Celestial Navigation Data
For New York Harbor
October 15, 2003
At 1520

Six (6) pages total including this cover

U.S. Naval Observatory
Astronomical Applications Department

Celestial Navigation Data

Celestial Navigation Data for 2003 Oct 15 at 19:20:00 UT

For Assumed Position: Latitude N 40 38.0
Longitude W 74 04.0

	Almanac Data				Altitude Corrections			
Object	GHA	Dec	Hc	Zn	Refr	SD	PA	Sum
	o '	o '	o '	o	'	'	'	'
SUN	113 33.2	S 8 34.6	+28 49.1	225.9	-1.8	16.0	0.1	14.4
VENUS	98 37.5	S13 34.6	+31 12.3	208.2	-1.6	0.1	0.1	-1.5
JUPITER	151 48.7	N 8 34.9	+14 51.6	268.6	-3.7	0.3	0.0	-3.4
ALIOTH	120 22.2	N55 56.4	+56 25.3	312.9	-0.7	0.0	0.0	-0.7
ALKAID	106 59.7	N49 17.8	+65 22.7	301.7	-0.5	0.0	0.0	-0.5
ALPHECCA	80 12.2	N26 42.3	+75 10.5	201.9	-0.3	0.0	0.0	-0.3
ALTAIR	16 10.2	N 8 52.8	+29 56.0	105.0	-1.7	0.0	0.0	-1.7
ANTARES	66 30.4	S26 26.4	+22 33.5	172.7	-2.4	0.0	0.0	-2.4
ARCTURUS	99 57.5	N19 09.9	+59 10.0	233.6	-0.6	0.0	0.0	-0.6
DENEB	3 31.2	N45 17.8	+39 50.4	59.7	-1.2	0.0	0.0	-1.2
DENEBOLA	136 36.2	N14 33.2	+30 09.5	263.4	-1.7	0.0	0.0	-1.7
DUBHE	147 55.7	N61 43.8	+42 20.0	322.0	-1.1	0.0	0.0	-1.1
ELTANIN	44 44.4	N51 29.5	+67 09.1	51.8	-0.4	0.0	0.0	-0.4
ENIF	347 49.0	N 9 53.6	+ 9 15.1	84.9	-5.7	0.0	0.0	-5.7
GIENAH	129 55.1	S17 33.5	+12 06.3	233.8	-4.5	0.0	0.0	-4.5
KAUS AUS	37 48.6	S34 23.1	+ 7 53.3	150.5	-6.6	0.0	0.0	-6.6
KOCHAB	91 14.9	N74 08.5	+55 32.6	351.8	-0.7	0.0	0.0	-0.7
MENKENT	102 11.6	S36 23.2	+ 8 46.2	202.6	-6.0	0.0	0.0	-6.0
NUNKI	30 02.3	S26 17.7	+11 34.7	140.5	-4.7	0.0	0.0	-4.7
RASALHAG	50 08.2	N12 33.5	+54 57.1	136.4	-0.7	0.0	0.0	-0.7
REGULUS	161 46.3	N11 57.1	+ 9 28.4	277.7	-5.6	0.0	0.0	-5.6
SABIK	56 16.0	S15 43.8	+31 15.8	159.9	-1.6	0.0	0.0	-1.6
SCHEDAR	303 43.5	N56 33.5	+15 49.4	25.9	-3.4	0.0	0.0	-3.4
SHAULA	50 27.0	S37 06.5	+ 9 18.1	161.1	-5.7	0.0	0.0	-5.7
SPICA	112 34.2	S11 10.7	+27 09.2	223.3	-1.9	0.0	0.0	-1.9
VEGA	34 38.8	N38 47.4	+59 52.4	80.4	-0.6	0.0	0.0	-0.6
ZUBENELG	91 08.8	S16 03.3	+31 08.0	199.3	-1.6	0.0	0.0	-1.6
POLARIS	274 38.9	N89 16.7	+39 57.5	0.3	-1.2	0.0	0.0	-1.2
ARIES	313 54.5							

Notes on the data

U.S. Naval Observatory Astronomical Applications Department

Celestial Navigation Data for Assumed Position and Time

This page allows you to obtain all the astronomical information necessary to plot navigational lines of position from observations of the altitudes of celestial bodies. Simply fill in the form below and click on the "Get data" button at the end of the form.

A table of data will be provided giving both almanac data and altitude corrections for each celestial body that is above the horizon at the place and time that you specify. Sea-level observations are assumed. The almanac data consist of Greenwich hour angle (GHA), declination (Dec), computed altitude (Hc), and computed azimuth (Zn). The altitude corrections consist of atmospheric refraction (Refr), semidiameter (SD), parallax in altitude (PA), and the sum Refr + SD + PA. The SD and PA values are, of course, non-zero only for solar system objects.

The assumed position that you enter below can be your best estimate of your actual location (e.g., your DR position); there is no need to round the coordinate values, since all data is computed specifically for the exact position you provide without any table lookup.

Data can be produced for any date and time from year 1700 through year 2035.

Be sure to check Notes on the Data, located after the form.

Date and time of observation:

Use UT (Universal Time). Specifically, the program assumes UT1.

Year: 2004 Month: January Day: 1

Hour: 0 Minute: 0 Second: 0 UT

Assumed position:

Enter best-estimate sea level coordinates.

Latitude: (•) north ( ) south 40 o 00.0 '

Longitude: ( ) east (•) west 60 o 00.0 '

Get data

Notes on the Data:

Data are shown for the navigational stars and planets only if their computed geocentric altitude, Hc, is equal to or greater than +1 degree at the place and time specified. Almanac data for the Sun is shown if its Hc is greater than -12 degrees, the limit for nautical twilight (this is intended as an aid in judging the brightness of the sky). Almanac data for the Moon is shown if its Hc is greater than -3 degrees; when data for the Moon is shown, a note on its phase appears at the end of the table.

Data are shown for objects above the horizon without regard to whether observations of them are practical. For example, data for stars are shown for either day or night, and data for objects that may be too close to the Sun for observation are also shown.

The GHA of Aries is always shown at the end of the list of objects.

The data are color-coded as follows: Data for solar system objects are shown in red and always appear first in the table. Data for the stars that are listed in *Sight Reduction Tables for Air Navigation (Selected Stars)* (Pub. No. 249, AP3270, Vol. 1) are shown in blue providing that their Hc values are between 15 and 65 degrees; otherwise they are shown in black. Data for the other navigational stars are also shown in black. Data for Polaris and the GHA of Aries are shown in green.

The altitude corrections are intended for use during sight reduction. For a given object, to obtain the observed altitude (Ho), the sum of the altitude corrections (in the rightmost column) is added to the apparent altitude (ha), which is itself obtained from the sextant altitude (hs) by removing instrumental and dip (height of eye) corrections. That is, **Ho = ha + Sum**. Then Ho can be compared to Hc to obtain the altitude intercept in the usual way. The altitude correction values strictly apply only in the case where the observations were in fact made from the assumed position, and, for solar system objects, the lower limb of the object was observed. Generally, however, these corrections are weak functions of altitude and can therefore be applied, with some small error, to sights made close to the assumed position. The first of the listed corrections, refraction, applies to sea level observations made under standard atmospheric conditions. The SD correction for the Moon includes augmentation.

The tabulated data can also be used for observation planning, where a prediction of the the apparent altitude (ha) may be formed by subtracting the sum of the altitude corrections (in the rightmost column) from the computed altitude: **ha (predicted) = Hc - Sum**. In many cases, the sum of the altitude corrections is negative, so that ha (predicted) will be greater than Hc.

Back to input form

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Other locations: Date menu | Calendar | Countdown

The World Clock Meeting Planner: Results

The table below shows actual time in the cities chosen, as well as the corresponding UTC-time. To see the corresponding time all over the world at a given UTC-time, use the links below UTC-time.

UTC-time	New York
Wednesday, October 15, 2003, at 4:00 AM	Wed Midnight *
Wednesday, October 15, 2003, at 5:00 AM	Wed 1:00 AM *
Wednesday, October 15, 2003, at 6:00 AM	Wed 2:00 AM *
Wednesday, October 15, 2003, at 7:00 AM	Wed 3:00 AM *
Wednesday, October 15, 2003, at 8:00 AM	Wed 4:00 AM *
Wednesday, October 15, 2003, at 9:00 AM	Wed 5:00 AM *
Wednesday, October 15, 2003, at 10:00 AM	Wed 6:00 AM *
Wednesday, October 15, 2003, at 11:00 AM	Wed 7:00 AM *
Wednesday, October 15, 2003, at Noon	Wed 8:00 AM *
Wednesday, October 15, 2003, at 1:00 PM	Wed 9:00 AM *
Wednesday, October 15, 2003, at 2:00 PM	Wed 10:00 AM *
Wednesday, October 15, 2003, at 3:00 PM	Wed 11:00 AM *
Wednesday, October 15, 2003, at 4:00 PM	Wed Noon *
Wednesday, October 15, 2003, at 5:00 PM	Wed 1:00 PM *
Wednesday, October 15, 2003, at 6:00 PM	Wed 2:00 PM *
Wednesday, October 15, 2003, at 7:00 PM	Wed 3:00 PM *
Wednesday, October 15, 2003, at 8:00 PM	Wed 4:00 PM *
Wednesday, October 15, 2003, at 9:00 PM	Wed 5:00 PM *
Wednesday, October 15, 2003, at 10:00 PM	Wed 6:00 PM *
Wednesday, October 15, 2003, at 11:00 PM	Wed 7:00 PM *
Thursday, October 16, 2003, at Midnight	Wed 8:00 PM *

Thursday, October 16, 2003, at 1:00 AM	Wed 9:00 PM *
Thursday, October 16, 2003, at 2:00 AM	Wed 10:00 PM *
Thursday, October 16, 2003, at 3:00 AM	Wed 11:00 PM *

* means the place/city is observing daylight saving time (DST) at time shown

To pick another day or cities, press the "Back"-button.

Color codes

This color represents the night time or normal sleeping hours

This color represents the first half of day when most people are at work

This color represents the second half of day when people are awake but not necessarily at work

Note: Different countries usually have different working hours and local holidays - these are not yet represented here.

No liabilities for any errors.

More information

- Complete menu of features
- Is it showing wrong time?
- About the World Clock
- Time zone abbreviations

Related links

- The World Clock - main page
- The Personal World Clock - shows just the cities you need
- Search for a city
- Fixed Time Calculator - If it's 3 pm in New York, what time is it in Sydney?