Task 2 Desired Stakeholder Outcomes

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IRP Status Meeting
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Task 2.1 (Sodium Loop Benchmarking)

Initial Stakeholder Outcomes

- **Historic Sodium Loops**
  - Identify a few tests and configurations of interest
  - Recover geometric information and build models
    - *INL's support needed to dig out old documents, etc.*
  - Compare to test data
    - *Pre-test loop checkout*
    - *Transient test*
  - Use tools/methods useful for state-of-art modeling of sodium loops
    - *Leverage for modern MK-IV design effort*

Observations from current meeting

- **Efforts to build CFD models of HOP 1-6A mostly complete, final runs forthcoming**
- **Mentor-student collaborations seem fruitful, especially including on-site (ORNL) period**
- **Previous "behind schedule" state (due to data availability issues) has been recovered**
- **In hindsight, HOP 1-6A was not ideal, but has helped formulate lots of lessons learned for future designs, tests, etc. beyond this IRP**

Task 2.2 (Water Loop Benchmarking)

Initial Stakeholder Outcomes

- **Future Water Loops**
  - No historic examples, must construct an "affordable" prototype of the in-pile loop TWERL (TREAT Water Environment Recirculating Loop)
    - *INL will eventually build a true-to-design TWERL prototype with superalloy piping, custom pump, etc. to verify design and operation*
  - Prototype should be "true to the essence" of the TWERL
    - *Compact, upright, small internal volume, no pressurizer, pump/system curves*
    - *Something akin to the secondary enclosure is desirable*
    - *Modularity (ability to install other types of test train)*

Observations from current meeting

- **Slight schedule delay on long lead procurements appears to have been recovered**
- **The TRTL is assembled and ready for its shakedown tests**

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Stakeholder outcomes from Kick-off Meeting

- Heated rod simulant should be pursued if feasible
  - *Heating rates need not simulate that possible in TREAT*
  - *Single rod test train recommended*
  - *Only the most basic test train features and instruments need to be included*
  - *Other test train concepts can be installed later if scope remains*
- Run the loop through its paces, gather data, benchmark against models
  - *INL has primarily used RELAP5-3D to model TWERL thus far, other tools could be used and compared*

Observations from current meeting

- **An appropriate commercial heater test progression has been determined for commissioning tests**
- **The novel heater approach will follow, excited to see how well it works**
- **Benchmark models and modelers seem to be ready for the for the real data**
- **All of task 2's hopes and dreams rest on successful shakedown of the TRTL**

And some other random observations

- **Excited to hear that min crit SS benchmark is on its way**
  - Will pave the way to other larger core history benchmarks (M2, M3, NCState)
  - And set the foundation for new core benchmarks (effectively creating TREAT's 94 CIC)
- **Don't lose sight of the transient benchmark as well**
  - Was always high risk, but its an important pioneering thought experiment for the entire community
- **No major showstoppers identified for task 3 instrument tests in TREAT**
  - Will require close communication between INL and IRP team (don't let the collaboration die after this meeting or failure will be inevitable)
  - Although not at this meeting, keep Colby Jensen in the loop so that he can keep things synchronized with other instrument-related initiatives
- **Keep up the good work, for all three tasks this last year will be the "defining moment"**