**Example for Position Fix**
Source: Helmut Knopp, Astronomische Navigation,
BusseSeewald Ed., Beispiel II, S. 78 ff.

**Date 19 Oct 1989**

**Position DR1 = 49°17' S 90°38' E**
**Position DR2 = 49°47.1' S 91°37.3' E**

| **Observation:** | **DR1=** | **DR2=** |
|---|---|---|
| | **SUN low** | **SUN low** |
| **Sextant** | **27°02** | **49°11** |
| **Index corr** | **2'** | **2'** |
| **Height of Eye** | **20 m** | **20 m** |
| **UT1** | **1h45m11s** | **5h00m50s** |
| **h-observed** | **27°10.4** | **49°20.4** |
| **h-calculated** | **27°16.7** | **49°25.2** |
| **Delta-h** | **-6.3 nm** | **-4.8 nm** |
| **Az** | **72.4°** | **14.4°** |

**Course 128° Distance 48.9 nm**
**= from DR1 to DR2 !**

**Position Fix:**
**Latitude 49°51' S**
**Longitude 91°27' E**
Deviation from DR2:
236.3° 6.5 nm
(Position-Fix was evaluated graphically)
==========

**Astronomische Navigation** Examples: p. 70, 72
by Helmut Knopp, Verlag Busse Seewald Herford 1996
(grafical evaluation of position on the sea-chart)

| | | | |
|---|---|---|---|
| **Date** | **1989 july 31** | Height-of-Eye: **2.0m** | |
| **DR-position** | **Latitude: N 43°18.6'** | **Longitude: W 55°28.3'** | |
| | | | |
| **Celestial Body:** | **Venus** | **Moon (low)** | **Arcturus** |
| **Hor.Parallax** | **0.1'** | **56.7'** | **0'** |
| | | | |
| **Time UT1** | **19h04m13s** | **19h08m42s** | **19h09m59s** |
| **Sextant Angle** | **52°28.2'** | **35°52.4'** | **53°45.6'** |
| **+- Index corr.** | **-2.0** | **-2.0** | **-2.0** |
| **Gb** | **-3.2** | **57.6** | **-3.2** |
| **Altitude obs.** | **52°23.0'** | **36°48.0'** | **53°40.4'** |
| | | | |
| **Altitude calc.** | **52°24.3'** | **36°46.4'** | **53°43.1'** |
| | | | |
| **Azimuth** | **211°** | **268°** | **121.3°** |
| **Δh** | **-1.3nm** away | **1.6nm** towards | **-2.7nm** away |

**------- now calculate the Position-Fix for the 3 pairs, and plot the result:**

| **POSITION FIX:** | **Latitude** | **Longitude** | **Deviation** | **Direction** |
|---|---|---|---|---|
| **Moon-Arcturus:** | **43°21'** | **-55°30.6'** | **3 nm** | **325°** |
| **Venus-Moon** | **43° 21.1'** | **-55°30.6'** | **3 nm** | **326.3°** |
| **Venus-Arcturus** | **43° 21.1'** | **-55°30.6'** | **3 nm** | **326.8°** |
| **AVERAGE:** | **43°21' N** | **55° 31' W** | **3 nm** | **325°** (plotted) |

**-------**

**The ASTRONOMICAL ALMANAC for the year 1989**
by U.S. Government Printing Office, Washington DC, USA,
and HMSO Publication Center, London, UK .-page D14.
The **MOON**. - For 00h Dynamical Time (i.e. **Delta_T=0**).
**July 31, at time 00h:**

| **apparent Right Ascension** | **Declination** |
|---|---|
| **7h 18m 03.9sec** | **N 25° 30' 56''** |
| compare: | |
| **for comparison: AstroPositionMax-V05.html:** | |
| **7h 18m 03.90sec** | **N 25° 30' 55.6''** |