TRACE/SNAP User Workshop
September 30 - October 3, 2014

Hilton Garden Inn
Idaho Falls, ID

Introduction to SNAP

Applied Programming Technology, Inc.

APT

What is SNAP?

- Symbolic Nuclear Analysis Package
  - Suite of Applications
- Standard Graphical User Interface designed to simplify the use of analytical codes.
  - Construct, Maintain and Document Models
  - Run Cases
  - Analyze Results
- Platform Independent, Pure-Java, Plug-in Arch.
  - Can Be Adapted to Any Engineering Code
  - Highly Extensible and Flexible

SNAP is a Suite of Applications

- Primary SNAP Apps:
  - Configuration Tool
  - Model Editor
  - Job Status
  - Calculation Server
- Associated Software
  - AptPlot & Demuxers – Plotting Tools
  - jEdit – ASCII Editor
  - ACAP - Automated Code Assessment Program
  - TSA – Test Suite Analyzer
  - Matlab / Mathcad

Consistent and Intuitive User Interface

- Common Functionality Across Several Codes.
- Minimize Learning Curve for Analysis Codes
- Logical Organization of Model Components and Interconnections
- 2D and 3D Visualization
- Input Checking and Model Validation Tests
- Advanced Model Editing Tools
- Manage Model Documentation
- Easily Submit, and Monitor Calculations
- Analyze Results

Why Use SNAP?

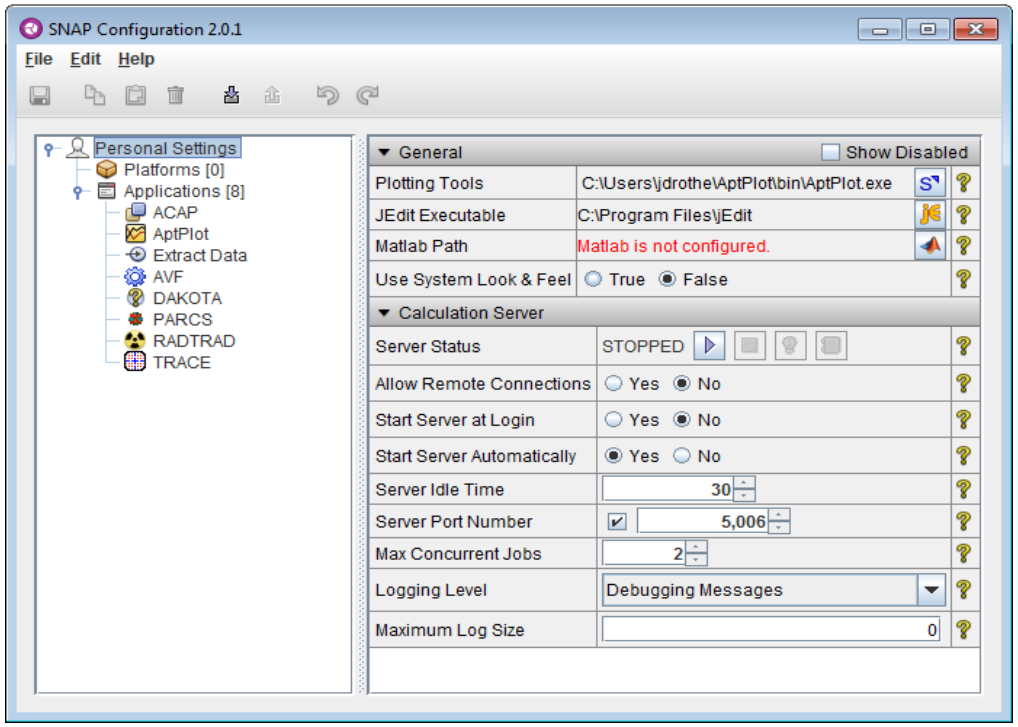
- Greatly reduces time to develop and/or modify analytic code models.
- Permits model developers to graphically annotate and document their input models.
- Simplifies the process of running analytical codes using job automation.
- Provides for quick and easy visualization of code results and/or data.
- Improves Efficiency and Quality!

Advanced SNAP Functionality

- Numerics - Use variables & functions to define input and control execution
- Model Notes - Attach HTML notes to components & individual attributes
- Attribute Ownership & Reviewer
- Model Notebook Generation
- Master Integrator - Split complex models into sub-models.
- Engineering Templates - Provides support for multiple diverse models.
- Kiosk - Create Input templates to constrain execution of predefined engineering templates.
- Uncertainty Quantification Analysis (Dakota)
- Restart Cases
- Component & Group Renodalization
- I/C Import & Management
- Model to Model Comparison
- Advanced Job Stream (Under Design)

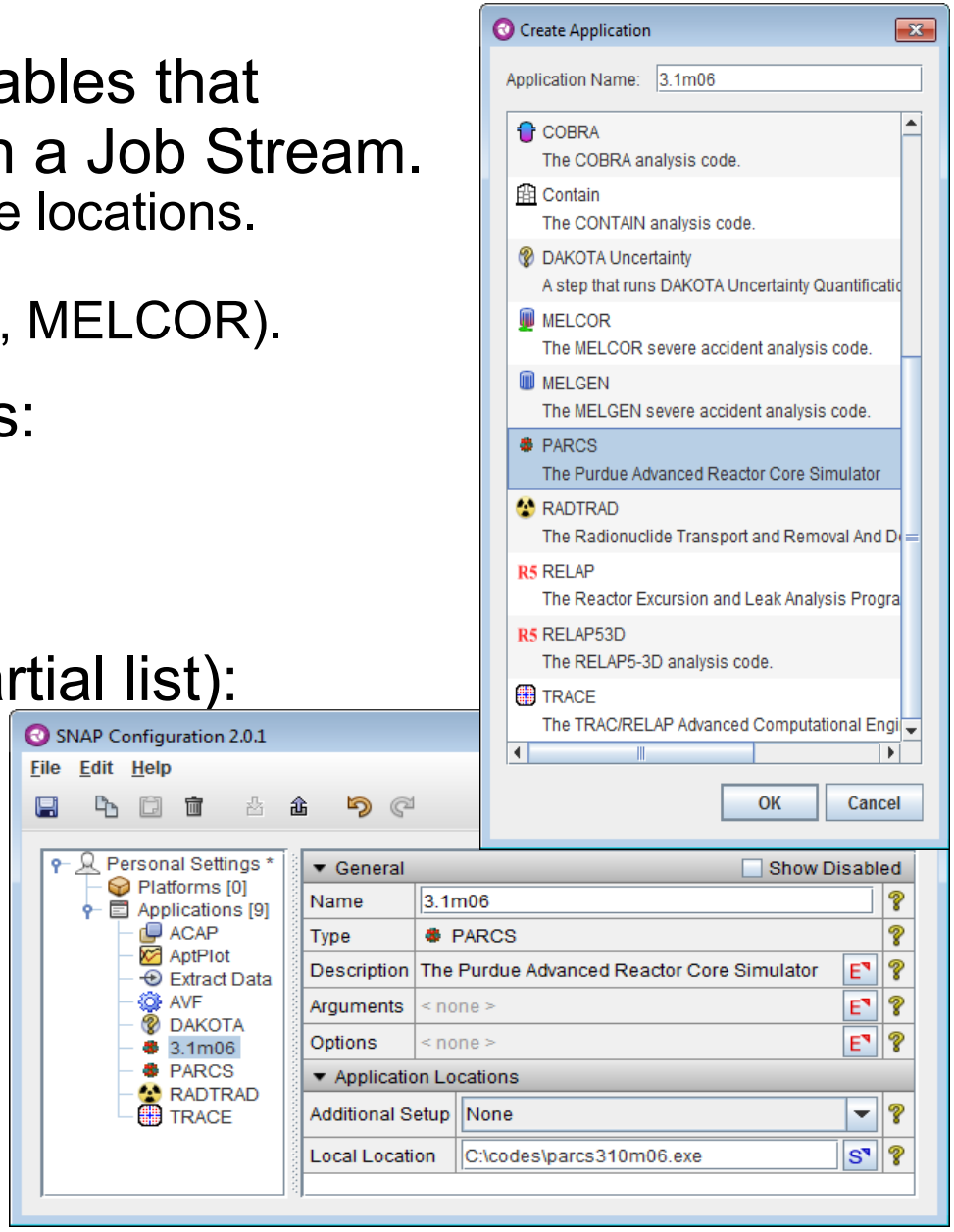
Configuration Tool

- Personal Settings are stored in the User's home directory.
- Application paths for jEdit, AptPlot, and Matlab.
- Local Calculation Server Settings
  - Status, Server Port, Logging Level, etc.
- No longer need to start/stop the Calculation Server manually.
- Manages the available set of Platforms & Applications.
- Global Settings are setup by your System Admin.



Configuration Tool – Applications

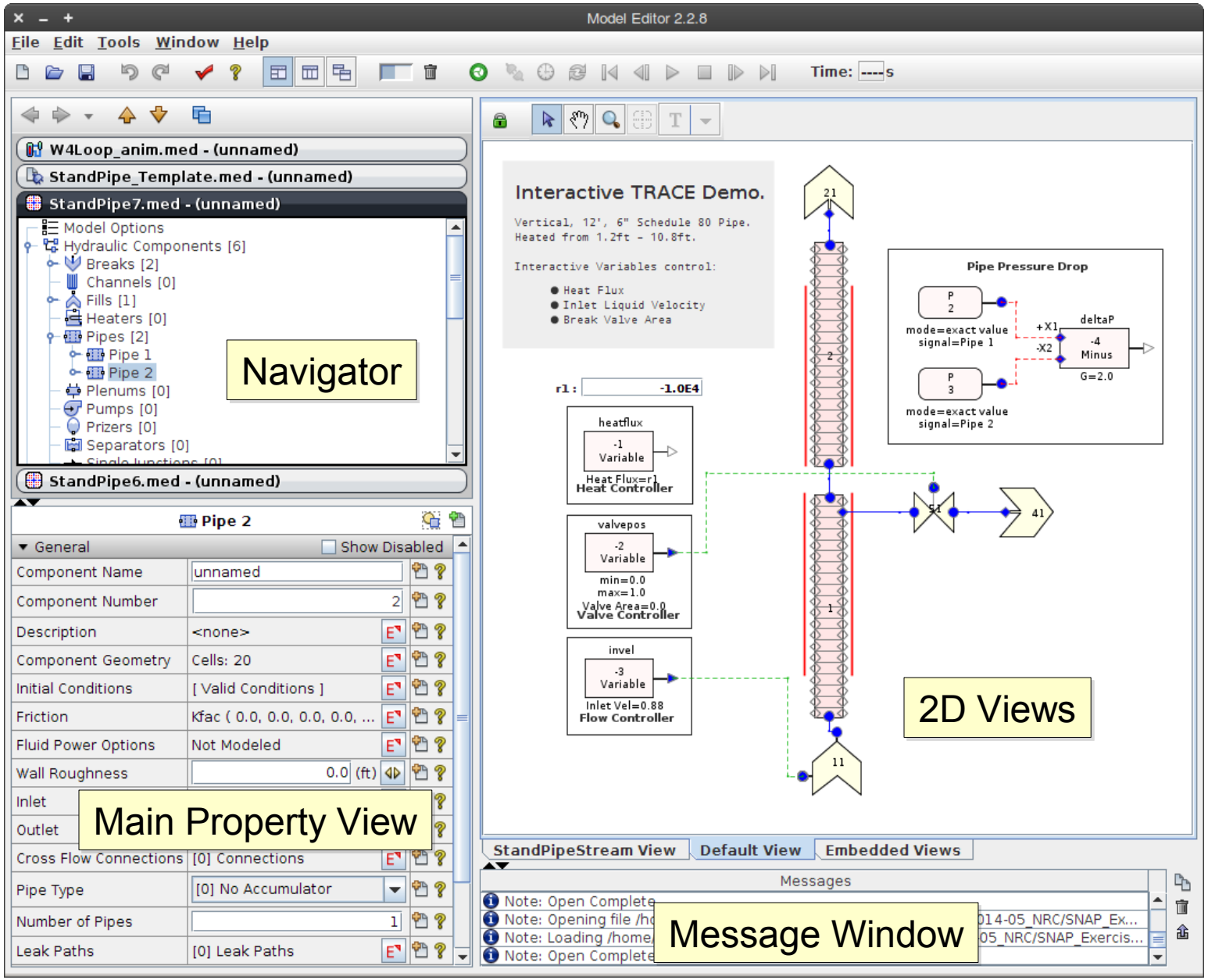
- Applications define executables that can be included as steps in a Job Stream.
  - Local and remote executable locations.
  - Command line arguments.
  - Application version (TRACE, MELCOR).
- Pre-configured applications:
  - ACAP
  - AptPlot
  - DAKOTA Uncertainty
- Supported applications (partial list):
  - COBRA-IE
  - CONTAIN
  - MELCOR
  - PARCS
  - RELAP5 / RELAP5-3D
  - TRACE
  - RADTRAD
  - FRAPCON/FRAPTRAN
  - SCALE



Model Editor

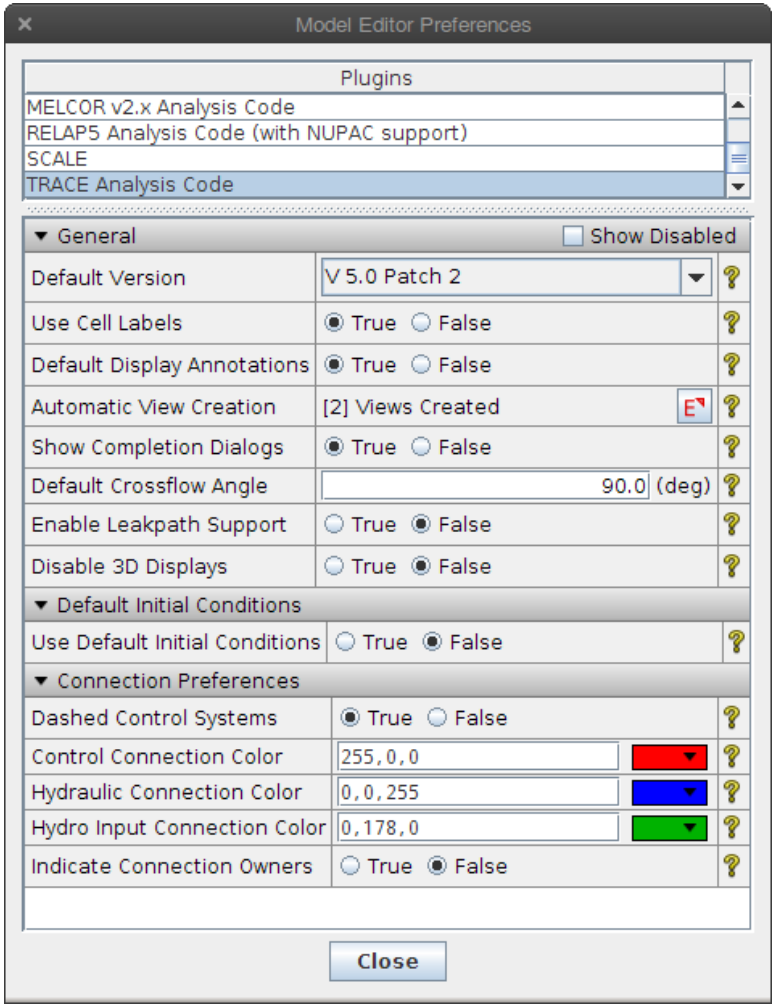
- Primary User Interface
  - Navigator, 2D/3D Views, Property View, Message Window, ASCII Views
- Model Editing and Animation
- Platform Independent Binary save format.
- Allows Editing Multiple Models Simultaneously
- Data Driven Hierarchy
  - Component Data model
  - Displayed in multiple Places
- Built in Engineering Unit Support

Model Editor User Interface

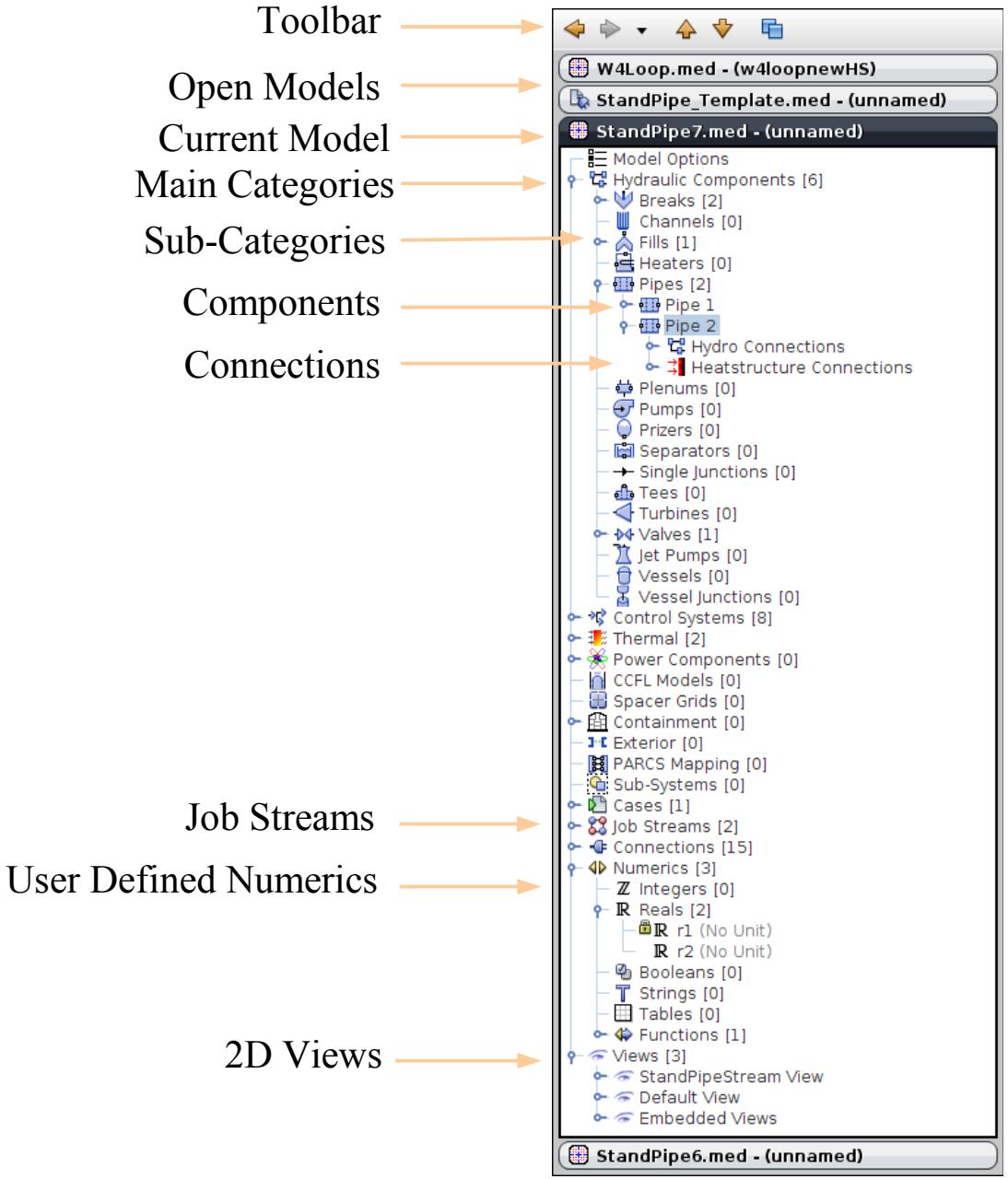


Model Editor Preferences

- Located under Edit menu
- General Preferences
  - Default Units
  - Session
  - Selection Modes
- Plug-in Preferences
  - Completion dialogs
  - User Manual Locations
  - Drawing Options



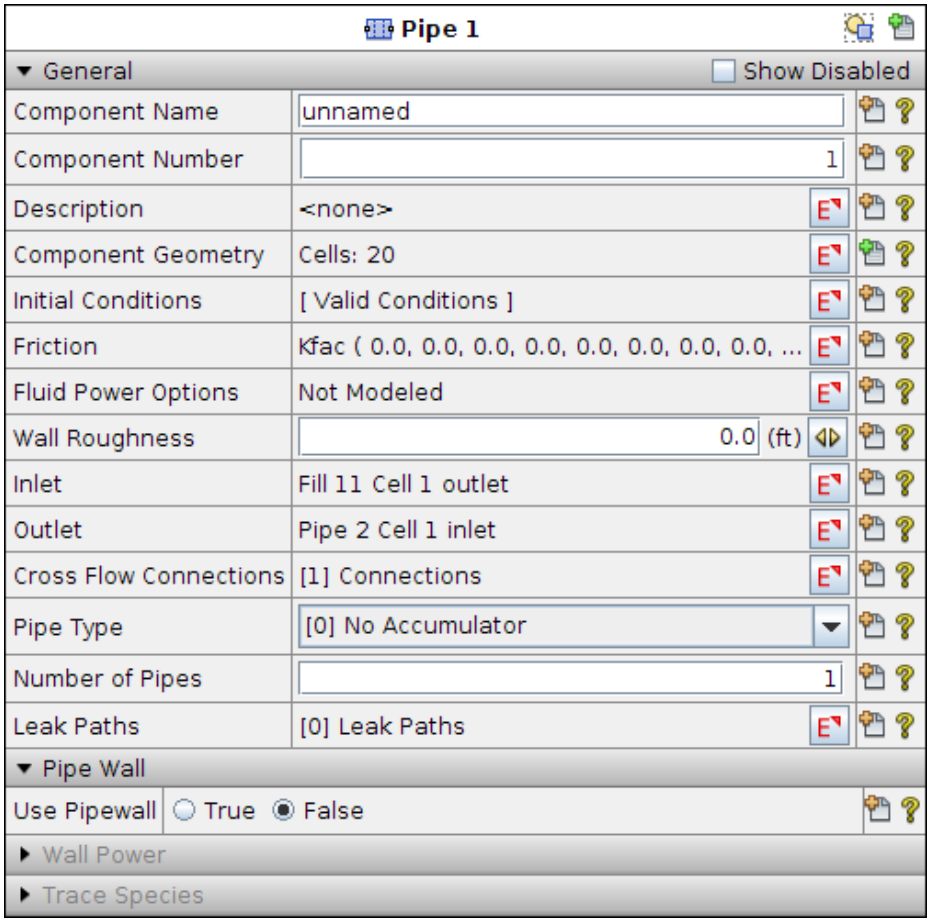
Component Navigator



- Multiple Open Models
  - Accordion Layout
- Organizes all Model Components
- Categories and Root Components
- Interconnections
- Copy/Paste
- Add/Remove
- Drag onto 2D View

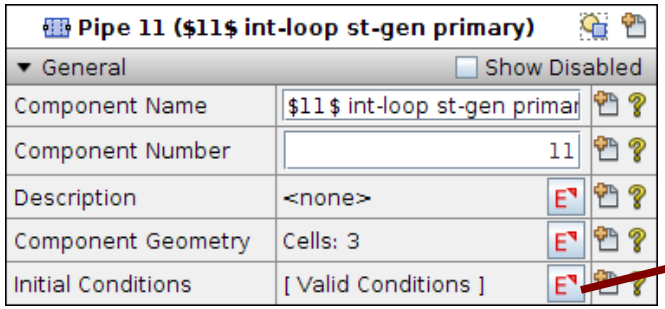
Property Views

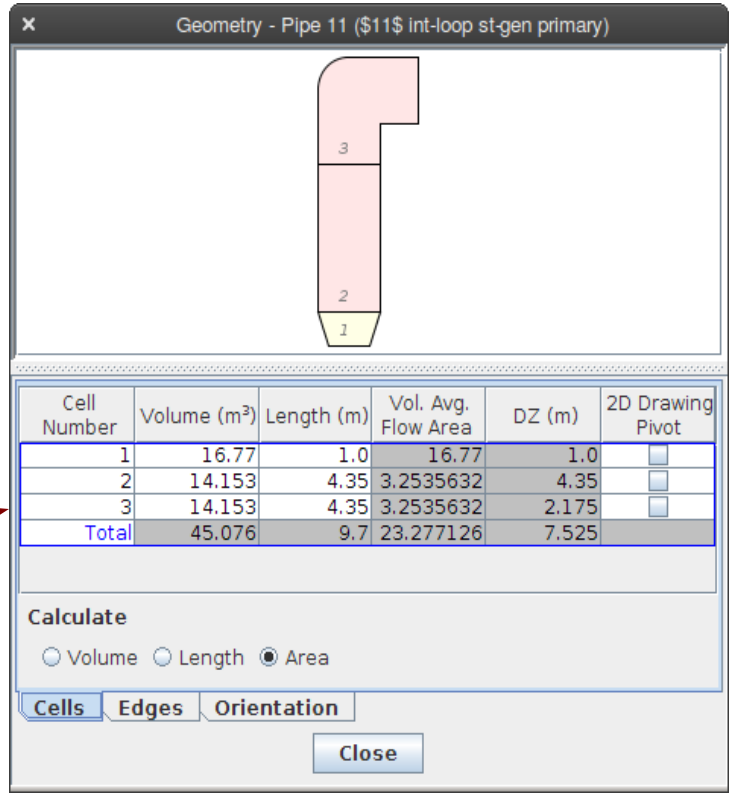
- Main Property View
  - Data Follows Selection in 2D Views or the Navigator
  - Multi-Select Editing
- Component Property View
  - Separate Window
  - Single Component Only
- Custom Editors
- Attribute Documentation
- Pop-up Help



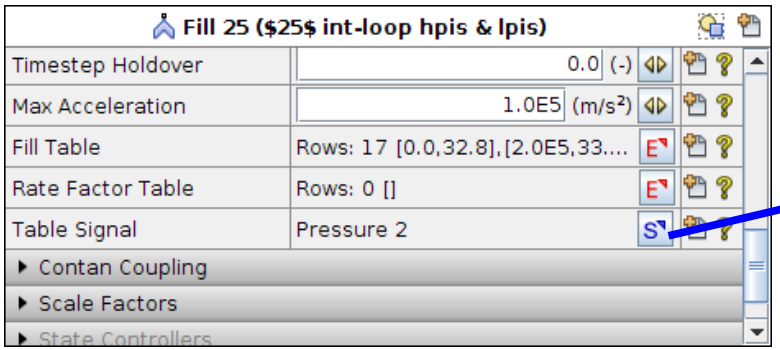
Property Editors and Selectors

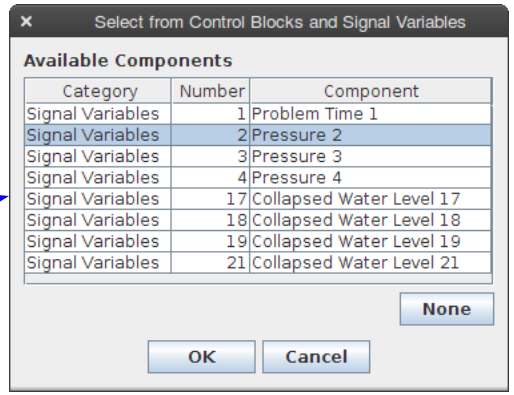
- Property Editors – **E**
  - Detailed custom dialogs
  - Display/edit sets of values





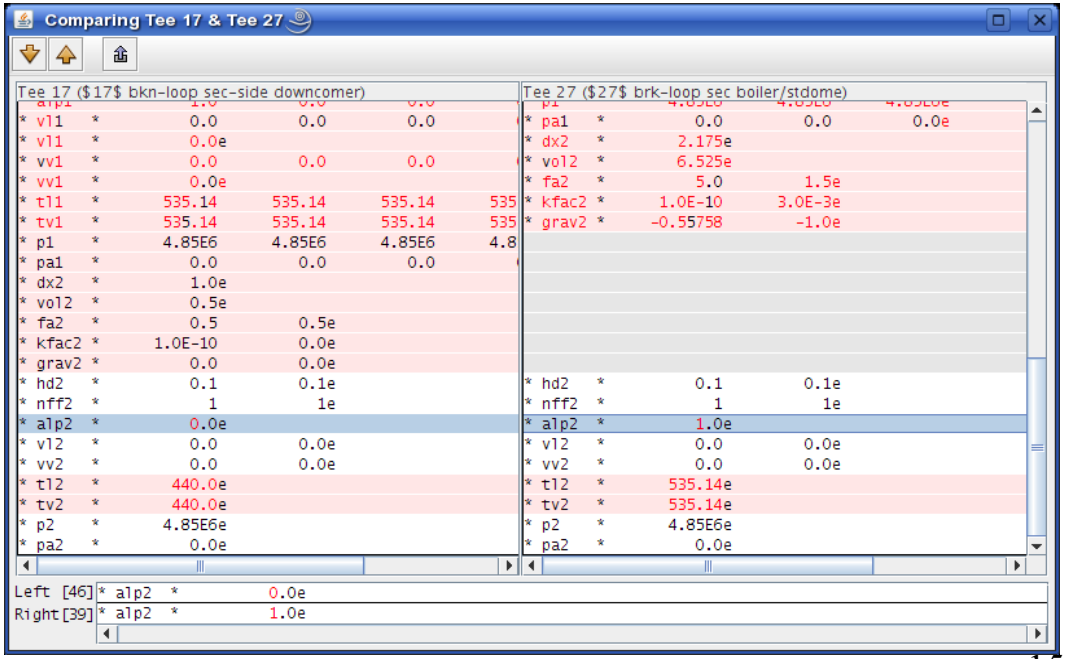
- Component Selectors – **S**
  - Select from the available components
  - Sort by category, number, or component





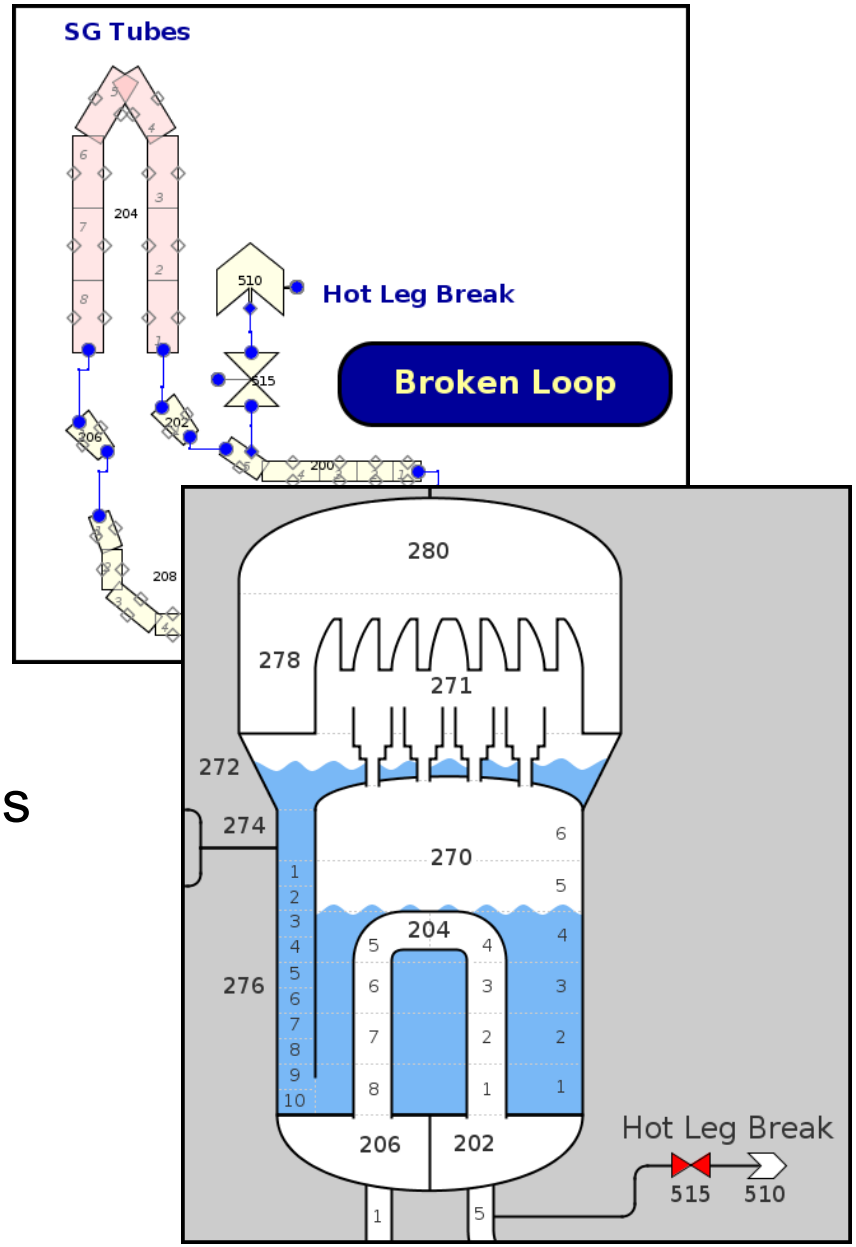
Component Differencing

- Compare the ASCII input of two component selections
- Single Component to Entire Models
- Left Side Implements Component Listener Interface
  - Monitor Changes to a component
- Can Export Results to a File.



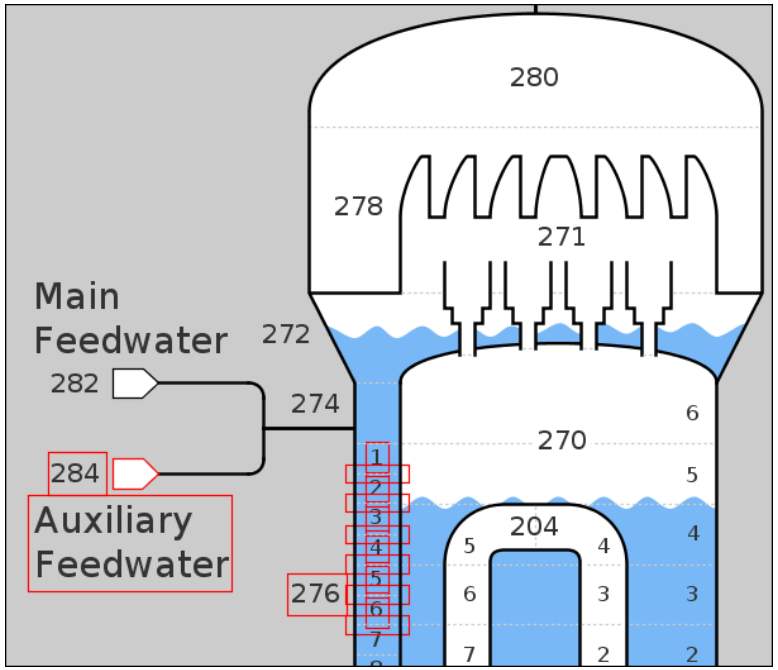
2D Views

- 2D Representation of Components and Interconnections
- Each Component may appear once in each view.
- Add & Remove Components
  - Delete – Remove from model
  - Cut – Remove from the view
- Annotations
  - Labels, Lines, Boxes, etc.
  - Can be associated with model components
- Group/Ungroup to treat a set of items as one.
- Use Layers to control selection and prevent modification.
- Use Embedded Views to hyperlink between views.

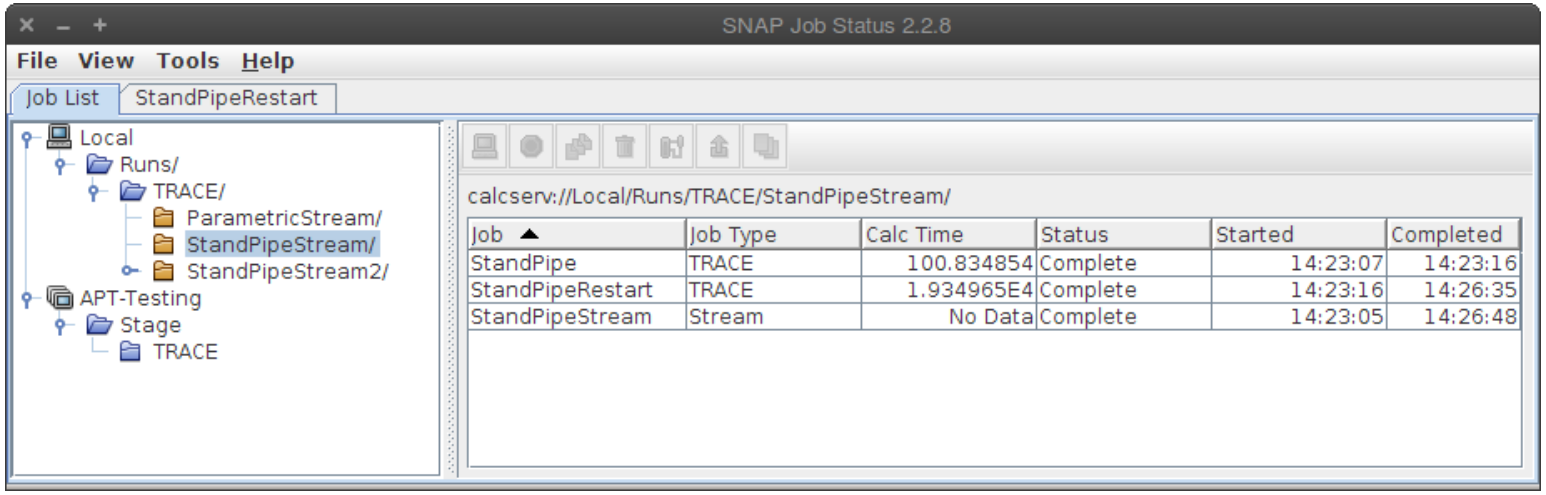


2D View Templates

- Exported From 2D Views
- Imported Into Any Similar Model
- Contains Annotations, Display Beans, Component Locations, etc.
- Complex Views Duplicated Between Models
- Recreate Views When Re-Importing a Modified Model



Job Status



- Display the Status of Submitted Jobs
- Connect to One or More Platforms
  - Calculation Server or Tracking Server
- Delete, Plot, and Terminate jobs
- Mount "Root Folders" (Calculation Server)
- View ASCII Input and Output Files (Calculation Server)
- Import Completed Jobs (Calculation Server)

Calculation Server

- Manages job stream execution.
- Required to Animate results. Interactively or in Replay mode.
- Provides access to files output by a calculation.
- Local server starts & stops automatically as needed.
- Use the Configuration Tool to Start/Stop remote servers.
- Completed Jobs can be imported using Job Status.