

## ORNL - Restart of the High Flux Isotope Reactor 2-07

### RADIOLOGICAL PROTECTION (RP)

#### OBJECTIVE RP-1:

The RRD radiological protection program has been appropriately modified to reflect the CS modification and its reactor interface, sufficient numbers of qualified radiological protection personnel are provided, and adequate radiological protection facilities and equipment are available to ensure that services are adequate to conduct and support HFIR operation. The radiological protection functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented with line management control of safety. Radiological protection personnel exhibit awareness of the applicable radiological protection requirements pertaining to HFIR operation and the associated hazards. Through their actions, they have demonstrated a high-priority commitment to comply with these requirements. The level of knowledge of radiological protection personnel related to reactor operation is adequate. (Core Requirements 1, 2, 4, and 6)

#### Criteria

- The radiological protection program and associated organization are established and functioning to support HFIR operation. The radiological protection functions, assignments, responsibilities, and reporting relationships are clearly defined, understood, and effectively implemented. The radiological protection function is adequately staffed with qualified personnel.
- The established radiological protection programs ensure that the new hazards associated with reactor operation with the CS have been identified and appropriate controls have been implemented by operations and support personnel.
- The radiological protection-related equipment needed to support HFIR operation has been identified, reviewed, selected, maintained, and where applicable, tested and calibrated to ensure adequate personnel protection.
- Radiological protection personnel demonstrate a working knowledge of HFIR operation with the CS, the associated systems and components related to safety, and the applicable safety management program requirements.
- Radiological protection support personnel demonstrate the ability to carry out normal, abnormal, and emergency response procedures under their cognizance in support of HFIR operation with the CS.

#### Approach

*Record Review:* Review the documentation (e.g., administrative procedures, organization charts, and position descriptions) which establishes the roles, responsibilities, interfaces, and staffing levels for the radiological protection group. Review the most recent as low as reasonably achievable (ALARA) design review of the CS for consistency with the as-built design. Review the radiation survey plans developed or revised as a result of the CS modification in order to ascertain their adequacy. Review a representative sample of radiological work permits associated with the reactor systems and the CS, if any are active, and determine if any items should be followed up during observation of the shift performance phase.

*Interviews:*

Interview selected radiological protection personnel to determine if they are familiar with their roles, responsibilities, and interfaces with the reactor operations organization. Interview selected radiological protection personnel to evaluate their knowledge of HFIR 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 DSAs and the HFIR Updated Safety Analysis Report. Interview selected radiological protection personnel to ascertain their familiarity with the radiological hazards and controls associated with reactor operations and the CS modification. Determine if they have adequate knowledge of ES&H protection issues.

*Shift Performance:*

Observe the role played by the radiological protection personnel to ensure that they are proactive in their approach to safety during routine operations. Walk down selected reactor areas, including the CS 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 the involvement of operators and operations supervision and appropriate subject matter experts in the process). Observe drills, routine evolutions, and normal operations to assess the ability of radiological protection support personnel to respond to hazardous situations and support reactor operation with the CS.