**130612 NAVLIST Moon Parallax Comparison between Accurate 3D Space formulae and approximate Nautical Almanac Formulae.**

Date Sep 29th, 1987

TT-UT=55.7 S

All MOON observations assumed to be carried out at the very same time (UT=23H48M29.0S) from different places specified further down.

Same environment everywhere: HOE=0ft, T=10°C, P=1013.25mb

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**EXAMPLE #1**

**From Position:**

**S 90°00’0 Longitude: any**

**At UT=23h48m29.0s**

**Sextant Height=27°37’.242832**

**MOON I=0.0 NM Z=any**

**3D Results**

DIP=0.000 MIN

RUN

REF=-1.844 MIN

RUN

SD AUG.=16.159 MIN

RUN

**\*\*\*PAR.=51.831 MIN\*\*\***

RUN

SDA+P= 67.990 MIN

RUN

R+SD+P=66.146 MIN

RUN

GEOC.H=28.43389 D.MX

**NAL Formulae Results**

DIP=0.000 MIN

RUN

REF=-1.844 MIN

RUN

SD AUG.=16.157 MIN

RUN

**\*\*\*PAR.=51.836 MIN\*\*\***

RUN

SDA+P= 67.992 MIN

RUN

R+SD+P=66.149 MIN

RUN

GEOC.H=28.43391 D.MX

**Difference in Parallax between Formulae: 0”30**

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The results showing under green color are 3D space results, i.e. fully accurate ones.

The results showing under purple color are results from a straight/direct (i.e no Loop) 2D space computation - which already yields Augmented Semi-Diameters accurate to better than +/- 0”3 and Parallaxes accurate to +/- 0’2 – with its Parallaxes results further corrected with the following Formulae published in the NAL Explanation Part as follows:

PA=HP cosH + OB, with

OB= -0°.0032 sin²Lat cosH

+ 0°0032 sin(2Lat) cosZ sinH

**EXAMPLE #2**

**From Position:**

**S 24°04’6 W094°52’6**

**At UT=23h48m29.0s**

**Sextant Height=85°00’.0**

**MOON I=0.0 NM Z=180.0°**

**3D Results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.306 MIN

RUN

**\*\*\*PAR.=4.994 MIN\*\*\***

RUN

SDA+P= 21.300 MIN

RUN

R+SD+P=21.215 MIN

RUN

GEOC.H=85.21215 D.MX

**NAL Formulae Results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.302 MIN

RUN

**\*\*\*PAR.=4.990 MIN\*\*\***

RUN

SDA+P= 21.292 MIN

RUN

R+SD+P=21.207 MIN

RUN

GEOC.H=85.21207 D.MX

**Difference in Parallax between Formulae: 0”24**

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**EXAMPLE #3**

**From Position:**

**S 28°43’4 W089°34’5**

**At UT=23h48m29.0s**

**Sextant Height=85°00’.0**

**MOON I=0.0 NM Z=268.7°**

**3D Results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.306 MIN

RUN

**\*\*\*PAR.=4.850 MIN\*\*\***

RUN

SDA+P= 21.156 MIN

RUN

R+SD+P=21.072 MIN

RUN

GEOC.H=85.21072 D.MX

**NAL Formulae results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.302 MIN

RUN

**\*\*\*PAR.=4.850 MIN\*\*\***

RUN

SDA+P= 21.152 MIN

RUN

R+SD+P=21.067 MIN

RUN

GEOC.H=85.21067 D.MX

**Difference in Parallax between Formulae: 0”00**

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**EXAMPLE #4**

**From Position:**

**S 33°22’5 W094°52’6**

**At UT=23h48m29.0s**

**Sextant Height=85°00’.0**

**MOON I=0.0 NM Z=000.0°**

**3D Results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.306 MIN

RUN

**\*\*\*PAR.=4.665 MIN\*\*\***

RUN

SDA+P= 20.971 MIN

RUN

R+SD+P=20.886 MIN

RUN

GEOC.H=85.20886 D.MX

**NAL Formulae results**

DIP=0.000 MIN

RUN

REF=-0.085 MIN

RUN

SD AUG.=16.302 MIN

RUN

**\*\*\*PAR.=4.670 MIN\*\*\***

RUN

SDA+P= 20.971 MIN

RUN

R+SD+P=20.886 MIN

RUN

GEOC.H=85.20886 D.MX

**Difference in Parallax between Formulae: 0”30**

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