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

MAINTENANCE

OBJECTIVE MT-1: The maintenance and test programs have been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified maintenance and testing staff and management are provided, and adequate facilities and equipment are available to ensure services are adequate to conduct and support reactor operations with the hydrogen-moderated CS. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management control of safety. (CR – 1, CR – 2, CR – 6)

Criteria

- The maintenance and test programs and organizations are established and functioning to support the RRD operations organization. Functions, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The maintenance and test organizations are adequately staffed with qualified personnel.

- Maintenance and test personnel give adequate attention to health, safety, and environmental protection issues.

- The maintenance backlog is controlled, prioritized, and minimized. Work relating to safety components, protecting the environment, and ensuring safety and health receives a higher priority over other items.

- Measuring and test equipment (M&TE) and installed CS process equipment used to ensure the proper operation of CS and reactor safety systems are identified, available, and calibrated.

- Adequate facilities, equipment, and tools are available for maintenance personnel to effectively support operations.
- The maintenance program adequately addresses identification and disposition of counterfeit and suspect parts.

Approach

Record Review: Review selected documentation (e.g., administrative procedures, organization charts, and position descriptions) which establish the roles, responsibilities, interfaces, and staffing levels of the maintenance and test organizations. Review completed reactor and CS equipment work packages and associated maintenance procedures for facility safety systems. Review the maintenance backlog listing and job priority. Review M&TE and installed process instrumentation recall and calibration records. Review program requirements to ensure counterfeit and suspect parts are adequately addressed for the CS.

Interviews: Interview selected maintenance and test personnel to determine if they are familiar with their support and interface responsibilities to the CS and reactor operations organizations. Interview maintenance planners and supervisors responsible for developing, reviewing, and approving work packages. Interview personnel responsible for prioritizing work requests, establishing maintenance schedules, and managing the backlog. Assess maintenance program personnel understanding of the process, including hazard analysis, and their commitment to comply with maintenance program requirements.

Shift Performance: Walk down M&TE and process equipment to determine if instrumentation is properly calibrated and M&TE is available for use. Walk down maintenance facilities/work areas to assess overall maintenance resources and equipment available to support operations. Ascertain if personnel demonstrate a high priority commitment to comply with maintenance program and procedure/work package requirements.

OBJECTIVE MT-2: Maintenance 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 maintenance managers and staff related to CS operations, hazards, and reactor operations with the hydrogen-moderated CS is adequate based on interviews. (CR – 1, CR – 4)

Criteria

- Maintenance and test personnel demonstrate a working knowledge of CS operations and hazards and reactor operations with the hydrogen-moderated with the CS, associated systems and components related to safety and applicable safety management program requirements. These personnel also give adequate attention to health, safety, and environmental protection issues.

- Maintenance and test personnel comply with procedure use requirements.

Approach

Record Review: None

Interviews: Interview select maintenance and test personnel assigned to support operations to assess their understanding of how their actions relate to the safety basis for those operations. Determine if their level of knowledge is adequate to properly assist the operations organization in maintaining safe operations. Determine if they have adequate knowledge of health, safety, and environmental issues.

Shift Performance: During walkdowns and observations of maintenance and test activities, assess the knowledge of maintenance and test personnel and assess their compliance with procedure use requirements.

OBJECTIVE MT-3: A test program is in place to confirm the condition and operability of structures, systems, and components required for operations with the hydrogen-moderated CS. Testing is performed after maintenance activities to confirm the effectiveness of the maintenance and the operability of safety SSCs.

Surveillance testing is performed to maintain safety SSCs operable consistent with TSR surveillance requirements. The material condition of all safety, process, and utility systems will support the safe conduct of work. (CR–8, CR–9)

Criteria

- A program is established and implemented for scheduling surveillance testing in accordance with the TSR.
- Surveillance test and maintenance procedures, and work packages are consistent with the approved CS DSA and HFIR USAR (as applicable) and are adequate.
- Completed startup test, surveillance test, and maintenance procedures, and work packages are reviewed and follow-up actions for identified deficiencies are appropriately documented.
- Equipment required to support reactor operation with the hydrogen-moderated CS is operable.

Approach

Record Review:

(1) Review the surveillance test program and procedures associated with the HFIR USAR and the CS DSA to verify that TSR surveillance requirements have been appropriately implemented into facility procedures and that those procedures are adequate.

(2) Review completed surveillance procedures to determine if TSR established acceptance criteria are implemented and met during the performances of periodic surveillances and equipment has been determined to be operable.

(3) Review a sampling of completed or in-progress startup test procedures to determine if program requirements have been met (including those associated with adequacy of procedures, fulfillment of acceptance criteria and disposition of test deficiencies).

(4) Review a sampling of completed or in-progress work packages for CS equipment and other selected safety related equipment modified or refurbished during this outage to determine if program requirements have been met (including those associated with adequacy of procedures, fulfillment of acceptance criteria and disposition of test deficiencies).

(5) Review a list of outstanding safety-related system deficiencies identified through the corrective maintenance program, preventive maintenance program, surveillance test program, or other reporting process to assess the condition of facility systems to support safe reactor operations with the hydrogen-moderated CS.

(6) Review a sampling of completed or in-progress maintenance procedures and work packages to determine if program requirements have been met (including those associated with adequacy of procedures, and post-maintenance testing).

Interviews: Interview selected personnel associated with the CS DSA surveillance program including selected cognizant engineers to assess their understanding of the surveillance testing requirements and basis.

Shift Performance:

(1) Observe the performance of a sampling of safety related equipment surveillances to confirm the adequacy of the scope of surveillance activities, accuracy of documented instructions, and to verify that personnel assigned to perform these activities fully understand the breadth of their responsibilities and demonstrate the ability to execute them.

(2) Walk down selected CS and reactor safety-related SSC with the cognizant engineer and an operator to assess the operability and condition of the system and to verify the status is consistent with the condition specified. Confirm that calibration of designated components, instruments, and gauges has been properly executed.

(3) While observing maintenance activities determine if the facility procedures and work packages are adequate in content, level of detail, acceptance criteria, and properly implement safety requirements. Verify that technicians are following site procedure compliance policy.