Breakout 2 - Farragut

Projects to do with $30M and 3 years

- Generate a set of requirements, feasibility study, electrical prototype
- Focus on the power conversion, can't just hook it up; also demonstration – take out heat and use
- Need the right materials, temperature and radiation
- 2 showstoppers – need to know in real time, confidence that it is to last to end of life; agree on materials, but it should be a materials qualifications project
- Support of a test rig – nuclear related reactions to be evaluated, efficiency of heat transfer for these small units – universal problem for all designs
- Sensors are critical to the operation, build an initial system with existing materials – would not be the most efficient, best; can advance the SOA
- Key attributes autonomous and load following, long core life, inherent safety reactor, no moving parts
- You have constrained space in small reactors. Need non-invasive sensors with online monitoring for load following.

General Comments

- Heat has value too, not just electricity output, can be compatible with load following
- Load following - System versus core responding
- Challenge of $0.10/kWh
- Sweet spot for reactor size: < 10 MWe
- If we are looking at the market, the power needs are closer to 5 MWe.
- Core Design – different opinions on need for development
- Sensors – different opinions on what is needed for small reactor
- System integration – recognition that core and power conversion can not be developed in isolation
- Parallel development paths – electric prototype and rad hard testing, both are needed

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- Generate a set of requirements, feasibility study, electrical prototype
- ~~Focus on the power conversion, can't just hook it up; also demonstration – take out heat and use~~
- Change of opinion: Sensors will be enabling and solid state power conversion will be transformational.
- Need the right materials, temperature and radiation
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