

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

Occupational Safety & Health

OBJECTIVE ESH-1: Personnel exhibit an awareness of public and worker safety and health requirements and, through their actions, demonstrate a high-priority commitment to comply with these requirements. (Should also be coordinated with OP-1, MT-1, AB-2, EP-1, and ES-2) (CR-1)

Criteria

Personnel understand their right and responsibility to identify safety issues and invoke work suspension and stop work authority when necessary. Personnel anticipate, recognize, evaluate, and appropriately respond to hazards that may be present in the work place.

Approach

Record Review: Review the site policies and procedures which promote the identification and promulgation of safety concerns and work suspension and stop work authority to RRD employees. Verify that they provide the opportunity for employees to report safety issues and, when necessary, suspend operations and/or stop work.

Interviews: Interview selected CS and reactor operators, management, and support personnel to evaluate their understanding of actual and potential safety issues with regard to CS and reactor operations. Assess their understanding of mechanisms available to provide protection from hazards. Assess their knowledge of the mechanisms available for them to submit safety concerns. Determine their awareness and willingness to invoke work suspension and stop work authority when required and evaluate their commitment to safety.

Shift Performance: Observe routine CS operations and drills to assess compliance with safety related requirements and commitment to safety.

OBJECTIVE ESH-2: The RRD Industrial Safety and Hygiene (IS&H) program has been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified IS&H staff and management are provided, and adequate facilities and equipment are available to ensure services are adequate to conduct and support operations with the CS modification. 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 IS&H program and associated organizations are established and functioning to support CS and reactor operations. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The industrial safety and hygiene (IS&H) function is adequately staffed with qualified personnel.

- Industrial safety and health programs have been established that ensure new hazards associated with CS operations have been identified and appropriate controls have been implemented by operations and support personnel.
- Research Reactors Division CS job hazards analyses are conducted as necessary by experienced engineering personnel, occupational safety and industrial hygiene technicians, other applicable subject matter experts, operations supervisors, and operators to identify and mitigate hazardous situations and conditions.
- Industrial safety and health related equipment needed to support CS and reactor operations has been identified, reviewed, selected, maintained, and where applicable, tested and calibrated to ensure adequate personnel protection.

Approach

Record Review: Review the documentation (e.g., administrative procedures, organization charts, and position descriptions) which establish the roles, responsibilities, interfaces, and staffing levels for the IS&H groups that support CS and reactor operations. Review at least one job hazard analysis associated with the CS and at least one associated with reactor systems and determine if any items should be followed up during observation of the shift performance phase.

Interviews: Interview selected IS&H support personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the CS and reactor operations organization.

Shift Performance: Observe the role played by the IS&H support organization to ensure that they are proactive in their approach to safety during routine operations. Walk down the CS areas with select IS/IH technicians to determine if appropriate industrial safety/hygiene related equipment is supplied, maintained, and reviewed to ensure personnel are properly protected. Observe the performance of selected reactor and CS procedures/work packages to assess the adequacy of job hazard analyses (including involvement of operators and operations supervision and appropriate subject matter experts in the process).

OBJECTIVE ESH-3: IS&H staff and management exhibit awareness of applicable requirements pertaining to CS and reactor operation and hazards. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of IS&H staff and management, related to CS and reactor operations and hazards is adequate. (CR-1, CR-4)

Criteria

- Industrial safety and hygiene support personnel demonstrate a working knowledge of operations with the CS, associated systems and components related to safety, and applicable safety management program requirements. They also give adequate attention to health, safety, and environmental protection issues.

- Industrial safety and hygiene support personnel demonstrate the ability to carry out normal, abnormal, and emergency response procedures under their cognizance in support of reactor and CS operations.

Approach

Record Review: None.

Interviews: Interview selected IS&H support personnel to evaluate their knowledge of reactor and CS operations and requirements and how they support those operations. Assess their understanding of their actions in response to abnormal and emergency conditions as well as their understanding of how these actions relate to the CS DSA and the HFIR USAR. Determine if they have adequate knowledge of health, safety, and environmental protection issues. Interview selected IS&H staff to ascertain their familiarity with IS&H hazards and controls associated with the CS modification.

Shift Performance: Observe drills, routine evolutions, and normal operations to assess the ability of IS&H support personnel to respond to hazardous situations and support reactor and CS operations.

OBJECTIVE ESH-4: The RRD fire protection program has been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified fire protection 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

- As related to CS and reactor operations, the fire protection program and associated organizations are established and functioning to support the operations organization. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The fire protection function is adequately staffed with qualified personnel.
- Fire protection programs have been established that ensure that operations and support personnel can prevent and respond to fire hazards.
- Fire protection equipment and systems are in place in CS and reactor interface areas to mitigate fires as described in the CS DSA.
- Site pre-fire plans have been revised as necessary and are adequate to support CS and reactor operations.
- The facility fire hazard analyses (FHA) adequately reflect fire hazards associated with CS and reactor operations, and CS - related requirements have been fully implemented or appropriate compensatory measures have been put in place.

Approach

Record Review:

- (1) Review the documentation (e.g., administrative procedures, organization charts, and position descriptions) which establish the roles, responsibilities, interfaces, and staffing levels for the fire department and fire protection engineering groups that support CS and reactor operations.
- (2) Review the Fire Hazards Analyses and site pre-fire plans for adequacy. Review implementation documentation to ensure that the requirements of the FHAs have been fully implemented for CS related issues.

Interviews: Interview selected fire department, fire protection engineering, and surveillance personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the operations organization.

Shift Performance: Walk down the CS and reactor interface areas with fire protection engineering and surveillance personnel to determine if the condition of the fire detection and suppression equipment and fire boundaries adequately reflect documented needs and if combustibles are suitably controlled.

OBJECTIVE ESH-5: Fire Protection staff and management exhibit awareness of applicable requirements pertaining to CS operation, hazards, and reactor interface. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of fire protection staff and management related to CS operations, hazards, and reactor interface, is adequate. (CR-1, CR-4)

Criteria

- Fire protection support personnel demonstrate a working knowledge of operations with the CS, associated systems and components related to safety, and applicable safety management program requirements. They also give adequate attention to health, safety, and environmental protection issues.
- Fire protection support personnel demonstrate the ability to carry out emergency response procedures under their cognizance in support of reactor and CS operations.

Approach

Record Review: Review drill records to assess the ability of fire protection support personnel to provide required emergency services in support of reactor and CS operations.

Interviews: Interview selected fire department, fire protection engineering, and surveillance personnel to evaluate their knowledge of CS operations and requirements and how they support those operations. Assess their understanding of their actions in response to abnormal and emergency fire conditions as well as their understanding of how these actions relate to the CS DSA. Determine if they have adequate knowledge of

fire protection program requirements and health, safety, and environmental protection issues.

Shift Performance: If possible, observe drills to assess the ability of fire protection support personnel to provide required emergency services. Alternatively, complete this assessment by reviewing records of completed drills.

OBJECTIVE ESH-6: The RRD Quality Assurance program has been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified quality assurance staff and management are provided, and adequate facilities and equipment are available to ensure services are adequate to conduct and support operations with the CS modification. 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 quality assurance program and associated organizations are established and functioning to support reactor operations with the hydrogen-moderated CS. Functions, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The quality assurance function is adequately staffed with qualified personnel.

Approach

Record Review: Review selected documentation (e.g., administrative procedures, the RRD quality assurance program, organization charts, and position descriptions) which establish the roles, responsibilities, interfaces, and staffing levels of the quality assurance group that supports CS and reactor operations.

Interviews: Interview selected quality assurance personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the Operations organization.

Shift Performance: While observing performance demonstrations and drill response, determine if quality assurance personnel are providing adequate support to the operations organization giving proper attention to production and safety issues.

OBJECTIVE ESH-7: Quality assurance staff and management exhibit awareness of applicable requirements pertaining to CS operation, hazards, and reactor interface. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of quality assurance staff and management, related to CS operations, hazards, and reactor interface, is adequate. (CR-1, CR-4)

Criteria

Quality assurance personnel demonstrate a working knowledge of operations with the CS, associated systems and components related to safety and applicable safety management program requirements. They also give adequate attention to health, safety, and environmental protection issues.

Approach

Record Review: None.

Interviews: Interview quality assurance personnel assigned to support CS operations to evaluate their knowledge of CS operations and requirements and how they support those operations. Determine if they have adequate knowledge of health, safety, and environmental issues.

Shift Performance: Observe drills, routine evolutions, and normal operations to assess the ability of quality assurance support personnel to support safe, compliant operation and maintenance of systems and components under their cognizance.

OBJECTIVE ESH-8: The RRD radiological protection program has been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified radiological protection staff and management are provided, and adequate facilities and equipment are available to ensure services are adequate to conduct and support operations with the CS modification. 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 radiological protection program and associated organizations are established and functioning to support CS and reactor operations. Functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The radiological protection function is adequately staffed with qualified personnel.
- Radiological protection programs have been established that ensure new hazards associated with CS operations have been identified and appropriate controls have been implemented by operations and support personnel.
- Radiological protection related equipment needed to support CS and reactor operations has been identified, reviewed, selected, maintained, and where applicable, tested and calibrated to ensure adequate personnel protection.

Approach

Record Review: Review the documentation (e.g., administrative procedures, organization charts, and position descriptions) which establish the roles, responsibilities, interfaces, and staffing levels for the radiological protection support group. Review the most recent ALARA design review of the CS for consistency with the as-built design. Review survey plans developed or revised as a result of the CS modification. Review at least one radiological work permit associated with the CS, if any are active, and at least one associated with reactor systems and determine if any items should be followed up during observation of the shift performance phase.

Interviews: Interview selected radiological protection support personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the CS and reactor operations organization.

Shift Performance: Observe the role played by the radiological protection support organization to ensure that they are proactive in their approach to safety during routine operations. Walk down the CS and selected reactor areas with a radiological protection technician to determine if appropriate radiological protection related equipment is supplied, maintained, and calibrated to ensure personnel are properly protected. Observe the performance of selected reactor and CS procedures/work packages to assess the adequacy and implementation of radiological protection controls (including involvement of operators and operations supervision and appropriate subject matter experts in the process).

OBJECTIVE ESH-9: Radiological protection staff and management exhibit awareness of applicable requirements pertaining to CS and reactor operation and hazards. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of radiological protection staff and management, related to CS and reactor operations and hazards is adequate. (CR-1, CR-4)

Criteria

- Radiological protection support personnel demonstrate a working knowledge of operations with the CS, associated systems and components related to safety, and applicable safety management program requirements. They also give adequate attention to health, safety, and environmental protection issues.
- Radiological protection support personnel demonstrate the ability to carry out normal, abnormal, and emergency response procedures under their cognizance in support of reactor and CS operations.

Approach

Record Review: None.

Interviews: Interview selected radiological protection support personnel to evaluate their knowledge of reactor and CS operations and requirements and how they support those operations. Assess their understanding of their actions in response to abnormal and emergency conditions as well as their understanding of how these actions relate to the CS DSA and the HFIR USAR. Determine if they have adequate knowledge of health, safety, and environmental protection issues. Interview selected radiological protection staff to ascertain their familiarity with radiological hazards and controls associated with the CS modification.

Shift Performance: Observe drills, routine evolutions, and normal operations to assess the ability of radiological protection support personnel to respond to hazardous situations and support reactor and CS operations.