ORNL - Restart of the High Flux Isotope Reactor 2-07 (Contractor ORR)

OPERATIONS

OBJECTIVE OP-1: Operations staff and management exhibit awareness of applicable requirements pertaining to CS operation, hazards, and reactor operations with the hydrogen-moderated CS. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of reactor operations and CS system operations managers and staff related to CS operations, hazards, and reactor operations with the hydrogen-moderated CS is adequate based on interviews. Sufficient numbers of qualified reactor operations and CS system operations staff and management are available to conduct and support safe operations with the hydrogen-moderated CS. (CR – 1, CR – 4, CR - 6)

Criteria

- Minimum staffing requirements have been established for operations and support personnel, including supervisors and managers. These staffing levels are met and are consistent with the safety basis requirements and assumptions.

- Sufficient numbers of qualified operations and support personnel are available to carry out operations with the hydrogen-moderated CS.

- The level of operator knowledge is adequate to operate safely. Operators demonstrate a working knowledge of facility systems and components related to safety. Operators demonstrate the ability to carry out normal, abnormal, and emergency procedures. These personnel also give adequate attention to and retain an adequate knowledge of health, safety, and environmental protection issues.

- Operations, management, and technical support personnel retain a practical and adequate understanding of facility systems, safety basis documents, the TSRs, and procedures.

Approach

Record Review:

(1) Review the TSRs, CS DSA, and associated administrative controls for staffing requirements. Compare with personnel records (list of qualified personnel) to asses the ability of the facility to field the required personnel.

(2) Review the staffing plans (or the startup plan) for operation with the CS and ensure there are adequate numbers of qualified personnel to support planned operations. Consider the projected throughput and any planned shift rotation schedules in this review.

(3) Review selected operator examinations and examination results to determine if they adequately test the operator's understanding of technical fundamentals, facility systems, and operating procedures.

Interviews:

(1) Interview operations managers and supervisors to ensure they understand the minimum staffing requirements for all modes of reactor and CS operation.

(2) Interview select reactor operators and supervisors and select CS system operators and supervisors to assess their understanding of facility processes, procedures, and fundamentals of operations with the hydrogen-moderated CS, their understanding of the CS DSA, and their awareness of health, safety, and environmental issues.

Shift Performance:

(1) Observe normal operations, routine evolutions, and drills to assess technical understanding and ability of the operators and supervisors to carry out their duties and to safely operate reactor and CS systems and components in accordance with approved procedures.

(2) Assess staffing levels while observing drills and routine evolutions to determine is they are adequate and satisfy administrative and safety basis requirements.

OBJECTIVE OP-2: Adequate and correct procedures are in place for operating and maintaining the CS and reactor systems and selected utility systems that include revisions for modifications that have been made to the facility. (No CR)

Criteria

- Operations procedures meet or exceed the requirements of the guidance provided in DOE Order 5480.19, *Conduct of Operations.*

- Procedure control, format, and content are compliant with applicable site directives.

- Procedure use complies with site policies.

Approach

Record Review: Review procedures for adequacy. Assess the adequacy of the review and approval process for procedures. Assess the currency of procedures and verify current configuration of safety systems is reflected in operations procedures.

Interviews: Interview selected operators and supervisors to assess their understanding of how they verify the latest approved revision of a procedure. Interview selected support staff responsible for procedure writing and revision to assess their understanding of procedure control requirements, validation process, and implementation of safety requirements. Interview selected operators and supervisors to assess their understanding of site procedure compliance policy.

Shift Performance: While observing performance demonstrations and drill response, determine if the facility procedures are adequate in content, level of detail, acceptance criteria, and properly implement safety requirements. Verify procedures

used by operators are properly controlled to ensure only the latest revision is used. Verify that operators are following site procedure compliance policy.

OBJECTIVE OP-3: An adequate restart plan has been developed and implemented that includes plans for graded operations and testing after resumption of operation to simultaneously confirm operability of equipment, viability of procedures, and the performance and knowledge of the operators. The restart plan identifies validation processes for equipment, procedures, and operators after resumption of operations including any appropriate restrictions and additional oversight requirements. (CR – 12)

Criteria

- The startup plan for operation with the CS is approved, adequate, is being implemented, and is on schedule to support safe startup. Specific hazards and evaluations that cannot be addressed prior to commencement of operations are included in the plan.

- The approved startup plan includes specific management oversight-observer responsibilities for each aspect of the plan.

Approach

Record Review: Review the plan for adequacy and evaluate the status of actions. Verify that the plan includes a phased approach to normal operations as well as including procedures, operator qualification, and equipment startup testing, as required. Verify that the plan includes mechanisms to deal with specific hazards and evaluations unique to the start of reactor operations with the hydrogen-moderated CS. Verify that the startup plan contains appropriate additional management oversight requirements and validation process requirements for equipment, procedures, and personnel.
Interviews: Interview select management oversight observers to ascertain their technical capability with respect to reactor operation with the hydrogen moderated CS and their commitment to effective conduct of operations, including use of procedures.

Shift Performance: During actual or simulated shift observations, ascertain that the Startup Plan, including validation activities, restrictions (if any), and management oversight, is being appropriately implemented.

OBJECTIVE OP-4: A program was effectively implemented to assure sufficient reactor operator proficiency prior to resumption of operations. (CR – 12)

Criteria

- Reactor operations personnel retain a practical and adequate understanding of systems, operations, and the authorization basis.

- Reactor operations personnel give adequate attention to and retain an adequate knowledge of health, safety, and environmental protection issues.

- Reactor operations personnel demonstrate a working knowledge of facility systems and components, as required to accomplish actions required by normal, abnormal, and emergency procedures under their cognizance.

Approach

Record Review: None.

Interviews: Interview reactor operators, supervisors, and shift technical advisors to ascertain effectiveness of the RRD reactor operations proficiency plan by assessing their understanding of processes, procedures, and the authorization basis for reactor operations. Determine if they have adequate knowledge of health, safety, and environmental issues.

Shift Performance: Observe performance of select actual or simulated routine and abnormal operations to provide confidence that reactor operations management, staff, and support staff proficiency has been maintained.

OBJECTIVE OP-5: The formality and discipline of operations for reactor operations with the hydrogen-moderated CS, including support activities, is adequate to conduct work safely and programs are in place to maintain this formality and discipline. (CR – 13)

Criteria

- Programmatic elements of conduct of operations are in place for reactor operations with the hydrogen-moderated CS.

- Operations personnel adequately demonstrate the principles of conduct of operations during the shift performance period.

- Interface and communications between CS operations and reactor operations is effective.

Approach

Record Review: Review recently completed operations logs, shift turnover documents, and other plant records of note to assess compliance with conduct of operations principles. Particular attention should be paid to documentation of facility mode changes, equipment operability issues, and entering/exiting LCO action statements.

Interviews: Interview selected FSMs, reactor and CS operators, CS operators and supervisors, and support personnel to asses their understanding of and commitment to comply with the conduct of operations principles (e.g., procedure usage, communications, response to alarms, turnover, independent verification, timely orders, and use of TSRs) in the performance of their duties.

Shift Performance: While observing drill response and evolutions during the hydrogen/heater test phase, determine if the facility is effectively implementing conduct of operations requirements. Attend pre-shift briefings, incident critiques, and shift turnovers, and observe control room activities, operator rounds, procedure use, communications, alarm response, system status control, lockout/tagout activities, mode changes and operability decisions. Determine if personnel demonstrate a high priority commitment to effectively implement good "conduct of operations" principles and behaviors.

OBJECTIVE OP-6): RRD management and staff are able to effectively and proficiently operate the CS system and related reactor interface systems. (CR–1, CR–2, CR–4, CR–6, CR–10, CR-13, CR-15)

Criteria

RRD is able to demonstrate that CS system and components function as required, operators demonstrate proficiency and acceptable conduct of operations for reactor operations with the hydrogen-moderated CS operation, support personnel adequately support operations, management is actively involved in operations, and feedback and improvement mechanisms identify and appropriately resolve safety issues.

Approach

Record Review: None.

Interview: None.

Shift Performance: Observe a comprehensive integrated demonstration run of CS normal and abnormal operation during the hydrogen/heater test phase to ascertain adequacy and effectiveness of equipment, personnel and programs.