



Michael Mayfield, Director Advanced Reactor Program Office of New Reactors

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NRC's Office of New Reactors (NRO)

- NRO was created in 2006 to ensure a dedicated organization was available within the NRC to enable the safe, secure, and environmentally responsible use of nuclear power in meeting the Nation's future energy needs
- NRO is responsible for all licensing activities associated with new nuclear reactors in the U.S.
 - 13 combined license applications under review
 - 3 design certification applications under review
 - 2 design certification amendment applications under review
 - 2 early site permit applications under review





NRO's Advanced Reactor Program (ARP)

- Created in 2009 to focus on licensing new technologies
 - Next Generation Nuclear Plant (NGNP)
 - High Temperature/Very High Temperature Gas-Cooled Reactors
 - Integral Pressurized Water Reactors (iPWRs)
 - Liquid-Metal-Cooled Fast Reactors (LMRs)
 - Other Conceptual Designs
- Lead licensing project management organization for all advanced reactors
- Using a matrix structure to draw on key skill sets in Office of New Reactors
- Implementing a procurement strategy that supplements NRC staff resources with contractors from the DOE laboratories





NRO's Advanced Reactor Program (ARP)

- Anticipating submittals in 2012 with pre-application work starting now
- Implementing a structured approach in preparing for the reviews of advanced reactor technologies.
- Priorities to:
 - Developing regulatory framework to review advanced reactors
 - Preparations for Next Generation Nuclear Plant (NGNP) in accordance with the Energy Policy Act of 2005
 - Preparations for integral PWR designs
 - Maintaining awareness of other designs and technologies
- Structured approach is consistent with the timelines for the various technologies discussed by DOE representatives





Licensing in the U.S.

- Regulations pertinent to licensing commercial nuclear power reactors are contained in 10 CFR Part 50 and 10 CFR Part 52
- 10 CFR Part 52 developed to address licensing challenges experienced by the current fleet of operating reactors under 10 CFR Part 50
- Goals for 10 CFR Part 52:
 - Stable and predictable licensing process
 - Resolve safety and environmental issues before authorizing construction
 - Reduce financial risk to licensees
 - Encourage standardization of nuclear plant designs
- 10 CFR Part 50 contains the technical requirements for nuclear power reactors (safety and emergency preparedness)
- Regulations addressing environmental reviews are contained in 10 CFR Part 51
- Regulations addressing security reviews are contained in 10 CFR Part 73





Licensing in the U.S.

- Current regulations and regulatory guidance are based on light water reactor technology
- Commission making increasing use of probabilistic risk assessments (PRA) in informing licensing decisions on plant safety
- NRC evaluating the need for changes in the review guidance to support reviews of non-LWR technology





Licensing in the U.S.

- Proposals of advanced reactor technologies have driven the NRC to explore possibility of technology neutral licensing framework
 - NUREG-1860, “Feasibility Study for a Risk-Informed and Performance-Based Regulatory Structure for Future Plant Licensing”, published 12/2007
- Licensing strategy for the DOE’s Next Generation Nuclear Plant (NGNP) implementing a deterministic but risk-informed strategy
- Commission interested in testing principals of technology neutral framework described in NUREG-1860 in parallel with the licensing strategy for NGNP
- Commission also interested in exploring the possibility of making risk-informed changes to review guidance
- Important to note that current basic regulatory structure is still adequate for licensing other technologies albeit not the most efficient approach (i.e. Peach Bottom 1, Fort Saint Vrain, Clinch River, and PRISM SER)





Summary

- Working to develop appropriate review guidance and regulatory framework to support a timely and thorough review of the NGNP design and integral PWR designs
- Risk-insights, coupled with a deterministic regulatory structure, will be used in conducting licensing reviews
- Technology-neutral framework will be explored but currently not compelling approach given the technologies expected to be submitted for review
- While not optimized for non-LWR technologies, existing regulatory framework is adequate





References

- New Reactors Website:
 - <http://www.nrc.gov/reactors/new-reactors.html>
- Advanced Reactors Website:
 - <http://www.nrc.gov/reactors/advanced.html>

