

Public Meeting for Abilene Christian University Fuel Qualification Methodology Whitepaper

**NRC Staff Feedback
May 28, 2025**

Feedback Areas

- Fuel qualification testing timeline
- Technical areas
 - Standards evaluation and applicability
 - Thermophysical properties
 - Fission product retention testing
 - Range of testing
 - Use and validation of Molten Salt Reactor Experiment (MSRE) data
- Quality Assurance

Fuel Qualification Testing Timeline

- NRC staff has not received confirmation that testing has been completed or a schedule with estimated completion dates.
- Fuel qualification testing is necessary to characterize fuel parameters used to support analysis in the Final Safety Analysis Report (FSAR).
- Incomplete testing has the potential to impact the Operating License Application (OLA) review.

Technical Areas (Part 1)

- Standards evaluation and applicability
 - Demonstrate applicability of the ASTM standards to molten salt.
 - Staff will evaluate application of the ASTM standards when reviewing qualification testing results.
 - Many of the ASTM standards in the white paper do not reflect the current version of the standard.

Technical Areas (Part 2)

- Thermophysical properties
 - Clear justification of the selection of fuel salt properties that support fundamental safety functions or what precision is needed for each property.
- Fission product retention testing
 - Determine whether fission product retention testing is needed.

Technical Areas (Part 3)

- Range of testing
 - Clarify which molten salt research reactor safety limits are being used for peak fuel salt temperature.
- Use and validation of MSRE data
 - Provide and justify a comprehensive list of impurities and allowable concentrations

Quality Assurance

- The quality assurance program should be applied to the fuel salt testing program.