H-Canyon Documented Safety Analysis (DSA)

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September 28, 2010
Purpose

- As requested by SRS CAB Recommendation #259 -- provide an update on H-Canyon's Documented Safety Analysis (DSA) Upgrade status
Background

- DOE directed SRNS, on July 2, 2008, to upgrade the H-Canyon safety analysis to be consistent with DOE-STD-3009 format and content to support H-Canyon operating schedule
Timeline

- SRNS submitted the upgraded DSA to DOE in March 2009
- DOE comments received in September 2009
- Comments incorporated and revised DSA submitted to DOE in April 2010
- DOE approved DSA on May 28, 2010
- Implementation of DSA scheduled for September 30, 2010
Development of DSA

- Supporting documentation developed using latest methodologies
  - New hazard analysis developed
  - New accident analyses developed for all credible accidents
  - New criticality analysis developed
Technical Safety Requirement (TSR) Controls

- TSR controls selected using preferred hierarchy
  - Engineered controls vs. administrative controls
  - Passive controls vs. active controls
  - Preventive controls vs. mitigative controls

- All accidents prevented or mitigated such that the facility can be operated without undue risk to the public, workers, and the environment
Examples of Control Improvements

- **Safety-Class Evaporator interlocks**
  - Prevent red oil reactions with redundant systems
- **Vessel air purge system**
  - Prevent hydrogen explosions in process vessels
- **Seismic air purge system**
  - Prevent hydrogen explosions following seismic event
- **H-Canyon exhaust ventilation modifications**
  - Ensures adequate ventilation following seismic event
DOE Review/Approval Process

- DOE assembled a review team of 25 scientists and engineers to review the DSA and TSR
- DOE performed an in-depth review of the accident analysis and the control sets developed to prevent and mitigate the accidents
- No DOE comments called into question the validity of the underlying hazard and accident analysis or control selection
- Comments primarily focused on:
  - Level of detail in Chapter 2, 4 & TSR Bases
  - Linkage between hazard analyses, DSA and TSRs
- Established joint DOE/SRNS reviews to facilitate completion
Activities Analyzed by DSA

- Processing of used fuel
- Processing of unirradiated uranium materials
- Processing of plutonium materials
- Processing of uranium, plutonium, and neptunium solutions
- Processing of laboratory sample returns from SRS analytical laboratories
- Repackaging of transuranic (TRU) waste containers (ARRA)
Key Implementation Activities

- Modifications to plant systems and equipment to support DSA and new TSR controls
- Training of operators, engineering, support personnel
  - On-the-job training, briefings, classroom training
- Procedure revisions
  - Over 400 procedures revised to implement new DSA
- Implementation plan and activities coordinated by senior SRNS manager
Assessment of Readiness

- Eighteen functional areas assessed
- Three independent assessment teams:
  - Management self-assessment - Complete
  - Facility self-assessment - Complete
  - Readiness assessment – Started September 18, 2010
- Assessment lines of inquiry included:
  - Technical information
  - Facility systems
  - Level of knowledge
- Goal is to declare readiness by September 30, 2010
Assessment Functional Areas

- Design
- Construction
- Training & Qualification
- Safety Documentation
- Environmental Protection
- Quality Assurance
- Maintenance
- Radiation Protection
- Fire Protection
- Emergency Preparedness
- Review, Assessment & Oversight
- Nuclear Criticality Safety
- Testing
- Safeguards & Security
- Packaging & Transportation
- Occupational Safety & Health
- Conduct of Operations
- Waste Management