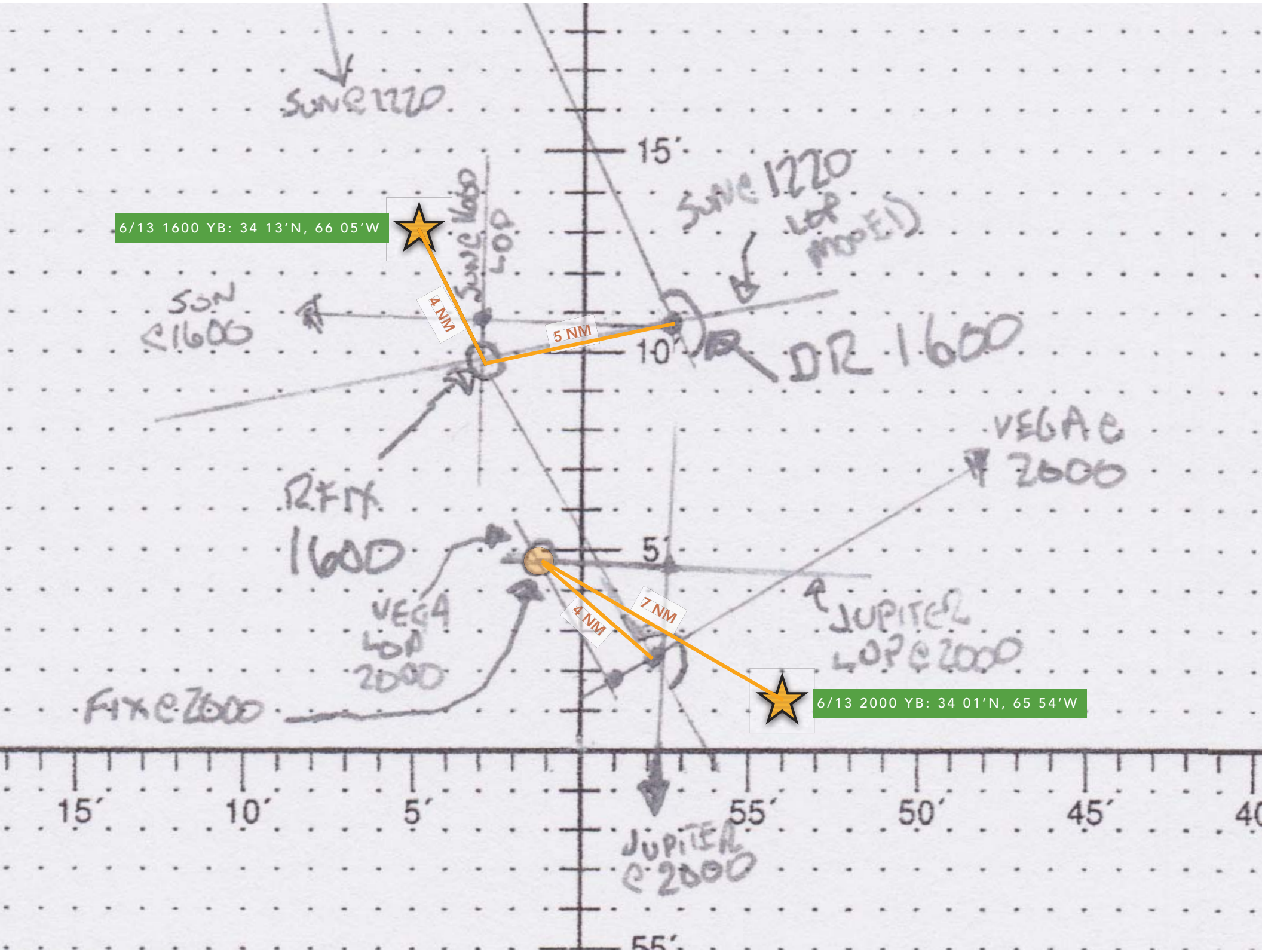

qtVlm 64 bits 5.5-3 slot1: ww3_wind_5.grb slot2: gfs1deg_12hr_wind_7.grb (from 06/12/2017 06:00 to 06/20/2017 06:00)
1 h
Reckoning
60
mins
Ref : 06/12/2017 06:00
Tue 06/13/2017 15:00
UTC
©OpenSeaMap
contributors
COG: 0°
SOG: 0.0kts
Start NMEA
Tiara @ 6/13 @ 0400
Bermuda Can't be reached with this Grib
Zoom Level 7
100NM
74°W
72°W
70°W
68°W
66°W
64°W
62°W
60°W
36°N
34°N
32°N
30°N
Wind 245.10°, 14.50 kts - 37°15'05"N 64°41'37"W - 131.58° 385.48NM
No WP


qtVlm 64 bits 5.5-3 slot1: rtofs_glb_ssc3.grb (from 06/13/2017 00:00 to 06/15/2018 00:00)
15 mn
Reckoning
60
mins
Ref : 06/13/2017 00:00
Wed 06/14/2017 00:00
UTC
©OpenSeaMap
contributors
COG: 0°
SOG: 0.0kts
Start NMEA
Tiara @ 6/13 @ 0400
Bermuda Can't be reached with this Grib
Zoom Level 7
100NM
74°W
72°W
70°W
68°W
66°W
64°W
36°N
34°N
32°N
30°N
Currents 122.15°, 1.64 kts - 36°54'32"N 70°17'07"W - 175.77° 286.92NM
zoom S57: x0.27
No WP


6/13 0400 YB: 35 1'N, 66 31'W
4 NM
6 NM
DR 0800
LOP SUN
SUN 0800
800 SUN LOP ADVANCE
0800 ADVANCED SUN LOP
FIX @ 1220
1220 SUN LOP
DR COURSE
6/13 1200 YB: 34 27'N, 66 14'W
3NM
5NM

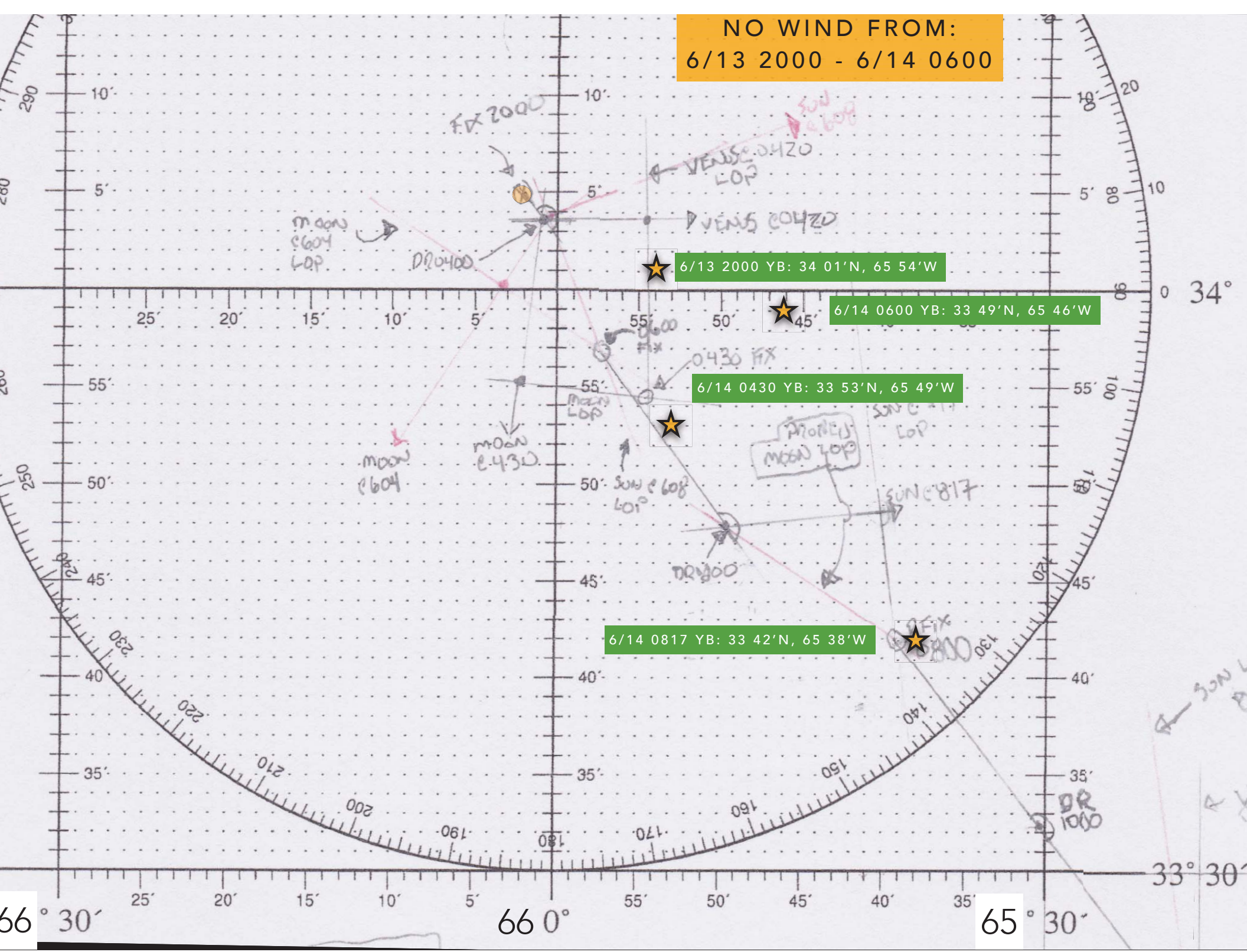

66° 30'
JUNE 13
#9
65° 30'
34° 30'
34°
6/13 1200 YB: 34 27'N, 66 14'W
3 NM
6 NM
6/13 1600 YB: 34 13'N, 66 05'W
6/13 2000 YB: 34 01'N, 65 54'W
DR 1600
RFIX 1600
VEGA @ 2000
JUPITER @ 2000

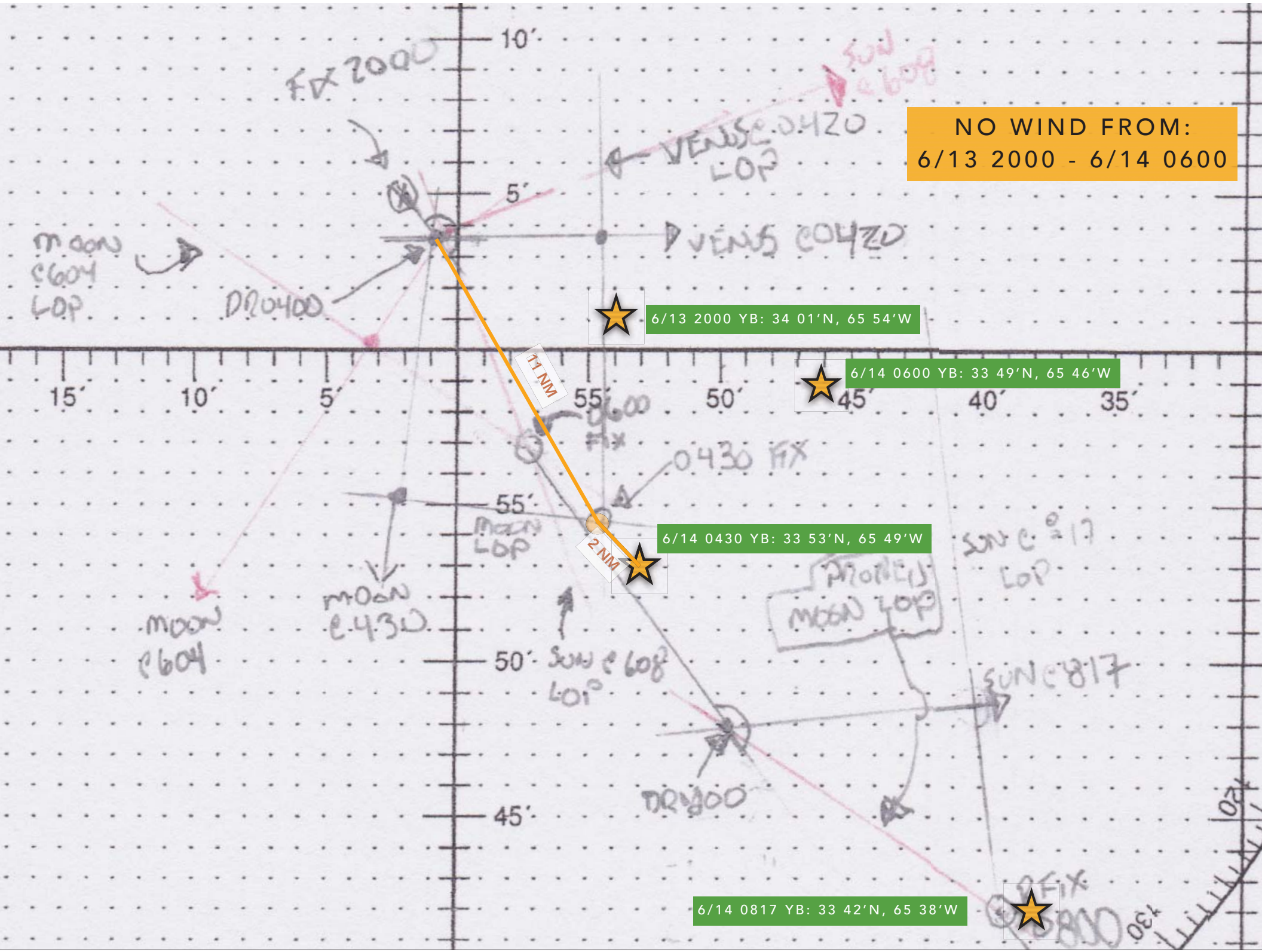

SUN 1220
15′
SUN 1220 LOP MOVED
6/13 1600 YB: 34 13′N, 66 05′W
SUN 1600 LOP
4 NM
5 NM
SUN @1600
10′
DR 1600
VEGA @ 2000
RFIX 1600
5′
VEGA LOP 2000
JUPITER LOP @2000
FIX @2000
6/13 2000 YB: 34 01′N, 65 54′W
15′
10′
5′
55′
50′
45′
JUPITER @2000

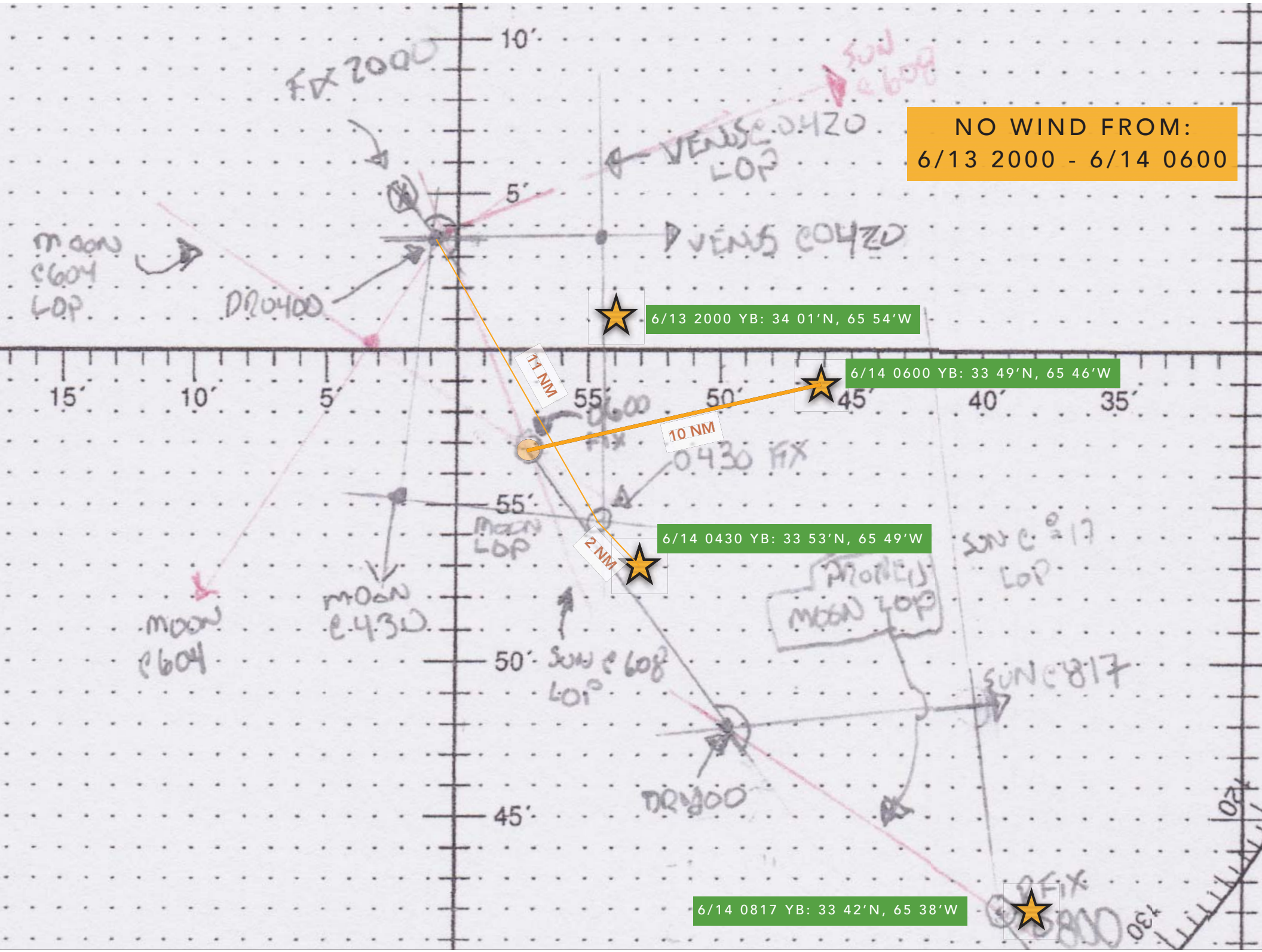

SUNC 1220
15′
SUNC 1220
LOP
MOVED
6/13 1600 YB: 34 13′N, 66 05′W
SUNC 1600
LOP
SUN
@1600
4 NM
5 NM
10′
DR 1600
VEGA @
2000
RFIX
1600
5′
VEGA
LOP
2000
4 NM
7 NM
JUPITER
LOP @2000
FIX @2000
6/13 2000 YB: 34 01′N, 65 54′W
15′
10′
5′
55′
50′
45′
JUPITER
@2000

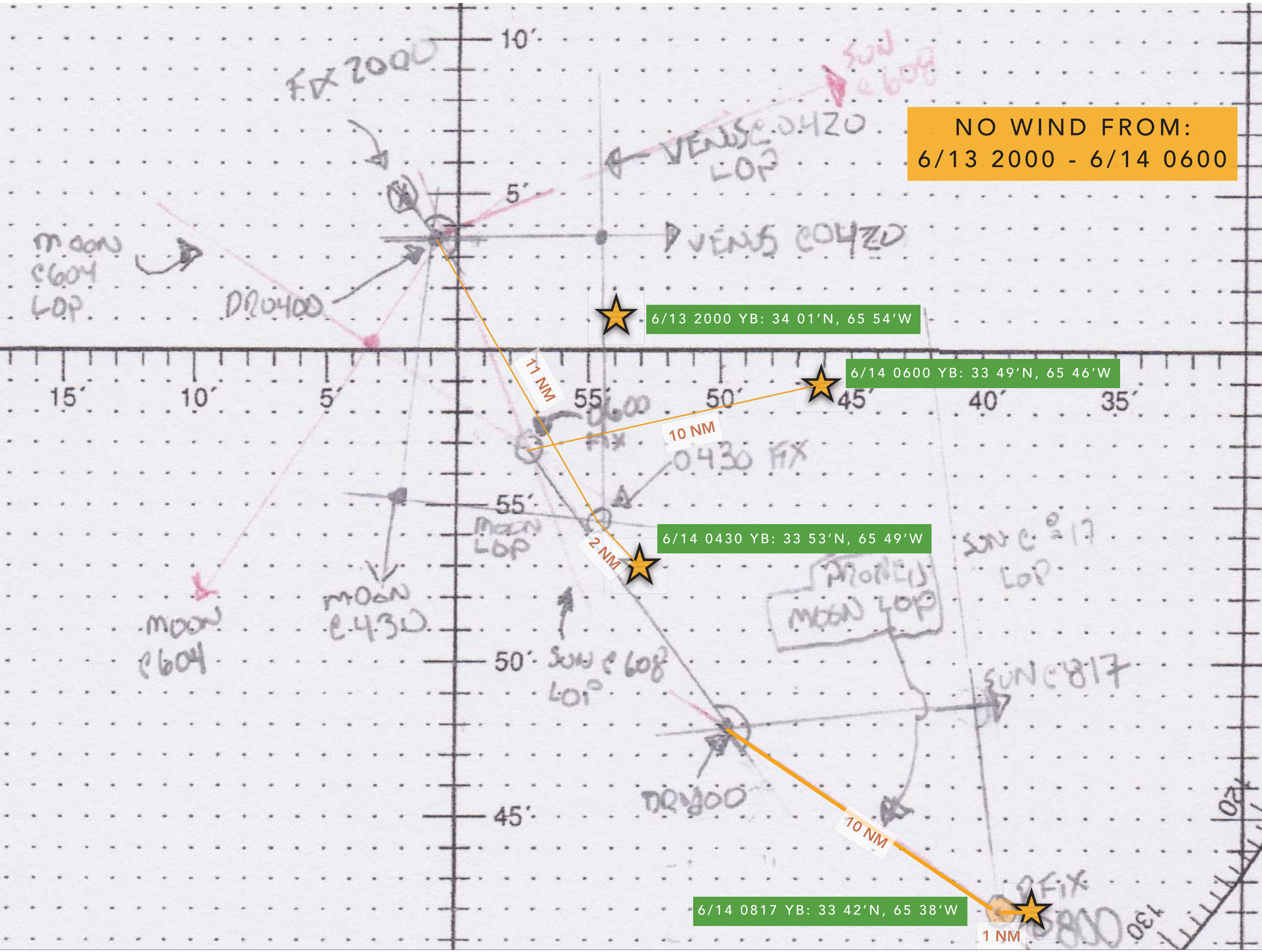
BECOMING A CELESTIAL NAVIGATOR

DAY SIX


NO WIND FROM:
6/13 2000 - 6/14 0600
6/13 2000 YB: 34 01'N, 65 54'W
6/14 0600 YB: 33 49'N, 65 46'W
6/14 0430 YB: 33 53'N, 65 49'W
6/14 0817 YB: 33 42'N, 65 38'W
FIX 2000
VENUS 0420
LOP
VENUS 0420
MOON 0400
LOP
DR 0400
0430 FIX
MOON 0430
MOON 0604
SUN 0604
LOP
PROBABLE
MOON LOP
SUN 0817
DR 0800
DR 1000
34°
33° 30'
66° 30'
66 0°
65° 30'

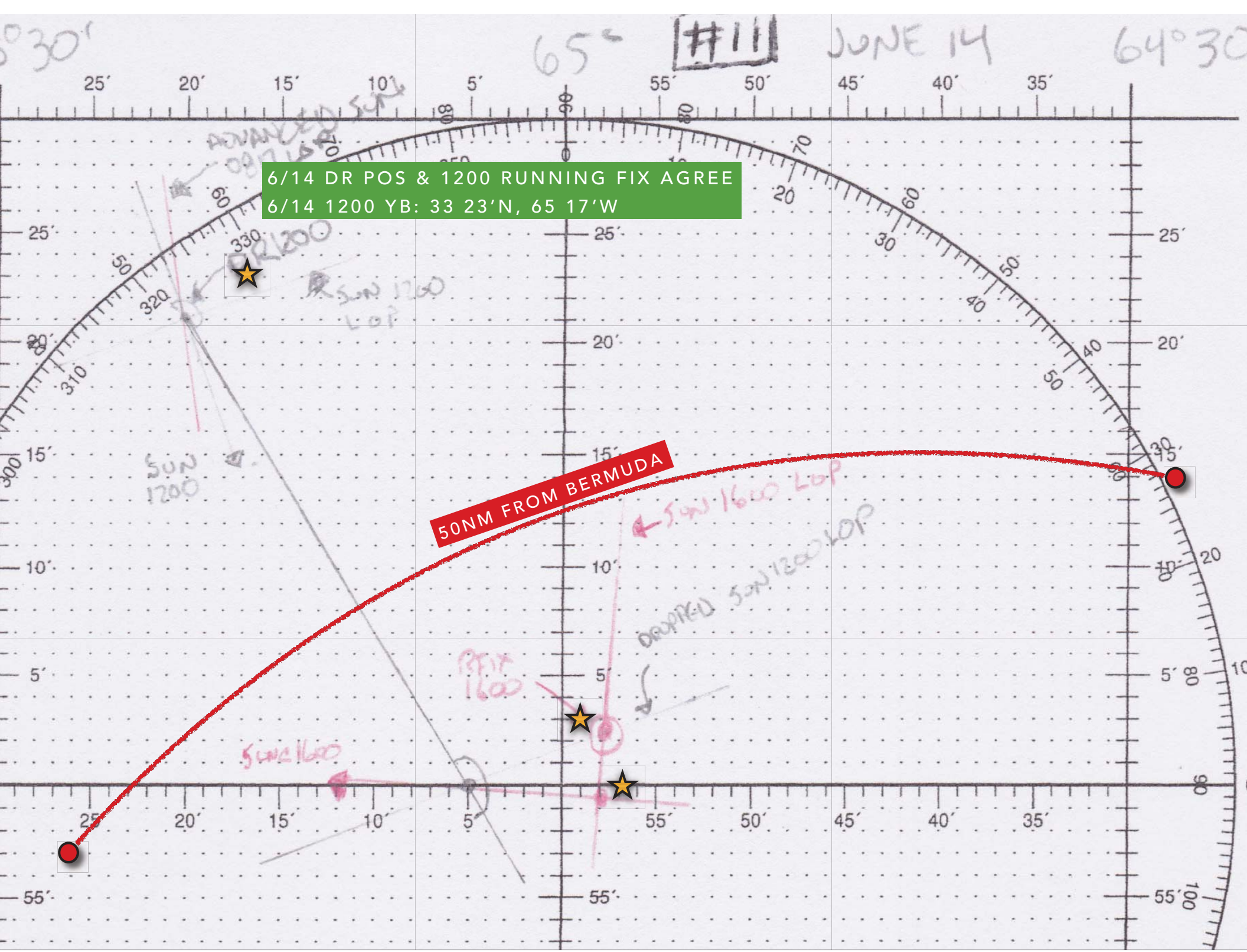

NO WIND FROM:
6/13 2000 - 6/14 0600
6/13 2000 YB: 34 01'N, 65 54'W
6/14 0600 YB: 33 49'N, 65 46'W
6/14 0430 YB: 33 53'N, 65 49'W
6/14 0817 YB: 33 42'N, 65 38'W
11 NM
2 NM
10'
5'
55'
50'
45'
15'
40'
35'
FIX 2000
VENUS 0420 LOP
VENUS 0420
MOON 0604 LOP
DR 0400
MOON 0430
SUN C 0817 LOP
DR 0800
0430 FIX
0817 FIX

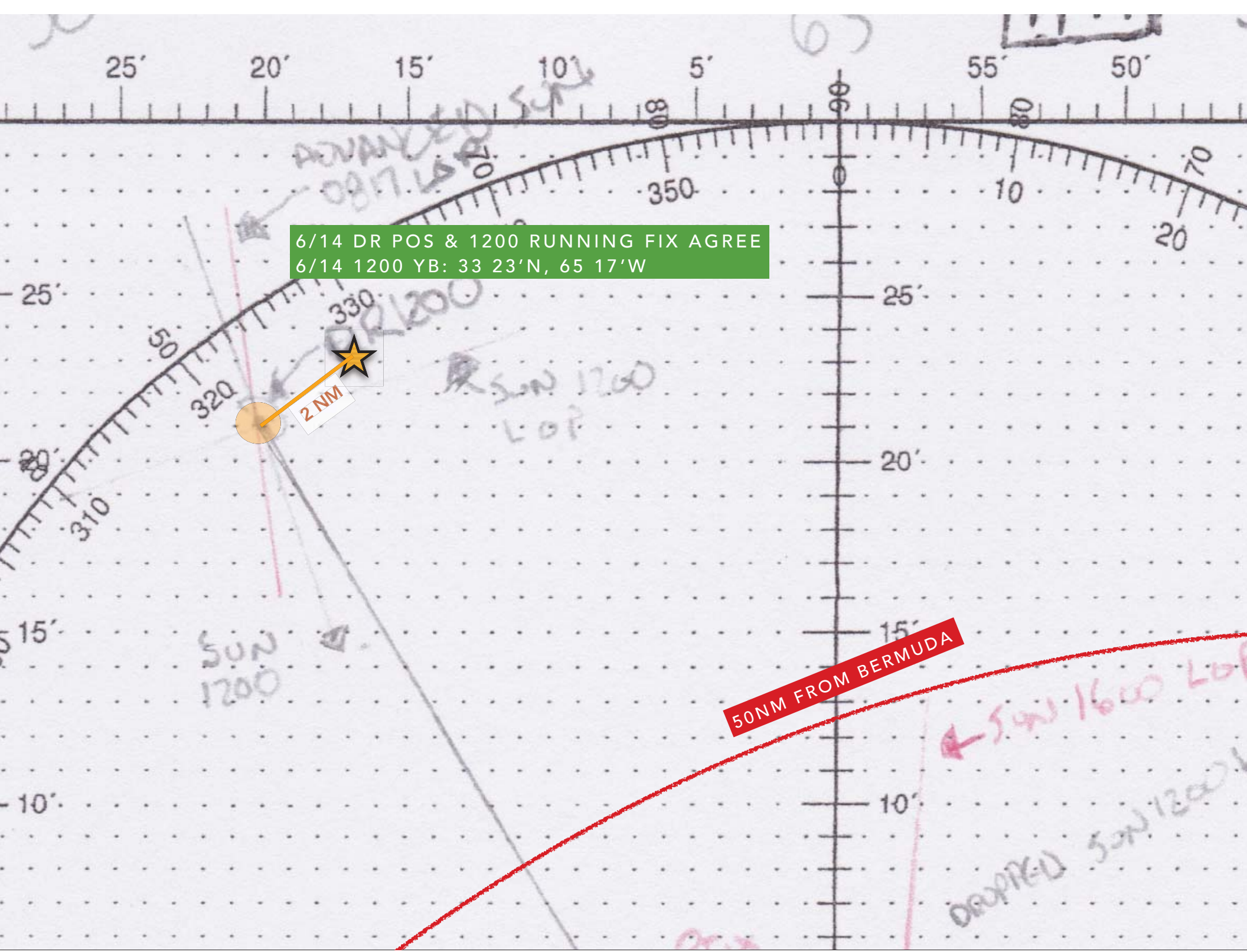

NO WIND FROM:
6/13 2000 - 6/14 0600
6/13 2000 YB: 34 01'N, 65 54'W
6/14 0600 YB: 33 49'N, 65 46'W
6/14 0430 YB: 33 53'N, 65 49'W
6/14 0817 YB: 33 42'N, 65 38'W
11 NM
10 NM
2 NM
FIX 2000
VENUS 0420 LOP
VENUS 0420
MOON 0604 LOP
DR 0400
MOON 0604
MOON 0430
SUN 0604 LOP
SUN 0817
DR 0800
10'
5'
55'
50'
45'
15'
40'
35'

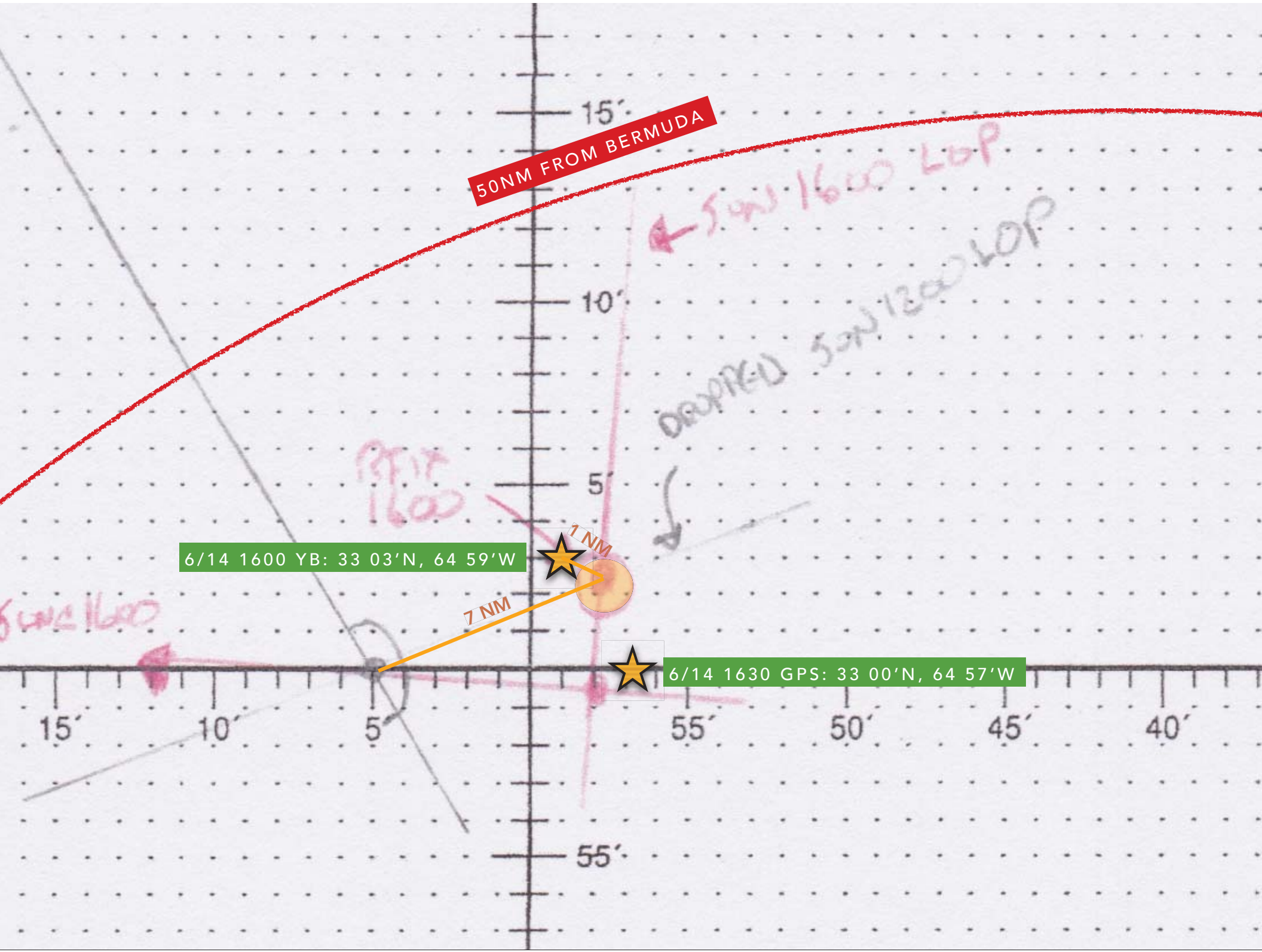

NO WIND FROM:
6/13 2000 - 6/14 0600
6/13 2000 YB: 34 01'N, 65 54'W
6/14 0600 YB: 33 49'N, 65 46'W
6/14 0430 YB: 33 53'N, 65 49'W
6/14 0817 YB: 33 42'N, 65 38'W
11 NM
10 NM
2 NM
10 NM
1 NM
10'
5'
55'
50'
45'
15'
10'
5'
55'
50'
45'
40'
35'
FIX 2000
VENUS @ 0420
DR 0400
0430 FIX
SUN @ 817
DR 0800

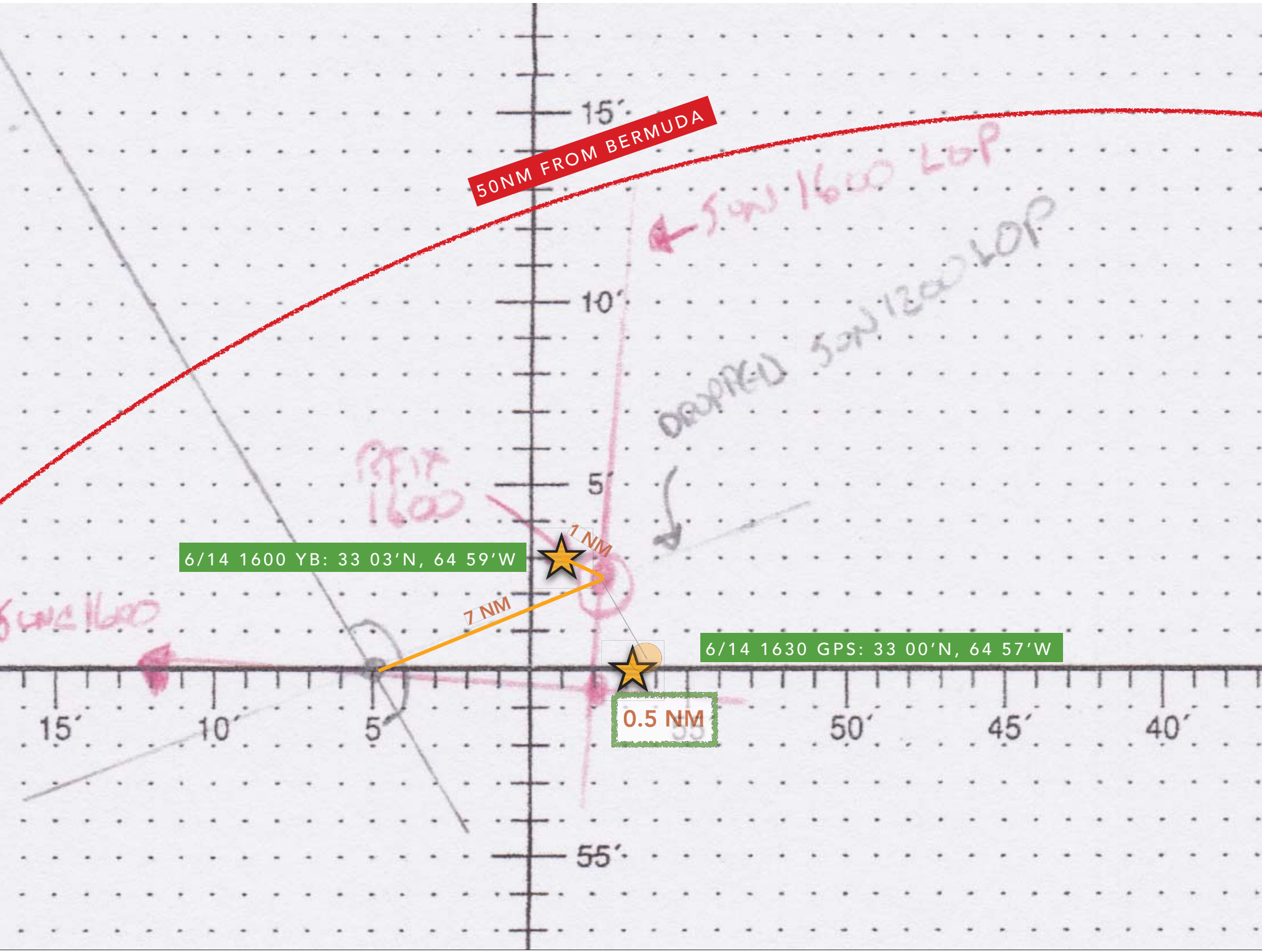

LIFESLING

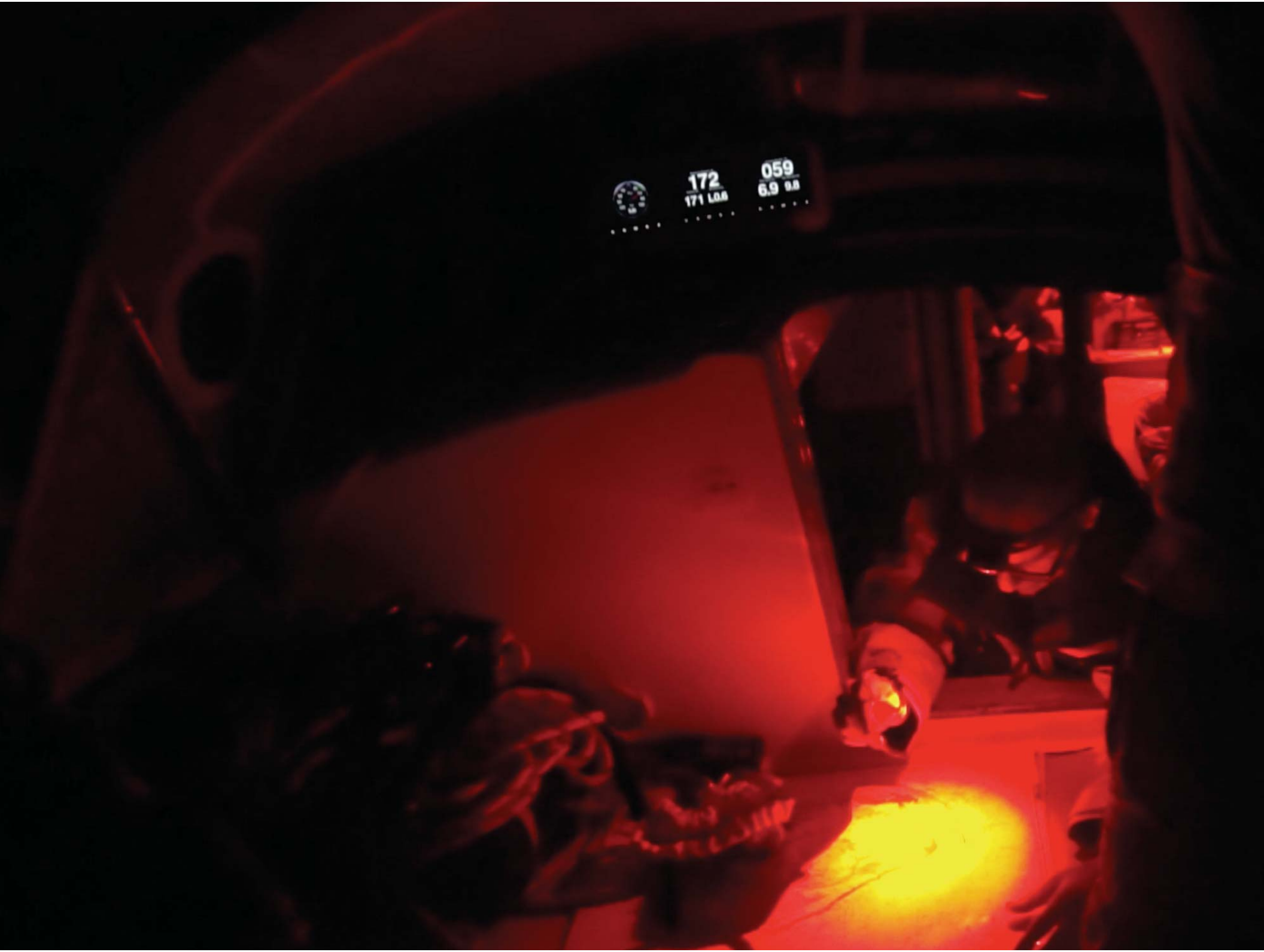

COMPETITION
Bermuda Long Tails!


#11
JUNE 14
6/14 DR POS & 1200 RUNNING FIX AGREE
6/14 1200 YB: 33 23'N, 65 17'W
50NM FROM BERMUDA


6/14 DR POS & 1200 RUNNING FIX AGREE
6/14 1200 YB: 33 23'N, 65 17'W
2 NM
50NM FROM BERMUDA


50NM FROM BERMUDA
6/14 1600 YB: 33 03'N, 64 59'W
6/14 1630 GPS: 33 00'N, 64 57'W
1 NM
7 NM
15'
10'
5'
55'
15'
10'
5
55'
50'
45'
40'


50NM FROM BERMUDA
6/14 1600 YB: 33 03'N, 64 59'W
1 NM
7 NM
6/14 1630 GPS: 33 00'N, 64 57'W
0.5 NM
15'
10'
5'
55'
50'
45'
40'


172
171 LOA
059
6.9 9.8


Finish Line!


YAMAHA

Final Division: Founders Class: D Start: June 09, 2017 12:10:00 EDT

C #	D #	Sail Number	Yacht Name	Skipper	ORR	EC	ORR Adj.	Finish (ADT) Date Time	Elapsed Time	Corrected Time	Penalty Time	Corrected + Penalty
1	1	32002	Selkie	G.J. "Chip" Bradish	0.710	C	0.689	06-15 00:51:30	5d 11:41:30	3d 18:44:08		3d 18:44:08
2	2	135	Tiara	John Ring	0.733	C	0.711	06-15 00:52:22	5d 11:42:22	3d 21:38:35		3d 21:38:35
3	3	USA60617	Cynosure	Logan Greenlee	0.730	E	0.730	06-14 21:33:19	5d 08:23:19	3d 21:43:25		3d 21:43:25
4	4	1913	Faith and Hope	James Putnam Frank Putnam	0.746	E	0.746	06-14 23:04:48	5d 09:54:48	4d 00:54:55		4d 00:54:55
5	5	40196	Amethyst	Kelly Shackelford	0.758	E	0.758	06-14 23:37:38	5d 10:27:38	4d 02:53:21		4d 02:53:21
6	6	2175	Hotspur II	Ron Wisner	0.782	C	0.759	06-15 01:53:52	5d 12:43:52	4d 04:44:34		4d 04:44:34
7	7	42023	Sparky	Rob McAlpine	0.791	C	0.767	06-15 00:55:52	5d 11:45:52	4d 05:03:48		4d 05:03:48
8	8	USA5181	Spirit	Manny Hontoria Tim Harris	0.811	E	0.811	06-14 18:57:58	5d 05:47:58	4d 06:01:24		4d 06:01:24
9	10	60043	Pouchy	Stephen Ricci	0.819	C	0.794	06-15 00:13:14	5d 11:03:14	4d 08:03:24		4d 08:03:24
10	11	USA42605	Silhouette	David Caso	0.810	E	0.810	06-14 21:38:17	5d 08:28:17	4d 08:03:43		4d 08:03:43
RET	RET	203	Southern Cross	David DePree Robin Fletcher DePree	0.738	E	0.738					
RET	RET	29388	Frolic	Ray Cullum	0.818	C	0.793					
DNS	DNS	1056953	Wind Tango	Ed Redmond Robert Maltby	0.799	E	0.799					

C # is class rank, **D #** is division rank. EC is **E**lectronic or **C**elestial navigation.

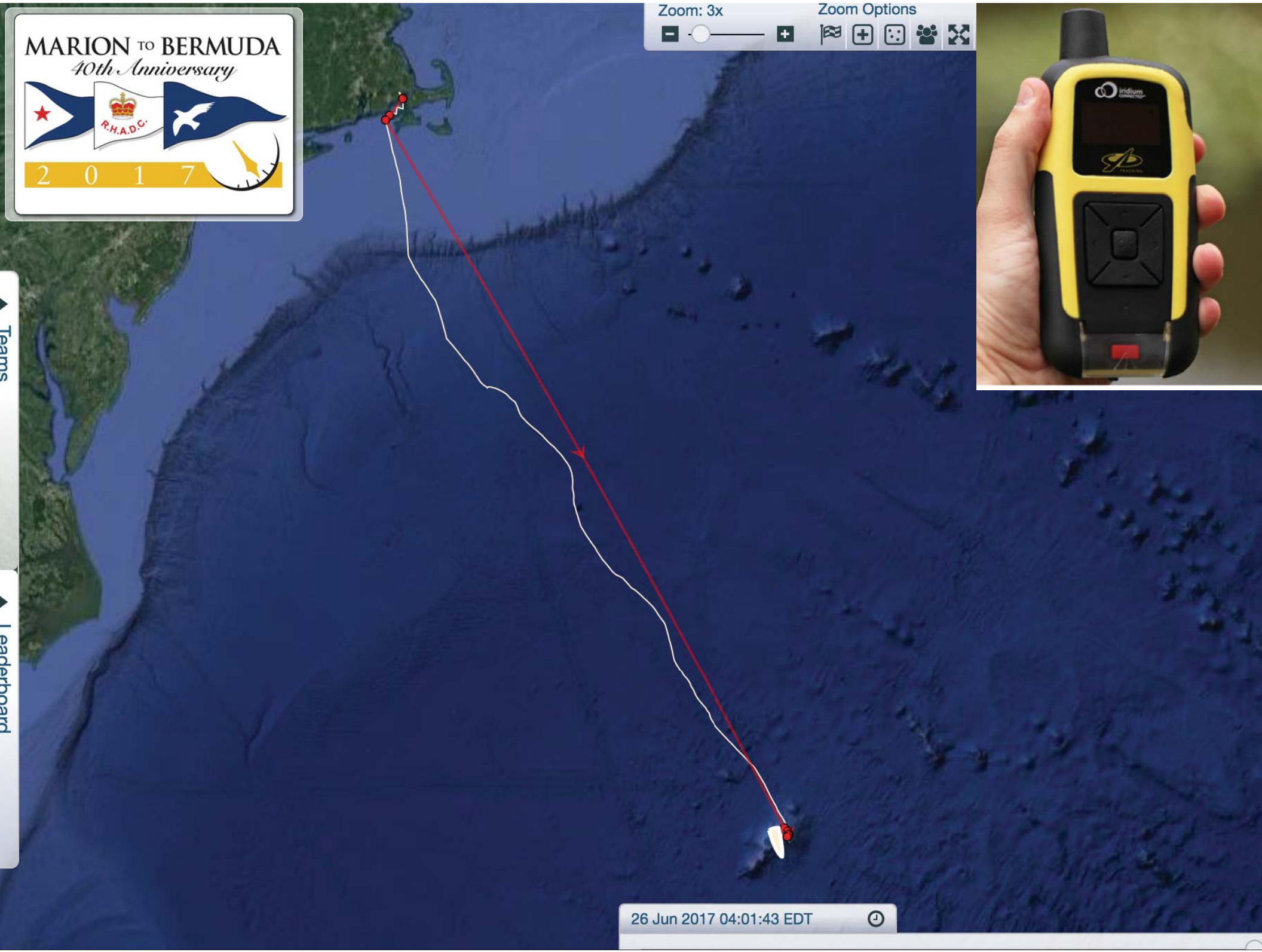
2nd in Class D, 2nd in Celestial, & 2nd Overall :)

BECOMING A CELESTIAL NAVIGATOR

FINAL THOUGHTS

BECOMING A CELESTIAL NAVIGATOR

EXTRAS

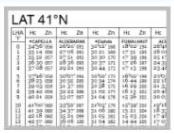

MARION TO BERMUDA
40th Anniversary
R.H.A.D.C.
2017
Zoom: 3x
Zoom Options
Teams
Leaderboard
26 Jun 2017 04:01:43 EDT

ReedNavigation.com

Classes in celestial navigation and related topics

Clockwork Mapping

HOME | ABOUT US | NAVIGATION CLASSES | TOOLS | RESOURCES



Celestial Navigation Classes: Fall 2017

All classes and workshops are held at the Treworgy Planetarium at Mystic Seaport in Mystic, Connecticut. Also this fall, the Treworgy Planetarium and the NavList community are hosting a *Celestial Navigation Symposium* at Mystic Seaport November 3-5, which I am organizing. We'll have many fascinating presentations on various aspects of the history and future of celestial navigation. Details: fer3.com/mystic2017/.

> *"A great opportunity to learn celestial navigation in an immersive environment under the guidance of a fantastic teacher, cartographer, and master navigator. Frank Reed's style integrates history, mechanics, observation, and the planetarium together to produce the best two-day course available, anywhere."*
>
> *—Philip Sadler, Lecturer in Astronomy, Director Science Education, Harvard University.*

- **Celestial Navigation: 19th Century Methods**
  Offered once this Fall: October 28-29.
  Real celestial navigation from the historical perspective of the Age of Sail. Hands-on sextant observations with historical instruments and historical pencil and paper calculations, just as it was

Upcoming Events in 2017

- Oct. 14-15: Modern Celestial Navigation
- Oct. 28-29: Celestial 19th Century Methods
- Nov. 3-5 *(not a class)*: Navigation Symposium
- Nov. 11-12: Modern Celestial Navigation
- Private Tutorials: Anytime.
- Spring class schedule coming soon!

Contact Us

- By email or phone
  Toll-free: 888.281.3132.

Is the sheet supposed to work with ho249 or ho229? Plotting from a DR position is usually ho229. The Int will be different.

It looks like it's supposed to be ho249

12/30/16, 5:51 PM

I'm still farting around with my understanding of LOP but I feel like the fog is begging to clear. There are clearly many ways to do this... here's a nice summary:

oceannavigator.com

I think when I took the course with Frank Reed (you got the universal plotting sheet we used at Magnolia from his website) in Mystic he was clearly showing me the Law of Cosines method.

A lot less looking stuff up in tables...

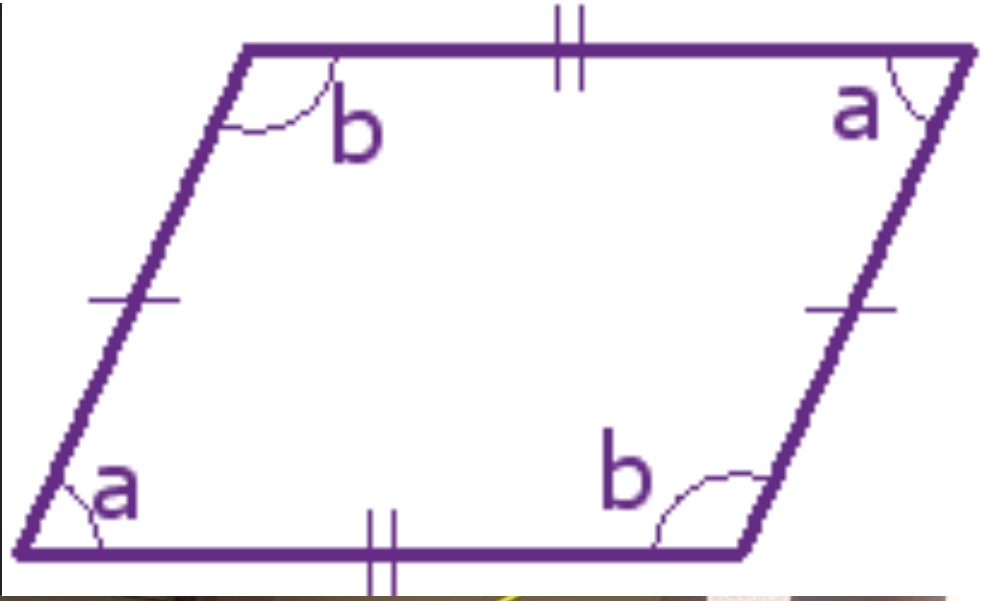
Sight reduction methods compared

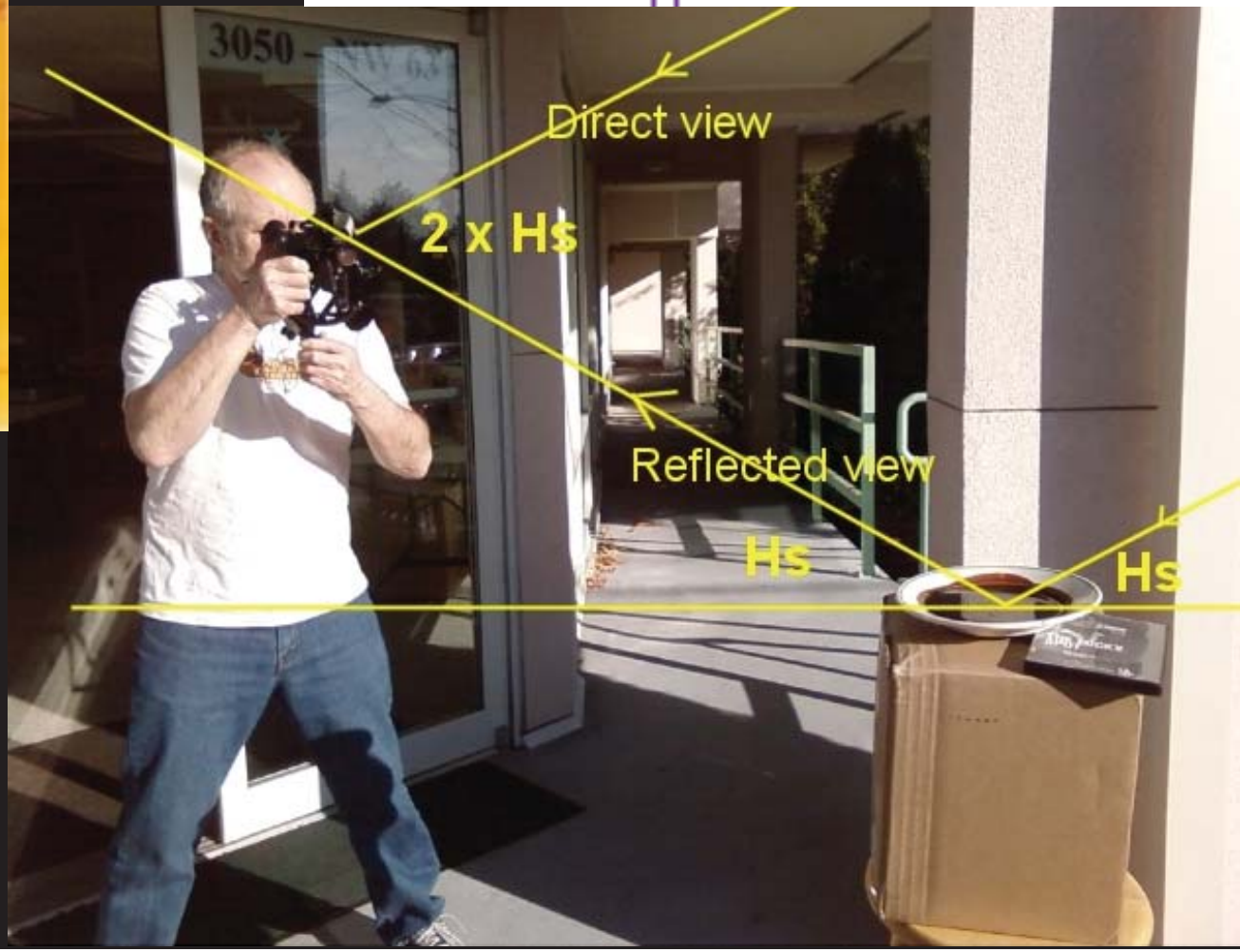
Jan 1, 2003

To the aspiring celestial navigator, the process of converting a sextant sight into a line of position (LOP) on a plotting sheet or chart may seem overwhelming and full of pitfalls.

Compounding the confusion for the student of celestial navigation is the fact that there are many different ways to do sight reduction. All have their pros and cons. In this overview, we'll look at the differences among the various methods.

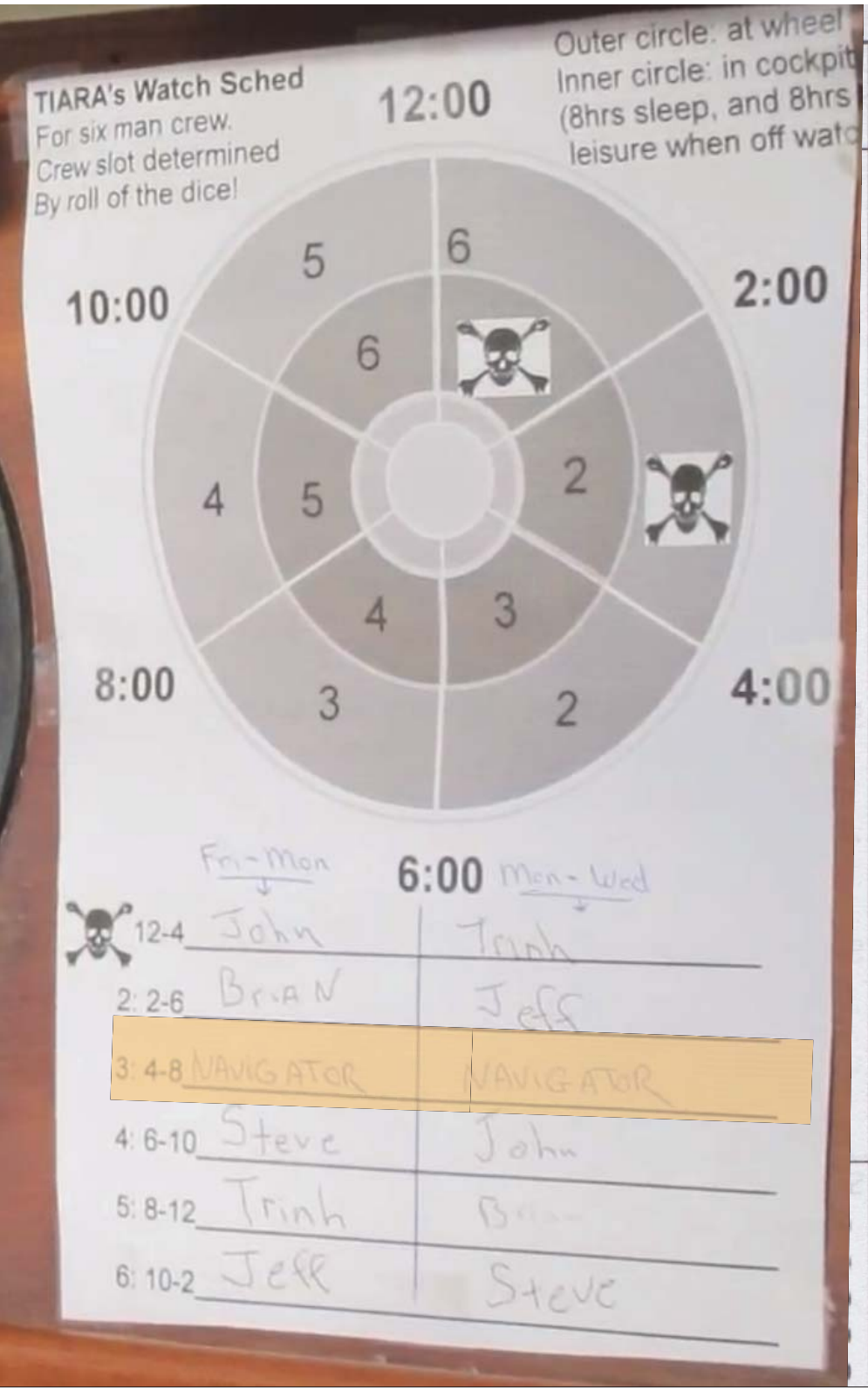
All methods discussed below are table-based methods (with the exception of the Law of Cosines method). They utilize tables to solve the navigational triangle. This means they require only addition and subtraction to reduce the sight. An electronic calculator is usually required for the multiplication and division necessary to solve the trigonometric equations that are part of the Law of Cosines method.


b
a
a
b


Direct view
2 x Hs
Reflected view
Hs
Hs


ARTIFICIAL
HORIZON

th.com]



Lat.	Twilight Naut.	Twilight Civil	Sunrise	Moonrise 9	Moonrise 10	Moonrise 11
°	h m	h m	h m	h m	h m	h m
N 72	▭	▭	▭	▬	▬	▬
N 70	▭	▭	▭	23 01	24 15	00 15
68	▭	▭	▭	22 09	23 11	23 53
66	////	////	00 27	21 37	22 36	23 20
64	////	////	01 39	21 14	22 11	22 55
62	////	////	02 14	20 55	21 51	22 36
60	////	01 02	02 39	20 40	21 35	22 20
N 58	////	01 46	02 59	20 27	21 21	22 07
56	////	02 14	03 15	20 16	21 09	21 56
54	00 57	02 35	03 29	20 06	20 59	21 45
52	01 37	02 52	03 41	19 57	20 50	21 36
50	02 03	03 07	03 51	19 49	20 41	21 28
45	02 47	03 36	04 13	19 33	20 24	21 11
N 40	03 17	03 58	04 31	19 19	20 10	20 57
35	03 40	04 16	04 46	19 07	19 58	20 45
30	03 58	04 31	04 58	18 57	19 47	20 35
20	04 26	04 55	05 20	18 40	19 29	20 17
N 10	04 49	05 16	05 39	18 25	19 13	20 01
0	05 07	05 33	05 56	18 11	18 59	19 47
S 10	05 24	05 50	06 13	17 57	18 44	19 32
20	05 40	06 07	06 31	17 42	18 28	19 17
30	05 56	06 26	06 52	17 25	18 10	18 59
35	06 04	06 36	07 04	17 15	18 00	18 48
40	06 14	06 48	07 18	17 03	17 48	18 36
45	06 24	07 01	07 34	16 50	17 34	18 22
S 50	06 35	07 16	07 55	16 34	17 17	18 05
52	06 40	07 24	08 04	16 26	17 09	17 57
54	06 46	07 32	08 15	16 18	17 00	17 48
56	06 52	07 41	08 28	16 08	16 49	17 38
58	06 58	07 51	08 42	15 58	16 38	17 27
S 60	07 06	08 02	08 59	15 45	16 24	17 13

Ed,

We just spent 24 hours on Tiara the boat we'll use in the race.

We used celestial navigation and dead reckoning during that time to keep track of our position and it went pretty well... I also know we had pretty ideal conditions with clear skies, a visible moon after sunrise, and calm seas.

It felt really gratifying to get a fix from the moon and sun about an hour after sunrise this morning!

A couple of things I'd love your advice about:

- It was very hard for me to get altitude measurements for any star or planet. Most of my measurements were way way off. I spent a lot of time making sure that I knew what body I was measuring in nautical twilight, but when I saw something through the sextant telescope... I wasn't sure if it was the same body I was looking at with the naked eye.

- The captain told me that it was better to shoot stars vs. planets because planets were unreliable... "they are called the wanderers"... he said mysteriously... but this bothered me since the wandering is predictable. Planets are certainly easier to pick out in the night sky. Is one better than another?

- My arm was getting fatigued because it takes me a while to get a fix.

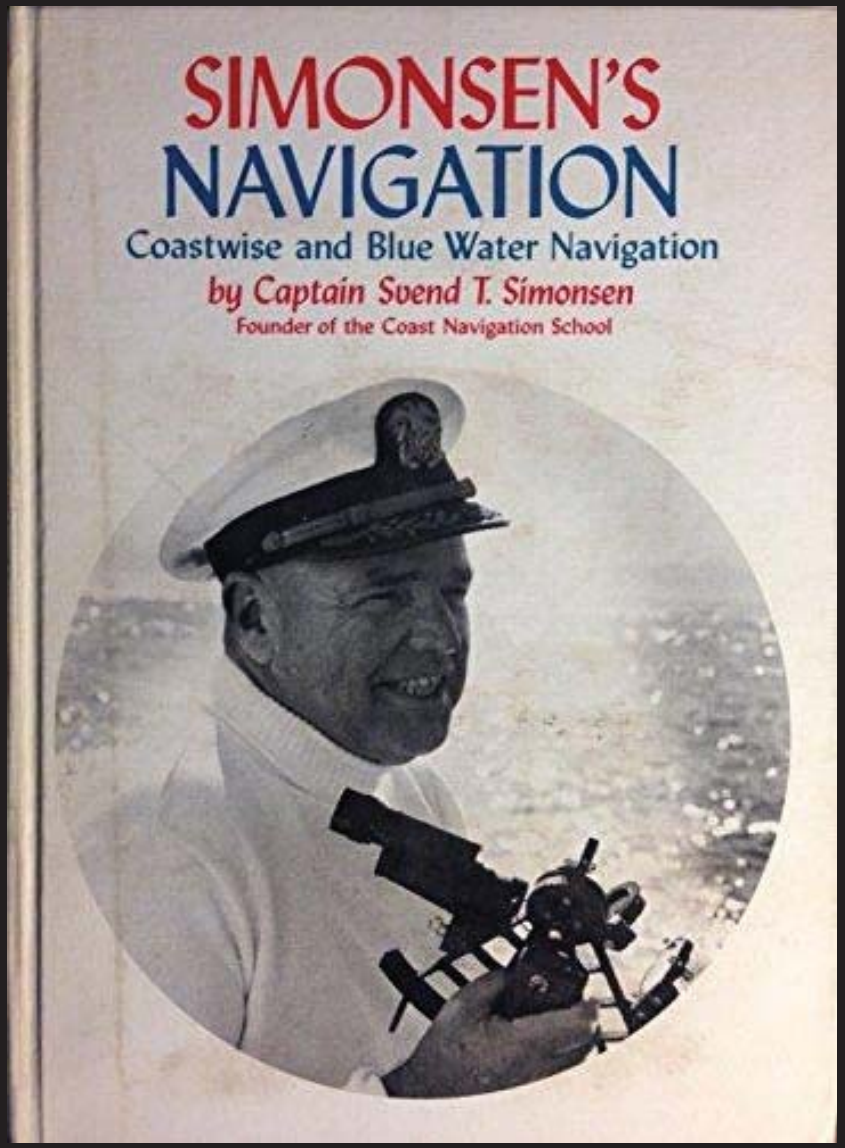
Any advice would be most appreciated. Hope you trip is going well. Thanks!

Bob

BECOMING A CELESTIAL NAVIGATOR

TOOLS


SIMEX MK II
JAPAN

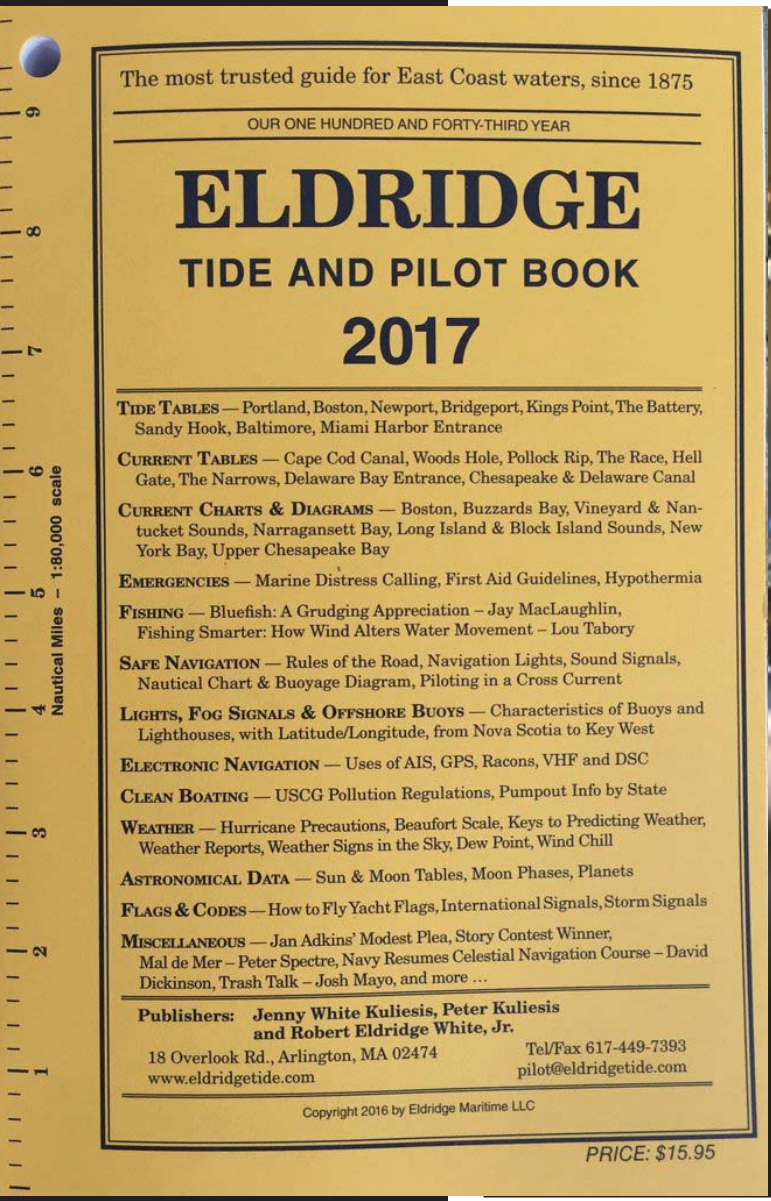


- Retired merchant seaman officer
- Coast Navigation School: Santa Barbara, CA
- Manufactured by Tamaya: Tokyo, Japan
- .1 micrometer (precision may not be realistic)
- Polarizing lens for filtering

[source: http://sextant.com]

If you need a sextant fixed, this is the man to do it

[BOSTON GLOBE 3/10/2017]

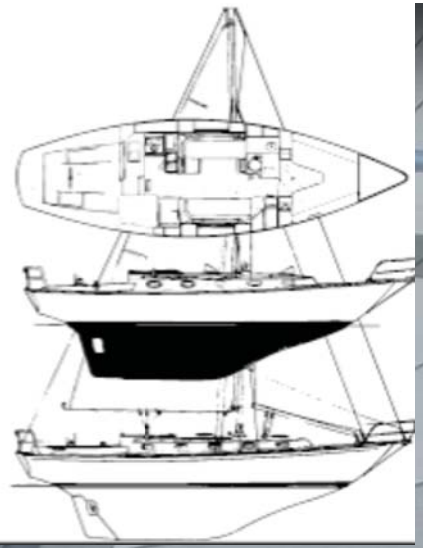


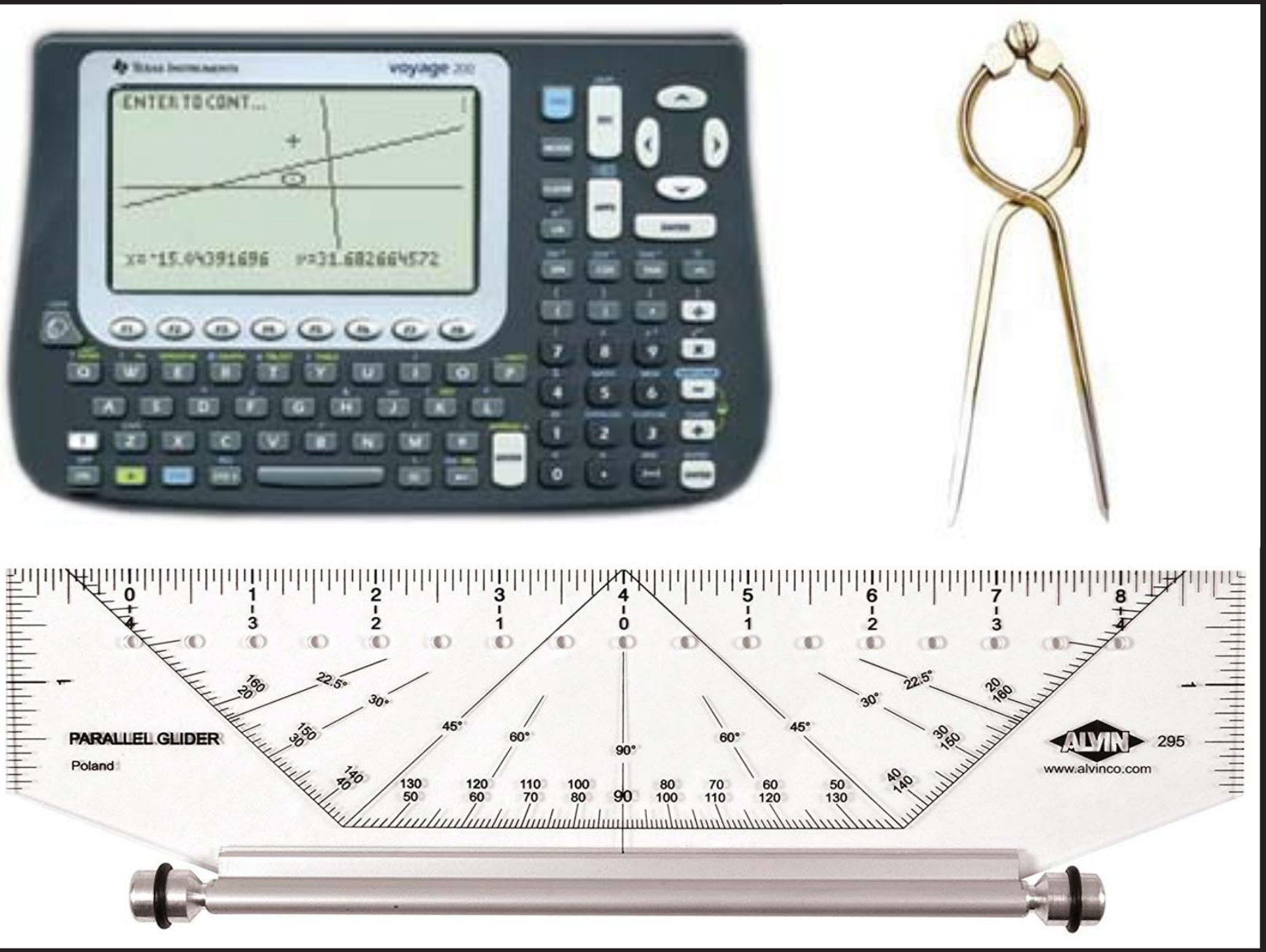
JONATHAN WIGGS/THE BOSTON GLOBE

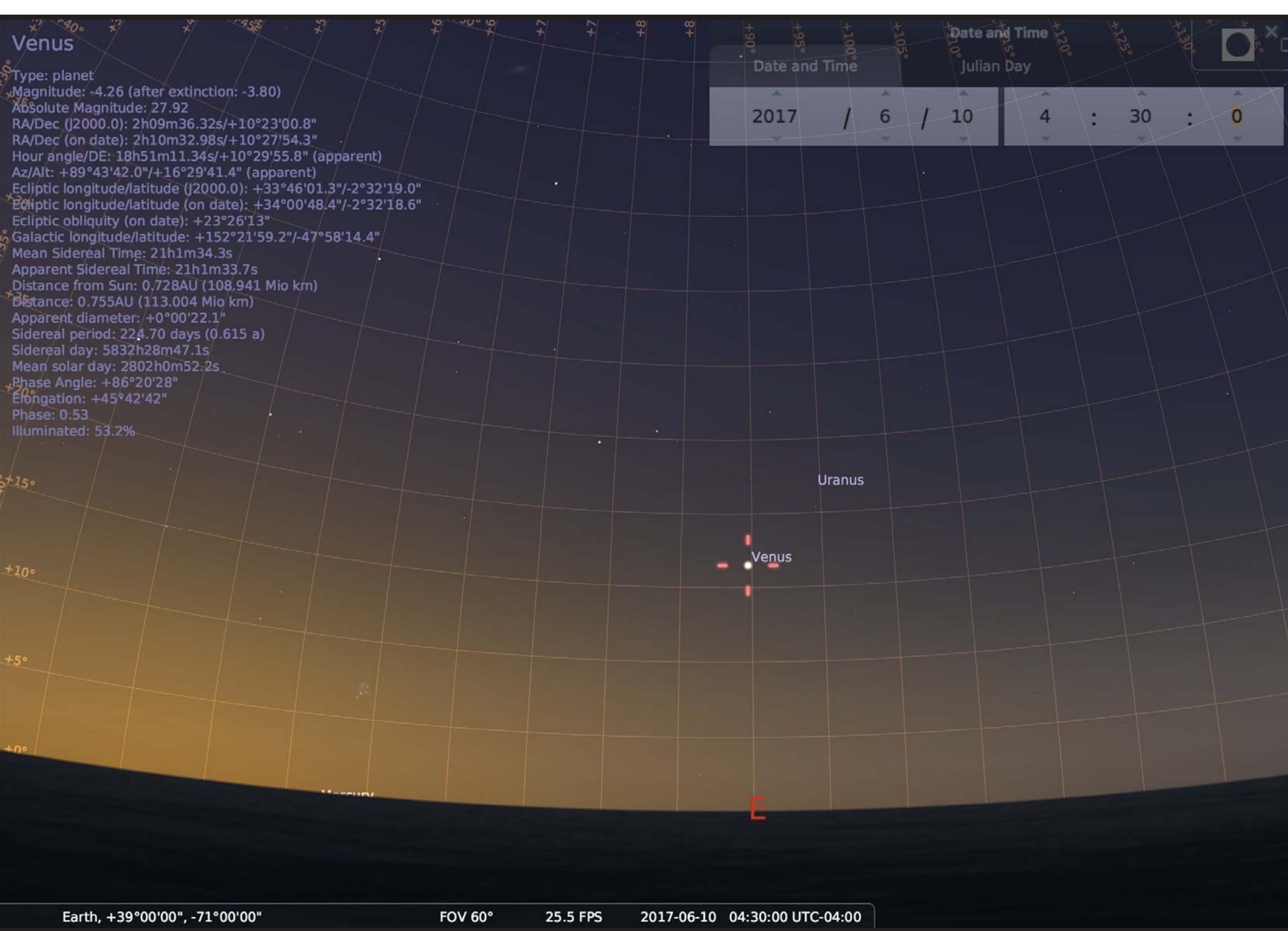
Ridge White operates Robert E. White Instruments out of his basement workshop in Medfield.

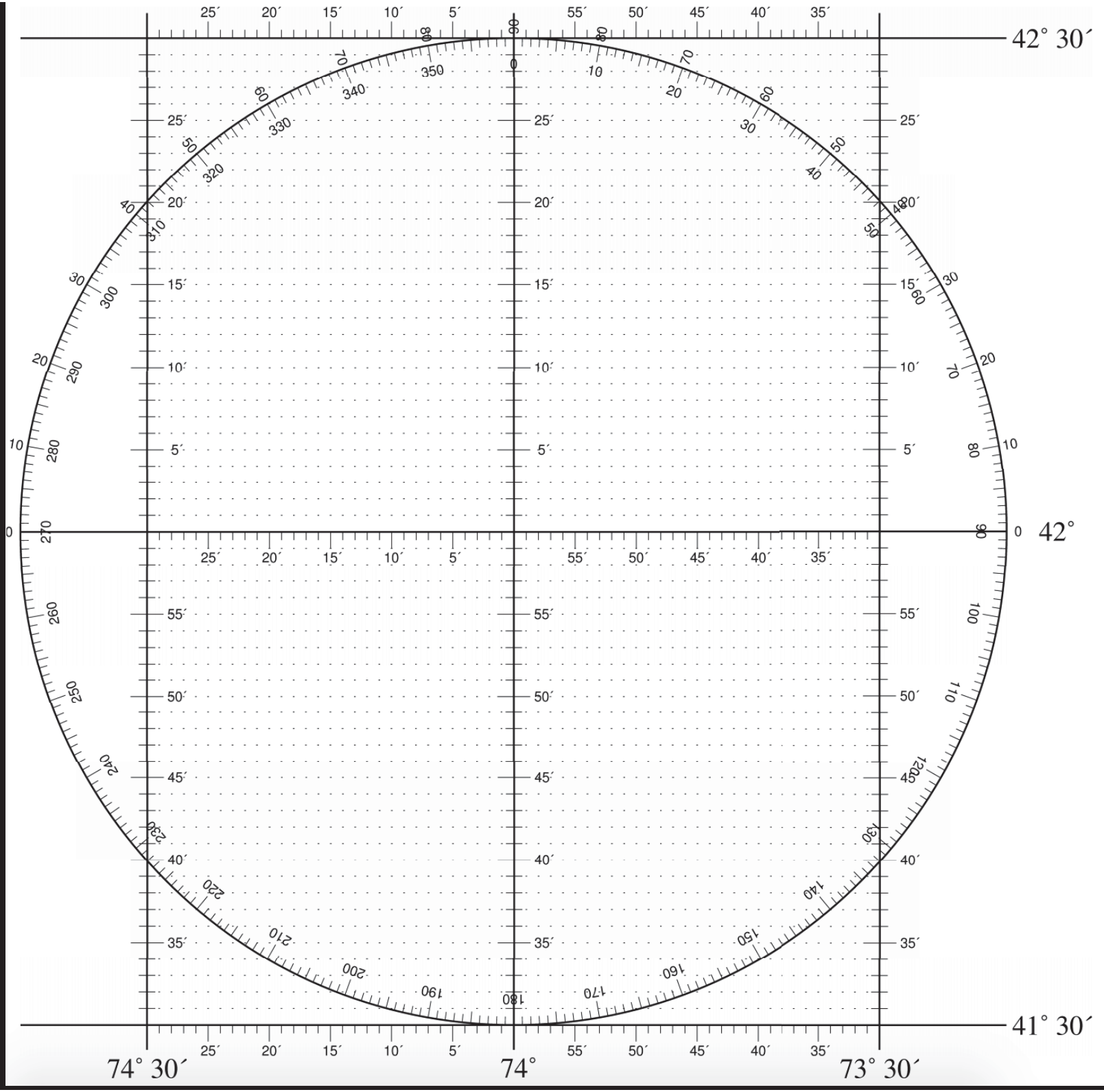
Cape Dory 36

LOA: 36' 1"
LWL: 27'
Beam: 10'8"
Draft: 5'
Sail Area: 622 sq. ft.
Displacement: 16,100 lbs.
Ballast: 6,050 lbs.

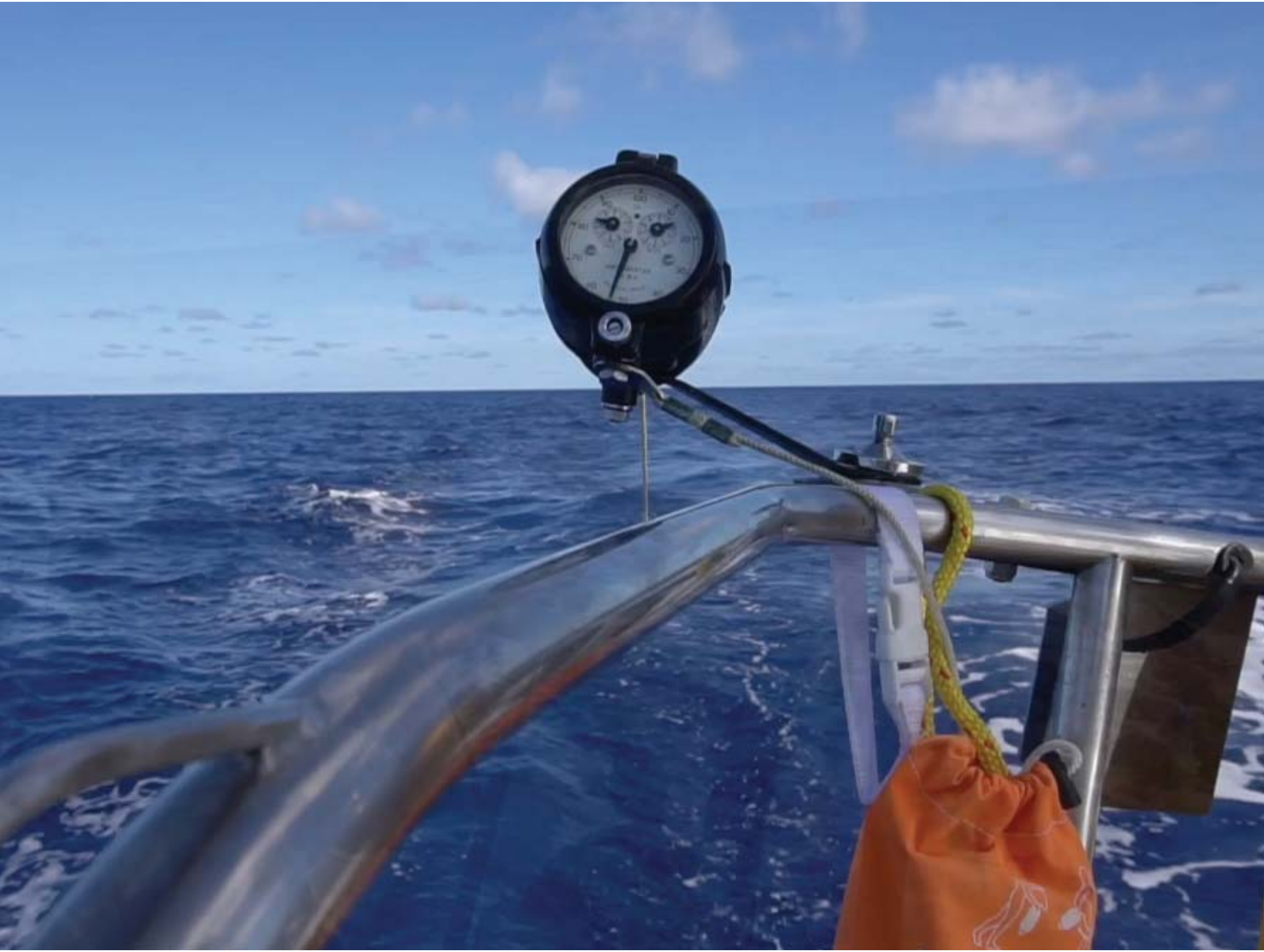



voyage 200
ENTER TO CONT...
x=-15.04391696 y=31.682664572
PARALLEL GLIDER
Poland
ALVIN
295
www.alvinco.com


Venus
Type: planet
Magnitude: -4.26 (after extinction: -3.80)
Absolute Magnitude: 27.92
RA/Dec (J2000.0): 2h09m36.32s/+10°23'00.8"
RA/Dec (on date): 2h10m32.98s/+10°27'54.3"
Hour angle/DE: 18h51m11.34s/+10°29'55.8" (apparent)
Az/Alt: +89°43'42.0"/+16°29'41.4" (apparent)
Ecliptic longitude/latitude (J2000.0): +33°46'01.3"/-2°32'19.0"
Ecliptic longitude/latitude (on date): +34°00'48.4"/-2°32'18.6"
Ecliptic obliquity (on date): +23°26'13"
Galactic longitude/latitude: +152°21'59.2"/-47°58'14.4"
Mean Sidereal Time: 21h1m34.3s
Apparent Sidereal Time: 21h1m33.7s
Distance from Sun: 0.728AU (108.941 Mio km)
Distance: 0.755AU (113.004 Mio km)
Apparent diameter: +0°00'22.1"
Sidereal period: 224.70 days (0.615 a)
Sidereal day: 5832h28m47.1s
Mean solar day: 2802h0m52.2s
Phase Angle: +86°20'28"
Elongation: +45°42'42"
Phase: 0.53
Illuminated: 53.2%
Date and Time
Date and Time
Julian Day
2017 / 6 / 10
4 : 30 : 0
Uranus
Venus
+15°
+10°
+5°
+0°
E
Earth, +39°00'00", -71°00'00"
FOV 60°
25.5 FPS
2017-06-10 04:30:00 UTC-04:00


42° 30′
42°
41° 30′
74° 30′
74°
73° 30′


0
10
20
30
40
50
60
70
80
90
MILES
MILES
KNOTMASTER
MK IIIA
NAUTICAL MILES
eBay



OCENS WeatherNet Content Wizard

OCENS

WeatherNet™
weather on demand

Model Preferences

Select your preferred sources of GRIB Wind/Wave data (over water only):

	Global	Europe Seas	Great Lakes
Wind	☑	☐	☐
Wave	☐	☐	☐

Select your preferred sources for GRIB General Met weather data:

	Global	Europe
Surface Pressure	☑	☐
500 mb	☑	☐
Cloud Cover	☑	☐
Precipitation	☑	☐
Air Temperature	☑	☐
Wind	☑	☐
Lifted Index	☑	☐
CAPE	☑	

Select your preferred sources for GRIB Fishing and Currents data:

	Global	Atlantic Mixed Layer	Atlantic Hi-Res	West Atlantic	East Pacific	Central Pacific	Alaskan Arctic	Great Lakes
Chlorophyll	☑							
Currents	☑		☐	☐	☐	☐	☐	☐
Sea Temp	☑		☐	☐	☐	☐	☐	
Sea Height	☑		☐	☐	☐	☐	☐	
Salinity	☑		☐	☐	☐	☐	☐	
Mixed Layer	☑	☑						

Finish

Help | < Back | Next > | Cancel

JENIFER CLARK'S GULFSTREAM

85W 80W 75W 70W 65W 60W

Legend

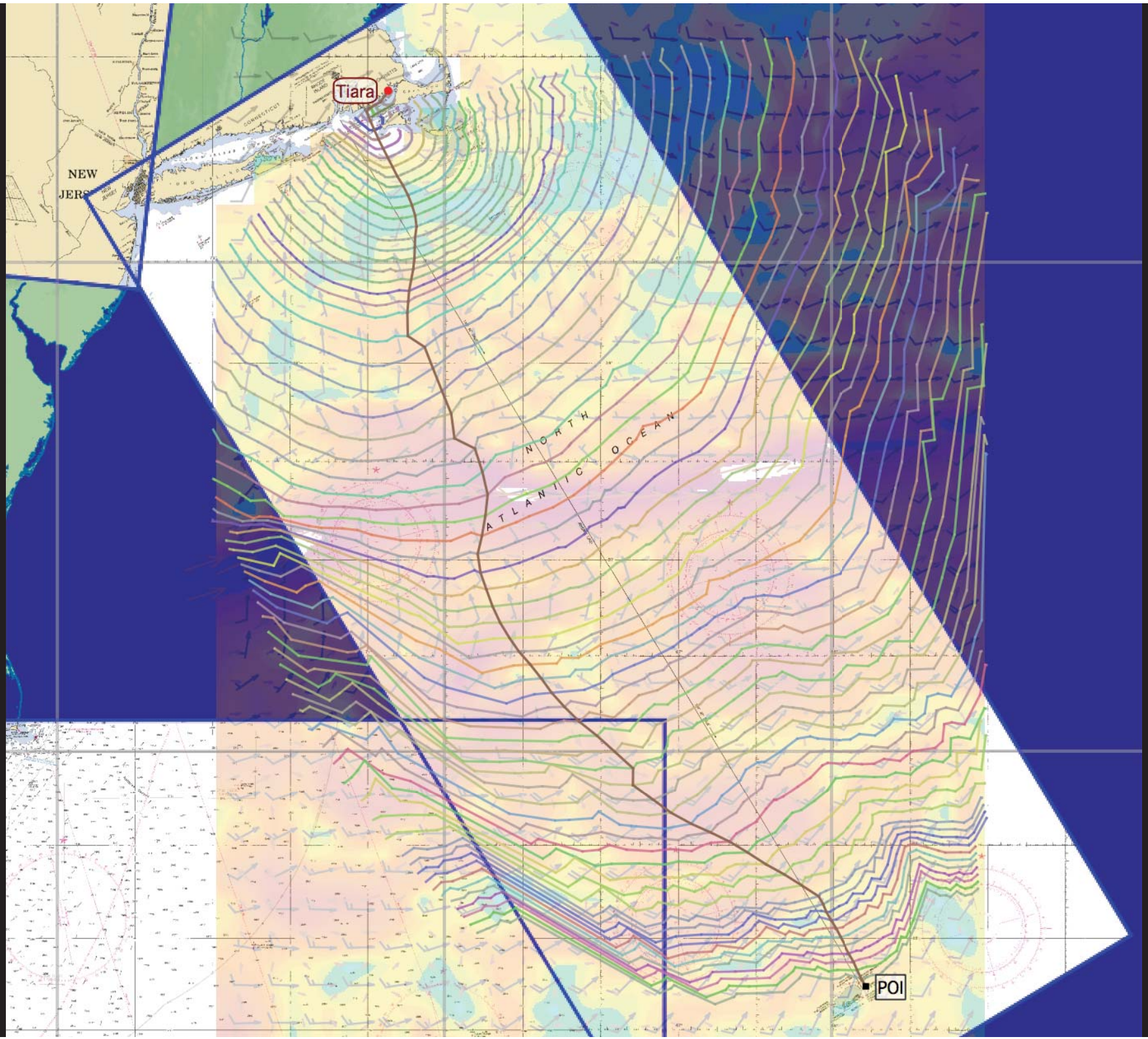
GS = Gulf Stream
WE = Warm Eddy
CE = Cold Eddy
SHW = Shelf Water
SLW = Slope Water
SAR = Sargasso Sea Water

Direction of Flow
Thermal Boundary
Canyon Line
H, N, W Canyon Locations
Hague Line

GULFSTREAM@COMCAST.NET
Phone: (410)286-5370

6/7/17

Bermuda


Tiara
NEW
JERS
NORTH
ATLANTIC OCEAN
POI

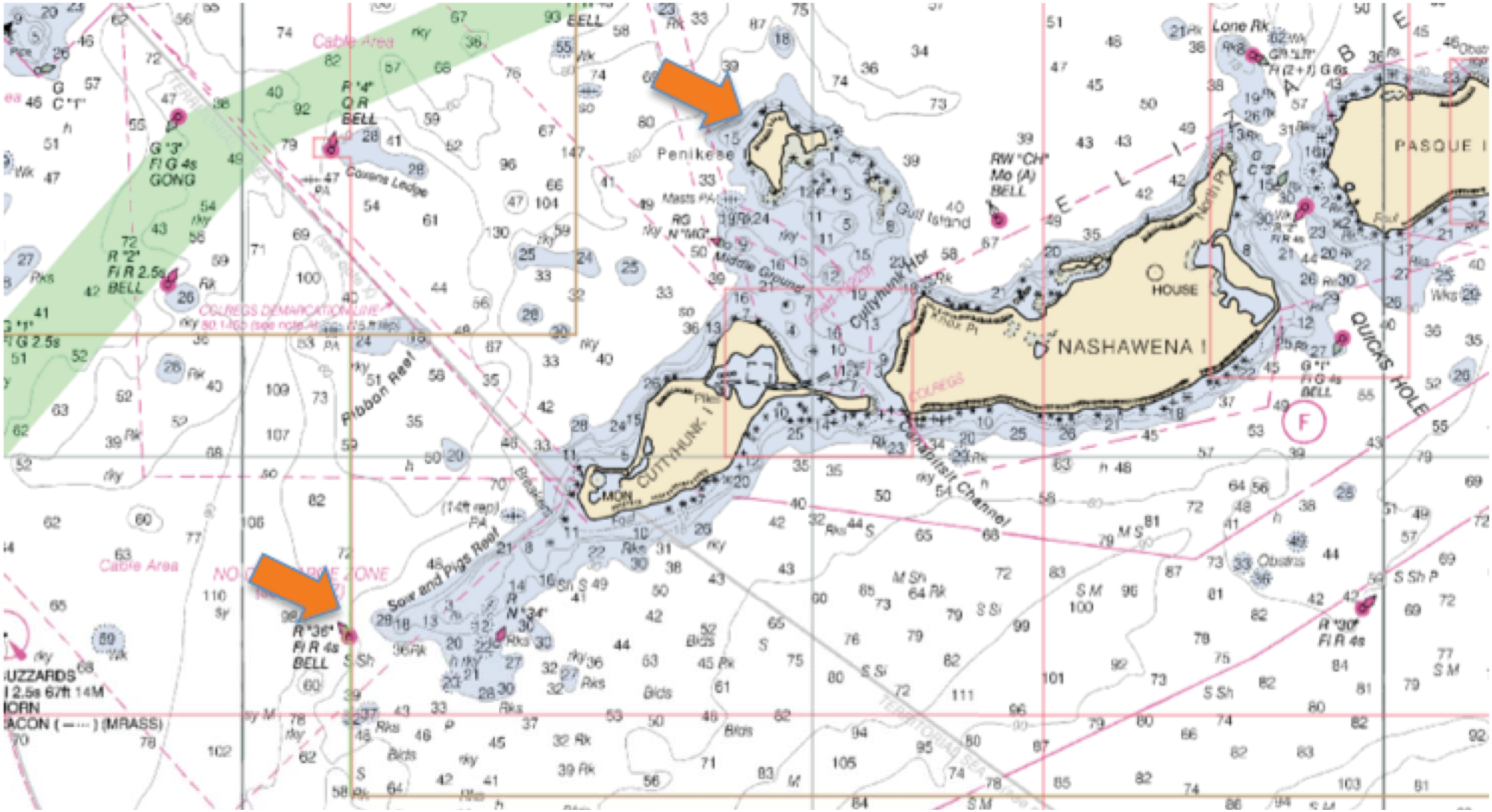
BECOMING A CELESTIAL NAVIGATOR

DAY ONE EXTRAS

In BUZZARD'S BAY must pass NW of :

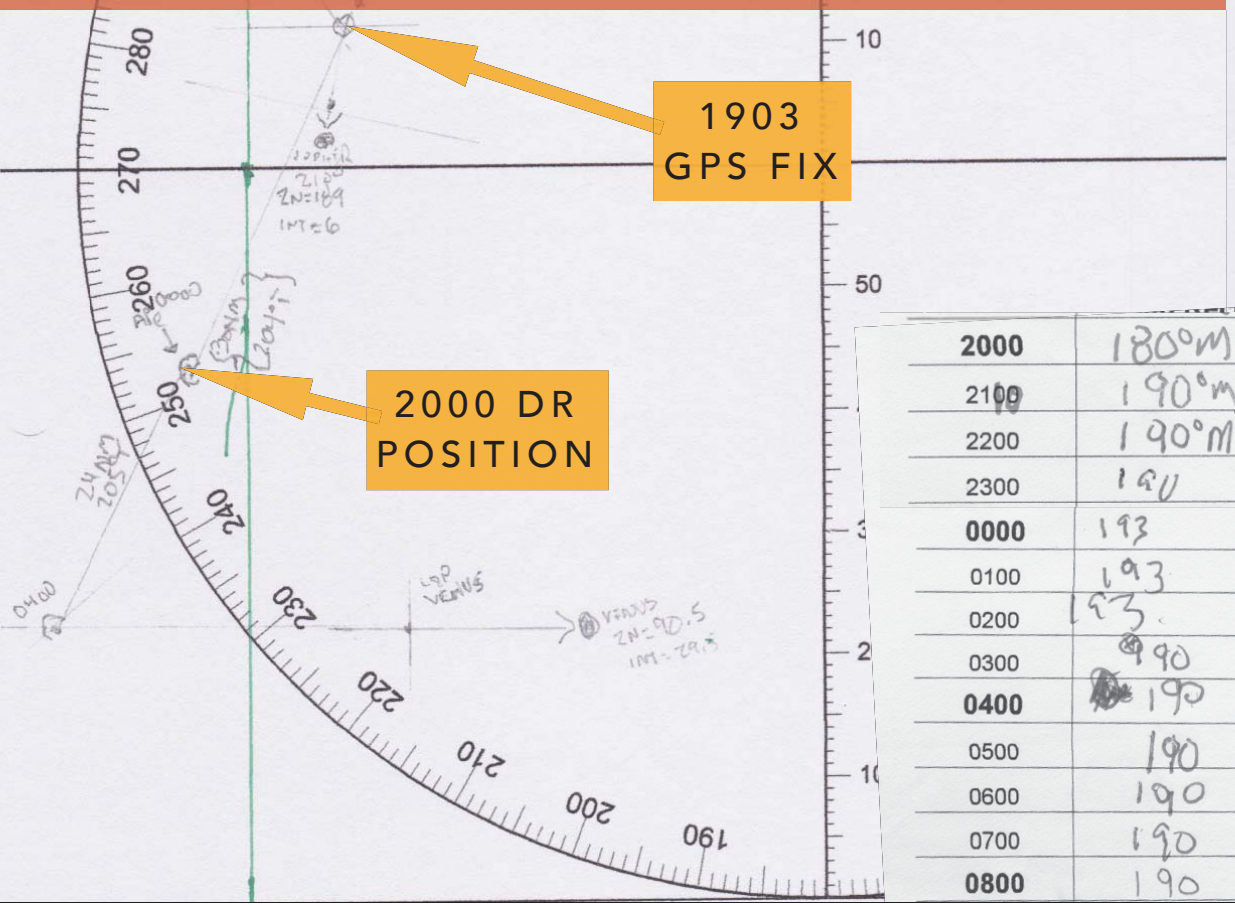
a. Yachts shall pass north and west of both United States marks. These are the only U. S. marks of the course:

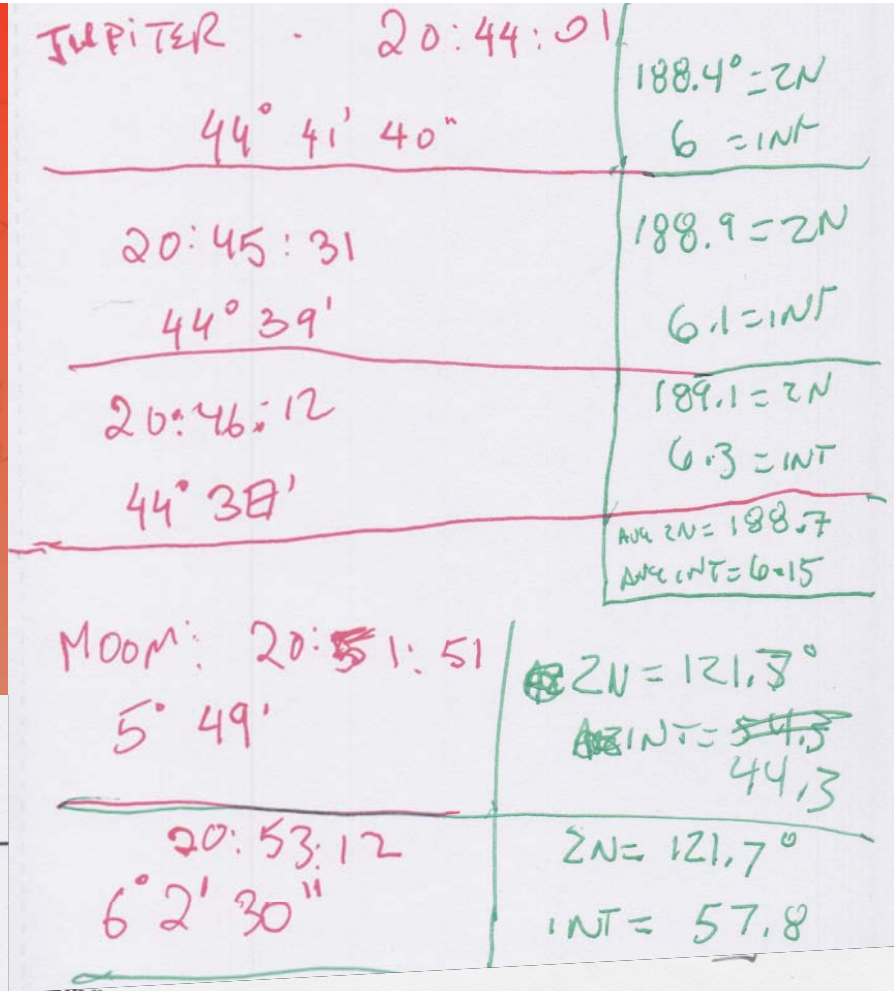
Name	Type Characteristics	Lat. (N)	Long. (W)
Penikese Island	Island	41° 27.0'	70° 55.4'
Sow & Pigs Reef	Bell Buoy "36" Fl R 4s	41° 23.8'	70° 59.1'

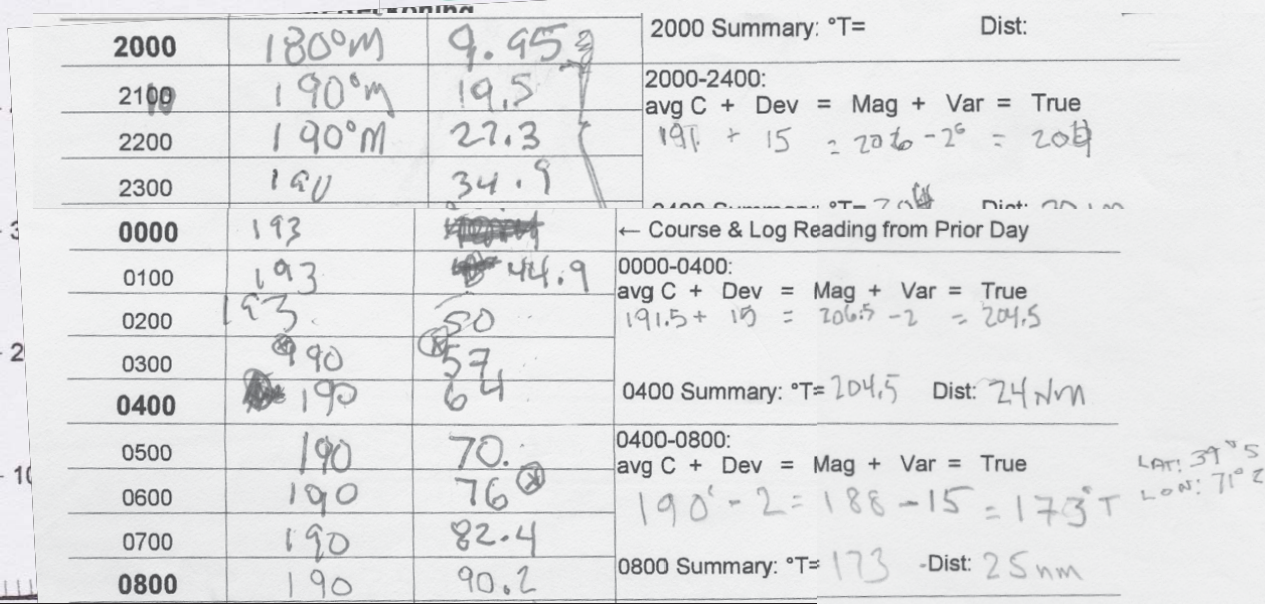


Problems:

- Moon was too low in sky for good sight @ nautical twilight.
- With just Jupiter's LOP could not get fix or running fix.
- 2000-2100 knot log readings were > 10nm indicating reading error or problem with knot log.
- Sextant mirrors and scope were covered in salt spray during evening sights.







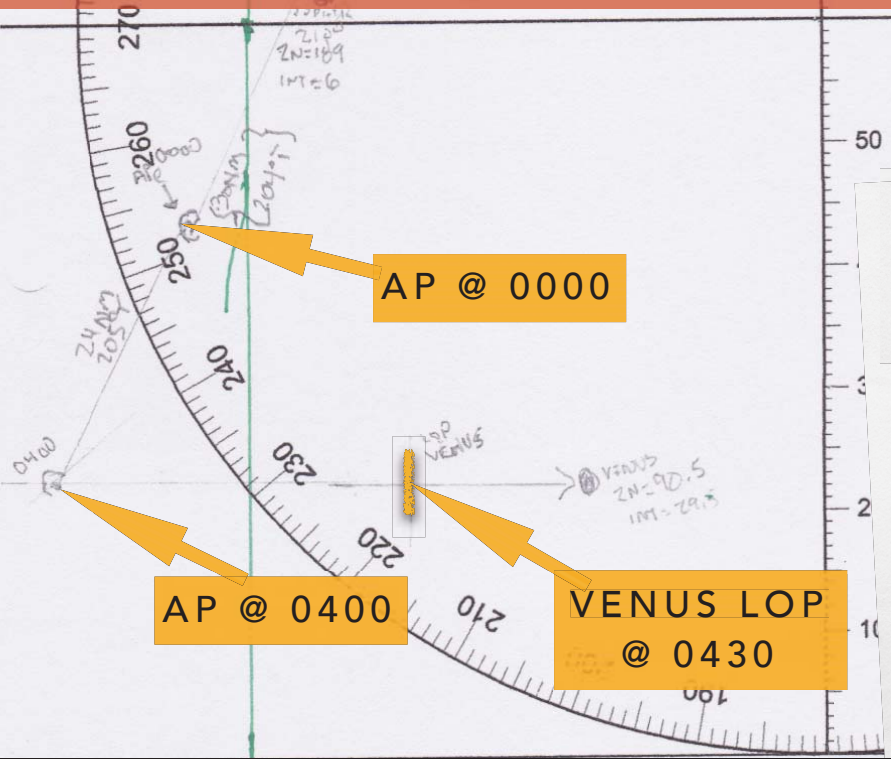
BECOMING A CELESTIAL NAVIGATOR

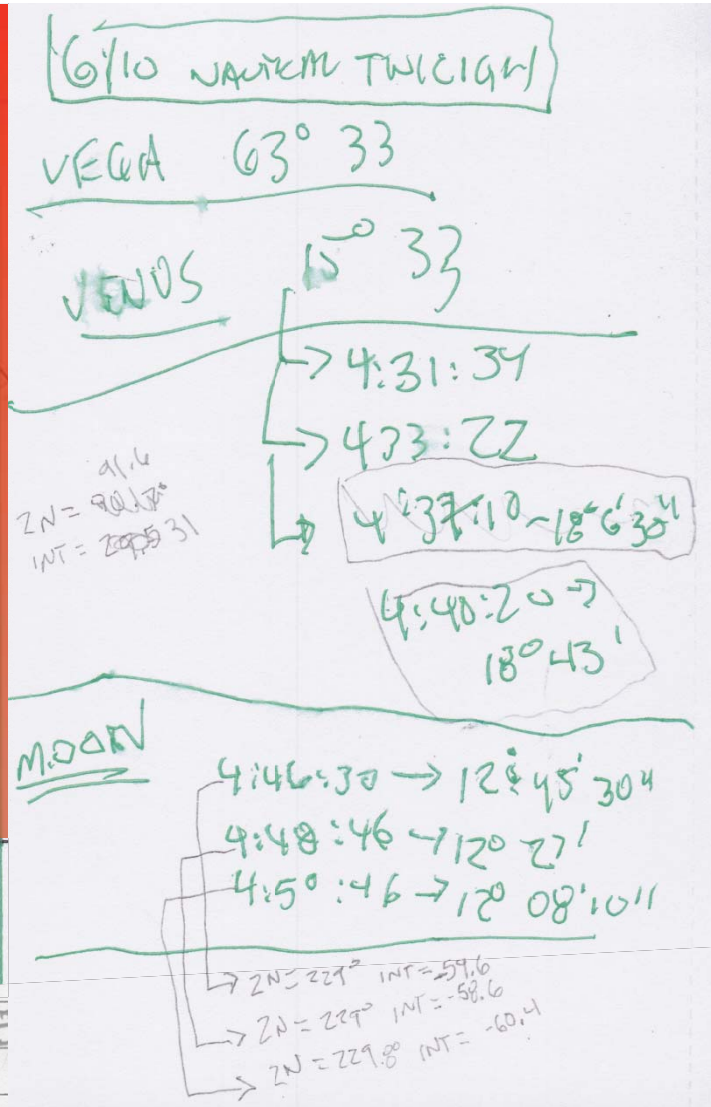
DAY THREE EXTRAS


Gill
9:12

Problems:

- Crew did not log DR entries overnight (red indicates estimates)
- Venus LOP & Moon LOPs at 06/10 dawn nautical twilight had large intercepts indicating either a DR error or a sight error.
- Moon LOP was so large that I threw it out assuming it was a sight error.
- No fix or running fix again because only one LOP @ dawn nautical twilight.
- DEV correction to magnetic compass was being added instead of subtracted so course was off 15 degrees!





2000	180°M	9.9
2100	190°M	19.5
2200	190°M	27.3
2300	190	34.9
0000	193	
0100	193	44.9
0200	193	50
0300	190	57
0400	190	64
0500	190	70.
0600	190	76
0700	190	82.4
0800	190	90.2

← Course & Log Reading from Prior Day

0000-0400:
avg C + Dev = Mag + Var = True
191.5 + 15 = 206.5 -2 = 204.5

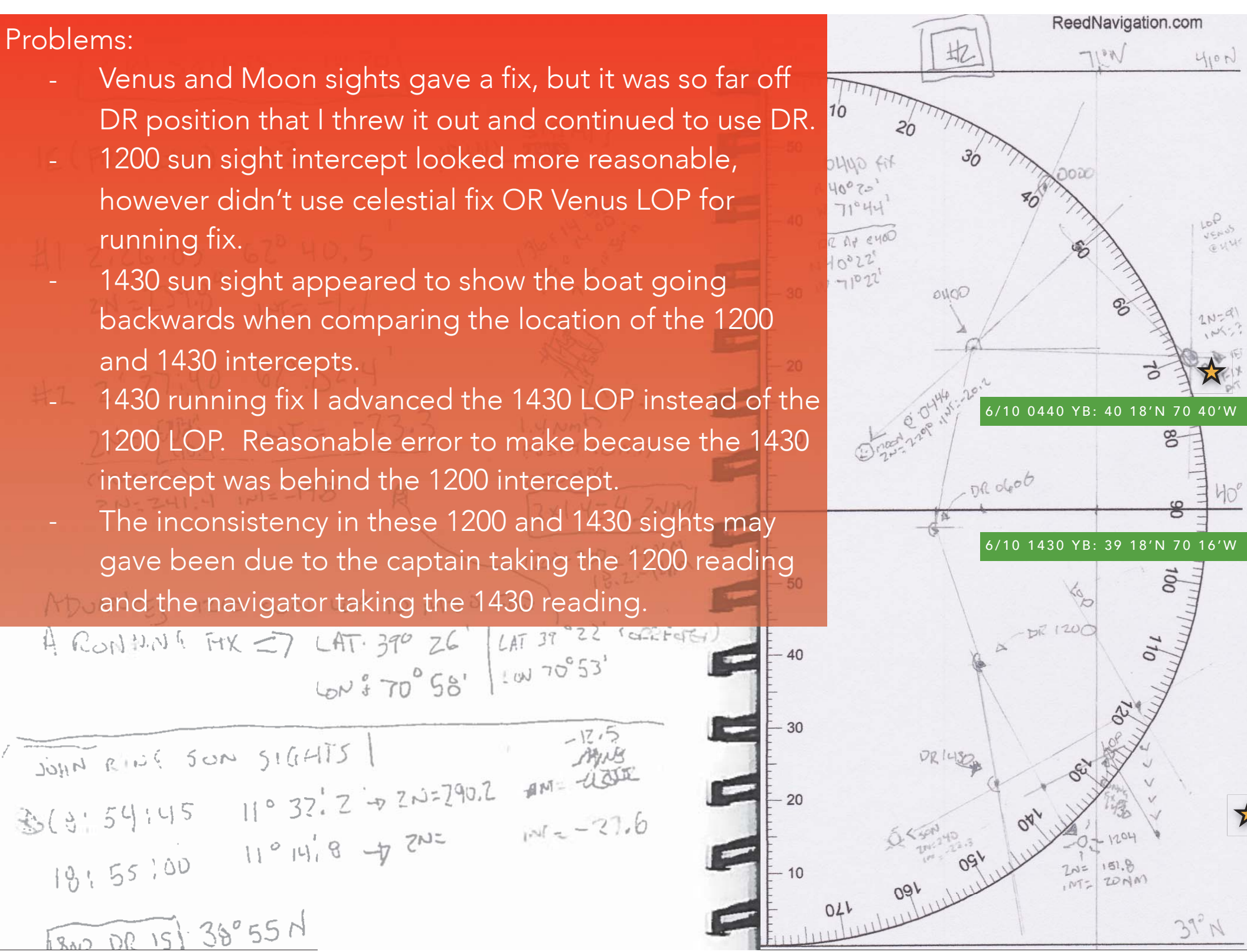
0400 Summary: °T= 204.5 Dist: 24 NM

0400-0800:
avg C + Dev = Mag + Var = True
190 - 2 = 188 - 15 = 173°T

0800 Summary: °T= 173 -Dist: 25 nm

Problems:

- Venus and Moon sights gave a fix, but it was so far off DR position that I threw it out and continued to use DR.
- 1200 sun sight intercept looked more reasonable, however didn't use celestial fix OR Venus LOP for running fix.
- 1430 sun sight appeared to show the boat going backwards when comparing the location of the 1200 and 1430 intercepts.
- 1430 running fix I advanced the 1430 LOP instead of the 1200 LOP. Reasonable error to make because the 1430 intercept was behind the 1200 intercept.
- The inconsistency in these 1200 and 1430 sights may gave been due to the captain taking the 1200 reading and the navigator taking the 1430 reading.



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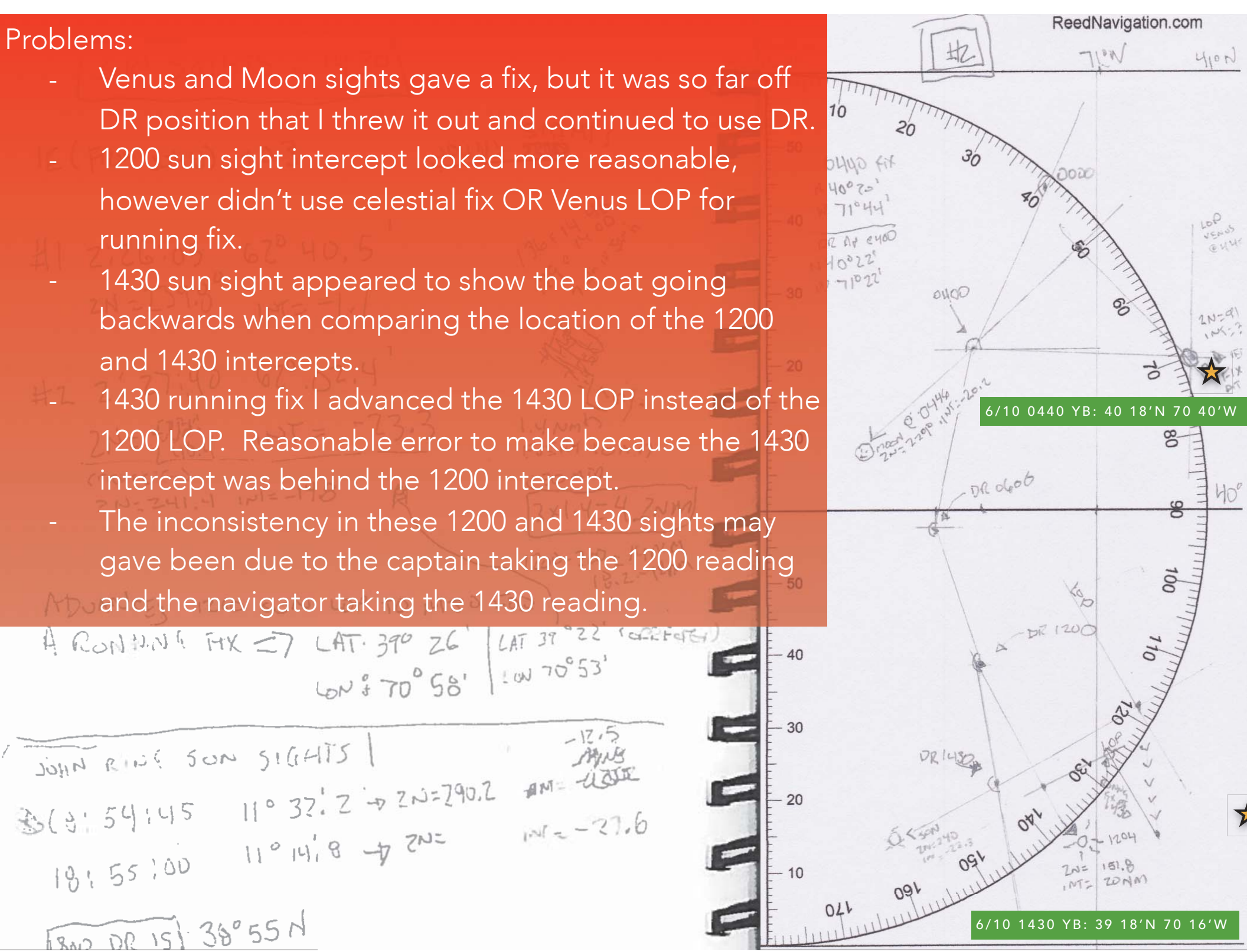
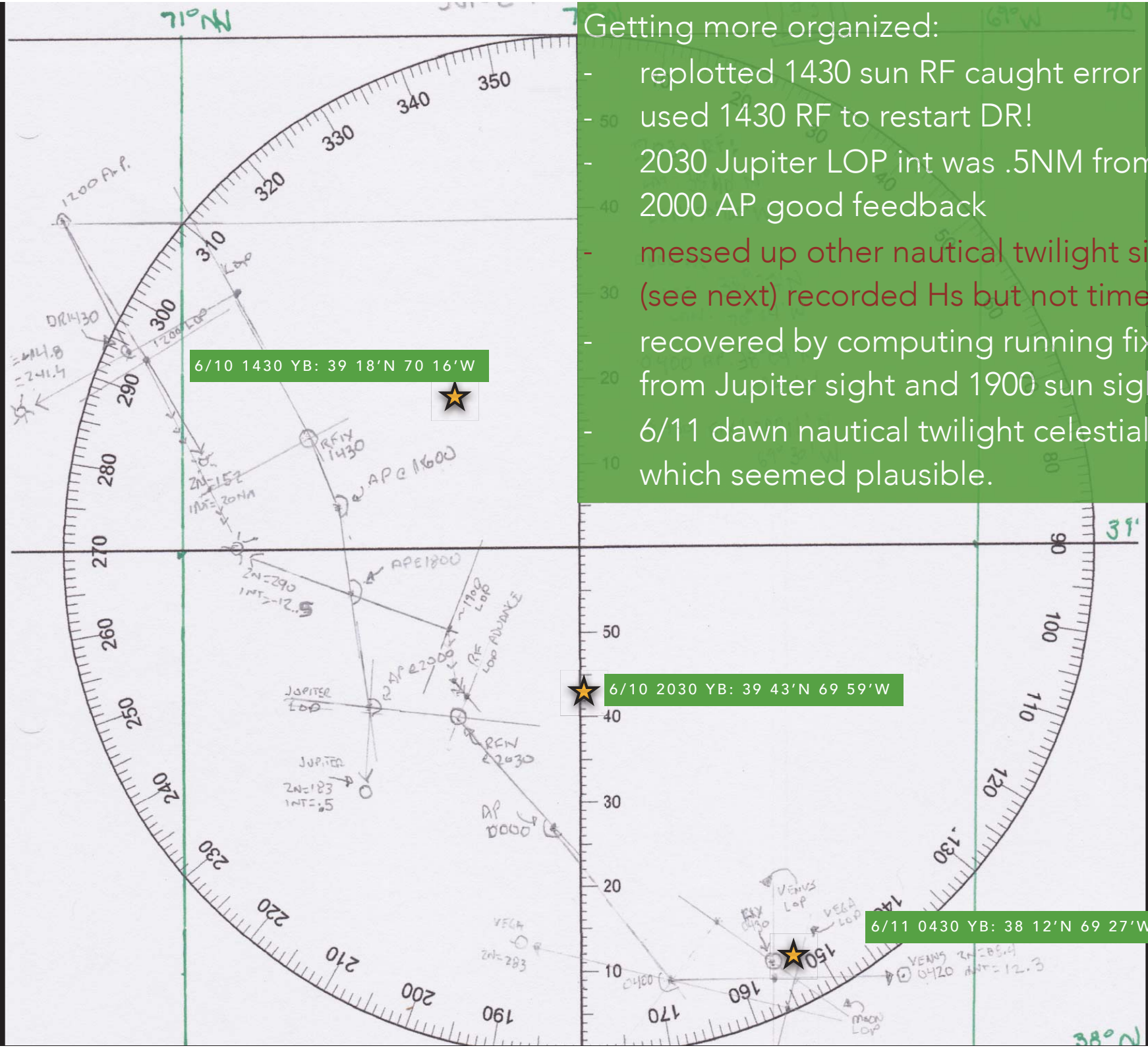


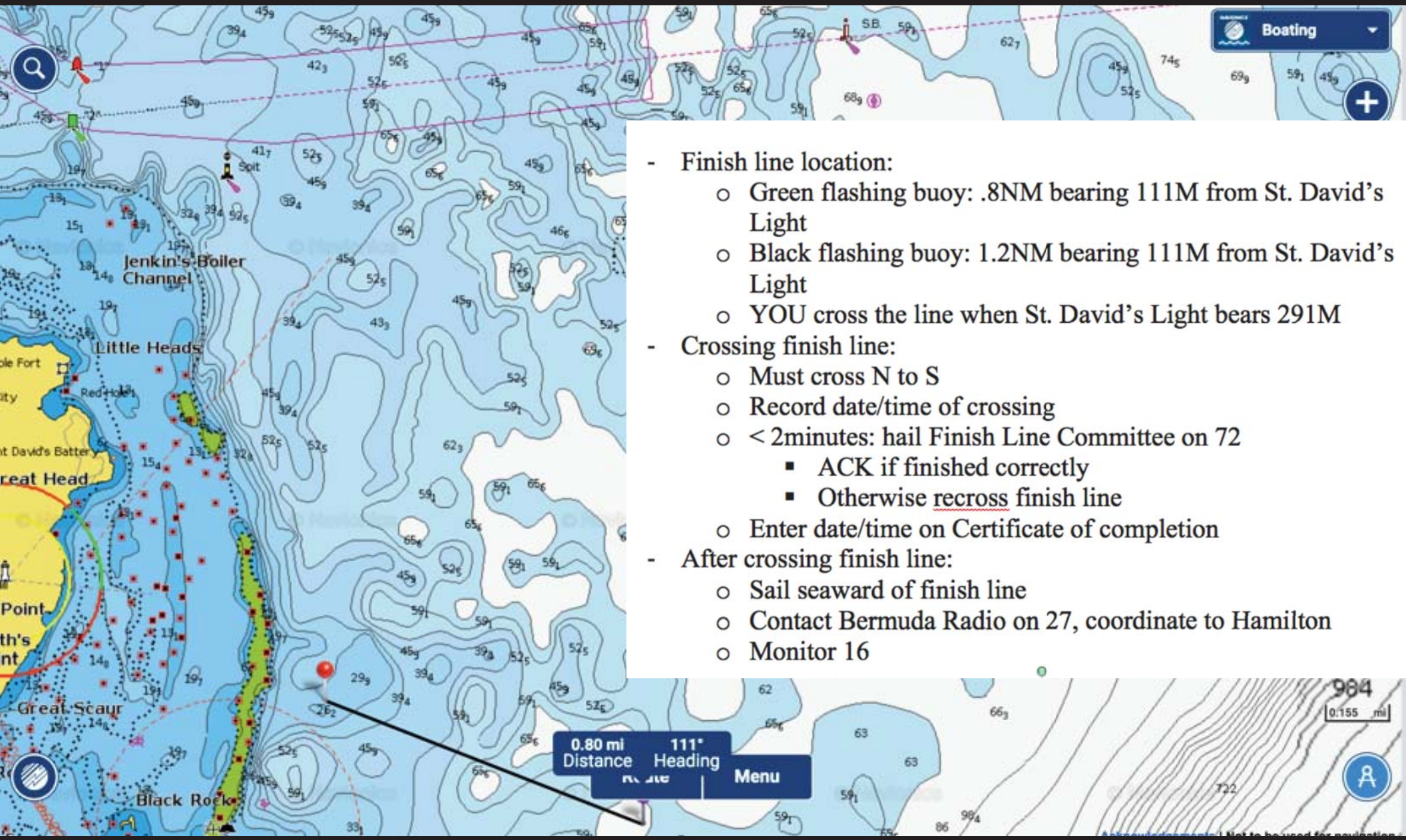


Getting more organized:

- replotted 1430 sun RF caught error
- used 1430 RF to restart DR!
- 2030 Jupiter LOP int was .5NM from 2000 AP good feedback
- messed up other nautical twilight sights (see next) recorded Hs but not time!
- recovered by computing running fix from Jupiter sight and 1900 sun sight
- 6/11 dawn nautical twilight celestial fix which seemed plausible.

BECOMING A CELESTIAL NAVIGATOR

DAY SIX EXTRAS



- Finish line location:
  - Green flashing buoy: .8NM bearing 111M from St. David's Light
  - Black flashing buoy: 1.2NM bearing 111M from St. David's Light
  - YOU cross the line when St. David's Light bears 291M
- Crossing finish line:
  - Must cross N to S
  - Record date/time of crossing
  - < 2minutes: hail Finish Line Committee on 72
    - ACK if finished correctly
    - Otherwise recross finish line
  - Enter date/time on Certificate of completion
- After crossing finish line:
  - Sail seaward of finish line
  - Contact Bermuda Radio on 27, coordinate to Hamilton
  - Monitor 16


Finish Line!