TerraPower HALEU

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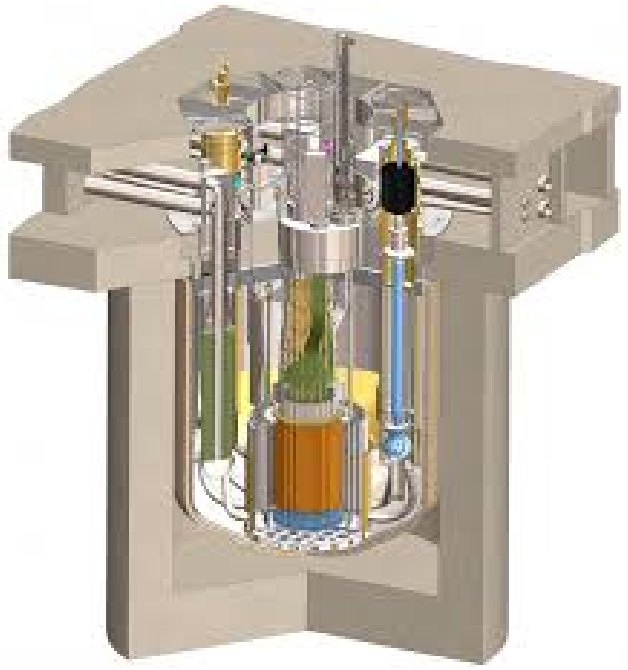
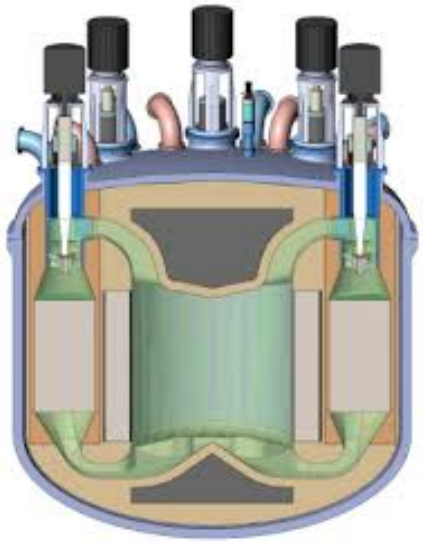
TerraPower HALEU

- TerraPower is currently working on several reactor applications that will require the use of HALEU, including sodium and molten salt fast reactors
- Experience gained over the last 10 years concerning fuel supply has revealed challenges ranging from availability of HALEU to delivery of finished fuel to the reactor site



HALEU Demand

- Initial series of commercial SFRs will require 15-20 tons 19.75% enriched equivalent U in metal form per startup core and ~1.5 tons / year thereafter for each commercial plant in operation, beginning in the next 10 years
- Commercial MSRs will require startup cores utilizing HALEU, beginning in about 15 years
- Long term goal to sustain operation on DU
- De-conversion supporting different HALEU material forms (metal, oxide, etc.) will be needed



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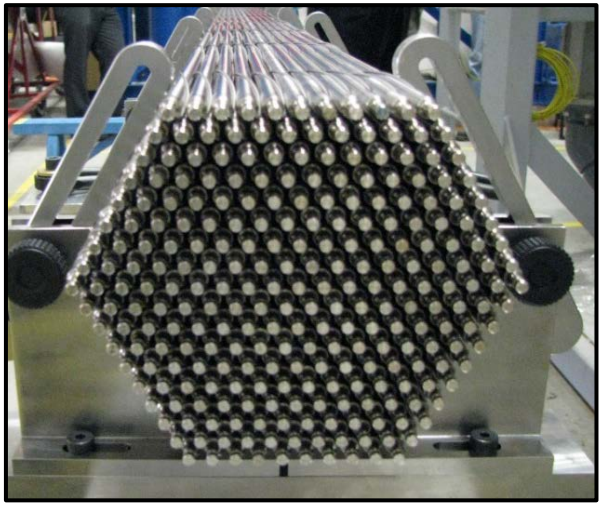
HALEU Supply

- No current US commercial supply, limited US government supply
- A guaranteed supply of HALEU will be needed to build developer and investor confidence and for HALEU demand during commercial infrastructure development

HALEU Fuel Fabrication

- Advanced designs require new commercial fuel production supply chains that don't exist today
- Upgrades of existing US commercial fuel fabrication facilities (LWR) for HALEU production is likely challenging, new Category II facilities may need to be designed, constructed and licensed



HALEU Transportation

- UF6, de-converted HALEU (metal, oxide, etc.), fresh and spent fuel containers for HALEU need to be developed
- New or updated transport security and criticality guidance established
- Co-location of enrichment and fabrication facilities may be considered

HALEU Regulatory Processes

- Updated guidance for physical security, nuclear material safeguards, MC&A, and criticality for facilities, processes and transportation
- Criticality benchmarks, codes and methods, and validation for HALEU may need updating for licensing of Category II facilities (enrichment, fuel fabrication, reactor, etc.), equipment and transportation containers
- Use of existing HEU benchmarks will result in excessive conservatism, significantly impacting cost and schedule

HALEU Vendor Development

- A solid demand signal will be necessary for private companies to invest in new facilities and containers needed for HALEU applications
- Individual advanced reactor applications are too small to provide a sufficient business case to motivate vendors
- The combined public and private HALEU needs should be coordinated

Conclusion

- HALEU demand for commercial applications is expected in the next decade
- Regulatory support for creating or updating HALEU guidance for new facilities, processes and transportation is needed
- Criticality benchmarks for HALEU will be helpful to support facilities and transportation
- HALEU demand for all applications needs to be coordinated to provide sufficient business case to motivate production and transport development