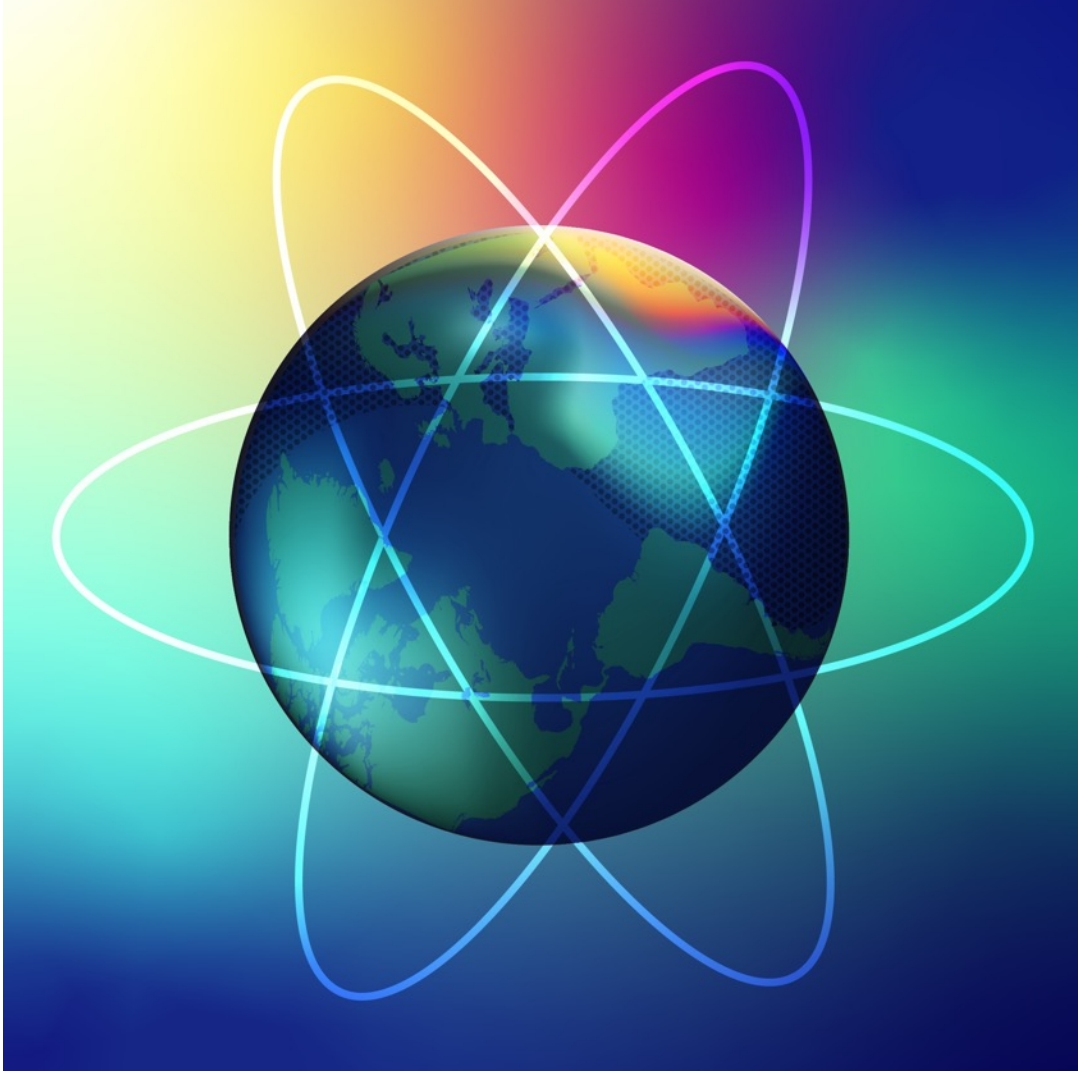




Potential SDP Realism Improvements

NRC Public Meeting
July 17, 2024



Overview



Improved realism furthers transparency and efficiency



Elimination of unnecessary conservatism decreases burden on both NRC and licensees



Notable progress made with GREATR project



Key Areas

CCF
HRA Floor Values
Green/White threshold

Common Cause Failures



- CCF could be a potentially beneficial next step in GREATR project
- CCF impact should be decreased when extent of condition/failure mechanism is known, and failure modes are not seen on redundant components
- Utility example
 - One of five EMRVs was found failed during shutdown due to missing hinge pin lock star washers
 - Investigation of the extent of condition identified the other four EMRVs had the washers in place and would have operated as designed.
 - Using simplified CCF approach, rather than the as-found condition, increased the CCF by approximately two orders of magnitude compared to the licensee's base model

HEP Floor Values



- Shutdown transients' over-reliance on HRA floor values
- Nine Mile Point 1 SDC pump trip
 - Risk significance based on reliability assigned to operator action
 - Two dozen sequential annunciations would have had to be ignored, and two separate crews of operators would have had to fail to recognize and respond to the loss of SDC for core damage to occur
 - Using minimum floor value unnecessarily elevates risk significance in shutdown conditions
- HRA exemptions

Green/White Threshold Flexibility



- Addition of Fire PRA and External Events PRA results causes a significant loss of margin between green and white
 - Fire and External Events models generally not as detailed as Internal Events models
 - Analyst should be given more discretion when results are close to a threshold and driven by Fire PRA or External Events PRA results
- More flexibility needed with HEP floor values based on independence
 - Often sole driving factor of risk yet RASP Handbook technical basis is sparse
 - Example: Exclude floor HEP value of $1\text{E-}6$ from assessment if sole driver of risk

Key Takeaways



Identifying areas of excess conservatism and pursuing realism improvement results in a more effective regulatory process



Transparent and frequent communications between licensee and NRC are paramount to success in SDPs



Further aligning industry and SPAR models hugely beneficial to both NRC and licensees

Discussion/Questions
