## **Sight Reduction**

## INSTRUCTIONS to derive computed altitude Hc:

Use the UTC of the moment when the altitude was measured with the sextant, nautical almanac, DR lat., and DR long. to derive the altitude Hc of the observed body based on where you think you are.

Determine Universal Coordinated Time (UTC) at the moment of sextant sighting.

Use UTC to locate GHA, declination, and SHA in the <u>The Online Nautical Almanac</u> or <u>2024 Nautical Almanac</u> for the moment you take your sextant sighting.

GHA - Global/Greenwich Hour Angle of observed body

decl - declination of observed body

SHA - sidereal hour angle of observed star

Enter your estimated DR latitude and longitude.

The lat/lon of San Antonio is shown.

Click button to derive computed altitude Hc.

Take sextant sighting and derive Observed altitude Ho.

## INSTRUCTIONS to derive observed altitude Ho:

What was the actual observed altitude Ho you measured with the sextant?

Enter the index error of sextant.

Enter the height of eye above sea level.

Enter the sextant altitude measurement.

Parallax is in the 2024 Nautical Almanac.

Semi-diameter is in the 2024 Nautical Almanac.

Compare Hc to Ho and convert difference (in minutes of a degree) to nautical miles toward or away from the observed body.

1' degree minute = 1 nautical mile.

## How to test computed altitude Hc:

Use the night sky map at timeanddate.com to locate a body

(Moon, planet, or star) in the San Antonio area.

Note the time and altitude for the body from the website.

Select the CST (Dallas) time zone from the tzone pulldown.

Click the UTC Time button to calculate the current UTC time.

Use the time to obtain GHA, declination [& SHA] from The Online Nautical Almanac.

Enter the GHA, declination [& SHA] almanac data for the

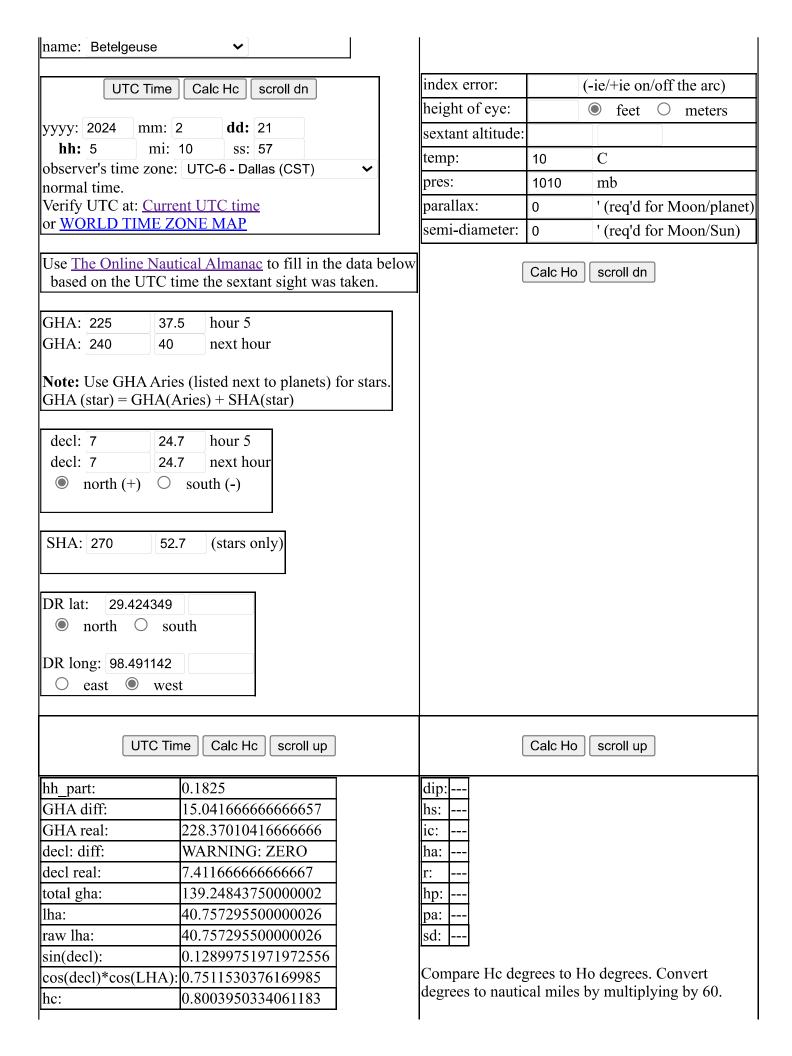
current and next UTC hour into the web form.

Use the provided DR lat. and long. (29.424349 N, 98.491142 W) for Schertz, TX.

Click the Calc Hc button to compute compted altitude Hc.

Compare your Hc findings with the altitude listed at TimeandDate.com.

Computed Altitude (Hc)	Observed Altitude (Ho)
Calculate altitude based on nautical almanac body: star ✓ limb: select ✓ (Sun / Moon)	Calculate altitude based on sextant observation



hc_deg:	45.859257357403116
x:	-0.36854658521923295
a:	1.9482413935508882
a_deg:	111.62600932315193
z:	248.37399067684805
LEFT	RIGHT

ho_deg:	
p:	undefined
nmi:	undefined
t/a:	Away
LEFT	RIGHT

Coast Guard Academy - Computed Greater Away

scroll up

Computed sight reduction based on formulas from:

NAUTICAL ALMANAC 2021 COMMERCIAL EDITION, pp 277-283

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Helpful links:

2024 Nautical Almanac, UTC time, night sky over San Antonio, time zone map