

Develop and maintain analytical tools for staff risk applications

RES/DRA

The NRC has developed and maintains the SAPHIRE (Systems Analysis Programs for Hands-on Integrated Reliability Evaluation) computer code for performing probabilistic risk analyses (PRAs). SAPHIRE offers state-of-the-art capability for assessing the risk associated with core damage frequency (Level 1 PRA) and the risk from containment performance and radioactive releases (Level 2 PRA). SAPHIRE supports the agency's risk-informed activities, which include the Standardized Plant Analysis Risk (SPAR) model development plan, the risk assessment standardization project, the Significance Determination Process, risk-informing Part 50, vulnerability assessment, advanced reactors, operational experience, generic issues, and regulatory backfit.

SAPHIRE version 7 is the current version in general use. User support, code maintenance, and testing, verification and validation activities are performed.

A new version of SAPHIRE, version 8, is being developed. SAPHIRE 8 is scheduled for release April 2010, and SAPHIRE 7 will be phased out. SAPHIRE 8 has new and improved capabilities for the construction and use of the SPAR models, and a specialized interface for performing Significance Determination Process analyses.

Selected Major Milestones and Schedules				
Major Milestones	Original Target Date	Revised Date	Completion Date	NRC Responsibility
Complete the first SAPHIRE 8 beta version (including the user-friendly Significance Determination Process interface module) for acceptance review.	February 2008	May 2008	May 2008	RES/DRA
Complete SAPHIRE 8 for general release.	April 2010			RES/DRA