

# A Proposal: Reliability Centered Maintenance (RCM) for the High Flux Isotope Reactor (HFIR)

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**RCM**  
There is a desire to implement a reliability-centered maintenance at the High Flux Isotope Reactor (HFIR) at the Oak Ridge National Laboratory to improve system reliability and performance. A Reliability-Centered Maintenance (RCM) structure is proposed for implementation at the HFIR. This proposed RCM structure is based on widely used and accepted industry practices. The HFIR primary cleanup system is used to provide specific applications of the proposed program. The project addresses the need for a methodical process to be developed that can be used on any system where preventative maintenance is desirable. A 7-step process for cost-effective maintenance on a primary cleanup system for the HFIR has been developed and is being proposed in the project.

- Project focus is to develop and propose a RCM program for the Primary Cleanup System for the High Flux Isotope Reactor (HFIR). The PCS has shown decreasing reliability and performance over the last several months.
- Project identifies a process to determine potential causes for the PCS problems.
- A comprehensive systems analysis process based on accepted reliability centered maintenance principles is proposed.



Reliability Centered Maintenance (RCM)  
Process consist of **seven** steps

- Step 1. System selection and information collection/  
Gather info on system or equipment
- Step 2. System boundary/ Define what is include or not included in the system
- Step 3. System description and functional block diagram/  
Detailed description of the system
- Step 4. System functions and functional failure/ System success criteria
- Step 5. Failure mode and effects analysis (FMEA)/  
Detailed evaluation of all failure modes of components, and how they could occur
- Step 6. Prioritize FMEA information/ Ranking FMEA from most critical to least critical
- Step 7. Procedure review/ look at existing procedures to ensure critical failure modes can be found

