

Stakeholder Outcomes: Task 3

J. R. Parry

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Task 3 Summary

Task Status and Look Ahead:

- 3.1 Instrumentation Plan
 - Draft completed (FY16)
- 3.2 Initial Benchmark Evaluation
 - Instrument holder designed and manufactured (FY17)
 - Initial tests performed in MITR (FY17)
 - CEA, KSU and INL collaborators attended initial tests
 - Modified instruments and fission wires to be tested early FY18
 - Testing in TREAT scheduled for May 2018

Clarification of Purpose

- Short term goal:
 - Collect data for TREAT in-pile instrumentation options including:
 - Fission and flux wires
 - Micro-pocket fission detectors (MPFDs)
 - Self-powered neutron detectors (SPNDs)
 - Self-powered gamma detectors (SPGDs)
 - Thermocouples (Type K, T, and J)
- Long term goal:
 - Determine instrumentation capabilities to inform selection of proper instrumentation for:
 - Advanced modeling and simulation
 - Experiment programs

Challenges

- Significant noise present in first testing results
 - Signal processing methods being investigation
 - Uncertainty decomposition methods investigation
- Approximately 7 months to prepare for TREAT testing
- TREAT experiment/irradiation process has not been tested
- If TREAT start up is delayed, instrumentation irradiation in TREAT may be delayed
- Gamma spec system not yet at TREAT facility, transfer of specimens to gamma spec location may limit counting ability

Opportunities

- Results of initial testing in MITR has provided opportunities for device suppliers to modify detectors to improve capability for the second round of testing in MITR and future testing in TREAT
- Coordination with TREAT experiment safety analysis group will facilitate the irradiation of the instrument capsule in TREAT
 - Defined tasks and identified responsibility (MIT/INL)
- Collaboration on fission wire selection/standardization.
- Investigation of flux wire removal methods for future experiments

Summary

- Early tests in MITR allowed instrument modifications for follow on tests
- Follow on tests in MITR will include fission wires and flux wires
- Contact with TREAT experiment safety analysis group complete
 - Created task list
 - Assigned responsibility
 - Assigned some due dates