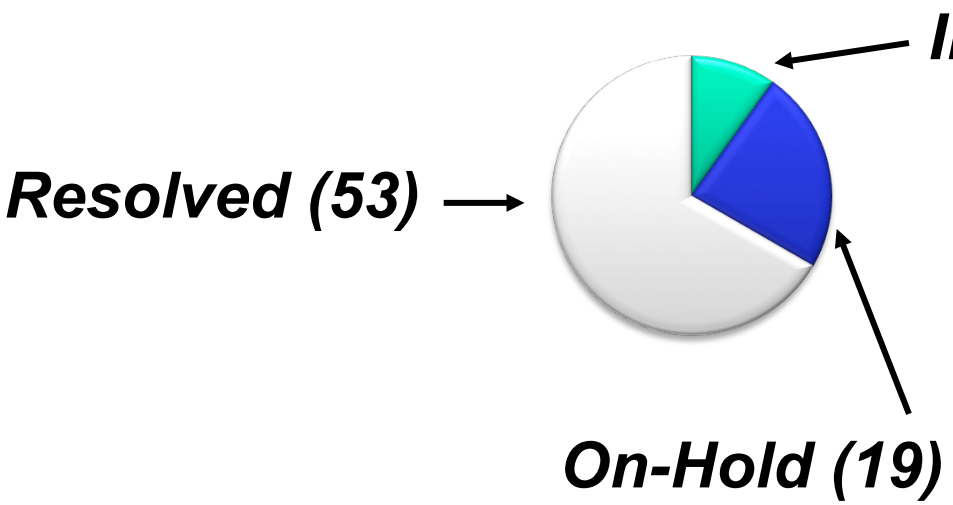
User Problems

2016 RELAP5 International Users Seminar
October 6-7, 2016
Idaho Falls, ID

User Problem History

July 2015 – August 2016
76 reported
4 additional older problems were resolved



Resolved: *Work has been completed on user problem, update has been submitted, and update is in latest developmental version*

In-Work: *Work on user problem is currently being carried out*

On-Hold: *Work has not begun on user problem, or work was began on user problem but work is now stopped on user problem*

Selected User Problems

- ***UP# 14013***
- ***UP# 15028***
- ***UP# 15054***
- ***UP# 15074***
- ***UP# 16002***
- ***UP# 16018***

Problem 14013

- **A long running steady state calculation fails after some time with a "Thermodynamic property error with minimum time step, transient being terminated" message, but the location of the failure in the model is not identified.**
- ***Root Cause: Incomplete debug statement.***
- ***Resolution:*** **Resolved. Modified the Thermodynamic Property error message to also print when the time-step size is equal to dtsmallest and the problem is in failure mode. This problem now correctly prints the error message and gives indication of where the failure occurs.**

Problem 15028

- ***Symptom:*** **The Chen boiling correlation is inappropriately coded with a lower velocity boundary that prevents the intended pool boiling heat transfer coefficients from being used. When liquid velocities decrease below 0.06 m/s, the Chen calculated HTC should approach the solution to the Forster and Zuber pool boiling correlation. However, when liquid velocities decrease below 0.06 m/s, the Chen calculated HTC reflects the solution at 0.06 m/s. During pool boiling conditions, this causes the heat transfer coefficient to be significantly under-predicted.**
- ***Root Cause: Inappropriate lower velocity boundary.***
- ***Status: Resolved.*** **The coding changes for the transition from Chen to Forster-Zuber were implemented. The solution involved using linear interpolation to ramp the suppression factor and heat transfer coefficient between that evaluated for the Chen correlation at 0.06 m/s and pool boiling (using only Forster-Zuber with S=1.0) at a lower velocity limit value of 1.0e-4 m/s.**

Problem 15054

- ***Symptom:*** **A problem running pure, dry noncondensable helium creates some water in one of the volumes, which leads to a thermodynamic property failure. This occurs in versions starting with 3.5.0, but did not occur in 3.0.2 or earlier versions.**
- ***Root Cause: Bad nullification and incomplete coding.***
- ***Status: Resolved.*** **Found that a previous code update did not set variable 'dqdtw' correctly when little-to-no fluid was present in a volume in subroutine DITTUS.F. The incorrect setting of this variable resulted in the creation of noncondensables in the volume. Set variable 'dqdtw' similarly to how variable 'htcf' was set which resolved the problem.**

Problem 15074

- ***Symptom:*** **The d flag on the time step card (ssdtt) is not working correctly. Setting d to 1 is supposed to give a major edit at every successful time step. However, for an input model, the d flag does not affect the major edit frequency. Setting d = 4 and d = 2, which control the plot frequency and minor edit frequency, are working correctly. The d flag was working correctly back in Version 3.2.1.2.**
- ***Root Cause: Incorrect zeroing out of variable 'iecf'.***
- ***Status: Resolved.*** **The issue with the d flag was traced to variable 'iecf' in subroutine DTSTEP.F. A zeroing out of variable 'iecf' was added to the code for pvm related coding. This coding addition caused the d flag to stop working. The line that zeroed out variable 'iecf' was modified so that it would only be accessed for pvmsyn-type problems. The d flag now works correctly.**

Problem 16002

- ***Symptom:*** **When running the steady state option, entering a second time step card caused the code to use the second card's time step control rather than continuing to use the nearly-implicit solution scheme. (The change in solution scheme occurred when the problem time reached the second card's time span.)**
- ***Root Cause: Incorrect variable reset.***
- ***Status: Resolved.*** **Found that the issue was due to an incorrect reset of variable 'print' in subroutine DTSTEP for problems using the nearly-implicit method. Corrected the setting of variable 'print' and the problem now uses the nearly-implicit time-stepping method throughout the transient.**

Problem 16018

- ***Symptom:*** **An input deck with an input error runs when used with h2on. However when used with h2o95, the case fails on input processing as expected.**
- ***Root Cause: Insufficient error checking.***
- ***Status: Resolved.*** **Found that the interpolator routine STPUTP.F for fluid h2on did not check whether the input temperature was above the minimum allowed input temperature. Added an if test to check whether the temperature was above the minimum value, the problem now appropriately fails with an error message.**

Questions?