Workers improve ALARA at River Corridor Project

River Corridor Project workers have improved safety and saved money by reducing a high radiation area by almost 92 percent, and in two separate actions, reduced exposure to certain workers by more than five person-rem. Because these individuals took the initiative to improve a work situation, the facilities will see a reduction in dose, maintenance cost, risk to perform maintenance and radiological waste generated.

Until recently, approximately 10,000 square feet of floor space in the basement of the 327 Building was designated as a high radiation area, or HRA. All personnel entries required a radiological control technician, or RCT, escort and HRA control documentation. Barriers or fences were put up around the high radiation areas. This released the basement access points, which greatly reduced the HRA controls for personnel who enter the basement for routine tasks. By using the Automated Job Hazards Analysis and good planning, workers realized they could construct much of the fencing in low-dose areas. This resulted in saving 55 percent of the original estimated dose for the job.

J.R. Vincent, left, and Dick Brown are shown with a solenoid valve assembly — part of the mock-up that proved their ALARA ideas would work.

The barriers reduced the controlled area by approximately 9,153 square feet, or 91.5 percent. Of the 552 entries made during 1999, only 156 would have required RCT coverage if the HRA barriers had been in place. An estimated 400 mrem will now be saved yearly because of the reduced HRA controls required to enter the basement area. Yearly cost savings for vent and balance alone are estimated at $4,600.

In the 324 Building, personnel were receiving unnecessary doses while adjusting and replacing flow control valves on the Radiochemical Engineering Cell, or REC, airlock cell doors. The flow control valves actuate each door by controlling the exhaust air, which controls the speed at which the doors open and close. The REC is a high-hazard work area, posted as an airborne radiation area, HRA and a high-contamination area.

Dick Brown, a mechanical engineer for Fluor Hanford, believed resizing the flow control valves might enhance the control of the cell doors. He also suggested moving the flow control valves from inside the REC airlock, a high-hazard work area, to outside the REC airlock in the cask handling area, a low-hazard work area.

Brown, with help from cognizant engineer J.R. Vincent of Fluor Hanford, designed a mock-up that represented the actual system as closely as possible. The mock-up proved that the flow control valves could be repositioned in the system and reduced in size for better door movement control. These actions will save an estimated 3 person-rem.

Another dose-saving job evolution resulted from the improved method for repair of the B Cell door actuators located in the REC Airlock, a high-hazard work area. Although the planning originally called for the actuators to be replaced one at a time, the team realized that significant worker dose could be saved if they were replaced at the same time. Work tasks were grouped to save time and dose. RCTs completed radiological surveys for both locations, the electricians disconnected the wiring for each, crafts disconnected the air lines and removed the actuators. The tasks were then reversed to finish the job. Grouping the tasks and replacing the actuators at the same time saved an estimated 2.078 person-rem. ✦