# ASTRON

## Revision history.

0.00 08 Oct 2015

* Initial test version.

0.01 08 Oct 2015

* Notes transferred from Workbook to this MS Word file.

0.02 11Oct 2015

* Developer’s initial external data connections removed.
* Harmonised common parts of Computer & Manual sheets.  (Styles, cell sizes, borders etc.)
* File size reduced from 35Mb to 4Mb. (Removed formatting from empty cells outside work areas.)
* Version number & date added to trhc.
* Rigil Kent note added (see calculation notes above)

0.03 13 Oct 2015

* Suspected bug located in conversion formula from D.d to D M.m for (exactly integer) negative numbers. All instances where negatives possible re-coded using string manipulation i/o int/abs math functions. Positive only instances unchanged.
* Unknown body logic retested – no faults found.

0.04 16 Oct 2015

* New formula for D.d to DM.m conversion now used throughout for consistency.
* Converter for Ft -> Metres, Fahrenheit->Celsius & In Hg ->hPa added to Manual Almanac sheet.
* COT() function in cell G31 (hidden - both sheets) replaced by 1/TAN() for compatibility with earlier Excel versions.

0.05 23 Oct 2015

* Aries sheet “Rigil Kent.” changed to “Rigil Kent” (period omitted – caused havoc with MATCH function!)
* Magnitude brighter than 1.5 star names now in UPPER CASE.

0.06 04 Nov 2015

* Aries sheet split into two sheets, “Time” and “Stars”.

0.07 06 Nov 2015 “Time” sheet changes:

* Cells in this sheet now named and names used i/o cell references. (Improves understanding of formulae.) Names have absolute references. Avoids refs like Computer\_Almanac!$A$12
* All cells on this sheet with formulae given comments, including references to literature.
* Some cells modified, reasons given in comment.
* Named Constants used i/o “365.25”, etc. Global ones all defined on “Time” sheet.
* Names scope policy – always sheet scope unless name used on more than one sheet.
* Entered date assumed to be a Julian date if Year < value of constant GREGORIAN\_START. This set to 1752 (for when the UK changed) but can be set to other values if required. Vatican 1582, Greece 1923. Result is undefined during actual year of change.

0.08 08 Nov 2015 “Stars” sheet changes:

* Some cells modified, reasons given in comment. (Comments in first star block only.)

0.09 10 Nov 2015 Delta T changes.

* Delta T section moved to new sheet.
* Tabulated format used. Algorithms unchanged.
* Range extended. Now -1999 to 3000.
* Sample values added.

0.10 15 Nov 2015 Earth calculations moved to separate sheet. Now only calculated once.

0.20 TEST VERSION. Minor tidying up. More cell comments.

0.21 TEST VERSION. Ditto. Testing redone.

0.22 Named “Astron” This is version with only the user input/output sheets visible.

0.23 This version has all sheets (and normally hidden areas within sheets) visible.

0.24 “Stars”sheet.

* Updated RA, Dec & pm’s from Hipparcos New Astrometric Catalog.

(Published 2007, star positions Epoch J1991.25 Equinox J2000.0)

* Proper motions entered using MAS i/o arcseconds. Formulae adjusted.
* HIP Catalog Numbers and Bayer Designations added to “Stars” sheet.

0.25 “Stars” sheet.

* RA & Decs adjusted to Epoch J2000.0 Equinox 2000.0 using HNAC pm’s.
* Epoch J1991.25 positions retained in separate column for reference.
* Reformatted to one row per star format & links in Locator sheet changed accordingly.

(Easier to maintain)

* Unused fields (mainly conversions from radians to degrees) deleted.

0.90 General tidy up

0.91 Frozen test user version – all sheets protected, unneeded sheets and cells hidden.

0.92 Frozen test user version – all sheets protected, but nothing hidden.

0.93

* Table of star magnitudes moved from “Stars” to “Locator”
* Table of Bayer star names moved from “Stars” to “Star Information”.
* “Stars” After Proper Motion columns (RA & Dec) in degrees unused elsewhere, so removed. Radians columns retained, of course.
* “Locator” page. MOD(xxxxxxxx,DEGSinCIRCLE) added to cells B2:B8.
* Star List in “Stars” now inherited from “Locator”. (Period re-added after RIGIL KENT.)

0.94 Waxing or waning indicator (+/-) added to moon phase.

1.00 Initial release version. All sheets with no user input now hidden, also certain intermediate calculation parts of user sheets hidden. Workbook and worksheets protected (without password). User notes updated.