

- - complete
- - in progress
- - backlogged

Stage 1

SaltProc v1 demo

- ✓ Simple demonstration for once-through MSR reprocessing
- ✓ Equilibrium fuel composition search for the MSBR based on ideal removals
- ✓ Fission products removal effect study

Stage 2

SaltProc v2 demo

- ✓ TAP full core Serpent model
- ✓ Multi-component, realistic fuel reprocessing system model
- ✓ Long-term demonstration with fixed removal efficiency and geometry
- Variable geometry demo: code-to-code verification with ChemTriton (Betzler, 2017)

Stage 3

SaltProc with variable xenon removal efficiency

- 60-year-long simulation with non-fixed removal efficiency and variable geometry
- Short-term (7 days) load-following simulation
- Sensitivity analysis of Xe removal system to find input parameters range when load following is possible

Sparger design optimization

- Based on desired efficiency determine the volume of the sparger, fuel salt and helium flow rate to ensure load-following operation with minimal salt inventory
- Determine appropriate sparger geometry to avoid criticality (using MCNP6)

Stage 4

TAP safety analysis

- Create multi-layer geometry in Serpent with non-uniform density to calculate axial offset (A/O)
- Calculate safety parameters (TCs, CRW and A/O) for startup, middle-of-life and end-of-life fuel composition
- Calculate safety parameters for various helium volume fraction in the core (varying from 0 to 1%)

Stage 5