

RELAP5-3D Version 4.1.3

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RELAP5-3D Version 4.1.3 will be released by September 2, 2013.

Improvements and New Code Features

Various new features and improvements have been implemented in version 4.1.3. Some of these additions include:

- The ability to model moving problems has been incorporated into the 2013 release. This will allow modeling of reactors during earthquakes, onboard watercraft, spaceships, and space stations, as well as and on planetary bodies like the moon or Mars.
- Compared with 4.0.3, version 4.1.3 can produce approximately half-sized plot files.
 - The user must select the XDR4 plot format on the 104 card. This option exercises the newly developed 4-byte floating point XDR option of the PIB auxiliary software package.
 - The machine Dependent binary files now automatically use 4-byte reals when the user specifies “mbinary” on the 104 card.
- Users can produce spreadsheet-ready strip files by choosing the CSV (Comma Separated Values) format on the 104 card. Users can also strip to “mbinary” and ASCII formats.
- Two new Card 1 options.
 - Option 53 activates the 2006 Groeneveld CHF correlation.
 - Option 63 reduces some round-off error in the code, although run time is increased.
- Elimination of the left-to-right evaluation order assumption for if-statement clauses connected by an and-conjunction operator allows the code to run correctly on multi-core platforms.
- New tests prevent allocating an allocated variable and deallocating a deallocated variable. These mostly occurred with multi-case input.
- The new verification capability locates differences, even in the last bit of 8-byte reals, between two code runs. It can be used to verify consistent results between two code versions, or for a single code version running an input deck and its restart.
- Numerous user problems have been found and fixed in this version, many identified by the verification capability. Corrections include some fixes for restart and backup problems – some issues were observed with less commonly used components.

Auxiliary Products

Some auxiliary products have been upgraded:

- PYGMALION now handles more plot file formats, from RELAP5/MOD1 through the new FORTRAN 95 plot file formats of XDR, machine dependent binary, and ASCII.
- The RGUI station for launching RELAP5-3D, PYGMALION, and other programs has been rewritten in JAVA.

Manuals and Documents

The normal RELAP5-3D code manuals will be updated for 4.1.3 and released with the code. New manuals have been also been written, all should be available for external release to RELAP5-3D code users by the time of RIUS 2013, the first three are currently available:

- Building RELAP5-3D on a Windows PC, INL/MIS-12-27541 Rev1
- Guidelines for developing RELAP5-3D coding, INL/EXT-13-29228, Rev 1
- PYGMALION Manual, INL/MIS-13-28216, Rev 1
- RGUI Station Manual.

Major change in RELAP5-3D support

INL announces the elimination of support for Windows XP. Microsoft has ceased its support of this operating system, and INL will follow suit.

4.1.3 Release Date

RELAP5-3D is now a more robust tool. The expected release date is September 2, 2013. This means it will be available for the 2013 RELAP5 International Users Seminar (RIUS 2013).